4th quarter/Showcase Special 2019

# PANSTADIA & ARENA MANAGEMENT

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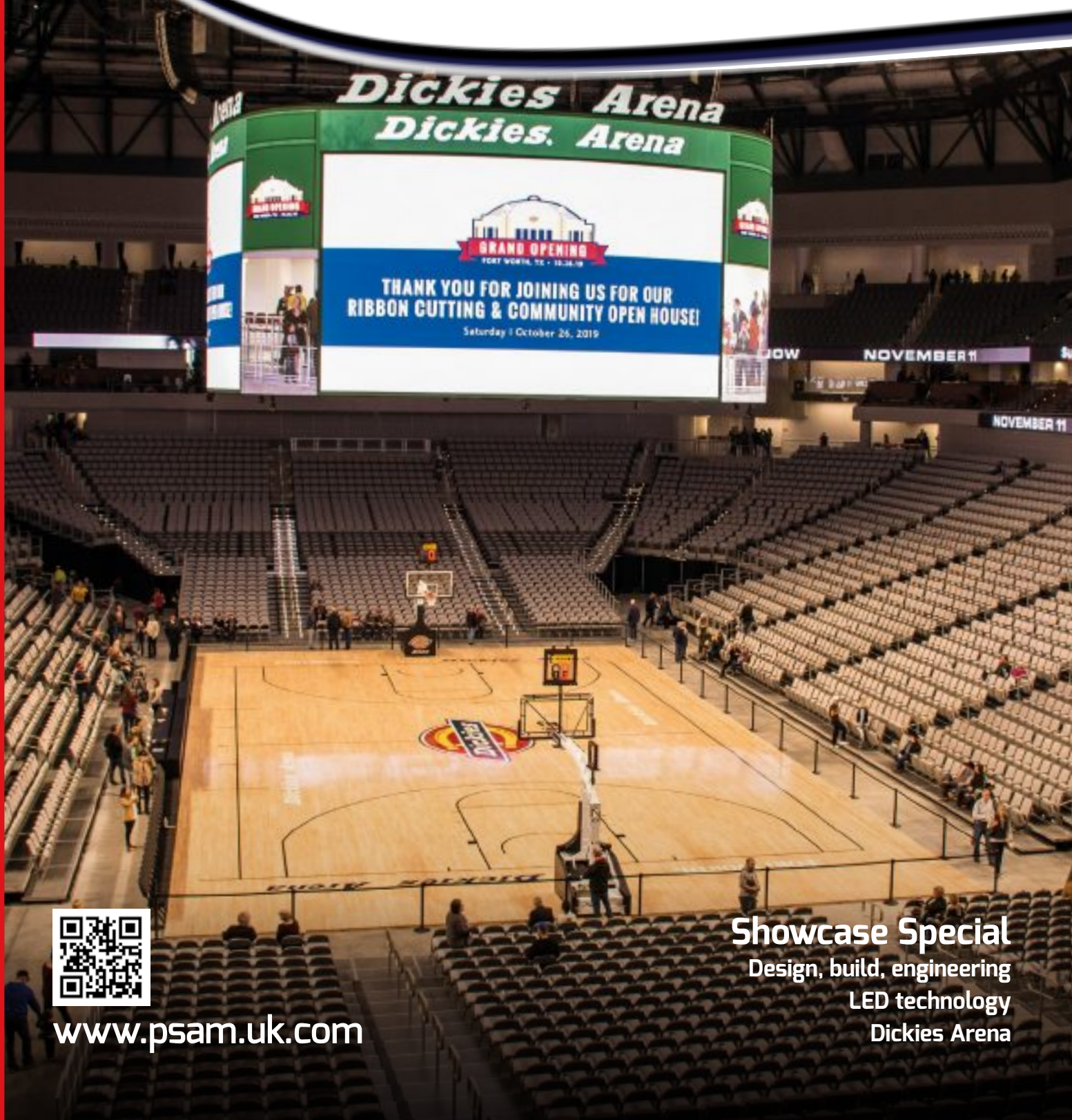


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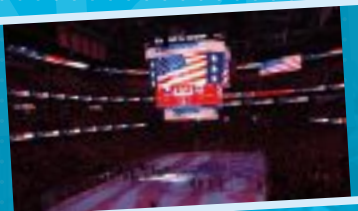

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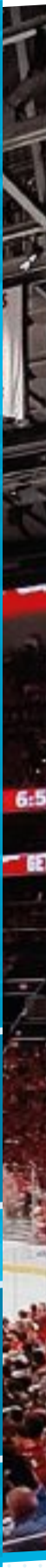

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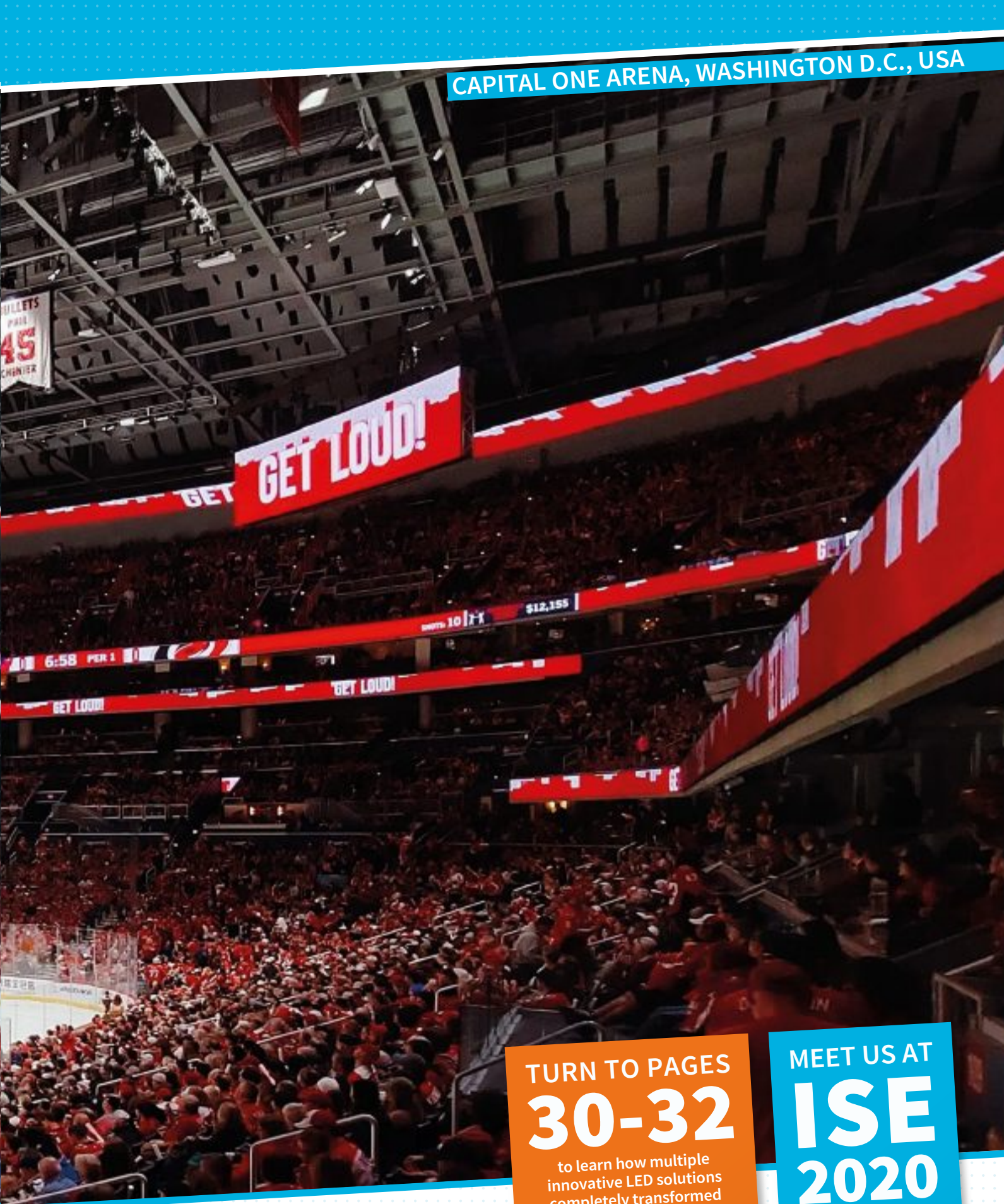


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***Cover:*** Dickies Arena
Image credit: *Trail Drive Management Corp. (TDMC)*

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I've just returned from our hugely successful SBJ/Stadia & Arena conference and exhibition at the **Saitama Super Arena** in Japan, and the country was still buzzing from hosting the recent **Rugby World Cup**.

A host of records were broken at the tournament, including for fan engagement, and there was still a real sense of excitement about the event.

Rugby officials in the country are looking to capitalise on the buzz surrounding the competition with the launch of a professional rugby league in 2021.

Existing rugby stadia will be used to host teams, while others could be built in a bid to attract a new generation of rugby fans.

The excitement from the Rugby World Cup is sure to carry over to next year's **Olympic and Paralympic Games**, and while I was in Tokyo, I managed to get a look at the new **National Stadium**.

The recently completed Kengo Kuma-designed stadium looks magnificent and will provide a superb backdrop to the Games. Other venues such as the Ariake Gymnastics Centre have also been completed so everything is on track for kick off on 24 July.

This issue of Panstadia & Arena Management magazine is our Showcase Special for 2019 and highlights some of the great work that has recently been carried out across a myriad of sports venue projects. Enjoy!

**John Sheehan**
Editor
***PanStadia & Arena Management Magazine***

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# FORT WORTH WELCOMES MULTI-EVENT DICKIES ARENA

*ANC videoboard set up for Fort Worth Rodeo weeks*

All images courtesy of *Trail Drive Management Corp. (TDMC)*

**The $540 million, 14,000-capacity venue will host rodeo, concerts, family entertainment, basketball, hockey and other major sports events. Feature writer Steve Traiman gets the lowdown from arena management and architect team.**

When the 2020 **Fort Worth Stock Show Rodeo** opens its three-week run on January 17, it will debut in a new state-of-the-art home – **Dickies Arena**, adjacent to the **Will Rogers Memorial Center** campus.

The community was invited to a free ribbon cutting and open house on October 26, while the arena officially opened with a November 8 concert featuring **Twenty One Pilots – The Bandito Tour** with special guests **Misterwives**.

**Texas Christian University** will host

*Mayor Betsy Price cuts ribbon held by Peter Beck, left, and Ed Bass for the opening ceremony*

the first sports event, a December 6 basketball game vs. **University of Southern California**.

Already confirmed are major collegiate tournament events including the April 2020 **NCAA Women's Gymnastics Championship**; the **American Athletic Conference (AAC)** annual men's basketball tournament from 2020-2022, and Dickies Arena will host first and second round games for the 2022 **NCAA Division 1 Men's Basketball Tournament**.

## CLOSE COLLABORATION

Owned by the City of Fort Worth and operated by **Trail Drive Management Corp. (TDMC)**, the arena is the result of a collaboration between the **Fort Worth Stock Show & Rodeo; Event Facilities Fort Worth Inc. (EFFW)**, a not for profit organisation created to support the Stock Show; and local businessman and philanthropist **Ed Bass**, who committed to raising more than half the final $540 million cost.

Mike Groomer, President and CEO of Event Facilities Fort Worth, told *PS&AM*: ***"The construction of Dickies Arena is the culmination of over 20 years of planning. An arena to serve Fort Worth was identified in the late 1990's and its construction was included in a proposal and bid for the Dallas/Fort Worth metroplex to host the 2012 Summer Olympics. Although that bid was not successful, the vision and need for a new arena remained, undertaken under the leadership of the Fort Worth Stock Show & Rodeo and our EFFW.***

*Dickies Arena south entrance from pedestrian bridge*

***"As a not for profit, EFFW received private contributions and other gifts that were utilised to assemble and acquire properties that would ultimately be needed for the Arena development.***

***"In 2008, funded by additional private contributions, EFFW engaged David M. Schwarz Architects (DMSA), and began the schematic design of a new multi-purpose arena. These early concepts were driven at the time largely by the needs of the Fort Worth Stock Show & Rodeo, which was initially the only identified user. However, as the project developed, the reality of the diverse users' opportunities continued to evolve, and this early effort continued to be refined through the efforts of DMSA and the leadership of the Fort Worth Stock Show & Rodeo and EFFW."***

Groomer said that as the planning efforts continued, EFFW worked with the City of Fort Worth and Tarrant County to develop public/private partnerships that provided funding for public infrastructure improvements needed to serve the future arena development. And more importantly, this public investment also helps address longstanding issues affecting the surrounding community.

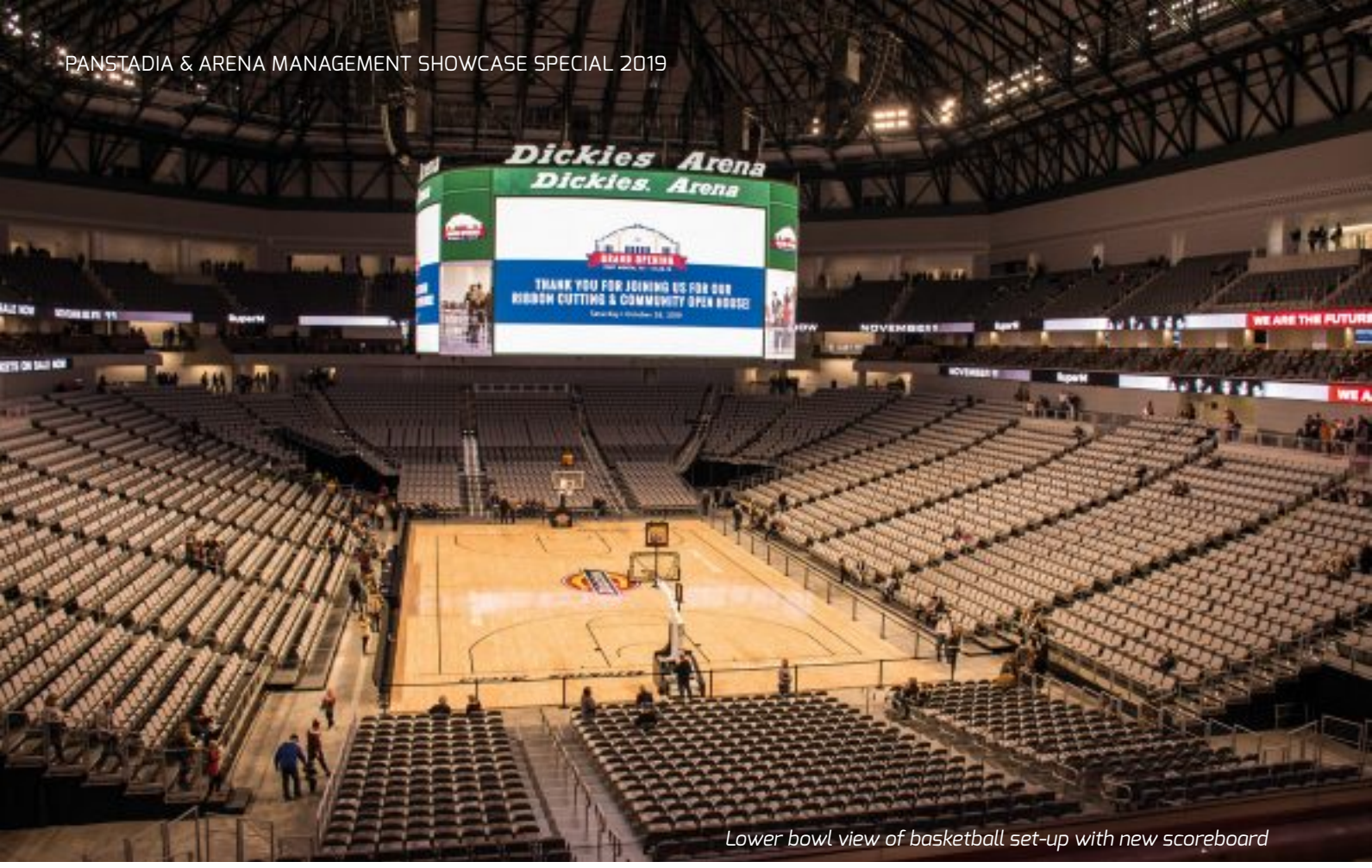
He added: ***"EFFW added HKS to the team as the architect of record for the project. DMSA was selected for the history of excellence and unique attention to detail. DMSA enjoys a long-standing and productive relationship working in the city, especially in the development of Sundance Square. HKS was selected due to the firm's reputation in sport stadium and arena design. HKS had recently completed the Dallas Cowboys Stadium project when they joined the team.***

***"Through the combined effort of these firms and the 'hands-on' involvement by the leadership of EFFW and the Fort Worth Stock Show & Rodeo, the arena began to expand and the full potential of what the arena will be became apparent.***

***"We are very grateful to our founding partners, including Dickies for vital naming rights funding, Texas Health Resources, and Chevrolet."***

## TAXING TIMES

The private sector through contributions to EFFW has funded the entire cost of »




*Lower bowl view of basketball set-up with new scoreboard*

professional services and contributed those costs to the project.

Working through EFFW, the State Legislature approved a unique piece of legislation which created a Project Finance Zone that captured an increment of state funding for construction of the arena (and future expansion of the Fort Worth Convention Center).

Groomer said: ***"In addition, Fort Worth voters approved three ballot proposals that addressed additional user fees dedicated to the arena construction cost. The cost of the arena construction was estimated to be $450 million. The private sector partners through EFFW guaranteed that the public sector cost would be capped at $225 million. This total includes the previous contributions from all of the public sources.***

***"The updated project cost is $540 million, with the City of Fort Worth still capped at the original $225 million they proposed, and all additional overruns will be paid for by the private sector by individuals, organisations and foundations. In 2014, the citizens of Fort Worth approved three different taxes – a ticket tax, a parking tax and a stall tax (for the livestock) – that will help fund the city's portion of the arena. The private sector agreed to match the city's $225 million investment as well as cover any of the overruns.***

***"Upon opening, the city is official owner of the arena, and they have chosen Trail Drive Management Corp. (TDMC) to operate the venue. From operations to sales and marketing, food & beverage to parking, everything will be run in-house by TDMC."***

In terms of VIP seating there are 40 private suites, 32 loge boxes and 216 rodeo boxes, accessible only during rodeo season. These are in the lower bowl, set on a variable rise configuration to create this special seating.

There are two private clubs: The high end, fine dining Avion Club is accessible only to suite, loge box and founder's rodeo box holders.

The two-level Reliant Club is more of a fast-casual club space, accessible to all suite, loge box and rodeo box holders, and well as all club seat holders.

## DESIGN ELEMENTS

Gregory Hoss, Project Architect and a Principal with **David M. Schwarz Architects**, design architect on Dickies Arena with architect of record **HKS**, has been with the firm since 1997. He is a graduate of The Catholic University of America where he now serves on the School of Architecture's Executive Development Board.

Among his other DMSA sports projects are the **American Airlines Center** in Dallas and **Dr Pepper Ballpark** in Frisco, Texas.

Hoss told *PS&AM*: ***"DMSA is primarily an architectural design firm that partners with Architects of Record. For Dickies Arena, we served as the team leader through the schematic design and design development phases and assisted HKS through the Construction Documents (CD) and Construction Administration (CA) phases.***

***"Our involvement throughout the CD and CA phases of the project allowed DMSA to make sure that the design intent was carried out during construction. We also led the careful finish and material selection process throughout design and construction.***

***"The arena is sited on the Will Roger's Memorial Center campus in Fort Worth's Cultural District and takes its design cues from the 1930s design elements of the other buildings on the campus. Primary materials, brick and stone, are complemented with glass tile mosaics and metal grille work. The details incorporate Fort Worth iconography around the building, with some elements revolving around livestock, rodeo and the natural features of Fort Worth.***

***"In addition to a flexible seating bowl that accommodates 9,300 to 14,000 attendees, Dickies Arena includes two entertainment clubs located near the***

*north and south entrances, two party suites, 40 VIP suites, 32 loge boxes, 216 rodeo boxes (for rodeo season) and 75 concession points of sale. The bowl features rigging to accommodate modern projections and performances. The arena is supported by a DMSA-designed parking garage with 2,200 spaces, and the Arena and its amenities are all organised on a three-acre green space plaza."*

## FAN EXPERIENCE

Kevin A. Taylor has been with HKS for 29 years and rose from a young architect out of college to stockholder, owner and principal.

He's been involved with the **NFL Dallas Cowboys** since major stadium improvements in 2009, with **U.S. Bank Stadium** for the **NFL Minnesota Vikings** and the new **SoFi Stadium** for the **NFL Rams** and **Chargers**, opening in summer 2020 in Los Angeles.

Taylor told *PS&AM*: ***"We've worked with DMSA on quite a few projects including the original MLB Texas Rangers ballpark and most recently the Frisco, Texas, minor league ballpark and Bass Hall in Fort Worth, and we were very pleased to team up again for Dickies Arena.***

*"DMSA was responsible for overall schematic design and design development, and all aesthetics for the arena exterior, 40 VIP and 32 Loge suites, and 216 boxes designed for the annual Rodeo season, plus the exclusive Avion and Reliant Clubs.*

*"At HKS, we were responsible for the sports aspect of the articulating bowl to house the stock show and rodeo, as well as basketball, ice hockey, concerts and other family entertainment. We had regular meetings with ownership on these multi-purpose events, and all event level design for operations, locker rooms, promoters, and lounges.*

*"We also worked closely with all support team consultants, and had a phenomenal relationship with DMSA and Gregory Hoss, their lead manager. We kept in close contact and made our teams work as one.*

*"Besides a design focus on Fort Worth aesthetics, providing a great fan experience was most important to owners with our multi-purpose approach to highlight all events from family shows to major league sports.*

*"Ed Bass, who raised more than half the $540 million arena costs, was our key ownership contact, offering valuable advice during the entire process.*

*"We've had no real weather issues and maintained our really good schedule for the project with no major delays. We worked really well with all the teams on site, with Eric Nelson and Ryan Blaylock our point guys on the project.*

*"Everyone was looking forward to the opening. Dickies Arena is completely different from most venues – from the upper concourse that's a very intimate experience right down to the seating bowl – that is very unique in sports venue design."*

EFFV President & CEO Mike Groomer emphasised: *"Among other things that make the new Dickies Arena unique is that it has been designed and built in such a manner so as to be a legacy project that will serve the needs of many future generations.*

*"The design is intended to offer flexibility and adaptability as conditions change, and unlike arenas driven by sports franchise owners, it is not constructed to be routinely replaced. Given this commitment to a legacy project for Fort Worth, the level and degree of detail found in the arena will certainly be an industry standard for years to come."* ■

*East Lobby view from the Club Level*

### DICKIES ARENA

**Project Team and Fact File**

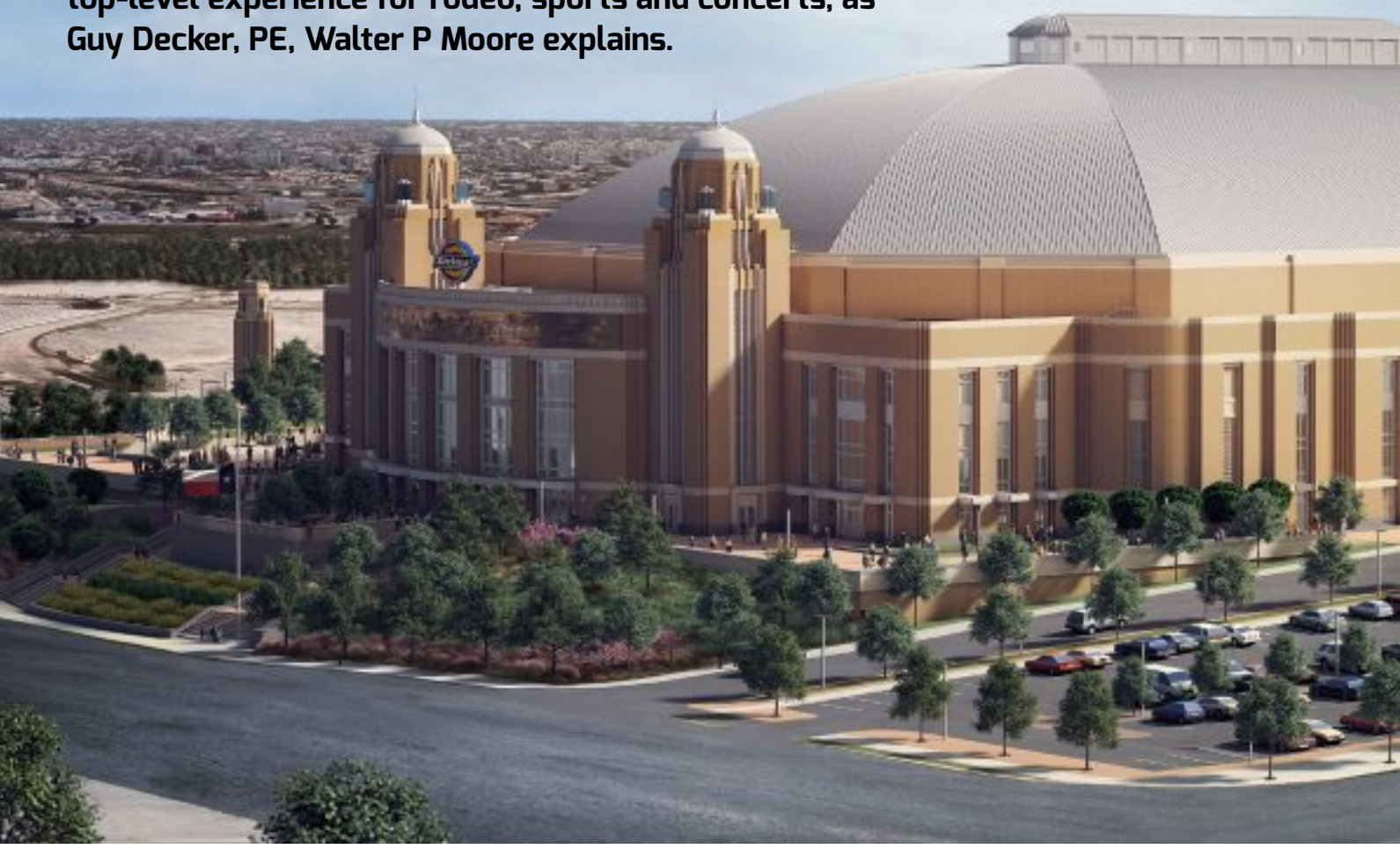
| | |
|---|---|
| Location | Fort Worth, Texas |
| Opening Date | November 2019 |
| Construction Cost | US $540 Million |
| Owner | City of Fort Worth |
| Operator | Trail Drive Management Corp. (TDMC) |
| Capacity | Rodeo, 9,300; family shows & hockey, 12,200; Basketball, 13,300; Concerts, 14,000 |
| Architect | HKS, Architect of Record & David M. Schwarz Architects |
| General Contractor | The Beck Group |
| Structural Engineers | Walter P Moore |
| Services (MEP) Engineer | Smith Seckman Reid |
| Videoboards | ANC & consultant work by WJHW |
| Landscape Architect | Michael Vergason & The SWA Group |
| F&B Concessionaire | Trail Drive Management Corp. |
| Major Tenants | Fort Worth Stock Show Rodeo, January 2020-annual; 2022, NCAA Men's Basketball 1st & 2nd Rounds; 2020-2022 NCAA Women's Gymnastics Championships; 2020-2022 American Athletic Conference Men's Basketball Championships |

**Amenities**

Multi-functional with 28,915 ft2 event floor; Premium seating with 40 suites, 32 loge & 216 rodeo boxes, Club seats; 86,932 ft2 of meeting space, with multi-purpose rooms, two dining areas, North & South clubs & four lobby spaces; 6 loading dock bays; 5,228 parking spaces, including attached 2,210-car garage; 98,040 ft2 climate-controlled ancillary Exhibit Arena for up to 400 10x10 exhibit booths or stock pens.

# COWBOY CULTURE CELEBRATED

**The new Dickies Arena has been designed to provide a top-level experience for rodeo, sports and concerts, as Guy Decker, PE, Walter P Moore explains.**



In 2014, the citizens of Fort Worth, Texas voted to approve the construction of a new venue—one capable of hosting nearly any kind of event while expanding the cultural district and complimenting the historic Will Rogers Coliseum.

Now complete, the 715,000ft² **Dickies Arena** realises this vision. The new 14,000-seat multipurpose arena features unmatched amenities and accommodations to host the **Fort Worth Stock Show & Rodeo**, hockey games, concerts, conventions, and private events.

An icon for Fort Worth, Dickies Arena opens to the community with three spectacular entrances: a grand North Stair connecting to the cultural district and the revered **Will Rogers Campus**; a monumental stair linking to downtown; and an ornate pedestrian bridge extending to the new parking garage.

These stunning entryways draw the patron into a meticulously landscaped plaza. Like the arena, this three-acre space was designed in a Southwest Art Deco architectural style to pay homage to the city's architecture and the region's cowboy culture.

Below the plaza is an 85,000ft² multipurpose event and equine building to house the animals for the rodeo.

This building includes a warm-up arena that can be seen through a clerestory from the plaza above. When not in use for the rodeo, the support building can be reconfigured for conventions and conferences events.

## DRAMATIC VIEWS

Serving as the most visible aspect of the arena, the roof posed a significant design challenge with clear spans up to 420ft and a structural truss depth of merely 14ft.

It was imperative that the roof be an efficient and acoustically-sound structure. The solution to this challenge is a vaulted, oval-shaped dome with a speciality 9 ¼-inch roof deck that has exceptional acoustical properties to promote a light-weight architectural structure and eliminate the need for lapendary panels.

It is supported by a tension ring along the base and a much smaller compression ring at the apex. Use of extensive post-tensioning on the

All image renderings courtesy of *HKS*

concrete lower roof level works to offset the tension ring loads. Seven-foot deep post-tensioned transfer elements at the north and south end were integrated into the tension ring to support the roof above and create a column-free environment below.

This column-free environment allowed for grand lobbies with hanging balconies on either end of the arena.

These lobbies were flanked by four grand stairs—two elliptical and two octagonal. Each stair run and landing is supported by HSS outriggers, cantilevering inward from the primary structure at the outer perimeter of the stairs.

This framing scheme leaves a structure-free space at the centre of each spiral stair, giving dramatic floor-to-ceiling views from all points over the over 45ft tall vertical circulation shaft that leads into each level of the seating bowl.

A further challenge to the roof design was to accomplish the above with an extremely robust and flexible rigging system that could accommodate loads for a myriad of event types.

**Walter P Moore** utilised a custom digital workflow to facilitate interoperability between our modelling and analysis programs, which enabled full geometry manipulation of the models throughout the design process.

Digital workflows were also leveraged to evaluate hundreds of thousands of potential rigging configurations to ensure the rigging grid would have enough capacity and flexibility to accommodate a wide variety of events.

## INTIMATE EXPERIENCE

In the seating bowl, the floor-to-floor height was shortened to provide a more intimate experience and provide better sight lines for the fans.

To allow for this tight stacking to occur between the floors, Walter P Moore's typical framing was inverted to result in upturned beams that were then integrated into the suite elements to serve as a natural divider making the most of the available space.

In efforts to maintain the intimate atmosphere, the north and south clubs were pulled into the bowl to allow for the patrons to continue their event exposure while still experiencing the premium amenities of the clubs.

As the new home for the Fort Worth Stock and Rodeo Show, the arena shines at providing an exceptional Rodeo experience. The lower bowl operable seating configures into rodeo box seats and to honour the Will Rogers rodeo era, a continuous walkway was created above these boxes to allow for standing-room-only watching areas. Elevated Chairman Boxes flank "the chute," where animals enter and exit the arena below, providing views unlike any other venue.

Walter P Moore's efforts to provide creative and constructible solutions brought **David M. Schwarz** and **HKS's** design and vision to life and allowed for a world-class facility. ■

# EVOLUTION FOR REVOLUTION

## Jon Leach, Director of AECOM Sport, Leisure and Entertainment looks at 2019 - The Past, Present and Future.

At **AECOM** we consider venue design to be one of our most exciting, fast-paced and innovative sectors. Like the events and performances that are staged inside these venues, the latest generation of stadia and arenas is experiencing a rapid evolution.

They are being transformed from being empty six days' a week into dynamic and sustainable socio-economic catalysts at the heart of our cities, serving clubs, spectators, communities and operators with vibrant, year-round facilities for sport, leisure, entertainment, meeting and dining, health and wellbeing.

From community-level training grounds to national stadia hosting major global events, these developments often represent a once-in-a-generation investment. Within the evolving backdrop of our industry, how do clients and consultants ensure we have settled on the right solution to create a venue that is as successful on its opening day as it is in 5, 10 or 20+ years in the future?

Over the last 12 months AECOM has celebrated the completion of many iconic sport and entertainment venues, delivered by our team and trusted partners.

The largest of these programmes have been many years in the making. So

much can change during that time, and it is essential that we learn from these major projects and take any lessons forward into projects of every type and scale. That is key to making the right decisions and ensuring future success.

The design of **Al Janoub Stadium** - the first new stadium for the **2022 FIFA World Cup in Qatar** - began in 2012.

The spectator and pitch cooling technology, combined with passive shading and operable roof and envelope components, was a culmination of research and testing carried out over many years.

The result is a revolution in design technology that we have since been applying to both open-air and enclosed venues to improve comfort and performance.

Our research into legacy transformation, and demountable and lightweight stadium components across the programme, built on our experience from the **London 2012** and **Rio 2016 Olympic Games**, and lessons from the strict 'per seat' embodied carbon targets are now being applied to our current and ongoing projects.

Al Janoub Stadium itself is a true icon for the region, with **Zaha Hadid's** design reflecting local marine tradition with a clean, sculptural silhouette.

In contrast, plans for the **Japoma Stadium**, built for the **Africa Cup of Nations** and with a legacy as part of a multi-sport precinct for Douala, only began in 2017.

But even in the two-and-a-half-year period from inception to completion, technology moved forward allowing AECOM to optimise and refine the design as construction on site continued.

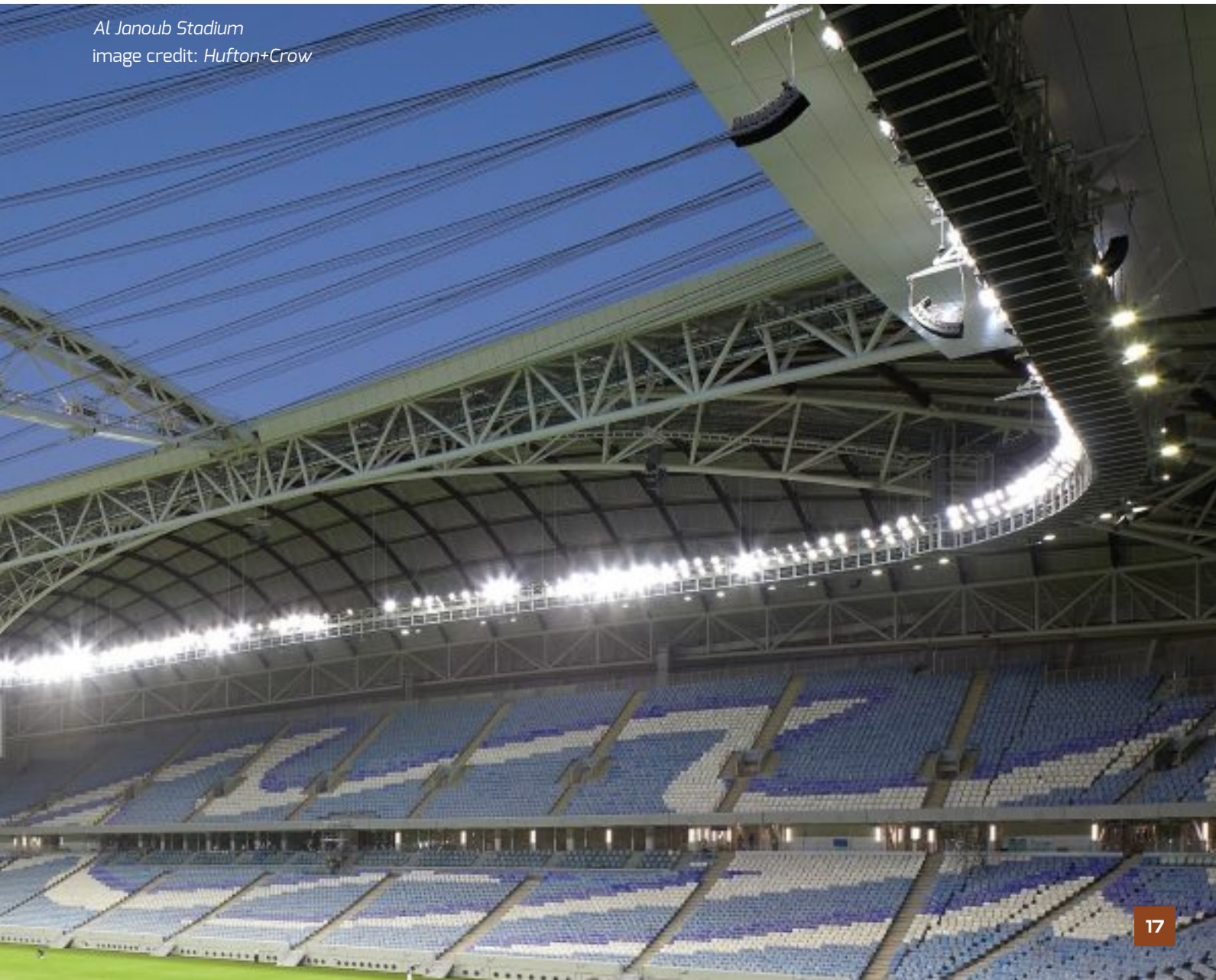
Designed with **Grimshaw Architects** and **Newenham Mulligan & Associates**, the **Curragh Racecourse** redevelopment has been celebrated for its beauty and artistry, demonstrating that with the right combination of materials, collaborative design and execution, a simple grandstand structure can be elegant, iconic, and delivered within challenging budget and programme constraints.

## AROUND THE WORLD

In addition to those completed venues, many more exciting projects continue to be developed by our global teams.

The new **Los Angeles Clippers Arena and Inglewood Basketball and Entertainment Center (IBEC)** will be a dynamic new venue that is grounded in performance and community.

The primary goals for the project are to have a meaningful impact on the Inglewood community, a basketball- »



*Al Janoub Stadium*
image credit: *Hufton+Crow*

*LA Clippers Arena – architectural visualisation*

*Al Janoub Stadium*
image credit: *Hufton+Crow*

first environment for players and fans alike, and to be a destination unique to the broader LA market that delivers positive returns through business-driven acumen.

The public realm surrounding the venue will be activated with entertainment and interactive opportunities that will draw in residents and visitors. Crucially, it will also achieve stringent California Energy Commission Net Zero requirements and a minimum LEED® Gold certification.

AECOM has also been an integral part of the **Los Angeles 2028 Olympic and Paralympic Games** bid team that developed the concept to create a transformative Games, utilising Los Angeles' ideal climate, its unparalleled number of existing world class venues, the unique culture of creativity and innovation, and its youthful energy.

The successful bid returns the Olympic Games to the city after 40 years, and will strengthen the Games hosting process through a sustainable and fiscally responsible plan, maximising the use of existing venues and supporting them with temporary facilities.

It makes use of and is consistent with the existing long-term plans the City has put in place, particularly with its goals for expanded public transit and sustainability targets.

In Melbourne, AECOM has worked with **Cox Architects** and **Dr Vincent Clark and Associates** to develop a framework to guide the capital investment decisions for Yarra Park and the **Melbourne Cricket Ground Precinct** over the next 10 years.

We have also developed engineering solutions for the **Melbourne Park** development, designing around the operational requirements of the precinct to ensure the patron experience for the Australian Open and year-round events is not compromised.

## AN EYE ON THE PAST

Lessons learned from these projects can be seen at both a macro and micro level. From city-scale master planning to component design, each development will have its own key goals and constraints. Our over-arching goal should be focused – to design and build amazing venues, responsibly and sustainably.

The meaning of sustainability itself is evolving. We are making a difference now, but we need to do more. The long-term social, environmental and economic impact of "white elephant" developments and the enormous investment required to correct those mistakes of the past have been a major focus of improvement for many developers, operators and organising committees.

It is no longer justifiable to develop large, permanent venues that are infrequently used, or which place a burden on the communities they were intended to enhance.

This can be achieved, at least in part, by being smart in the creation of flexible and adaptable venues that are able to be fully utilised all year round. But, as well as optimising the functional and operational aspects, the premise of the Circular Economy is a strong and tangible concept against which we must plan and execute our venues of the future.

Low-carbon and low-energy initiatives from the last 20 years have largely focussed on improving the operational efficiency of buildings.

Against a backdrop of increasingly intensive energy use associated with lighting and audio-visual displays, mobile communications and personal comfort, our modern venues also embrace the use of low-energy installations and passive environmental controls, on-site renewables and integration with district energy systems to improve the balance of supply and demand.

The result is that the balance of focus has begun to swing back in the direction of the embodied carbon in the structure and the building fabric, which can now be higher than the operational carbon over the life cycle of the building.

## MOVING FORWARD WITH ENERGY AND EFFICIENCY

We are constantly exploring efficiencies in all aspects of our designs. Technology allows us to rapidly explore, assess and optimise any number of design options but, with only a few notable exceptions, many aspects of a venue's construction, including the terracing, floors and general building fabric, have remained traditional due to limitations of construction industry supply chains, and with sustainability legislation still putting surprisingly little emphasis on embodied carbon.

As a result we are working to optimise every component of a stadium from the bottom-up. By striking the right balance between permanent and temporary structures, and ensuring even permanent structures can be easily repurposed or recycled in the future, we are seeking to re-invent how we use material by maximising the use of off-site and modular manufacturing processes and Design for Manufacture techniques.

Learning from other sectors and our close partnerships between clients, consultants and contractors is just one example of how we are tackling such issues.

Putting these responsibilities at the forefront of our designs does not compromise any other goals for a successful venue; fan experience, athlete performance, economic growth and positive societal impact remain as important as ever.

But it does put a stronger and more holistic emphasis on the future. We believe harnessing this mind-set can mean that the venues of today will win the test of time and be as important and relevant in 20 years as they were when they first opened. ■

AECOM Imagine it. Delivered.

# This is the new favourite

Steeped in history, The Curragh is Ireland's spiritual home of horse racing. Its redevelopment, engineered by AECOM alongside Grimshaw and Newenham Mulligan Architects, ensures its future as one of the finest tracks in the world.

A celebration of the unique Curragh plains landscape, the new grandstand provides a sense of exquisite quality at every scale. A rare combination of grace and grandiose, it is a place where structural artistry meets architectural vision, enhancing the racing experience for fans while attracting new ones.

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# A NEW HOME FOR BATH RUGBY

## Bath's Premiership 'Rec' is being lined up to become a world-class rugby stadium.

Final designs for the new **Bath Rugby Stadium** designed by **Grimshaw** will be submitted for planning early next year, following an extensive consultation period between **Stadium for Bath**, local residents and representatives of the city.

The proposed 18,000 capacity stadium is set to replace the **Premiership** team's current facility at the **Recreation Ground** (known as 'The Rec'), which has been home to **Bath Rugby** club for over a century and is one of the most iconic and recognised grounds in world rugby. The new stadium will be located on a floodplain that borders the eastern bank of the Avon, close to the historic city centre, with further regeneration planned for the surrounding riverside area between Pulteney Bridge and North Parade.

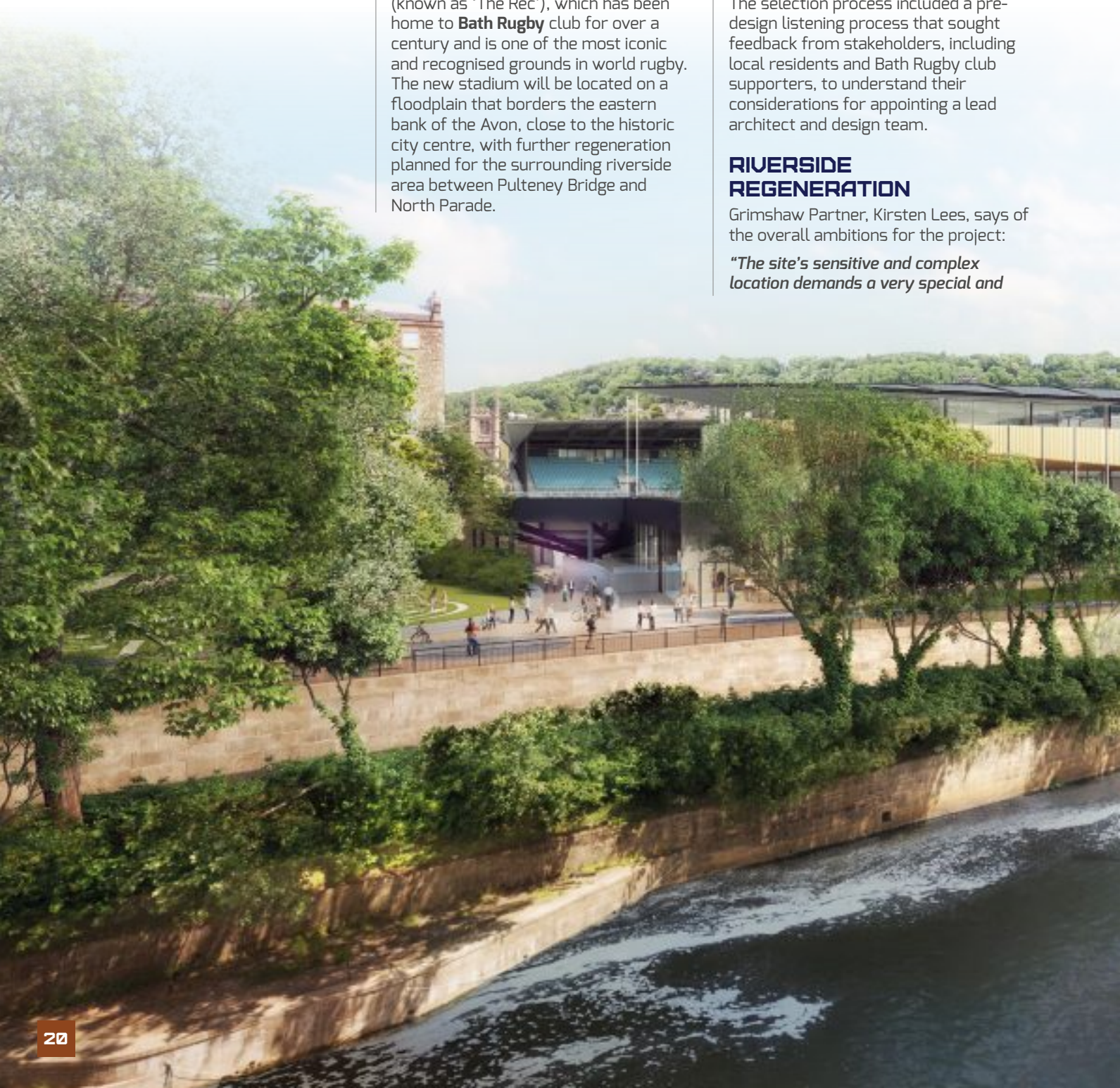
Grimshaw, who have an established history of designing within the **UNESCO World Heritage City** of Bath, emerged as the winning project architects in early 2018, following a rigorous competition.

The selection process included a pre-design listening process that sought feedback from stakeholders, including local residents and Bath Rugby club supporters, to understand their considerations for appointing a lead architect and design team.

### RIVERSIDE REGENERATION

Grimshaw Partner, Kirsten Lees, says of the overall ambitions for the project:

*"The site's sensitive and complex location demands a very special and*



***unique design response in order to deliver the project's aspirational objectives. The scheme is set to deliver wider benefits to the city including riverside regeneration and an enhanced relationship with the Recreation Ground to provide an exceptional new home for Bath Rugby, emblematic of its place, its community and the city of Bath."***

Since being appointed, Grimshaw has been working closely with interiors and landscape collaborators, Kay Elliot and Gross Max, to design a world-class community and sporting stadium.

Throughout the design process they have continued to incorporate feedback from residents and other key stakeholders, including **Bath and North East Somerset Council** officers, **Historic England**, the **Environment Agency** and **Bath Preservation Trust**.

Key aspects of the revised design include a height reduction to help preserve sensitive heritage views, a 550-space car park providing a blueprint for electric vehicle usage in Bath, retaining mature trees along the riverside with revitalised public realm design, enhancements to the stadium's North, East and West Stands, and a hybrid playing surface that will be usable all year round.

The West Stand looks out to the historic centre of Bath and is civic in scale, referencing the classic proportions of the city's Georgian architecture. The East Stand faces a more residential outlook, with an aspect to the verdant hillsides beyond that envelop the city.

The landscape nature of the Rec is drawn up onto the stand with a planted bund forming the open East concourse overlooking activity on the outfield.

## HEART OF THE CITY

Bath Rugby Chief Executive, Tarquin McDonald, says of the project: ***"Keeping sport in the heart of the city is the catalyst for this project – but we are also incredibly proud of the opportunity to regenerate the riverside creating an amazing place for everyone to enjoy; of the significant social legacy we will build through the delivery of education and employment programmes being run on the site every day of the year and of the opportunity to promote grassroots community sport."***

In response to council commitments to reduce air pollution and congestion in the city, the new stadium will not increase parking spaces, but instead rely on a concealed under-pitch carpark to support the growth of Bath's economy and ambitions for longer-term pedestrianisation. In order to reduce overcrowding during match days, a new vehicle ramp behind the pavilion and pedestrian link to the riverside will improve access to and from the stadium site.

The new stadium will provide working and collaboration space for community initiatives outside of match days, as well as sports education and other vocational training for young people through the dedicated Bath Rugby Foundation programme.

It is hoped that the stadium will bring a significant boost to the local economy through visitor spending, as well as providing employment opportunities in construction, operations and hospitality.

If the planning application is successful, Bath Rugby Stadium will join the roster of other Grimshaw projects in Bath, including Thermae Bath Spa and the former Herman Miller factory recently adapted to become Bath Spa University's new School of Art and Design. ■

# ME ENGINEERS SCORE HAT TRICK

**ME Engineers has been at the heart of a trio of very different sports venue development projects in the United States.**

**ME Engineers** is celebrating the recent opening of three innovative sports facilities: **Allianz Field**, **Las Vegas Ball Park** and **State Farm Arena**.

ME Engineers is a global mechanical, electrical and plumbing design firm. ME also offers architectural lighting, sports lighting, technology design, commissioning and building performance consulting services.

***"We blend cutting edge technologies with proven delivery and service to help drive our buildings to new levels,"*** said Mike Hart, Principal and CEO.


*Allianz Field*
image credit: *Ryan Linton*

## ALLIANZ FIELD, SAINT PAUL, MINNESOTA

The new home of **Major League Soccer's Minnesota United FC**, Allianz Field held its debut game in April 2019.

A true integration of architectural design and MEP engineering, the 346,000ft2 soccer-specific stadium seats 20,000 and features a 360-degree roof canopy over the bowl and four hospitality clubs.

The stadium's iconic look comes courtesy of a first-of-its-kind translucent fabric skin that wraps the entire stadium and is embedded with LED lights.

ME Engineers provided the design for the mechanical, electrical and plumbing systems, as well the architectural lighting design, sports lighting design, and technology design.

The dramatic design of Allianz Field evokes the natural elements of Minnesota—the abundant rivers and lakes and the Northern Lights sometimes visible in the night sky.

The streamlined, clean design of the MEP systems preserved the project's design intent, and the lighting design supported the design concept.

The sports lights were designed and coordinated to provide superior pitch lighting, limiting glare while allowing access for maintenance from a lift.

In order to keep the underside of the canopy streamlined, the design and installation involved routing the conduit so that the view from the bowl is minimised.

The stadium exterior is crafted from a unique translucent skin and backlit with over 1,600 LED lights, which allows for the stadium to change its colour scheme with the press of a button.

Colour is either static or flows from one colour to the next. The controls provide for five preset lighting scenes that are inspired by the colours of the Northern Lights, and a colour picker that allows for the game-day staff to easily activate scenes or goal celebrations.

Due to the constraints of a tight façade skin, ME developed a design solution that worked for all conditions—ranging from open corner entrances to the areas that are tight to the structure.

The continuous linear approach of the lighting fixtures allowed for creative, unique and fun approaches to lighting controls to activate the façade.

ME Engineers worked closely with the team during design of the LED lighting system for the skin system. The team developed a mock-up to test a variety of lighting aiming options to illuminate the exterior skin, including direct and indirect lighting.

The mock-ups uncovered unacceptable shadows on the building skin. To counteract the shadows, the team devised an innovative solution: custom-designed light shields.

The first shield eliminated any spill light from the lighting fixtures and

*Allianz Field panorama*
image credit: *Ryan Linton*

the second shield removed any direct view of the LED diodes from inside the stadium.

The ME team reviewed over 6,100 linear feet of LED lights to determine which light fixture needed the shields and then adjusted every fixture for consistency.

## LAS VEGAS BALL PARK, SUMMERLIN, NEVADA

In April 2019, the newly rebranded **Las Vegas Aviators**, a professional **Triple-A Pacific Coast Baseball League** and **Triple-A** affiliate of the **Oakland Athletics**, celebrated their inaugural season in Las Vegas Ballpark.

The 10,000-seat venue is open year-round, hosting **Major League Baseball** exhibition games, concerts and other special events.

ME Engineers provided the design for the mechanical, electrical and plumbing systems, as well the architectural lighting design and sports lighting design.

The sleek, modern ballpark features 360-degree seating, an open grand concourse with upscale food and beverage concessions, luxury suites, two party decks, and a swimming pool and kids splash pad located in center field.

The player facilities include a clubhouse and player lounge, indoor batting cages for both teams and a weight room.

Keeping sports fans cool in the desert sun was a primary concern for the design team. In addition to a large shade canopy integrated into the architecture, fully-breathable mesh seats and large fans circulating air within the concourse areas help to keep spectators comfortable.

ME designed the accent lighting to highlight the team's new rebranding efforts. Lights placed at the roof edge graze the underside of the roof that is painted orange in homage to the beauty of a Las Vegas sunset.

Due to the proximity of nearby neighbourhoods, glare and spill lighting studies were conducted for the sports lighting design to ensure the impact on surrounding neighbourhoods was minimised. The multi-functional LED sports lighting was designed with dynamic lighting control to enhance the excitement of an event.

The ballpark utilises 100% LED fixtures throughout and the electrical services were designed with the capacity to meet an increase in technology demands.

## STATE FARM ARENA, ATLANTA, GEORGIA

An extensive renovation to State Farm Arena was completed in time for the **National Basketball Association's Atlanta Hawks** 2018-2019 season opener.

Upgrades to the 17,600-seat, multi-purpose arena gives fans a modern game-day experience. The arena features improved sight lines, a 360-degree connected concourse, a new viewing terrace, a wide variety of seating options, upgraded concessions, and expanded technology and Wi-Fi connectivity.

ME Engineers provided the design for the mechanical, electrical and plumbing systems, as well the sports lighting design and technology design.

To showcase the action on the court, ME looked to the sport of boxing for inspiration. A boxing ring deploys a theatrical style of lighting that focuses the attention of the audience on the athletes to the exclusion of everything else. To produce the same visual effect, ME used a custom-design LED light fixture with added visors (or shutters) that abruptly eliminate the light at the court's edge.

*State Farm Arena*
image credit: *John Mastrogiacomo*

The contrast between a highly-lit playing surface and a crowd in darkness provides a dramatic sports stage that adds to the excitement of the game.

An enhanced in-stadium experience is dependent on the latest technology. To keep fans connected, ME designed a system with over 400 wireless access points located throughout the venue to deliver high-density Wi-Fi coverage.

More than 300 HD TVs and menu boards located throughout the venue provide an immersive video experience with high-definition content. New fibre optic backbone provides super-fast data speeds, capacity and flexibility throughout the IT infrastructure.

Almost 300 new concession and retail pay stations and expanded premium club technology options rely on the new technology backplane. Additional efforts were made to streamline courtside cable routing to reduce game day setup concerns and improve the premium seating experience. ■


*Las Vegas Ballpark*
image credit: *John Mastrogiacomo*

# REFURBISH, REBUILD OR RENEW?

**It's one of the biggest decisions an owner or chairman of a sports club will have to make: what investment should be made in stadium infrastructure to secure the club's future? Barry Winterton, Account Leader, Mott MacDonald, looks at the options.**

The stadium is not just the home and heart of the club, providing a venue where the local community, fans and team come together. It also plays an important role in supporting a team's success by generating revenue.

If designed and delivered correctly, a stadium can generate an operating profit which can be reinvested into the playing staff, increasing the chances of success on the pitch and reducing the risk of breaching financial guidelines including the Financial Fair Play Regulations.

In the **English Premier League (EPL)**, incomes generated from the stadium vary significantly from club to club, with some as low as £10 million, and others more than £100 million.

Whatever a club's size, it must make sure it maximises and captures the income generation potential of its stadium, and this is what should inform investment decisions on infrastructure.

The recently completed **Tottenham Hotspur Stadium** in north London has set a new benchmark in terms of quality of facilities, although this did come at a high cost with some media sources claiming the final bill will be close to £1 billion, double the original budget.

It was also delivered nearly a year later than originally planned, which will have cost the club even more in terms of loss of planned revenue and the additional costs of hiring **Wembley Stadium** as a temporary home.

The majority of sports clubs will not have access to this level of funding, but doing nothing is likely to mean the club will fall behind its peers in its ability to compete to attract the best players.

So, what are the options, and how do you determine which option is likely to be the best solution? Having worked in sport and venue development for

over 25 years, I know there is no single straightforward answer.

The right solution will be dependent on a number of factors, primarily the strategic vision of each club. The three key options can be summarised as follows: refurbish, rebuild or renew.

## REFURBISH

Refurbishment works can vary from relatively minor projects involving the conversion of operational space into revenue-generating space such as corporate lounges, through to major building works taking more than a year to complete. Ideally, any upgrades will take place while the stadium remains operational.

The capital investment can be relatively low compared to other options as most of the infrastructure is already in place. If the project is planned and designed properly, the capital is likely to have a relatively short return on investment period. Refurbishment may also be considered the most environmentally sustainable option.

Since its completion in 2011, **Brighton & Hove Albion FC's American Express Community Stadium** has undergone a number of upgrades to respond to ever-changing market demands and capture revenue potential. These works have included increasing the capacity, from 22,500 to 30,000, and the graduated inventory of hospitality.

## REBUILD

The second option is demolishing the old stadium and replacing it with a new one on the existing site.

While the rebuilding works are taking place, the club's team will more than likely need to move out and play their home games at an alternative venue. Like the new Tottenham Hotspur Stadium, this is what happened with major global venues including Wembley Stadium, **Soccer City (FNB Stadium)** in Johannesburg and the **Adelaide Oval** in Australia.

As with the refurbishment option, a key benefit of rebuilding is that most of the infrastructure – chiefly, transport and utilities – is likely to be already in place and not require significant investment and upgrading.

The costs of rebuilding the stadium will be high, generally with longer return on investment periods compared to refurbishment projects, as the investment needs to pay for core operational facilities that don't generate direct income, such as the changing rooms.

*Wembley Stadium*
Image credit: *A. Amsel / Alamy*

A new build stadium should deliver improved operational efficiency, reducing operating costs. But if it's simply a case of replacing old with new, there will be limited incremental revenue benefit. If spectator capacity and hospitality provision remain the same, match day income is unlikely to be materially affected.

The initial plans for Wembley Stadium were to essentially replicate the existing stadium but upgraded to modern-day standards. The original £200 million investment in this less ambitious design »


*Corporate suite at the Amex*

would have only delivered similar revenues to the existing stadium.

As part of the original feasibility study, **Mott MacDonald** worked with the client to explore revenue interventions that could be included within the emerging design to deliver enhanced income.

These included a below-concourse 360-degree road delivering operational benefits, including both match day and non-match day event efficiencies (for concerts, for example) and an additional 10,000 hospitality seats with a graduated inventory to appeal to various spectator groups. While these facilities required significant additional investment, they have delivered excellent returns and provide long-term revenue streams.

## RENEW

The final option involves building an entirely new stadium on a new site. The benefits of this approach are that the new stadium can be built while the existing stadium is still being used, allowing a seamless transition from old home to new and eliminating costs associated with temporarily relocating to another stadium.

The construction costs of building a new stadium will be similar to that of the rebuild option, but additional infrastructure costs are likely. Moving to a new stadium on a new site should be the least disruptive, but it is also possibly the most difficult.

Finding a site which is acceptable to fans and hospitality customers, with good transport links and that is large enough, will always be difficult in any city. Any plots that are suitable will come with a large price tag, making them less viable as a solution.

On the plus side, a new site offers great opportunity. Stadiums are known to assist with urban regeneration as a result of the large number of people that visit them on both match and non-match days, and this in turn attracts businesses to sites around them. Research from a number of leading institutes, including the London School of Economics, has confirmed this.

Reaping these wider economic gains, what is known as land value capture, rather than letting third parties benefit, will help to subsidise the site purchase and construction costs.

In addition, the existing stadium is likely to be in a location which has seen lots of adjacent development over many years, improving the value of the existing site, which may be in excess of the cost of purchasing another. Finally, a new stadium may be able to improve naming rights opportunities as the facility will not have any historic names associated with it.

*The new home of Brentford FC and surrounding development*

**Brentford FC** needed new facilities to be able to compete financially with other football clubs in the **English Championship**. Its existing site was too small and wouldn't support any kind of stadium improvement to support its vision of being promoted to the EPL.

The club identified and purchased a new site, then entered into a development agreement with a partner who took responsibility for funding and building the new stadium and associated infrastructure. In return, the developer has been given development rights to build on the existing site and land adjacent to the new stadium. The stadium is due to be completed on time in the first quarter of 2020.

## REVIEW ALL OPTIONS

In summary, no single option is the right option. When embarking on investment into stadium infrastructure, it is important to review all the options – refurbish, rebuild, renew or 'do nothing' – as part of any feasibility study.

At the outset, clearly identify the vision, and explore the opportunities/risks with each of the scenarios to mitigate future risks, capture opportunity and establish a robust outline business case for a preferred solution. This will need to cover:

- Land – available development area and land value capture opportunities
- Capital cost of the works
- Capital cost of any infrastructure works
- Disruption costs (operating/revenue) while works are undertaken
- Future operating costs
- Match day revenue opportunities
- Non-match day revenue opportunities
- Sponsorship, e.g. naming rights
- Fan migration
- Timeframe required to deliver the new facility/facilities
- Life expectancy of facility/facilities
- Funding opportunities and return on investment criteria

Once a preferred solution has been identified, and it has been tested to make sure it is not only financially viable but also technically deliverable, clearly document the desired outcomes within the strategic brief.

Lastly, identify the workstreams required to deliver success and manage risk, and appoint suitably qualified professionals with experience to translate this into a successful project. ■

MOTT MACDONALD

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# SKIN IN THE GAME: RATIONALISING COMPLEXITY AT CHASE CENTER

**Sanjeev Tankha, AIA, and Gustav Fagerström, ARB at Walter P Moore, explain how digital modelling was at the forefront of their work at Chase Center.**

Serving as a year-round sports and entertainment venue in Mission Bay, San Francisco, **Chase Center** is a new 11-acre mixed-use development featuring an 18,000-seat, multi-purpose arena for the six-time **NBA** Champion **Golden State Warriors**.

The development also includes two office buildings, over 20 retail and restaurant locations opening over the first year of operation, and 3.2 acres of open space including a large, multi-function outdoor plaza fronted by a jewel box pavilion that also serves as an indoor-outdoor TV studio.

The $1.4 billion development officially opened with a ribbon-cutting ceremony on September 3, 2019, hosted its first concert on September 6, and its first Warriors game played in San Francisco since 1971 on October 5 against the **Los Angeles Lakers**.

The new venue represents a major milestone and turning point for the Warriors franchise. Joe Lacob, Warriors co-executive chairman and CEO, said at the ribbon-cutting: ***"Today is the beginning of an exciting new era for the Warriors and our franchise. We've officially transitioned from a basketball team to a sports and entertainment company with this incredible state-of-the-art arena."***

## ENVELOPING AN ICON

Owners envisioned the "Madison Square Garden of the West" and desired all sides of the arena to be "forward-facing," meaning that the structure should be aesthetically welcoming from every angle — a challenge for the design team.

Working with architects **MANICA Architecture** and **Kendall Heaton**, **Walter P Moore** provided enclosure engineering with waterproofing and parking consulting services for the iconic arena, office buildings, retail, and gatehouse.

The ambitious arena is clad with a complex, metal-perforated rain screen

*Chase Center Exterior Northeast Corner*
Image credit: *Jason O'Rear Photography*

skin and large glass-clad atria at the plaza and waterside entries.

The skin of the arena was designed as a complex multi-layered surface that intersects and offsets, creating unique folds and hoops that allow LED lights to highlight the façade.

These surfaces are clad with three different primary materials: insulated glass for the atria, Neolith Sintered Stone panels for the base of the building, and a pearlescent white painted metal panel for the majority of the surface area that gives the arena its signature look.

What at first appears to be a somewhat irregular enclosure is actually anything but. To make the most efficient use of materials and budget, the engineers rationalised the façade's geometry by designing standard and modular units of eight feet by three feet for both the metal and glass panels.

From there, "mega-panels" of eight feet by 24 feet were configured and pre-assembled off-site to promote efficiency of shipping, fabrication, and installation, thereby cutting down on schedule and conserving materials.

With the introduction and assembly of mega-panels, what would have been almost 3,000 individual panels then became approximately 600 mega-panels, significantly reducing construction time.

Once the modular approach and panelisation strategy were set, the overall outer form and geometry went into more than three months of design iteration to optimise the design and engineering of the systems and reduce the surface area and cost.

## DIGITAL MODELLING

This was possible only through an internally developed digital workflow and advanced 3D modelling process set forth by Walter P Moore.

Form, surface area, and resulting costs were developed and tracked in real time until an equilibrium was achieved between design and budget.

Holding the owner's and architect's vision paramount, the engineers at Walter P Moore set out to formulate the optimal panel configuration that would deliver the vision and achieve efficiency.

The digital and parametric modelling process allowed exponential potential geometric configurations of the skin surface and panel layout to be visualised and considered — the process of optioneering that is not available using traditional BIM (Building Information Modelling) methods, but is bespoke to Walter P Moore's Enclosure Practice's every-day processes.

The result: an efficient, repetitive modular system that showcases a very complex geometry and precisely meets the design vision of the design team.

Walter P Moore engineers designed lightweight structural "hoops" that transfer the gravity and lateral loads from the façade to the primary structural columns, allowing the 360-degree "forward-facing" façade panels to create the form of the exterior façade while floating outside and remaining detached from the weather wall barrier.

The weather wall was optimised for acoustical, water, and thermal performance as an efficient and easily constructible skin that was tight up against the arena structure.

Walter P Moore's waterproofing team carefully detailed and oversaw the construction of these performance-related aspects of the façade.

Once the final enclosure design was approved, Walter P Moore took the parametric model a step further to provide construction engineering services, delivering construction documents and fabrication-level digital models to the construction and fabrication team. The process was a natural progression of exchange of high-fidelity digital information that had already been created in the design stages that precisely communicated the complex geometry and assembly of each panel and mega-panel.

The modelling effort reduced complexity and eliminated significant risk that typically appears later in the design and construction phases of comparable projects.

Through digitally advanced workflows, the design process enabled the team to rationalise and modularise with unlimited iteration.

Additionally, it afforded standardisation of materials and simplified construction techniques, which resulted in an economical, efficient, and ultimately successful project. ■

## CHASE CENTER

### Team Players

| | |
|---|---|
| Location | Mission Bay in San Francisco, California |
| Opening Date | September 6, 2019 |
| Construction Cost | US$1.4 Billion |
| Owner | Golden State Warriors |
| Operator | Golden State Warriors |
| Capacity | 18,064 |
| Architect | Manica Architecture, Kendall Heaton, Architect of Record; Design & Gensler Sports, interiors |
| General Contractor | Mortensen\|Clark, a Joint Venture |
| Structural Engineers | Magnusson Klemencic (Foundations & Superstructure) |
| Facade Engineering & Waterproofing | Walter P Moore |
| Services (MEP) Engineer | Smith Seckman Reid Inc. |
| Videoboards | Samsung/Prismview |
| Landscape Architect | SWA Group |
| Parking Consultant | Walter P Moore |
| F&B Concessionaire | Bon Appetit & Levy |
| Major Tenants | Golden State Warriors |

**Amenities**

Arena will host over 200 events annually including concerts, family shows & corporate events; 136 suites include 44 between upper & lower bowl, 32 Courtside Lounges & 60 Theatre Boxes on sidelines on top of suites ring; Mass transit
Includes easy access stops via Muni, Bay Area Rapid Transit (BART) & Caltrain, plus a light rail Arena stop & new subway line will link the arena & UCSF to downtown.

# VISUAL REVOLUTION AT CAPITAL ONE ARENA

**Capital One Arena has introduced a visual entertainment revolution powered by Colosseo.**

Sports venues are constantly looking for ways to enhance their technology to provide the ultimate interactive fan experience.

One concern for owners and operators is how to future-proof their venue, using solutions which will keep their facility at the very cutting edge of fan engagement, able to adapt to the ever-changing demands from the new generation of sports fans.

It was with these key goals in mind that **Monumental Sports & Entertainment (MSE)** partnered with **Colosseo** for the second phase technology upgrades toward a cutting edge fan experience at **Capital One Arena** in Washington DC.

The arena is home to **Washington Capitals** of the **National Hockey League**, the **Washington Wizards** of the **National Basketball Association**, the **Georgetown University** men's basketball team, and **Washington Valor** of the **Arena Football League**.


*Four state-of-the-art two-sided, curved DualTV boards in the corners of the arena ensures that every fan has a premium view of all the action.*

*The newly installed LED video technology has completely transformed the entire in-bowl visual experience to a never-seen-before level.*

***"With this latest round of renovations and upgrades at Capital One Arena, we have raised the game once again in terms of best-in-class arena experience for sports and entertainment. Features such as one of the largest 360-degree continuous screen in sports and access to live action, stats and betting lines via dual-vision corner boards and the 9,000ft² SkyRing make Capital One Arena one of the top digitally-integrated venues in the world,"*** David Touhey, President of Venues at MSE, said.

Jim Van Stone, President / Chief Commercial Officer, Monumental Sports & Entertainment, continues:

***"Investing in the best technology available to provide fans with a superior in-venue experience is incredibly important to us at Monumental. From a business perspective, the massive LED capabilities at Capital One Arena will provide our partners with unprecedented ability to reach fans through innovative content."***

## CENTRE OF ATTENTION

Globally recognised Colosseo technology innovations met the client's lofty expectations at the top notch US sports and entertainment venue, MSE's Capital One Arena.

At the centre of attention is the first telescopic Colosseo Vision centre-hung video board with over 7,000ft² of 360-degree zero bezel SMART LED screen, featuring best-in-class 4.00 mm line spacing LED technology, enabling massive real-time statistical infotainment and superior monetising of advertisements. All this in 4K UHD resolution and HDR for vivid colours on seamless multi-level display areas.

The centre-hung masterpiece is the tallest among all US competitors. It also features the first bottom facing LED surface and double sided LED ring to optimise game presentation from every angle underneath the video board. Capital One Arena's new LED centrepiece is the largest 360-degree continuous LED area video screen in North America. »


*North America's largest continuous 360-degree centerhung with telescopic bottom part and LED underbelly provides unlimited possibilities for sponsorship and fans' infotainment.*

The other first of its kind visual experience is the world's first Gravity-Defying SkyRing LED Display, wrapped around the ceiling of the arena bowl and providing an incredible 9,000ft² of stunning LED canvas to optimise the monetising of advertisements.

## TRULY UNIQUE

The next truly unique in-bowl visual experience at the Capital One Arena are four double sided curved corner boards elevating premium display view to fans in top rows. The boards boast more than 2,200ft² of HD LED and the first back-side LED video display. Over 1,000ft² of back side LED displays will be much appreciated by many upper bowl viewers.

Colosseo also updated the arena with 1,600ft² of ribbon boards and added two new end zone boards, giving more than 1,040ft² of additional in-bowl LED inventory.

Every single display in the arena, including 29 new narrow pixel pitch displays and over 400 TV panels with the Colosseo IPTV app that were installed by Colosseo in phase one in 2018.

Together with phase two of LED upgrades in 2019, these are completely under the control of the industry leading Colosseo Single Media Platform, which distributes any type of digital content to any screen at any time. Colosseo SMP has proven again to be a powerful tool for the most demanding venues around the world.

The upgraded Capital One Arena now features over 35,000ft² of Colosseo LED displays throughout the arena, controlled by the unrivalled Colosseo media platform. Monumental Sports & Entertainment's vision, powered by Colosseo has resulted in a new benchmark for the world's best indoor arena visual experience.

***"An essential piece of the puzzle towards an ultimate fan experience at Capital One Arena was to create a web of digital media, where fan engagement and interactivity truly catch the eye of every visitor,"*** said Joseph Bocko, President of Colosseo USA, Inc. ***"Colosseo's unique innovations in centre-hung video board design and the LED SkyRing have set a very high bar in applied technologies for sports and entertainment venues of the future. Colosseo is proud to assist Capital One Arena in becoming the most advanced venue in terms of applied technology capability."*** ■

*Fans at Capital One Arena enjoy an amazing in-game atmosphere which is now multiplied by the cutting-edge and innovative LED inventory*

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## YOUR AREAS OF INTEREST

Please send me the latest information on these aspects of sports venue design, finance, management, operations and technology:

- ☐ Access control
- ☐ Acoustics/audio systems
- ☐ Adhesives
- ☐ Architecture and design
- ☐ Athletic tracks
- ☐ AV systems
- ☐ Broadcast/TV technologies
- ☐ Catering/concessions
- ☐ CCTV
- ☐ Cleaning products/ services
- ☐ Computer systems/ networks
- ☐ Concert/production services
- ☐ Concession carts
- ☐ Construction
- ☐ Consultants
- ☐ Coverings: pitch/floor
- ☐ Crowd management/ barriers
- ☐ Customer relationship management (CRM)
- ☐ Electronic displays
- ☐ Engineering: electrical/ mechanical
- ☐ Event management/ planning
- ☐ Facilities management
- ☐ Fan attractions
- ☐ Feasibility studies
- ☐ Financial management/ services
- ☐ HVAC/insulation/energy management
- ☐ Ice-rink systems/ products
- ☐ Interior design/theming
- ☐ Internet services
- ☐ Lighting: sports/ emergency
- ☐ Loyalty programmes
- ☐ Luxury suite design/ services
- ☐ Marketing/advertising
- ☐ Membrane systems
- ☐ Merchandising/novelties
- ☐ Naming rights
- ☐ Point-of-sale products
- ☐ Practice/training facilities and systems
- ☐ Project management
- ☐ Retailing: concepts/ systems
- ☐ Retrofit and refurbishment
- ☐ Rigging systems/ fall safety
- ☐ Roof systems
- ☐ Scoreboards
- ☐ Seating: fixed/ temporary/retractable
- ☐ Security
- ☐ Signage/advertising
- ☐ Signage/wayfinding
- ☐ Smart cards
- ☐ Sports floorings
- ☐ Structural engineering
- ☐ Suite management
- ☐ Systems integration
- ☐ Temporary flooring
- ☐ Ticketing systems/ services
- ☐ Timing/scoring systems
- ☐ Transport planning and operations
- ☐ Turf management/ maintenance
- ☐ Turf natural
- ☐ Turf synthetic
- ☐ Waste management/ recycling
- ☐ Wi-fi/4G coverage

**Others** *(please list)*

## YOUR DETAILS

*(please complete ALL sections)*

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# ALLIANZ FIELD SHINES BRIGHT WITH DAKTRONICS

**Experiencing football in Minnesota involves Daktronics LED display integration at the new Allianz Field.**

In football, all eyes are on the pitch. Well, almost all eyes are watching the action. When goals are scored or fans head to the concession stands, other things catch their attention.

One of the main things that fans pay attention to are the digital displays.

Replays are an exciting part of the match-day experience. Not only replays of the goals, but close plays, spectacular passes and players weaving through defenders with ease.

There are many moments in a match when fans want and deserve a second look. And LED technology delivers.

In the middle of the United States, football has recently taken centre stage.

In 2019, **Minnesota United FC** (MNUFC) opened their new venue, **Allianz Field**, located in St. Paul, Minnesota.

The new stadium is specific to football and allows the team exclusive branding opportunities above and beyond a shared facilities capability. But it is also flexible to hold other events.

## VIDEO DISPLAYS

**Daktronics** partnered with MNUFC to deliver LED displays throughout the stadium, including one large main video display, 10 ribbon displays and a club display.

Since this was a new venue being constructed, the company was able to work with the architects to integrate the technology into the stadium from the start.

***"One of Minnesota United's biggest goals is providing the best possible match-day experience for our fans,"*** said MNUFC CEO Chris Wright. ***"This partnership with Daktronics guarantees that the displays at Allianz Field will be absolutely top-of-the-line elements that will raise that experience to a new, incredible level for fans everywhere in the stadium."***

The main video display is located behind the goal at one end of the stadium and measures 7 meters high by 35 meters wide. It features a 15HD pixel layout, consistent with some of the largest sports venues in America.

This display can show all the replays and live video football fans expect. But it can also show multiple statistics and graphics at the same time through its variable content zoning capabilities.

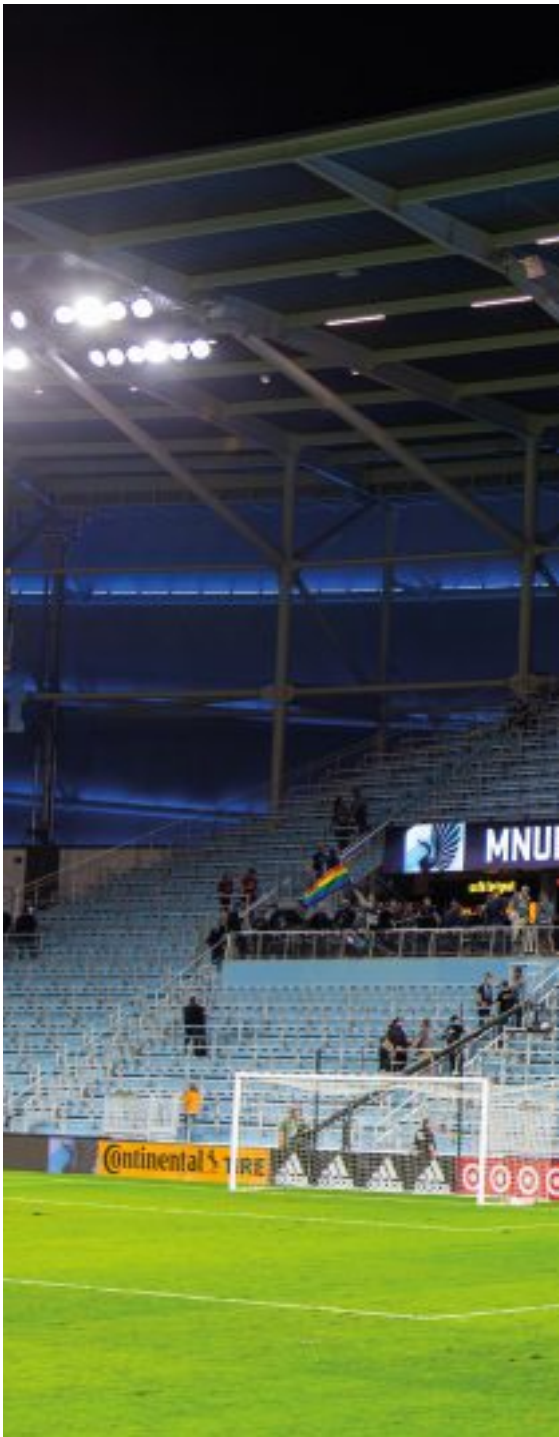
Fans can look up and see the score, match time, graphics and live video all at once using multiple zones of the display, catching all the information they desire in a single glance.

One of the more interesting aspects of Allianz Field is the integration of 10 separate ribbon displays. Along the seating fascia, Daktronics installed displays using patented ProRail® technology which offers better sightlines for the fans due to the discrete mounting method.

It ensures the product is connected closer to the seating fascia coordinated with the stadium architecture – something which saves building costs when implemented with new construction.

On each side of the field, ribbon displays measure 0.76 meters high by 115.82 meters wide and feature the same 15HD pixel layout to bring crisp, clear imagery to fans.

Additionally, eight ribbon displays are strategically placed throughout the stadium: two along the Supporters



Section fascia, two at the South Gate and four at the North Gate. These eight ribbon displays feature 16-millimeter line spacing to connect with fans in those areas.

## CLUB CLASS

Another aspect where the LED technology shines at Allianz Field is in the club area. The team had Daktronics install a narrow pixel pitch, or fine pitch, LED display in their club with 2.5-millimeter line spacing.

Content can be viewed at roughly 2 meters from the display. It brings the same functionality to show one large image or multiple zones of content including social media features and upcoming game information as it caters to fans in that area of the stadium.

The new construction allowed for technology to be easily integrated into the stadium.

From the moment MNUFC envisioned their new home, they knew they wanted to create something special and technologically advanced for their fans.

Daktronics was enlisted to bring that vision to life. Rounds of conceptual design took place to ensure a feasible design for the new venues.

After deciding on the concept, preliminary drawings and detailed shop drawings were crafted. Once approved, those drawings were finalised and installation drawings were completed.

This ensured the manufacture and installation of the displays would be quick and effective. And, most importantly, they looked exactly like the drawings and seamlessly integrated into the intended architecture.

This process ensured MNUFC received what they signed up for while saving them time and money. But it also ensured fans would experience their vision and walk into a technologically-advanced stadium on match day.

## SYSTEM INTEGRATION

With all the infrastructure worked into the architecture and the displays installed, the next step is to integrate everything.


Daktronics Show Control supplies a powerful, easy-to-use solution for event production. It provides a combination of display control software, world-class video processing, data integration and playback hardware to drive the experience of all the LED displays at Allianz Field.

As a complete control solution, Show Control ties all the displays together and sends content to them with the click of a button.

MNUFC can coordinate to show the same content on all displays at the same time in a moment of exclusivity. They can also show different content on each display to target viewers in each area of the stadium.

Ribbon displays can supplement content on the main screen or they can provide a direct return on investment by sharing sponsorship messages throughout the match.

While fans enter, they can be greeted at the gates with welcome content or team branded messages as the fully-immersed match-day experience begins.

Entering the seating bowl, the main displays, in coordination with the ribbons on each side of the field, provide the "wow" factor that many stadiums are looking for today.

While the teams on the field supply the main action, these displays provide the additional aspects that continue to entice fans and impact their visit. And Allianz Field has it.

***"This is a great project to be a part of as professional football continues to build roots in Minnesota,"*** said Daktronics Regional Sales Manager Tony Mulder. ***"It was exciting to partner with Minnesota United FC for this installation as we brought an amazing match day experience to Allianz Field for the team and their fans. It was exciting to see the completed project in action when the stadium opened. It really builds a home team advantage and helps their fans rally around the team."***

The stadium and its integrated LED technology have set a new standard for the match-day experience at professional football-specific venues in the United States.

While many venues share the field, MNUFC is prominently featured at Allianz Field and the technologically-advanced stadium makes sure football fans can feel it during every moment of their experience. ■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# VIDEO REFEREE WITH GOAL SPORT

*Goal Sport Software running at Puskás Aréna UEFA EURO 2020 Stadium*

## Video Referee Software from Goal Sport is in use for a number of different sports.

**Goal Sport** (GS) Video Assistant Referee (VAR) software was recently deployed by the **Slovak Football National Federation**. The solution was approved in tests under **FIFA** supervision.

The GS VAR System is now being used during all matches in Slovak competitions.

In this case, Goal Sport Technology developed the software and the full hardware integration.

Our team also manufactured the VAR booths that offer the best conditions for referees to review images on the field of play.

VAR is becoming a necessity in many sports. For the **Czech Basketball Federation**, GS has deployed an easy to mount set-up that can be quickly implemented in different locations.

For ice hockey, we've designed the Video Coach's Challenge Application that is now in use by the **Czech Ice Hockey League**.

The solution is implemented with tablets positioned by the ice rink, so referees don't need to leave the ice to check the images that are required.

Other sports also take advantage of this application, especially for seasonal events, as recently happened at the **Floorball World Championship** and the **Men's Softball World Championship**.

### EASE OF OPERATION

The key benefit of GS VAR is its easy operation. With it you can easily mark from all cameras with one click, inspecting replays from multiple cameras at the same time.

Its live and replay modes are powerful ways to analyse critical situations during matches. It also features offside-line technology, an intuitive full touch screen interface operated by pinching to zoom in and selecting areas of the image.

Goal Sport staff can provide full integration and calibration of the cameras on-site.

Based on work with different federations and along with the FIFA test, GS has improved the application by including new features such as camera layouts and different interface modes, according to the rules of every federation we cooperated with.

Since sport leagues usually apply VAR in many different locations, Goal Sport came up with a compact GS VAR hardware station. This is a portable plug-and-play solution suitable even for minor leagues and tournaments.

GS VAR stations are easy to transport from venue to venue. The company also organises the integration of the hardware in OB Vans.

## HARDWARE INTEGRATION

There are many cases where software implementation is not enough. Goal Sport's vast experience in hardware integration allows seamless functionality to be set up.

The company can also advise on how to improve the performance of AV systems based on the integration of all digital assets in a venue.

Goal Sport has deployed the complete integration of multiple digital elements at the **Humo Ice Arena Complex**, which was recently built in Tashkent.

The Uzbekistan installation was realised in the two venues of the complex. The devices connected to the system include two four-side LED Scoreboards, two upper rings, outer and inner bottom rings, two digital GS hockey-proof dasherboards, two giant LED screens, fascia boards, a giant LED screen on the external façade and in-goal cameras.

Goal Sport applications are used there for the in-venue broadcasting. The system also includes the Video Referee Software for ice hockey and basketball.

A system was recently integrated as well at the **Hungarian National Football Stadium**, a host for the **UEFA Euro 2020** football competition, where four LED scoreboards and the perimeter system are controlled by GS Playout software.

In the new **Dynamo Moscow Volleyball Arena**, GS software controls the digital scoreboard with multiple functionalities.

There, Goal Sport Software controls several advertising playlists, video animations, instant replays along with all the statistics of the matches such as points, penalties and player presentations.

For the **Georgian National Stadium**, GS is currently putting together a fully integrated system for in-house broadcasting, including dedicated applications for camera live switching, replays and slow motion. They will also install the GS VAR System approved by FIFA.

*Dynamo Volleyball Arena in Moscow*


*GS Coachs Challenge in action at Czech Ice Hockey*

## WHAT GOAL SPORT CAN DO FOR YOU

Goal Sport Software offers all the software applications a venue needs for in-house broadcasting. We offer solutions for statistics, content management, live production and video refereeing.

Our solutions are scalable for sports venues of any size. You can either have GS software for controlling one small screen in a small arena or use it to control many digital elements in the case of large stadiums.

Goal Sport Software can handle such straightforward demands as in-putting goals to a scoreboard, but it can also be used for such complex scenarios as running multiple advertising pieces over many screens within the stadium.

Our customers can also take advantage of adding our new applications to current systems. Venues with low content demand can opt for GS Studio, our all-in-one application that can be managed by just one operator.

For example, if your club needs to improve fan engagement, we offer solutions that allow interactions with the audience in the grandstands.

That is the case of the noise-meter system that measures the decibel levels around different areas of the sporting venue.

The level of db is automatically displayed on the screens within the venue. The graphics are adjustable and can be branded by a sponsor or club.

## CREATE WOW MOMENTS

The sky's the limit when creating possibilities to engage the crowd. Goal Sport Software allows you to turn your ideas for fan engagement into real results.

Fans will also appreciate getting the stats of the match in real-time. Introduce the players, announce goals, show player stats, penalties, and much more to keep the audience informed and entertained.

Sponsors tend to invest in advertising spaces where some relevant game information is presented. Game statistics can be easily done by adding GS Timekeeper software to your system. With it, match events can be presented on the screens in real-time and with no effort.

A lively atmosphere is a must-have for stadiums and arenas that look to catch the eye of fans. Rely on GS Playout to benefit from seamless content management. Entertain the audience with interaction calls such as “make some noise” that you can type on-the-fly by its dynamic message feature.

That’s just the beginning. You can entertain the audience with loads of graphic animations and effects connected to the match events.

Simply upload your content to the software and put it together in playlists according to your needs. For even greater results, you can create scenes combining multiple screens in-sync. Scenes feature open doors to be creative using content. You don’t need to be tight to standard screen resolutions. You can create video content that would cover entire areas of perimeter screens for example, or animated graphics that scroll from one screen to the other.

## INCREASING REVENUE

That also sounds appealing to sport sponsors who want to innovate with alternative video formats. GS counts on an application for perimeter screens that allows the easy scaling and replication of pieces of content across the screens.

It saves time on the match scheduling and avoids hiring a producer to just adjust the content for your standards.

GS software has its own graphical editor that allows the creation and adjusting of your own graphic overlays. In these cases, you can add dynamic elements to the graphics such as players' names or penalty types.

The software automatically updates the information to the graphics every time an event that has happened in the game is required to be displayed. No render is needed.

Our software also allows operators to pull out Information from either social media channels or a website. It is perfect if you want to promote campaigns in a stadium using hashtags, for example.

## DMX AND AUDIO MIXER INTEGRATION

It’s worth mentioning that the software also incorporates DMX effect and audio mixing. The DMX is especially used for match openings, player presentations and during breaks in play. The different light scenarios are incorporated by the software and can be triggered simultaneously with video and audio content.

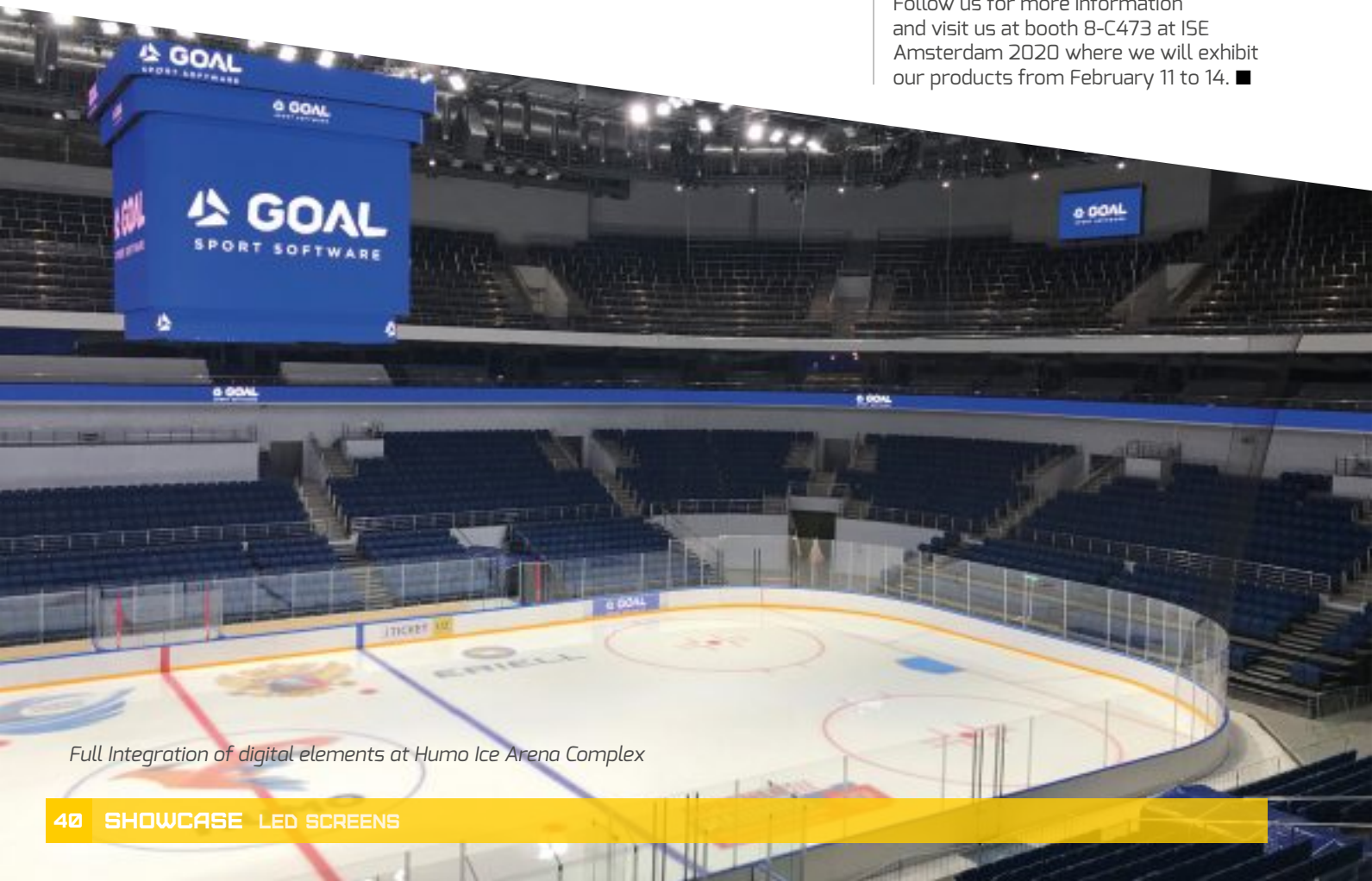
Built into GS Playout, you can find an audio mixer that allows operators to handle on-the-fly the master and every single audio channel of the sound system. It comes in handy for creating a smooth sound atmosphere in a sports venue.

When looking to offer a more inviting atmosphere to the audience, sports venues can also opt for IPTV and Digital Signage.

With GS IPTV, fans can order drinks and food using the remote control. The restaurants and bars in the venue can adjust their menu instantly and display specific information to multiple displays.

The system has been used to create an inviting atmosphere in the common areas of the stadium. GS will soon showcase digital signage in Miami football stadium.

Follow us for more information and visit us at booth 8-C473 at ISE Amsterdam 2020 where we will exhibit our products from February 11 to 14. ■




*Full Integration of digital elements at Humo Ice Arena Complex*

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# BE PART OF THE ACTION WITH KOCSISTEM

***PS&AM* spoke to KoçSistem CEO Mehmet Ali Akarca about the company's latest digital developments.**

**Can you please give our readers an overview of KoçSistem and the solutions that KoçSistem offers to sports venues?**

As the technology subsidiary of Koç Holding, the only Turkish company listed in the Fortune 500, we offer cutting edge technologies to all businesses around the world aiming to launch their digital journeys.

We do this with our proprietary value-added product family, smart cities, the solutions developed in accordance with Industry 4.0 trends and our partnerships with more than 80 leading brands.

Our highly qualified and well-trained staff, mostly members of Gen Y, and teams of data scientists and engineers, stand out with their analytical intelligence and competency in creating business value from big data.

We conduct R&D activities on cyber security, mobile applications and identity management, along with many other areas and projects at the KoçSistem R&D and Innovation Center, to find the solutions that will meet the needs of the future.

Currently, we have a workforce of close to 1,500 which we plan to raise to over 3,000 within five years.

As the leading technology company in Turkey, we operate with a vision to act as a technology provider across our region and all around the world.

After founding our Azerbaijan subsidiary seven years ago, we have expanded into five other countries in the last five years with next generation technology companies to provide services for and add momentum to the digitalisation of corporations.

We are pleased to see that KoçDigital, our youngest company, founded through cooperation with Boston Consulting Group (BCG), the leading management consultancy company in the world, is taking strong growth strides, especially in the region.


In addition to Advanced Data Analytics and innovative Internet of Things solutions, KoçDigital is also committed to providing Industry 4.0 tools and methods thanks to its staff prominently comprising data scientists, to a broad range of industries in 32 countries.

Our diverse solutions offer companies the opportunity to efficiently evaluate opportunities such as creating a rich customer experience, personalising products and services and marketing through multiple channels, which are the main trends of today.

Pixage is surely one of the most important among these products. Pixage, a digital signage application, is a technology aimed at today's consumers who spend prolonged periods in front of their screens, and in this sense, it enhances the customer experience of brands.

"Pixage Arena" is one of our offerings that provides a comprehensive smart stadium digital signage & IPTV solution for sports clubs.

It includes all the infrastructural requirements starting with the procurement of the screens as well as digital signage solutions, IPTV systems and customised event content management services.

**Can you tell us about some of the stadium / arena projects you are currently involved in or have worked on?**

We have recently finished a project for Fenerbahce Sports Club where we



implemented all the requirements for a UEFA compatible LED perimeter system in their 51,000-capacity stadium.

To date, we have worked with the most popular sports clubs both in Turkey and Europe. Some of the most successful sports clubs in Turkey (including Galatasaray, Fenerbahçe and Trabzonspor) trusted us with the management of screens in their stadiums.

Also, we have worked with more than 20 clubs in Europe including Liverpool, Tottenham Hotspur, Leicester City, West Ham United, etc.

We were the winner of the "Technological Solution of the Year" in The European IT Excellence Awards 2012 with our offering for English Premier League clubs and our Fenerbahçe Stadium Pixage Arena Project won bronze for Technical Innovation of the Year at the Stevie International Business Awards.

**Two huge topics of concern for all sports venues are optimising fan engagement and also increasing revenue streams. Can you describe how your technology can help venues to achieve both aims?**

Since we are both a high-tech company and a system integrator, we provide more than regular digital signage solutions. We give fans an interactive experience and opportunity to be part of the action from anywhere, both inside and outside the stadium.

Fans all over the world can join the stadium atmosphere by broadcasting their support on the screens around the pitch thanks to Pixage's live broadcast feature.

Together with the integration of live data, brands have the opportunity to better showcase their products, which increases the value of screens for the clubs.

Also, the Pixage zone management feature allows clubs to manage even the 360 LED perimeter screens according to their advertisement value.

**How can your solutions help smaller-sized venues compete against larger venues in the same city which have deeper pockets?**

Pixage provides better and more active fan engagement. It improves the way a club reaches its audience and provides a more loyal fan base and an increased monetisation opportunity. Also, the customised nature of the product creates new advertisement income potentials for clubs. With Pixage's easy and cost-effective management structure, clients can choose the best cloud solution option and begin using the system without having to invest in servers, software or hardware. As a result, Pixage is an end to end solution and our professional teams can handle all software, hardware, operating, setup, infrastructure, maintenance and content management needs, so small businesses can run their budgets effectively.

**What distinguishes your solution from other digital signage solutions?**

In addition to the advanced features of the product discussed above, one key element of Pixage that our customers highly value is its approval by UEFA. Pixage saves our customers from the burden of hiring additional screens to meet UEFA standards for their UEFA games. Also, Pixage provides individual control of brightness, gamma, colours of every single pixel/ module/cabinet and synchronous content management.

**Are you able to supply your solution internationally? In the long term, are you interested in partnering with international distributors?**

Yes, we have worked with many international customers and completed projects all around Europe. In coming years, we would like to cement our position in Europe and extend our offerings outside Europe internationally. In order to do that, we are open to entertain partnership opportunities that would add value to our international footprint.

In order to do that, we will attend Integrated Systems Europe (ISE) 2020 exhibition in Amsterdam where we will present our digital signage solutions that drive digital transformation and meet potential business partners. We will be exhibiting our smart signage solutions especially for sports venues and retail players. Our solutions will include digital signage, video analytics, sensors, real time retail analytics which create interactive experience and provide business critical information for the marketers and retailers. We will also present our new cloud based – plug & play digital signage solution: Pixage One. With Pixage One's extremely affordable pricing model and user friendly content management tools, we aim to help every SME's digital transformation process. We look forward to seeing you at ISE 2020 from 11 to 14 February on booth E400 in hall 8. www.pixage.tv. ■

# VESTEL SHINES AT VFL WOLFSBURG ARENA


**Vestel professional displays are now ready to boost the fan experience during breathtaking matches at the Vfl Wolfsburg Arena.**

**Vestel**, the leading manufacturer of consumer electronics and home appliances in Turkey, is continuing its prestigious work with the **VfL Wolfsburg Arena** project.

Starting with the 2019/2020 season, the project is going to run for at least two seasons with a possible extension afterwards.

**VfL Wolfsburg** has been playing in the German **Bundesliga** since 1997, having won the Championship in 2009 and the DFB Cup in 2015, and is currently ranked second after game seven in this year's season.

A new project has been unveiled at the VfL Wolfsburg Arena, powered by Vestel Signage Series.

As a solution partner, Vestel offers an impressive user experience, enabling VIP guests to watch the game, replays, and press conferences from all tables and seats within the VIP areas with minimum transmission delay - all thanks to the new innovative solution offered by Vestel.

The close collaboration arose from VfL Wolfsburg's strong focus on technical innovation to create a state-of-the-art visual experience for their VIP customers; and after a thorough examination and reference checks, Vestel was identified as the right solution partner with its innovative approach and cutting edge technology.

## A COMPLETE PACKAGE

The project began with the VfL Wolfsburg Arena being equipped with 400 Vestel Professional Displays: in VIP areas, 49-inch screens will delight the fans and help provide unforgettable match days, while 55-inch, 65-inch and 75-inch displays in the lounges will allow audiences to see all the available game information.

After this initial step, the project also includes further scope. From within the wide portfolio of its product range, Vestel will provide videowalls, totem displays and LED products to meet the exact needs of the arena.

The system integration partner for the project is **GHMedia** with whom Vestel has teamed up before on previous projects as well.

GHMedia converts the video signal into a UDP Multicast stream and has incorporated Vestel LAN Command API and the SoC (System on Chip) Multicast capability into their proprietary control software.

The signal is processed into a LAN Multicast Stream and sent within a dedicated, separately switched media network, using a fibre-optic ring throughout the stadium without the need for any additional hardware.

The SoC handles the conversion of the Multicast Stream on board. Not only does this solution provide a fast way of delivering the signal to all screens at the same time with minimum transmission delay, but also it is a big gain in picture quality compared to the old coax cabling

## ABOUT VESTEL

Comprised of 28 companies, Vestel Group is a multi-industry manufacturer that operates in consumer electronics, home appliances, mobile technologies, professional displays, LED lighting, and EV Chargers. Testimony to the global importance of Zorlu Holding across multiple technology sectors, Vestel is not only thriving at home in Turkey, but also through a further 10 subsidiaries that have been set up in various other parts of the world. Thanks to its renowned manufacturing and R&D complex, Vestel exports to 155 countries and retains its position as a global player.

Vestel City is one of Europe's largest manufacturing facilities with 1.16 million square meter factory space and a 700,000m² enclosed space. 1,600 engineers and R&D staff, scientists, and 16,000 employees help spin the wheels at these massive factories.

With the immense scale of Vestel City, fast collaboration and strong cohesion between both groups shows a complete picture of the end-to-end production line which is the result of the holistic understanding of Vestel.

Vestel is well-positioned for the future with its stunning scale of production capacity, sophisticated design and innovation, high product quality, and superior market share growth.

For more information: **www.vestelinternational.com**


technology. With digitalisation into Multicast packets, there is no quality loss due to cable length.

The Vestel Signage Series is in harmony with the spectacular design of the stadium's interior and enables VIP customers to enjoy a technologically advanced experience as they watch the games.

The cosmetic look and feel, picture quality, brightness and colours were assessed besides end-to-end interaction of hardware and software. Outside of game days, the displays will be used as information screens.

Implementing a secure, and separately switched media network throughout the Volkswagen Wolfsburg Arena, and making sure the displays fit in the already beautifully designed interior of the venue were some of the challenges the team faced during the project; but eventually the installation process was a success and the project was ready in time for the first game of the season.

With Vestel's experienced team on board, each seat now has perfect vision of the screens and the GHMedia control software is successfully passed to the control of the production team on site.

This huge project is the result of extensive planning, construction and integration carried out by the Vestel team who ensured that the project moved forward seamlessly.

Vestel focuses on offering its customers a great experience in all stages of the user lifecycle. This is a part of the unwavering vision of Vestel.

## VESTEL PROFESSIONAL DISPLAYS – SIGNAGE SERIES

Vestel offers a wide range of commercial displays, with sizes starting from 24-inches to 98-inches. Specifically designed brightness performance enables system integrators to use displays for indoor applications and in well-lit environments such as window facing under sunlight.

A variety of brightness solutions starting from 350 and going up to 2,500 nits is available in the product range.

With 4K resolution displays, Vestel Signage Series provides life-like picture quality, providing the perfect solution for any application where exceptional resolution is required.

The screens can be customised to suit the content by selecting either portrait or landscape mode. Professional panels used for signage series are quality confirmed to operate 24 hours a day without any issues.

With quad core SoC platform, Vestel offers a powerful and cost effective signage solution for Content Management Solution (CMS) providers. With the support of SoC, it is the most convenient solution for any cloud based html application.

Besides SoC, OPS-compliant displays also offer additional operating systems such as Android or Windows. Vestel offers an open operating system platform which is suitable for any CMS system in the field. With the support of a touch overlay option coming as an accessory, users can also add interactivity to any screen. ■

# NORTHWESTERN UNIVERSITY RAISES THEIR GAME WITH VITEC

## EZ TV IPTV & Digital Signage Solution for Sports Venues delivers a captivating fan experience at Welsh-Ryan Arena.

**Northwestern University (NU)** is revving up the game-day experience for **Wildcat** fans at its newly renovated **Welsh-Ryan Arena**.

The arena in Evanston, Illinois, was renovated in 1983 and serves as home court for its basketball, volleyball, and wrestling teams.

The venue had been largely untouched since its opening and to make way for the $110 million renovation, the school completely gutted the existing structure.

The mission was to create an environment that would feel both intimate for fans and intimidating to visiting teams.

Seating capacity was adjusted to just over 7,000 seats to create one of the

world's most accessible arenas, while giving every spectator a great view of the court and allowing room for the new Wilson Club premium seating area.

The other priority for transforming the fan experience was focused on replacing the CATV system and implementing the best video technology available. NU improved the fan visual experience by installing a four-sided center court videoboard and LED ribbon displays around the arena. To carry the on-court action outside, more than 75 displays were installed around the concourse, at the concessions, and within the Wilson Club.

## THE CHALLENGE

With the goal of delivering a state-of-the-art fan experience at the forefront of the planning process, the organisation required an IPTV and digital signage system that could do more than just display video and concession signs.

NU needed a solution that would distribute live content as high-quality IPTV streams in low latency to every screen and would offer a selection of IPTV channels from multiple service providers.

Additionally, the digital signage solution needed to easily allow the school to create sharp, dazzling video content, compelling digital signage campaigns, and point-of-sale menu boards at the arena's concession stands.

The final item on the checklist was a centralised, user-friendly interface that the school's small broadcast operations staff and sponsorship team could easily manage from the broadcast control building, adjacent to the arena.

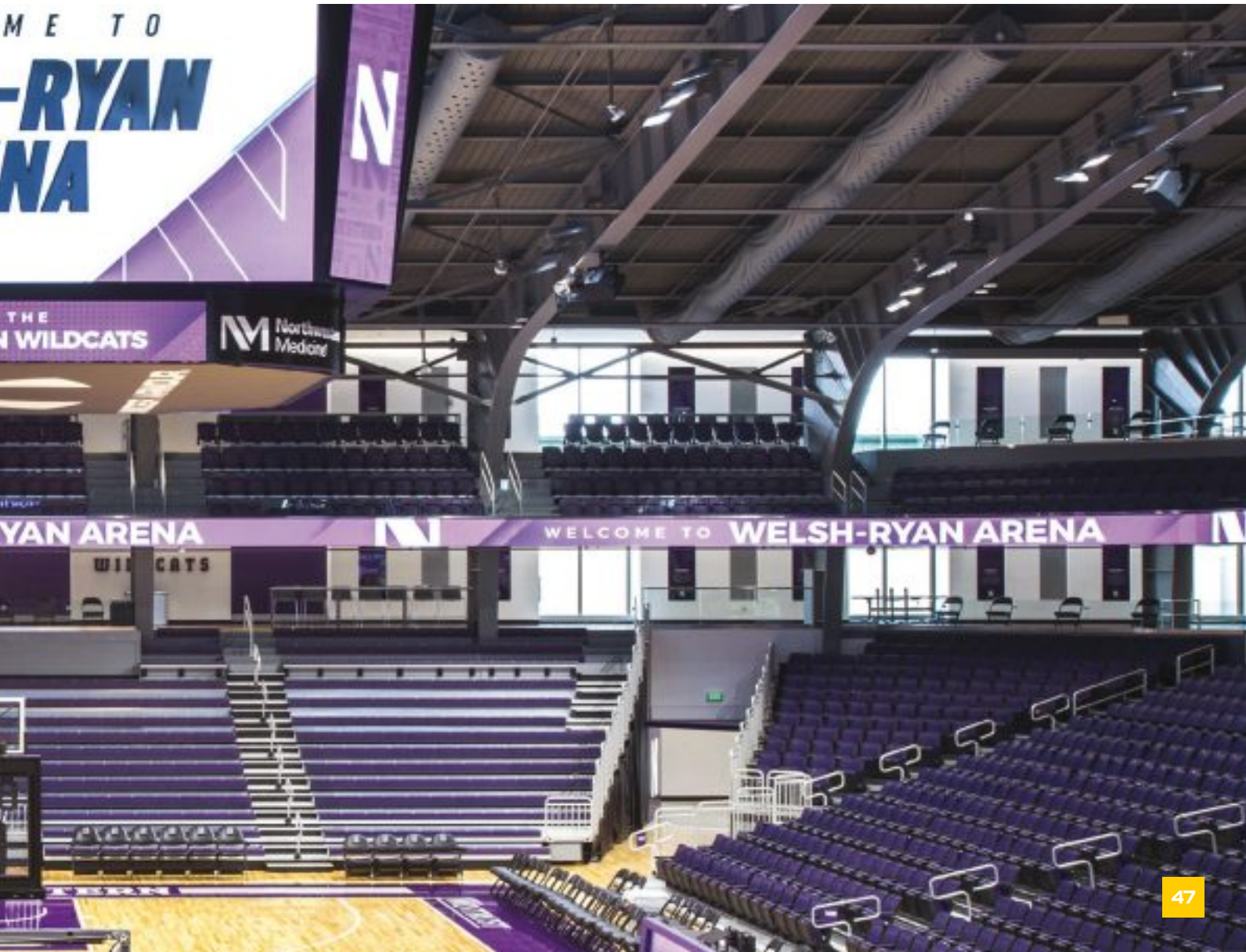
## THE SOLUTION

Wanting the best-in-class fan experience, Brian Baptiste, the school's deputy director of athletics for capital projects and operations, spent time researching the IPTV setups of many leading collegiate and professional sports teams. During this process, Baptiste and the NU team were made aware of **VITEC's** EZ TV IPTV & Digital Signage Solution for Sports Venues by the digital integration group within **Mortensen**, the general contractor for the renovation.

The NU team learned that VITEC was the premier platform for some of the nation's most state-of-the-art sports and entertainment venues, including the **Sacramento Kings' Golden 1 Arena** and the **Green Bay Packers' Lambeau Field**.

The powerful VITEC EZ TV solution not only enhances the fan experience with broadcast-quality, low-latency live and on-demand video streams, but also provides exceptional digital signage capabilities to every display over the facility's existing network infrastructure.

With VITEC, NU is able to engage fans while reducing the capital and operational expenses associated with legacy solutions.



Driven by VITEC's affordable, high-performance, hardware-based endpoints; every screen in the university's network becomes a potential revenue opportunity, delivering eye-catching digital content with dynamic data and menu boards that automate food service workflows. In addition, VITEC offers a 100-percent hardware-based IPTV solution with digital signage end points which feature low latency playback of up to two HD channels simultaneously.

The high-performance platform also supports scalability into the future with VITEC's mobile app for iOS and Android devices for streaming live video and playback of IPTV content.

An integrated, EZ TV Media Library enables administrators to tag, edit, organise, store, search, and share media files for archiving or playback.

The VITEC EZ TV solution provides unprecedented value with a suite of modular tools that further streamline media processes from live streaming to recording, archiving, and collaboration; easily allowing users to manage a full digital video experience across an entire venue.

> ***"VITEC's EZ TV IPTV & Digital Signage Solution for Sports Venues puts Northwestern University's Welsh-Ryan Arena in the same class as the top facilities in the world and made us a leader in collegiate sports. Now - whether fans are attending a basketball game, volleyball game, or wrestling match - every screen is delivering all the action happening on the court, with striking digital signage and video content, to every corner of the arena."***
>
> Brian Baptiste ,
> *Northwestern University's deputy director of athletics for capital projects and operations.*

## THE RESULTS

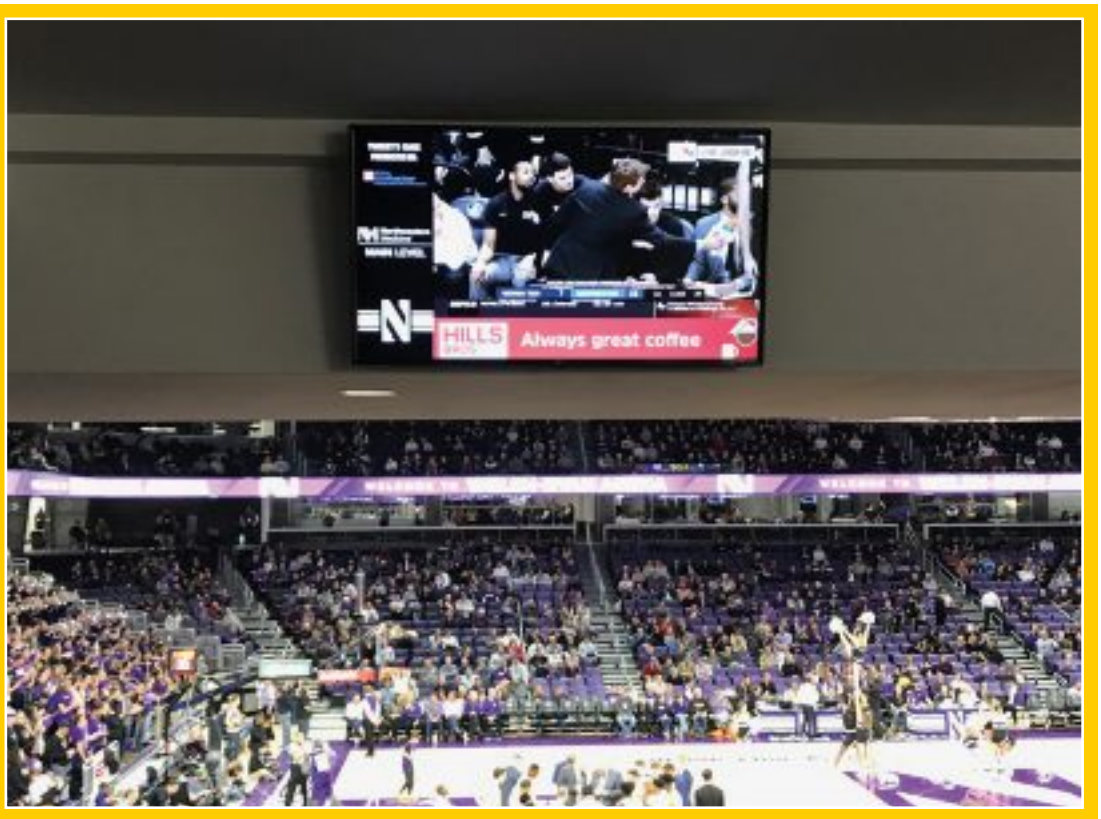
Even with an aggressive time frame for the construction project, VITEC's EZ TV IPTV & Digital Signage Solution for Sports Venues enabled NU to hit the ground running and set a new benchmark in fan engagement.

The new arena opened just in time for the first tip-off of the 2018-2019 basketball season with EZ TV's comprehensive IPTV and Digital Signage platform fueling every screen with high-quality, ultra-low-latency IPTV streams and captivating digital content.

Fans can now walk around the new arena without missing a minute of the action. With the unparalleled support of VITEC's administration tools and comprehensive capabilities, personnel can easily manage all the arena's IPTV and digital signage, plus benefit from new revenue growth opportunities for years to come. The result is entertainment that goes above and beyond standard IPTV and digital signage solutions that has transformed the facility into a leading collegiate arena. ■

## THE BENEFITS

- Easily and affordably answers the demand for a broadcast-quality, low-latency IPTV content available at any screen in the arena
- Centralised IPTV and digital signage capabilities and comprehensive administration tools simplify content creation and management tasks for IPTV and digital signage
- Efficiently scales to any number of displays in the network, making every screen an asset to the fan experience
- Opens up and drives new sponsorship revenue opportunities with a built-in suite of digital signage capabilities and analytics
- Securely and freely moves high-value video content throughout the installed EZ TV network due to leading-edge DRM interoperability



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# CRYSTAL CLEAR AT SPODEK ARENA

**A new d&b sound system is delighting fans at Poland's 'Spodek' Arena ice rink.**

Located in Katowice, Poland, Spodek—meaning 'saucer' in Polish—is one of the country's best-known cultural landmarks. Named for its iconic shape which distinctly resembles that of a classic sci-fi flying saucer.

Spodek is one of Poland's largest multipurpose indoor venues, second only to the recently built **Krakow Arena**.

In addition to the main arena, the municipally-owned Spodek also houses a 1,200-capacity ice rink, home to Polish premier league ice hockey team, **Tauron KH GKS Katowice**.

The rink also hosts training sessions for local schools and figure skating clubs, not forgetting the 'Disco on ice' held every weekend. As a result, during the winter season, the venue welcomes over 40,000 people through its doors.

When the time came to replace the sound system, pro audio distribution and systems integration experts **Konsbud Audio** won the tender to supply a flexible, lightweight, sound system from **d&b audiotechnik**, along with the rest of the audio infrastructure – which combined have radically improved the audio experience within the ice rink.

## SETTING OBJECTIVES

The top requirement for the new system was to achieve flawless speech intelligibility and even coverage across the whole audience area—against a background of music, cheering, clapping and all of the other types of noise generated by a high-octane hockey match.

Fans need to be able to hear all of the information and announcements provided during the match—who scored, penalties awarded and any other commentary.

The same is true of figure skating competitions which are accompanied by constant commentary alongside the music.

The system also had to be able to stand up to the harsh conditions within the hall of low temperatures and high humidity—issues that had proved to be the downfall of the previous system, which suffered significant corrosion.

## THE SOLUTION

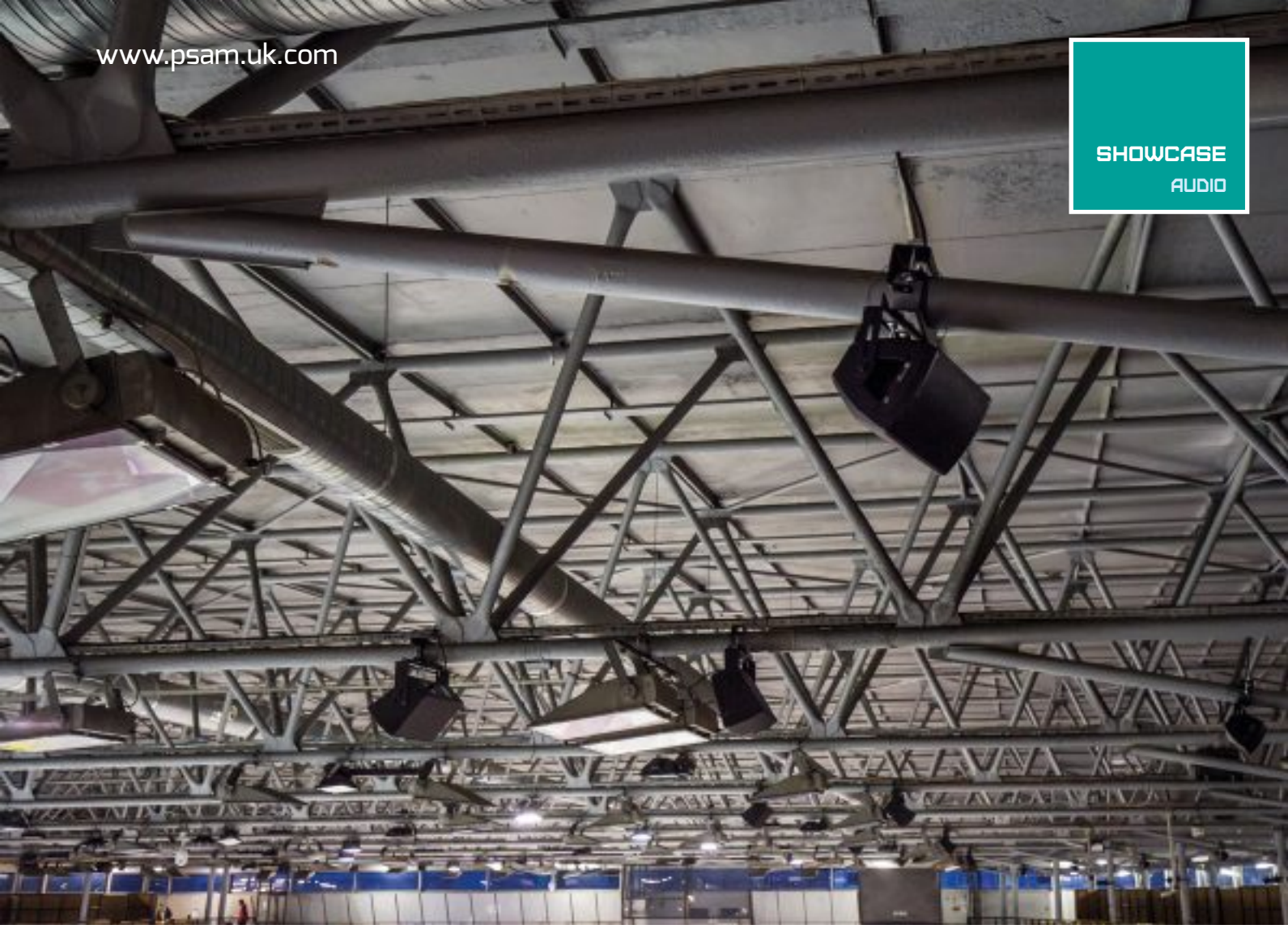
In such an acoustically challenging environment with so many reflections off the hard surfaces—including of course the ice itself—Konsbud Audio team decided that the best solution would be to install a large number of smaller loudspeakers in a zoned configuration for maximum control. Five zones were designated: upper stands; lower stands; VIP area; journalists' area; and around the main scoreboard.

With the Zone approach, sound level can be independently controlled for each area. If a stand is unoccupied or only sparsely occupied, the level can be reduced accordingly or even turned off completely, this minimises reflections from empty seats, thus improving intelligibility throughout the hall.

Furthermore, all system control can be performed either from a computer or remotely from an iPad, making the system very easy to manage.

To this end, Konsbud selected a total of 16 Vi10P high-performance, two-way point source loudspeakers with wide dispersion and 24 E6 compact coaxial point source loudspeakers with rotatable horns—all in fully-weatherised (WR) versions to withstand the harsh conditions. The speakers are distributed across the area, either suspended from the roof or wall-mounted.

***"We demanded a multi-zone configuration of the system combined with its small dimensions. The d&b solution fully met our requirements,"*** says Grzegorz Wylaztowski, Sound System Engineer. ***"We expected a lower intelligibility (STI), but the system really surprised us. Additionally, the great intelligibility and excellent sound coverage in individual zones are attainable with lower sound levels, resulting in reduced reverberation on the ice rink."***



## INSTALLATION CHALLENGES

Konsbud project manager, Damian Mizura, recalls that the installation was not without its challenges given the difficult climatic conditions within the ice rink.

*"All of the prep work was carried out while the rink was frozen, but when it came to install the speakers, we had just 10 days and nights to do that while the ice was being thawed, which massively increased humidity in the room. Our working at height over thawing ice definitely didn't make for easy working conditions,"* said Mizura. *"However, the results are definitely worth it, not just in terms of intelligibility and ease of control, but also in terms of the amount of weight borne by the roof.*

*"The new d&b system has significantly relieved the strain on the roof structure as it is so much lighter than what was in place before."*

The previous system comprised 16 loudspeakers suspended from the roof, each one weighing a massive 75kg. Even though 40 loudspeakers now perform the job of 16, with the Vi10Ps weighing in at only 18kg and the E6s a mere 5kg each, total weight has been reduced by a staggering 65%.

The implementation of a Dante network also formed an important part of this installation, significantly reducing cable costs and guaranteeing signal integrity over long distances. In order to power the system, Konsbud supplied four d&b 30D amplifiers with integrated DSP connected to the Dante network via a d&b DS10 matrix processor.

The control room—where Konsbud has supplied an **Allen & Heath** SQ5 digital console equipped with a Dante card—is located beneath the western grandstand.

*"We decided on a networked solution because the distance between the control room and rack room where the amps are located was too great to cover adequately or easily with analogue cabling,"* explained Mizura. *"A Dante network was the obvious choice and gave us much more flexibility in terms of overall system management. We installed several extra connection points throughout the venue enabling the stagebox to be connected in three different locations, meaning that the ice rink is far more able to adapt to specific production needs than previously."*

Mizura noted that the other advantage of the network is the fact that they can control nearly everything remotely, either from the main computer or from a tablet, enabling the engineer to configure and control the system or run full diagnostics from anywhere in the venue. Technicians can actually hear exactly what is going on from an audience point of view and make adjustments directly rather than being stuck in the control room.

*"Ultimately, the choice of a d&b system is an investment in the future of the venue,"* says Mizura. *"They have achieved their goal of crystal-clear intelligibility in a notoriously difficult venue, and fans can finally hear what's going on without their ears ringing. They are now guaranteed the best audio quality for many years to come with a modern system that is easy to operate and maintain. They have reduced system weight by two thirds which is important for the structure of the building, and they can rely on us and d&b for support."* ■

# LA GALAXY FANS DIG THE STELLAR NEW SOUND AT DIGNITY HEALTH SPORTS PARK

**3G Productions designs and installs an L-Acoustics Kiva II/SB18i loudspeaker system for Major League Soccer's most prestigious club.**

**Dignity Health Sports Park (DHSP)** the home of the **LA Galaxy**, one of **Major League Soccer's** most successful franchises, teamed up with 3G Productions to design and install an **L-Acoustics** Kiva II/SB18i loudspeaker system.

The new loudspeaker system is part of **AEG** and the LA Galaxy's continued investment in the fan experience at Dignity Health Sports Park.

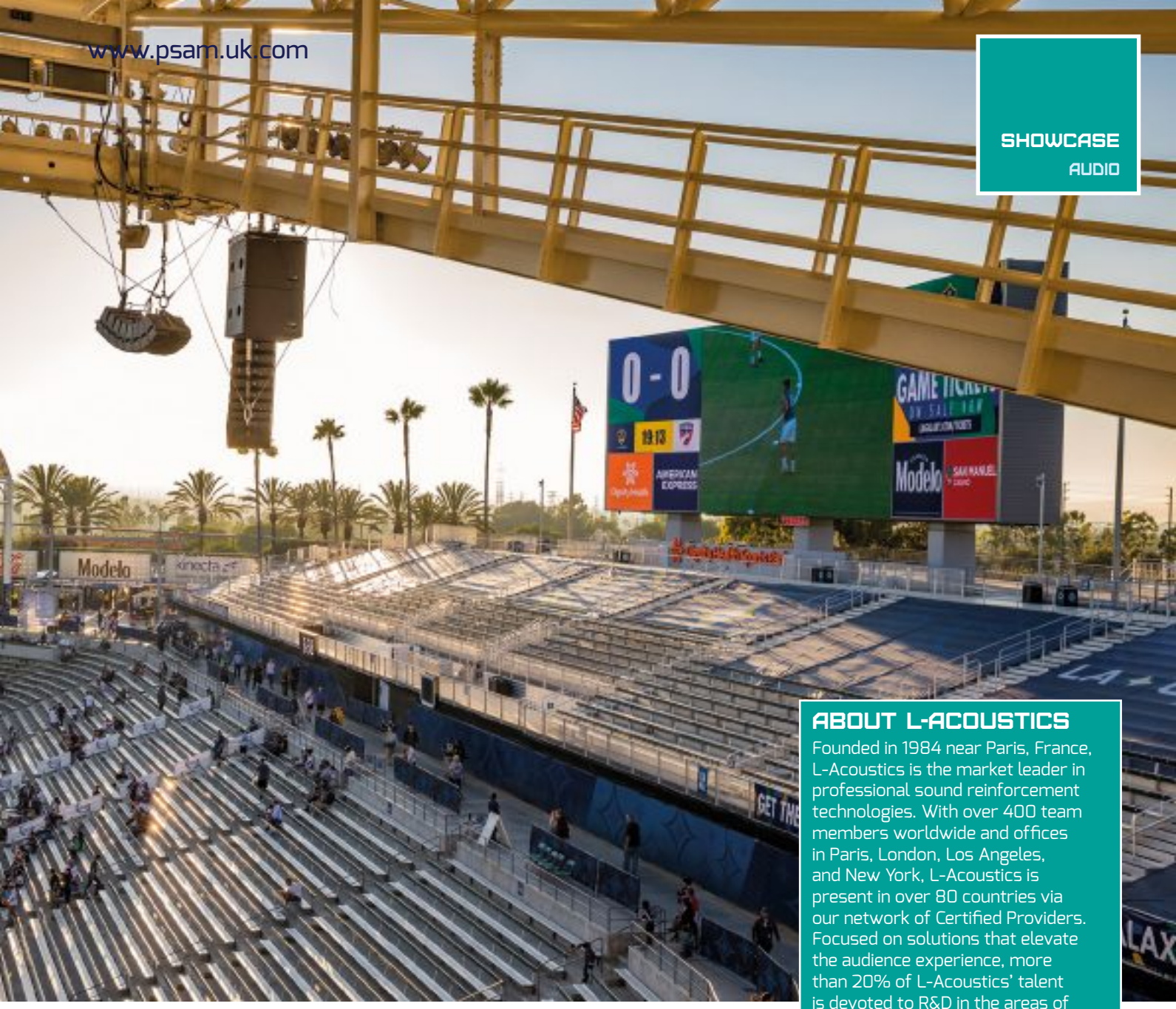
***"The previous sound system, installed during the stadium's construction, was no longer adequately meeting their needs,"*** said 3G Productions, Inc. Chief Operating Officer Keith Conrad. ***"It was beyond its age and had reliability concerns. Plus, it did not extend enough sound coverage in the stands or to the concourse, which limited the fan experience throughout the venue."***

With all of the various stadium needs in mind, 3G Productions Director of AVL Integration David Myers collaborated on a Soundvision system design with L-Acoustics Sports Facilities Business Development Manager Dan Palmer.

The final result that satisfied all criteria was a bowl sound system primarily comprised of 142 Kiva II line source enclosures—divided across 18 arrays in eight zones—paired with 14 hangs of 28 SB18i subs and collectively driven by 13 LA12X and four LA4X amplified controllers. Additionally, 10 ultra-compact, short-throw 5XT speakers would cover a press area in the West zone, while two co-linear Syva enclosures would be mounted to the left and right sides of a giant LED wall at the stadium's main entrance.

## SCALABLE SYSTEM

***"Using the same loudspeaker solution throughout the bowl, we created a system that is scalable to accommodate each of the unique listener areas while maintaining the same tonal voicing and acoustic characteristics. This also maximised***




*horizontal dispersion control,"* Myers said. *"Also, Kiva II is very visually unobtrusive, allowing clear views to the field and preserving the architectural look of the park. And we flew SB18i subs to reinforce the main system and extend the frequency bandwidth and low-end energy as needed for the more sonically demanding shows and games."*

Conrad notes that the new loudspeaker system—which was ultimately commissioned in February, just prior to the LA Galaxy's season opener in early March—is a major improvement from the old one.

*"The L-Acoustics system significantly enhances the energy inside the stadium, while also preserving the integrity and nuances of a soccer match by keeping the sound off the field,"* he said. *"The audio system throughout the concourse enhances the fan experience by allowing people to continue to follow the action even if they have to leave their seats. Speech intelligibility is notably improved and the surrounding neighbours are delighted with the minimised noise emanating from the stadium during games."*

## OUTSTANDING FAN EXPERIENCE

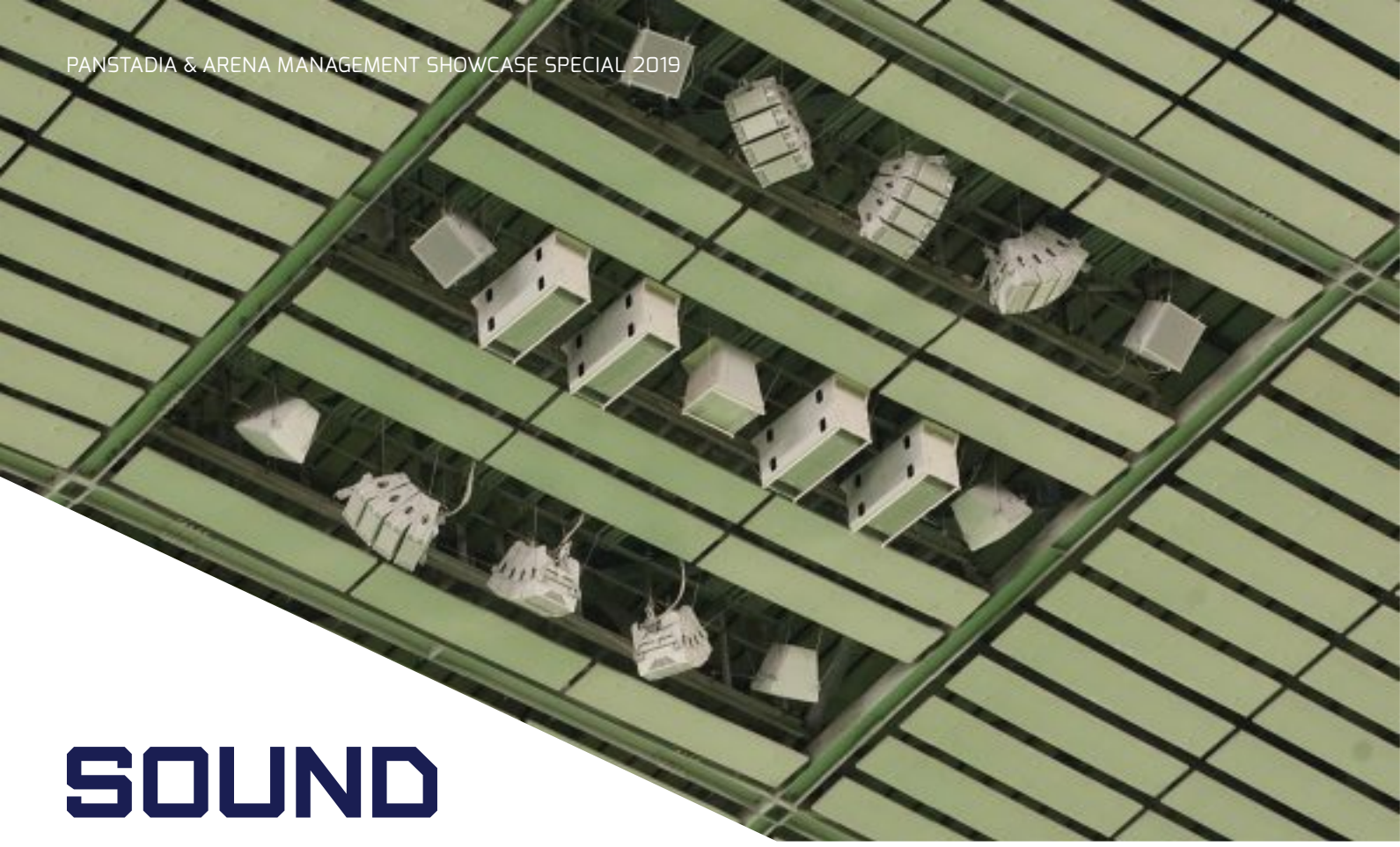
Adam Duvendeck, AEG Vice President of Operations for Dignity Health Sports Park, couldn't agree more. *"Faced with an outdated system, our search was focused on finding a product that allowed us to deliver an outstanding fan experience while focusing the audio within the stadium, and not to our neighbours,"* he says. *"3G and L-Acoustics were not only able to furnish a concert-quality system with superior intelligibility but also do so on time and on budget."* ■

## ABOUT L-ACOUSTICS

Founded in 1984 near Paris, France, L-Acoustics is the market leader in professional sound reinforcement technologies. With over 400 team members worldwide and offices in Paris, London, Los Angeles, and New York, L-Acoustics is present in over 80 countries via our network of Certified Providers. Focused on solutions that elevate the audience experience, more than 20% of L-Acoustics' talent is devoted to R&D in the areas of acoustics, applications, mechanics, electronics, signal processing, and software development.

Recognised for pioneering the line source array, L-Acoustics continues to shape the future of the professional audio industry with L-ISA Immersive Hyperreal Sound technology, a multidimensional, object-based approach to designing, mixing, and processing sound that results in extremely natural and intelligible audio and a more vibrant, and authentic connection between artists and their fans.

L-Acoustics technologies can be heard in places like the **Hollywood Bowl**, the **NFL Cardinals State Farm Stadium** or the **Philharmonie de Paris**, as well as the world's top-grossing festivals, and on tour with world-class artists such as **Adele**, **Pearl Jam**, **Lorde**, and **Depeche Mode**.



# SOUND SPOTLIGHT ON JAPAN

**The 2019 Rugby World Cup has given the opportunity to several stadia in Japan to install new sound systems with NEXO loudspeakers.**


With a relatively youthful football league and the recent legacy of stadium building from the **2002 FIFA World Cup**, Japan's large sports venues are mainly modern arenas and domes, many of which house more than one professional sport.

The international spotlight of the **Rugby World Cup 2019** presented a new opportunity to optimise technical facilities in host venues, as well as raising the bar in terms of fan expectations.

Two of the host venues for Asia's first Rugby World Cup, the **Sapporo Dome** and the **Toyota Stadium** in Toyota City, were opened in the same year, 2001.

Both of them committed to a major audio upgrade in time for the rugby tournament, approaching **Yamaha**, one of Japan's most famous technology companies, to implement new sound systems which will take them, in the case of Sapporo Dome, through next year's **Olympic Games** and far beyond.

Yamaha was also contracted to design a stadium sound system for the **Nagoya Dome**, a similarly-sized baseball venue in Japan's fourth largest city.

The three stadia make for an interesting case study. All of them have approximately the same audience capacity (45,000-55,000), and the versatility to host different sports.

All three shared the same objectives when it came to specifying their new audio installations: primarily to improve sound clarity, particularly with regard to speech intelligibility, and to exploit the latest techniques for time-aligning sound sources to achieve better distribution of sound throughout the venue.

Also critical was the need for more dynamic interaction of the audio system with other elements of the event, such as video, DJs, pitchside interviews and entertainment.

## SAPPORO DOME

Since its grand opening in time to host the 2002 World Cup, Sapporo Dome has become well known as one of Japan's five largest geodesic domes, and is also the country's only soccer stadium with an all-natural indoor grass-covered playing field.

Designed to host baseball in a diamond format, the stadium can transform and be reshaped to house a rectangular pitch.


With a maximum capacity of 53,738 people, Sapporo Dome is home to professional soccer and baseball teams.

Preparing for the Rugby World Cup 2019, Sapporo Dome commissioned **Yamaha Professional Audio** to design and install a world-class audio equipment installation, that would significantly enhance the clarity of sound in the venue, as well as increase the volume of output, so as to rise above the levels of cheering fans in the audience.

The system proposed by Yamaha Professional Audio sets a new benchmark for stadium sound in Japan, as Sapporo Dome became the first to include subwoofers in its specification.

Loudspeaker elements from the well-known French manufacturer **NEXO** have been installed in an unusual central 'bank' in the centre of the Dome.

These include the model GEO S12-ST specialist long-throw line array cabinets, developed by NEXO for stadium and arena use, as well as flagship STM Series modular line array cabinets, frequently seen on large music stages around the world.

As a result of the renovation, superior clarity and improved speech intelligibility has been achieved throughout the entire Dome, along with greatly improved sound pressure level distribution, enabling equal delivery of output to each seat in the house.

***"The addition of the NEXO RS18 high-performance 18 subwoofers has brought us a solid low end never heard before in a stadium, which gives even more impact to our sound performance,"*** said Manabu Takeda, from Yamaha.

## TOYOTA STADIUM

Many miles to the south, in the home of several of the Toyota Motor Corporation's manufacturing plants, is the Toyota Stadium in Aichi Prefecture.

With its capacity of approximately 44,400, it was chosen as one of the 12 Rugby World Cup host venues, and also undertook a major upgrade of its sound system in preparation for the event.

Although Toyota Stadium also features a world-class installation of NEXO loudspeakers and amplifiers and Yamaha electronics, the design is a world away from that of Sapporo Dome. The loudspeakers, primarily »

NEXO's high-spec GEO S12-ST line array modules, are discreetly installed amongst the steel beams of the stadium structure, ensuring ultra-low visibility.

The system is spread over a large number of locations, starting with an 11-module main array facing the pitch.

For the main stand and the back stand, there are identical arrays of 6 modules, all positioned near the edges of the large roof. Smaller 3-module arrays are directed at the front row of seats, with additional sets of arrays behind the seats, for auxiliary use.

For auxiliary use, another 48 point-source loudspeakers, positioned on the balcony edge around the perimeter, can be activated.

The system is used for music at half-time, for the stadium DJ, for venue announcements and to play sound to accompany the big video screens. It is also used to amplify the pitchside interviews, so speech clarity was an absolute priority for the designers, as well as high SPL to provide the volume needed to handle loud cheering and applause.

Japanese specialists M&H Laboratory Co, Ltd. undertook the design and sound consulting for the project, working closely with Yamaha Sound Systems (YSS) and the NEXO Engineering Support team.

The President of M&H Laboratory Co. Ltd, Yoshiteru Mimura, explained: ***"This is an environment with a large amount of reverberation and echo. That makes it difficult to ensure clarity with even volume and sound quality. Before the upgrade, we took measurements in listening tests, and there were several areas in the stands where it was difficult to hear the sound. To solve this, we not only replaced the existing speakers, but also increased the actual number of speakers, thoroughly adjusted the sound quality and corrected the distance. The main goal was to improve sound clarity."***

HOR Masahiro Hori, sound operator for the Toyota Stadium, said: ***"I can clearly feel the difference between the previous speakers and the NEXO speakers. It feels like the NEXO speakers are never strained for sound. We also thoroughly corrected the level and time alignment, but the sound has much greater clarity than before. I also think a big improvement point is how we reduced the echo through appropriate adjustments."***

President Mimura added: ***"The NEXO speakers have higher efficiency than the previous ones, so we can output louder sound than before. Something that is important in this kind of facility is durability. Speakers in this kind of facility often break due to exposure to wind and rain. With the new NEXO system, we are able to achieve theatre-class high sound quality even in severe conditions."***

## NAGOYA DOME

Home of the **Chunichi Dragons** professional baseball team, the Nagoya Dome stadium in Nagoya, Japan, is also a major concert and event venue.

This 50,000-capacity stadium has finally completed an extended programme of upgrading its sound systems, and is now enjoying the benefits of its new NEXO GEO S12-ST line array PA installation.

Yoshihiro Hattori from the Facilities Department of Nagoya Dome Co. Ltd said: "The speaker systems had been in place since the Dome opened in 1997 and there was an increasing incidence of failures as it became more difficult to get repair parts for discontinued loudspeaker models.

"In the fifth floor stands, there were some locations where we had difficulty with coverage. Making improvements to these seats was one of the goals of our upgrade."

Hattori and his team, working closely with Yamaha Sound Systems, started the loudspeaker upgrade by replacing the centre cluster, and then the stand-facing satellite clusters, which are in 18 locations facing the upper stands in each direction.

They chose NEXO's GEO S12-ST extended throw line array modules: these cabinets have been developed from the standard GEO S12 concert sound design to deliver higher SPL (volume) and the enhanced speech intelligibility required for stadium and arena applications.

***"The sensation and feeling of the sound has improved very considerably,"*** said Hattori. ***"Previously, there was the sense that sound echoed through the whole dome, but when I sat in the stands during a professional baseball game, I felt the sound had more impact than before, as if the sound was coming directly towards me. It felt close and exciting. I felt that way particularly when listening to the sound effects from the screen."***

Nagoya Dome has a remarkable 106 metre-wide screen, the longest and biggest size for a home stadium in the Central League.

***"We expanded the screen, tripling the visual impact for fans, but the sound had remained the same, so we couldn't help but feel there was something lacking. With the NEXO system, the feeling of the sound has dramatically improved, so the images and sound feel more united, and fans are experiencing images and sound with even more impact."*** ■

For the last 10 years, NEXO has been a strategic business unit of the globally dominant Yamaha Corporation of Japan, and has consolidated its place as one of the world's leading elite manufacturers of sound reinforcement equipment of the highest specification.

Each and every one of NEXO's loudspeaker cabinets is designed and manufactured in France.

The NEXO range of sound reinforcement solutions includes point-source cabinets for small and intimate spaces, to complete line array ranges for larger performance areas, ranging from 1,000 to 100,000 audience size. NEXO systems, recognised for their exceptional clarity and musicality, are carefully versioned for touring use, and for fixed installations in the built environment. NEXO's long list of stadium references include the **Stade de France** in Paris, the **Etihad Stadium** in Manchester, **Croke Park** in Dublin, **Wimbledon** and **Roland Garros** tennis clubs.

NEW

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# BATHED IN LIGHT

All images courtesy of *Todd Kaplan*

**Elation Professional LED lighting onto the ceiling grid at Little Caesars Arena in Detroit, Michigan creates a truly immersive experience.**

**Little Caesars Arena** in Detroit, Michigan, U.S. opened to praise as one of the most innovative and technologically impressive sports and entertainment complexes in the world.

Part of the credit can be taken by the venue's unique dynamic ceiling, a 43,000ft² wire grid onto which nearly 1,700 custom LED strip lights from **Elation Professional** are mounted.

Designed by architectural and engineering firm **HOK**, the $863 million, 20,000-seat arena is part of District Detroit as the major new attraction in the city's rapidly revitalising greater downtown.

Home to the **Detroit Red Wings** (hockey) and **Detroit Pistons** (basketball), the arena hosts a slew of sporting and entertainment events.

Built to maximise the live event experience, it is one of the most unique arenas in the world.

Lighting and multi-media design firm, **Illuminating Concepts (IC)**, was the lighting designer on the project, responsible for lighting the public spaces through to the theatrical lighting in the bowl.

The design goal for the Little Caesars Arena was to create an environment that allowed for everyone, wherever you are in the complex, to be part of the action.

The key phrase is "holistic integration." From the floor to the walkways to even the iPads in the suites, everything communicates and can be controlled by the LD. This was done with layers of lighting and video.

## DYNAMIC CEILING

The dynamic ceiling is just one part of the arena's large integrated lighting network in which all lighting is interconnected – indoors and out – to act as one themed environment.

IC's design for the arena uses lighting to create a space that engages, guides visitors, creates moods and disseminates advertiser information.

IC brought in production design company **Crossfade Design**, a firm with extensive theatrical lighting and video experience, to handle the theatrical lighting elements, including the dynamic ceiling.

The client wanted the arena bowl to be covered by a solid ceiling, rather than the typical black void of most arenas, but with challenges like HVAC and rigging to contend with, not to mention

cost concerns, the solution wasn't easy to find.

The answer came in the form of SkyDeck, a tension wire grid system created by **InterAmerica Stage**. The open wire covering acts as a scrim over the bowl, a modular ceiling that can be reconfigured for any event.

Although Crossfade Design tested several strip lights for the project, they quickly came to the conclusion that a custom solution was best. Only minimal features were required.

The result was a custom spin-off of Elation's six-colour SixBar 500™ (1/2 meter) and SixBar 1000™ (1 meter) LED batten lights yet with RGBW LEDs only, a lower wattage and other design changes, such as moving connector locations for data and power, that allow it to keep a clean look.

The remodified fixtures use 10W Cree RGBW multi-chip LEDs with each LED individually controllable, which makes a virtually unlimited number of designs possible.

Custom mounting brackets were added to install the fixtures beneath 372 removable SkyDeck panels (4 fixtures per panel). Each panel has four quadrants that can be lit separately and each fixture has a custom-made glare shield attached so that the lights won't shine into the audience's eyes as seating extends nearly up to the level of the ceiling.

The last element of the ceiling is 400-plus Anolis ArcDot Pixels that go into the centre of each panel and provide an extra layered look and starfield ceiling.

## IMMERSIVE EXPERIENCE

The custom Elation fixtures, dubbed the Quad Bar 500 and Quad Bar 1000, create a multi-coloured light ceiling that immerses guests in a state-of-the-art house lighting system like no other.

Using the ceiling's wire mesh as a scrim, the lighting can be used to engage the visitor, create different moods and project logos, advertising and other branding.

The dynamic ceiling allows everyone to feel a part of the fun and has also eliminated the typical arena black hole look above the audience.

Crossfade was also responsible for fixture addressing, all data and signal flow, including RDM, as well as initial programming of the lights. IC produced the design drawings and handled all of the coordination with InterAmerica Stage.

Electrical contractor **Motor City Electric** installed the fixtures. Illuminating Concepts, Crossfade Design, InterAmerica Stage, Elation Professional, and Motor City Electric all collaborated on the project.

Another technological highlight is a 660ft-long video projection wall on the second story of the Via. There, 12 Barco HDF 30W LP laser projectors are used to create one big image that wraps around more than half the building. (Another eight Barco units are positioned over the floor in the arena).

Motion video can occur from one end of the screen/building to the other. Because of the walls of windows, the marching Budweiser Clydesdales, as an example, can be seen from outside by those walking and driving by. It's a great branding and advertising opportunity.

The jewel skin of the video wall consists of triangle geometric shapes that have been 3D mapped on all sides and can ripple from side to side, up and down and make the entire surface look like individual triangles.

It uses imagery fed by three d3 Technologies 4×4 servers. The d3 servers also feed more Barco projectors permanently mounted in the rigging grid for pixel mapping the hockey ice and other projects. ■

# MILE HIGH SHINE

**The NFL's Denver Broncos reignite an already impressive stadium experience with new LED lighting.**


Two years ago, the **Denver Broncos** knew the day was approaching when new lighting would be needed to replace the existing, ageing lights at **Empower Field at Mile High**.

The stadium was widely recognised as one of the best in the **National Football League**, and the organisation wanted to not just retain that reputation, but improve upon it.

It was clear to the Broncos' stadium management team that any new lighting system would need to feature LED light source technology. The benefits it could bring in terms of light quality, television broadcasts, long-term reliability, and energy efficiency were undeniable.

But it was still relatively early in the new age of LED stadium lighting. Instead of rushing, the organisation conducted extensive research into various manufacturers and monitored the evolution of LED to ensure the technology was ready, that it would be cost effective, and reliable.

Once the confidence was there and the decision was made to move ahead on the project, it came down to choosing a partner out of the many manufacturers being considered.

As part of their research, project leaders with the Broncos inquired with other NFL clubs that had used different lighting manufacturers at their stadiums. Ultimately, the organisation chose **Musco** and its Total Light Control—TLC for LED® technology.

***"For us the criteria really boiled down to the reliability of the system, the reliability of the partner that we chose, as well as meeting all of the NFL standards,"*** said Zach Myhra, the stadium's Director of Facilities, Construction, and Planning. ***"We really appreciated not only the system that Musco provided, but also the support that goes along with the system so that over the 25-year lifetime of these lights we know we have a trusted partner that'll be with us for the long term."***

## LIGHT DONE RIGHT

As one of the most successful and storied teams in the NFL, the Broncos organisation has always prided itself on delivering the best possible stadium experience to players, spectators and fans watching around the world. Lighting is a critical component to achieving that goal, said Jay Roberts, General Manager of Empower Field at Mile High.

***"Lighting is important for players because they need to be able to perform at their peak. We need to make sure we're presenting a field and a lighting system that will let them do***

***their best,"*** Roberts said. ***"From a fan's standpoint it's really important to have a great lighting system so that there are no shadows, they can follow the action really well and enjoy the game as it's meant to be viewed."***

***"Lighting for TV is obviously very important,"*** Roberts continued. ***"The NFL has certain guidelines that we have to follow, certain specifications that we need to reach for every broadcast, and I'm really excited about the fact that not only did we reach those specifications with our new lighting system but we actually exceeded those specifications and are one of, if not the best lighting system in the NFL."***

Equally important to achieving and exceeding necessary broadcast requirements, Roberts added, is simply being able to see the difference the new lighting has made throughout the stadium. With patented visoring and optics designed around the LEDs, the Musco system offers greater light control and overall uniformity while reducing glare from affecting players and spectators.

And it's making Empower Field at Mile High shine like never before.

***"As a general fan of sports and someone who watches sports on TV, I've watched a lot of broadcasts where the lighting wasn't very good, where there are shadows and the building looks dirty and dingy,"*** Roberts said. ***"With our lighting system, the colours are going to pop and the lighting is going to be great. Our building on TV will automatically look better, and that's exciting."***

## THE MUSCO DIFFERENCE

While there were a number of important benefits the Broncos were able to realise by partnering with Musco, a key difference was the company's distinctive system approach to sports lighting, as opposed to other manufacturers that simply produce LED fixtures.

This complete system approach allows for much greater customisation capabilities, since the lighting, structural, and electrical components are all engineered and built to work together by Musco.

For Empower Field at Mile High, one of the more significant elements of the system's custom design was locating the LED drivers remotely in the stadium's scoreboards on the upper deck.

**"The total system approach that included remote drivers was a big deal to us,"** said Chris Hoag, the stadium's Electrical Supervisor. ***"Other manufacturers we looked at have integrated drivers in the fixtures, and just from an access perspective, we wanted something we could easily work on and maintain. So remoting them to the scoreboards has been great from a service perspective. You don't see them, they're concealed, they're protected from the weather, and I have six extra drivers up there ready to go."***

***"I think some of the other manufacturers were offering full fixture replacements that had an integrated driver,"*** Hoag explained, referring to when the lights would need to be serviced. ***"But that requires getting harnessed up, climbing out on the light rack and replacing parts that may be not a whole fixture problem but just a driver problem or a chip problem. So this gave us flexibility in maintenance and service."***

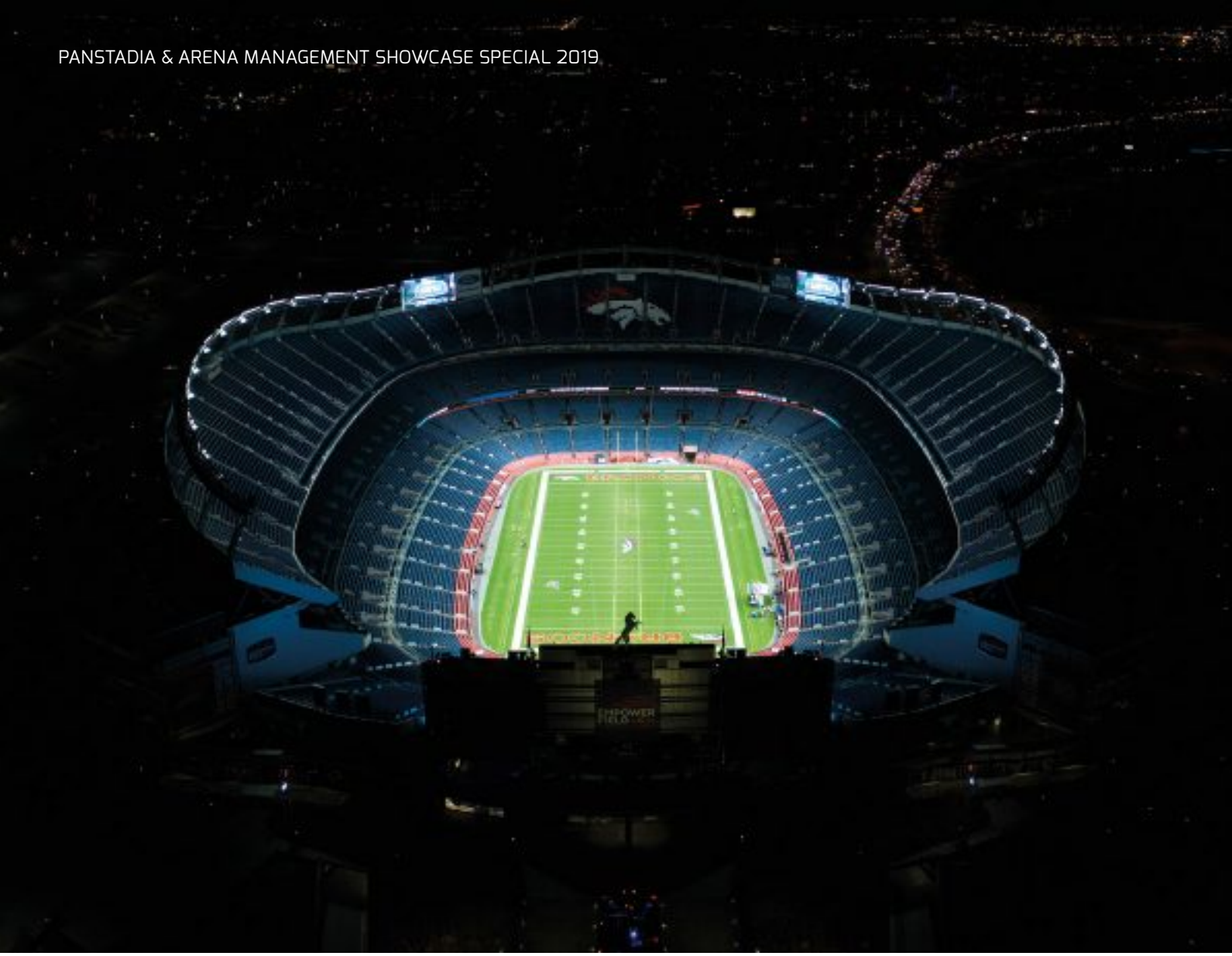
Additionally, the complete system solution resulted in the Broncos' stadium management team having one point of contact in Musco for any and all aspects of the new lighting, as opposed to having to go through different vendors depending on if there was an issue with the lighting, electrical, or structural components.

***"So being able to have one trusted partner to solve any issues for us, whether it's during installation or in the future maintenance of the system, was a great benefit,"*** Myhra said.

## PEACE OF MIND

As impressive as the Broncos' new lighting has been—drawing rave reviews for light quality, glare reduction, broadcast quality, and Musco's proprietary special effects system with light-to-sound synchronisation for innovative new light shows—the technology itself is only half the equation.

The other half is trust. »



With the previous HID lighting approaching 20 years of age, the organisation was growing increasingly concerned with reliability and worried that failures could occur and impact live events with nowhere to turn. The Broncos wanted not just a new lighting system they could rely on, but a partner they could trust.

***"The warranty was important,"*** Myhra said. ***"But also having Musco's support 24 hours a day. We appreciated that Musco is not only great on the installation, but they're here for the long term to support us as a true partner."***

The new lighting at Empower Field at Mile High is proactively monitored 24/7 through Musco's Control-Link® service and call-centre team. And it's backed by a long-term warranty that covers every part and all labour involved with servicing the system, eliminating maintenance costs for the Broncos well into the future.

***"Warranty was a key factor, and Musco's is above and beyond any of the other manufacturers, so that was big for us,"*** Hoag said.

***"We were excited about being able to install a system and not have to worry about it. My electricians are excited about not having to re-lamp. Going up into that light rack isn't all that exciting for most people,"*** Roberts said. ***"From a budget standpoint we're excited about not having to worry about a line item for replacing bulbs. We don't have to do anything with this system for 20 years, which is awesome."***

As important as the long-term warranty was in the decision-making process for the Broncos, knowing they have a cutting-edge LED system that is going to perform reliably well into the future is just as meaningful when it comes to their peace of mind, Roberts said.

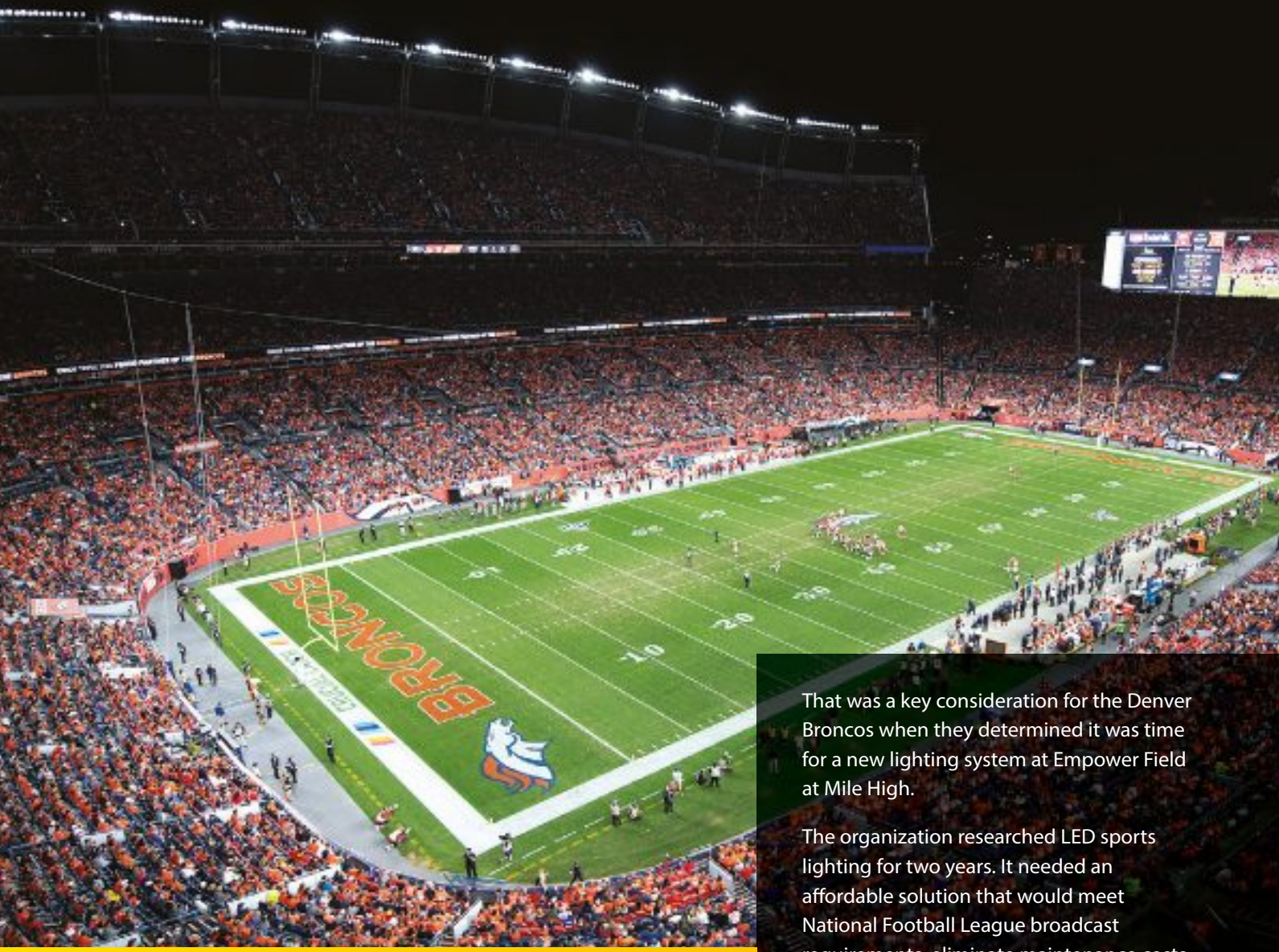
***"These lights are going to be good, they're not going to go out, we don't have to re-lamp them all the time, we don't have to worry about that labour, we don't have to worry about a couple going out right before a game and worrying about whether we can get up there and replace it,"*** Roberts said. ***"And the fact that Musco is a company that has been around a long time, I've worked with them in other venues before and had great experiences with reliability."***

## GLOBAL LEADER

Empower Field at Mile High adds yet another brightly lit feather to Musco's cap with regards to iconic stadiums and arenas around the world that have opted for its LED system.

***"Anyone who follows the NFL knows that the Denver Broncos and their stadium are as good as it gets,"*** said Jeff Rogers, President of Musco World. ***"They really did their homework, studied the technology extensively, and brought the highest expectations in order to deliver for their players and fans. We take a lot of pride in being their partner and helping them do just that."*** ■

# How do you make one of America's best stadiums even better?




That was a key consideration for the Denver Broncos when they determined it was time for a new lighting system at Empower Field at Mile High.

The organization researched LED sports lighting for two years. It needed an affordable solution that would meet National Football League broadcast requirements, eliminate maintenance costs and concerns, and include special effects technology that would enhance an already amazing stadium experience. Musco and its Total Light Control—TLC for LED® delivered.

*"Working with Musco has been great. On time, on budget, met all the specs and actually exceeded the specs. There's not much more we could ask. We're really excited about having a long-term partner in Musco, somebody we know we can trust and that's always going to be there."*

– Jay Roberts
**General Manager, Empower Field at Mile High**

**Get the whole story about the Denver Broncos project at www.mile-high-lighting.com**

musco Lighting

We Make It Happen.

# GAME CHANGING LIGHT

**_PS&AM_ caught up with soft-LED's CTO Mario Vukovic to hear about the company's giant strides in LED lighting.**

**Can you please give our readers an overview of your company and what your motivation was for developing a new LED-floodlight for multi-purpose sports lighting?**

We came to Lighting Technology via a little detour. As a microelectronic development business, soft-LED received an order from one of the world's leading opera houses, the Vienna State Opera, to retrofit 3,500 traditional incandescent bulbs to LED. The challenge was to retain a perfect dimming capability.

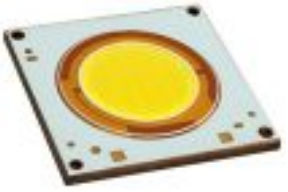
All the currently available systems on the market showed poor performance in dimming 3,500 bulbs smoothly and simultaneously. A completely new dimming technology, DC-Dimming, was developed by the engineers at soft-LED. It is now internationally recognised in the industry.

The New Year's Concert celebrated at the world-renowned "Vienna Musikverein" now showcases this technology in action and it is broadcast in 120 countries, with our DC-Dimming technology in action.

**That sounds interesting, but it isn't related to lighting sports venues?**

You're right. I took a shine to the lighting business. It seemed that there are a lot of challenging tasks for an innovative developing company such as us. I soon noticed that LED was clearly not being used enough in sports lighting. Back in 2015 we had the idea of starting this business by developing our own technology. I was eager to learn more about this business and therefore I participated in an international congress about LED opportunities in sports lighting. Then I had a crucial experience. The main lecture topics were about the technical insufficiencies which prevent LED succeeding in sports lighting. I got a target specification delivered! Now I understood what had been going wrong and where other producers had been slipping up.

*SMART ARENA TERA 2.0 SOLO FLOODLIGHT*



*soft-LED 1000W LED pointlight-source (CoB)*

**Could you go into more detail?**

In addition to high and uneconomical prices, there were two more negative points. First, light spillage - far too much light ends up where it should not. Second, lack of flexibility in the available light distribution options made it impossible to replace conventional metal halide lamps with LED fixtures. The cause was quickly discovered by our R&D department: most other manufacturers equip their optics with cheap plastic lenses resulting in not only poor efficiency but also creating a lot of light spillage and glare. Furthermore, plastic lenses are not able to focus light narrowly, which is another big disadvantage. As you might know, traditional metal halide lamps commonly use reflectors for their optical systems, which is a much better solution considering the already mentioned problems.

**Why do the producers not use reflectors for LED too?**

Well, we wondered too! Soon we learned that there are major obstacles in construction of the lamp housing to overcome. Nevertheless, it was a pleasure for us to undertake this this challenge. The word 'impossible' has never been in the soft-LED dictionary. The result was a combination of LED point light sources (CoB's) and reflectors embedded in a sophisticated casing with a passive cooling concept. On top of all this, we also developed a system for mounting different reflectors on the luminary base. This means you can easily change the optical system as required.

**Have you already successfully installed the system in an application where all the described benefits work together and can you tell us more about that project?**

One particularly challenging project was the lighting solution for the Beach Volleyball Major Series. The worldwide tour of this beach volleyball mega-event required a flexible floodlight. It was necessary to ensure a high vertical illumination level for optimal TV broadcasting – ideal for our SOLO product from the TERA series! This floodlight, equipped with our 10 degree narrow beam optic, works perfectly for this project. Our light calculation showed clear advantages compared to our competitors. The camera and broadcast teams were also enthusiastic about the performance.


*Perfect Light for Beachvolleyball Major Series Hamburg 2019*

**What common performance issues can a sports venue potentially experience with LED lighting such as excessive light spill and glare if a low quality, cheap system is used?**

That`s exactly what happened at the venue for the resident baseball team of my hometown. Attracted by the low prices, they resorted to a cheap Chinese product. Firstly, they claimed it offered good lumen output. But the main problem was the high level of light radiation emissions. Only a fraction of the radiated light shone onto the field. The light measurement showed that the luminance levels were far too low. Therefore, they were forced to install additional lights. Finally, the energy consumption was higher than a conventional system. In addition, the neighbours complained about a strong glare from the escaping light. All in all, a catastrophe! Not even one advantage of LED technology was used. In the end, some fixtures failed after just a few months.

**These days many sports venues are reaching the end of their original lifecycles and need to upgrade their lighting solutions. Are you also able to work with the retrofitting of existing sports venues in addition to new build projects?**

Yes. Especially for many football pitches in our vicinity, which have converted existing floodlights to LED. We shot an informative short film about one of these projects. You can see the video at www.psam.uk.com/soft-led.

**Are you currently working on any exciting product innovations or projects which our readers can learn more about in the near future?**

After the great success of our TERA series, which is now in the second generation, TERA 2.0, our development team is concentrating on the development of the PETA series. The power and operational area of the PETA series will be on a whole different scale compared to the TERA series. The CoB light source is already fully developed and with 1,000 watts it offers twice the power of the TERA series. A light output area of just 32mm, creating 1,000 watts is a world record. There is no comparable CoB worldwide.

The basic technical concept of our SMART ARENA product portfolio, based on LED point light sources combined with proven reflector technology, makes it possible to clearly push the boundaries of technical capabilities. The narrowest beam of the new PETA series floodlight family has 6 degrees beam angle! No current LED product on the market is able to meet such narrow beam angles. This opens up completely new application possibilities: genuine retrofit solutions for existing 4-pole systems in football stadiums of the 1,000 lux class will be technically possible for the first time – you see, we fully meet our slogan “Game changing lighting”! ■

# RELIABLE, SUSTAINABLE AND INNOVATIVE STADIUM FIELDS

**New technologies and an open mind make it possible to deliver sustainable and quality stadium fields. For this to be achieved, it is important to consider taking the full package.**

The final months of 2019 have made it clear that 2020 will be a watershed moment for venue owners and municipalities around the globe. "It has become evident that society no longer tolerates the abuse of nature and natural resources in a quest for profit," says Arnoud Fiolet, the managing partner of **Recreational Systems International (RSI)**.

For owners of sports venues, this means that people are no longer satisfied by just being offered bread and games: they also come with a sustainability scorecard.

It is an addition that no host should actually fear. ***"There is much more to gain from an all-inclusive eco-friendly approach towards building, maintaining and removing sports surfaces than ruthlessly pursuing the financial bottom line,"*** Fiolet continues. ***"All it takes is for venue owners to have an open mind and to select a partner who is willing to deal with the entire process decisively. This partner should have a portfolio that covers everything from design and installation to equipment for regular maintenance."***

## GROUPED INTO PACKAGES

RSI has packaged its technologies and services into concepts, Fiolet says. ***"We have concepts for indoor facilities, multipurpose courts and stadiums."*** RSI solutions can truly be called unique and innovative. ***"The hybrid system we have developed has every right to be called a third-generation hybrid system. It consists of a partly degradable carpet that holds artificial turf fibres that will support the system, that is rolled out on top of a mineral wool layer.***

***"This mineral wool layer delivers both impact attenuation and draining for the system. Using mineral wool means we no longer have to replace the soil to create a subbase."***

The mineral wool can hold up to 75 litres per square meter. Once saturated, the excess water filters down into the system or is diverted to the side of the field. "That water is very clear as it has also been filtered by the mineral wool."

As the installation of the system only takes a matter of days, venues that opt for this solution could technically be operating within a week. ***"The best solution would be for the grass to grow naturally in the stadium but when time is limited, reinforced rolls or slabs could be used to finish off the top layer."***

## ALWAYS PROTECTED

The RSI portfolio also includes various protective systems. ***"We have special covers that can be used to allow the grass to recover after an event or to provide insulation against the elements. There are also rain covers that protect the field against excessive rain and sleet."***

Using the right cover in a venue with field heating means that a 50% energy saving can be achieved. ***"The thermal properties of the cover guarantee maximum insulation, which will be useful at a time where grass seeds are germinating."***

For the hosting of events, RSI can supply special protective panels. ***"They come in different grades and are able to either hold vehicles and delivering trucks, crowds, tents or stages. All panels are translucent and have holes to ensure water and oxygen can make it to the pitch."*** The panels are easy to assemble and disassemble, meaning that it doesn't require special tools or skills to prepare a venue.

## SMART TECHNOLOGY

Maintenance of the field can be done by means of smart technology. ***"Our unique LED grass grow system delivers the required dose and colour of light with pinpoint accuracy,"*** Fiolet explains.

Convinced of the superiority of the technology, RSI became a shareholder in their partner firm **Rhenac GreenTec** in October this year. ***"Rhenac studied the needs and growth of grass for many years before they moved on to developing a luminaire that could accelerate the process."*** The result was an LED unit that can stimulate the development of the rootzone as well as that of grass blades. ***"Each requires a different colour light and intensity of light. As LED technology allows for this, Rhenac GreenTec wrote a script that will fully service the grass surface."***

LED technology also has the advantage that it consumes much less energy compared to conventional sodium vapour luminaires, and also produces less heat.

***"Thanks to the LED technology it will be less likely that the grass will burn or dry***

*out when the technology is left unattended."*

RSI offers the LED grass grow technology in three different systems. ***"We have units that were specifically developed for improving small areas like the penalty box but there is also a full-size system. Lastly, we have a fully automated system that can be completely integrated into the venue design or can be retrofitted. All it takes is a small area behind the goal posts where a special storage unit is added to contain the unit when it is not needed."***

If need be, the fully automated system can also be fitted with irrigation and liquid fertiliser technology.

*The UV-C grass care solution is gaining momentum since use of pesticides will soon be prohibited*

## LED GRASS CARE

Following the success of the LED grass grow technology, Rhenac GreenTec also developed a unit that uses UV-C light to fight infestations by algae, fungi and diseases.

***"Rhenac GreenTec soon realized that light not only stimulates the growth of plants and other organisms, but that it can also frustrate their development,"*** said Fiolet.

The RSI UV-C unit has an operational width of 6 meters and is most effective when driven at a low speed.

***"It takes only 20 to 30 minutes to finish a full-size football field. Feedback from our clients shows that a field that is treated two to three times a week will experience 98% reduction in the presence of algae, fungi and diseases within days."***

Once that has been achieved, only preventative maintenance is required, without any pesticides or disruptive tools or equipment.

The LED technology has the advantage that it can be used regardless of the weather or certain venue conditions. ***"The operator won't require a special permit for operating the unit. Also, as it doesn't require fungicides or herbicides, the field can be treated no matter how strong the wind is and even at a time where the venue is in use."***

There will be no side effects experienced by the operator, players or fans sometimes associated with the use of chemicals.

## STIMULATES MULTI-USE

Last summer **Tottenham Hotspur** essentially installed two pitches in this same space – a reinforced grass pitch for its football team, as well as an artificial surface underneath for hosting American Football games.

Similarly, a temporary artificial turf hockey field was installed at Twickenham Stoop on top of its natural grass surface, which enabled them to host two hockey games. RSI has the ability to do the same for any other stadium, and at a fraction of the cost.

***"One of the advantages of RSI's extensive portfolio is that we are able to encourage multi-use of the venue,"*** Fiolet points out. ***"Years ago we were involved in a project at LA Galaxy where base panel technology was used to facilitate a swap between artificial turf and natural turf for just one game. Our Base Panel shock pad is a modular system that can quickly be assembled. Once it has been installed, all it takes is to roll out the artificial grass surface on top of it. The field was cleared after the event. By the end of the week, the stadium was available again to host its next event."***

RSI's portfolio means that this is something Fiolet is confident of delivering for any client. "We have the technology and expertise to quickly install and break down a temporary surface on top of a natural grass field. All that is left is a few sessions with our LED grass grow units in the days thereafter to assist the grass in recuperating. That's it."

## NOT ROCKET SCIENCE

Installing or operating any RSI technology is not rocket science. ***"It doesn't require special tools or equipment, nor does it take skilled employees. A team of volunteers would be enough to establish a surface,"*** Fiolet assures. If need be, he will also deliver a competent maintenance team that he will continue training for the duration of the contract. ***"I have no problem with guaranteeing the quality and performance of the field for a period of five years minimum. We have equipment that has already proven its quality and functionality in many different places. Providing it's used and operated in accordance with the agreement, nothing will stop us from delivering a field that continuously meets the highest standards."***

All technologies in the RSI portfolio have proven to be reliable, sustainable and innovative. ***"They each will deliver as promised. Once a venue owner invites us to the table at an early stage to discuss what is wanted and allows us to make it happen, any investment will become truly effective."*** ■

RECREATIONAL SYSTEMS INTERNATIONAL

# STADIUM CONCEPTS

- Hybrid turf
- Artificial turf
- Mobile solutions
- Heating solutions
- Drainage solutions
- Turf master analyser
- LED Grass grow
- UV-C Grass care
- Blower

**Santiago del Estero**
LED Grass Grow lighting
& Blowers

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RECREATIONAL SYSTEMS INTERNATIONAL

## EXCELS IN STADIUM INFRASTRUCTURE

# FIVE TIPS TO STREAMLINE YOUR STADIUM EVENTS TRANSITIONS

**Signature Systems outlines the top priorities when it comes to protecting your playing surface.**

**Benefits of Signature Systems' OmniDeck™**

- Superior strength and protection
- Fast, omnidirectional installation
- Safe and easy to carry
- Efficient to transport and store
- Durable for maximum ROI

## 1. ABOVE ALL, PROTECT YOUR TURF OR PLAYING SURFACE

Sporting events are priority No. 1 for your stadium, and the playing surface or turf — whether it's natural, hybrid or synthetic — is an investment that demands protection for events that happen in between games that draw comparable crowds to professional sports.

The strength and quality of your surface protection is the foundation for everything that happens at the stadium, so the product you choose must be rated for the necessary equipment with no surprises impacting a tight turnaround schedule for any high-profile event.


**Raymond James Stadium** in Tampa, Florida, is home to the **NFL's Tampa Bay Buccaneers** as well as the **NCAA's South Florida Bulls** football team. It has hosted the **Super Bowl** and is home to the annual college football **Outback Bowl**.

The stadium has hosted a variety of events, including Supercross motorcycle races, charity walks and massive concerts such as **U2**, **Taylor Swift**, **Ed Sheeran** and the Sunset Music Festival.

The stadium uses **Signature Systems'** ArmorDeck® turf protection system to protect its natural grass field for events and also for maintenance, such as installing or replacing the turf.

***"In off-season, hosting other events is not a big deal but most of our pressure is in August through January,"*** Wayne Ward, grounds manager at Raymond James, said last year.

***"Our toolbox limited us previously to hosting no events during the football season. Now, with the advances in floor protection, I'm having concerts between two football games – that's unheard of." He noted the example of hosting a Taylor Swift concert with a football game just 10 days later.***

***"Besides the ability to have events during the [football] season, the flooring is my biggest tool in the bag" for overall field management, Ward said. "I use it for more than just protection during an event. I use it to limit traffic while working. I use it whenever there's a risk to my field."***

## 2. HOLD THE LINE ON LABOUR AND TRAINING COSTS

Pay growth has reached an 11-year high in Britain, according to theguardian.com, despite challenges ahead of Brexit and some growing concern about signs of a global economic slowdown.

According to the article, wages have increased faster than inflation for the past year and a half and unemployment has fallen to the lowest level since the mid-1970s to 3.8%.

And in a strong U.S. economy with low unemployment rates, demand for workers — and by extension labour costs — are increasing for hourly employees such as event installers, according to CBSnews.com.

There are now more open jobs than people seeking work in nearly every industry, including leisure and hospitality; manufacturing; and construction, according to the article.

As stadium event budgets hold the line or get tighter, owning durable and reusable event products that are long-lasting, intuitive to install without training and fast to assemble are vital to streamlining labour costs.

***"Companies looking to attract enough blue-collar workers will have to continue increasing wages and, as a result, possibly experience diminished profits,"*** wrote Gad Levanon, chief economist for North America at the Conference Board, a global economic research organisation that has studied the recent U.S. labour shortage.

Those pressures play into stadium facilities managers' purchasing decisions, where innovative product design and efficiencies continue to grow in importance along with event demands.

## 3. AVOID DELAYS WITH FAST AND EASY EVENT TRANSITIONS

Although sporting events are the main draw at stadiums, stadium owners and managers must also balance revenue opportunities for overall stadium financial growth.

Quick transitions can cause a bit more drama than planners would like, however, if they involve massive stages or labour-intensive breakdowns in order to return the stadium to its original playing condition.

**Arthur Ashe Stadium** in New York, home of the **U.S. Open**, in late July hosted the inaugural **Fortnite World Cup**, including a giant two-storey stage and extensive video and electronics equipment for three days of sold-out video game competitions.

Just a few weeks later it would transition to its biggest and highest-profile event, the 139th edition of the **U.S. Open Tennis Championships**.

The stadium installed Signature Systems' OmniDeck™ panel protection system for the event to protect the playing surface to efficiently make the transition, also allowing for the heavy equipment necessary to dismantle the esports setup quickly and with strategic labour investment.

Having a floor that protected the iconic stadium's biggest asset — its hard-surface tennis court —was vital to facility managers and planners.

***"Like most venues that are doing events all the time, the turnaround time for assembly and disassembly is really critical from a timing and also a cost standpoint,"*** an operations planner told Signature Systems. ***"If it's a labour-intensive process, then obviously your costs go up. And you're also jeopardising the next event on the back end if they're trying to move in and the outgoing crew is delayed."***

## 4. BE READY FOR LAST-MINUTE CHANGES OR ACCESS CHALLENGES

Often, after a stadium turf protection system is installed, organisers need to remove a panel to access an electrical connection, adjust wiring during pre-event checks, add support posts or to make other adjustments under the protective surface.

In the past with a traditional flange or hook and loop panel system, that flexibility was not possible or would require removal of several rows of panels to get to the access location.

With OmniDeck™, Signature's innovative design allows for a single panel to be removed from a large footprint with ease in minutes and can be easily re-secured.

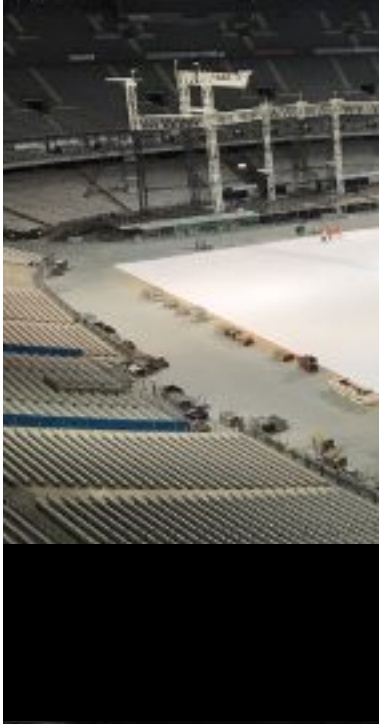
## 5. KEEP SAFETY IN MIND WHEN INSTALLING, UNINSTALLING AND STORING

Size, weight and safety features of surface protection systems are also key to overall efficiency and help operations teams address liability risks and keep labourers and event patrons safe.

Also with OmniDeck™, handholds are incorporated on the underside of panels to make them easier and safer for two people to carry. A dimpled undersurface helps panels nest solidly on a pallet for secure transportation and storage.

ADA compliant ramps are available with the system to improve public access and ease event setup. ■

# CASE STUDY – TO RENT OR TO BUY – THAT IS THE QUESTION



**Stade de France turned to Terraplas to protect their running track and later, their prestigious playing surface.**

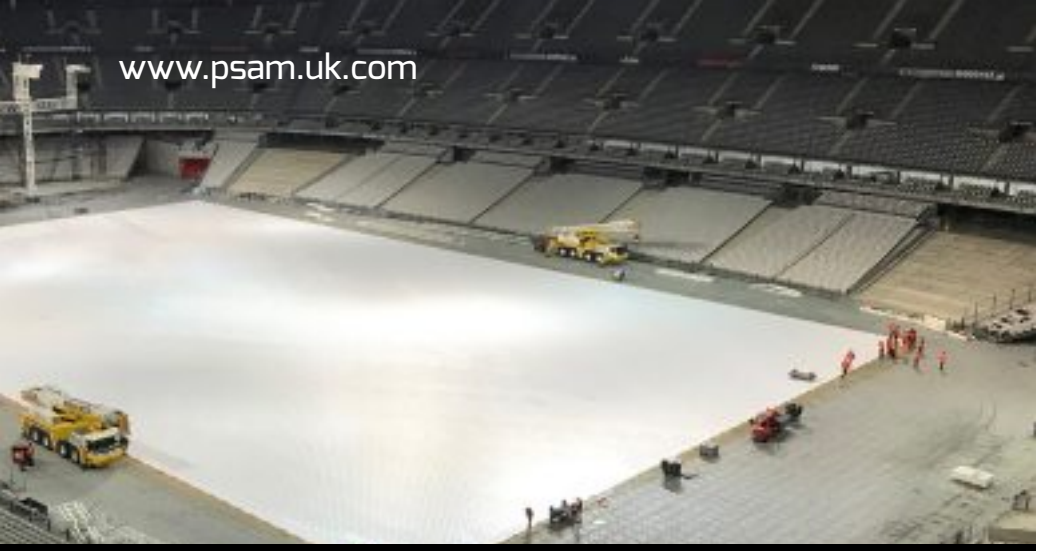
The iconic **Stade de France** is renowned for its regular calendar of sports and concert events.

The National Stadium of France attracts worldwide TV coverage of numerous sports events throughout the year, including such prestige events as **Six Nations** rugby, French national football team matches and football and rugby championship finals, so the quality of their playing surface is obviously absolutely vital.

In 2016 Stade de France management determined that to make the best use of the stadium, their **Mondo** track needed to be fully protected during the year, lifting only when needed for Athletics.

This would allow constant use of the track area, including additional seating. Whatever product they chose needed to interlock, be easy to fit and lift and withstand the forces of constant heavy traffic. After a period of evaluation, **Terraplas'** terratrak plus was selected and supplied in a grey colour.

*c. 8,000m² of grey terratrak plus covering the running track and 'Ds' with grow lights enhancing conditions for grass growth on the pitch*



*terratrak plus (driveable) around the running track and in the 'Ds in a grey colour. Pitch protected by 3,500m² of terratrak plus and 9,000m² of terraflor pedestrian turf protection. Envhyro manages the fitting of the Athletic Track Cover & Turf Protection systems at Stade de France.*
Image credit: *Simon Demereau/Envhyro*

Turf protection was another aspect that needed very careful consideration. Having rented a number of different products over the years, the decision was made to specify a product that met or exceeded their needs.

Move forward and after three years of successful rentals and with an increasingly busy calendar of events, Stade de France, like the majority of large multi-use stadiums, decided to buy its own system, which would ensure that the product they wanted would be available as and when required.

Establishing which system to purchase is the next 'hurdle' in any stadium's investment plan, requiring discussions between not only the stadium owners and operators, but also the grounds team and financial management.

Only after the exacting requirements of the venue are established from all departments can an order be placed for the appropriate quantity of specific products such as Terraplas' terratrak plus driveable stadium access, and terraflor pedestrian turf protection.

When the agenda of multi-use stadiums requires concerts on consecutive weekends and possibly a football match in between, it is necessary for the entire pitch to be protected with a system that will ensure the grass quality is maintained, whilst allowing a very tight turnaround.

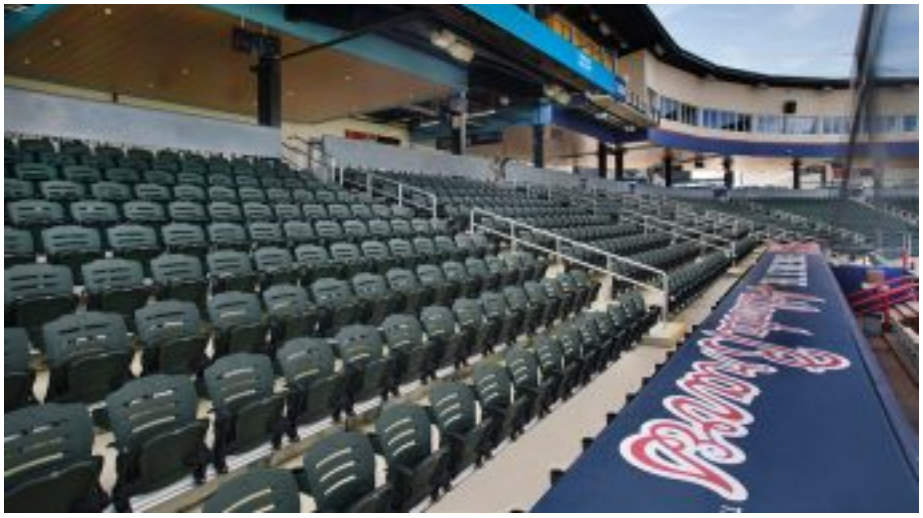
The combination of a quality Terraplas turf protection system together with a heavy-duty option allows very fast conversion from soccer/rugby pitch to concert venue and back again, during the playing season – as well as out-of-season activities where the cover can be in place for longer periods of time.

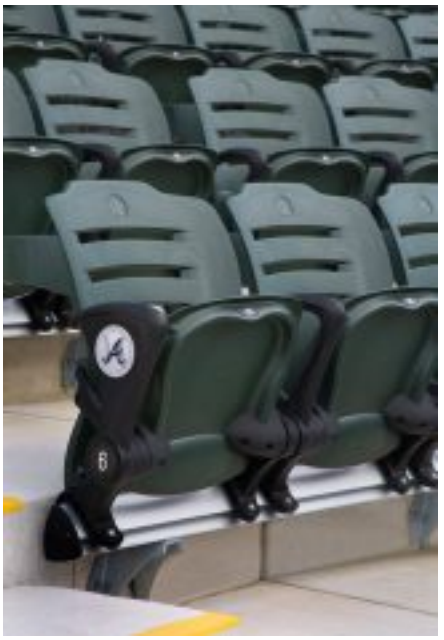
The unbeatable experience of Terraplas, with their strategic product combinations offer exceptional continuous performance in all aspects, with a proven product lifespan that cannot be matched anywhere in the world. ■

*Ready for "Gims", the first French-speaking urban artist to fill Stade de France*
Image credit: *JB Goxe*

# BRAVE NEW WORLD

**Atlanta Braves, one of the oldest teams in baseball, to embark on milestone season from a spectacular new spring headquarters.**





**Major League Baseball** powerhouse the **Atlanta Braves** are set to launch their 150th season at a sprawling new stadium complex that combines heritage ballpark values with the 21st-century needs of a first-class sporting organisation.

Primed for a tilt at the **World Series** after going close in 2019 — Atlanta topped the **National League East** division ahead of eventual World Series champs **Washington Nationals** before faltering in the Division Series — the Braves open their milestone 2020 campaign with spring training at the $125 million, 80-acre **CoolToday Park** complex in North Port, Florida.

The club's stunning new spring headquarters will host its first full Braves pre-season schedule next year, including games at a showpiece ballpark that strengthens and extends the club's links to internationally renowned seating specialists **Camatic Seating**.

The Braves commissioned the Australian company to fit the stadium with just over 6,200 Quantum 850 SB seats developed specifically for multi-use baseball facilities.

As well as accommodating modern spectator comfort with robust, ergonomic, 20-to-22 inch seats, the slat-back design pays nostalgic tribute to traditional seating in early 20th century ballparks.

The Braves opted for Camatic's pioneering beam-mounted system, which maximises venue capacity and layout flexibility, prioritises obstacle-free spectator movement, safety and comfort and facilitates maintenance and stadium cleaning.

***"The innovation that beam-mounted seating has brought to the market includes ease of install, ease of maintenance and the ability to reconfigure over the life of the facility,"*** said Camatic Seating Senior Vice President, Ken Griffiths.

***"The installation schedule is often the greatest challenge on most sites. This was no different, but the Quantum 850 Slat Back beam-mounted chair met the challenge. This chair can be installed at over twice the rate of traditional stanchion-mounted chairs. This allows for a later start date to install and more time for other trades to complete their work ahead of the seating installation."***

## STRONG RELATIONSHIP

CoolToday Park is the latest project in a relationship that stretches back to the early 1990s when Melbourne-based Camatic won the contract to supply and install seating for a new stadium for the **Atlanta Olympics** in 1996.

After the Games the stadium was converted to **Turner Field**, **MLB** home of the Braves until 2017.

Camatic has installed seating at dozens of iconic venues, including **Wimbledon**, the **Melbourne Cricket Ground** and **Ascot** racecourse, as well as performing arts venues, auditoria and places of worship around the world.

A visit to another Atlanta landmark helped seal the CoolToday Park deal for Camatic.

***"Prior to the Braves selecting the Quantum Slat Back chair, Camatic hosted a visit with the Braves to our latest major installation, the new Mercedes Benz Stadium, home of the Atlanta Falcons NFL team and Atlanta United Major League Soccer team. This installation further supports Camatic's credibility in the North American market place."***

As well as the showpiece CoolToday Park stadium, the complex includes seven fields, 11 batting cages and 63 pitching mounds.

"The Bravos" tested their new base in March with a one-off spring game against Tampa Bay Rays and immediately pronounced it a winner.

***"Spectacular. Unbelievable. Even better than I thought,"*** said manager Brian Snitker.

Star first baseman Freddie Freeman was deeply impressed.

***"When you first drive in, it's kind of the 'wow' factor,"*** he said. ***"It's a beautiful ballpark in the short amount of time they've done it too. We're pretty blessed to have a facility like this."*** ■

# Want a slice of the fastest growing global live-entertainment sector?

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# SEATING SOLUTIONS

***PS&AM* caught up with Daplast General Manager, Rafael Pérez-Esparza, to discuss the latest developments in sports seating.**

**More and more sports venues seek to differentiate themselves by creating their own identity. How important can seating be?**

The seating in sports facilities is an increasingly demanding sector in design and functionalities, and there is a wide range of seating solutions available. Seats are nowadays far more than furniture providing comfort to spectators, or security elements that define and organise a venue capacity. They differentiate areas, spread messages and communicate the club's identity.

Besides the distribution of colour seats, either random or creating spectacular visuals, our customers are looking for a complete line of dimensions, finishes and accessories.

For example, our Avatar Seat Family proposes 4 tip-up models: Basic for main areas, Compact for narrow bleachers, and the upholstered Premium and Suite versions for preference areas. Numbering, armrests, logo and coasters are also available to improve the fan experience.

The Avatar is true to our seats' general characteristics (security, ergonomic and quality requirements) and all the versions follow the same design line, in order to harmoniously combine different areas in a same venue. It was actually recognised with the Reddot award in 2016.

Our R&D department is constantly working on new product developments (new production techniques and materials) so as to cover all the market trends we identify. Our latest model to launch made with wood, the ultimate noble material, has been specifically developed for the Narbonne Arena in France (opening scheduled next December). It has already been requested for other European projects, and the trend is likely to become stronger.

**We have seen many big stadium projects worldwide in recent years. What are the corresponding challenges for seat providers such as Daplast?**

Over 30 years, Daplast has installed more than 3 million seats worldwide, in 2,000 venues of all kinds and sizes. We have learned that for big projects, we needed to go beyond the seat production itself, and I believe the business decisions we have made in the last decades took us there.

Today we integrate and develop all the phases of each seating project with our own resources in 30,000m2: design and development, engineering, plastic and metal manufacture, logistics and installation. That specialisation allows us to meet and resolve those project's needs.

Last September we completed the installation of 40,000 Avatar seats in the Anoeta Stadium, recently named the Reale Arena. This is the perfect example of the flexibility our company can display - obviously with products as the Avatar family, but also in processes and human teamwork. We had to overcome different challenges: from the adaptation (and creation) of seat supports to the existing bleachers so as to reach an optimum spectator vision, to working in different phases in a two-year project (during the season, combining seat installation and matches), to progress hand in hand with construction (with its advances and delays), or to reconfigure areas during the project (increasing VIP areas capacity or modifying grandstand sectors). Developing ourselves all the phases of our seating solution has definitely been the key to providing satisfactory solutions, and allowed a constant adjusting of our production and installation planning in order to meet the deadlines.

**What about the future? Do you feel confident?**

Fortunately, and after some difficult years for the sector, many projects are underway worldwide. Our brand Insitual is ready to continue wining international projects, and we are currently working on several venues: Fez Stadium in Morocco, Saint Michel Ice Arena in Canada, Sadar Stadium in Pamplona, Spain, or the National Stadium of Luxembourg. We have always been working looking forward, committed to innovation, and 2020 will be the same, with the expected release of interesting new seating solutions ■

Daplast is one of the leading companies in the sector of seating for sports and leisure facilities. Through its dedicated brand, Insitual, the Spanish manufacturer offers a wide range of backless and backrest shell seats, tip-up seats, VIP seats and bleachers suitable for all its customers' needs and projects. After more than 40 years supplying and installing stadium seats across the five continents, the company is "still committed to innovation".

# CLEARLY CONNECTED

## FC Barcelona's Barça Studios and Germany's DFL Usher in a New Era of Seamless Signal Transport and Communications for Pro Football.

The latest technologies in real-time video, audio, and networks, coupled with new advances in wireless intercom systems, are giving professional football teams a powerful advantage. With total reliability and flexibility as key requirements, these solutions offer the essential redundancies that football clubs require for their critical communications, and live TV and sports production environments.

One recent example is Barça Studios, the official broadcaster of **FC Barcelona**, which has recently installed **Riedel's** MediorNet real-time media network.

MediorNet enables Barça Studios to share video resources between its TV and media centre, located just outside of Barcelona, with **Camp Nou Stadium** in the centre of the city and **FC Barcelona Sports City**, located in Sant Joan Despí.

In addition, the MediorNet network facilitates decentralised signal acquisition, processing, and routing between different areas of the stadium using several Riedel MediorNet MicroN and MediorNet Compact Pro units.

The Barça Studios deployment consists of a Compact Pro frame and nine MicroN app-driven devices equipped with the Standard and Processing Apps that handle connectivity between all three locations.

CWDM optical multiplexing allows the connection between Barça Studios and Camp Nou to function redundantly on just two dark fibres.

Five of the MicroN devices are used in the stadium: one on the pitch; one each in the TV compound, data processing room, and video scoreboard control room; and one as a mobile node that can be flexibly positioned anywhere in the stadium. The remaining four MicroN units, also equipped with the Standard and Processing Apps, are located in the Barça Studios and FC Barcelona Sports City.

***"The built-in signal processing capabilities of MicroN allow us to take advantage of the device's onboard embedders/de-embedders, frame sync, frame store, and a timecode generator,"*** said Xavier Fontoba, Audiovisual Operations Supervisor of Barça Studios.

***"The Processing App adds colour correction in the RGB and YCbCr colour spaces, up/down/cross-conversion, and two multiviewers — all of which streamline our workflows and eliminate single-purpose devices."***

For control and operation, Barça Studios uses Riedel's MediorWorks software on its corporate network. For authorised users, 2300-Series SmartPanels loaded with the MediorNet Control App allow routing of signals directly from the panel.

***"Ensuring total reliability and flexibility were the biggest challenges of this project,"*** said Adrián Lorenzo, System Consultant for Southern Europe at



Riedel. ***"With MediorNet we were able to deliver the perfect solution, providing the essential redundancies that the client required for their critical live TV and sports production environment."***

## RELIABLE REF COMMS

In another example, the **Deutsche Fußball Liga (DFL)** and **Deutscher Fußball-Bund (DFB)** have expanded their cooperation with Riedel to ensure reliable referee communications in the 2019/2020 season.

Riedel's Bolero S wireless intercom is being used in all 612 games of the 1. and 2. Bundesliga, as well as the final 15 DFB Cup matches. With remotely monitored VOX voice activation, Bolero S enables superior communication between referees, assistants on the pitch, and video assistants in the DFL Video Assist Center (VAC) in Cologne.

From the ROC in Wuppertal, Riedel's operators remotely control, configure, and calibrate all system components in real time, ensuring maximum security and optimum sound quality.

***"After the successful premiere in the Bundesliga last season, it quickly became clear that we would also be using the Riedel solution in the 2nd Bundesliga and for the DFB Cup,"*** said Ansgar Schwenken, DFL Director Football Affairs & Fans.

***"Riedel's tailor-made technologies and comprehensive system management from the ROC in Wuppertal have considerably enhanced both the referee comms and the integration of the video assistant. The cooperation between the DFL and Riedel is a perfect example of how innovative technology and the emotion inherent in football can be perfectly harmonised."***

With the expanded partnership between Riedel and DFL, all 36 Bundesliga stadiums are now equipped with Riedel Artist and Bolero hardware and the Riedel support capabilities in the ROC have been raised to an entirely new level. The ROC now offers space for 12 audio specialists who can monitor up to 10 matches simultaneously on any given Bundesliga matchday.

## PROCESSING POWER

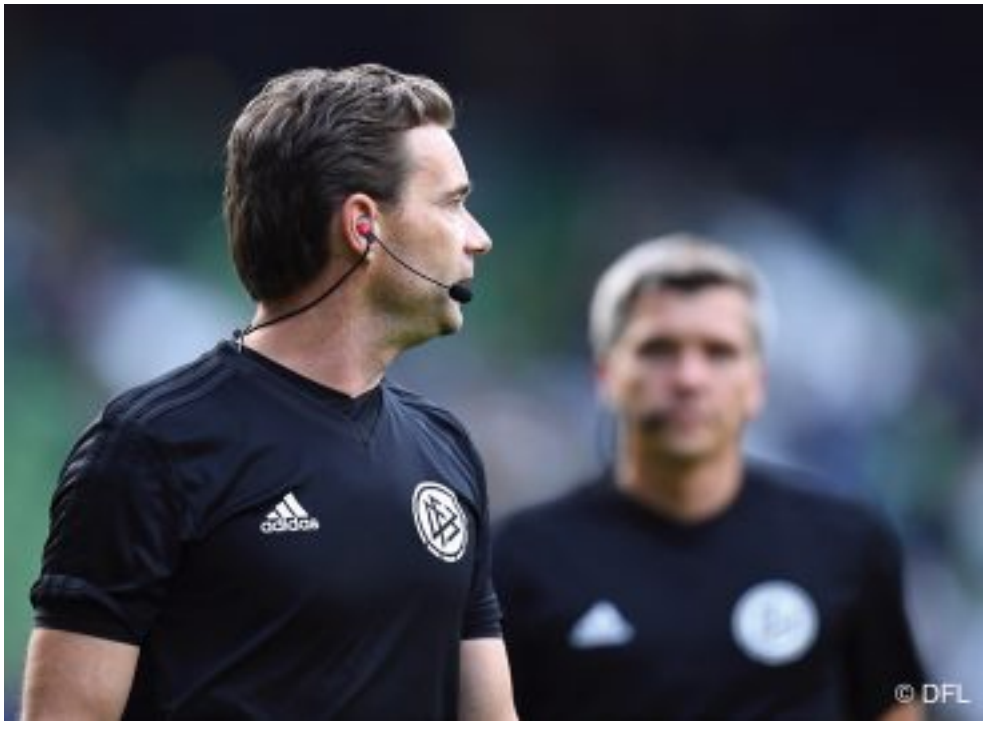
For the improved room concept, Riedel relied on the processing power of the new RSP-1232HL SmartPanel, whose user-friendly interface enables the Riedel team to optimise their workflows.

The ROC operators benefit from the patented Hybrid Lever Keys and the phase-accurate stereo loudspeakers of the highly customizable panel. In addition to 12 RSP-1232HL SmartPanels, 12 RCP-1028 panels, and six RCP-1128 panels, the team also uses 12 2300-Series SmartPanels equipped with the MediorNet Control App.

***"With the MediorNet Control App we can access the video signals from the Cologne VAC from here and distribute the live images to our screens. At the same time, we can quickly reconfigure the panels to customize each monitoring position to the operator's needs,"*** said Carsten Voßkühler, Project Manager at Riedel Communications. ***"With panels from the 1000-, 1100-, 2300-, and 1200-Series, we have absolute flexibility for any scenario."***

The new ROC also sets new reliability standards because every component is completely redundant. The core technology is located in the Riedel data centre, which operates independently thanks to a backup power generator. Even in the event of a major power failure, the real-time monitoring of the football matches remains completely unaffected.

***"For us, the future of sports production lies in managed sports services and remote management. The ROC significantly reduces the personnel and logistical production effort for us and our partners, while enabling unrestricted transmission security and the highest service quality,"*** said Voßkühler. ***"The incredible response to our cooperation with the DFL empowers us to apply the concept of central control management to other applications. With our expanded ROC, we are already prepared for future projects."*** ■




# STADIUM CABLING SORTED WITH SOMMER

*A look at the sales and support department*

**Since 1999 SOMMER cable has developed, produced, and marketed professional cable technology. On the occasion of the company's 20th anniversary, proxy Pascal Miguet talks about projects, digitisation, trends and goals.**

Founded in: 1999

55 employees in Straubenhardt

14 more employees for the cable production

Branch offices in France (Alsace), Russia (Moscow), and USA (Santa Rosa)

Additional branch office in Bengen (Rhineland-Palatinate)

**In 2019 SOMMER cable GmbH is celebrating its 20th anniversary. If you were to give these two decades a primary headline – what would it be?**

I wouldn't frame this as a headline for our company history, but there's one thing I find remarkable: the fact that people, who have known us from the beginning, are still loyal after 20 years. And when these customers tell us that the same fire is still blazing within ourselves as before – and that the motivation is still just as high as it used to be in 1999. This is not only about me, but the entire staff around me as well. This is something which makes us particularly proud.

**What role does the sports facility sector play for SOMMER cable? What references – national and international – can you report on?**

The IT designers tender our products. Our portfolio contains about 30,000 products, so customers can find everything for that's needed for installation. Electrical installation companies buy the goods from us and install them in the stadiums. We deliver the cables either as finished products or yard goods – to suit the customers' personal wishes.

Among our references in football are the majority of stadiums in Portugal. Moreover, for the FIFA World Cup 2006 in Germany and 2018 in Russia we also equipped most venues with our products. For instance, for the WC 2006 cables with an order volume of approximately €250,000 were installed at the RheinEnergieSTADION in Cologne. These included installation cables, digital cables, loudspeaker cables as well as cables for media engineering. In most cases the entire broadcasting set-up runs through our products. Our products are also installed in almost every major stadium in France.

**Which milestones of the company history would you higlight?**

The biggest change, or the biggest progress respectively, was the development of the HICON brand about 14 years ago. This has decisively helped us to move on. With the HICON Fiber 4 we designed a special fiber-optical connector some years ago. This is a quad connector which the customer can configure himself. The input socket of the connector can be found in virtually every digital broadcasting console.

**How significant is the stadium market in the overall context of your business?**

This market is definitely of enormous importance to us. Our products are really outstandingly suitable for stadiums. One example: we developed the AquaMarinex series of cables. I got this idea when I attended a Bundesliga stadium in Baden in the pouring rain.


*Automatic cable coiling machine with automatic side shifting*

There I saw that the advertising panels were swamped with cables. I spotted a standard control cable with 5-pole DIN connectors lying in the water which was already oxidized. When I spoke to a technician together with a colleague, he confirmed to us that this cable is replaced every two or three years. So with the AquaMarinex we designed a cable with a service life of way more than 10 years. This particular cable has a special polyurethane jacket which is also watertight in underwater pressure. Thus the cable can be permanently laid under water. The interesting thing is: this cable has a special fleece, some kind of taping. If it gets moist, the cable will be closed and sealed automatically. We're selling huge quantities of this cable for football stadiums, mainly for the loudspeaker systems, or advertising panels. We developed the AquaMarinex about three years ago and have constantly expanded the range since then.

**What other innovative products did you develop?**

The stadium sector in particular always requires high-quality cables to be layed, which contain only a little chalk and few plasticisers. We have special PVC jackets that are almost free from such additives. These are high-quality composites which can withstand the cold down to -30 °C. Moreover, they are very heat resistant. Another highlight are cables with a special component called aramid. You may hang up microphones on such cables, for example. The aramid fibers may serve as an extra strain relief. In football stadiums there is also a tremendous amount of conference and surveillance technology, of course – this is an incredibly huge market.

**Speaking of digitisation: currently we see the sports and entertainment industry in a profound transition phase. How does this change affect your company?**

The digitisation also requires cables, of course. In the past we had pure analog technology. Those were modulation cables with 110 ohms. Nowadays these cables have become pretty rare because they contained a lot of copper and were therefore expensive and rigid. In addition, the German fire safety regulations are very strict. Due to the copper, such cables involve a complex production, they're barely flexible and very difficult to lay. Very often these cables are now replaced by FO cables. Plus there's the wireless technology, which is meanwhile covered by 50-ohm cables. Today we have highly flexible CAT cables which are transported on cable drums.

**What objectives do you set out for the coming 20 years with SOMMER cable?**

Our company is still young – in my view 20 years are not a long period of time. This job will never get boring; notably the field of hybrid cables is a bottomless pit. There are countless ideas for hybrid products. It would be my long-term dream to equip all European stadiums with our products at some point in the future. We're indeed well positioned already, but as a next step we want to develop the Asian and North American markets. We're only at the beginning. It would be very nice to pass on the company to our children someday. ■

# FIRST CLASS PROJECTS IN THE SECOND CITY


## Iowa Rotocast Plastics has built and installed food service carts at Chicago's iconic baseball venues.

Chicago, sometimes called the "Windy City", is the third largest city in the United States with a population of nearly three million people.

A hub for pro sports, Chicago has been named the Best Sports City by Sporting News three times and has made TSE's International Ranking of Sport Cities every year since 2012.

With a total of six stadiums and arenas hosting eight **Major League** and four **NCAA** teams, the city hosts two Major League Baseball stadiums, **Wrigley Field**, home of the **Chicago Cubs** and **Guaranteed Rate Field** (formerly **Comiskey Park**), home of the **Chicago White Sox**, presenting opportunity to suppliers such as **Iowa Rotocast Plastics (IRP)** who designs and fabricates carts and kiosks for professional and collegiate sports venues.

Incorporated in 1986, IRP, a family-owned business, is an established manufacturer and supplier of merchandising equipment for the food and beverage industry.

IRP caters to beverage brands and foodservice and hospitality groups, as well as working directly with stadiums and arenas to support major project builds and renovations as well as fulfilling year-over-year needs.

## WRIGLEY FIELD RESTORATION

The long-awaited restoration and expansion of Wrigley Field, now known as the 1060 Project, was completed in the spring of 2019.

This multi-year upgrade was designed to ensure the viability of the ballpark for future generations of Cubs fans, while preserving the beauty, charm, and historic features fans have come to know and love.

The 1060 Project, which started at the conclusion of the 2014 baseball season, improved player facilities as well as updating features to optimise the fan experience.

This included structural upgrades for outfield signage including two video boards, new premier clubs, open concourses, expanded concession and dining options and better restroom facilities.

All improvements made will appeal to fans, reduce lines and overall ensure fans can enjoy more baseball from their seats.

IRP partnered with the Cubs and **ICON Venue Group** to design and fabricate several draft, cocktail, and grill carts for the newly renovated upper concourse.

Construction on the project was still in progress as carts and kiosks were being fabricated and ultimately craned and installed in the stadium. This resulted in a highly fluid collaboration between the IRP team and project contractors. Details like ensuring the outlets were positioned correctly and the correct power/wattage was aligned with the concourse and carts were adjusted mid-production to align with the evolution of the construction.

Installation of the carts on a project this size also posed some barriers to navigate successfully.

The Fabrication Plant Manager from IRP recognised the challenges presented by working on the project while construction was still underway, but also understood that this would pose an even greater trial for installation. »

Scouting for the project installation took place the week prior to delivery, where installation points were clearly labeled and marked off with cones.

For this specific project, all carts and kiosks had to be craned into the upper concourse.

As carts were packaged for shipping and loaded onto trucks, the trucks were stacked for how to most effectively unload at the job site.

This process of surveying the installation course prior to scheduled delivery, as well as applying best practices in packaging and shipping, streamlined the progression of installation, which resulted in efficiencies that ultimately saved two days of contracted crane time translating to significant cost-savings for the client.

## FROM IDEA TO INSTALLATION

At IRP, the entire process is kept in-house and under one roof, from idea to installation. This means dedicated marketing, research and development, engineering and project management teams within IRP partner directly with stadiums, project managers, architects, concessionaires, design firms and all key teams that are involved on these major developments, helping to ensure the best end results of major projects such as the Wrigley upper concourse carts.

Lifestyle experience for fans is important both inside and outside of a stadium. From the time you arrive onsite at Wrigley Field, the connection of fans to the event experience is critical to overall fan engagement.

IRP had the opportunity to team up with **InnerWorkings** to develop a custom **Jim Beam** kiosk for outside of Wrigley Field. Headquartered in Chicago, InnerWorkings is a global marketing execution firm serving Fortune 500 brands across a wide range of industries.

Another close collaboration with the InnerWorkings team, they provided three concepts to communicate their vision for the end product.

The IRP team of engineers were able to render concepts that would structurally support their creative vision. Multiple changes and revisions were discussed and implemented prior to production.

The project presented unique challenges around lighting and electrical requirements as well as size. Powder coating a unit this size with unique angles and elevation in the design was difficult. The Jim Beam kiosk measured 19.5' wide and over 12' high.

With Chicago experiencing harsh climate conditions during winter months, the IRP team constructed the unit so that it can be assembled and disassembled every year at the beginning or end of each baseball season; extending the life of the unit.

Travelling to the Bridgeport community of Chicago on the city's south side leads IRP to their next project at Guaranteed Rate Field. A highly custom build to pay homage to the city's nostalgic CTA 'L' train system, the project required intricate detail in the design to very closely mimic a train car. Built close to scale, this custom draft kiosk featured a brushed stainless exterior and working lights.

Whether you're constructing a new stadium or renovating a historic ballpark, it is a substantial financial investment involving multiple project stakeholders including architectural firms, contractors, governing bodies and facility operators.

Partnering with the right supplier who integrates their process with the reality of these projects, and all moving pieces, is critical. IRP does just that while keeping a keen eye on design integrity when there are unique, architectural elements in the theme of a venue; or known, historic landmarks that plays into the design of carts and kiosks.

A novelty cart can captivate the customer, increase engagement, grow vendor sales, and enhance the fan experience, which ultimately keeps them coming back for future events. ■

# SOMETHING'S BREWING

## SCORE BIG WITH VENDOR PROFITS

# A TICKETING REVOLUTION?


**Roboticket assesses the impact of the digital revolution on the ticketing business.**

Image credit: *Kaique Rocha from Pexels*

The 'fan experience' can easily be described as the overall satisfaction derived from an event.

The term is often heard, particularly in the context of new technologies around sports events.

Because of its popularity, we have decided to look at the fan experience to see how the digital transformation is performing in some areas and what it brings to fans.

With technological advancements we are experiencing the ongoing process of digital transformation which impacts every part of life.

The sports market, with its millions of fans, is no different in terms of this. As a part of the entertainment world, it is viewed as the perfect place to deploy digital innovations to attract customers.

It's not hard to spot the ever-present giant screens, internet live streams, LED lights, footage in 4k, 5G connection, mobile games amongst other advancements in stadia and arenas.

Everything is there to build a better and better experience and this is not surprising as every sport is heavily dependent on fans. To make them eager to attend, organisers reach out with new things to improve the fan experience.

With this in mind, we looked at another area, also closely related to the fans. Maybe it doesn't spark as much excitement as other things, but it's absolutely necessary for the sports industry - it's ticketing.

## DIGITAL TICKETING TRANSFORMATION

Looking at all the innovations in stadia and arenas, the ticketing industry seems to get a bit overlooked.

As we mentioned at the beginning, the fan experience is about the overall satisfaction with the event. It means that everything related to the event matters, not just how much you enjoyed the game and atmosphere inside the arena, but what happens much earlier in the customer journey.

It's not just about a ticket box-office now but a computer or mobile screen as well. Ticketing connects fans, clubs and events. You simply can't enjoy all the event's attractions until you buy a ticket.

How you do this sets your mood far earlier than the start of the event. So its influence is indisputable. How has the digital transformation changed things since queuing for hours was treated as socialising time?

In the digital era, tickets are no longer represented by a piece of paper. There are different types of digital tickets in use, contactless cards and barcodes. It's also easy to buy a ticket online and use print@home ticket to get into the event. This is a huge benefit for fans but is it enough to conclude that the digital transformation of the ticketing industry is complete?

## OVERALL EXPERIENCE

To answer this question we have to go a step further and take into account all ticket-related products, not just one-off ticket sales which account for only a fraction of total attendance.

There is no secret that the focus of every sports club is the more profitable products like season tickets, memberships, subscriptions and hospitality.

They are absolutely essential to spectator sports as they generate a solid income every year. Surprisingly, however, we don't see a positive response after reviewing the steps which supporters need to take if they want to buy these products.

There are a lot of negatives such as difficult access, no possibility of buying more advanced products than one-off tickets online and complex registration processes.

A lack of online self-service also means fans have to wait on the phone or send an e-mail asking for manual seat reservations without the option of choosing their seat. This can be disappointing as fans ultimately have to go to the club to pick-up up their tickets.

From the fan experience perspective it's disastrous, regardless of how much they want to go to the event.

This is especially true for the younger generation who are driven by mobile connectivity and this may stop them from buying tickets.

Image credit: *Tom Grimbert from Unsplash*

So, if clubs experience a downturn in sales, it doesn't mean that fans stopped liking sports but that the younger generation of fans are taking over.

These criticisms have been made to emphasise how easy it is to disrupt a fan's experience.

But at the same time we should spend money in other areas to encourage them to attend live events.

We shouldn't spend money to over-ride bad experiences but use the money to make sustainable improvements.

We decided to review ticketing based on our experience and as part of a whole event, especially for sports where long-term relationships and the fan experience always pays off.

Because we still come across many bad examples, however, we can't say that the digital transformation of the ticketing industry has already happened.

It needs to keep going towards a unification of services and be more open to the exchange of data with user-friendly technology.

If we do a lot of work around existing procedures but don't improve customer service, we are betting on the wrong horse.

Fans don't need a story about blockchain, they just want well-integrated features that bring tangible benefits. Otherwise, it will soon be easier to dispatch a self-driving car to the club to pick up new season tickets than go through the current procedures.

In the digital era, the phone no longer means a land-line, watching TV doesn't depend on a setting-up an antenna, today ticketing doesn't mean printing on paper at the box-office. Ticketing is now a fully digital business dependent on data.

## COST OF DIGITAL TRANSFORMATION

In carrying out this review we have unintentionally targeted clubs with some negative assessments regarding customer services but this wasn't the aim.

Digital transformation is still a challenge for the ticketing industry first, not for sports clubs. They can't do much until proper solutions are provided, even if they are aware that they need to change something.

Sometimes, clubs try to go ahead with individual projects by joining different solutions, with mixed results. In this way, they take up the role of the software integrator, which is really confusing and demands real IT skills.

There is no secret that IT projects can cost a lot of money without giving a positive result at the end. So, even if some clubs have failed, it's hard to blame them as we know how difficult it is.

This is still a discussion about the fan experience as an ultimate challenge. As we are trying to underline, the digital transformation is one of the ways to achieve it, probably the most important one.

This constant focus on supporters raises a question of what would be a direct benefit for a club, if they feel that they need to invest money just to make fans happy.

It's undeniable that a happy customer is a better customer, but it's not only about fans. We need to look at this more like a win-win situation as it can potentially bring a lot of improvements to the ticketing process, making it way more efficient.

It's hard to offer a better service to a customer without proper tools. We believe that the sports market is open to applying innovations, but for now, these are most visible in areas where the risk of failure is less or is not as painful. ■

> *"Today ticketing doesn't mean printing on paper at the box-office. Ticketing is now a fully digital business depends on data"*

# MODERN AND SMART STADIA SOLUTIONS

**Christian Heidegger, Director of International Sales at Axess AG, explains how some of the company's technologies improve venue operations.**

### What makes a smart access system? What characteristics does it have?

Above all, to be a smart access system it has to be easy to operate and reduce the workload on the game day with automated processes. Such a system not only simplifies the handling of the pre-game phase, it also provides insight into the status of occupancy in the stadium that is relevant to the operator at all times.

For stadium visitors as well as stadia operators Axess systems are easy and intuitive to use.

### What innovative solutions does Axess offer today?

In addition to the continuous development of access control software and hardware, Axess is working on a wide range of new and innovative solutions for automating and digitising applications for our customers. This year, for example, a system for the automated legitimation and accreditation of press representatives was introduced at 1. FC Köln.

Axess offers an online "press" portal for this, in which press representatives can create an account and place a legitimation request. As soon as the club releases the legitimisation, the press representative can independently select his accreditations for those events which have been approved by the association for him.

The accreditations are sent by e-mail from the portal in pdf format as well as wallet/passbook format to the press representative. He automatically exchanges it in the stadium at an Axess Smart Gate with badge box and gets a branded accreditation with zone authorisation.

Our latest accreditation innovation is currently in development and will enable our customers to easily and conveniently distribute work accreditations online. The solution will on the one hand reduce hassle for the operator enormously, and on the other hand provide traceability for employees in the stadium.

### What role does the integration of individual systems or the integration of interfaces play now and in the future?

The integration of individual systems is already a standard today and indispensable in our opinion. Axess systems offer bidirectional interfaces for all areas of application, which for example return access information to the ticketing system or to business intelligence systems. From a technical point of view, there are no limits to our customers, only the data protection basic regulation valid since May 2018 has a limiting effect in this respect.


**To what extent does this include the integration of new technologies such as smartphones (mobile ticketing, etc.)? What other examples can you give?**

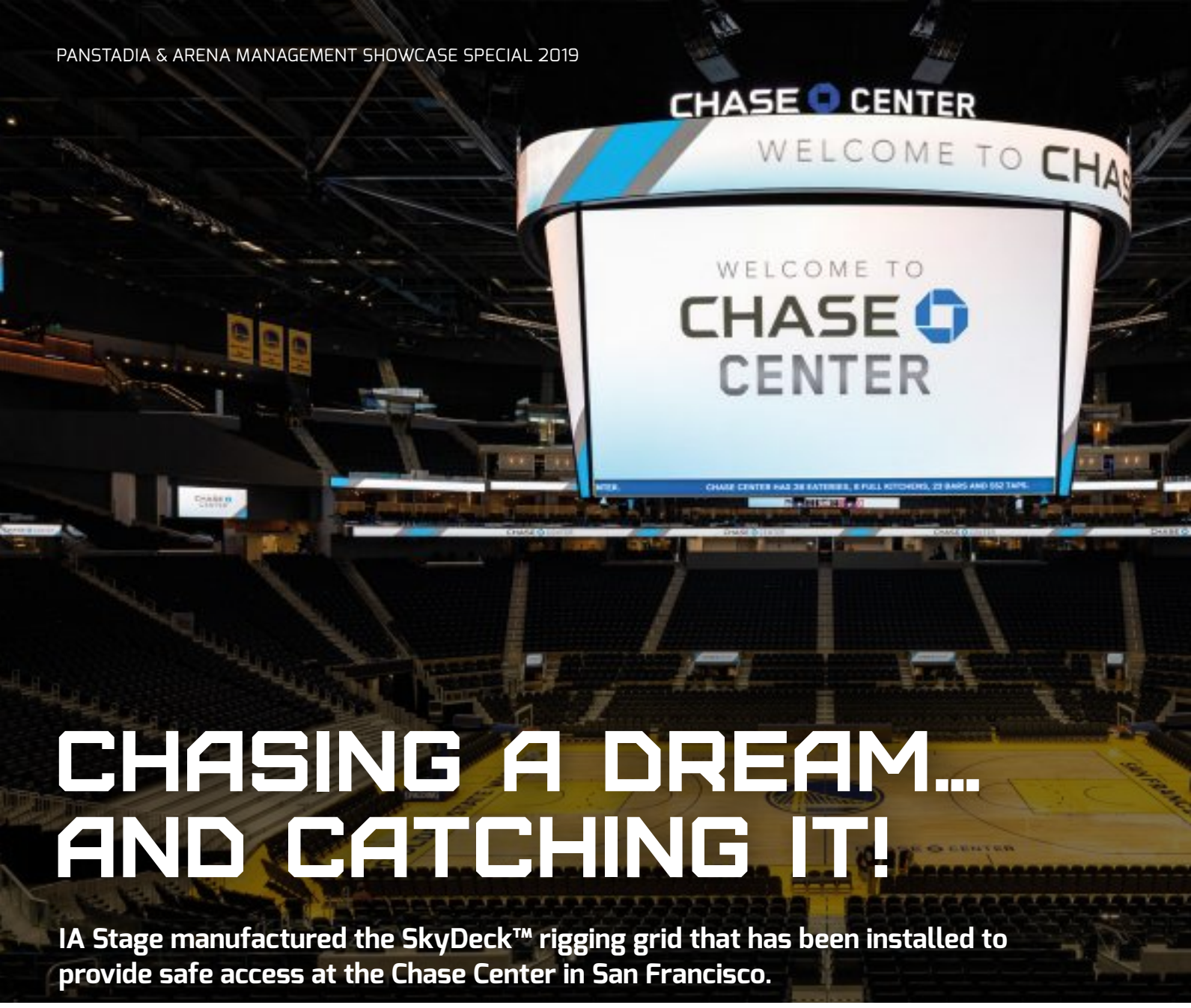
Axess systems are always open to new technologies. Access to smartphones via mobile tickets has been used by many of our customers for years. Other trends such as NFC technology have not yet made their breakthrough. Axess RFID readers have already been prepared for reading NFC chips for more than 10 years, but unfortunately smartphone manufacturers have not yet been able to agree on a uniform protocol that can be used by ticketing providers.

By using Axess systems in a wide variety of applications, we work with a variety of technologies such as UHF, but for applications in the stadium and arena area next to 1D / 2D barcodes and various RFID standards no groundbreaking alternative can be expected.

**What significance will wearables (such as smart watches) have for ticketing and payment in the future? How are you prepared for this?**

For some time now, we have seen the importance of smartphones and smart watches as indispensable. With the increasing digitalisation and networking of systems, it can be assumed that the proportion of mobile ticket users will continue to increase. Axess constantly takes new emerging trends into account in its product development.

Last year, for example, during the development of our new reading device, the Axess Smart Scanner 600, special attention was paid to the ergonomic and comfortable readability of smart watches. ■




# CHASING A DREAM... AND CATCHING IT!

**IA Stage manufactured the SkyDeck™ rigging grid that has been installed to provide safe access at the Chase Center in San Francisco.**

There's been quite the buzz around the **NBA Golden State Warriors' Chase Center** for the past few years.

GSW President and Chief Operating Officer Rick Welts set a high bar from the get-go when he said: "We wanted to build the Madison Square Garden of the West."

Stephen Collins, Chase Center's former General Manager, echoed Welt's sentiments. "Chase Center and the surrounding entertainment district will set the bar within the industry for design, experience and operational excellence," said Collins.

Kim Stone, Chase Center's current GM, spoke of "reimagining the event experience...for the Bay Area, and, really, the world."

The venue officially opened in September 2019 in San Francisco's Bay Area. Does the vision hold up?

Robert Powers of **IATSE Local 16** and Chase Center's head rigger put it this way: "[Chase Center] is one of the best production-friendly arenas I've ever been in."

Speaking some 60 days after the arena had opened, Powers said: ***"We've only had 16 events here, and we look great. Our [load-in and load-out] times are admirable, bordering on record setting."***

When asked what makes Chase Center so production friendly, Powers immediately credited the forethought and planning that came not only from ownership, but from top administration. ***"I want to acknowledge Stephen Collins for his professional integrity and vision and Ed Kish for his ideas and concepts,"*** said Powers.

Ed Kish is the founder and majority owner of **Kish Rigging**. ***"It was very well thought out and installed,"*** Powers continued. ***"They set us up for success."***

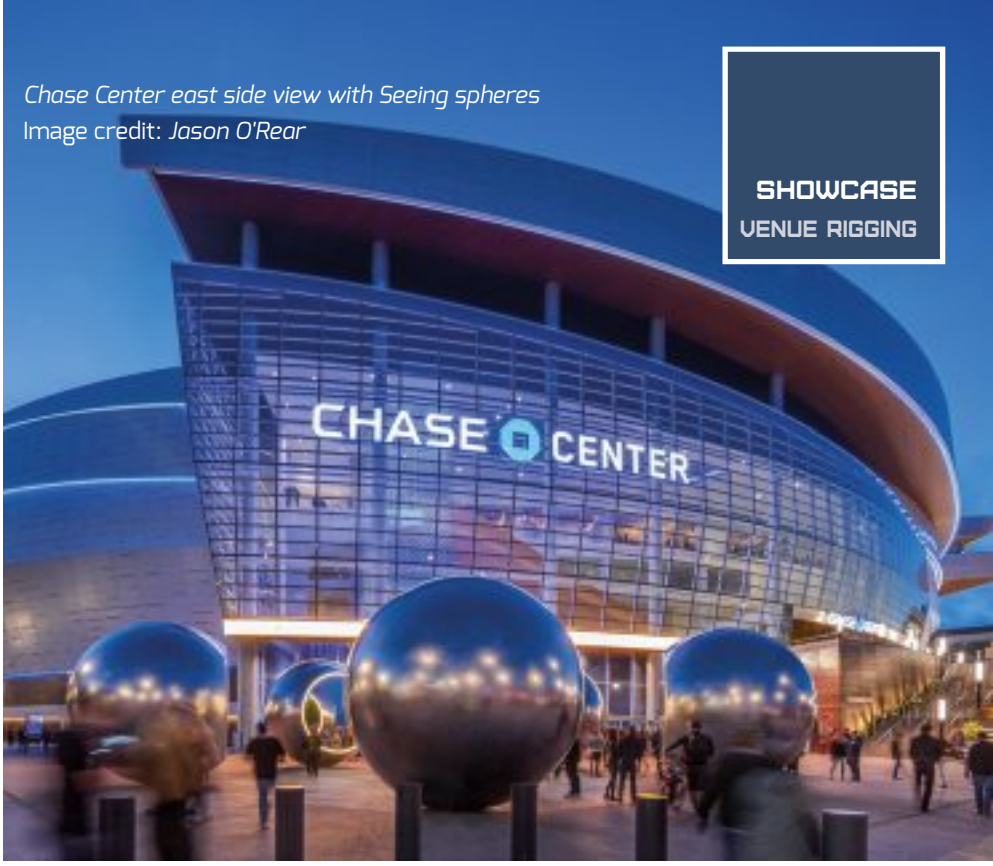
## THREE-IN-ONE

A big part of that success is a litany of high-end amenities. Chase Center essentially houses three types of performance space in one building.

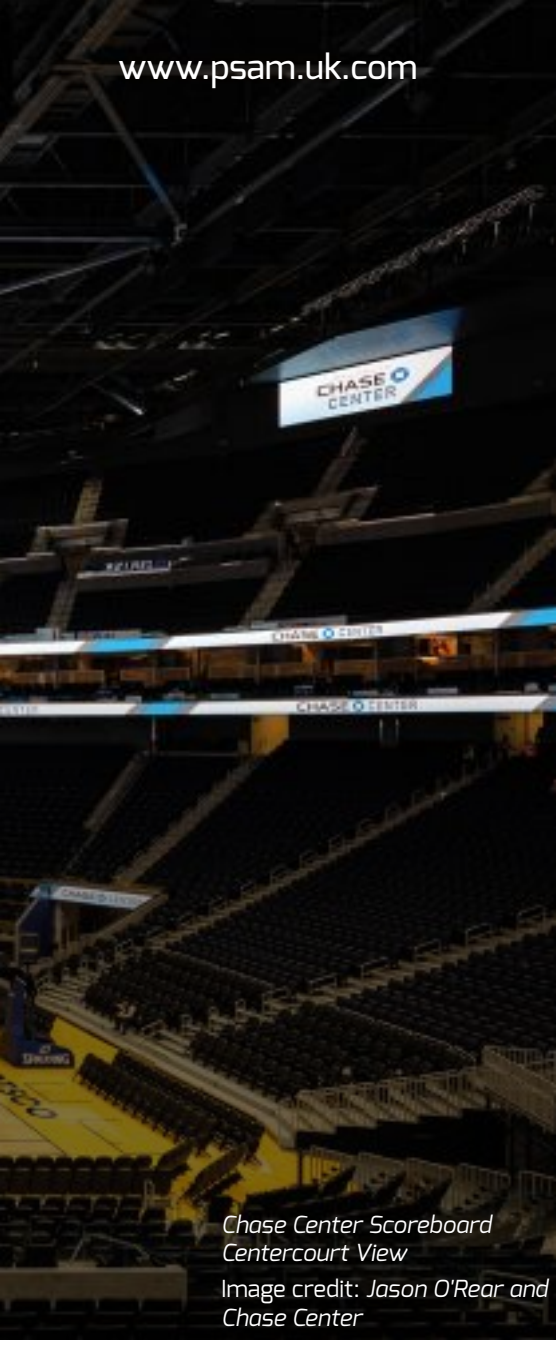
Of course, it's a premier 18,000 seat basketball arena and home of the Golden State Warriors. Chase Center is also a large concert arena.

With the addition of a stage, side masking, and a 270° perimeter truss with drapes to cover the upper bowl, it neatly converts into a smaller, more intimate proscenium theatre-like space. And how about the scoreboard?

At 9,699ft², the **Samsung** scoreboard is the largest centre-hung in the NBA. For non-sports events, the behemoth scoreboard, along with eight JBL audio clusters, fully retracts to store above the low steel. Two motorised gantries bridge the 60ft x 90ft space beneath the center-hung, providing




*Chase Center east side view with Seeing spheres*
Image credit: *Jason O'Rear*




*Chase Center Scoreboard Centercourt View*
Image credit: *Jason O'Rear and Chase Center*

uninterrupted rigging capability for the entire space.

Above it all, the new arena boasts a 49,860ft² rigging grid that sits 96ft 6-inches above the arena floor.

Over 12,000ft² of the rigging grid is a SkyDeck™ modular tension wire grid manufactured by **InterAmerica Stage, Inc**.

Chase Center is the third US arena to have a SkyDeck™ tension grid installed.

The **Fabulous Forum** was the first, reopening in 2014 with a 34,000ft² grid.

**Little Caesars Arena** in Detroit was the second, opening with a 43,000ft² SkyDeck™ in 2017. Little Caesars Arena currently houses the largest SkyDeck™ in the world.

Chase Center's 12,000ft² SkyDeck™, comprised of 188 modular panels, is shaped somewhat like a capital letter T with a fat vertical and skinny horizontal. The top of the T follows the curve of the bay side/northeast end of the arena, and the vertical extends west out over the court to just past the gigantic centre-hung scoreboard.

The catwalks located over rigging beams in high foot-traffic access areas have removeable railings, ensuring efficient traffic flow from loading dock to freight elevator and right onto the grid. There's even a hinged panel so rigging crews can bypass the elevator and pull equipment up through the grid if necessary.

The bulk of the panels at Chase Center are arranged in 10ft x 20ft bays, which, Powers explains, makes the bridles manageable. The rigging beams are spaced at 10ft on centre, and there are saw lines cut into the concrete floor below that correspond directly to the riggable beams. This allows ground riggers to use the grid like a tape measure, improving the speed of marking rigging points without compromising accuracy.

***"If rigging is your trade, it takes you maybe half an hour to realise that you're in the Disneyland of access,"*** Ed Kish told Pollstar in November of last year.

## SAFE ACCESS

Circling back to the comment by Kim Stone, Chase Center's GM, I asked how SkyDeck™ factors into the Chase Center fan experience.

Little Caesars Arena, for example, illuminates the underside of their grid and immerses the fans from floor to ceiling with a light show themed to each event.

Chase Center takes a different approach. Stone explained that Chase Center doesn't use their grid for illumination, they use it exactly as it was originally intended: to provide safe overhead access.

The grid actually disappears into the background during GSW games and concerts. The fan experience part comes from the kinds of events Chase Center can bring in.

Stone pointed out that the flexibility of the SkyDeck™ in conjunction with 600 additional off-grid rigging points and the retractable scoreboard allows the arena to present shows with complex theatrical lighting and effects, which most definitely impacts the fans. "As we inhabit the space," she says, "the range of what we can do will continue to evolve for years."

***"It's absolutely 21st century,"*** says Powers. ***"We've been given an amazing building where we can practice our craft at the highest level."*** He continues: ***"Rigging is the business of risk management, risk reduction, and risk elimination. If you're not managing, reducing, and eliminating risk, you're not doing your job. Moving forward, for every arena without a tension grid in it, people need to stop and ask why (there isn't one)."***

Boiling it down, Powers says, ***"SkyDeck™ is the single biggest risk eliminator in the arena."*** ■

# SLAM DUNK!

**FIBA is introducing its own testing for basketball flooring and equipment to ensure the highest standards are maintained.**

The playing floor is one of the most important components of a sports venue, and technological advances in recent years have increased the flooring options for basketball.

Whereas previous generations of players tended to compete indoors on wood or tile surfaces and outdoors on either concrete or asphalt, now new synthetic surfaces and sports court technologies mean a number of choices are available.

Some surfaces offer greater performance, while some are kinder to players and offer greater safety.

The basketball floor plays a crucial role in the cause and/or prevention of injuries to players and the effect it has on their performance. Incorrect or defective flooring is often the main cause of injuries to players' ankles and knees.

In general, **FIBA** regulations state that the playing court must have a rectangular, flat, hard surface, free from obstructions.

The dimensions of court must be 28m in length and 15m in width, measured from the inside edge of the boundary line.

The height of the ceiling or the lowest obstruction above the playing floor must be at least 7m from the ground. The court surface must be uniformly and adequately lit.

## FIBA TESTING

FIBA has always shown a great interest in studies on biomechanics and the safety of athletes, contributing to the compilation of a set of regulations which is recognised by most countries.

Now the association is launching the FIBA Approvals Programme for Basketball Equipment and bringing in its own testing methods to make sure basketball equipment complies with the highest standards.

Jasmine Long, Equipment and Venue Centre Associate at FIBA, told *PS&AM*: ***"This year is a big year of change in terms of FIBA and the way that all equipment is handled, not just flooring but also backstops, balls etc.***

***"We have launched the Approval Programme where manufacturers are approved based on their product quality."***

She said FIBA had previously relied on European EN standards to regulate equipment but that this was all set to change.

***"Over the past year we have developed our own test methods. A lot of them follow the EN norm but they're written into our own document, and before approving any flooring, manufacturers have to go to one of our newly accredited test labs to test their products. There is a 100-page book specifying all test methods.***

***"The sort of things we test for include force reduction, how bouncy the floor is – the shock absorption of the flooring. The floor can't be too hard, or the players could get injured, so we test for vertical deformation – the hardness of the floor.***

***"An important one for basketball is slip resistance. This is tested with a pendulum machine. We test how much***


***friction there is when it passes over the surface. This is a really important one for the players."***

## KEY PROPERTIES

Essential characteristics of basketball flooring include elasticity, which is a fundamental property by means of which floors can elastically deaden the impact force of the body during jumping and running, thereby providing a feeling of comfort to players.

Optimum values of elasticity provide for rapid action and reduced muscular stress, whereas excessive elasticity values lead to a slowing down of action. Floors that are too hard cause muscles to tire quickly, thus increasing the risk of injury to ligaments, FIBA says.

Uniformity is also essential. The surface of the playing area must be perfectly level, as unevenness may cause irregular bouncing of the ball and impact player performance.

Shock absorption properties are critical as is the non-elastic absorbency of the impact forces of the body, due to the inner viscosity of materials. It measures the impact force absorbed by the floor as opposed to returning the energy force to the athlete. The more impact energy the floor absorbs, the less impact the athlete must absorb, thus providing greater comfort for the feet.

The ball bounce must be uniform and regular over the entire surface. What is more, the flooring should not absorb the bounce to such an extent that it is impossible to play regular competitions on that surface.

Superficial friction is also extremely important and has optimum values which vary according to the different sports. To improve superficial friction, synthetic materials are embossed on the surface.

Long added: ***"A lot of recent development has been in the coatings to get the best fiction and slip resistance. Top courts will get recoated every year with a lacquer and a top coat. A big change has been with the stickers. Anyone who wants to advertise wants it on the court. A lot of our courts get covered in stickers for advertising and this is something we're going to look into more, because these stickers don't always meet the same slip requirements as the flooring. Players can have trouble with this. Some stickers are certified but they are not always being used. Players say even the certified ones can still be slippery.***

***"Specular gloss is another test we added this year, and this is about the amount of light the floor reflects. This is for TV production and cameras, so the cameras don't glare back."***

Long said there have been big developments in synthetic surfaces with the rise of the 3x3 basketball game which is going to be staged at the **Tokyo Olympics** in 2020 for the first time – and which is played on synthetic flooring, made up of interlocking plastic tiles and mainly for outdoor use.

3x3 basketball is growing in popularity. The FIBA 3x3 World Tour is the pinnacle event of an 'open' network of FIBA-endorsed 3x3 tournaments. The 2019 season consisted of 11 Masters, before culminating with the FIBA 3x3 World Tour Final on Nov 2-3, 2019 in Utsunomiya, Japan. ■

# PROFESSIONAL SPORTS FLOORING TAKEN TO A NEW LEVEL

**Ole Slott, R&D director and part-owner of KTL Sports Flooring, explains about the company's unique, prefinished, permanent and portable sports floors.**

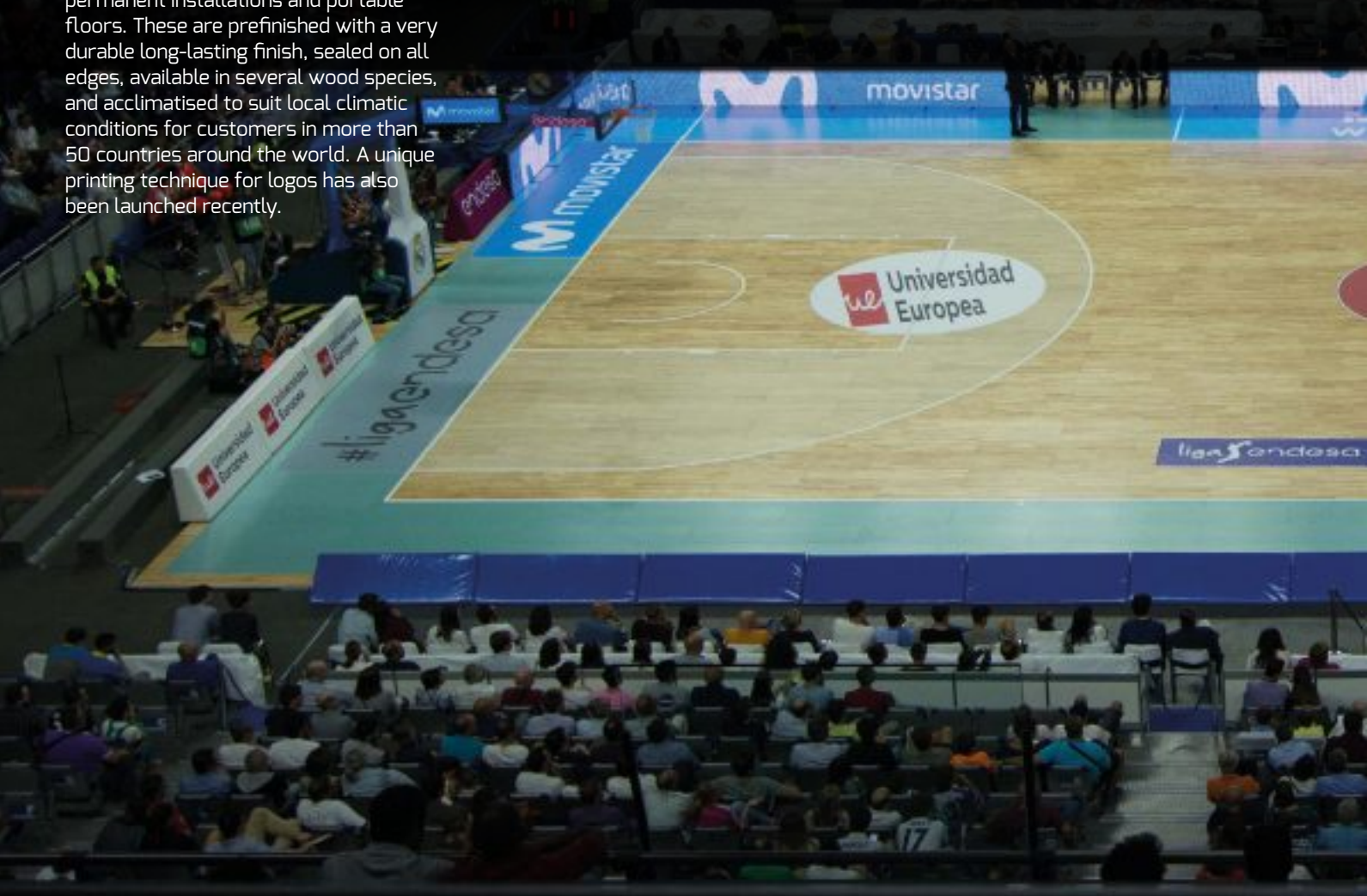
### What's so unique about KTL Sports Flooring?

KTL Sports Flooring is a Danish innovation produced by KTL and consists of solid 2-strip parquet boards for permanent installations and portable floors. These are prefinished with a very durable long-lasting finish, sealed on all edges, available in several wood species, and acclimatised to suit local climatic conditions for customers in more than 50 countries around the world. A unique printing technique for logos has also been launched recently.

### What kind of obvious advantages does KTL Sports Flooring give you?

The solid 7/8"/22mm parquet ensures maximum life span, realistically 40-50 years, as you can sand it several times.

The prefinished 2-strip product has an anti-scratch surface coating that ensures maximum surface abrasion and wear resistance, being around three times higher than a traditional on-site applied coating system.



With the prefinished surface together with the 'acclimatised to site condition' boards, you get the fastest, easiest to install and cleanest working environment possible.

## Why is that?

With a traditional "sand and seal installation" of a strip floor in e.g. North American Maple, you bring in the staves and lay them lose as a puzzle on the plywood substrate to acclimatise to site conditions. After some days or even weeks, the staves can be installed by nailing each individual stave to the wooden based subfloor. Then the floor is sanded several times, typically four times to achieve the smoothness required.

The result totally depends on the skills of the guys sanding! Afterwards the finish system is applied. First two coats are applied, followed by painting of game lines, before another two coats are applied. For a 10,000sf / 1,000m² job, the overall timeframe is often up to 5-8 weeks from start to finish.

With the KTL prefinished flooring already pre-dried to meet local climatic conditions, the boards are taken out of the wrapping and installed straight away, often without any gaps (for further expansion allowance) as the floor is already acclimatised to local climatic conditions. The installation of a 10,000sf / 1,000m² floating system, laid over an even concrete takes around one week, excluding the line marking.

The game lines are applied directly on top of the factory finish and the floor is ready for use. Only in special cases you would apply an extra transparent topcoat. At normal wear and tear the KTL finish would not need any renovation for the next 5-10 years, due to the high wear resistance of the finish.

You can choose between several wood species, e.g. traditional species like maple, beech, ash and oak, however Hevea being a plantation wood species, is by far the most stable of them all with a hardness close to ash and beech wood. The wood is available in two grades, where the premium grade is rather uniform in colour. Over time after being exposed to UV light for some time, the colour of the wood will gradually go lighter towards the looks of a clear Maple AB grade without any brown heart.

The assembling of the floorboards with glued finger joints, combined with sealed edges and backside finishing, ensures not only maximum stability of the wood but also optimum resistance against water and cleaning products.

Consequently, you can dissolve the floor surface with aggressive cleaning products for several minutes before washing and collecting the water using a man-driven washing machine.

KTL portable sports floors are unique in the market as they combine acclimatised solid wood panels in a so-called lightweight easy to lay design, where teams of two people install each panel. »

Yet, despite the light design, the KTL portable floor systems features heavy duty loading capacities, suitable for professional basketball games within NBA and FIBA.

KTL portable systems in the PRO series are available in individual court designs and colours, including logos and game lines and all prefabricated with the prefinished seven coats system above to protect all colours / designs.

Transport carts for fast installation and safe / protective storage are available.

## COMPANY BACKGROUND

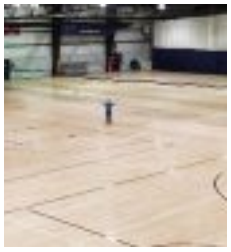
KTL was originally set up in 1966 as a sawmilling business and then ventured into timber mouldings in 1979 and started manufacturing lam parquet, initially for the local market and later for export to Europe. In the mid-eighties, they expanded their operations to include finger-jointing and lamination of wood, creating a wide range of flooring products.

Today, KTL is among the market leaders within innovative sports floor solutions, including a wide range of easy-to-lay portable floor systems. Besides that, KTL offers several subfloor systems for other types of floor coverings.

The company is well known for its high-quality products and its ability to offer customised solutions that match local climatic conditions all over the world.

**www.ktlfloor.com**

## SOUTHLAND CENTER



**Fitness Flooring, Inc.** of Indianapolis, Indiana, in conjunction with **Patriot Design** of Lockport, Illinois, completed in 2018 the largest hardwood portable floor in the Northern U.S., an installation of a 40,000sf / 4,000m² of **KTL Portable Sports** floor at **Southland Center** in Lynwood, Illinois.

The floor is 7/8" / 22mm solid beech hardwood over a plywood substrate that allows the floor, even one of this size, to be taken apart or reassembled within just a few days.

The flooring has been striped for six full-sized basketball courts and 10 full-sized volleyball courts, with an additional 10,000sf / 1,000m² of space for fan seating.

Southland Center is owned by the **Ho-Chunk Nation** and managed by the **Indoor Sports Manager Group**. It provides space for sports leagues, camps and tournaments for 10 sports, from baseball and volleyball to indoor soccer and basketball.

The 100,000sf / 10,000m² facility has been named a top ten multi-use facility by the Sports Planning Guide and one of the top seven basketball venues in the country by Connect Sports.

## PRATT INSTITUTE

In the autumn of 2019, KTL installed a Portable PRO Summit at Pratt Institute, Brooklyn, NYC, home ground for the **Cannoneers**.

The floor supplied is Hevea, a very stable plantation wood species with a maple-like colour. The floor upgrades the old polyurethane floor significantly with high shock absorbency and deflection, without compromising on the ball bounce nor the stability under foot.

The floor also features KTL's latest innovation with team logos and ads, printed directly on the raw wood, followed by a factory finish 7-layers anti-scratch finishing system for full protection.

The floor was supplied via one of KTL's US dealers, **RD Weiss** initiated by **Charles Doherty**.

The easy to handle system enabled eight people to install the 7,850sf / 785m² large portable floor in less than three hours, thanks to the limited weight and the carts.

## WIZINK CENTER, MADRID

The largest sports hall in Spain got its KTL Portable PRO Summit floor back in 2017.

After two seasons and more than 140 assemblies and disassembly, the KTL Pro Summit court supplied at the **WiZink Center**, the third most important venue in the world and first in Europe in number of events according to the international Pollstar magazine, only surpassed by **Madison Square Garden** in New York and the **Los Angeles Forum**, keeps performing to the highest level.

It is assembled in three hours, offering all its benefits as if it were the first day and guaranteeing excellent levels of play.

## NEW PARTNERSHIP

At the FSB exhibition in Cologne, Germany, November 5-8th 2019, KTL group presented its new partnership with EPI group from the Netherlands, a large producer of Polyurethane floors, including sports floors for both indoor and outdoor use. Together we combine "The Best of both Worlds" into unique sports floor solutions for any event. A joint Scandinavian Showroom will be open in Copenhagen, Denmark, in January 2020.

In North America, Centaur Sport Contracting, Canada's Largest Sport Contractor which have just been awarded the "2019 Burnaby Business of the Year" by Burnaby Board of Trade is proudly taken on board as KTL partner recently, to service Canadian clients.

The wide range of sports floors includes combi-elastic sports floor systems with advanced subfloor constructions, all with focus on sports functional characteristics, loading capacities and the efficiency of the installation itself.

KTL Portable PRO Summit presented at FIBA PLAZA at the FSB Exhibition in Germany, including a new printing technique of logos directly onto the raw wood. See photo below.

All KTL sports floor systems are tested and approved according to EN 14904 and certified to FIBA level 1. ■

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## STADIUMS
### ASIA & AUSTRALASIA

## AUSTRALIA

### Adelaide: Adelaide Oval
The Adelaide Oval will become the first stadium in Australia to feature an integrated hotel under plans revealed by the Stadium Management Authority (AOSMA). The hotel will be contained within the Adelaide Oval area and will not impact the parklands or the existing plaza. The design is being overseen by COX Architecture and project managed by Mott MacDonald, the same team responsible for the award-winning redevelopment of Adelaide Oval. The 128-room boutique hotel will feature two wings that will integrate into the existing design on either side of the East Gate.

**Completion** 2020

### Adelaide: Memorial Drive Tennis Centre
Upgrades to Memorial Drive Tennis Centre inlclude a new woven fibreglass membrane fabric roof covering the existing stands and centre courts; four refurbished ITF standard Plexicushion match courts; new fencing and lighting; improved access between the centre and outside courts during tournaments.

**Completion** 2020

### Brisbane: Dolphin Oval


Phased redevelopment of the Redcliffe Dolphin Stadium at Kippa-Ring to help Brisbane Bombers' NRL expansion. Multi-stage upgrade for Redcliffe Dolphins rugby league club. 4,000-seat western stand completed June 2016. More stands to follow on eastern and northern ends. Covered seating, upgraded change rooms and a recreation area for schools and junior player camps. Finance: Federal Government AUD$4m, Moreton Bay Regional Council AUD$3m.

**Capacity** 10,000

### Brookvale, NSW: Brookvale Oval
Proposed new home of NRL team Manly Sea Eagles to resist urge to move to Allianz Stadium. Community consultation process. Development of land on Pittwater Road for commercial and residential. Owner: Warringah Council.

**Capacity** 23,000

### Cairns: Rectangular Stadium
Study commissioned from Coffey Sport and Leisure. Owner: Cairns Regional Council.

**Capacity** 20,000
**Cost** AU$66m

### Canberra Stadium
Crumbling home of the ACT Brumbies and Canberra Raiders. Maintenance costs of AU$2m per annum. Naming rights in prospect and then new under cover multi-purpose stadium in Civic for Raiders, Brumbies, soccer, concerts, conferences, netball and basketball. Expandable to 45,000 for any future World Cup bid.

**Capacity** 25,000-35,000
**Completion** 2020

### Darwin: TIO Stadium
Proposal by AFLNT (Chief Executive Tony Frawley) for upgrade of TIO Stadium at Marrara Sporting Complex. Expanded main grandstand, portable stands on the scoreboard side, kitchen and dining facilities, new changerooms and resurfacing. Designs and feasibility study (AU$50,000) completed for submission to the Federal and Northern Territory Governments

**Cost** AU$80m

### Fremantle Oval Precinct
Development to maximise community use and commercial exploitation for Fremantle Football Club, South Fremantle Football Club, the Western Australian Department of Sport and Recreation, and the AFL. Masterplan: Coffey Commercial Advisory, Cox Architects, WT Partnership.

Commonwealth Games 2018: athletics competition and the opening and closing ceremonies. Capacity will be temporarily increased from 25,000 to 40,000. A new warm-up track will also be constructed. Owner/operator: Stadiums Queensland.

**Capacity** 40,000

### Gosford: Central Coast Stadium
Australian Hyundai A-League team the Central Coast Mariners have revealed plans for upgrades to their Central Coast Stadium. The main components of a stage one upgrade to include: dual big screens in the south east and north west corners of the venue; weather/sun protection over the northern grandstand; yellow seats; additional changing rooms; wi-fi compatibility; state of the art sound system; upgrade of the corporate facilities (including a 100-seat function room); retail and café precinct.

### Melbourne: MCG Sports Link
The Melbourne Cricket Club (MCC) and the Melbourne Cricket Ground (MCG) Trust have presented a billion-dollar plan to the Victorian Government that proposes a link between the MCG and the Melbourne and Olympic Parks. Elevated pedestrian podiums stretching from the MCG to Richmond Station and a new hotel and health club, with later development to include decking of the railway tracks between the MCG and the Melbourne and Olympic Parks decked, with open space created for events in the middle. To compliment the expected redevelopment of the Great Southern Stand.

### Richmond: Tigers Stadium
Proposal by Richmond Tigers AFL (CEO Brendon Gale) for new stadium at the club's Punt Road Oval headquarters. Team plays at MCG but could use a lower-capacity, low-cost stadium to make smaller fixtures more viable.

**Capacity** 40,000

### Rockhampton, Queensland: NRL Stadium
Central Queensland Stadium committee set up to consider sites and manage licensing and approvals stages. Project is dependent on the success of the region in getting its own NRL team. Stadium and 1,000-seat convention centre. Jobs: 425 (operational). Developer: Capricorn Enterprises (CEO Mary Carroll). Architect: Populous. Finance: State Government.

**Capacity** 20,000
**Cost** AU$130-150m

### Sydney: Allianz Stadium
Naming rights deal is helping fund upgrade to Sydney Football Ground. Proposed level-one deck to connect to the eastern and western stands, forming a continuous upper bowl to provide extra seats at the goal ends. Developer: Sydney and Cricket and Sportsground Trust.

**Capacity** 60,000 (55,000)

### Sydney: Blacktown Olympic Park (BOP)
Proposed upgrade to host a new AFL franchise in western Sydney. 170 metre by 150 metre main oval with a second practice field and ancillary facilities.

**Capacity** 10,000 (current)

### Sydney: ANZ Stadium
Plans for the A$810 million redevelopment of the ANZ Stadium in Sydney Olympic Park, Australia, have been revealed. The NSW Government has unveiled the scheme, which would see the stadium's capacity reduced from 85,500 to 70,000, with capacity for a further 20,000 people on the field for concerts. The plans include changing the playing field from an oval to a rectangular shape.

Operator: STADIUM Australia Operations Pty Ltd (ANZ Stadium Managing Director Daryl Kerry). Contractor: Laing O'Rourke. Architect: BVN Donovan Hill. Engineer: Arup. Vision includes a retractable roof, reconfiguration of the Stadium's lower seating bowl to improve spectator viewing and playing field dimensions – bringing spectators as close as five metres to the field of play at the northern and southern ends of the Stadium through the installation of moveable grandstands and creating a perfect rectangle for rugby league, rugby union and football; increasing the eastern and western boundaries to provide longer straight-hit boundaries in cricket and a more traditional oval shape for AFL. New and refurbished player and spectator facilities including restaurants, bars, terraces and eateries. Development of the precinct outside the Stadium, which is expected to include new precinct bars, cafes and restaurants for Stadium patrons to enjoy before and after events.

**Capacity** 80,000
**Cost** AU$350m
**Completion** 2018

### Sydney: Ken Rosewall Arena
The stadium named in honour of Australian tennis legend Ken Rosewall is currently having a roof built as part of a A$50.5 million upgrade to the arena and the Sydney Olympic Park Tennis Centre. The project includes:

Construction of a canopy roof structure over Ken Rosewall Arena and Show Court 1; upgrades to player and media facilities; additional lighting, seating and public amenities; new sprung floor to allow for multi-sport use.

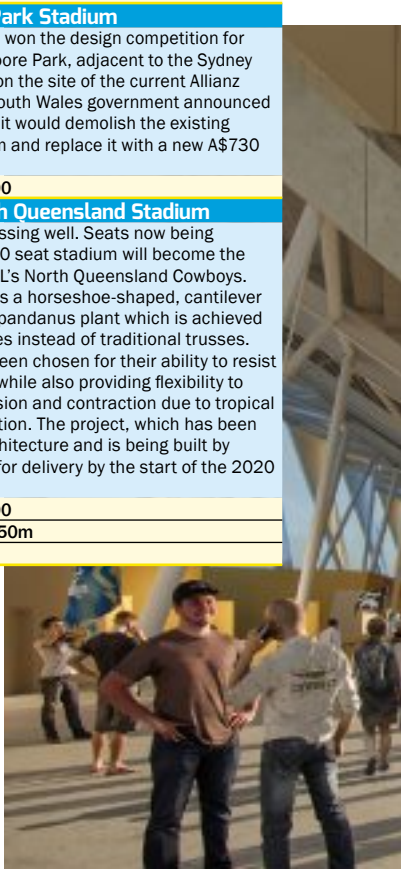
**Completion** 2020
**Cost** AU$50.5m

### Sydney: Moore Park Stadium
Cox Architecture has won the design competition for a new stadium at Moore Park, adjacent to the Sydney Cricket Ground and on the site of the current Allianz Stadium. The New South Wales government announced earlier this year that it would demolish the existing 40,000-seat stadium and replace it with a new A$730 million stadium.

**Capacity** 45,000

### Townsville, North Queensland Stadium
Construction progressing well. Seats now being installed. The 25,000 seat stadium will become the new home of the NRL's North Queensland Cowboys. The stadium features a horseshoe-shaped, cantilever roof inspired by the pandanus plant which is achieved by using folded plates instead of traditional trusses. These plates have been chosen for their ability to resist cyclonic wind loads while also providing flexibility to allow for roof expansion and contraction due to tropical temperature fluctuation. The project, which has been designed by Cox Architecture and is being built by Watpac, is on track for delivery by the start of the 2020 NRL season.

**Capacity** 25,000
**Cost** AU$250m
**Completion** 2020





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## CAMBODIA

### Phnom Penh: Morodok Techno National Stadium

Centrepiece of the 2023 Cambodia SEA Games, in multi-purpose sports complex on the outskirts of Phnom Penh in Prek Phnov. Complex also houses Olympic swimming pool, outdoor football pitch, running track, tennis courts and dormitories for athletes. Finance: $100m donation from the Chinese government.

| | |
|---|---|
| Capacity | 60,000 |
| Cost | $100m |
| Completion | 2021 |

## CHINA

### Dalian: Dalian Yifang FC Academy

Architects Cruz y Ortiz have been chosen to design a youth football training complex in Dalian.

The Dalian Yifang FC Football Academy will be built according to top international standards by the Dalian Municipal Government and Wanda Group. The project covers an area of 22 hectares with a construction area of 90,000m2 the. Total investment is $290 million. A cluster of 23 football fields for training and competition will be built, including 12 standard pitches, six floodlit pitches, two with an under-soil heating system, two indoor pitches and 1 competition pitch with a 5,000-seat stand.

The training base will consist of five buildings equipped with world-class accommodation, teaching, rehabilitation, conference and other supporting facilities.

| | |
|---|---|
| Cost | $290m |

### Rizhao: Rizhao Sports Facilities

AFL Architects have been commissioned for the design of major new sports and leisure facilities for the city of Rizhao in Eastern China. The designs, for three sites across the city, will be part of a larger masterplan, encompassing a 12,000 capacity stadium, an esports arena, a multi-sport venue, and hotel/retail developments. Plans also include academy accommodation, community spaces, and professional training facilities. Working directly with a commercial JV client and partnering with the Kehua Sport organisation, this will be AFL's third commission with Kehua Sport and sixth in the country. The esport arena will be the first in the region, with approximately 3,000 – 4,000 capacity, and will be AFL's first esport arena.

| | |
|---|---|
| Completion | 2022 |

### Hong Kong: Kai Tak Sports Park

The Hong Kong government has awarded the contract for the design, construction and operation of the Kai Tak Sports Park to Kai Tak Sports Park Ltd, a subsidiary of New World Development Company Limited and NWS Holdings Limited established specifically for the project. Its project team comprises overseas and local experts experienced in design, construction, venue management, sales and marketing, and retail and operation. Project team members like Populous, SMG and Lagardère Sports are recognised global industry leaders with extensive experience in the design and operation of large scale international projects as well as the management of major sports venues. Proposed stadium at heart of 24 hectare sports hub as part of redevelopment of airport site. The current Design, Build and Operate scheme includes a 50,000-seat, retractable roofed stadium, a public sports ground with seats for at least 5,000 and an indoor arena with 10,000 seats. Government seeking HK$32 billion (US $4.1 billion) from the legislature to help build the huge sports park Developer: Home Affairs Bureau. Finance: public.

| | |
|---|---|
| Capacity | 50,000 |
| Cost | HK$32bn |
| Completion | 2022 |

### Hubei Province: Yichang Sports Centre

Main stadium and other facilities.

| | |
|---|---|
| Capacity | 40,000 |

### Jiangsu Province: Yancheng Stadium

Main stadium and other sports facilities in Sports Centre configuration. Outdoor tennis (1,000) and swimming (1,500) and indoor arena. Area (site): 218,298m².

| | |
|---|---|
| Capacity | 34,000 |

### Shaanxi Province: Xianyang Sports Centre

Outdoor stadium Area: 68,695m².

| | |
|---|---|
| Capacity | 40,000 |

### Zhejiang Province: Hangzhou Stadium

Main 'Olympic Stadium' and separate tennis centre (+12,000). Adjoining Hangzhou Olympic Sports Expo Centre will be a large urban complex which is expected to boost economic activity in the areas of commerce, travel, accommodation, entertainment, food, leisure, vacation, shopping and other services.

| | |
|---|---|
| Capacity | 80,000 (stadium), 12,000 (tennis) |

### Zhejiang Province: Ningbo Sports Centre

Main stadium, arena and swimming hall. Area: 598,000m².

| | |
|---|---|
| Capacity | 46,000 |

*North Queensland Stadium*

## GOA

### Panaji: Campai Football Stadium

With the original stadium already demolished, the State Government has promised a FIFA-compliant soccer stadium in the next 18 months. The project is being developed in consultation with Collage Design, the infrastructure consultants for the 2017 Under-17 World Cup in India.

| | |
|---|---|
| Capacity | 4,000 |
| Cost | Rs 45 crores |
| Completion | 2018 |

### Thivim Cricket Stadium

For international matches and Indian Premier League (IPL) matches. Area: 100,000m². Owner: Goa Cricket Association (president Chetan Desai). Needs government approval.

| | |
|---|---|
| Capacity | 35,000 |

## INDIA

### Bihar: Nalanda International Cricket Stadium

Cricket stadium under coonstruction in Nalanda, Bihar. After completion the stadium will be home of Bihar cricket team. Construction began in 2018.

| | |
|---|---|
| Capacity | 41,000 |
| Completion | 2021 |

### Dwarka Cricket Stadium

International cricket stadium to become HQ of Delhi and District Cricket Association (DDCA). DDCA talking to ministry of urban development over the process of identifying and acquiring 10 acres required. To replace The Kotla (38,167).

| | |
|---|---|
| Capacity | 50,000 |
| Cost | Rs 150 crore |
| Completion | 2020 |

### Gujarat, Ahmedabad Cricket Stadium

Construction work is well underway on what will become the largest cricket stadium in the world in Gujarat, India. The makeover of the Sardar Patel Cricket Stadium in Motera, Ahmedabad is progressing well and on completion the venue will be able to hold 110,000 people. Populous has designed the new Motera Cricket Stadium which will be home to the Gujarat Cricket Association and is being built in collaboration with India's top contractor Larsen & Toubro. The new complex is expected to take about two years to build and facilities include three practice grounds and an indoor cricket academy. The stadium will have 76 corporate boxes, four dressing rooms, a clubhouse and an Olympic-size swimming pool. Once completed, it is also expected to be the home of Indian Premier League side, the Gujarat Lions..

| | |
|---|---|
| Cost | US$84m |

### Hindustan, Solan, Chail: Cricket stadium

Preparing detailed project report for construction of a cricket stadium (international standards).

### Jammu and Kashmir Cricket Stadium

International standard cricket stadium on land donated by government to Kashmir Cricket Association (JKCA). Finance: Board of Control for Cricket in India (BCCI).

| | |
|---|---|
| Capacity | 35,000 |

### Kerala: Stadium programme

Multi-purpose indoor stadium in each of the 14 Districts of the State. Finance: Kerala Government plus renovations and upgrades to existing facilities. Announced as part of the first budget, using money from the Special Infrastructure Fund. Stadium names will be dedicated to sports personalities who have done Kerala proud: Thiruvananthapuram (Thomas Sebastian, football), Kollam (Olympian Suresh Babu, athletics), Pathanamthitta (Blessen Goerge, volleyball), Alappuzha (K. Udayakumar, volleyball), Kottayam (Susan Mable Thomas, athletics), Ernakulam (Olympian O. Chandrasekharan, football), Idukki (K.P. Thomas, athletic coach), Thrissur (I.M. Vijayan, football), Palakkad (K.K. Premachandran, athletics), Malappuram (P. Moideen Kutty, football), Kozhikode (Olympian T. Abdul Rehman, football), Wayanad (C.K. Omkaranathan), Kannur (Jimmy George, volleyball), Kasaragod (M.R.C. Krishnan, football). Sports Department also planning a mini stadium in each of the panchayats in the State (Rs. 5 crore each). Renovations of the Jawahar stadium in Kannur and the construction of a new stadium in Adoor (Rs. 10 crore each). Upgrading of sports schools (Rs. 30 crore each to two schools), volleyball academy in Alappuzha named after Kalavoor Gopinath (Rs. 50 lakh) at the new indoor stadium named after K. Udayakumar. Finance: Kerala State Sports Council and Directorate of Sports and Youth Affairs. Budgeting has begun for the Asian Beach Games in the State during 2018.

| | |
|---|---|
| Cost | Rs 500 crore (US$74m) |

### Madhya Pradesh: Indore Sports Complex

Proposed sports city in Indore, Madhya Pradesh. Indore Development Authority gave 100 acres of land to build the complex including a cricket stadium, indoor stadium, tennis court, aquatic centre as well as stadia for other outdoor sports like athletics, football and hockey.

### Madhya Pradesh: Gwalior Cricket Stadium

Under construction stadium at Shankarpur village in Gwalior West. The proposed stadium will be built on a land of 30 acres, which has been taken over by Gwalior Division Cricket Association (GDCA). The construction of the proposed stadium is expected to be completed in 2021. It will have a seating capacity of around 50000 spectators. It will also be equipped with flood lights for night matches, a swimming pool, sauna bath, modern gym, dressing room, and 30 corporate boxes

| | |
|---|---|
| Capacity | 50,000 |
| Completion | 2021 |

### Mussoorie: Multipurpose Stadium

Stadium in hill town at altitude of 1,800 metres. Ahead of 38th National Games (2018). Outdoor stadium for hockey, football and 400-metre athletic track, indoor hall for four badminton courts and table-tennis. Basketball and volleyball courts inside the stadium. Area: 3.6 hectares. Construction: Uttarakhand Peyjal Nigam.

### Punjab: Shahbaz Park & Sports Stadium

Main stadium and community sports facilities.

## INDONESIA

### Jakarta International Stadium

Work has begun on Jakarta International Stadium or BMW Stadium. The venue is a retractable roof multi-purpose stadium in Tanjung Priok, North Jakarta. Once completed, it will be used as home ground for Persija Jakarta and also will be mostly used for football matches. The stadium will be built on a 30 hectares land and will be able to host 82,000 spectators.

| | |
|---|---|
| Capacity | 82,000 |
| Cost | US$350m |
| Completion | 2021 |

## JAPAN

### Tokyo: Kasumigaoka National Stadium

The Japan Sport Council has confirmed that the National Stadium being built for the for the Tokyo 2020 Olympics has been completed.
The Kengo Kuma-designed new National Stadium will host the opening and closing ceremonies of both the Olympics and Paralympics. Lumber from earthquake hit area. Tiered levels with plants and trees on concourses. Japanese-style interiors. Architect: Kengo Kuma. Construction: Taisei Corporation, Azusa Corporation. Ambition to incorporate green technologies. Owner: Japan Sports Council. Area: 290,000m$^2$. Architect: Kengo Kuma. General constructor: Taisei Corporation and Azusa Corp.

| | |
|---|---|
| Capacity | 68,000 (expandable to 80,000) |
| Cost | ¥149bn (£932m) (US$1.3bn) |
| Completion | November 2019 |

### Ariake Tennis Park

Some permanent, some temporary stadiums. Legacy: temporary parts will be re-used for community and schools sport. Capacity main stadium 10,000, stadium$^2$ 5,000, stadium3 3,000 (legacy 1,000), stadium4 2,500 (legacy 0).

| | |
|---|---|
| Capacity | 20,500, legacy 3,500 (total) |
| Cost | US$66.754m |

### Dream Island Archery Field

Tokyo 2020: archery. Legacy: integrated into the parkland surroundings, to host national and international archery competition events. Owner: Tokyo Metropolitan Government.

| | |
|---|---|
| Capacity | 7,000 |
| Cost | US$15.84m |

### Fukushima: Fukushima United Stadium

Japanese third division football club Fukushima United FC have revealed plans to build a new 15,000 seat stadium. The stadium will be built with a football pitch that can be lifted up and down depending on the nature of the event being staged at the venue. In football mode the pitch will be placed below the level of the stands, but for concerts and indoor sports such as basketball, the pitch would be elevated to become a part of the roof structure. The capacity of the stadium will be at least 15,000 to meet the J-League requirement for promotion to the top flight.

| | |
|---|---|
| Capacity | 15,000 |

*Japan National Stadium*

Amsterdam ArenA, Netherlands

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Seaside Park Hockey Stadium

### Hokkaido: Hokkaido Ballpark

Architects HKS have been chosen to design a new ballpark and entertainment district in Kitahiroshima, Hokkaido, for the Nippon-Ham Fighters Baseball Club. The ballpark will be the centrepiece of a new entertainment district and fully integrated into the community. Future entertainment facilities include retail, hospitality, residential, parks and public spaces – a destination for families and fans throughout the region.

It is expected to have a high peaked roof reminiscent of traditional old-style Hokkaido homes, and a massive transparent "glass wall" on the outfield side of the park. This will allow the park to be fully enclosed during Hokkaido's frezzing winters and still support natural grass. The retractable-roofed ballpark – a first in Japan – will have a 35,000 capacity and is expected to debut in March 2023. Construction is due to get underway in 2020.

| | |
|---|---|
| Cost | $540m |
| Completion | 2023 |

### Kanazawa: Kanazawa Stadium

The City of Kanazawa has selected Azusa Sekkei's design for the new municipal football stadium to be built inside the Johoku Municipal Athletic Park. The new football stadium will be built in the area where football facilities such as the Cruyff Court Keisuke Honda and Junior Sports Court currently stand. These existing football facilities will be moved elsewhere within the park.

With a provisional capacity of 10,000, which can be increased to 15,000 should the local Division 2 team Zweigen Kanazawa be promoted to the J-League Division 1 (J1), the country's top-flight football league, the stadium will also have a natural grass pitch, a roof covering all seats, and operational facilities and areas required to host J1 matches.

The south entrance of the stadium will have a Welcome Gate to provide an open space for fans and supporters. Also, the area underneath the concourse to the stands will be used as a multi-purpose space to host even

| | |
|---|---|
| Completion | 2023 |

### Sea Forest Waterway

Tokyo 2020: rowing and canoe-kayak (sprint). Legacy: rowing and canoe competition plus leisure. Construction of additional permanent structures required.

| | |
|---|---|
| Capacity | 24,000 (10,000 seated), legacy 2,000 |
| Cost | US$78.069m |

### Seaside Park Hockey Stadium

Newly built in Ohi Seaside Park. Tokyo 2020: hockey. Legacy: remodelled as a hockey stadium with 4,000 capacity. Owner: Tokyo Metropolitan Government

| | |
|---|---|
| Capacity | 10,000 (legacy 4,000); stadium 25,000 |
| Cost | US$28.286m |

## KOREA

### Changwon City: NC Dinos Baseball Park

The new Changwon NC Park ballpark has opened. The Populous designed ballpark is home to the NC Dinos of the Korea Baseball Organisation (KBO). Designed to be active all year round, NC Dinos ballpark is a major breakthrough for sport and entertainment venues in South Korea. It is the first baseball stadium to have 360° views to the field and integrate with the park outside. As part of the innovative design, all of the commercial spaces in the stadium including the restaurants, fan retail shop, function room and café are operational during the off-season. Design and build: Populous and Haeahn Consortium.

| | |
|---|---|
| Capacity | 22,000 |
| Cost | US$100m |
| Completion | 2019 |

### Seoul Ballpark

New baseball stadium next to the Han River and sport facilities built for the 1988 Summer Olympic Games. Part of the city's urban development plan in Jamsil, southeastern Seoul. Current stadium will be demolished to make way for exhibition and convention facilities covering 100,000m². Olympic swimming pool and gymnasium will also be renovated into an indoor sports complex. Home for the LG Twins and Doosan Bears, To begin in 2021. Developer: Seoul Metropolitan Government.

| | |
|---|---|
| Capacity | 35,000 |
| Cost | Won 2-3tn |
| Completion | 2023 |

## MALAYSIA

### Kuala Lumpur: Sports City

Government refurbishment of Bukit Jalil National Sports Complex into Kuala Lumpur Sports City. Project 1 readies Bukit Jalil National Stadium to host the 2017 Southeast Asia (SEA) Games, will carry out targeted works on Putra Stadium, National Aquatic Centre and National Hockey Stadium, improve integration with current and existing public transport links, and enhance pedestrian access across the site. Project 2 (early 2018) will create KL Sports City, a fully-integrated sports hub with high performance sports training facilities, a sports rehabilitation science centre, a youth park, public sports facilities, a sports museum, youth hostel, convention centre, and a sports-focused retail mall. Project designer: Populous. Design and build: Rukun Juang Sdn Bhd (RJSB).

| | |
|---|---|
| Capacity | 80,000 |
| Cost | US$237m |
| Completion | 2020 |

### Johor: Sultan Ibrahim Larkin Stadium

Johor Darul Ta'zim's (JDT) new stadium (club owner Tunku Ismail Ibrahim). Part of JDT Sports City project. Construction: Forest City. Area: 35 acres. Finance: private, including investment from Valencia CF.

| | |
|---|---|
| Capacity | 45,000 |
| Cost | S$180 (US$127m) |
| Completion | 2019 |

## NEW ZEALAND

### Auckland: Waterfront Stadium

Proposals for a new sports stadium on the waterfront in downtown for Vodafone New Zealand Warriors (Chairman Bill Wavish), the Blues and soccer. City supportive but could be as much as a decade off. To replace Mount Smart Stadium. Club looking for government financial support to add to possible private funding of NZ$100m. Regional Facilities Auckland (RFA) Chief Executive, Chris Brooks, investigating.

### Dunedin: University Oval

Proposed enlargement of the playing area of the Dunedin ground for Otago Cricket (Chief Executive Ross Dykes) and to make it a test venue. Owner: Dunedin City Council.

| | |
|---|---|
| Capacity | 6,500 (3,500) |

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### Tauranga Stadium
Proposed purpose-built stadium at The Domain as part of civic heart project. Proposed by group of property developers. City to consider all submissions.

## PAKISTAN

### Islamabad: Benazir Bhutto Stadium
Cricket Stadium delayed over environmental concerns as the land is in the National Park Area at Shakarparian. Land lease: CDA (30% of stadium income). Developer/operator: Pakistan Cricket Board. Area: 35 acres. Area: 35 acres.

| | |
|---|---|
| Capacity | 50,000 |

### Karachi: Bahria Town Cricket Stadium
Pakistan's largest cricket stadium at the Bahria Sports City. Plus football ground, golf course, and a five-star hotel. Architect: GMP Architects. Owner: Bahria Town..

### Peshawar Soccer Stadium
Proposed stadium with central government support.

| | |
|---|---|
| Cost | Rs30m |

## PAPUA NEW GUINEA

### Port Moresby: Sir Hubert Murray Stadium
Private public partnership. Construction: Curtain Brothers. Government seeking sponsorship from BSP to finish main grandstand. New trustees will be appointed for ongoing operation. Will host games in Rugby League World Cup 2017. Minister for Sports and National Events: Justin Tkatchenko.

| | |
|---|---|
| Capacity | 20,000 |

## PHILIPPINES

### Manila Football Stadium
Home for national soccer team. Location to be decided. Owner: Philippine Sports Commission (PSC). Funding: annual operating costs FIFA.

| | |
|---|---|
| Capacity | 75,000 |
| Cost | P300m |

## TAIWAN

### Tainan Ballpark
City government planning to build an international standard baseball stadium in the city's coastal Annan District, featuring administrative and TV broadcasting facilities. Open international design contest for the baseball stadium and training complex. Second stadium and two little league arenas. Site area: 30-hectares. Gym, training pitches, dressing areas and public spaces. Project Sponsor: Department of Sports, Tainan City Government. Project Organiser: Bureau of Public Works, Tainan City Government. Co-organizer: Taiwan Engineering Consultants Group / Transcend Engineering Consultants.

| | |
|---|---|
| Capacity | 25,000 |

## SOLOMON ISLANDS

### Honiara: National Stadium
To host 17th Pacific Games in 2023.

| | |
|---|---|
| Completion | 2021 |

## TONGA

### Nuku'alota: National Stadium
Upgrade ahead of the 2019 Pacific Games. New Zealand-funded feasibility study and design.

| | |
|---|---|
| Capacity | 5,000 |
| Cost | $NZ2m |

# EMEA

## ALBANIA

### Tirana: National Soccer Stadium
To ensure hosting of UEFA competitions. On site of 70-year-old Qemal Stafa Stadium. Demolition of old stadium under way. Underground parking, hotel, shops and bars. Developer: Albanian soccer federation. Construction: Albstar.

| | |
|---|---|
| Capacity | 22,300 |
| Cost | €50m |
| Completion | 2019 |

## ALGERIA

### Algiers: Baraki Stadium
Soccer stadium, including practice facilities. VIP hospitality areas, conference rooms and offices. Secondary stadium, training fields, indoor halls, tennis courts, along with residential/educational and commercial facilities. Architect: Atelier Tom Sheehan & Partners (ATSP). Developer: Wilaya. Manager: DJSL. Engineers: GLI, DVVD, Designer: ABDI, QS: AD economist. Contractors: CRCEG (China).

| | |
|---|---|
| Capacity | 40,000 |
| Cost | €100m (overall €210m) |
| Completion | 2018 |

## AUSTRIA

### Vienna: Generali Arena

Upgrade for Austria Wien's soccer stadium. VIP lounges: 38. Temporary move to Ernst Happel Stadion. The north stand will hold 4,100 spectators and include 28 VIP boxes, two sky boxes and two boxes for dignitaries. It will have an underground car park for 370 VIPs. The east stand will hold 5,050 spectators and house the fan shop, museum and a restaurant. The west stand will seat 5,600 spectators, while the south stand will take 2,750 spectators and will also be host to two TV studios, the press area, as well as the team dressing areas. It will include 10 VIP boxes.

| | |
|---|---|
| Capacity | 17,500 |
| Cost | €42m |
| Completion | Q3 2018 |

## AZERBAIJAN

### Dalga: National Team Stadium
Base for national team, financed by AFFA.

| | |
|---|---|
| Capacity | 6,000 |

### FC Gabala Stadium
Stadium, training base (5 natural, 1 synthetic pitches) and Academy of Football Administration (education). Area: 7 hectares.

| | |
|---|---|
| Capacity | 15,000 |

## BAHRAIN

### Sakhir: Football Stadium
International standard stadium with football pitch, an underground shopping complex and a cinema in Southern Governate. To include an Olympic-size swimming pool, sports training schools and halls dedicated to various sports such as basketball, handball, bowling, badminton and table tennis. Also to help Bahrain enter the race to host the Asian Cup championships. Developer: Southern Municipal Council (council chairman Ahmed Al Ansari).

| | |
|---|---|
| Capacity | 50,000 |

## BELARUS

### Minsk: Dinamo Stadium
Reworking as large track-and-field complex to obtain category 1 IAAF certification. Olympic elements retained. Auxiliary stadium with warm-up ground, a sector for hammer, javelin and discus throwing along with dressing rooms and climbing wall. Perimeter will be covered with structures made of light materials. Turf: natural. New lighting, press centre, a physical culture complex, a medical centre, dressing rooms and halls for boxing, weightlifting and sports games. Catering facilities such as retail outlets, bars, cafes and restaurants as well as parking lots, including for buses, will be constructed. Backs bid to host the 2019 European Olympic Youth Festival. Design: Minskproject. Developer: Tourism Department of the Minsk City Hall.

## BELGIUM

### Antwerp: Royal Antwerp Bosuilstadion
Royal Antwerp FC plans to build a new western grandstand at its Bosuilstadion after winning promotion back to the top division of Belgian football. The new building will include changing rooms for players, referees and staff, a high-end media centre for the press, facilities for emergency services, catering, loges and VIP rooms.

| | |
|---|---|
| Capacity | 12,975 |

### Bruges: Club Brugge Stadium
Proposed new stadium and training centre in the north of Bruges for Club Brugge soccer team.

| | |
|---|---|
| Capacity | 40,000 |
| Cost | €100m |

### Leuven: Stadion Den Dreef
New two-tier east stand. Player facilities, club offices (250m²), media zone and two cafeterias. Corporate boxes: 10. Finance: €4m public loan, €500,000 grant, rest commercial.

| | |
|---|---|
| Capacity | 3,500 |
| Cost | €5m |

### Liege: Stade Maurice Dufasne
Corner filling to add 7,000 capacity at the home of Standard Liège. Possible car park.

| | |
|---|---|
| Capacity | +7,000 |
| Completion | 2018 |

### Ostend: KV Oostende Stadium
New stand with three floors in red-green wooden façade. Business seats: 1,250. Architect: Zwarts en Jansma and ABV+ Architecten.

| | |
|---|---|
| Capacity | 8,000 (+3,700) |
| Cost | €12m |

## BULGARIA

### Plovdiv: Botev Plovdiv FC Stadium
Work on Botev Plovdiv's renovated soccer stadium (Hristo Botev) halted after financial issues surrounding problems with Corporate Commercial Bank AD (owner Tsvetan Vasilev). Restarted. Concession owner: Botev Plovdiv (35 years). Architect: Georgi Savov.

| | |
|---|---|
| Capacity | 18,777 |
| Cost | €10m |
| Completion | 2020 |

### Sofia: National Stadium
Long-term commitment confirmed by Bulgarian Sports Minister Mariana Georgieva. Possible host of Euro 2020 games. Bulgarian Football Union, Bulgarian club Slavia and German investment company IFS have signed a preliminary agreement. On the site of Slavia's stadium. Volleyball and basketball facilities. Replaces Vasil Levski national stadium which will now be used for athletics only.

| | |
|---|---|
| Capacity | 40,000 |
| Cost | €40m |

## CROATIA

### Croatia: Kantrida Stadium
New-build stadium for HNK Rijeka on same site. It will have about 14,000 covered seats and will meet the standards of UEFA category 4. The stadium will have approximately 3,000 seats for VIP visitors and sponsors, around 1,000 family seats and some 4,000 seats for the most loyal supporters.

| | |
|---|---|
| Capacity | 14,000 |
| Completion | 2020 |

## EIRE/REPUBLIC OF IRELAND

### Dublin: Dalymount Park
Opening of the new stadium, which will be home to Bohemians and Shelbourne football clubs, has been pushed back to 2023. Plans for the newly renovated 6,000-seater, UEFA category 3 stadium were unveiled recently. Dublin City Council (DCC) said the venue would be a municipal stadium and include a library, flexible community space and meeting rooms, as well as concourse space at ground level which can be utilised for community activities and events on non-matchdays.

| | |
|---|---|
| Capacity | 10,000 |

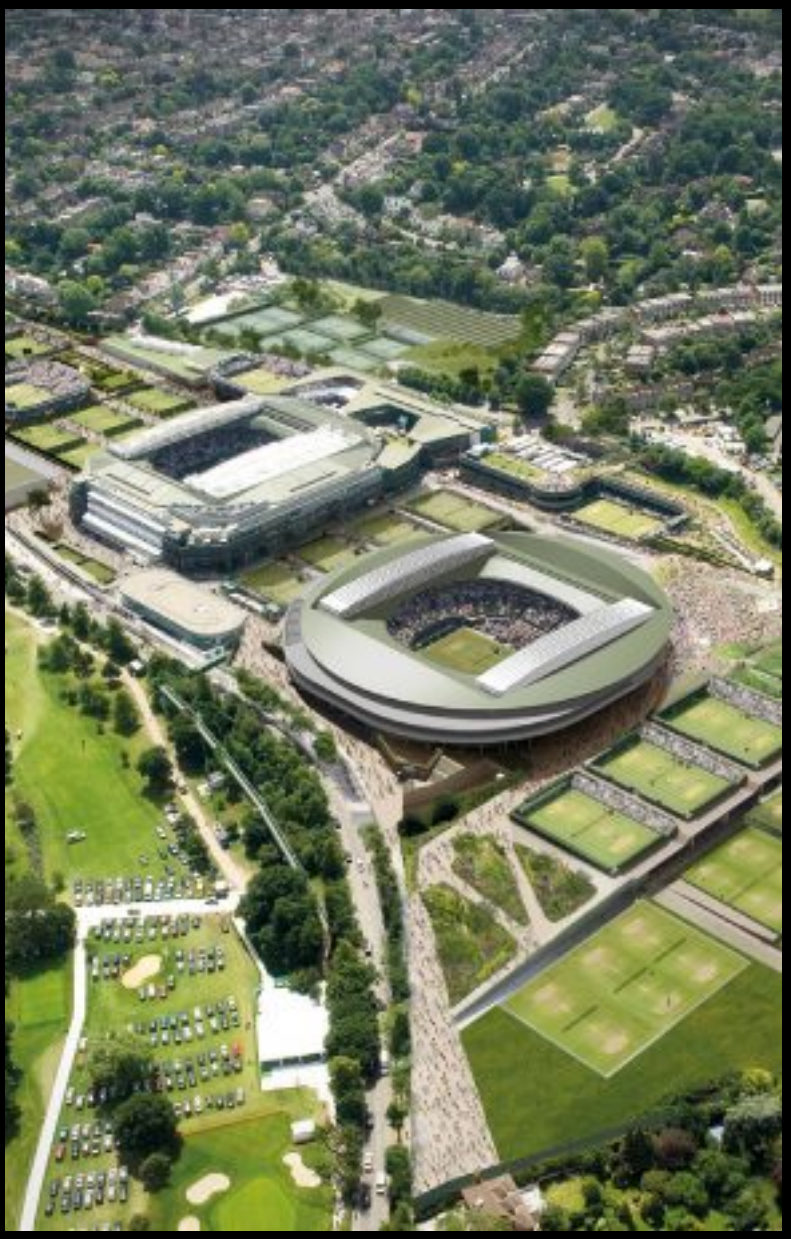
# GRIMSHAW

The Curragh Racecourse
Kildare, Ireland

Bath Rugby New Stadium
Bath, UK

YTL Arena Complex
Bristol, UK

Wimbledon No.1 Court
London, UK



Wimbledon Master Plan
London, UK

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## Connacht: Sportsground Stadium

Connacht Rugby has secured full planning permission for the redevelopment of its Sportsground stadium. The initial redevelopment plans were launched following an arrangement reached between the Irish Greyhound Board and the freehold owners of the Sportsground, the Galway Agricultural and Sports Society, with respect to a shared vision for the future of the Sportsground. The €30m project will include a full redevelopment of the stadium as well as a multi-use indoor High Performance Training Centre.

**Capacity** 12,000

## Dublin: RDS Arena

Planning application granted for redevelopment of three-storey Anglesea Stand as first phase of ground development (capacity to 21,000). Two-storey building attached via glazed bridge. International design competition won by Dublin-based Newenham Mulligan Architects and London-based Grimshaw Architects. Five designs anonymously shortlisted, with the winner chosen by a five-person expert jury. RDS, with Leinster Rugby, will work to complete the design that will host professional rugby matches, equestrian sports, music concerts and other sporting opportunities. Six-month time frame until choice of concept architect. Client: RDS (Chief Executive Michael Duffy). Tenants: Leinster Rugby (Chief Executive Mick Dawson), RDS Dublin Horse Show. Finance: applying for government grant, seeking naming rights deal.

**Capacity** 25,000 (18,500)
**Cost** €35m (Anglesea Stand €21m)
**Completion** 2019

## Dublin: St Patrick's Athletic

League of Ireland Premier Division team St Patrick's Athletic FC has revealed plans to build a new stadium in Dublin. In association with HRS Internationaland FESP International, St Patrick's announced a proposal for a major development at St Michael's Estate in Inchicore, to include new homes and an Inchicore Town Centre with state-of-the art retail, leisure and community facilities on top of which would sit the club's new stadium. The stadium has been designed by a leading European architect, David Mizrahi of HRS International.

**Capacity** 12,000

## Kildare: The New Curragh Racecourse

The centrepiece of the redevelopment of the Curragh will see the creation of a major new grandstand which will incorporate five star corporate facilities, restaurants, bars and superb viewing facilities. A new arrivals and reception area will incorporate a museum to celebrate the history of racing in Ireland. A new parade ring will ensure that more patrons can share in the excitement and build up to the racing. A new weigh room will provide even better facilities for the jockeys, while a completely refurbished stable yard will ensure that the real stars of the sport will also have first class facilities.

Architect: Grimshaw Architects; Architect implemntation: NMA Architects; Integrated desesign team: AECOM.

**Completion** 2019

## Limerick FC

Medium-term plan to build new stadium for Eircom League team playing at Hogan Park.

**Capacity** 7,000

## Tallaght Stadium

Tallaght Stadium will see its seating capacity increase to 10,000 with the building of a new North Stand. South Dublin County Council also plans to develop the West Stand to incorporate a high-quality corporate area. This work follows the expansion of the stadium in March of this year with the opening of the South Stand. In conjunction with these plans, South Dublin County Council intends to promote Tallaght Stadium as an events venue to include music, festivals and all aspects of community events. With stadium seating and temporary on-field seating, the venue will accommodate up to 20,000 people.

**Capacity** 8,000 (+2,150)

# ENGLAND

## Accrington: Wham Stadium

Redevelopment of the Accrington Stanley (owner Andy Holt) stadium. Terms agreed with Hyndburn Council on a 50-year lease. First phase: new 1,500-capacity all-seater single-tier stand down the Whinney Hill side of the ground. Ability to split to accommodate home and away supporters. Expandable to add corporate entertainment boxes and facilities. Architect: Frank Whittle Partnership.

**Capacity** 5,000

## Aldershot: Aldershot Town FC

Aldershot Town Football Club has presented Rushmoor Borough Council with its proposals for the redevelopment of the entire EBB Stadium.

The stadium has been the club's home since it was originally reformed in 1926. This would see the potential development of a new stadium, containing both seating and standing areas, that will give the Club a long-term home from which to build its ambitions on the pitch.

## Barnet: The Hive

Barnet FC have announced plans for a major overhaul of The Hive that would increase the stadium's capacity to approximately 8,000. AndArchitects proposals will involve replacing the current South terracing with a new all-seater stand as well as a revamp and extension of the East Stand. Also a new-look indoor Academy centre with indoor pitches behind the South Stand.

A new multi-purpose indoor sports hall will also be built at the back of the North Stand, with facilities for other sports such as basketball, netball and badminton.

Behind the North Stand sports hall will be a new 11-a-side 3G Astroturf pitch alongside eight smaller ones – open to the wider community as well as the Bees' Academy teams. Subject to planning approval from Harrow Council, the club anticipate that work on the site will begin at the end of the 2017-18 season.

**Capacity** 8,000

## Barrow: Furness Building Society Stadium

Five-year plan from owner Mark Casson to redevelop the Barrow AFC's stadium, including new stands on the Popular Side (currently a terrace), the Main Stand (seats and standing) and the Steelworks/Crossbar End (standing) sections of the ground. New fan, corporate and hospitality facilities will also be installed and the previously planned ground improvements, including the floodlights and Crossbar building, will be completed.

**Cost** £10m
**Completion** 2018

## Bath: Bath Rugby Stadium

Revised plans have been unveiled for the new Stadium for Bath after extensive consultation with residents and representatives of the English city. The height of the stadium has been reduced, while car parking allocation has also been cut.

Stadium for Bath is part of a plan to regenerate the riverside in Bath between Pulteney Bridge and North Parade and create a new, world-class community and sporting stadium at the Rec. A planning submission will be made early in the New Year.

Key design changes to the proposed stadium include:
Overall height reduction of 5.1m;
550 space car park providing blueprint for electric vehicle usage in the city;
Mature trees retained along riverside with enhanced public realm design;
Enhancements to West, East and North stands which maintain views to local landmarks including St Mary's Church, Bathwick and the hills beyond;
State of the art hybrid playing surface available for use all year round.

**Capacity** 18,000

## Beverley: Beverley Racecourse Grandstand

Beverley Racecourse has submitted an application to East Riding of Yorkshire Council for full planning permission for the £4.8m development, which will provide an enhanced customer experience and additional hospitality opportunities for racegoers.

The new grandstand will provide improved viewing for spectators, both inside and outside the building; expanded and enhanced catering and hospitality facilities; and fit-for-purpose kitchens, toilets and other amenities. The grandstand would replace the existing 1960s main stand which has rudimentary facilities and no disabled access beyond the ground floor.

## Birmingham: Alexander Stadium

Proposals for the redevelopment of Alexander Stadium have been submitted to Birmingham City Council's planning department for consideration. The stadium, at Walsall Road, Perry Barr, is set to be the focal point of the Birmingham 2022 Commonwealth Games, hosting the Opening and Closing Ceremonies as well as the athletics events.

The redeveloped stadium would increase its permanent seating capacity from 12,700 to 18,000 allowing more than 30,000 during the Games through additional temporary seating. Subject to planning approval, construction of the new stand will commence in spring 2020, with completion in late 2021 ahead of test events for the Birmingham 2022 Commonwealth Games.

Key features of the revamped stadium include:
A new western stand replacing the Main, Knowles and Nelson stands;
New tiered seating to the north and south;
A new 400m 6-lane warm up track and re-laying of a new IAAF Category 1 track (400m 9-lane competition standard track);
Improved public realm and parking provision, with additional landscaping and signage;
Installation of new stadium lighting and practice throwing field;
A new access road from A453 Aldridge Road (to be used for event/maintenance use only).The capacity of the stadium will be increased from 12,700 to 40,000 and 20,000 seats will be retained after the event.

**Cost** £75m

## Boston: Boston United Stadium

Community stadium for Pilgrims as part of The Quadrant. Developer: Chestnut Homes. Architect: WMA Architects and Planners. Planning permission granted. All-weather 3G pitch, educational facilities, conference and banqueting facilities; a café; education and community facilities; meeting rooms for hire; sports hall attached to stadium. Specifications to Football League standards.

**Capacity** 5,000
**Completion** 2018

## Bournemouth: Bournemouth Training Complex

AFC Bournemouth have put all major construction packages out to tender for the club's new training complex after revised plans were approved by the local council. The complex will be developed on the 57-acre former Canford Magna Golf Club site, which the Premier League club has owned for more than two years.

A phased build will create a state-of-the-art facility which will bring the Cherries' first team, development squad, academy and pre-academy training operations and facilities into one location.

The centre will offer first-class facilities, including 10 full-size pitches, three junior pitches, an indoor artificial playing surface, an outdoor artificial playing surface, state-of-the-art medical, fitness, sports science and rehabilitation facilities, administrative space and a press conference theatre.

## Cambridge Abbey Stadium

With the proposed community stadium for Cambridge United, Cambridge City and Cambridge Rugby Club blocked, the Club will now redevelop their existing Abbey Stadium. Stadium owner Grosvenor released their first sketches of potential designs for the redeveloped stadium in May 2015, with plans to change the name to the Cambridge Community Stadium. At present, the main plans are to increase the capacity in the Newmarket Road End to 3,500 and to introduce safe standing. The new design will include community facilities for public use.

The Habbin Terrace will also be completely redeveloped, which will see it become fully seated and expanded as well. The main stand will also be expanded slightly and redeveloped. Feasibility study: Cambridgeshire Horizons.

**Capacity** 8,000

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## Chester: Chester Racecourse

Plan Plans for the redevelopment of Chester Racecourse in the UK have been approved. Racecourse architects McGuirkWatson describe the work as having these key elements: Demolition of the Leverhulme Grandstand and removal of all car parking and ancillary buildings between the railway viaduct, Holiday Inn Express and the County Stand; a new pedestrian zone for racegoers and the public will be created between the County Stand, viaduct and Holiday Inn Express; a new Conference and Events Centre linked to a new Hospitality Grandstand is to be located between the Holiday Inn Express and the racecourse, with a service courtyard secluded between the two buildings.
Chester Race Company aims to complete the work in 2022.

**Cost** £100m

## Edgbaston: Warwickshire County Cricket Club

Warwickshire County Cricket Club has announced the next phase of development at Edgbaston Stadium. An £85 million project has been agreed with PATRIZIA UK and the Homes and Communities Agency to build 375 new Build to Rent homes and new retail and catering opportunities. The new development, which is subject to planning and local consents, will be built on a four-acre area of Edgbaston's site and it will also provide a new main entrance to the stadium on Edgbaston Road, a plaza area for match day spectator experience opportunities and an extension to the on-site car parking behind the RES Wyatt Stand.

**Capacity** 9,200

## Forest Green Rovers Stadium

Forest Green Rovers FC have resubmitted plans for a new 5,000-seater carbon neutral stadium. The EFL League Two club hopes to build the all-wooden stadium on land near junction 13 of the M5 near Stroud, Gloucestershire, UK.
Stroud District councillors voted against the proposal in June, citing concerns over noise, traffic and the impact on the landscape. Plans also included a car park for 1,700 vehicles and two full size grass practice pitches. These plans have now been slightly amended. Zaha Hadid Architects won the competition to design the new ground in 2016.

**Capacity** 5,000 (expandable to 10,000)
**Cost** £100m (overall project)

## Gloucester: Meadow Park Stadium

Construction work is set to begin on a new stadium for Gloucester City FC, after their original home was hit by severe flooding 12 years ago. Two new stands, each with 350 seats, will be positioned either side of the existing changing rooms. They have been ordered and the steel structure for the new 'T-End' and opposite terrace have also been placed for delivery with Dorchester based Snashall Steel. Soldi are the principal contractor for the build and are expected to take over the site with construction set to begin before Chirstmas.

**Capacity** 4,000
**Completion** 2021

## Grimsby: Grimsby Town FC Stadium

Sports and leisure property developer Extreme Leisure has teamed up with Grimsby Town FC to develop a new stadium at Peaks Parkway. Having signed an agreement with the Club, Extreme is now progressing with the viability assessment with a view to obtaining pre-application planning. The facility mix being considered includes a state-of-the-art 14,000-capacity soccer stadium, a new ice rink, additional sports & leisure facilities, retail and food & beverage offers.

**Capacity** 14,000
**Cost** £55m

## Harrogate:Harrogate Town FC

Harrogate Town FC has been granted planning permission for its proposed developments to the CNG Stadium. The National League North club's application was granted approval at a meeting of Harrogate Borough Council's planning committee. Proposals include a new two-storey clubhouse, seated terraces, an office building, classrooms to be used as community facilities and a new, improved floodlighting solution. The club's recently-installed 3G playing pitch was also approved by members.
The development will increase the capacity of the ground from 2,800 spectators to around 5,000.
The club was advised on its application by Indigo Planning and the scheme was designed by Bowman Riley Architects.

## Henley-in-Arden: Wasps Training Centre

Wasps Rugby has revealed plans to develop a new high-performance training centre in Henley-in-Arden, Warwickshire, UK, after buying a 13-acre site close to the town. The Premiership rugby club has not had a training base of its own since moving to the Ricoh Arena in December 2014. Contracts have been exchanged, subject to planning approval, and the deal will see a new training base for the first-team and Academy set-ups, complete with two grass pitches, an all-weather surface, skills area and gymnasium.
The club will shortly be submitting all applications with the aim of operating from the site for the start of the 2020/21 season.

**Completion** 2020

## Leamington: Leamington FC Stadium

Leamington FC looks set to push ahead with the development of a new 5,000 capacity stadium after a deal to buy land for the project was agreed.
Warwick District Council has approved the purchase of land off Europa Way in Leamington to allow for the development of the community football stadium.
Plans call for football stadium with a 3G artificial pitch, conference facilities, a gym, bar, café and community facilities on land adjacent to Europa Way and Gallows Hill.

**Capacity** 5,000

## Leeds: Leeds United FC training ground

Leeds United unveiled plans to build a new training complex in the city, close to their Elland Road ground.
In talks with Leeds City Council. The current first team training ground is based at Thorp Arch, which is over 40 minutes away from the heart of the City. In addition, the Club does not own the training facility at Thorp Arch, making it challenging for the club to bring forward their own improvement proposals that would meet the required Category 1 status. Leeds United is looking to move its official training facilities for senior and academy players to the currently vacant former Matthew Murray High School site in south Leeds. As part of the new developments, a 'Community Sports Village' would be built at Elland Road's Fullerton Park site.

## Leicester: Leicester City training Ground

Leicester City Football Club (LCFC) has won planning permission to build a new world-class football training facility at the former Park Hill Golf and Fishing Centre.
Key components of the masterplan include 12 full-size pitches, together with various smaller pitches and targeted outdoor training areas, including a full-size indoor pitch within a signature building that moulds into the landscape and forms a centre point to the masterplan.
Additionally, a fully integrated training facility building for the academy and first team players, incorporating medical, tactical, training and dining facilities will be built. Architect: KSS.

## Liverpool: Everton Stadium

Everton Football Club has revealed the proposed designs for its iconic new stadium. The new stadium would be built on semi-derelict dockland in North Liverpool and deliver a £1bn boost to the city's economy. Images of the stadium were revealed by world-renowned architect Dan Meis at an event for the club's fans held in a former warehouse at the Titanic Hotel just yards from the proposed Bramley-Moore Dock site, which is part of the wider Liverpool Waters development. The concepts show a stunning brick, steel and glass design which takes its inspiration from the historic maritime and warehouse buildings nearby. The club and Liverpool City Council have agreed the principles of an innovative finance model. The club intends to submit a detailed planning application for the stadium in the second half of 2019 and, at the same time, an outline planning application for the redevelopment of Goodison Park.

**Capacity** 50,000

## Liverpool: Liverpool FC Training Ground

Liverpool FC has confirmed that it will proceed with the redevelopment of its Academy site in Kirkby. The KSS-designed project will provide the club with world-class training facilities, including an elite performance centre for the first team and state-of-the-art training centre for its development squad teams. The new 9,200m2 training centre on LFC's Academy site creates a combined first team and U23 Academy facility, each of which has their own identity, along with new first-team pitches and parking within the site. The facilities will incorporate two gyms, a full-size sports hall, pool, hydrotherapy complex and specialist sports rehabilitation suites. There will also be dedicated TV studios, press conference facilities and office accommodation. The club has appointed building and civil engineering contractors, McLaughlin & Harvey, to deliver the project. Architects: KSS.

## Liverpool: Anfield

Liverpool FC has reaffirmed its intention to redevelop the Anfield Road stand with ambitious new plans now under active consideration. As part of this process, the six-time European champions have committed to engaging with the local community and other key stakeholders while pursuing a vision in keeping with the club's aspirations. The club said that as a direct result of this development, existing outline planning permission will be allowed to lapse in order to allow work to continue on alternative options with a view to submitting a new planning application for a larger scheme in due course.

## London: Allianz Park

Aviva Premiership rugby club Saracens Saracens Rugby Club has won planning permission and secured funding in partnership with Barnet Council to renovate the West Stand at Allianz Park. The club aims to start the construction phase at the end of the current rugby season (summer of 2019) with completion anticipated in 2020.
Matches will continue to be played at Allianz Park during this period. The £23 million redevelopment project will include: A fully accessible, weatherproof facility for 3,000 spectators; First-class hospitality experience; A centre of excellence for Middlesex University's London Sport Institute and Health Faculty that includes a purpose built simulation suite; A dedicated education centre operated by the award-winning Saracens Sport Foundation Improved training, medical and competition facilities for all users including athletics, rugby and community sport; The creation of a community garden designed by local school children; A new media facility.

**Completion** 2020

## London: Craven Cottage Stadium

Fulham FC has signed an agreement with lead contractor Buckingham Group Contracting Ltd, for the demolition and development of the Riverside Stand, commencing this summer. The new stand will not only increase the seating capacity at Craven Cottage but also enhance amenities to the ground and locality for supporters, residents and visitors to enjoy. The development boasts a transformation of the riverside walkway into a world class leisure destination; a pathway that will allow an uninterrupted walk along the banks of the River Thames between Hammersmith and Putney Bridges and a choice of amenities for visitors to enjoy throughout the year. The new stand will increase the overall capacity of Craven Cottage . Architect: Populous.

**Capacity** 30,000 (25,000)

## London: Emirates Stadium

Arsenal FC plan to increase capacity at the Emirates Stadium over the next two years. The Premier League club said the stadium's capacity has been reduced in recent seasons due to safety requirements and improvements to facilities for disabled supporters.
Work will begin next May on adding approximately 780 extra seats to Club Level to help bring capacity back in line with the original figure from 2006. It will involve adding an extra row to the front of Club Level and will take the stadium's capacity to just over 60,600. Construction will be completed in two stages during the summers of 2018 and 2019. Arsenal also plans to upgrade and refurbish additional areas of Club Level over the next two years. The first upgrade will be to Dial Square in the summer of 2018, which will see the area transformed to celebrate the club's original name of Dial Square Football Club.

**Completion** 2019

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## London: Brentford Community Stadium

A major milestone has been reached in the construction of Brentford FCs new home as a Golden Bolt ceremony was held. Brentford FC will be moving to its new stadium at the end of the 2019/20 season and construction has been underway since ground was broken in 2018.

The final piece of the steel frame was completed at Brentford Community Stadium on May 23, a moment that was marked with a ceremony on site known as a Golden Bolt ceremony. The 17,250-seater stadium and associated development commenced in Q2 of 2018 with the Club's development partner EcoWorld London, and its stadium principal contractor Buckingham Construction Group Limited. The club, which is set to share the new venue with London Irish RFC, submitted a revised planning application. Amendments included: Reducing the capacity from 20,000 to circa 17,250+; Reducing the stadium footprint to introduce a new road along the northern perimeter; Compressing the stadium 3m to the south (staying within the approved planning envelope); Converting the east and west stands to a single tier; Lowering the roof form on the east and west stands; Lowering the south stand by removing the top tier; Providing more premium seats from 1,800 to 2,930. This will strengthen an important revenue stream for the Club; Making it Premier League and Premiership Rugby compliant from day one.

| | |
|---|---|
| Capacity | 17,250 |
| Cost | £70m |
| Completion | 2020 |

## London: Lords Cricket Ground

Marylebone Cricket Club (MCC) has been granted planning permission to build two new stands to replace the existing Compton and Edrich stands.

The redevelopment of the stands at Lord's forms the second phase of the ground's updated Masterplan.

The designs by double Stirling Prize winners WilkinsonEyre will remain consistent with the overall architectural identity of Lord's and the 'village cricket green' ethos, whilst working to improve the overall harmony of the north-east end of the ground.

The plans include much needed upgraded amenities. There are currently no facilities within the existing stands, with poor sightlines in the lower tiers.

The new designs include integrated catering and WC facilities, and vastly improved sightlines for the seats in the lower levels which will substantially improve the spectator experience. Work on site is scheduled to start after the Test Match against Australia in 2019.

The proposed new three-tier stands will increase the capacity of Lord's by around 2,500 seats to a total of 11,500. The timeline of the Updated MCC Masterplan is:

2019-21: new Compton and Edrich stands with up to 2,000 extra seats built.

2021-22: new East Gate Building (first phase).

2023-25: East Gate Building (second phase), including goods entrance, car park, shop, hospitality facilities and ECB offices.

2025-26: demolition of the Nursery Pavilion and extension of the Nursery Ground playing area up to the Wellington Road. The Nursery Ground would be slightly larger than at present.

2027-30: construction of the South-Western Project, principally including the redevelopment of the Tavern and Allen Stands and Lord's Tavern.

2031-32: new facilities for groundsmen and ticket office staff would be built at the North Gate.

| | |
|---|---|
| Capacity | 32,000 (29,500) |
| Cost | £180-200m |
| Completion | 2022 (seoond phase) 2027 (entire) |

## London: Oval Cricket Ground

Surrey County Cricket Club has been granted full planning permission for the redevelopment of the Lock/Laker Stand. The new development will see a new three tier stand built in between the Micky Stewart Members' Pavilion and the Peter May Stand, with considerable new facilities for match day experience, conference and events and hospitality included in new buildings that will link to the stand, known as One Oval Square.

Construction will begin in October 2019, immediately after the conclusion of the cricket season. It will be phased over one and a half years. The redevelopment would increase the capacity of the Test Match ground in Kennington, London, to 28,000. There will also be an extension to the Micky Stewart Members' Pavilion, by adding an extra wing to the original building, built in the 1890s, which will make it fully symmetrical when viewed from the Vauxhall End of the ground and add new rooms for Members' use on match days.

| | |
|---|---|
| Completion | 2021 |

## London: QPR Stadium

QPR are looking to develop a new stadium on the site of the Linford Christie Stadium in London after plans for development at Old Oak were thwarted. The Championship side could develop a partnership with athletics club Thames Valley Harriers which use the stadium next to Wormwood Scrubs. The venue was originally called the West London Stadium and was then named after Olympic 100m champion Linford Christie, who grew up in the area. The new potential site is located a mile from QPR's current Loftus Road home. QPR previously announced plans for a stadium at Old Oak,Common but acquiring the land from the owner proved difficult. Developement partner: Stadium Capital Developments. Masterplanner: Farrells. Architects: CZWG and Populous. Project manager: EC Harris. Planning advisor: Savills. Land agent: Anthony Green & Spencer.

| | |
|---|---|
| Capacity | 40,000 |

## London, Chelsea: Stamford Bridge

Chelsea Football Club's plans for a new 60,000 seat stadium to replace Stamford Bridge have been put on hold. The move comes as owner Roman Abramovich was denied a visa to return to the UK. He has since become an Israeli citizen. A right to light issue for neighbours had been solved. The new stadium was set to be built within the grounds of Stamford Bridge on Fulham Road, and required the demolition of the existing 41,600 seat stadium. The plans also included a new club shop, kiosks, museum and a restaurant/café. The brick-clad stadium – which won plaudits from members of the planning committee for its look – has been designed by architects Herzog & de Meuron. Consulting: Herzog & de Meuron, Lifschutz Davidson Sandilands.

**Capacity** 60,000

## London: Crystal Palace, Selhurst Park

Crystal Palace FC will start work on an iconic new Main Stand at Selhurst Park in summer 2019 after being given the green light by planners. The project, which is expected to cost between £75-100 million, will increase the capacity at Selhurst Park from 26,000 to more than 34,000, transforming the match-day experience for supporters and providing new facilities for the community while retaining the ground's uniquely passionate Premier League atmosphere. New Main Stand capacity of 13,500, with more than 10,700 of these General Admission seats. Design pays homage to the original Crystal Palace on Sydenham Hill.
Improved facilities for supporters with disabilities and a substantial increase in wheelchair spaces. A new museum, a bigger pitch, increased from 101.5m x 68m, to 105m x 68m, making Selhurst Park compliant with UEFA regulations and eligible to host tournament football. Premium hospitality and entertainment facilities for more than 2,500 supporters, including a new Tunnel Club, and between 16-28 boxes.
Improved sightlines in the Arthur Wait Stand with the removal of the TV gantry, and improved concourses.
Redevelopment of the upper Whitehorse Lane Boxes into mixed bar/box use.

**Capacity** 34,000

## Luton: Luton Town Stadium

Luton Town Football Club could face a delay in developing its new stadium after a Judicial Review against part of the scheme was submitted.
The club and 2020 Developments expressed extreme disappointment at discovering that there has been a claim to the High Court for a Judicial Review upon Luton Council's decision to grant planning permission for Newlands Park. The initial capacity of the stadium, designed by AndArchitects, will be 17,500, rising to 23,000 as the club grows. The stadium site will also feature new public spaces and facilities, including a 1,800-capacity live events venue, bars, restaurants, a hotel and 550 apartments. The development is expected to be paid for by a separate development at Newlands Park, near junction 10 of the M1. The club revealed Power Court as the preferred location for its new stadium in December 2015 when artists' impressions of the stadium were first revealed to the public. In August 2016, 2020 Developments submitted the applications for Power Court and Newlands Park to the council which were validated shortly afterwards.

**Capacity** 17,500 rising to 23,000
**Completion** 2021

## Manchester: Emirates Old Trafford

Lancashire Cricket Club is pushing ahead with plans for further significant development at Emirates Old Trafford with the development of a new stand.
The new 4,850-seater stand, which replaces the existing Red Rose Suite, is set to feature a pitch-view suite, enhanced members facilities, a heritage centre, ticket office and retail shop which will face directly on to Brian Statham Way. It will take the capacity of Emirates Old Trafford to 26,700, making it the largest cricket ground outside of London.
Also included in the club's plans are an extension of the existing Hilton Garden Inn hotel due to the huge continued success since opening two years ago.
The plans have been created alongside CHROMA Consulting, BDP, Marston and Grundy,Planit-IE, Virtual Planit, Gardiner & Theobald and Paul Butler Associates.

**Capacity** 26,700

## Newcastle: Kingston Park

English Premiership rugby side Newcastle Falcons have been given a boost after planning permission was granted for ambitious improvements to their Kingston Park Stadium. Newcastle Rugby Ltd's plans include major development work to the North Stand which would increase the stadium's capacity from approximately 10,000 to 11,730, with additional parking and infrastructure. Significantly increasing the number of covered seats and hospitality spaces, the plans would also improve training, medical and office facilities.
The North Stand, which is currently an uncovered terrace with no bars or toilets, would be transformed into a state-of-the-art facility featuring 1,530 covered seats, standing accommodation for supporters, new fitness and medical facilities, meeting rooms and hospitality space.

## Newcastle: Newcastle Racecourse

Arena Racing Company (ARC) has revealed plans for a multimillion pound redevelopment scheme for High Gosforth Park and Newcastle Racecourse. Following on from the success of previous development work, which included the installation of the Tapeta surface and enhanced racing facilities, ARC anticipate submitting plans for the next stage of development of the High Gosforth Estate to Newcastle City Council in Autumn 2018. The proposals will further boost the international prestige of the racecourse, create new jobs in hospitality, tourism and construction, and draw thousands of visitors and their spending into the City. Improvements across the racecourse estate will include a 3,500m2 events centre, alongside significant refurbishment of the public and hospitality areas as well as the racing staff accommodation.

## Nottingham: The City Ground

Nottingham Forest football club plan to redevelop The City Ground after a lease extension was agreed with the city council. Central to this redevelopment will be the creation of a new, world-class Peter Taylor Stand and improvements to the Trentside area, Brian Clough and Bridgford Stands. The new Peter Taylor Stand will see the introduction of world-class facilities including a museum, a new club shop, range of hospitality lounge options and restaurants and executive boxes.
In addition to this there will be new spacious concourses for general-admission supporters as well as improved facilities for supporters with disabilities and a substantial increase in wheelchair spaces. Architect: Benoy.

## Plymouth: Home Park Mayflower Stand

GL events UK has been appointed to carry out stadia redevelopment at Home Park Stadium, home of Plymouth Argyle FC. Plymouth Argyle were earlier given the green light for the development of Home Park's Mayflower grandstand. The development will provide Argyle with a refurbished grandstand; new players facilities; new offices and classroom; new bars; retail and ticketing functions; and a conference and banqueting facility. Seating capacity will be increased to around 18,600 in stage one and to more than 20,000 in stage two. The wider development includes a new international size ice-rink; a hotel; a gym; offices; and restaurants. It is expected to employ 400 additional people once completed and more during the construction phase.

## Portsmouth: Fratton Park

Portsmouth FC have submitted a planning application, which includes alterations to the roof of the South Stand at Fratton Park. This involves building a new television gantry and the addition of eight t-bar light frames along the main truss. New lighting – a mix of LED and halogen bulbs – is being installed, which adheres to EFL requirements and takes into account any potential need for VAR at Fratton Park. This new lighting is being installed during the close season, with the television gantry planned for the start of the 2020/21 campaign.
The iconic Archibald Leitch-designed South Stand is also undergoing a recladding programme, which is set to be completed for the start of the forthcoming season.

## Salford: Moor Lane

Redevelopment plans for new stands and terraces, with one all-seater stand running the full length of the pitch. submitted to Salford City Council shortly as Salford City FC gets ready for promotion. Also planned is a Class of '92 suite and parking for executives. Design: Zerum. Finance: private (Class of '92 and Peter Lim).

**Capacity** 5,108 (2,241 seats)

### Scunthorpe: Glanford Park Stadium

Scunthorpe United has received planning consent to build a new £30 million stadium at the site of its current Glanford Park ground. The plans have been approved almost a year after they were submitted to North Lincolnshire Council. The current ground was built in 1988 and at the time was only the second new English Football League stadium to be built post-war. It will be a first for any club to have developed and played in three purpose-built stadia. The Glanford Park Stadium will be demolished and rebuilt stand-by-stand over the next few seasons to enable the club to continue to play matches during the development. New cantilever style stands will ensure unrestricted views onto the pitch and will include improved seating and new food and beverage facilities. Architect: Frank Whittle Partnership (FWP).

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| Capacity | 12,000 |
| Cost | £30m |

### Sheffield: Olympic Legacy Park Stadium

On the Don Valley Stadium site. Tenant team: Sheffield Eagles RLFC (Chairman Ian Swire). The Brand New Stadium at the Olympic Legacy Park will open early 2020. The 3,900-capacity stadium will be home to the Eagles and Sheffield United Womens Football Club. Scarborough Group International was granted planning for the stadium and work will commence in March 2019. The £5m facility will be built on the west side of the 3G pitch, which was completed in April 2017 and is also used by UTC Sheffield Olympic Legacy Park, Oasis Academy Don Valley and the local community.
An initial 788 seats and 3,000 standing capacity will make up the stadium with approval granted for an extension of seating if and when required.

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| Cost | £5m |
| Completion | 2020 |

### Southend United FC Stadium

Football stadium, 131-bed hotel and residential development, an 11-12 screen cinema, retail and restaurant floorspace, together with related ancillary infrastructure at Fossetts Farm. Two soccer domes. Developer: Martin Dawn plc (in discussion with British Land plc to forward fund the retail development, which will facilitate the first phase of the new stadium).

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| Capacity | 21,000 |

### Swindon: Abbey Stadium

Speedway and greyhound stadium development to include a play area for youngsters, a racing building, training kennels and market. Jobs: 62. Parking: 479 on-site.

### Torquay: Torquay United Stadium

Torquay United FC have revealed plans for the development of a new £40 million stadium, event arena and academy. The proposed project is designed to launch the National League South side to sustainable success on the pitch. The proposed state of the art expandable 10,000 seat community stadium and 30,000 capacity event arena will include, integrated Exhibition and Music Event space, a hotel, integrated hospitality, food/beverage and leisure facilities, indoor leisure attractions, an enabling housing development and substantial car parking and transport links. A separate proposed stand-alone Football Academy and sports Centre of Excellence will provide facilities for both community football and the Clubs youth development programme together with facilities to attract and accommodate foreign students of football.

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| Capacity | 10,000 |

### Truro: Stadium for Cornwall

The Cornish Pirates RFC and Truro and Penwith College are joining forces with Truro City FC and the club's developer partner, to deliver the Stadium for Cornwall project together. Both clubs and the college will jointly occupy a single stadium at Langarth Farm near Truro. Trio working together to secure the £10 million required to fund the 6,000 capacity facility, which will include funding being provided by the Cornish Pirates RFC, Truro and Penwith College and Truro City Football Club. Main grandstand (4,200) and temporary. Pitch: synthetic. Conference centre (200), offices and restaurant. Tenants: Cornish Pirates (Chairman Ian Connell), Truro City Football Club, Truro and Penwith College (£2m), Cornwall College and the Royal Cornwall Hospital. Council no longer offering funds. Enabling project of supermarket also given planning permission. Feasibility study: Gardiner & Theobald LLP. Developers: Inox Group (MD Rob Saltmarsh), Henry Boot Developments (Julian Painter).

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| Capacity | 6,000 (10,000 concerts) |
| Cost | £14m |

### Wakefield Trinity Stadium

Stadium for the Rugby League Wildcats and 100-acre business park near Stanley. Previous project was referred to the UK Secretary of State, which was a blow to receiving a Super League licence. Developer: Yorkcourt Properties.

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| Capacity | 12,000 |
| Cost | £19m |

### Wimbledon, AELTC: No.1 Court

The All England Lawn Tennis Club (AELTC) and main contractor Sir Robert McAlpine have announced the completion of the No.1 Court Project on time and on budget. Commencing in 2016, the No.1 Court Project has been a highly complex three-year build. In addition to a new fixed and retractable roof, it has an increased capacity of 12,345 and includes: the replacement of all seats inside the stadium for improved spectator comfort; 15 refurbished hospitality suites and various back-of-house areas; a two-level Walled Garden public plaza; and a living wall either side of the Big Screen facing Aorangi Terrace. Developer: All England Lawn Tennis Club (AELTC). Architects: KSS. Mechanical Engineers: M-E Engineers. Structural Engineers: Thornton Tomasetti. Roofing and cladding: Prater (£8m). Construction: Sir Robert McAlpine.

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| Mechanical Engineer | ME Engineers |

ME is providing MEP and lighting design for the roof installation at Court 1.

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| Capacity | 12,400 |
| Cost | £70m |
| Completion | 2019 |

### Wimbledon, AELTC

Willmott Dixon has been chosen by The All England Lawn Tennis Club (AELTC) to build a new members' tennis complex adjacent to Wimbledon. The Somerset Road project will see Willmott Dixon demolish the existing indoor courts and replace them with a facility that will significantly enhance the AELTC's offering for both its Members year-round and competitors during The Championships. The project includes 12 new tennis courts (six indoor and six outdoor) and associated clubhouse facilities; a single-storey underground car park for up to 338 vehicles that will be the hub of The Championships' courtesy car operation; an enhanced arrivals experience for competitors at The Championships; and upgraded Centre Court chiller plant.

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| Completion | 2021 |

### Wimbledon, AFC Wimbledon Stadium

AFC Wimbledon has released further details of the new £30 million stadium it plans to build in time for kick-off of the 2020/21 season. The English Football League One club is looking to return to its spiritual home in Plough Lane, Wimbledon. Designed by KSS and being built by Buckingham Group, AFC Wimbledon said the club's new home will be bursting with unique features that can't be found in other stadiums. The new venue will feature:
Its own pub which will be open seven days a week and which the local community can use during normal licensing hours; A fan zone, which can be accessed from all our stands, so fans can meet before, during and after games, no matter where they're sat; The largest conferencing suite in the borough – capable of seating 500 guests; A museum charting the history of the club with tours available for the wider community; A 9,000 capacity which can eventually expand to 20,000 by connecting all four corners to create a dramatic bowl-shaped arena.

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| Completion | 2020 |

### Southend: Southend United Stadium

Southend United FC has submitted a detailed planning application for its proposed new stadium development to Southend Borough Council. The new ground at Fossetts Farm would replace the club's current Roots Hall home and the development would include a 22,000-seat ground, a hotel and flats.

### Worcester City FC Stadium

Plans rejected in July 2017 4,400-capacity stadium which would have an all-weather pitch, floodlights and 82 parking spaces at Perdiswell Sports Centre site. Pitch: synthetic. Standing and covered stands. Community use and pool. Club playing at Aggborough, home of Kidderminster in the meantime.

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| Capacity | 4,400 |
| Cost | £12m |

### Wakefield: Castleford Tigers Stadium

Planning permission has been granted for the new Castleford Tigers Community Stadium in Wakefield. Next to Junction 32 of the M62, the 106 acre next generation Axiom retail and leisure destination in the north of England, will comprise of around 75 retail, restaurant and leisure units, alongside a new 10,000 capacity community stadium for Castleford Tigers rugby league club. Once operational, the Axiom development will create in excess of 2,000 jobs, plus around 1,100 construction jobs per annum during the 2.5 year build period. Three of the four stands of the stadium would be standing-only with facilities including corporate boxes, club shop, ticket office and bar.

### York Community Stadium

Delays to 8,000 capacity stadium – which will become the new 'home' to both York City Football Club and York City Knights Rugby League Club. Work began in October 2017 on all-seater stadium. Combined with community sports facilities, university athetics, swimming pool. Partners (York Teaching Hospital NHS Foundation Trust, York St John University, Be Independent (CIC) and Explore York Libraries and Archives Ltd) will make use of the building on non-matchdays. Project manager: Tim Atkins. Council has approved extra £4m funding. Detailed planning application. Developer/operator: Greenwich Leisure Ltd (Chris Symons). Construction: Buckingham Group.

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| Capacity | 8,000 |
| Cost | £41m |
| Completion | 2020 |

## ESTONIA

### Tallinn: A. Le Coq Arena

Government funding to increase the capacity of Flora Tallinn's home to act as Estonia National Stadium. Owner: Estonian Football Association.

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| Capacity | 15,000 (+5,000) |
| Cost | €5m |
| Completion | 2018 |

## ETHIOPIA

### Addis Ababa: National Stadium

Tender out for contractor. Area: 67,000m². Coffee bean shaped 'Adey Abeba' stadium and sports village. First design dropped. Athletics track, aquatics centre, residential village, sports halls, arenas, retail and commercial zones, and the headquarters of the Federal Sport Commission. Modern ticketing and access control. Developer: Federal Sports Commission. Finance: national government. Design: MH Engineering Plc (GM Mesele Halle).

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| Capacity | 60,000 |
| Cost | US$100m |

## FINLAND

### Helsinki: Olympic Stadium

Renovation and expansion. Widening of track, roofing over stands, new infrastructure. Work must be monitored by Finnish National Board of Antiquities to ensure preservation. Structural engineering: Sweco.

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| Cost | €2m |
| Completion | 2018 |

## FRANCE

### Metz: Stade Saint-Symphorien

FC Metz is planning to carry out extensive renovations to its Stade Saint-Symphorien and build a new training centre on the Frescaty Plateau. The club, which was promoted back to Ligue 1 at the end of the current season, has started work on the project. Demolition of the stadium's South Stand has begun, with completion of the new stand planned for August 2020. The South East and South West areas of the ground will be filled in by the summer of the following year. A pedestrian square will be built at the back of the South Stand to allow for better crowd flow. Seats will be replaced in the East, West and lower North stands. There will also be a complete renovation of the stadium's sound and light system, while the access control system will also be updated.

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| Completion | 2021 |

### Montpellier: FC Montpellier stadium

French Ligue 1 football club Montpellier has revealed plans for a new stadium to be developed as part of wider project in the Cambaceres district of the southern French city. An arena is also being built on the site and it will host the city's handball and basketball clubs. Work on the new venue is expected to begin in June 2019, with completion slated for the start of the 2022/23 season.

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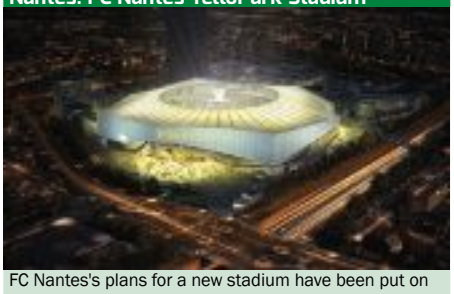
| Capacity | 30,000 |
| Cost | €150m |
| Completion | 2023 |

### Nantes: FC Nantes YelloPark Stadium



FC Nantes's plans for a new stadium have been put on hold while a fraud investigation is carried out into the club's owner. The new YelloPark Stadium has been designed by Atelier Tom Sheehan & Partenaires (ATSP) and HKS. Stadium includes a fixed and a retractable roof to improve comfort and optimise the carbon footprint. The roof is composed of two parts: a fixed 25,500m2 roof and a retractable central 12,000m2 oculus. The system provides shelter to all spectators in case of bad weather. The new stadium will benefit from: 40,000 seats; 125m diameter oculus; 37m of free height above pitch; 10 main entrances; 1 giant 360° screen; a 1,000m2 museum; 7,000 Kop seats in the same area; 150 media seats; 150 conference room seats; 600m2 shop; 25,500m2 fixed roof; 12,000m2 retractable roof.

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| Capacity | 40,000 |

### Paris: Olympic Aquatics Centre

All 2024 Olympics Aquatics events (apart from the 10 km marathon) take place on a single site at Plaine Saulnier in Saint-Denis, next door to the Stade de France, forming a venue cluster of the two major sports of Aquatics and Athletics, situated just a few metres from the Olympic Village. The Games-time configuration will feature five pools (two permanent; three temporary): A temporary 50m pool for the Olympic and Paralympic swimming events and the water-polo finals, with seating for 15,000 spectators; a 50m pool, connected to a 25m pool, within a permanent structure that will accommodate 5,000 seated spectators at Games time (2,500 in legacy) and will host Diving, Synchronised Swimming and Water Polo preliminaries. Two temporary 50m warm-up pools for athletes competing in swimming, synchronised swimming and water polo events will also be built. Architects: Populous.

## GABON

### Port-Gentil Stadium

Lionel Messi and President Ali Bongo Ondimba laid foundation stone for a new facility that will host matches of the 2017 Africa Cup of Nations.

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| Capacity | 20,000 |

## GEORGIA

### Batumi Stadium

In holiday destination alongside a newly created avenue in the western part of the city, just a short walk away from the beach. Aiming for UEFA category 4. Design approved, construction tender soon. Concept inspired by Georgia's passion for dance, utilising the motion of 'whirling'. Cladding will be dynamically illuminated at night to represent colours of Georgia, Adjara region or local football team Dinamo (President Otar Redichkini). Funding: Batumi Municipality (Chairman Giorgi Ermakovi). Two-tier grandstands, lower 10,040, upper 9,995. Area: 87,000m$^2$. Parking: 1,000 Architect: Bahadir Kul Architects (BKA).

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| Capacity | 20,000 |
| Cost | 25m lari (US$10m) |
| Completion | 2019 |

## GERMANY

### Berlin: Hertha Berlin

Hertha Berlin plans to build a 55,000 capacity football stadium in the Olympiapark. Albert Speer + Partner reviewed over 50 potential sites for a new stadium both inside and outside of the Berlin city boundary.

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| Completion | 2025 |

### Berlin: Union Berlin

Union Berlin plan to increase the capacity of their Alten Försterei stadium to 37,000 by 2020. The work will cost around €38 million and will increase capacity from 22,000 currently. Reconstruction work is due to begin in 2019 and will leave the ground with a standing capacity of 28,700. The number of seats in the stadium will be increased to more than 8,000, meeting German Football League requirements for top division football. Union Berlin currently play in the second division. The reconstruction will keep the stadium, built in 1920, true to its existing style, with the three standing areas in the lower tier remaining in place. An upper tier will be built to accommodate more fans.

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| Completion | 2020 |

### Darmstadt: Merck Stadion

SV Darmstadt 98 (President Rudiger Fritsch) modernising Merck-Stadion am Böllenfalltor. Improvements to accommodation under one roof. Tender for construction going out.

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| Capacity | 19,000 (17,000) |
| Cost | €33m |

### Freiburg: SC Freiburg stadium

A new stadium to be after the city council voted for the project to go ahead. SC Freiburg will now be able to build the new 34,700-capacity stadium in the Baden-Württemberg city. The new stadium will be built on an area of land in Wolfswinkel, close to the city's airfield – a similar distance from the centre of Freiburg to the north as their current Schwarzwald-Stadion is to the East. According to the provisional timeplan, it should be open for the start of the 2020/21 campaign.
The new venue has been designed by HPP Architekten and will be built by general contractor Köster GmbH. Finance: public, including infrastructure, club €15-20m.

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| Capacity | 35,000 |
| Cost | €70m |
| Completion | 2020 |

### Kiel: Holstein Stadion

Phased capacity expansion. Parking: 1,500.

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| Capacity | 15,000 (expandable to 20,000) |

### Leipzig: Red Bull Arena expansion

Capacity increase to meet growing demand. German Bundesliga newcomers RB Leipzig have announced plans to expand the Red Bull Arena after agreeing a deal in principal to buy the stadium. The team, owned by Red Bull, want to increase the capacity of the Stadium, formerly known as the Zentralstadion, to 57,000 from its current capacity of 42,500.

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| Capacity | 57,000 (currently 44,345) |

### Oberhausen: Stadion Niederrhein

Northern grandstand demolition. Stands closer to field. New 3,110-capacity grandstand.

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| Cost | €2.8m |

### Regensburg: Continental Arena

New soccer stadium for SSV Jahn, a third division club. Naming rights: Euro 200,000 (5 years). Four grandstands visually pulled together by red facade. Architect: agn Niederberghaus & Partner (Stefan Nixdorf). Design and build: BAM Sports.

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| Capacity | 24,000 |

### Saarbrucken: Ludwig Park Stadium

Planning under way to update home stadium of FC Saarbrücken to DFL standards. Three-storey main stand. Loges: 10. Business Club: 635m$^2$. VIP terrace: 170m$^2$. Alternative stadium required from January 2016. Architect: GMP. Structural engineer: Schlaich Bergermann. ME: Paul GmbH. Transport: WSV/PCE.

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| Capacity | 20,400 |

## GHANA

### Accra Sports Stadium

Public-private partnership to renovate. Memorandum of understanding in place. Developer: Ministry of Youth and Sports. Finance: Government GH¢1.5m.

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| Cost | GHC12m (US$3m) |

### Bekwai: Edubiase Sports Stadium

Revamp for Premier League team in stadium formerly passed unfit.

## GIBRALTAR

### National Football Stadium

Gibraltar national football stadium to be built at site of Victoria Stadium. The Gibraltar FA said an agreement has been reached with the Gibraltar Government and UEFA on a major project that will see both the construction of a UEFA Category 4 National Football Stadium in Gibraltar and other sporting facilities.n.

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| Capacity | 10,000 |

## GREECE

### Athens: AEK Athens Stadium

Proposed temple 'Ayia Sophia' of football and of Greek sport according to AEK owner Demetri Melissanidi. At the site of its old stadium at Nea Filadelfia, north of Athens city centre. AEK obliged to develop park as part of deal to use land. Planning also requires construction 4m below street level – height 17.9m. Environment, Energy and Climate Change ministry funding local infrastructure upgrade. Home for AEK and New Philadelphia teams. UEFA 4-star. Religious-leaning architecture, grand central entrance; four corner towers hold up a fabric roof. Two tiers. Club seats: 1200. Suites: 40. Underground parking: 400-500. Parking lot: 250. Area 65,000m$^2$. Finance: €20m Attica Regional Authority; €50,000 Ecumenical Patriarchate of Constantinople (symbolic).

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| Capacity | 32,500-34,000 |
| Cost | €65m |

### Athens: Panathenaikos Stadium

Additon of upper tiers and skyboxes (28) on south and north stands. Cantilevered roof. Aluminium facade. Finance: fan bonds and public.

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| Capacity | +4,600 |
| Cost | €10-15m |

## HUNGARY

### Budapest: National Soccer Stadium

The Puskás Arena has been opened in Budpapest. The UEFA category 4 stadium has around 68,000 seats for football and it can hold 80,000 for concerts. The new venue will host four matches at the upcoming Euro 2020, including three in the group stage and one in the round of 16. The stadium has been built on the site of the former Ferenc Puskás Stadium, named in honour of the legendary Hungarian footballer, which was torn down in 2016. The grandstand of the stadium has been built on three levels and the roof covers 57,142m2.
Initially, in 2011, the construction cost was budgeted around €112 million but that rose to €610 million on completion.

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| Capacity | 68,000 |
| Cost | €600m |
| Completion | 2019 |

## IRAQ

### Al Diwaniyah: Al Sunbula Stadium

Main stadium plus hotel 3 floors (75 rooms), indoor hall (2,500) secondary stadium (2,000) and training field. Area: 250,000m$^2$. Client: Ministry of Youth & Sport. Building Management and Security Systems: Alara Engineering. Landscaping: Turkan Erdem. Architect: Bahadir Kul Architects. Construction: Renaissance Construction.

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| Capacity | 30,000 |
| Cost | US$100m |
| Completion | 2017 |

### Al-Samawah: Al-Samawah Olympic Stadium

FIFA standard soccer stadium. Design and construction management: Hill International (US$2.2m). Developer: Ministry of Youth and Sports.

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| Capacity | 20,000 |
| Cost | IQD 70.9bn (US$61m) |
| Completion | 2017 |

### Baghdad: Al Risafa Sports Stadium

New soccer stadium in Al Sadr City to FIFA standards. Finance interrupted at 40% completion. Now back in place. Area: 250,000m$^2$. Owner: Ministry of Youth and Sports. Project management: Hill International (IQD3.3-3.8m). Parking: 2,900. Employs prefabricated building systems for the structure. Steel: Integralia. Construction: Triarena.

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| Capacity | 31,200 |
| Cost | IQD116bn (US$100m) |
| Completion | 2017 |

### Baghdad: Taji Stadium

For athletics and football. 4-star hotel, golf training area, parking and green spaces. Consulting: Harris.

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| Capacity | 60,000 |

### Babil, Al Hillah

Owner: Ministry of Youth and Sports. Area: 350.000 m$^2$ .Parking: 2,545. Architect: Agence D'Architecture A. Bechu.

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| Capacity | 32,000 |

### Karbala Olympic Stadium

Muted colours and texture to blend with the surrounding mosques and houses. 73 arcades represent the number of martyrs killed in the Karbala tragedy. Two-layer translucent skin allows air to circulate through the concourse. Client: Ministry of Youth. Architect: Bahdir kul architects.

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| Capacity | 30,000 |
| Completion | 2017 |

### Najaf Stadium

Football stadium. Landscaping to connect the stadium to the city. Passive cooling towers. Owner: Iraq Ministry of Youth and Sports. Building services, fire protection, sports lighting design: WSP. Construction: Anwar Soura General Contracting. Architect: 360 Architecture.

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| Capacity | 30,000 |
| Cost | US$83.75m |
| Completion | 2017 |

### Nasiriyah Stadium

Main stadium for football, plus athletics stadium with 2,000 seat capacity, training stadium with 500 seat capacity, 4* hotel, in Dhi qar Province in southern Iraq. Area: 55,000m$^2$. Architect: Agence D'Architecture A. Bechu. Associate architects: Adil Alkenzawi and Alain-Charles Perrot.

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| Capacity | 30,000 |
| Cost | US$97.5m |
| Completion | 2017 |

### Salah Al Din Stadium

Owner: Iraq Ministry of Youth and Sports. Area: 16.610m$^2$. Architect: Agence D'Architecture A. Bechu.

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| Capacity | 30,000 |

## ITALY

### Bergamo: Stadio Atleti Azzurri d'Italia

Renovation plan for Serie A soccer club Atalanta. Architect: Mauro Piantelli. Phased renovation starting with the Creberg stand – improved access for disabled supporters. Removal of the glass separating the supporters from the playing field. Finance: Atalanta $2.4m-$2.6m, city the rest.

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| Capacity | 22,000 |
| Cost | $3.8m |

### Cagliari: Cagliari Calcio Football Stadium

Italian Serie A club Cagliari Calcio has chosen the Sportium consortium to design its new stadium. Sportium beat off competition from two other design teams, Tractebel Engie with Gau Arena and J+S with One Works. Sardinia-based Cagliari said that in depth analysis will now take place with Sportium with the aim of defining all the contractual and operational aspects of the work. Sportium is made up of partners Progetto CMR, iDeas, B&L Real Estate and Manica Architecture from the US. Once a design has been decided on, the project will collaborate with engineers Ginevra Balletto, Alessandro Gostiand Mario Marongiuand the University of Cagliari.

### L'Empoli: New Stadio Castellani

Major renvotion for Italian Serie A side, Empoli FC (Chief Executive Francesco Ghelfi). Architect: Roberto Puliti. Removal of running track, staged demolishing of old stands to create seamless bowl. Renovation of main grandstand, introduction of sky boxes. Restaurants, hospitality areas, VIP suites and commercial areas. Naming rights and solar energy provider: Enegan.

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| Capacity | 17,300 (expandable to 20,000) |
| Cost | €11m |

### Florence: Fiorentina Stadium

Fiorentina have unveiled plans for a new 40,000-seat stadium in Florence, which is set to open for the 2021/22 season. The Serie A club said the €420 million stadium will include all the latest technology and put fans at the heart of the action, just 7 metres from the pitch. The Arup-designed stadium is set to be built on a 48 hectare site at Mercafir in north-western Florence. The complex will include a hotel, a shopping centre, a small training centre and a new railway station.

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| Capacity | 40,000 |
| Cost | €420m |

### Milan: Internazionale Stadium

A.C. Milan and Inter Milan have unveiled the shortlisted designs for the clubs' new stadium and plans for the redevelopment of the San Siro Area.
Designs by Populous and a Manica/Sportium consortium have been chosen.
The Rings of Milano by Manica/Sportium consists of two iconic rings, interlocked and set apart in perfect balance, symbolising the story of how two clubs, forever in opposition, and now united in their cause to preserve one of Milano's most storied traditions.
The stadium's iconic linked rings accommodate both LED and architectural solutions for branding and team changeover between matches.
The new Stadium of Milano is carefully integrated into a broader masterplan development that will revitalise and transform San Siro into a park and entertainment district for the people of Milano to experience year-round, preserving the original pitch's location and reimagining it as a gift to the community for all to enjoy.
The Cathedral by Populous draws inspiration from two of Milan's most iconic buildings; the Duomo and the Galleria.

### Naples: San Paolo Stadium

Napoli has decided to stay at San Paolo and upgrade with city's help. Napoli will gain ownership rights (99 years) so that it can exploit the stadium commercially. Development of Fuorigrotta area around the stadium for non-matchday events and services. Napoli museum.

### Rome, Tor di Valle: Stadio della Roma

Construction work could soon get underway on AS Roma's Stadio della Roma after the project was given the all clear by an independent technical report. AS Roma reached a deal with the city council for the 52,500-seat Meis Architects designed venue, which will be built in the south-west of the city. Plans include a brand new stadium and training centre in Tor di Valle in southwest Rome for the football team AS Roma. Developer StadCo has secured finance ($34m) from Goldman Sachs for predevelopment costs. Anchors entertainment district Roma Village.
14,800-seat detached section behind one of goals for the hard-core "ultra" supporters, replacing the Curva Sud from the Stadio Olimpico. Floating stone facade reminiscent of Colosseum. Polycarbonate roof. Super premium lower bowl club: 600. luxury boxes, plus commercial areas and training grounds outside the stadium. Green: carbon neutral. Transport: 50% public. Currently the club rents the city's Stadio Olimpico for its home matches. The new stadium will be developed and managed by Italian real estate firm Grupo ParsItalia. Finance: naming rights, sponsors and priority seating, bank loans and equity. Feasibility 2013, approval 2014, build 2015. Project manager: Eurnova (Luca Parnasi). Architect: Dan Meis. Pre-opening services: AEG Facilities Global Solutions.

| | |
|---|---|
| Capacity | 52,500 (expandable to 60,000) |
| Cost | €210m (overall project €1.5bn) |
| Completion | 2020 |

## IVORY COAST

### Yamoussoukro: Yamoussoukro Stadium

Situated on the east side of the city, the stadium is being built for the Africa Cup of Nations in 2021. The west stand houses all the programme for the stadium, the other 3 stands are dug into the ground, taking advantage of a natural slope in the site. This reduces the amount of built infrastructure to be maintained. Also, this adds to the excitement of arrival at a match. The spectator arrives at the top of the stands and has a clear expansive view of the entire stadium, moves down to the seat and approaches the pitch. A single roof covers all the stands rising and falling to adapt to the volume underneath and focuses the attention towards the pitch. Design : SCAU architecture; Contractor : Sogea Satom.

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|---|---|
| Capacity | 20,000 |
| Completion | 2020 |

## KENYA

### Kakamega: Bukhungu Stadium

Renovation. First phase ready December 2016.

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|---|---|
| Cost | Ksh 1bn (US$10m) |
| Completion | August 2017 |

### Manga Nyamira County Stadium

Soccer and athletics stadium. Partners sought.

| | |
|---|---|
| Capacity | 30,000 |
| Cost | Sh63m |

### Mombasa County Stadium

To host 2018 CHAN championships. Phase two of the project will start in July, including infrastructure around the stadium. Developer: Mombasa County.

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|---|---|
| Completion | September 2017 |

## LIBYA

### Tripoli: National Stadium

One of the stadiums due to host the African Cup of Nations in 2017 but Libya's civil war has put all development on hold. Two venues are planned for the capital Tripoli. In addition to the National Stadium, the project includes an indoor pool, a multi-purpose arena and Family Sportsworld. The complex, which is being built around a circular basin of approx. 500m diameter, is designed with a symbolism focusing on the number 3 in deference to the historic genius loci, as represented by the city's name (tri-polis = city of three). Architect: GMP – Volkwin Marg and Hubert Nienhoff. Associate Partners: Hans-Joachim Paap, Jochen Köhn. Structural design (outline design): Werner Sobek Ingenieure, Stuttgart. Structural design (scheme and detailed design): Schlaich Bergermann und partner, Stuttgart. Services engineering (outline design): Bechtold Ingenieurgesellschaft mbH, Berlin. Project commissioned by: Masterplan Libya, Tripolis, Kronberg. Client: Lidco – Libyan Investment and Development Co. Tripolis. General contractor: Porr Libya.

| | |
|---|---|
| Capacity | 71,000 |

## LITHUANIA

### Vilnius: National Stadium

Ministry of Finance given the job of reviving national stadium project. Financial aid sought from EU.

| | |
|---|---|
| Cost | €50m |

## LUXEMBOURG

### Luxembourg National Football Stadium

Football stadium in Kockelscheuer. Finance: City of Luxembourg and the state. Master plan April 2015, preliminary design September 2015, final plan January 2016, final project June 2016, construction early 2017. Architects: gmp, Beng Architectes Associés.

| | |
|---|---|
| Capacity | 9,600 |
| Cost | €59m |
| Completion | 2018 |

### Luxembourg Velodrome

Mecanoo and Metaform, Netherlands and Luxembourg based architecture offices, have won a competition to design a new velodrome and sports complex in Mondorf-les-Bains, Luxembourg. The velodrome, multi-sports and swimming pool complex project is inspired by its surroundings, a subtly undulating topography.
The main challenge was to integrate all three functions under one roof, while paying respect to the context and at the same time to create the architectural landmark for the city of Mondorf-les-Bains.

## MALAWI

### Karonga: Community Stadium

In construction. Construction: Nangaunozge Building Contractor. First phase to complete October 2016.

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|---|---|
| Capacity | 20,000 |
| Completion | 2017 |

### Salima Stadium

First phase (K47m) complete. Second phase requires funding for VIP stand, dressing room and toilets.

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| Completion | 2020 |

## MOROCCO

### Tangier: City of Sports

City of Sports complex under construction with tennis compound, Olympic swimming pools, multi sports halls, hotels and a football stadium. Construction: Adgeco.

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|---|---|
| Capacity | 4,000 |
| Cost | £44m |
| Completion | 2016 |

### Tetouan: Soccer Stadium

Soccer stadium to FIFA standards. Four training pitches. Conference rooms and retail. Area: 35ha.

| | |
|---|---|
| Capacity | 40,410 |
| Cost | 700m DH (€64m) |
| Completion | 2018 |

## NETHERLANDS

### Amsterdam: ArenA expansion

The Amsterdam ArenA, home of Ajax FC, has kicked off a large-scale renovation project. The lower and upper tier concourses at the stadium will be enlarged. The project is the largest renovation since the ArenA was opened in 1996. Seats in the lower south stand have already started to be replaced with red seating to reflect the team's colours. Project ArenA 2020 consists of three phases. Phase 1 concerns the east side of the stadium. Phase 1 will be followed by phase 2 (south side) and phase 3 (north side). Once these three phases have been completed, together with the already renovated main building, the ArenA will have undergone a 360 degree renovation.

| | |
|---|---|
| Completion | 2017 |

### Helmond Stadium

Proposed new home for Helmond Sport (to replace Lavans Stadion) and several smaller football teams. Eight outdoor pitches and indoor training hall shared with school. Feasibility study for new stadium due in the autumn.

### Rotterdam: Feyenoord Stadium

The schematic design for the new 63,000 seat Feyenoord Stadium at the Maas in the Netherlands has been completed by architects OMA. The new venue will be the largest football stadium in the Netherlands.
An iconic structure partly located over the river Maas, the stadium design represents the DNA of Feyenoord's current stadium De Kuip, with a perfect bowl shape formed by continuous curved tiers in close proximity to the pitch.

| | |
|---|---|
| Capacity | 60-65,000 |

## NIGERIA

### Lagos: Dream Theatre

Multipurpose Concert and Sports venue for up to 15,000 spectators in a building complex which contains a 1,500 seat multipurpose theatre, a five star hotel and a four storey shopping mall with a multiplex cinema on top. Client: Landmark Africa; Archicects: vision4venue / EASt architects; Project Manager: vision4venue

| | |
|---|---|
| Completion | 2021/22 |

### Nigeria, Lagos: National Stadium Surulere

Government seeking partners to bring the stadium back to life – built 1972, renovated 1999, closed 2004. Developer: Ministry of Youth and Sports. Construction consulting: Maysu Construction.

| | |
|---|---|
| Capacity | 55,000 |

### Minna: Minna Stadium

Developer: Niger State Government (Commissioner for Sports Daniel Shashere).

| | |
|---|---|
| Capacity | 10,000 (expandable to 15,000) |
| Cost | N2.4bn |
| Completion | end 2016 |

### Plateau State: Jos Stadium

Stalled under construction soccer stadium. State seeking bank loan to complete. Construction: BCC Tropical Nigeria.

| | |
|---|---|
| Cost | N11.3bn (US$6.5m) |

## NORTHERN IRELAND

### Belfast: Casement Park

For Gaelic sport and Ulster rugby. Ulster GAA has submitted a new planning application to Belfast City Council for a new stadium at Casement Park. Submission follows an unprecedented 32 week consultation period, with 95% of people that responded to the proposed design coming out in favour of the project. Circulation zone of 9,000m² around the perimeter to improve crowd movement. Standing terrace: 8,500, Owner: GAA. Developer: Casement Park project board (chairman Tom Daly). Finance: public. Architect: Populous. Construction: Heron Buckingham joint venture.

| | |
|---|---|
| Capacity | 34,500 |
| Cost | £77m |
| Completion | end 2019 |

### Belfast: Cliftonville Stadium

Redevelopment to provide more community facilities for Irish League club. Planning application submitted by Community Interest Company. First phase to replace the Main Stand at Solitude.

| | |
|---|---|
| Cost | £4m |

### Derry: Brandywell Stadium

Council announcing contractor in November. Work to start immediately. Stadium for Derry City FC with 3,600 seat stand along the Lone Moor Road side. Replaces existing uncovered seated area and the old Glentoran Stand. New changing and treatment facilities. Turf: synthetic 4G. Showgrounds area to be revamped with new greyhound track, bookmaking, spectator and kennel facilities. Demolition and redevelopment of Brandywell Sports Centre. Tenants: Ballymoor FC, Oak Leaf boxing and the Over the Hill Club. Funding: city council, regional funds. New greyhound track July 2016 – Dec 2016,, 3G pitch Aug 2016 – Dec 2016, Construct New Stand Sept 2016 – Mar 2017. DCFC unable to play home games for possibly last 3 months of 2016 season.

| | |
|---|---|
| Capacity | 6,000 |
| Cost | £8.8m |
| Completion | 2017 |

### Belfast: Glentoran Stadium

Glentoran Chairman Terence Brannigan looking to move club away from the Oval, possibly to the Blanchflower Stadium site.

| | |
|---|---|
| Capacity | 8,000 |
| Cost | £10m |

## NORWAY

### Sandiness Stadium

New football stadium for Sandnes Ulf. Architect: Plank Arkitekter. Area: 4,500m².

| | |
|---|---|
| Capacity | 7,582 (expandable by 2,023) |
| Cost | NOK150m (€16m) |
| Completion | 2018 |

## OMAN

### North A'Sharqiyah: A'Rustaq Sports Complex

Public facilities and football stadium.

| | |
|---|---|
| Capacity | 12,000 |

### South Al Batinah: Al Sa'ada Sports Complex

Expansion of complex and doubling of current stadium's capacity.

| | |
|---|---|
| Capacity | 18,000 |

### Musandam: Khasab Sports Complex

International standard football stadium, hockey, tennis, covered pool (800), gymnasium (1100).

| | |
|---|---|
| Capacity | 17,000 |

## POLAND

### Chorzow: Ruch Chorzow Stadium

Proposed new stadium for Ruch Chorzow soccer team, with realistic capacity, unlike Stadium Slaski. First phase in early 2017 with 4,500 seats. Architect: GMT. Finance: public.

| | |
|---|---|
| Capacity | 16,000 |
| Cost | PLN 60m (€14.5m) |
| Completion | 2020 |

### Jaworzno: Sport Stadium

Athletics stadium with sports and culture complex nestled in a quarry. For local and regional track and field events and training camps. The design is inspired by the rich geological landscape of the region and to resemble a rock and six free-standing buildings evoking scattered boulders. Sports facilities, restaurants, exhibition space and high-end hotels for tourists, spectators and athletes. Area: 4,200m$^2$. Architect: Mateusz Tański & Associates (design competition winner). Developer: Jaworzno City.

| | |
|---|---|
| Capacity | 1,000 |
| Cost | 10m zloty (US$2.5m) |

### Lodz: Wizdew Stadium

Polish fourth division football team Widzew Łódź has played its first match in its new 18,000 seater stadium. The new Stadion Wizdew has been built in the city of Łódź on the site of the club's former home, which was demolished in 2015.Plans were announced for the new venue in October 2014 and it has taken two years to build. The West Grandstand is the main stand and contains the changing rooms, gym, 24 corporate boxes, eight commentary boxes and two TV studios.
The other three stands are simpler and include space for 900-1,200 visiting supporters.

### Sosnowiec: Zaglebiowski Park Sportowy

Stadium plus indoor arena for 3,000 and covered ice rink for 2,500. Three phases, following approximately a year of detailed design work. Design competition won by JSK Architekci.

| | |
|---|---|
| Capacity | 12,000 (expandable to 15,000) |
| Completion | 2019 |

### Warsaw: Polonia Warszawa Stadium

Early stage proposal for lower league football club. Office building development to help fund new stadium, retaining only historical western façade. Funding: private.

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|---|---|
| Capacity | 20,000 |

## QATAR

### Al Khor City: Al Bayt Stadium

The stadium structure has been completed, along with the installation of the retractable roof. Works within the precinct infrastructure and landscaping are progressing at the venue. The arena, designed to represent Arab hospitality, will host matches through to the semi-finals stage in 2022 and will be covered by a structure resembling a traditional Arab tent known as 'bayt al sha'ar', complete with a state-of-the-art retractable roof. A modular design includes an upper tier of removable seats. Retail spaces and restaurants will sit alongside landscaped paths for use by local residents and there will be dedicated women-only facilities within the complex. Green: energy-efficiency and green building materials, with renewable energy to power the venue. Owner: Supreme Committee for Delivery & Legacy and the Aspire Zone Foundation. Construction: Qatari contractor Galfar Al Misnad will construct the stadium and precinct in a joint venture with two Italian firms, Salini Impregilo Group and Cimolai. Construction supervision consultant: KEO International Consultants Design Consultant: Dar Al-Handasah. Landscape architect: Polis Group. Project Manager during design stage: Projacs.

| | |
|---|---|
| Mechanical Engineer | ME Engineers |

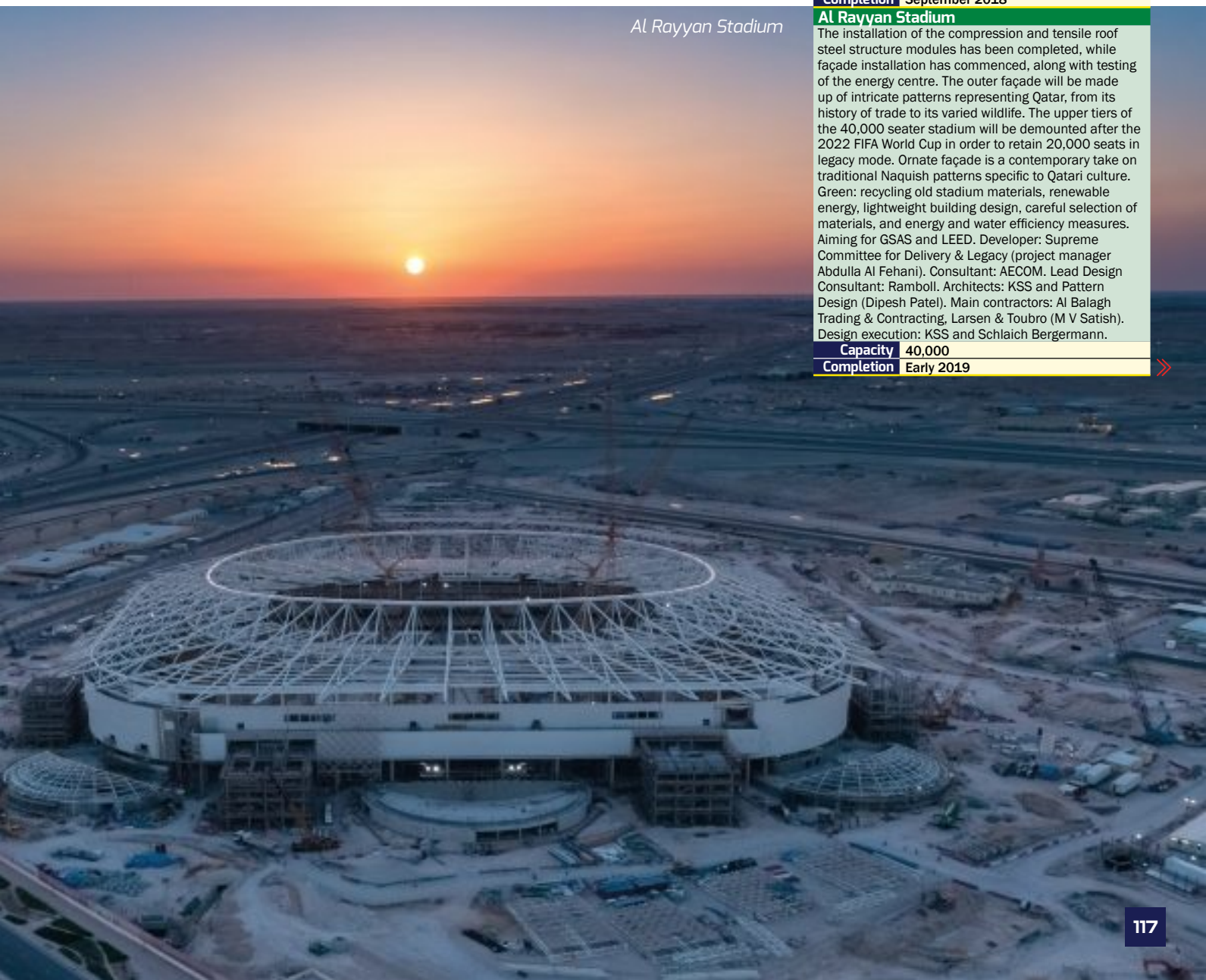
ME is providing MEP design.

| | |
|---|---|
| Capacity | 32,000 (70,000 for World Cup) |
| Completion | September 2018 |

### Al Rayyan Stadium

The installation of the compression and tensile roof steel structure modules has been completed, while façade installation has commenced, along with testing of the energy centre. The outer façade will be made up of intricate patterns representing Qatar, from its history of trade to its varied wildlife. The upper tiers of the 40,000 seater stadium will be demounted after the 2022 FIFA World Cup in order to retain 20,000 seats in legacy mode. Ornate façade is a contemporary take on traditional Naquish patterns specific to Qatari culture. Green: recycling old stadium materials, renewable energy, lightweight building design, careful selection of materials, and energy and water efficiency measures. Aiming for GSAS and LEED. Developer: Supreme Committee for Delivery & Legacy (project manager Abdulla Al Fehani). Consultant: AECOM. Lead Design Consultant: Ramboll. Architects: KSS and Pattern Design (Dipesh Patel). Main contractors: Al Balagh Trading & Contracting, Larsen & Toubro (M V Satish). Design execution: KSS and Schlaich Bergermann.

| | |
|---|---|
| Capacity | 40,000 |
| Completion | Early 2019 |



*Al Rayyan Stadium*

### Al Thumama Stadium

More than 50,000m³ of concrete have been cast at the site, while 2,285 tonnes of steel have been installed and approximately 38,400m² of masonry works have been completed. Preparations for the rooof lift are underway. Installation of the bleachers is ongoing. Precinct works are also in progress, including installation of water tanks, training pitches and other utilities and services. World Cup stadium on site already comprising four outdoor training pitches and office facilities used by the Qatar Football Association Technical Committee. Area: 515,400m². Design consultant: AEB Group (CEO & Chief Architect Ibrahim Mohamed Jaidah). Project management: TiME Qatar.

| | |
|---|---|
| Capacity | 40,000 (20,000 legacy) |

### Al Janoub Stadium

The newly-built Al Janoub Stadium in Al Wakrah – a FIFA World Cup Qatar 2022 tournament venue – has hosted its first match, the 2019 Amir Cup final. The stadium was designed by Zaha Hadid and AECOM. It has a fully retractable roof, meaning it can be used all-year-round. It also features innovative cooling technology for the benefit of supporters and players. The technology is capable of cooling the spectator areas to 18°C and the field of play to 20°C. Upper tiers will be removed after the World Cup. Area (precinct): 586,000m². Sports centre & community hub. Tenant: Al Wakrah Sports Club. Green: renewable energy & structural design efficiency; targetting GSAS and LEED certification. Developer: Qatar 2022 Supreme Committee (Hassan Al Thawadi, Secretary General). Project manager: KEO. Design consultant: AECOM. Architect: AECOM and Zaha Hadid Architects. Programme manager: CH2M Hill. Enabling works: HBK Contracting Co. Main contractor: MIDMAC in a JV with PORR Qatar.

| | |
|---|---|
| Capacity | 40,000 (World Cup) 20,000 (legacy) |
| Completion | 2019 |

### Doha: Sport City Stadium

Design draws inspiration from traditional Arab tents. A retractable roof, partly retractable pitch and retractable stands for multi-use after hosting 2022 FIFA World Cup.

| | |
|---|---|
| Capacity | 47,560 |

### Foundation Stadium

Soccer stadium for FIFA World Cup™ 2022. Plus swimming pool and indoor pavilion on same site. Green: photovoltaic and solar thermal panels. Aiming for LEED Gold. Design consultant: RFA Fenwick Iribarren. Project manager: Astad. Construction: Four companies, led by Cyprus-based contractor Joannou & Paraskevaides (J&P), are teaming up in the Main Contractor role: J&P Qatar WLL, Conspel Qatar WLL, J&P-Avax S.A and J&P (Overseas) Ltd. who have been awarded the contract as a joint venture.

| | |
|---|---|
| Capacity | 26,000 (40,000 for World Cup) |
| Completion | Q3 2019 |

### Education City Stadium

At Education City Stadium designed by FIA Fenwick Iribarren Architects, progress continues to be made at the 'Diamond in the Desert'. More than 220,000m³ of concrete has been casted, fabrication of the shimmering façade is almost complete and the roof structural steel works are progressing rapidly.

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|---|---|
| Capacity | 40,000 |

### Lusail City: Lusail Stadium

Construction is progressing well and is scheduled for completion on time in 2020. The substructure of the stadium is complete, concrete superstructure and infrastructure works are progressing in all zones, while internal works have commenced in the west stand. The venue is being delivered by a joint venture comprising Qatari firm HBK Contracting Company and China Railway Construction Corporation.Largest venue for the 2022 FIFA World Cup Qatar and the site of the opening ceremony and the Final. Open-air pitch that can be cooled to an optimal 26 degrees Celsius using cooled and shaded spectator stands and state-of-the-art green technologies. Owner: The Supreme Committee for Delivery & Legacy. Architect: Foster + Partners (design competition). Consultants: ARUP, Populous.

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| Capacity | 80,000 |

### Ras Abu Aboud Stadium

The fabrication of containers for Ras Abu Aboud Stadium commenced in August 2018, with the first batch expected in Doha in February 2019. The venue will be built using 998 modular containers. Located in a 450,000m² water-front site with exceptional views over Doha's skyline, the stadium will host matches up to the quarter-finals in 2022. On waterfront with a 'design for legacy' concept with an ability for it to become part of a larger mixed-use neighbourhood afer World Cup. Developer: Supreme Committee for Delivery & Legacy. Area: 450,000m². Parking: 6,000 (2,000 in legacy). Architect: Populous. Project management: Time Qatar (Turner Construction).

| | |
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| Capacity | 40,000 |

## ROMANIA

### FC Botosani Stadium

New stadium proposed for Liga I club. City support in seeking funding.

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|---|---|
| Capacity | 11,000 |
| Cost | €18m |

### Bucharest: Dinamo Stadium

To replace Stefan cel Mare stadium, possibly to host Euro 2020 games. Developer: Dinamo Bucharest (chief executive Elisabeta Lipa). In northern Bucharest. Underground parking: 1,087. Large public plaza south of the stadium. Finance: Romanian government. Upper tier 17,350; lower tier 10,350. Skyboxes: 20 (2,015). Media: 450.

| | |
|---|---|
| Capacity | 30,000 |

### Targu Jiu: Targu Jiu Stadium

New-build home for CS Pandurii Târgu Jiu on old stadium site. Stadium, hotel rooms, conference rooms and a car park. Area: 37,500m². Architect: DICO si Tiganas.

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|---|---|
| Capacity | 15,000 |
| Cost | €20m |

## RUSSIA

### Krasnodar: FC Kuban Stadium

Stadium for soccer team but capable of staging other events including rugby. Angled roof to retain noise. On podium with surrounding landscaped parking. Envelope design influenced by Russian artist and architect El Lissitsky. Plates of solid and perforated metal peel away from the bowl. Facade material: TECU Gold. Architect: AFL Architects, Tecnion, Syntesis Rus.

| | |
|---|---|
| Capacity | 45,000 |

### Moscow: VTB Arena

Stadium and arena combination on site of Dynamo stadium, designed to retain historic elements of Petrovsky park. Also two levels of retail and one of parking. Developer: Dynamo Mangement Company. Architects: MANICA Architecture and SpeeCH. Construction: Codest International (US$707m).

| | |
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| Mechanical Engineer | ME Engineers |

ME provided LEED, sustainable design and energy modeling in early design stages.

| | |
|---|---|
| Capacity | 27,000 (stadium) |
| Completion | 2018 |

### Novosibirsk: Sibir Football Stadium

UEFA Category 3 (1A Russian ranking) stadium for FK Sibir in the north of the city in development area. Two-tier grandstands, business zone in west stand, heating in some areas (average temperatures of below 0° from October to May).

| | |
|---|---|
| Capacity | 15,000 |
| Cost | €11.2m |

### Vladivostok Stadium

Proposed soccer stadium as part of sports and leisure development by local authority.

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|---|---|
| Capacity | 16,000 |

## SCOTLAND

### Aberdeen FC Stadium

Aberdeen FC has been granted official planning permission for a new stadium and training complex at Kingsford, near Westhill. Aberdeen City Council's planning department has formally approved the development and the club plans to begin construction of the 20,000-capacity stadium in June 2018.
Phase one will include the construction of the training pavilion, groundsman's accommodation, three professional training pitches, two 3G pitches, a full size and a half size grass pitches, the latter being mainly for use by AFCCT. Club previously worked on outline plans for stadiums at Loirston Loch and King's Links but both failed. Finance: sale of Pitodrie stadium for development, council contribution, grants, naming rights. Construction: McLaughlin & Harvey Construction (preferred bidder). Consultant: Gardiner & Theobald. Architect: Miller Partnership.

| | |
|---|---|
| Capacity | 20,000 |
| Cost | £50m |
| Completion | 2019 |

### Dumbarton: Community Stadium

For Dumbarton Football Club at Young's Farm, which is bounded by the River Leven to the east, the A82 to the north and a railway line to the west. Hospitality and dedicated training facilities, plus additional playing pitches for community use and car parking. Non-football related uses could include gym/leisure facilities, a hotel, conferencing facilities, a restaurant, a shop and offices.

| | |
|---|---|
| Capacity | 4,000 (1,000 standing) |

### East Kilbride Stadium

Proposal by East Kilbride Community Trust (EKCT) to build a multi-million pound stadium to replace K-Park for senior teams. Location could be South Lanarkshire Council-owned site at Langlands West. Council considering proposal. Local campaign in support under way.

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|---|---|
| Capacity | 4,000 |

### Edinburgh: Academicals Rugby Club

Edinburgh Academicals Rugby Club, the second oldest club in the UK, has confirmed that it will build its new facility in Stockbridge, Edinburgh. It will contain conference facilities and a rugby museum, with associated retail. Planning agreed 2013, S75 with City of Edinburgh Council 2014. Planning permission granted. Finalising design and layout, researching best practice, setting leasing arrangements, applying for building warrants, Architect: Michael Laird Architects. Jobs: 100.

| | |
|---|---|
| Capacity | 5,000 (2,500 seated) |
| Cost | £8m |
| Completion | 2017 |

### Edinburgh: Edinburgh Rugby

Scottish Rugby's plans to install a new stadium in the grounds of BT Murrayfield have been given the green light by Edinburgh City Council. The 7,800 capacity development is intended to be the new home of Edinburgh Rugby and would be located on a section of land currently used as training pitches.
Four stands approximately 8.6m high will be built around a new synthetic 3G surface on Murrayfield's back pitches. The existing six 18m tall floodlights will be replaced with four 25m high floodlights.
Part of the north stand will be assigned for accessible use and will have ramped access. Edinburgh will play its home matches on the international pitch at BT Murrayfield for the coming 2018/19 season, with the aim of commencing the 2019/20 campaign in the new purpose-built venue. Scottish Rugby has designed the project using flexible infrastructure and is open to making the space available to other users from the wider rugby community in Scotland, and the possibility of other sports as well.

| | |
|---|---|
| Capacity | 7,500 |
| Completion | 2019 |

### Edinburgh: New Meadowbank Stadium

Vision for refurbished venue. February 2015 report estimated project cost was £43m with a funding shortfall of between £11.3m and £19.8m. Shortfall now at £6.8m Outdoor athletics track with seating for 500, indoor 60m six lane athletics track with jumps area, outdoor throws area, 3G synthetic sports pitch or grass pitch in the centre of the outdoor athletics track for football, rugby and other pitch sports, outdoor 3G synthetic sports pitch, eight badminton court sports hall with 500 permanent seats plus bleachers, four badminton court sports hall with 500 permanent seats, gymnastics hall, gym, studios, changing facilities, café and meeting rooms. Aim is to find finance, appoint development team by February 2016, demolition autumn 2016.

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|---|---|
| Cost | £43m |
| Completion | 2020 |

### GLasgow: Celtic Park

Celtic Football Club's plans to expand Celtic Park and build new hotel, museum, retail and ticket office facilities have been given the green light. The Scottish champions unveiled plans earlier in 2017 to regenerate the area around Celtic Park and those have now been approved by Glasgow City Council. The hotel will be based on London Road, outside the main stand of Celtic Park and across from the Emirates Arena.

### Glasgow: Partick Thistle FC

Partick Thistle FC are pushing ahead with plans to build a dedicated training ground for the club in Glasgow. The Scottish Premiership team has agreed a deal with Three Black Cats, a company set up by the Weir family for long term investments, to build the new £4 million facility. Three Black Cats was seeking a new investment project and has agreed to work with Partick Thistle to design and build a new training ground to the Club's specification. It will then be leased to Thistle while remaining in the ownership of Three Black Cats. A location has yet to be found.

### Paisley: St Mirren FC

New in Ferguslie area. Seeking buyer of Love Street ground.

| | |
|---|---|
| Capacity | 10,000 |

## SLOVAKIA

### Bratislava: National Stadium

Public/private partnership lost private investor. Government has agreed to purchase the stadium from current owner Ivan Kmotrik once it's built. Home to natioinal team and Slovan Bratislava. International tender for design and construction of UEFA standard stadium to play queen internationals. Finance: government subsidy. Construction: Strabag (€42m)

| | |
|---|---|
| Capacity | 23,000 |
| Cost | €75m |
| Completion | 2018 |

### Kosice: MFK Kosice Stadium

New soccer stadium for Fortuna Liga club. Area: 60,000m$^2$. Operating company: Kosice 85%, club 15%. Funding: city, state (€4m).

| | |
|---|---|
| Capacity | 9,080 |
| Cost | €15m |
| Completion | 2017 |

### Trencin: Stadion na Sihoti

Phased replacement stadium for AS Trenčín. Municipality to provide land and infrastructure. Finance: AS Trenčín, Slovak FA, Slovak government.

| | |
|---|---|
| Capacity | 12,000 |
| Cost | €7.4m |
| Completion | 2018 |

## SOUTH AFRICA

### Krugersdorp: Amakhosi Stadium

Proposed, revised and stalled new stadium project for Kaizer Chiefs. Developer: Lefika.

| | |
|---|---|
| Capacity | 35,000 |
| Cost | R700m |

## SPAIN

### Barcelona: Camp Nou Stadium

Designed to facilitate circulation and achieve diverse urban usage in the Barça Campus. The stadium is the biggest component of €600m (US$651.9m, £467.4m) sports district called Espai Barça, which also includes the New Palau Balgrana multi-use arena. Architect: Nikken Sekkei + Pascual i Ausió Arquitectes (design competition winner – lead architects Joan Pascual and Takeyuki Katsuya). Sport design services: Manica Architecture. Super-upgrade for FC Barcelona's Catalan home voted for by club members in referendum. (Previous Foster+Partners design didn't go ahead.) Third tier on west side and roof (47,000m$^2$) over all stands. Jury of club officials and local architects reviewed proposals of eight design teams. Stadium specialist consultants: ISG, AEG, ICON Venue Group and Ryder Levett Bucknall. As well as a reconfigured spectator bowl, there will be a new ring of boxes and restaurants overlooking the pitch, along with 'superboxes' and other VIP services between the first and second tiers. The quality of the VIP services will be vastly improved both in terms of quantity and quality (3,500 new seats would create a total of 5,700 luxury seats).

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|---|---|
| Capacity | 105,053 |
| Cost | €360m |
| Completion | 2023 |

### Barcelona: Johan Cruyff Stadium

Training stadium for FC Barcelona at the Ciutat Esportiva training ground has opened. The stadium, named after club legend Cruyff, will be the home of Barça B, the Barça Women's team and the Under-19 team for Youth League matches. The shape will be asymmetric with a two-level grandstand. There will be 1,000 seats in the second level of the main grandstand and 5,000 seats on the entire, 360-degree lower level. The corners will be rounded to bring the fans as close to the action, and the players, as possible. UEFA category III with covered terraces. Parking: 600. Architect: Batlle i Roig Arquitectes.

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|---|---|
| Capacity | 6,000 |
| Cost | €12m |
| Completion | 2019 |

### Madrid: Santiago Bernebeu

Real Madrid CF's Board of Directors have awarded the task of remodelling the Estadio Santiago Bernabéu to FCC Construcción. The revamped stadium will spread over 66,000m2 and feature leisure and entertainment facilities. The venue will have a retractable roof as well as a 360-degree 'halo' videoboard. It will also have a surrounding skin of steel bands to allow images to be projected on to the exterior surface of the stadium. The timeframe needed to remodel is 39 months, meaning it would be finished by August 2022, plus an additional four months needed to develop the stadium's exterior.Architect: GMP Architects and L35 Ribas (winners of the 'International Tender for Architectural Ideas for the remodelling of the Santiago Bernabéu'). New skin, retail mall and sliding roof. Planning permission sought. Funding: commercial sponsorship (International Petroleum Investment Co.).

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|---|---|
| Capacity | 80,000 |
| Cost | US$400m |
| Completion | 2022 |

### Pamplona: El Sadar Stadium

Spanish Second Division football club Osasuna has revealed the winning design for a renovation of its El Sadar Stadium – as chosen by fans. Club Atlético Osasuna said the Muro Rojo scheme will be designed by OFS Architects and built by VDS. More than 90% of the 8,409 people who took part in the vote called for the stadium to be renovated, with 45% backing the Muro Rojo scheme.

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|---|---|
| Completion | 2020 |

### San Sebastian: Estadio Anoeta

Four-phase upgrade while continuing to operate. Removal of athletics track and new roof, followed by grandstand rebuilds. Municipality hiring construction manager to handle contracts.

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|---|---|
| Capacity | 32,000 |
| Cost | €40m |
| Completion | 2019 |

### Valencia CF Stadium

Spanish La Liga club Valencia CF have accepted a $128 million offer to purchase the land where the club's stadium is located, meaning construction can restart on the club's new stadium. Consultants Deloitte were brought in by Valencia CF to broker the deal as they looked to push ahead with a move to a new stadium. Local co-operative ADU Mediterráneo has agreed to buy the land.

The new stadium could be ready for the 2022/23 football season. Half finished and on hold since 2008 after financial difficulties of club. Three-tier (22,000 bottom tier, 18,000 middle, 25,000 upper) soccer stadium in NE Valencia. Architects: Reid Fenwick Associates. Engineer: Arup Sport.

| | |
|---|---|
| Capacity | 65,000 (75,000) |
| Cost | €200m (€300m) |

## SWAZILAND

### Siteki Soccer Stadium

Developer: National Football Association of Swaziland (NFAS). NFAS reported that it is trying to secure a title deed for the construction of a stadium in the Shiselweni region.

## SWEDEN

### Helsingborg: City Stadium

Project to rebuild the Olympia soccer stadium. Project manager: Karnfastigheter (Catharina Branden). Construction: Peab AB (US$44.4m).

| | |
|---|---|
| Cost | US$140m |
| Completion | mid-2017 |

## SWITZERLAND

### Lausanne Football Stadium

Rectangular Tuilliere Lausanne stadium as part of larger redevelopment in north of city. Training areas, restaurant and media. Architects: MLZD and Sollberger Boegli.

| | |
|---|---|
| Capacity | 12,000 |
| Cost | €70m |
| Completion | 2019 |

### Schaffhausen: FCS-Park

New stadium for FC Schaffhausen (President Aniello Fontana).

| | |
|---|---|
| Capacity | 8,000 |
| Cost | CHF 60m |
| Completion | 2017 |

### Zurich football stadium
Proposed soccer-dedicated stadium. Possible standing area. Developer: city.

| | |
|---|---|
| Capacity | 16,000 (international), 20,000 (domestic) |
| Cost | CHF 150m |
| Completion | 2017 |

## TANZANIA

### Kaunda Stadium
For Yanga soccer club. Start June 2016. Contractor: Beijing Construction Engineering Group Co Ltd.

| | |
|---|---|
| Capacity | 40,000 |
| Cost | $20m |

## TURKEY

### Adana: Adana Stadium
For soccer club Adanaspor. Suites: 49 (552). Club seats: 992. Media seats: 178. Officials seats: 196. Funding: public. Concrete bowl complete, roof steel being erected.

| | |
|---|---|
| Capacity | 36,117 |
| Cost | TL 107m |
| Completion | 2017 |

### Sakarya Stadium
Concrete bowl, steel roof. Roof cladding going on. Parking: 1445. VIP: 661. Area: 136,000m2. Architect: Alper Aksoy Architects (A.Arch). Construction: Ahes Construction.

| | |
|---|---|
| Capacity | 28,710 |
| Completion | 2017 |

### Trabzonspor: Akyazi Stadium
Main construction complete. Roof cladding going in, pitch yet to be installed. Replaces Huseyin Avni Aker stadium. Built on artificially created land on the shore of the Black Sea.

| | |
|---|---|
| Capacity | 42,000 |
| Completion | 2017 |

## TURKMENISTAN

### Ashgabat: Olympic Stadium
Refurb for athletics and soccer stadium ahead of Asian Indoor and Martial Arts Games. Architect: AFL.

| | |
|---|---|
| Capacity | 48,000 (35,000) |
| Completion | 2017 |

## UGANDA

### Ruti: Mbarara Stadium
Football stadium next door to Mbarara-Kabale Highway. Government has entered talks with Chinese firm Anhui Foreign Economic Construction Group Company (AFECC) to create plans. 500 seater pavilion, protected perimeter fence, modern dressing rooms, boardrooms, stores.

| | |
|---|---|
| Capacity | 15,000-20,000 |

## UNITED ARAB EMIRATES

### Abu Dhabi Stadium
Developer Mubada has prequalified five companies to build a new sports stadium with retractable roof as part of the Capital City District development next to Khalifa City.

| | |
|---|---|
| Capacity | 65,000 |
| Cost | US$1bn |

### Dubai, Al Aweer: Rashid Al Maktoum Stadium
Elevated in a diagrid bowl. Playing field 18m above entry plaza. Open tensile roof. Skin allows in air but not sun and sand. Water features will create natural thermal sink to cool air. Landscaping to block hot wind. Site area: 120,000m$^2$. General seating: 23,116 upper, 6,688 lower. Suites: 1,642 capacity. VIP: 8,941 Design and construction: Dar Group and Perkins+Will. Warm-up area, athletic training hall. Parking: 5,000. Sport museum (1,500m$^2$). Multi-purpose hall (3,500m$^2$), exhibition halls and conference facilities, shops and restaurants. Developer: Dubai Sports Council. Named after His Highness Shaikh Mohammad Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai.

| | |
|---|---|
| Capacity | 60,000 |
| Cost | AED 3bn (US$817m) |

### Dubai: Al Wasl Sports Club
Proposed upgrade to become air-conditioned stadium. Developer: Dubai Sports Council.

| | |
|---|---|
| Capacity | 25,000 |

## WALES

### Ebbw Vale: Circuit of Wales
The proposed Circuit of Wales motor racing track suffered a possible fatal blow when the Welsh Government refused to guarantee a £210 million loan for the project.
The circuit is planned to be built in an area near Ebbw Vale and has a deal to host the British MotoGP round until 2020. Developer: Heads of the Valleys Development Company. Construction (preliminary): FCC and Alun Griffiths Contractors.

| | |
|---|---|
| Capacity | 15,000 |
| Cost | £280m |

### Newport: Dragons Stadium
New stadium on site of Rodney Parade going through planning permission. Includes an 84-room hotel, 105 student flats, restaurant, conference facilities, offices and public gym. Architect: S&P. Planning: RPS. Cost consultant: Gleeds. Transport: Pinnacle. Boxes: 20.

| | |
|---|---|
| Capacity | 15,000 |
| Cost | £40m |

## ZAMBIA

### Southern Province: Livingstone Stadium
Soccer stadium and community sport facilities in sight of the Victoria Falls.

| | |
|---|---|
| Capacity | 30,000 |
| Completion | 2017 |

## ZIMBABWE

### Tsholotsho Stadium
Football stadium for Tsholotsho FC who are playing temporarily at White City during the first half of the Castle Lager Premier Soccer League season. Contractor: JR Goddard.

| | |
|---|---|
| Completion | 2021 |

### Victoria Falls Cricket Ground
Local council has granted planning approval for a stadium near the iconic site to become country's third international Test ground. Also home for domestic side Matabeleland Tuskers and open for touring teams to practise. Floodlights proposed.

| | |
|---|---|
| Capacity | 12,000 |

# AMERICAS

## ARGENTINA

### Buenos Aires: Mary Teran de Weiss Stadium
Redevelopment of tennis stadium with retractable roof. In Parque Roca.

| | |
|---|---|
| Capacity | 14,000 |

## BAHAMAS

### Andre Rodgers Baseball Stadium
Ballpark named after the first Bahamian to play in the major leagues. plus auxiliary practice fields to the east of the stadium, locker rooms, meeting rooms, physical/therapy/training rooms; vendor spaces, eight luxury boxes, state of the art audio/visual scoreboard, parking and offices for the sport's partner, the Bahamas Baseball Federation. East of the Government High School in the Queen Elizabeth Sports Centre. Original was demolished in 2006 to facilitate construction of the new TAR National Stadium. Budget for statutory utility connections, baseball accessories and installations, digital/video scoreboard and installation, supply and construction of synthetic field, stadium lighting, stadium 'Smart Technology' design, PA system, AV system and security/surveillance system install: $4m. Construction: Woslee Construction ($21.352m). Architect: Arconcepts ($3.96m).

| | |
|---|---|
| Capacity | 4,500 |
| Cost | US$21m |

## BRAZIL

### Rio de Janeiro: Olympic Stadium
Temporary capacity update of 2007 Pan-American Games stadium for Olympic athletics.

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|---|---|
| Capacity | 60,000 (45,000) |

## CANADA

### Calgary: CalgaryNEXT
Proposal for a new stadium to replace the Saddledome and McMahon Stadium. New field house, NHL arena, and football stadium in the West Village. Evaluation by city under way.

| | |
|---|---|
| Cost | C$890m |

### Montreal: Baseball Project
Study funded by a group comprised of the Board of Trade of Metropolitan Montreal (BTMM), the Montreal Baseball Project (MBP), EY and BCF LLP. Costed as $500m to buy team and $500m for an open-air ballpark.

| | |
|---|---|
| Capacity | 36,000 |
| Cost | C$500m |

## GUYANA

Soccer stadium plus training fields, a co-ed sports academy, amphitheater, golf course, resort and retail. Architect: Baker Barrios Architects Inc.

| | |
|---|---|
| Capacity | 24,000 |
| Cost | US$30m |

## UNITED STATES OF AMERICA

### AL, Birmingham: University of Alabama Stadium
Upgrades to the University of Alabama's Bryant Denny Stadium with changes to the original plans.
And this will mean an increase in costs to some $92 million. Instead of a new single large video board in the south end zone, Alabama's plan now calls for replacing the current corner screens. The new ones will be 60% larger and incorporate new technology. The single new video board would have eliminated a large portion of the 8,500 upper deck seats added in 2010, but now the capacity of the stadium, currently at 101,821, will drop by a few hundred seats and still remain above 100,000.
Upgrades also include more elevators, improvements to suites and areas that students will have access to so they can have a better game day experience. The walk of champions tunnel remains part of this phase of the renovation, along with a reconfiguration of the Alabama locker room.

| | |
|---|---|
| Cost | US$92m |

### AL, Mobile: Uni of South Alabama Stadium
The University of South Alabama (Director of Athletics Dr. Joel Erdmann) has selected three consulting firms to assist with the exploration of the financial, logistical and infrastructural requirements associated with the possible construction of an on-campus football stadium. Consulting: CDFL Architects and Engineers, Populous and Hunden Strategic Partners.

### AR, Fayetteville: Razorback Stadium
Arkansas, Fayetteville: Expansion project for Donald W. Reynolds Razorback Stadium at University of Arkansas. New loge boxes, suites, club seating and club areas, plus concessions and restrooms in the north end zone. New elevators and updated security and safety systems. Finance: athletics revenues, capital gifts and bond proceeds from a future bond issue.

| | |
|---|---|
| Cost | US$160m |
| Completion | 2019 |

### AZ, Phoenix: Sun Devil Stadium
Redevelopment for home of Arizona State University sport. "Double Inferno" upgraded student section, enhanced seating and legroom, more restrooms and concession options, technological upgrades, improved air and traffic flow through the venue, a connection to the surrounding landscape, additional premium seating options, and a new video board and sound system. Phase 1: new student section in the south end zone, permanent stadium seating, student section in the north end zone. Removal of loge structure in the southwest corner and demolition of the upper deck of the northeast end zone. Phase 2: work on east and north sides. Phase 3: work on the west side and on the Student Athletics Facility. Work ncludes connecting the main concourse with the south end zone. Premium seating will be added, along with expanded restrooms. Infrastructure improvements to water, electrical and mechanical systems. Architect: Gould Evans and HNTB. Construction: Hunt/Sundt Construction. Finance: real estate project University Athletics Facilities District.

| | |
|---|---|
| Cost | US$300m |
| Completion | 2019 |

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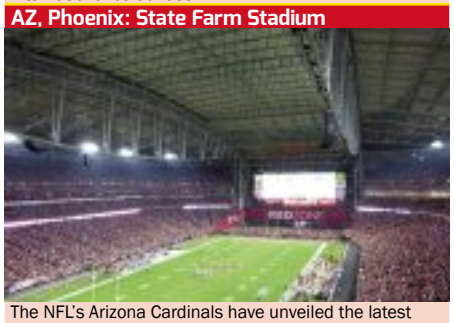
## AZ, Phoenix: Phoenix Rising Stadium

Phoenix Rising Football Club has picked Populous and Gould Evans to design its proposed Major League Soccer (MLS) stadium. The pair will collaborate to create the newest professional sports stadium in the greater Phoenix area. Phoenix Rising FC is the highest-level professional soccer franchise in Arizona's history. The club is owned by legendary Chelsea and Ivory Coast striker Didier Drogba, Kona Grill CEO Berke Bakay and an impressive collection of business leaders and international celebrities.

## AZ, Phoenix: State Farm Stadium



The NFL's Arizona Cardinals have unveiled the latest $28 million renovations to their newly named State Farm Stadium. The most recent phase of renovations included the creation of "The Tail Feather," a speakeasy lounge and full-service bar located on the northeast side of the stadium. Other club level upgrades include new bars and food service in all four corners, new flooring, new lighting, more televisions, a new sound system and new furniture. A speciality lounge area called the "Bird's Nest" boasts a new bar and buffet, as well as extensive millwork finishes and new furniture. All the restrooms on the club level were completely renovated with new floors, ceilings, lighting and wall tiles.

## AZ, Tucson: Arizona Stadium

Proposed makeover of Arizona Stadium as part of campus-wide 2017-19 Capital Improvement Plan. Seeking student and other stakeholder input while researching requirements. Replace dated restrooms, concessions facilities and about 50,000 bench seats. Arizona Wildcats (athletic director Greg Byrne). Also seeking to build an indoor training facility.

| | |
|---|---|
| Capacity | 50,000 (56,000) |
| Cost | US$146m |

## CA, Los Angeles: Dodger Stadium

The Los Angeles Dodgers have unveiled plans for a $100 million facelift at Dodger Stadium. Plans call for the creation of a new Centerfield Plaza and renovations to the Left and Right Field Pavilions as the club continues to enhance the Majors' third-oldest ballpark with modern and fan-friendly amenities.

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| Completion | 2020 |

## CA, Fresno: Bulldog Stadium

Renovation plans for Bulldog Stadium that will transcend the 35-year-old facility into a new era for Fresno State Athletics (Director of Athletics Jim Bartko). Improve all amenities, enhance the fan experience. Access tunnels built into the berm and a cross-sectional concourse at the midpoint of the bowl, doubling of restrooms and concessions, extra suites, club seats, loge areas, sponsorship displays and the possibility of naming rights, new press box and a new two-story football facility in the south end zone with a HD video board on top + ribbon boards. Phased construction. Architect: AECOM Sports.

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| Completion | 2019 |

## CA, Los Angeles: Inglewood NFL Stadium

The new home of the Los Angeles Rams and Chargers is beginning to take shape. Construction was held up last year because of an unusually wet winter, meaning the opening date for the $2.6 billion stadium was pushed back to 2020. For the Rams (owner Stan Kroenke) and NFL west coast operations on the former site of Hollywood Park racetrack and casino. NFL owners overwhelmingly voted for the St Louis Rams to relocate to Los Angeles. San Diego Chargers and Oakland Raiders could end up taking a stadium-share option if they can't resolve own stadium issues (NFL US$100m subsidy to remain in their current home markets). Outdoor feel under a canopy covering 19 acres with all sides of the building open-air, allowing natural breezes to pass through the venue. Site area: 3.1m ft². Height: 175ft. Roof: transparent ETFE canopy (19 acres). Developers: Stockbridge Capital Group (Terry Fancher). City of Champions Revitalization. Project to develop 300 acres for shopping mall, office, hotel, residential, entertainment/performance venue and a NFL stadium. Integration into LA County a priority to create destination. Project manager: Legends Project Development. Infrastructure management: Wilson Meany. Architect: HKS. Construction: Turner and Hunt Construction.

| | |
|---|---|
| Capacity | 70,000 (70K fixed, expandable to 80K) |
| Cost | US$2.5bn |
| Completion | August 2020 |

## CA, Oakland: Oakland A's ballpark

The MLB's Oakland A's have revealed plans to build a new ballpark at Howard Terminal to open in 2023. The A's also plan to redevelop the Coliseum site, which has been their home since 1968, in a way that will address community needs. The ballpark, which is being designed by the Danish architectural firm Bjarke Ingels Group, will be privately financed and anchor a waterfront district that features housing, restaurants and retail. The A's will formally begin a year-long state environmental review of the Howard Terminal proposal, a critical component of this process. They must also negotiate an agreement with the Port of Oakland to either lease or purchase the property.

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| Capacity | 32,000-36,000 |
| Cost | US$300-$400m |
| Completion | 2023 |

## CA: Sacramento Republic FC Stadium

Ground-making carried out at soccer specific stadium for franchise with MLS ambitions. This phase one of the project will set the stage for the "groundbreaking," which is inked in for spring 2018 with actual construction of the facility. The stadium plan is projected to cost $245 million, privately financed, with initial capacity for 20,000, to expand to 22,000. Planning commission approval given, council vote imminent. Suites: 36. Party suites: 3. Premium seats: 3,100. Standing: 500. Development requires spot in MLS. Architect: HNTB.

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|---|---|
| Capacity | 22,000 |
| Cost | US$245m |
| Completion | 2020 |

## CA, San Diego: San Diego State University

Gensler has been chosen as the architect for San Diego State University's proposed new multi-use stadium.

The leading global design firm will work alongside Clark Construction, which was selected earlier this year as the design-build contractor for the expandable 35,000-capacity stadium. The firm will design and build the expandable 35,000-capacity stadium to support collegiate football, professional and collegiate soccer, NCAA championship games, concerts and other events. In keeping with the current timeline, construction is slated to begin in early 2020 with a completion date in time for the start of the 2022 NCAA football season.The stadium interior would feature more than 82 suites, including field level, lower bowl sideline and upper sidelines, five different club sections (totalling approximately 6,500 seats), 50 loge boxes with lounge access, two end zone party decks and six exterior balconies, providing fans in San Diego unparalleled methods to enjoy games, concerts and a wide variety of events.

| | |
|---|---|
| Capacity | 32,000 |

## CA, San Diego: Saddleback College Stadium

Replaces campus's existing stadium. Press box, restrooms, scoreboard, synthetic turf, and a nine-lane running track, improvements to the athletic practice fields for football and soccer and new surface parking lot. Design and build: PCL Construction Services

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|---|---|
| Capacity | 8,000 |

## DC, Washington Football Stadium

New stadium proposal by Washington Redskins (lease at FedEx Field expires 2027). Curvaceous, open-air seating bowl enveloped in a mesh-like skin – and surrounded by a moat. Structure will also act as a performance venue for approximately 100,000 people. Parks and pedestrian bridges for tailgating fans. All-year events planned. Locations under consideration: Prince George's County, Maryland; Loudoun County, Virginia; and the District of Columbia. The team now plays at FedEx Field in Greater Landover, Maryland. Architect: Bjarke Ingels Group (BIG).

## DE: Newark, University of Delaware

The University of Delaware Athletics Department has debuted renovations to Delaware Stadium. Renovation of the stadium and creation of the Whitney Athletic Center began at the conclusion of the 2018 football season. Improvements to the west side of Delaware Stadium will ultimately include: adding chair backs for all seats in the middle three sections (C, D, E); Upgraded restrooms and concessions; Stadium Club space with bar, food and exclusive club seating; Enhanced press box, including game-day production spaces and coaches' booths. There are temporary press boxes built on the east side. A brand-new press box will be unveiled next fall atop the Whitney Athletic Center. To replace the main west gate there will be new entrances in the southwest corner and the northwest corner of the stadium. With the renovations, the new capacity beginning in 2020 will be 18,309. For 2019, with the temporary press boxes in place on the east side, the capacity will sit at 16,730.

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|---|---|
| Cost | US$60m |
| Completion | 2020 |

## FL, Gainsville: University of Florida

The University of Florida Athletic Department has announced plans to build a new baseball park, a new $65m stand-alone football training complex (Architect: HOK) and carry out upgrades to its current softball stadium. The projects, which combined are estimated to cost $130 million, are part of phases 2 and 3 of the University Athletic Association's (UAA) Facilities Master Plan. Construction for the estimated $50 million baseball ballpark, with an overall capacity of 10,000, will begin in the fall of 2018 with a completion goal prior to the 2020 season. Home plate will face northeast with the sun behind the stadium for a cooler atmosphere for the student-athletes and fans. A 360-degree open concourse will give fans constant field views and multiple seating options will be under shade. Permanent chairback seats will increase from 2,408 to approximately 5,000, while fans will also be able to choose from premium seating and non-traditional seating options to bring overall capacity to approximately 10,000. Architects and Engineering – Populous and Walker Architects.

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|---|---|
| Cost | US$50m |

## FL, Jacksonville: EverBank Field

Renovation for Jacksonville Jaguars (President Mark Lamping). Includes addition of a 5,000 seat amphitheater and renovations to the stadium's clubs.

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|---|---|
| Mechanical Engineer | ME Engineers |

ME is providing full MEP and technology design.

| | |
|---|---|
| Cost | US$37m |

## FL: Miami Freedom Park

Inter Miami CF have taken a step forward in their bid to secure a home stadium with the submission of a draft lease agreement to the City of Miami for the planned venue. Miami Freedom Park would incorporate one of the City's largest public parks, a world-class stadium for Major League Soccer's newest team, Inter Miami CF, and a tech hub, among other components. Developer: David Beckham group (Beckham exercising option on MLS franchise, Simon Fuller). Finance: private. Architects: Arquitectonica (Principal Bernardo Fort-Brescia) and HOK.

## FL: Miami Gardens, Baptist Health Complex

Construction underway on on a new training centre for the NFL's Miami Dolphins. The $135 million newly named Baptist Health Training Complex will open in Spring 2021. It will house an innovation hub for new technology, spatial computing and a walkthrough space, a state-of-the-art hydrotherapy area, fuel bar, dedicated recovery area including cryotherapy and isolation tanks, an athletic training room with expansive rehabilitation space, meeting rooms with direct access to the fields, a two-storey weight room with a cardio deck, locker rooms, equipment space, dining hall, auditorium, an outdoor practice area with two full natural grass fields, full indoor practice facility, a lobby with a grand staircase, office area, press area, fan amenities and a broadcast area.

| | |
|---|---|
| Cost | US$135m |
| Completion | 2021 |

## FL, St. Petersburg: Al Lang Stadium

The Tampa Bay Rowdies have taken a major step towards bringing a Major League Soccer (MLS) franchise to Tampa Bay after St. Petersburg voters approved expansion of the Al Lang Stadium. The vote now means the City Council has the authority to negotiate a long-term use agreement for Al Lang Stadium.

## FL, St. Petersburg: Carillon Ballpark

Rays seeking new stadium site with council approval. Hillborough County in the running. Carillon proposed by developer CityScape (Darryl LeClair) for Tampa Bay Rays. Club noncommittal. Offices as part of stadium structure. Part of retail and residential development. Retractable or fixed transparent roof options. ETFE roof and wall. Consultants: HKS and Hunt Construction.

| | |
|---|---|
| Capacity | 35,000 |
| Cost | US$577m (retractable), US$548m (fixed) |

## FL, Tampa: Raymond James Stadium

Tampa Bay Buccaneers have announced the next phase in the more than $150 million renovation of Raymond James Stadium. The latest enhancements are highlighted by a completely redesigned West Stadium Club, a new team retail store, expansion of the highly successful Hall of Fame Club, and a new home team locker room. The redesigned West Stadium Club will incorporate modern style with high-end finishes and furnishings, while providing more than 60,000ft2 of total lounge space – an increase of more than 25% from the original event space.

## FL, Tampa: Tampa Bay Rays Stadium

Major League Baseball's Tampa Bay Rays have announced a site for their proposed new ballpark. The Rays have selected a site in Ybor City in Tampa, which is the centre of Tampa's historic cigar industry. The stadium site covers 14 acres and it contained by Channelside Drive to the west, 4th Avenue to the north, 15th Street to the east, and Adamo Drive to the south. The team currently plays at Tropicana Field, which is located across Tampa Bay in St. Petersburg.

## GA, Atlanta: Bobby Dodd Stadium

Georgia Tech athletics has announced a series of comprehensive fan experience enhancements. The planned enhancements are aimed at improving all aspects of the gameday experience for fans attending Georgia Tech football games at Bobby Dodd Stadium. Located in the heart of Georgia Tech's Midtown Atlanta campus, Bobby Dodd Stadium was constructed in 1913 and is the oldest stadium in NCAA Division I FBS. It has not undergone major renovations since the construction of the stadium's north end zone structure in 2003, which added 15,000-plus seats and 10 luxury suites to the historic facility. Among the items being planned for implementation by 2023: improvement and enhancement of existing premium seating areas; creation of additional premium seating areas; improved cellular and Wi-Fi connectivity; enhanced stadium audio; improved general seating options; expanded tailgate offerings.

| | |
|---|---|
| Completion | 2023 |

## GA, Statesboro: South Georgia Tormenta

South Georgia Tormenta FC are looking at building a soccer-specific stadium in Statesboro, Georgia. Tormenta FC Owner and President Darin Van Tassell revealed intentions to explore the possibilities of a move from the Premier Development League – the top amateur league in North America – to the USL's Division III in May. Since then, Van Tassell has been busy expanding the club's ownership group and researching plans for a new stadium should Tormenta FC join the third-division league.

| | |
|---|---|
| Capacity | 5,000 |

## HI, Honolulu: Aloha Stadium redevelopment

Crawford Architects has been selected to lead a multi-disciplined team planning for a new stadium and site redevelopment of the entire 100-acre + Aloha Stadium site in Honolulu, Hawaii. Aloha Stadium, which opened in 1975, is Hawaii's largest outdoor facility, home to the University of Hawaii's Rainbow Warriors football team and former host of the NFL Pro Bowl.
The 50,000-seat stadium can be configured to offer multiple seating arrangements and field formations that allowed football, soccer and baseball.

## IA, Iowa City: Kinnick Stadium

Improvements to north stands at the University of Iowa. Athletics Director: Gary Barta. New suites, restroom upgrades and expanded food options in the north end zone – not been upgraded since 1983. Planning addressing logistics challenges ahead of design. Finance: city, university.

| | |
|---|---|
| Cost | US$75m |

## IL, Champaign: Memorial Stadium

University of Illinois continuing Illinois Renaissance project to renovate Memorial Stadium with priority given to the south horseshoe and the east side of the stadium. Director of Athletics Josh Whitman. Finance: donations and Department of Intercollegiate Athletics money. Phase one: reconfiguration of the south end zone will include construction of a new home for all football operations including locker rooms, training, recovery, sports medicine, meeting and office space, coaches offices, equipment room, recruiting venues, a grand entrance and a student-athlete dining space. Request for Proposal for architectural services issued. Second phase: east grandstand lower and upper levels – new restrooms, concessions, elevators, enhanced fan accessibility and ADA seating (end 2020 season).

| | |
|---|---|
| Capacity | 60,000 |
| Cost | US$132m ($95m phase one) |
| Completion | 2019 (phase one) |

## IL, Chicago: Chicago Bears Halas Hall

The Chicago Bears have partnered with global design and architecture firm HOK to design a 162,500ft2 extension to their training facilities. The building work will add to the already existing 143,000-square-foot Halas Hall facility and a 30,600ft2 remodeling project on the northeast side of the building. The addition will feature a 13,000ft2 indoor turf space for training and walkthroughs with a 133ftx26ft video projection wall and adjacent virtual reality room, in addition to a weight room expanded by 2,000ft2. Also included will be an equipment room, recovery space and nutrition/fuel station that are double the current size. Additionally, the sports medicine space will be four times larger than the present area and will feature a hydrotherapy pool.

## IL, Chicago: Wrigley Field

Cubs to upgrade player facilities, add a big screen in left field and an ad screen in right field. Main screen: 5,700ft$^2$. Hotel development across street but no connecting bridge. City council approval gained as first step in getting full planning permission. Four phases to upgrade club houses, concourses, suites and retail. Architect: VOA Associates. Consulting architect: DAIQ Architects and Harboe Architects. Contractor Pepper Construction. Owners' rep: ICON Venue Group., Structural engineer: Thornton Tomasetti. Steel: David Architectural Metals, Lenex Steel and Byus Fabricators. ME: ESD. AV consultant: WJHW. F&B: Levy Restaurants.

| | |
|---|---|
| Mechanical Engineer | ME Engineers |

ME is providing MEP and lighting design.

| | |
|---|---|
| Capacity | 42,495 |
| Cost | US$575m |
| Completion | 2020 |

## IL, Woodstock: Lakewood Sportsplex

Proposed minor league ballpark for McHenry County K-Nines. City providing land for a stadium. Finance: Private investors now sought. Developer: Equity One Sports Development.

| | |
|---|---|
| Cost | US$40m |

## IN, Bloomington: Indiana University

A new volleyball/wrestling indoor arena to be built on the Bloomington campus for Indiana University.
Will allow the volleyball and wrestling teams to move from their current locations to the athletics campus.
The 2,500- to 3,000-seat venue will be used as a competition facility for both volleyball and wrestling, as well as the practice facility for volleyball.

## IN: Indianapolis Motor Speedway

Proposed new grandstands and possibility of floodlighting. Seeking public funding.

| | |
|---|---|
| Cost | US$100m |

## IN: Indianapolis Soccer Stadium

United Soccer Leage (USL) team Indy Eleven have unveiled plans to build a new stadium as part of a major development in Indianopolis. Eleven Park would be a transformational neighbourhood development expected to include an office building, retail shops, apartments, a boutique hotel – all anchored by a 20,000 seat multi-purpose soccer stadium with the Indy Eleven professional soccer team as the primary tenant.
The ambitious plans have been put forward by Keystone Group, an Indianapolis-based real estate development, construction and investment company. Currently plays at Carroll Stadium at IUPUI.

| | |
|---|---|
| Capacity | 18,500 |
| Cost | US$87m |

## KS, Lawrence: Memorial Stadium

Proposed renovation of Memorial Stadium for Jayhawks' football. Consulting: HNTB. Track can be removed after building of $39m complex in west Lawrence for soccer, softball and track and field.

## KY: Churchill Downs Racetrack renovations

Churchill Downs Racetrack is set to undergo a $300 million makeover which will include the construction of permanent stadium seating and a hotel. Pending final approval of a Kentucky Tourism Development Incentive Act, the project will begin in December 2019 with projected completion at the end of 2021.

The development will transform the first turn of the 190-acre facility and provide guests the opportunity for never-before imagined Kentucky Derby experiences.

New permanent covered stadium seating for 4,700 will replace the 3,300 temporary grandstands historically located in that area.

It will provide a thrilling spectator experience to the thunderous racing and the famous Kentucky Derby walkover as well as an all-inclusive hospitality experience. In total, the project will provide approximately 5,500 new reserved seating options for the Kentucky Derby and Oaks. Additionally, 6,700 existing customers will have access to upgraded amenities.

**Completion** 2023

## KY: Papa John's Cardinal Stadium

University of Louisville Athletic Department (athletic director Tom Jurich) has begun fundraising to add 10,000 seats to the north end of the stadium. The Howard Schnellengberger Football Complex will also undergo major renovations. Doubling of size of team's weight room and conditioning centre. Improved players and coaches facilities. Club seats: 1,000. Premium boxes: 70. Field level suites: 12. Finance: PepsiCo $5m, Planet Fitness $3m.

**Capacity** 65,000 (55,000)
**Cost** US$55m
**Completion** 2019

## KY: Louisville Soccer Stadium

Louisville City FC has moved a step closer to building its own 10,000 seat, soccer-specific stadium after taking an option on land in the Butchertown neigbourhood. Lou City has entered into a partnership with architects HOK for the design of a soccer-specific stadium. HOK will design a 10,000-seat stadium that could later expand in capacity to 20,000. The overall site plan will also include space for office and retail development. Louisville City currently plays at Louisville Slugger Field (6,500 crowd). Study: Conventions, Sports & Leisure Int ($75,000).

**Capacity** 10,000 (expandable to 20,000)

## LA, Lafayette: UoL Ballpark

Renovation for University of Louisiana M.L. "Tigue" Moore Field. Athletic director: Scott Farmer. Architect: Abell + Crozier + Davis, DLR Group. Also on campus: new sports plaza behind the south end of Cajun Field, renovation of the Academic Center, proposed improvements at Earl K. Long Gym and the Culotta Tennis Center and a new basketball practice facility.

**Cost** $10m

## MA, Boston: New England Revolution Stadium

New England Revolution are close to finalising a site for a new soccer-specific stadium. Plans to build at the site of the former Bayside Expo Center collapsed.

**Capacity** 22,000 (30,262)
**Completion** 2021

## MD: Baltimore: M&T Bank Stadium

The Baltimore Ravens have completed a three-year, $120 million self-funded investment project to enhance the fan experience at M&T Bank Stadium. Demonstrating a continued commitment to create an exceptional gameday atmosphere, the improvements include 4K ultra-high definition video displays, escalators and elevators to the upper deck, a new sound system, upgraded kitchen facilities, a redesigned club level and updated suites. Another improvement is the addition of new LED ribbon displays, which will be installed around the seating bowl's suite level. In total, the Ravens will be installing more than 28,000 square feet of video displays. The Maryland Stadium Authority has also agreed to contribute an additional $24m – designated for general stadium upkeep – bringing a $144 million in combined funds that will improve the stadium over the next several years.

**Cost** US$120m

## MD: Baltimore: UMBC Event Center

The University of Maryland Baltimore County (UMBC) Event Center has opened for action. It is a comprehensive, all-in-one athletics venue designed as one of the premier mid-major NCAA Division 1 facilities in the US. The arena will be home to the UMBC Retrievers M&W basketball programs and women's volleyball team.

Flexible and multi-purpose in nature, the event centre has seating capacity for 5,000 in its stadium bowl and an additional 1,000 on the floor. The arena will be used for commencement, concerts and various public speaker events and is equipped with concessions, catering, hospitality, restrooms and security and guest services amenities.

**Capacity** 6,000
**Cost** $85m

## MD: Baltimore Soccer Stadium

Maryland Stadium Authority investigating market for a MLS team with feasibility study ($100,000). 42-acre waterfront site identified.

**Capacity** 17,000-20,000

## MI, Detroit: Ford Field

NFL's Detroit Lions have unveiled a design renovation plan of Ford Field's hospitality areas. The renovations are part of a larger $100 million upgrade project which includes a larger scoreboard, technology upgrades and architectural renovation. A total of 210,000ft2 of premium space, ranging from large social clubs to suites and loges, will be renovated in place or completely reconfigured. ROSSETTI, which is headquartered in Detroit, is the design architect for the renovation and was also the original designer of the stadium, which opened in 2002.

**Cost** US$44m

## MI, Detroit: MLS Stadium and District

Proposed soccer stadium to establish MLS in Detroit as cornerstone of larger development at Wayne County's unfinished jail site. Early discussions under way. Restaurants, retail, fitness, spa and conference centre. Also 30-storey hotel/residential tower, 24-storey residential tower, 18-storey office tower and 12-storey office tower. Podium open to the public at all levels from the ground up to the park-like setting along the rooftop nature trail, an 8-10 block continuous elevated greenspace that connects all four towers. Area: 15 acres. Parking: 5,400. Developer: investor partner group spearheaded by Tom Gores (Detroit Pistons owner) and Dan Gilbert (Cleveland Cavaliers' owner). Architect: ROSSETTI (Matt Rossetti, Dan Soleski, Nick Moriarty, John Bigtacion, Joe Donelko).

| | |
|---|---|
| Capacity | 20,000-25,000 |
| Cost | US$1bn (overall project) |

## MI: Central Michigan University

Populous has been picked to take the lead in designing the Chippewa Champions Center at Central Michigan University's Kelly/Shorts Stadium. Populous will partner with GMB, the architectural firm that designed CMU's soccer and lacrosse stadium. Meeting spaces, an alumni centre and offices housing the CMU Advancement team are included in the plan. The Chippewa Champions Center will replace the current locker room building in the north end zone of Kelly/Shorts Stadium.

The current vision includes a new football locker room, a rehabilitation centre and a nutrition centre for all 475 CMU student-athletes, team meeting space and offices for football staff and a weight room.

## MI: Rosemont Ballpark

Minor league baseball stadium for team in the American Association of Independent Professional Baseball on 10 acres of village-owned land north of Balmoral Avenue and west of the Tri-State Tollway. Four-level parking garage (+$20m). One-level stadium with skyboxes, party decks and club areas. Finance: Village. Architect: AECOM Services ($2.6m).

| | |
|---|---|
| Capacity | 6,300 |
| Cost | US$35m |
| Completion | 2018 |

## MI: St. Louis: St. Louis Soccer Stadium

Proposed MLS stadium on 13-acre plot located at the intersections of Grand Boulevard and Chouteau Avenue, owned by St. Louis University. Tenants: MLS expansion team, women's soccer team, SLU's men's and women's soccer teams. Two groups are bidding to provide an expansion team in the city. The owners have revealed their broader vision for an entire mixed-use stadium district to be located in St. Louis' Downtown West area. As part of their updated stadium-site plan, the proposed MLS stadium will now expand north of Market between 20th and 22nd Streets, connecting Downtown West between Union Station, south of the stadium and businesses on Olive and further north.

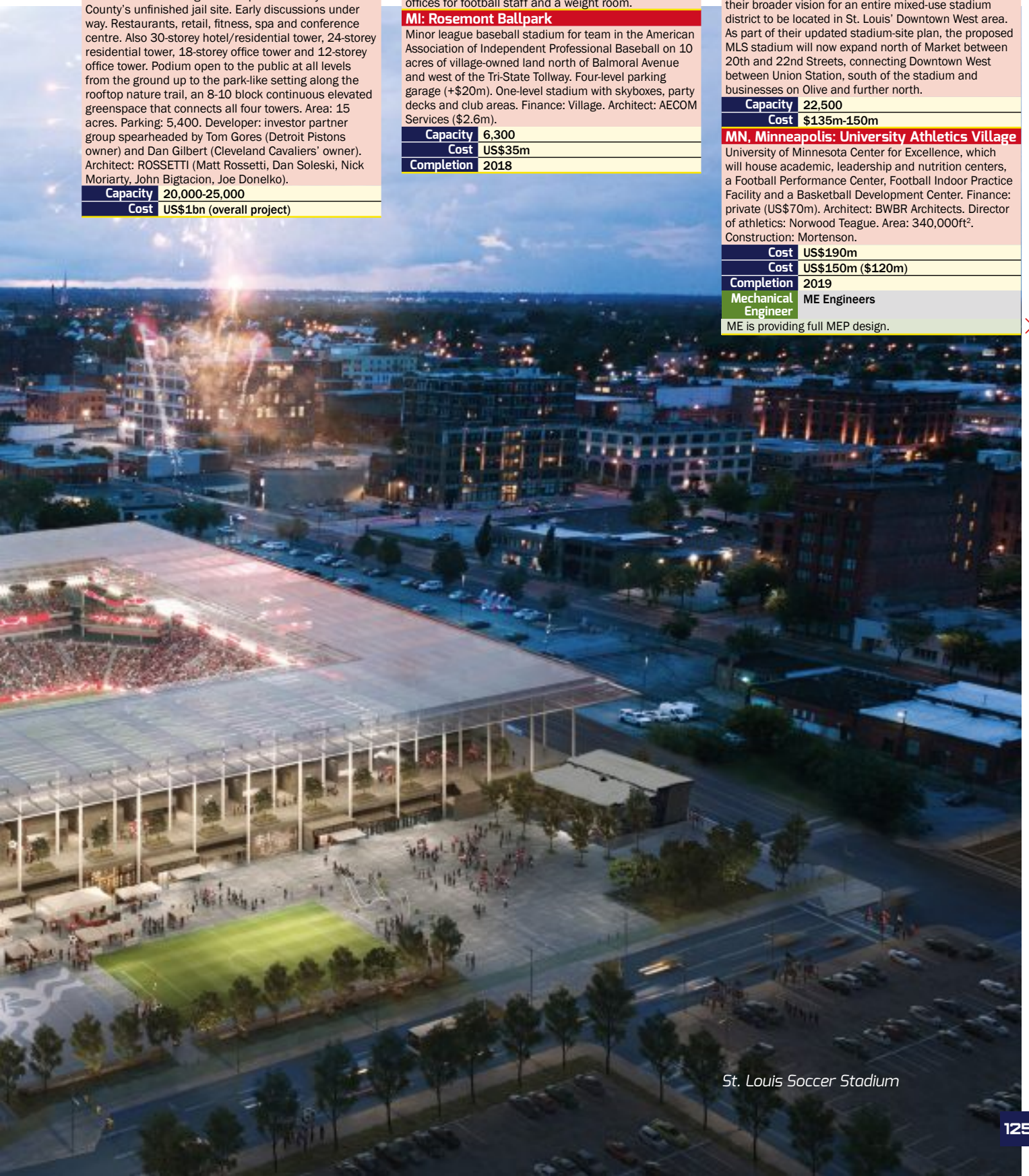
| | |
|---|---|
| Capacity | 22,500 |
| Cost | $135m-150m |

## MN, Minneapolis: University Athletics Village

University of Minnesota Center for Excellence, which will house academic, leadership and nutrition centers, a Football Performance Center, Football Indoor Practice Facility and a Basketball Development Center. Finance: private (US$70m). Architect: BWBR Architects. Director of athletics: Norwood Teague. Area: 340,000ft$^2$. Construction: Mortenson.

| | |
|---|---|
| Cost | US$190m |
| Cost | US$150m ($120m) |
| Completion | 2019 |
| Mechanical Engineer | ME Engineers |

ME is providing full MEP design.



*St. Louis Soccer Stadium*

### MS, Jackson: JSU Dome

For Jackson State University to host football and basketball games, as well as concerts on campus. Sports Hall of Fame on first floor. Parking: 4,500. Finance: up to $75m state-issued bonds.

| | |
|---|---|
| Capacity | 50,000 |
| Cost | US$200m |

### MS, Oxford: Vaught-Hemingway Stadium

Enclosure of north end zone and adding suites (30) and skyboxes on the south and west sides. Athletic department (Assistant Athletic Director Kyle Campbell) authorised by The University of Mississippi's College Board to hire AECOM Technology Corp. for $2.4 million to design the expansion. Finance: donations to Ole Miss' Forward Together athletics fundraising campaign. The university is also building a new basketball arena and plans to pay for the stadium expansion from the same campaign.

### NC: Fayetteville Ballpark

Minor league baseball stadium in downtown behind the Prince Charles Hotel. Hotel part of development and investment group. City dealing exclusively with the Houston Astros, which would like to relocate a Class A-Advanced ball club from California to play in the Carolina League by 2018. City refining site plan and design.

| | |
|---|---|
| Capacity | 5,000 |
| Cost | US$30m-$40m |
| Completion | 2018-19 |

### NC, Kannapolis: Kannopolis Baseball Park

Ground broekn on its new downtown Sports and Entertainment Venue. Designed by Populous, the $52 million ballpark will open for the Kannapolis Intimidators', the Single-A affiliate of the Chicago White Sox, 2020 season. Designed to be a year-round community asset, the facility's concourse will function as a city park to be open and active on non-game days and will feature numerous community amenities. The Sports and Entertainment Venue also includes a kids zone and the necessary accommodations to host special events such as concerts.

| | |
|---|---|
| Cost | US$52m |
| Completion | 2020 |

### NC, Raleigh: North Carolina FC Stadium

MLS hopeful, North Carolina Football Club, has chosen its preferred location to build a new stadium and entertainment complex in Raleigh. In partnership with Kane Realty, the community hub will include conference space, office, hospitality and retail space, housing and public parking. The project's footprint is approximately 13 acres in the area currently known as the State Government Complex, located within the boundaries of Peace St., Salisbury St., Lane St. and the CSX Rail easement. Architect: Gensler.

### NM, Portales: ENMU Football Stadium

Proposed replacement for 45-year old stadium. Funding: student vote on fee increase. Also for schools use and with City Manager's support.

| | |
|---|---|
| Cost | US$18m |

### NV, Las Vegas: Football Stadium

A groundbreaking ceremony has taken place at the home of the NFL Raiders' Las Vegas stadium. The event kicked off the construction of the 65,000-seat domed stadium that will serve as the team's new home. NFL owners approved the Raiders' relocation from Oakland in March, with 31 of the 32 owners voting in favour of the move.

| | |
|---|---|
| Capacity | 65,000 |
| Cost | US$1.2bn-$2.1bn |

### NV, Las Vegas: University of Nevada Stadium

UNLV is a possible partner in football stadium construction. Previously looked at funding of an on-campus stadium (deal with Majestic fell through.) Consultant: Conventions Sports & Leisure International ($325,000).

| | |
|---|---|
| Capacity | 60,000 |
| Cost | US$500m (stadium) US$2bn (overall) |

### NY, New York: Queens Soccer Stadium

New York City FC playing in Yankee Stadium while seeking to build a soccer-specific stadium in Queens or or Brooklyn. MLS Commissioner Don Garber has presented plans to build a 25,000-seat stadium at Flushing Meadows Corona Park. Designed to allow upgrade to 35,000. The plans call for parkland used for the project to replaced acre-for-acre. Jobs: 150 full-time, 700 part-time.

| | |
|---|---|
| Capacity | 25,000 |

### NY, Syracuse: University Stadium

Syracuse University is to spend $118 million on revamping its stadium over the next few years. Upgrades include a new fixed roof, a vertically hung scoreboard, state-of-the-art sound and lighting systems, improved accessibility and added Wi-Fi capabilities. The investment, authorised by the Board of Trustees, will enable the University to create a new stadium experience for students, faculty, staff, alumni and fans alike. The stadium upgrades represent the next step in advancing the $255 million West Campus transformation strategy the University first announced in 2016. Consultant: Irwin Raij.

| | |
|---|---|
| Cost | US$118m |

### OK, Oklahoma University softball/baseball

The University of Oklahoma (OU) has completed the drafting of master plans for the baseball and softball facilities at OU. The work encompasses expansion and enhancements at both L. Dale Mitchell Park and the OU Softball Complex. Populous, the firm retained for the south end zone project at Gaylord Family – Oklahoma Memorial Stadium, has performed the work on the two ballparks. The full master plan calls for approximately $15 million of work at the softball park and $10 million at the baseball park. The work could be phased if necessary.

### OH, Akron: MLS Stadium

Proposed retail village and retractable-roof stadium for MLS expansion team. Developer: Wolstein Sports & Entertainment Group LLC (Paul Garofolo). Finance: $7m per year tobacco tax, Wolstein $100m.

| | |
|---|---|
| Capacity | 20,000-25,000 |
| Cost | US$327m (stadium $110m-$165m) |

*Aerial photo showing the construction progress at the Las Vegas Stadium*
Image credit: *A Desert Dweller / Shutterstock*

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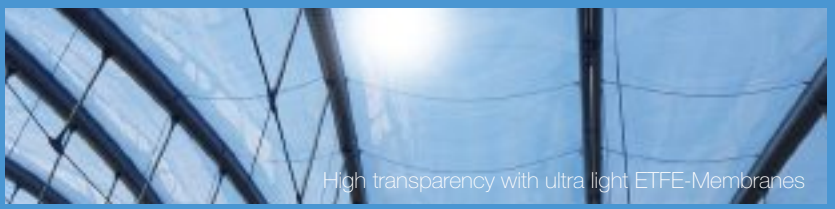
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**OH, Cincinnati: FC Cincinnati Stadium**

FC Cincinnati has unveiled a new, progressive design for its West End Stadium, which is scheduled to open in March 2021 and will be the future home of the Major League Soccer team. The $250 million stadium construction cost is being privately funded by the club's diverse, local ownership group, which led by FC Cincinnati CEO and managing owner Carl H. Lindner III. Designed by world-renowned architecture firm Populous, West End Stadium features an ambitious interpretation of Cincinnati on the rise.The USL club currently plays at the University of Cincinnati's Nippert Stadium. Internal features include: Final seating capacity will be between 26,000 and 26,500, pending the final seating manifest; A 110-yard by 75-yard natural grass field; A central field tunnel that guides the teams out just inches from the fans; A total of 4,500 total premium seats in suites and premium clubs

59 Suites, including 2 party suites and 3 three field-level suites, the most in MLS for a venue that does not also host an NFL team; Four distinct premium club areas, each with unique designs and amenities, varying hospitality options and different locations throughout the stadium.

| | |
|---|---|
| Cost | US$200m |

**OH, Columbus: Ohio Stadium**

Four-year renovation project for Ohio State University's iconic home (1922). Restore and re-coat the 94-year old concrete on C-deck, upgrade power distribution systems for the east, west and south stands, improve and upgrade B-deck to include better lighting, larger televisions, an improved sound system and better scoreboards, renovate the premium seating area to consolidate the university suites into one University Suite and add 35 loge boxes and 12 luxury suites. Finance: Department of Athletics using auxiliary funds, debt and private donations. Design and build process autuum/fall 2016, C-deck concrete restoration 2017-2020, University Suite expansion completed in August 2017, removal of 2,600 seats 2018, suites and loge seats completed in 2019.

| | |
|---|---|
| Capacity | 102,854 (104,944) |
| Cost | US$42m |
| Completion | 2020 |

*Ohio Stadium*

*FC Cincinatti Stadium*

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## OK, Oklahoma City: Chesapeake Energy Arena

The Chesapeake Energy Arena in Oklahoma City, US, is set to undergo a major revamp. The arena is home to the NBA's Oklahoma City Thunder and is a popular concert venue. Improvements include: Renovated concourse with expanded views into the seating bowl; expanded 10,000ft2 interior fan gathering space; new 34 x 19ft expanded centre-hung video and scoreboard (nearly twice original size); second level outdoor patio; new food and beverage concepts; new team shop and box office; expanded main concourse; loud city fan zone; upgraded home and visitor locker rooms; new seats; new elevators

## OR, Eugene: University of Oregon

The University of Oregon has unveiled plans to build a futuristic new track and field stadium. The University said Hayward Field will set a new standard for sports venues, create world-class training and competition facilities for student-athletes, and incorporate new laboratories and research facilities to better understand the potential of human performance.
Watch a video of Hayward Field's history and planned future here. The new stadium's permanent capacity will be 12,900, slightly larger than the 10,500 fans it currently holds. This will be expandable to nearly 30,000 for the IAAF World Outdoor Championships in 2021.

**Completion** 2020

## PA, Reading: Ballpark

Ballpark for Reading Phillies to replace FirstEnergy Stadium as part of proposed RiverView at Reading development.

**Cost** US$70m

## PA, Philadelphia: Temple University Stadium

Temple University's Board of Trustees voted to authorize the development of preliminary designs ($1m), usage options and environmental impact studies for a multipurpose retail and football stadium project on the northwest corner of Main Campus. Architect seeks to create a vibrant streetscape experience that blends together the planned stadium, the significant retail components, the adjacent indoor recreation facility and various pedestrian plaza and green spaces. Engagement process under way. Architect: Moody Nolan (Curtis J. Moody). Moody Nolan is also designing Temple's new indoor practice facility next to the stadium site and is collaborating with AECOM (engineering design) and Langan (civil engineering and landscape design. Required funding: $50m donations. City approvals required. Task force of students, staff, and community members, will advise on maximising use.

**Capacity** 35.000
**Cost** US$126m

## PA, University Park: Beaver Stadium

Revamp for football stadium which has been in its current location on Penn State's campus since 1960 and seats 107,000. Improvements will be decided as part of the Intercollegiate Athletics' facilities master plan. Athletic director: Sandy Barbour. Aiming to generate more revenue from the stadium beyond football games, attracting concerts, NHL preseason games and international soccer matches.

## RI: Providence: Pawsox Ballpark

New owners of Pawsox intend to take the Triple A franchise out of Pawtucket. Undertaking a structural study on McCoy Stadium Target site for new stadium is a piece of freed-up I-195 land near the intersection of Dyer and Dorrance streets in Providence. Plus parking garage ($10m). Concept design: DAIQ and Populous. Economic consultant: Brailsford & Dunlavey.

**Capacity** 10,000
**Cost** US$70m

## SC, Myrtle Beach: Brooks Stadium

Proposed expansion of Coastal Carolina University's Football Stadium. Donations sought to build fund sufficient for state finance matching. Finance: athletic fund, renovation fund. Depends on approval of financing by South Carolina Commission on Higher Education (CHE). Chants' move to the Sun Belt Conference and to the NCAA's Football Bowl Subdivision means they are required to average 15,000 in attendance per game.

**Capacity** 19,000 (9,214)
**Cost** US$29.9m

## TN, Knoxville: Neyland Stadium

University of Tennessee (UT) Athletics has outlined a revised year-by-year progress plan for its Neyland Stadium renovation project. The new project goals include: Design a stadium exterior integrated into the campus fabric that embraces the objectives of the Campus Masterplan and the established architectural language of the university;
Build new entry plazas in the southwest and southeast that create a cohesive exterior architecture while consolidating stadium entry for easier access, improved security and operational control;
Expand the main south concourse to improve safety, functionality and fan comfort;
Improve restrooms to comply with modern standards for number of fixtures, accessibility and ease of use by patrons;
Increase the quantity of concession stands in the south end of the stadium while also upgrading food and beverage quality, selection and availability;
Develop an on-site kitchen and commissary to enable catering service to designated points throughout the stadium;
Create new and diverse seating alternatives and gathering spaces;
Upgrade technology infrastructure and capabilities throughout the stadium—specifically addressing sound quality along with digital video displays; Finance: gifts and athletics department. Consultant: Populous.

**Completion** 2023

## TN, Memphis: Liberty Bowl Memorial Stadium

Home to University of Memphis' Tigers football team is seeking to install more than 5,000 premium seats. Finance: Tigers.

**Capacity** 57,800 (60,000)
**Cost** US$3m

## TN, Nashville: MLS stadium

Plans to bring a Major League Soccer (MLS) expansion team to Nashville boosted by the city's Metro Council decision to approve a $275 million stadium project. Stadium to be built on a portion of the city's fairgrounds, and includes a funding package of $225 million in the form of revenue bonds. The MLS stadium plan integrates the new stadium with the existing Metro masterplan for the fairgrounds. Stadium funding would come from a combination of three sources: $200 million in revenue bonds, $25 million in cash from the MLS ownership group, and $25 million in Metro general obligation bonds to pay for public infrastructure associated with the stadium.

**Cost** $275 million

## TX, Amarillo Ballpark

Ballpark under construction in downtown Amarillo, Texas. It will be the home ballpark of the Amarillo Sod Poodles, the Double-A affiliate of the San Diego Padres in the Texas League. The ballpark is scheduled to open on April 8, 2019

**Cost** US$45.5m (US$30.3m)
**Completion** 2019

## TX, Arlington: Esports Stadium

Esports Stadium Arlington, the largest gaming and esports events facility in North America, has opened. Located in the heart of Arlington's entertainment district, Esports Stadium Arlington is a $10 million, 100,000ft2 facility built to serve the unique and technologically advanced demands of the esports industry. Designed by award-winning architectural firm Populous and brought to life with build partner Shawmut Design and Construction, the stadium features a competition space with a built-in 85 ft-long LED wall that's accompanied by an immersive sound and theatrical lighting system.

## TX, Arlington: Globe Life Field

Construction of Globe Life Field in Arlington, the new home of Major League Baseball's Texas Rangers, is approximately 72% complete. Work is ongoing on the retractable roof. The roof will use a total of 19,000 tons of steel. Roof construction started in late fall 2018, and is expected to be completed by the end of 2019. Finance: 50/50 public-private partnership (PPP) – Arlington City Council, Texas Rangers – for 30 years. Rangers' 30-year lease on the City-owned Globe Life Park ends in 2024. Economic impact 2016-2054: US$2.43bn for Arlington and US$4.35bn for Tarrant County. Architects: HKS.

**Mechanical Engineer** ME Engineers

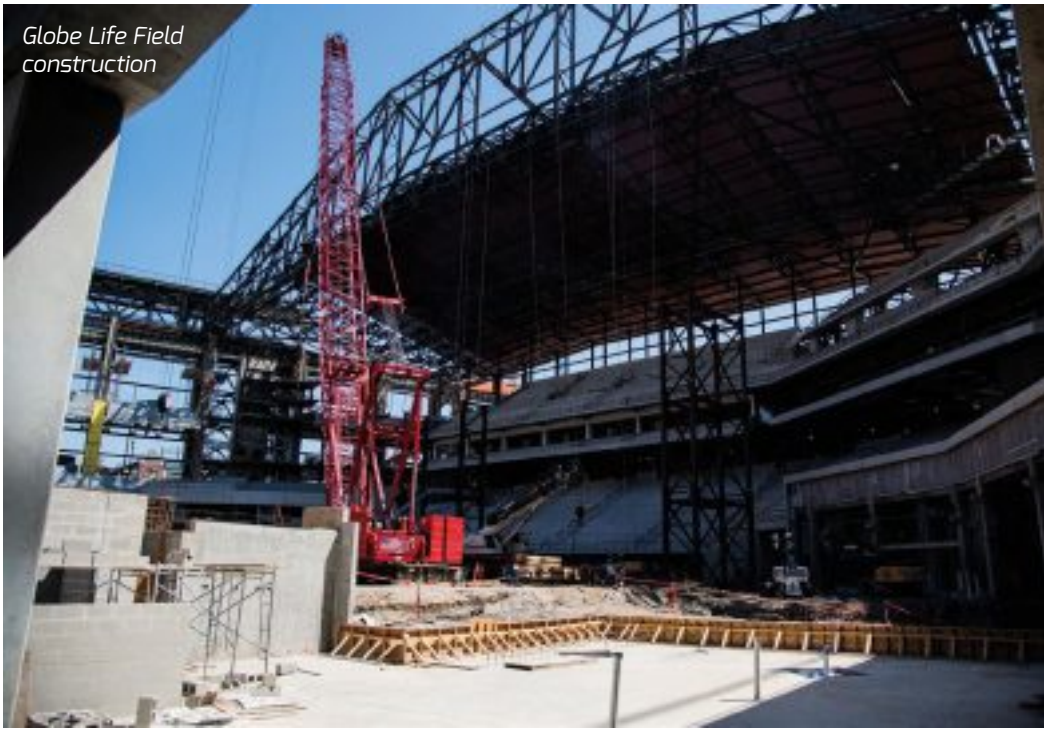
ME is providing MEP and sports lighting design.

**Cost** US$1bn
**Completion** 2020

## TX, Austin: Austin FC MLS stadium

Plans have been unveiled for a new stadium for the Columbus Crew SC MLS team. Columbus Crew owners Precourt Sports Ventures (PSV) have been searching for a stadium site since announcing plans to potentially relocate the Major League Soccer club last October. A suitable 24-acre site has now been identified at McKalla Place in north Austin near the Domain. Gensler Sports is the architect.

**Cost** US$200m



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### TX, Texas Tech: Jones AT&T Stadium

Texas Tech Athletics will renovate both its Football Training Facility and the south end zone of Jones AT&T Stadium after receiving a significant monetary gift. Tech has already made significant upgrades to Jones AT&T Stadium as part of the campaign, notably the North End Zone Club Area, the video board, the North End Zone Colonnade and new FieldTurf surface. Gensler Sports is the architect.

### TX, Canyon: West Texas A&M University

West Texas A&M University will break ground today on the new $38.8 million on-campus Buffalo Stadium. The new Buffalo Stadium, located in Canyon, Texas, east of the current soccer/track stadium and Jarrett Hall, will be constructed on a north/south axis with easy access to campus. The west side of the football stadium will include a multi-storey building to house concourse-level suites, elevated club seating areas and a modern press box. There will be grade-level entry to the stadium with bowl seating split into an upper level of pre-engineered metal grandstands and a lower level of cast-in-place concrete surrounding a below-grade artificial turf playing field.

**Capacity** 8,500
**Cost** US$39m

### TX, Dallas: SMU Soccer Stadium

Phase 1 of Southern Methodist University Athletics' Facilities Master Plan, a $150 million comprehensive facilities investment that will serve the needs of all 17 sports and 400-plus student-athletes. New stadium for men's and women's soccer. at SMU on Mockingbird Lane. Current site will house indoor performance center with full-sized football field and indoor 300-metre track. Director of Athletics: Rick Hart. Finance: donations (80%).

**Completion** 2019

### TX, Fort Worth: TCU stadium

Amon G Carter Stadium at Texas Christian University (TCU) in Fort Worth will undergo major upgrades after funding for the project was approved. The plans for the home of the university football team include additional luxury seating, two private clubs, 1,000 additional club seats, and a large balcony that will overlook Frog Alley. Work is expected to get underway in May 2018. The expansion will include 48 loge boxes with two private clubs, over 1,000 club seats and 20 luxury suites. There will also be a 100-foot outdoor balcony overlooking Frog Alley, the TCU campus and downtown Fort Worth as well as vast additional premium space that can be used for outside events on game days. Additionally, a new video board will be installed in the north end zone.

**Cost** $100 million

### TX, Fort Worth: Fort Worth Arena

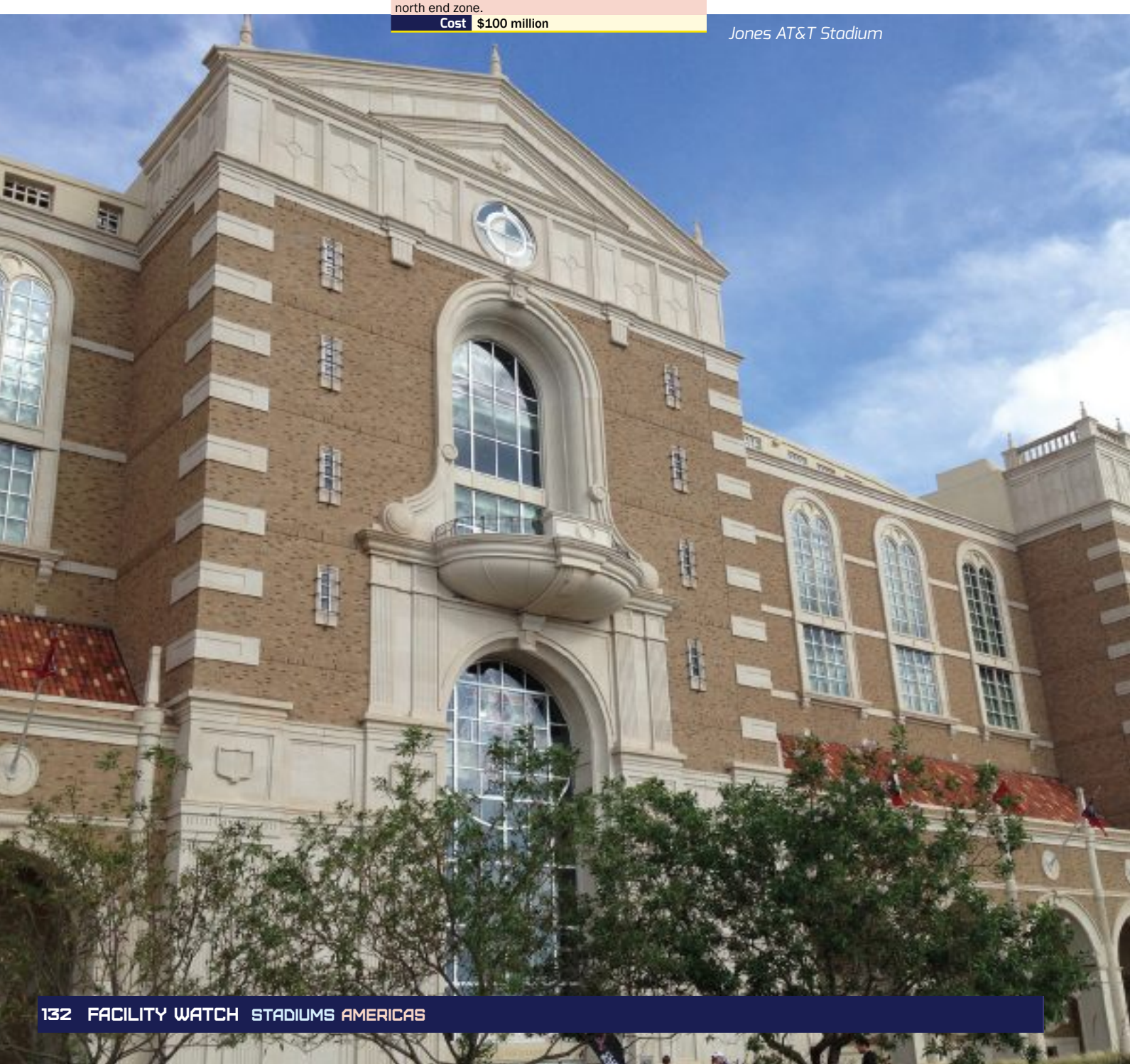
Ground broken on the site of the new Fort Worth multipurpose arena. Planned to bring a wide variety of programming, including sporting events, concerts, family shows, community and school events, and more. Located adjacent to the Will Rogers Memorial Center campus. Will be the new home to Fort Worth Stock Show Rodeo performances. The arena will have a seating capacity of up to 14,000 for concerts; 13,300 for basketball; 12,200 for family shows and ice hockey and 9,300 for rodeo and equestrian shows.

**Capacity** 14,000
**Completion** 2019

### TX, Houston: Houston Strikers

Houston Strikers rugby team stadium has opened. Strikers are one of the nine teams looking to take part in the new MLR competition and want to build an 11,000 seat, $10 million stadium. The Strikers say they are in the process of interviewing stadium contractors and that they will build the venue in sustainable phases.

**Capacity** 11,000



*Jones AT&T Stadium*


*Toyota Center - Houston, TX*

# RAPID ROI

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### TX, Prosper: Prosper High School Stadium

Prosper Independent School District (PISD) has completed the design of its new stadium/natatorium complex in Texas. The 12,000 capacity stadium, designed by Huckabee Architects, will serve all PISD high schools when it opens in August 2019.
This project was approved and will be funded from the $710 million bond issue passed nearly 10 years ago, coming in with an approximate cost of about $48 million. Prosper ISD's new district stadium and natatorium complex delivers a state-of-the-art facility for the growing community. The complex will be located to the west of Prosper High School and will be utilised for athletic, extracurricular and community programmes.

| | |
|---|---|
| Capacity | 12,000 |
| Cost | US$48m |
| Completion | August 2019 |

### TX, San Antonio: Alamodome

Expansions and exterior modifications completed. New wings to the east and west concourse, totaling 55,000 square feet of new space. Expanded field level to the north, outdoor terraces and beer garden. Voted through by the Historic and Design Review Commission.

| | |
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| Mechanical Engineer | ME Engineers |

ME is providing sports lighting and technology design.

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|---|---|
| Cost | US$42m |

### UT, West Valley City: Real Monarchs Stadium

Real Salt Lake owner Dell Loy Hansen has signed a letter of intent with city manager Wayne Pyle. 60-day negotiating window. Work in tandem with Maverik Center. Hansen withdrew in February from deal for club and Utah State Fairpark to add a multi-use sports stadium to the fair park.

| | |
|---|---|
| Capacity | 8,000 |
| Cost | US$20-23m |

### VA, Chalotteville: Davenport Field

Redevelopment of the University of Virginia ballpark – Davenport Field at Disharoon Park. DLR Group's design has has introduced a new 'front door' – a memorable gateway for fans, student-athletes, recruits, and visitors. Phase I includes new and enhanced options for viewing the game, including wrap-around elevated concourse, chair back seating, outfield bleachers, berm, picnic terrace, and the new Field Level Club. Team training and recruitment will benefit from the new Pitching Development Center, batting cages, bullpens, and baseball operations suite. Additionally, future phase construction has been coordinated to include suite, club, and party deck spaces added above the expansion concourse, fulfilling the expressed desire for a 'big time' look and feel.

| | |
|---|---|
| Cost | US$18.6m |

### VA, Blacksburg: Virginia Tech English Field

Virginia Tech's new ballpark – English Field at Union Park – has opened. CannonDesign designed the dynamic new ballpark in design-build partnership with Whiting-Turner. English Field at Union Park is an exciting new ballpark that celebrates Virginia Tech baseball's rich history and serves as a home for its future.
Everything from the Hokie stone to embossed university symbols celebrate Virginia Tech, in Blacksburg, Virginia, and its legacy of baseball success.
Overhaul of Virginia Tech baseball team's ballpark. Additional seats, modernised concession stands and a new scoreboard. Four design-build teams presenting designs in June. Senior associate athletic director for facilities and operations: Tom Gabbard. Naming rights: Union Bank & Trust ($3.5m).

| | |
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| Cost | US$12m-US$14m |

### VA, Fredericksburg

Fredericksburg Baseball has broken ground on a new state-of-the-art stadium in Virginia, US. The 5,000 seat venue will be home to MiLB's Potomac Nationals of the Carolina League, who currently play at Northwest Federal Field at Pfitzner Stadium in Woodbridge, Virginia.
They are the Carolina League affiliate of the Washington Nationals.

| | |
|---|---|
| Capacity | 5,000 |
| Cost | US$29m |

### VA, Norfolk: ODU Foreman Field

Old Dominion University has announced plans to rebuild and expand S.B. Ballard Stadium to enhance seating and add modern amenities. Construction will begin this summer and end before the home opener of the 2019 football season. The project will not use state funds or require an increase in student fees. It will be funded by athletic revenue, private funding and bond proceeds. The first phase of the $65 million project will address many of the recommendations that fans made in a 2016 survey. The stadium will have more than 21,000 seats. Bidders – Construction S.B. Ballard. Architects: Moseley Architects, Populous.

| | |
|---|---|
| Capacity | 21,000 |
| Cost | US$65m |
| Completion | August 2019 |

### VA, Henrico County: Richmond Intl Raceway

Planning future of development of more than 1,000 acres along Laburnum Avenue in Henrico County. Cushman & Wakefield and HOK will work to determine the "highest and best use" of the land the racetrack owns and to plan potential future improvements. RIR President: Dennis Bickmeier.

### VA, Richmond: Ballpark

Proposed development of minor league ballpark. Flying Squirrels AA affiliat of the San Francisco Giants is reviving interest after failed attempt in 2014.

### WA, Tacoma: Soccer Stadium

Seattle Sounders FC and the Tacoma Rainiers Minor League Baseball outfit have signed a memorandum of understanding to develop a new soccer-specific stadium in Tacoma, Washington. Architects: Populous.

| | |
|---|---|
| Capacity | 5,000 |
| Completion | 2019 |

### WI, Franklin: Ballpark Commons

Proposed baseball stadium at The Rock sports complex for an independent professional baseball team; an indoor sports complex with four Little League-sized baseball fields and space for other sports; one or two hotels with up to 220 rooms; around 300 apartments; restaurants and other retail space, and an office building. Common Council has authorised financial consultancy. Developer: Mike Zimmerman

| | |
|---|---|
| Capacity | 2,500 |

## US VIRGIN ISLANDS

### St. Croix: Paul E. Joseph Stadium

Demolishing the existing stadium (under way) and rebuilding pro baseball field and sports complex to include 750-seat Little League baseball field; associated lighting, a press box and other amenities; an entry plaza with ticket booths; restrooms; a concession building; an open pavilion; a locker and maintenance building; and a permanent St. Croix Christmas Carnival Village. Finance: V.I. Public Finance Authority $17.5m. Client: VI Dept of Sports, Parks and Recreation. Architect: Steven E. Hutchins. Design consultant: Populous. Design and build: General Engineering Corp.

| | |
|---|---|
| Capacity | 3,500 |
| Cost | US$35m (US$20m) |
| Completion | June 2018 |

## VENEZUELA

### Caracas: La Rinconada Stadium

Baseball stadium under construction in La Rinconada Park as first phase of a new public park master planned by Rogers Stirk Harbor + Partners. Located just outside the capital, this 36,500-seat baseball stadium is slated to be a venue for the Venezuelan winter baseball league and for international baseball events. The park will include world-class sports venues, public plazas, and a hotel and convention centre. Architect: Gensler

| | |
|---|---|
| Mechanical Engineer | ME Engineers |

ME is providing the MEP, sports lighting and technology systems design.

| | |
|---|---|
| Capacity | 36,500 |
| Completion | 2017 |

## WEST INDIES

### Jamaica, Clarendon: Herb McKenley Stadium

Work under way but Minister of Transport and Works seeking full finance. Nine-lane, all-weather running track, football field, basketball and netball courts.

| | |
|---|---|
| Capacity | 12,000 |
| Cost | US$200m |

### Trinidad, Tarouba: Brian Lara Stadium

Refurbishment for moth-balled cricket stadium. Repair, electrical, landscaping, fencing, plumbing, air-conditioning, and elevators. Developer: Urban Development Company of Trinidad and Tobago (UDeCOTT). Consultant: NLBA Architects.

| | |
|---|---|
| Cost | TT$90m (US$13.5m) |
| Completion | 2017 |


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# ON THE HORIZON

**More than $9 billion in new North America sports venues are set to debut in 2020. Feature writer Steve Traiman gets insight from stadia owners and operators.**

The North America sports venue building and renovation boom continues in 2020 with more than US $9 billion in new and renovated facilities set for completion.

Included are the new 70,000-seat **SoFi Stadium** in Inglewood, California, to be shared by the **NFL Los Angeles Rams** and **Chargers,** at an estimated $5 billion the costliest ever NFL stadium; 65,000-seat domed **Allegiant Stadium** in Las Vegas, Nevada, for the to-be-renamed NFL **Las Vegas Raiders**, moving from Oakland, California; the 40,300-seat domed **Globe Life Field** for the **MLB Texas Rangers** in Arlington; and **Lynn Family Stadium**, the new 14,000-capacity home of Louisville City FC (Kentucky) of the **United Soccer League (USL)**.

Major renovations include a facelift for 56,000-seat **Dodger Stadium** for the MLB **Los Angeles Dodgers**, featuring creation of a new Centerfield Plaza and entrance, with almost two acres of unique food offerings, entertainment and kids' areas, and retail locations; and a renovation and expansion for **Dunedin Stadium** (Florida) as long-time winter quarters for the MLB **Toronto Blue Jays**, increasing seating to 8,000 and adding a new 90,000ft² Blue Jays Player Development Complex.

## SOFI STADIUM, INGLEWOOD, CALIFORNIA


The estimated $5 billion, approximately 70,000- seat SoFi Stadium in Inglewood, California, shared by the **NFL Los Angeles Rams** and **Chargers**, opens in July 2020.

The architect is **HKS**; **Turner AECOM Hunt** is the general contractor joint venture; and **Legends** is providing project management services.

The stadium can expand up to 100,000 and will feature 260 luxury suites, more than 13,000 premium seats and over 3 million ft² of usable space.

Digital personal finance company SoFi has acquired naming rights to the stadium, located in Hollywood Park, in a 20-year deal.

SoFi will also receive a 27,000ft² branded VIP activation space inside the stadium, including a dedicated lounge for its members.

SoFi is also an official partner of the two teams, as well as a partner of the 6,000-seat performance venue and Hollywood Park — a 298-acre sports and entertainment destination. In addition to hosting Rams and Chargers NFL games, the stadium will hold year-round sports and entertainment events and has already secured the **2022 Super Bowl** LVI, the **2023 College Football Championship** and the opening and closing ceremonies of the 2028 Olympic Games.

First concert events are **Taylor Swift's** Lovers Fest West, July 25 & 26, and Kenny Chesney's Chillaxifications tour, August 1.

SoFi CEO Anthony Noto said: ***"This is a giant leap toward achieving our company's mission of helping people get their money right by reaching our members where they are. The partnership with this transformative project taking shape under (Rams owner/chairman) Stan Kroenke's leadership is the perfect opportunity to drive awareness and trust in the SoFi brand as we continue to grow and reach members on a national level."***

Kroenke added: ***"It would be impossible to build a stadium and entertainment district of this magnitude without incredible and innovative partners like SoFi who share our ambitions for Los Angeles, our fans worldwide and the National Football League."***

## LYNN FAMILY STADIUM, LOUISVILLE, KENTUCKY

**Lynn Family Stadium**, the new $65 million home of the **Louisville City Football Club** (Kentucky) of the **United Soccer League (USL)**, is a 14,000-capacity, 11,700-seat soccer-specific stadium in the up-and-coming Butchertown neighbourhood.

Opening in the spring of 2020, the ambitious stadium design is by **HOK**, one of the global design leaders.

With the **Messer-Harmon** JV joint venture as construction manager, the stadium features an iconic, copper-coloured canopy designed by structural engineer **Walter P Moore**.

The stadium's intimate, 270-degree seating bowl opens to the nearby Ohio River and provides views to the downtown Louisville skyline.

The main scoreboard at the north end towers above a tiered safe-standing area directly adjacent to the pitch.

The Lynn Family partnered with the club for a decade-long naming rights partnership. ***"We are thrilled to be able to contribute not only to the development and appreciation of soccer but to the Louisville community as a whole,"*** said Dr. Mark and Cindy Lynn. ***"We could not be more honoured in helping Louisville City FC erect a stadium built for soccer where the city can come together to enjoy the fastest growing sport in America."*** Louisville City FC President Brad Estes said, ***"The Lynn Family are the perfect fit for Louisville City because they believe in the same things we do as an organisation: family, community and success."***

## DODGER STADIUM, LOS ANGELES, CALIFORNIA

The **MLB Los Angeles Dodgers** will complete a $100 million facelift at the 56,000-seat **Dodger Stadium** in Chavez Ravine in time for the 2020 season in April, with the Dodgers set to host Major League Baseball's All-Star Game.

Architect of record: **D'Agostino Izzo Quirk Architects**, **Inc/Levin & Associates/Studio-MLAContractor**: **PCL Construction**

Dodgers' president & CEO Stan Kasten said: ***"Dodger Stadium has always been and remains the most beautiful place ever built to play or watch the game of baseball, and these renovations will enhance every aspect of the fan experience with modern and family-friendly amenities."***

Included for the MLB's third oldest stadium that opened in1962 are creation of a new Centerfield Plaza and entrance, with almost two acres of unique food offerings, entertainment and kids' areas, retail locations, sponsor activations, more social and standing room areas, and greater access for those with special needs.

It will also be the new permanent home to the "Legends of Dodger Baseball" plaques and a new statue of **Hall of Fame** pitcher **Sandy Koufax**, joining a relocated statue of **Jackie Robinson**.

Other new additions include renovations to the Left and Right Field Pavilions with new restrooms, enclosed bars with views into the bullpen, the creation of standing room areas at the top of each Pavilion, enhanced ADA seating and "home run seats" just beyond the outfield wall; and new elevators in right- & left-field and bridges to connect the new Pavilion standing room decks to the rest of the stadium for a 360-degree connection around the park's perimeter; and a new sound system. ≫

## DUNEDIN STADIUM, DUNEDIN, FLORIDA

Florida's **Dunedin Stadium** is completing a $102 million facelift and expansion as continuing winter headquarters for the **MLB Toronto Blue Jays**.

The city entered into an agreement with the team in November 2017 to keep Toronto's spring training and minor league operations for the next 25 years.

An agreement was reached with **Gilbane Construction Co.** as construction manager for a guaranteed $96.5 million maximum price amendment, with **Turner Construction Co.** as subcontractor for the stadium, and Gilbane doing the other projects -- with overall supervision. Another $5.4 million is set for architect **Populous**, permitting and other costs. The stadium will see capacity increased from 5,500 to about 8,000 through added seats, standing room and a new Party Deck.

Also added are a new scoreboard, Jays Shop, Jays Zone and BBQ Tent, plus an air-conditioned bar along the third base line, an outdoor bar in right field and a boardwalk around the outfield, enabling 360-degree circulation for fans.

The stadium should be ready for spring training in February, according to Doug Hutchens, Deputy City Manager and point man on the project.

The expansion project includes a new 90,000ft² Blue Jays Player Development Complex that will have a 10,000ft² weight room, eight locker rooms, two dining rooms, two training rooms, classrooms and large conference rooms, sports labs, plunge pools and a sauna, among other features.

While the building will not be completed until summer, the outdoor amenities will be ready for spring training. Included are three new ballfields for a total of six - and a new half-field, five-bay and seven-bay batting cages, and two 10-pack pitching mounds.

The Jays will use the existing Clubhouse that will revert to the city after the new Centre is completed.

The stadium has been home since 1977 to the Blue Jays, their minor league **Dunedin Blue Jays** of the **Class A Florida State League**, and the Dunedin High School baseball teams.

## GLOBE LIFE FIELD, ARLINGTON, TEXAS


The **MLB Texas Rangers** will move into a new $1.2 billion, retractable-roof, 43,000-seat **Globe Life Field** in Arlington, Texas, for the 2020 season. Financing for the new multi-purpose venue is a 50/50 partnership between the City of Arlington and the Rangers.

Globe Life extended its naming rights deal, worth a reported $11 million annually, through the 2048 season. Architect is **HKS** with associate **VLK Architects**; **Manhattan Construction** is general contractor; **Walter P Moore**, structural engineer; and **ME Engineers**, services engineer. Premium seating includes over 4,200 Club Seats; 71 long-term and 37 nightly event Suites; five Field Level and three Upper Level Clubs with total capacity of about 1,500. A new shopping mall, Loews Hotel and a Ballpark Village are also part of the "Texas Live" project.

The 238,000ft² roof includes 120,900ft² of ETFE plastic polymer along concourses to allow natural light into the building. The Rangers have partnered with **Live Nation** for concerts and other events, with Grammy winner and country star **Chris Stapleton** headlining the opening event March 14. Special guests are **Willie Nelson & Family**, **Jamey Johnson** and **Yola**.

First baseball game is a March 23 spring training match against the **St. Louis Cardinals**.

With construction about 85% complete in late November, Jack Hill, the Rangers' senior vice president for project development, said: ***"We're good. Obviously, we have a lot of work to do. There has been great cooperation between the workforce and the City of Arlington. It is really starting to come together. The roof is in good shape. We have hit all our milestones."*** Rangers vice president Rob Matwick emphasised: ***"Globe Life Field will be more than just the home of the Texas Rangers, It will be a 365-day-a-year sports and entertainment venue!."***

## ALLEGIANT STADIUM, LAS VEGAS,NEVADA

The $2 billion, 65,000-seat domed **Allegiant Stadium** opens in August in Las Vegas for the to-be-renamed **NFL Las Vegas Raiders**.

Venue will be operated by **ASM Global**, formerly AEG Facilities, with **Manica Architecture** and **HNTB** as architects; **Mortenson/McCarthy** is the joint venture contractor, **ICON Venue Group** is project manager; and **Legends Global Partnerships** is official premium ticketing and sponsorship agency.

Las Vegas-based travel company **Allegiant**, was announced in August as the naming rights & founding partner for the stadium.

Other major sponsors and founding partners for Allegiant Stadium include **Caesars Entertainment**, **Cox Communications**, **Desert Ford Dealers & San Manuel Casino**. Additional founding partners include **Credit One Bank**, serving as official credit card of the Raiders; **America First Credit Union**, serving as exclusive credit union and debit card partner of the Raiders; and **Reyes Coca-Cola Bottling**, serving as official soft drink partner of the team and stadium. Streaming service **Twitch** sponsorship includes a branded lower level lounge featuring interactive elements and its live-streaming capabilities and community to a range of entertainment experiences planned for the stadium. Along with Allegiant Stadium, the Raiders have also announced their partnership with **Intermountain Healthcare** as naming rights to the team's Performance Center and M Resort as the Official Team Headquarters Hotel

**Levy** will provide the food and beverage experience across the stadium's concessions, clubs, bars, 128 executive suites, and other premium spaces;

Allegiant will also host the **NCAA Division I University of Nevada Las Vegas Rebels** football team and the new, annual **NCAA Las Vegas Bowl**, in addition to other events including concerts, international sporting events, family shows, festivals and corporate and special events. ■


## WALTER P MOORE HAS KEY ROLE IN MAJOR 2020 VENUE PROJECTS

As structural engineer, **Walter P Moore** had a major role in two of the new 2020 North America sports venue projects profiled in this feature.

**Globe Life Field**, the **MLB Texas Rangers'** new ballpark, is expected to unite fans in Arlington for the coming 2020 season. The estimated $1.2 billion stadium features a retractable roof, strong exterior facades, and a large glass wall on the north entry of stadium. The roof features ETFE elements which will create a more open feel and bring natural light inside the stadium.

This entry provides a connection to the **Texas Live!** Entertainment District featuring restaurants, retail, and other entertainment venues. In addition to the ability to provide a climate-controlled environment, modern ballpark amenities such as enhanced concessions, kid's zone, suites, loge spaces, field level boxes, and special viewing porches will undoubtedly enhance the fan experience.

**Lynn Family Stadium**, the new home of **Louisville City Football Club** of the **United Soccer League (USL)**, is an 11,700-seat, soccer-specific stadium in the up-and-coming Butchertown neighborhood of Louisville, Kentucky.

Opening in the spring of 2020, the ambitious stadium design reflects the energy and enthusiasm of a community that has embraced the young club during its current run of consecutive USL Cup championships in 2017 and 2018, losing in the 2019 finals to the Salt Lake City Real Monarchs.

The $65 million stadium features an iconic, copper-clad canopy designed to evoke the rich bourbon culture of the River City and a distinctive sports lighting concept—vertically oriented arrays mounted to variable height "light rods" extending from the canopy tip—that enhances the stadium's dynamic curving form.

Lynn Family Stadium's intimate, 270-degree seating bowl opens to the nearby Ohio River and provides unobstructed views to the downtown Louisville skyline. The main scoreboard at the north end towers above an outdoor beer garden and tiered standing area directly adjacent to the pitch.

# FACILITY WATCH



## ARENAS

## ASIA & AUSTRALASIA

### AUSTRALIA

**Brisbane: Live Precinct**

Arena and entertainment precinct proposed for the Roma Street rail yards. Developer: AEG Ogden.

| | |
|---|---|
| Capacity | 17,000 |
| Cost | AU$2bn |

**Gold Coast: Convention and Exhibition Centre**

Commonwealth Games 2018: netball in 5,000 seat capacity arena. Overlay works only. The International Broadcast Centre (IBC) and Main Press Centre (MPC) will also be located in this venue, forming the Main Media Centre. Owner: Department of Public Works.

**Coomera Sport and Leisure Centre**

Commonwealth Games 2018: gymnastics, basketball and netball. Outdoor courts, change rooms, administration and a café. Indoor courts: 9. Gym: 2,500m$^2$. for a dedicated gym. Area: 10,000m$^2$. Green: systems to minimise the use of light, power and water. Architect: BDA Architecture/ Peddle Thorp (Director Peter Brook).

| | |
|---|---|
| Capacity | 7,500 (temporary) |
| Cost | AU$52m |

**Frankson Regional Basketball Centre**

In Victoria. First stage upgrade. Courts: 10 (6). Upgrades to spectator seating, car parking, change rooms and public toilets. Finance: federal government $4.95m, state government $2.5m, council $4m, Frankston and District Basketball Association $1m.

| | |
|---|---|
| Cost | AU$12m |

**Melbourne and Olympic Park**

Stage two of the Melbourne & Olympic Park redevelopment, being financed by the State of Victoria (AU$298m) and the Melbourne & Olympic Park Trust (AU$40m). The project includes the refurbishment of Rod Laver Arena and a new 5,000-seat show arena. Phase 2 developments also include a new eastern entrance, better loading bay, rigging and automated rectractable seating, construction of footbridge over Batman Avenue and a new Administration & Media building. Construction on Stage 2 to begin after the 2016 Australian Open. The Administration and Media Building open design EOI is available at: www.tenders.vic.gov.au. Construction (Rod Laver refurb): Lend Lease. Engineering (Administration and Media Building): Arup and HASSELL. Architect: COX Architecture (Patrick Ness).

| | |
|---|---|
| Mechanical Engineer | ME Engineers |

For the Rod Laver Arena refurbishment ME is providing ESD scope, modeling to evaluate thermal comfort and providing design recommendations to reach LEED Gold certification as well as peer review of MEP design.

| | |
|---|---|
| Cost | AU$338m |
| Completion | 2019 |

**Sydney: Ken Rosewall Arena**

Roof to change tennis venue to multi-purpose facility. Oculus design on a rotating louvre system that would allow the control of light and ventilation while also providing protection from wet weather. Developer: Sydney Olympic Park Authority (SOPA). Architect: BVN Architects (Ross Seymour). Tenants: Sydney Kings and NSW Swifts. Finance: SOPA, state government. Backing: Tennis NSW, Netball NSW and Basketball NSW.

| | |
|---|---|
| Capacity | 11,000 |
| Completion | 2018 |

### CHINA

**Beijing: National Speed Skating Stadium**

Part of bid for the 2022 Winter Olympic Games and scheduled regardless of the result. West of the Olympic Park and south of the National Tennis Center. For both athletic training and public recreational use.

| | |
|---|---|
| Capacity | 12,000 |
| Completion | 2017 |

**Hong Kong: Kai Tak Sports Park**

Tender expected in summer 2017 after financial package agreed with government for arena for badminton, volleyball, basketball and other community sports, as part of 24 hectare sports hub as part of redevelopment of former Kai Tak airport site. Potential to hold events such as Sudirman Cup. Discussions around capacity, especially for badminton which attracts nearly 6,000 at Hong Kong Coliseum. Developer: Home Affairs Bureau. Finance: public.

| | |
|---|---|
| Capacity | 7,000 |
| Completion | 2020 |

**Hubei Province: Yichang Sports Centre Arena**

Arena to include a 4,000-seater shooting hall and a 2,000-seater tennis court. Separate swimming hall for 1,500 visitors.

| | |
|---|---|
| Capacity | 6,000 |

**Jiangsu Province: Yancheng Sports Arena**

Jiangsu Province: Yancheng Sports Centre Arena Indoor facility as part of multi-sport centre.

| | |
|---|---|
| Capacity | 6,000 |

**Shenzhen, Nanshan: Xili Sports Centre**

Basketball and badminton arena (15,000m$^2$), a multi-functional arena (10,000m$^2$), swimming pool (6,000m$^2$) and theatre. Elevated running track weaves in and out of all areas. Plaza level with lobby, changing rooms, second basketball venue surrounded by a mezzanine for badminton, fitness spaces, and a sports bar. Gets under way in 2017. Area: 105,000m$^2$. Owner: Shenzhen Nanshan Government announced.. Architect (competition winner): MVRDV and Zhubo Architecture Design.

**Suzhou: Arena**

Sports and entertainment arena. Developer: Suzhou Industrial Park Sports Industry Development Co. Ltd (SIPSID). Building services, energy planning and LEED green building consultancy services: Mott MacDonald. One of five facilities on a single campus.

| | |
|---|---|
| Capacity | 13,000 |
| Completion | 2017 |

**Zhejiang Province: Ningbo Sports Arena**

Arena plus swimming hall (+3,000) as part of Ningbo Sports Centre.

| | |
|---|---|
| Capacity | 13,000 (arena), 3,000 (swimming) |

### JAPAN

**Tokyo: Olympic Aquatics Centre**

Tokyo 2020: swimming, diving and synchronised swimming. Legacy as Tokyo Tatsumi International Swimming Centre. Owner: Tokyo Metropolitan Government.

| | |
|---|---|
| Capacity | 20,000, legacy 5,000 |
| Cost | $363.189m |

**Ariake Arena**

Part of the Waterfront sports area. Tokyo 2020: volleyball and Paralympic basketball final. Legacy: for national volleyball league, and international competitions. Owner: Tokyo Metropolitan Government.

| | |
|---|---|
| Capacity | 15,000, legacy 12,700 |
| Cost | $199.131m |

**Water Polo Arena**

Temporary structure. Tokyo 2020: water polo.

| | |
|---|---|
| Capacity | 6,500 |

**Youth Plaza Arenas A and B**

Tokyo 2020: badminton, basketball. Legacy: large gymnasiums. Owner: Tokyo Metropolitan Government.

| | |
|---|---|
| Capacity | A 7,000 (legacy 5,700); B 18,000 (legacy) 16,300 |
| Cost | $411.84m |

**Nagoya: Nagoya Arena**

Aichi Prefecture announced the masterplan for a new municipal indoor arena complex to be built in Meijo Park. The new complex will have an area size of 43,000m2 which is 2.5 times larger than the current municipal arena, the Dolphins Arena. The Main Arena, to be used for professional basketball B-League matches amongst other events, will boast an area size of 4,500m2 and a maximum of 15,000 fixed seats, while a smaller arena (1,500m2) and multi-purpose hall (1,500m2) will also be built within the same building.

| | |
|---|---|
| Completion | 2025 |

### KOREA

**Seoul Ballpark**

New baseball stadium next to the Han River and sport facilities built for the 1988 Summer Olympic Games. Part of the city's urban development plan in Jamsil, southeastern Seoul. Current stadium will be demolished to make way for exhibition and convention facilities covering 100,000m$^2$. Olympic swimming pool and gymnasium will also be renovated into an indoor sports complex. Home for LG Twins and Doosan Bears, to begin 2021. Developer: Seoul Metropolitan Government (SMG).

| | |
|---|---|
| Capacity | 35,000 |
| Cost | Won 2-3 trillion |
| Completion | 2023 |

**Seoul: CJ LiveCity**

CJ LiveCity Corporation has teamed up with AEG to jointly pursue building a state-of-the-art 20,000-capacity arena in Seoul, South Korea. CJ LiveCity will include the Seoul Metropolitan Arena as well as a studio complex, a K-culture themed entertainment district and waterfront park. With more than 20 million visitors projected annually, CJ LiveCity will become Korea's landmark touristic destination that will revitalize both the national economy and the northern Gyeonggi Province. CJ LiveCity is strategically located to attract K culture fans across Asia. The site is centrally positioned among five of Korea's largest cities with a combined population of over 150 million people.

### MALAYSIA

**Nilai: Velodrome**

Indoor velodrome to be built by youth and sports ministry.

| | |
|---|---|
| Cost | US$24m |

### NEW ZEALAND

**Christchurch: Metro Sports Facility**

10-lane competition pool and seating for a minimum of 1,000 spectators, a leisure area including hot pools and hydroslides, nine indoor sports courts and retractable seating for a minimum of 2,500 spectators. Base for High Performance Sport New Zealand and spaces for fitness and other activities. Request for proposals from construction companies in progress. Architects: Warren and Mahoney, Peddle Thorp Architects and MJMA. Engineering team: Aurecon and ARUP, Powell Fenwick Consultants, Aquatic Design and Engineering.

| | |
|---|---|
| Capacity | 3,500 |

**Hawke's Bay: Multiuse Velodrome**

Council choosing design team for the construction on a design-build basis of an indoor track cycling and multiuse facility alongside Pettigrew Green Arena. Seeking to maximise club and community use, host Cycling New Zealand development programmes and national events, and supports the region as a whole by being a multiuse facility used by other sports and a range of community events. 250-metre cycling track, three courts, 300-metre walking track. Business case and design stage: NZ$500,000. Finance: council, private donations.

| | |
|---|---|
| Cost | NZ$15m |



Information correct at time of going to press – please keep us updated with all your news at facilitywatch@hgluk.net

# EMEA

## CZECH REPUBLIC

### Pardubice: Dukla Sports Centre

International architectural and urban planning competition – begins June, ends October – to find design for multi-functional sports complex . Area: 85,000m$^2$. Close to the city centre, offering excellent transport access and strong potential for development. Indoor athletics hall, a multi-functional sports hall for ball games (with a capacity of 2,500 spectators), plus facilities for gymnastics, martial arts and other sporting activities. Outdoor sports facilities plus all essential infrastructure – a restaurant, office premises, storage areas, accommodation, and facilities for physiotherapy, massage etc. Project team assembled from sports clubs plus architects and City officials. Project Manager: Miroslav Janovský. Planning and design budget: 12m CZK (€450,000).

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| Cost | 200-200m CZK (€7.5m-9m) |

## EIRE/REPUBLIC OF IRELAND

### Cork: Concert Centre

An Bord Pleanala has granted planning permission for Cork concert centre on Albert Quay in Cork city centre. Developer Owen O'Callaghan. (Heineken Ireland and Bam have also proposed a concert venue on the site of the former Beamish brewery.) Area: 100,000ft$^2$. Jobs: 300 (construction), 40 (permanent), 150 (part-time).

| | |
|---|---|
| Capacity | 7,500 (5,000 seated) |
| Cost | €50m |

### Dublin: Liffey Valley Ice Arena

Arena with international competition-size ice rink to host major tournaments – figure skating, ice hockey – and community use, as well as serving as a major leisure destination for the Liffey Valley Shopping Centre. An application for planning permission is currently being considered by the planning authority. Consultant: Vibrant Partnerships. Property developer: Hines.

| | |
|---|---|
| Capacity | 2,500 |

## ENGLAND

### Birmingham Aquatics Centre

Plans have been unveiled for the Birmingham Commonwealth Games 2022 aquatics centre in Sandwell – including an Olympic-sized swimming pool. Sandwell Council is proposing to build the centre on part of the site at Londonderry Playing Fields in Smethwick. The centre would feature an Olympic-sized competition swimming pool and a 25m diving pool, plus 5,000 spectator seats. Also planned at the centre – which would be run by Sandwell Leisure Trust – are two activity studios, a 12-court sports hall, a 125-station gym, a 25-station ladies-only gym, an indoor cycling studio, a sauna/steam room and a café.

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|---|---|
| Cost | £60m |

### Bristol: Ashton Gate Arena

Bristol Flyers basketball club has revealed comprehensive plans for a new home as part of a £100m development to extend the footprint of Ashton Gate Stadium. The centrepiece of the proposed development is the Ashton Gate Sports & Convention Centre – a 4,000-capacity venue which will provide a permanent home for Bristol Flyers basketball team. The proposal includes additional housing, offices, a multi-storey car park along with two hotels.

| | |
|---|---|
| Capacity | 4,000 |

### Bristol: YTL Arena

YTL has submitted its plans to repurpose the Brabazon Hangars at Filton. The planning application to Bristol City Council and South Gloucestershire Council to repurpose the Brabazon Hangars in the north of Bristol will create a new entertainment complex for Bristol and the South West. The new complex will create more than 500 new jobs and inject £1.5 billion into the local economy over 25 years, as well as raise the profile of the city and wider region. It uses the 28,000m2 floorspace of all three hangars to create something unique in the south west: an arena, exhibition and leisure space all under one roof. The arena will be in the Central Hangar and with 17,080 capacity, it will be the third largest in the UK after Manchester and the 02. The East Hangar will house a new Festival Hall; a flat floor event space for conventions, exhibitions and working in tandem with the arena to attract large scale events. The West Hangar, The Hub, will be a place to eat, work and play, with leisure facilities, food and drink and home to small or start-up businesses. Architects Grimshaw in partnership with Manica Architecture have been chosen to deliver an arena for Bristol by repurposing the Brabazon hangars at the former Filton airfield.

| | |
|---|---|
| Capacity | 17,000 |

### Cambridge Ice Arena

Permanent rink to international standards (56m x 26m) for university hockey team and public skating. On land leased from Marshall next to the Newmarket Road Park & Ride site. Operator: Cambridge Leisure and Ice Centre (Chairman Professor Bill Harris). Consultant: Cool Venues (Jim Kay). Finance: loan South Cambridgeshire District Council (25 years).

| | |
|---|---|
| Capacity | 1,000 |
| Cost | £1.85m |
| Completion | 2019 |

### Gateshead: Gateshead Quays

Three firms of architects, headed by HOK appointed to design the new £200m regional arena and conference and exhibition centre for Gateshead Quays. Team to plan the 10-acre site on Gateshead Quays. HOK have been appointed to design the new 12,500 seat arena and international conference and exhibition centre. AHR Architects has been selected to develop and design the overall masterplan of the site including hotels, bars and restaurants and car parking for the scheme. Planit-ie, with particular experience in designing outside spaces, has been selected as landscape architects.

| | |
|---|---|
| Capacity | 12,500 |
| Cost | $200 million |

### Newastle: Eagles Community Arena

Work has now begun on a brand new, purpose-built community sports arena as the new multi-million pound home for the Eagles Community Foundation (ECF). The state-of-the-art venue will host the region's most successful sports team – Esh Group Eagles Newcastle. It is anticipated that more than 11,000 people will be engaged in sport during the facility's first year. And more than 1,000 disabled users will be encouraged to play sport annually at the arena – based at Riverside Dene in Elswick, reflecting the ECF's commitment to deliver recreation and education opportunities to the wider community. The new venue will provide a home for the ECF and enable it to develop its current player pathway structure under one roof whilst also providing educational routes and workforce development.The move to the 2,800-seater venue will allow the most successful franchise in British basketball history to pursue its long-term dream of competing on the European stage.

| | |
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| Capacity | 2,800 |

### Sheffield Community Arena

Future home of the Sheffield Sharks basketball team. Finance: private. Multipurpose for sport, culture and business. Courts: 3. See Olympic Park Stadium for more details about the Park.

| | |
|---|---|
| Capacity | 3,000 |

## FINLAND

### Tampere Central Arena

Construction work has begun on Finland's Tampere Deck Arena. The City of Tampere's newest district is being constructed over the railway tracks in Tampere city centre.
The main landmark for the Tampere Deck district, the Tampere Deck Arena will be Finland's biggest sports and event venue. Multipurpose arena above the existing railroad track near the city's main railway station as part of the new urban city centre development. 5.5 million passengers passing yearly. Intends to be event and promoter friendly and the most modern in Europe for event and fan engagement, technology and sustainability. Suites: 46. Party suites: 6. Restaurants: 6,750m$^2$. Integrated training ice for ice hockey, figure skating etc. 400-room integrated hotel. Architects: Studio Daniel Liebeskind, Aihio Architects, Ramboll. Concept Design: Sport & Live Vision, Ramboll. Developer & Construction: SRV Group. Owner: Investment group. Finance: Tampere City €26m, private €76m (€26m loans).

| | |
|---|---|
| Capacity | 12,000 (hockey), 15,000 (concert) |
| Cost | €124m (€95m) (plus €12.5m car park) |
| Completion | 2020 |

## FRANCE

### Villeurbanne-Lyon: ASVEL Arena

For basketball tenant Olympique Lyonnais, plus other sports such as handball, concerts and business events. Earlier project didn't get off the ground. At current location of the Georges-Lyvet Stadium, close to the current basketball arena, Astroballe. Finance: private.

| | |
|---|---|
| Capacity | 10,500 (basketball), 12,000 (concert) |
| Cost | €45-55m |
| Completion | 2020 |

## GERMANY

### Erlangen Sport Complex

Multi-functional gymnasium, bouldering/climbing facilities, office spaces and space for university sports science study. Owner: Stadt Erlangen Area: 19,000m$^2$ Architect: Schulitz Architects.

| | |
|---|---|
| Capacity | 3,000 |

### Kassel: Multipurpose Arena

Feasibility study (euros 80,000) under way for arena to be home of German Bundesliga handball team MT Melsungen and boxing. Discussions on financing with town. Developer: Herbert Aukam. Area: 12,000m$^2$.

| | |
|---|---|
| Capacity | 7,500-10,000 |
| Cost | €30m |

### Koblenz: CONLOG Arena

Upgrade menu list issued for ageing arena: seating €1.1m, floodlighting (€60,000-€200,000), a new video scoreboard (€250,000) and a new sound system (€250,000), space for seminars and conferences (€800,000).

### Munich: Olympiapark Arena

Danish architect 3XN has won the competition to design a new multipurpose sports arena in the Olympiapark in Munich. The sports arena, with match seating of up to 11,500, will be the future home of German ice hockey champions Munich Red Bulls and German basketball champions FC Bayern Munich. To improve the local sports infrastructure for schools, amateur clubs and young talents, three additional canopied ice rinks will be built next to the sports arena as training facilities and for recreational use. Located in Olympiapark, a significant historical setting for modern architecture, the new sports arena in Munich required an approach based on both humility and audacity.

| | |
|---|---|
| Capacity | 11,500 |

### Selb: Netzsch Arena

Town is funding modernisation of home of VER Selb ice hockey club to meet safety standards by building two separate sets of facilities for home and away fans. Finance: Government of Upper Franconia/VER Selb ice hockey team.

| | |
|---|---|
| Cost | €1.1m |
| Completion | 2017 |

### Würzburg: Arena Würzburg

A proposed new multifunctional arena in the centre of the city of Würzburg in Germany. The new home venue for the s.Oliver Würzburg first division basketball team. The arena is designed to host a huge variety of events, shows, concerts and upcoming Esports events.
For regular match days, the arena will have up to 7,000 seats for basketball, and for concerts a total capacity up to 8,000. Client: Arena Wüzburg Projektgesellschaft; Archicects: vision4venue; Project Manager: vision4venue.

**Completion** 2021/22

## KUWAIT

### Kuwait: 360 Mall Tennis Arena

Sheikh Jaber Al Abdullah Al Jaber Al Sabah International Tennis Complex in retail development, also with hotel. Developer: Tamdeen Group. Two main arenas – 4,000 and 1,600, eight indoor courts with over 500 seats and eight outdoor courts with 1,500 seats. Doubles up as an entertainment venue.

**Capacity** 7,600

## NORWAY

### Oslo, Nye Jordal Amfi Sports Arena

Ice hockey arena for elite and recreational sports, and public events. Restaurants, cafes and conference facilities. The project will also address Jordal Athletic Park as an important recreational area. Developer: Culture and sports Oslo KF $CO_2$ neutral construction. Developer: City of Oslo's Municipal Body for Culture and Sports Facilities (Simen Bakken). Construction: NCC (Brudevold Eek) – SEK 445m (US$49m).

**Capacity** 10,500
**Cost** €70m

### Bergen: Bergen Arena

3XN has been commissioned to design a proposal for a new arena and a masterplan for central Bergen in Norway. The proposal is a response to Bergen City's ambitious plans for sustainable development of the area.
The arena will become a catalyst for transforming the city by becoming an anchor for the development of an entirely new neighborhood that connects the inner city with the waterfront, and that will become a destination for concerts, sport and cultural events.

## ROMANIA

### Constanta Arena

For tenant handball team HCM. Also on site: indoor Olympic pool (2,000), gymnasium (1,000), hotel, pedestrian plaza landscaping and water elements. Parking: 2,000. Area: 37,500m².

**Capacity** 10,500
**Cost** €70m

## RUSSIA

### Krasnoyarsk: Platinum Arena

Multi-level, multi-functional sports and entertainment complex with an ice arena for the 29th Winter Universiade Krasnoyarsk 2019. Near river bridge which connects river bank area with both sides of the city. Primarily intended for winter sports competitions: figure skating, ice hockey, short track. Area: 22,500m². Design and construction: Russian Platinum (Director General Yevgeniy Vorobeychik).

**Capacity** 7,000
**Cost** 3 billion rubles (US$39m)
**Completion** end 2017

## SCOTLAND

### Aberdeen: P&J Live

DC Thomson Media has taken the naming rights to the new exhibition and conference centre in Aberdeen. The new official name for the world class venue at The Event Complex Aberdeen (TECA) will be P&J Live. Aberdeen Exhibition and Conference Centre (AECC), off the A96 near Aberdeen International Airport, will be four times the current exhibition space and increase the arena seating capacity from 4,750 to 15,000 (standing). Hotel, leisure, restaurants. Multipurpose arena: 9,000m². Floor space: 45,000m². Owner: Aberdeen City Council. Development partner: Henry Boot Developments. Construction: Robertson Construction Group.

**Capacity** 10,000
**Cost** €333m
**Completion** Q2 2019

### Edinburgh Ice Arena

Proposed refurbished hockey and curling arena in the Murrayfield quarter as part of mixed use development. Proposal of Application Notice (PAN) lodged. Consultation with Scottish Rugby Union (SRU), Edinburgh Curling Club Ltd, Murrayfield Ice Rink Ltd. Developer: Murrayfield 2020.

## SENEGAL

### Dakar: Basketball Arena

Potentially home to Senegal basketball, women and men.

**Capacity** 15,500
**Completion** Q2 2017

## SPAIN

### Barcelona: New Palau Blaugrana

On the current site of the Miniestadi, next to the new Camp Nou station on Metro Line 9. Areas that can operate independently. Multi-purpose pavilion (10,000 for Euroleague), auxiliary court (2,000), ice rink. VIP boxes: 24. Skybars: 4. Press area: 200m². Start: 2017/18 season. Masterplan of Palau, annex court, ice rink and the FCB Escola facilities. Architects and Barça technical teams and the Barcelona City Council are working on the integration of the new facilities with the rest of the Espai Barça and the city. Arena will maintain energy in a unique assymmetrical configuration to create a wall of people in the bowl. Metallic facade and transparency, with large projection screen. Outdoor concourse with concessions for open air festival environment. Owner: FC Barcelona. Architect: HOK + TAC Arquitectes (Eduard Gascón).

**Capacity** 10,000 (12,000 concerts)
**Cost** €100m
**Completion** 2020

### Valencia: Valencia Arena

Design plans for the new €220m Valencia Arena in Spain have been revealed by LICAMPA 1617.
The arena has been designed by HOK in conjunction with ERRE Arquitectura. Valencia Arena will be home to Valencia Basket club and will become a premier destination for music, arts, culture and sporting events. Spectator capacity will be 15,600 seated or 18,600 with standing room.

**Completion** 2023

## SWITZERLAND

### Lucerne: Pilatus Arena

New arena for handball club HC Kriens. Multipurpose for volleyball, tennis and concerts. City to make land available. Developers: HC Kriens-Luzern. General contractor: Sarnen AG.

**Capacity** 4,000
**Cost** €28m
**Completion** 2018

### Zurich, Altstetten : Theatre of Dreams arena

Business plan for pure ice hockey arena after multipurpose ambitions dropped on cost grounds. Home for ZSC Lions. Finance: €33m private + city of Zurich.

**Capacity** 12,000
**Cost** €146m
**Completion** 2018

## UNITED ARAB EMIRATES

### Dubai: Coca-Cola Arena

Global architecture firm Populous is celebrating its first arena concept design in the Middle East with the opening of the Coca-Cola Arena in Dubai. The venue opened on the 6 June with a show by the Canadian comedian Russell Peters, shortly followed by Maroon 5 performing on 14 June. With a capacity of 17,000, the arena becomes the largest multi-purpose indoor arena in the region and, by incorporating climate control throughout the building, the only arena of its kind between Istanbul and Singapore to support a year-round programme of events, even in the hotter summer months. Owned by Meraas and operated by AEG Ogden, it will host international touring artists, world-renowned comics, family entertainment, sports events, gala dinners, exhibitions and conferences.

**Capacity** 17,000
**Completion** 2019

### Abu Dhabi: Yas Arena

Abu Dhabi is to build a new multipurpose sports and entertainment arena in the city. Yas Arena's dynamic form and illuminated lantern facade is intended to both complement and animate the expanding waterfront promenade at Yas Bay. HOK is part of the WSP-led team responsible for delivering the design of Yas Arena, with support from Pascall+Watson. In addition to the architectural design of Yas Arena, HOK designed the adjacent arena retail and dining destination along the boardwalk, forming a mixed-use anchor on the east end of Yas Bay. The arena is designed to expand from an intimate 500-seat theatre to an 18,000-capacity venue, maximising revenue and supporting a wide variety of events. Premium spaces include a VIP lounge that can be transformed into a grand ballroom for events, hospitality boxes and unique terrace bars for receptions and parties.

**Capacity** 18,000

## WALES

### Swansea Arena

Buckingham Group Contracting has been appointed by Swansea Council as the principal contractor for the Swansea Arena project. The 3,500-capacity digital indoor arena is being built as part of a transformation of the city centre including a coastal park, digital plaza, landmark pedestrian bridge, new car parking and new homes and premises for retail, food and drink. Buckingham Group will undertake six months of pre-construction services including detailed design, costings and essential preparatory work on the expansive city centre site.
The early work will prepare the project and site for the main build phase due to start in late summer this year. The transformation is due to be completed in 2021.

**Capacity** 3,500
**Completion** 2021

### Cardiff Arena

Plans for a new indoor arena in Cardiff Bay, Wales have been given a further boost after the city council's cabinet agreed to go out to tender for a developer to build and operate the development. A report to Cabinet reveals that a final business case for the 15,000-seater arena will be presented at the end of 2019, with planning consent potentially achieved by 2020, meaning the new venue could be open for business by December 2023.
The proposed new multi-purpose facility – which could bring major cultural, sporting and entertainment events to Wales' capital city – could be built across two sites in Atlantic Wharf adjacent to Cardiff Council's County headquarters and the nearby Red Dragon Centre in Cardiff Bay.

**Cost** £85m

# AMERICAS

## CANADA

### Calgary Event Center
A new public sports and entertainment event centre and home for the NHL's Calgary Flames has been approved for development in Calgary, Canada. The City of Calgary, Calgary Sports and Entertainment Corporation (CSEC) and the Calgary Exhibition and Stampede have each approved the fundamental terms and conditions for the development and construction of the new complex.
The event centre will anchor a public festival street, attract world-leading performing artists and major events, and an arena will serve as a new home to the Calgary Flames, Hitmen and Roughnecks. The cost of the C$550 million event centre, including the new 19,000-seat arena, will be split 50/50 between the City and CSEC.

**Cost** C$550m

### Conception Bay North, Newfoundland: Arena
New Multi-purpose facility in Harbour Grace. Single-pad NHL-size ice surface, community room and kitchen. Replaces S. W. Moores Memorial Stadium. Finance: provincial government $15m, Town of Harbour Grace $6m. Construction: Pomerleau.

**Cost** $21m

### Kitchener Arena
Kitchener Rangers interested in expanding Memorial Auditorium or building new arena. Preparing business plan and detailed development proposal. Architect: BBB Architects. Construction: Ball Construction.

**Capacity** 10,000 (extension)
**Cost** C$44m

### Peterborough Hockey Arena
Hockey arena to replace the aging Northcrest Arena with a multipurpose facility. Possible location: Morrow Park. Possibly to host Agricultural Society's annual Peterborough Exhibition. Two ice pads and support for community and college sports.

**Cost** C$27m

### PortsToronto Arena
PortsToronto to provide federally owned lands at the foot of Cherry St. for two rinks. Area: 75,000ft$^2$. Build/operate developer sought. Working with the city and Waterfront Toronto to ensure the building fits the future vision of the area.

**Completion** 2018

### Ottawa: Lebreton Flats Entertainment Centre
Arena for Ottawa Senators as part of proposed RendezVous development on Lebreton Flats. For Ottawa Senators, concerts and possibly more. Bids from design/build groups – RendezVous LeBreton Group (arts spaces, community theatre and commercial areas attached to the concourse – Matt Rossetti) and Devcore Candarel DLS Group (BBB Architects plus subsidiary Stadium Consultants International) with hockey and fans focus. Developers: Senators and Windmill Development Group.

### Saskatchewan, Saskatoon: Merlis Belsher Place
Twin-pad arena for the men's and women's Huskies at University of Saskatchewan. Funding raising Home Ice Campaign to replace the Dog House (now beyond repair). Finance: donations (Merlis Belsher $12.25m) – $34m so far).

**Capacity** 1,830
**Cost** C$41m

### Sudbury: True North Strong Event Centre
Proposed downtown multi-use sports and entertainment venue in a mixed-use development area to include a hotel. Tenant: Sudbury Wolves.

## UNITED STATES OF AMERICA

### AK, Anchorage: UAA Arena
Proposed sports centre for the University of Alaska Anchorage. Possible tie-in with UAA Seawolf ice hockey to replace Sullivan Arena.

**Cost** US$80m

### AZ: McKale Center
For University of Arizona. Enclosed concourses wrap around 36-year-old McKale Center in a proposed upgrade plan. Improved locker rooms, equipment rooms, showers, offices and lounge areas, concessions areas, bathrooms, air conditioning and premium seating. A new gift shop to be located at the south end of Cherry Avenue parking garage.

**Cost** US$155m

### AZ, Phoenix: Talking Stick Arena
Phoenix City Council has approved $230 million for the renovation of Talking Stick Resort Arena. The arena is home to the NBA's Phoenix Suns, WNBA's Phoenix Mercury and the Arizona Rattlers indoor American Football team. The venue also hosts concerts and other live events. The arena will undergo extensive renovations between 2019 and 2021 with the City of Phoenix contributing $150 million towards the project and the Suns stumping up $80 million. Renovations include repair and replacement of mechanical, electrical and plumbing infrastructure for the arena. Improvements will also be made to locker rooms, seating areas, concourses and VIP and hospitality areas.

**Completion** 2021

### AZ, Phoenix: Phoenix Suns Training Center
The Phoenix Suns have started construction work on their new state-of-the-art training facility in Phoenix, Arizona. The training facility, which is privately financed by the Suns, will be a stair-stepped two-storey building spanning nearly 50,000ft2 and will include two NBA/WNBA basketball courts, the latest in sport science and innovative performance amenities, indoor/outdoor training areas, and operational space for Phoenix Suns and Phoenix Mercury basketball operations. The private facility will also feature a generous players lounge, complete with active and quiet recovery rooms and ample recreational amenities with spectacular views of Camelback Mountain.

**Completion** 2020

### CA: L.A. Clippers Arena
The L.A. Clippers have unveiled renderings of the team's sports and entertainment centre that will be anchored by their new basketball arena in Inglewood, California. The proposed arena will have a three-dimensional oval design with a unique exterior of diamond-shaped metal panels inspired by the concept of a basketball swishing through a net. In addition to attractive aesthetics, the panels have been designed to provide solar benefit for maximum energy efficiency, as part of the facility's LEED GOLD-certified design. The facility's most striking feature, intended to highlight the temperate climate of Southern California, is the integration of indoor/outdoor "sky gardens."

**Completion** 2024

### CA: Sacramento State University campus
Proposed expansion of University Union Well includes arena for ceremonies, concerts and special events.

**Capacity** 5,000-6,000
**Cost** US$175m (overall)

### CO, Colorado Springs: Edward J. Robson Arena
On-campus hockey arena at Colorado College on the west side of Nevada Avenue, part of a campus master plan the college's Board of Trustees approved in 2015. Replaces Honnen Ice Arena. CC's Division I hockey team will practice in the new facility and continue to play its games in the Broadmoor World Arena. Finance: donations (Edward J. Robson $8m). Sustainable building practices and materials.

**Capacity** 900
**Cost** US$10m

### CT, Hartford: XL Center
In 2015 the consultants, SCI Architects of New York recommended three options for the arena: work with the existing building, embark on a major renovation and expansion; or replace the structure entirely on the present site. The authority settled on the second option because, even at $250 million, it was half of the $500 million for a new structure. The project would be spread across several fiscal years and paid for almost entirely by the state but needs the political support from both Gov. Dannel P. Malloy and the state legislature to secure funding – which is not yet forthcoming. If legislative approval is secured, construction could start the following year and be completed by 2019.
The plans envision a dramatic change that would essentially create a new arena: a second concourse to relieve congestion and irritating waits at concessions; more "premium" seating lower in the arena; and more amenities and restrooms.
Developer: Capital Region Development Authority. Potential to be home to UConn Huskies men's and women's basketball and hockey teams. Architect: SCI Architects.

**Mechanical Engineer** ME Engineers

ME is providing full MEP design.

**Cost** US$250m-US$500m

### DC, Congress Heights: Practice and Entertainment Arena
Architects developing designs for the Entertainment and Sports Arena in the Congress Heights neighbourhood of Washington, DC. Practice facility for the Washington Wizards, home court of the Washington Mystics Also aiming to drive urban regeneration to the communities east of the Anacostia River. 35% of the work will be performed by Small Business Enterprises. Jobs: 600 (construction), 300 (permanent). Split bowl design for intimate viewing of non-basketball programming. Exterior facing retail bays. Undulating roof and local materials chime with local architecture. Architects: Marshall Moya Design and ROSSETTI (Tony Reiner). Program management: Brailsford & Dunlavey. with ADC Solutions and Kumi Construction Management. Operator: Events DC (CEO Gregory A. O'Dell).

**Capacity** 5,000
**Completion** Q3 2018

### DE, Smyrna: Delaware Sports & Ent Complex
Delaware University and Delaware Civic Center Corp are working on a $92.1m complex, to include a 14,829-seat football stadium and a 7,500-seat arena, which would house the DSU basketball teams. Finance package sought: $40m state bond, $11.6m private, $3.5m consortium. Management: Global Spectrum. Events: 155 per year including minor league hockey.

**Capacity** 14,829 (stadium) 7,500 (arena)
**Cost** US$92.1m

### FL, Tampa Bay: Sun Dome
Renovation for 30-year-old home to USF basketball and concerts. Centre-hung scoreboard, concessions and restrooms in new concourse and club-levels. Finance: $8.5m cash and 20-year funding.

**Capacity** 10,000
**Cost** US$35m

### GA: Augusta Arena
The city's Coliseum Authority seeking support for a replacement to James Brown Arena. Seeking SPLOST funding.

**Cost** US$110m

### GA: Savannah Arena
Recommendation for multi-purpose arena to host minimum 93 major events per year. Possible minor league sport tenants. City consulted on general concept, project scope, site options, and also possible funding sources. Will replace 45-year old Savannah Civic Center. Infrastructure works required, including parking. Finance: SPLOS tax $120m. Consultant: Barrett Sports Group. Architect: Gensler.

**Capacity** 9.300
**Cost** US$140m

### IA, Iowa Arena
Arena and sports performance complex at Coralville's Iowa River Landing. Council reviewing plans March 2016. Architect: JLG Architects (preliminary design $99,500). Seeking $12m state assistance.

**Capacity** 7,000
**Cost** US$45m
**Completion** 2020

### IA: Mason City Events Center
City Council supporting pre-application downtown redevelopment project Our River City Renaissance to include hotel, performing arts pavilion, retail outlets, apartments and a multipurpose ice arena. Tenant: North Iowa Bulls. Finance: city, state, private.

**Capacity** 2,400 (sport), 5,000 (concert)
**Cost** US$36.2m

### ID, Moscow: Idaho Arena
Stand-alone athletic venue for basketball and volleyball at the University of Idaho, just north of the Kibbie Dome. Area: 70,000ft$^2$.

**Capacity** 4,700
**Completion** Spring 2020

### IL, Rockford: MetroCentre
Exterior façade update, new box office and main entrance, video scoreboard, 11 corporate suites, club boxes, 200-person group terrace, retail centre, additional bathrooms, and new concession stands and food courts. Client: MetroCentre Authority. Renovation to support purchase of American Hockey League franchise, the elevation of the Rockford IceHogs into the American Hockey League, and a 10-year affiliation agreement with the Chicago Blackhawks.

**Cost** US$23m


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## IN, Indianapolis: Bankers Life Fieldhouse

The Indiana Pacers' Bankers Life Fieldhouse arena is set to undergo a series of major improvements after the NBA team agreed to stay in Indianapolis. The new agreement funds operating expenses, technology improvements, and capital projects, including a new outdoor plaza and social gathering areas. The deal includes $360 million for capital improvements comprised of an estimated $270 million from state and Capital Improvement Board of Managers (CIB) sources and $65 million of private investment from Pacers Sports & Entertainment, including real estate purchases needed to construct an outdoor public plaza. The City of Indianapolis also is contributing $25 million for public infrastructure needs. The plan also includes investments in future technology capped at $113 million.

## IN: Fort Wayne Arena

Proposed west of the Grand Wayne Convention Center. Feasibility studies under way.

**Capacity** 4,500-6,000
**Cost** US$63m

## KS, Hutchison Arena

Renovation to sports arena built in 1962 to keep the National Junior College Athletic Association men's national championship basketball tournament for 25 years. More upper-level seating for people with disabilities, undersized practice gymnasium into new home team locker rooms, renovating an existing sports medicine area and weight room into meeting or hospitality space, upgrading heating, plumbing and electrical systems and adding air conditioning to the seating bowl. New main entrance and lobby, concession stands, more restrooms, elevators to reach the upper level, and office and meeting space. Two full-size practice gyms, a new weight room and mechanical and storage space. Architect: Sink Combs Dethlef (Chris Kastelic).

**Cost** US$29m

## MA, Boston: TD Garden

Delaware North has unveiled plans for a massive expansion of TD Garden, home of the NBA's Boston Celtics. The major overhaul of the 23-year-old arena, which is also home to the NHL's Boston Bruins, will take place over the next two years. The $100 million private investment by the Jacobs family will provide a combined 50,000ft2 of additional space on all levels of the building and marks the 'Legendary Transformation' of TD Garden and the fan experience for generations to come.

**Cost** US$100m

## MA, Cambridge: Harvard Multipurpose Arena

New mixed-use facility and basketball venue on the North Harvard Street site of the old Ed Portal. To replace Lavietes Pavilion (2,195). To include graduate housing and ground-floor retail space.

**Capacity** 3,200
**Completion** 2020-2024

## MD: Baltimore Arena

Various proposals from developers to replace 45-year-old 1st Mariner Arena. Private funding interest from Whiting--Turner. Likely to extend convention center, and add arena. Also suggested for Inner Harbor. Research phase. Maryland Stadium Authority centre suggested a 18,500-seat arena with no major league basketball or hockey franchise, 500-room hotel to create a destination package. Arena income projection: $48.1m-$50.3m annually. Arena jobs: 730-760. Parking: 500

**Capacity** 18,500
**Cost** US$900m

## ME: Bowdoin University Arena

University's future building plans include a new hockey arena. Masterplan: Doug Voigt of Skidmore, Owings and Merrill.

## ME, Portland: Forefront Arena

Arena/convention centre as part of the Forefront development at Thompson's Point. Tenant: Maine Red Claws pro basketball team. Tax breaks under discussion.

**Cost** US$100m (total development)

## MI: Kalamazoo Arena

Proposed downtown arena for WMU and the Kalamazoo Wings as part of mixed use development. Early community meetings taking place. Architect: Eckert Wordell Architecture, Engineering and Interior Design (Jason B. Novotny). Area: 215,000ft².

**Capacity** 6,800
**Cost** US$82m

## MN: Crookston Arena

Developer: Crookston Civic Arena, LLC. Construction: Donlar Construction.

## MS: Jackson Arena

Study commissioned by Downtown Jackson Partners and the Central Mississippi Planning and Development District. Consultant: Populous (Russ Simons).

**Capacity** 15,000-18,000
**Cost** US$100m

## NC, Charlotte: Time Warner Cable Arena

Updates to keep the arena competitive and to bid on hosting the 2017 and 2018 NBA All-Star Games. Home of Charlotte Hornets. Restaurant renovations, bathroom improvements, new lighting, visitor locker room upgrades, moving the ticket office and scoreboard improvements, lower bowl reconfigure +600. Finance: city. Owner: city. Operator: Charlotte Bobcats.

**Cost** US$27.5 (US$44m)

## NC, Charleston: Carolina First Center

North Carolina Center for Health & Wellness and multipurpose convocation centre, Kimmel Arena at College of Charleston. For intercollegiate basketball teams and student health and recreational programmes. Architect: Betsch Associates. Area: 270,000ft². Finance: Naming gift $2m and college budget.

**Capacity** 5,000
**Cost** US$35m

## NC, High Point: University Basketball Arena

High Point University (HPU) plans to build a $100m basketball arena, conference centre and hotel. The new building will become the home of HPU's men's and women's basketball programs, as well as a venue for major events, speakers, concerts, entertainment, academic symposia, and recreational activities. The 4,500 seat arena will include suites, locker rooms, staff offices, concession stands and a merchandising area. There will also be a media suite, film room, press conference room, weight room, athletic training room, hospitality area, high tech audio and video equipment, ticket office and practice gym. There will be 2,500 conference centre seats and a small, executive hotel will be located adjacent to the conference centre to support a proposed hospitality management programme.
The university is selecting a site location from several campus-owned possibilities as architects finalise plans. Construction will begin during the 2018-2019 academic year..

**Capacity** 4,500
**Cost** US$100m

## ND, Jamestown: UoJ Arena

Basketball court on the east side of the Larson Center at University of Jamestown. Finance: donation – Harold Newman.

**Capacity** 2,200
**Cost** US$16m

## NJ: Monmouth University MAC

Multi-Activity Center of 152,400ft². Anchor arena. Architect: Ewing Cole Cherry Brott.

**Capacity** 4,800

## NV, Las Vegas: All Net Arena

All Net Arena and Resort nongaming hotel project on the former Wet 'n Wild site (total project cost $1.4bn). Needs development agreement with Clark County. Developer: Jackie Robinson. Could be the first ever arena with a retractable roof. Architect: Cuningham Group (Brett Ewing). Consulting: HKS, Walter P. Moore and Uni-Systems.

**Capacity** 22,000
**Cost** US$690m
**Completion** 2020

## NV, Henderson: Silver State Arena

Proposed as part of the planned Las Vegas National Sports Complex in Henderson on a 485-acre site in West Henderson. Finance: International Development Management and China Security & Surveillance Technology.

## NV, Las Vegas: MSG Sphere

The Madison Square Garden Company has engaged AECOM to serve as general contractor for MSG Sphere at The Venetian, MSG's state-of-the-art entertainment venue currently under construction in Las Vegas. This first-of-its-kind venue will be 360ft tall and 516ft wide, and will connect to Las Vegas Sands' Venetian Resort, the largest resort under one roof in North America, via an approximately 1,000-foot long pedestrian bridge. With a scalable capacity of approximately 17,500 seated, MSG Sphere at The Venetian will be the first venue to deliver a fully immersive experience on such a large scale.

**Capacity** 17,500
**Cost** US$650m

## NY, Le Ray: Mall Arena

Proposed multi-purpose arena near Fort Drum's main gate off Route 11 in LeRay. Destination element in 600,000ft² outlet mall.

## OH, Cincinnati: Fifth Third Arena

Renovation of the Bearcats' basketball arena at University of Cincinnati is in the home stretch – UC architect Beth McGrew, University of Cincinnati department of Planning, Design and Construction. Interior and exterior of the 26-year-old facility to receive a new look. A 360-degree seating bowl, adding more comfortable seats and better spectator sight lines. Permanent seating to replace rollaway bleachers. East plaza will be renovated with a new main entrance, centralised ticketing and guest services. New luxury suites, bathrooms and concession areas will be added. The arena will get a new fan lounge and sound system, in addition to upgraded locker rooms. Contractor: Skanska and Megan Construction ($70m). Upgrades to restrooms, HVAC, lighting, A/V, fire protection systems. Athletic Director Mike Bohn. Architect: Populous.

**Capacity** 11,500 (13,176)
**Cost** US$87m
**Completion** November 2018

## OH, Cincinnati: US Bank Arena

Proposed extensive renovations. Owner: Nederlander Entertainment (CEO Ray Harris). Operator: AEG Facilities. Seeking some public contribution with support of city, Hamilton County, and regional tourism leaders. Modernising interior and exterior, expanding venue seating. The 40-year-old arena has not undergone a major renovation since 1997. Multiple points of entry, new façade, continuous walkable concourse around the arena's base, which will connect the plaza level to the riverfront and The Banks. Better locker rooms to attract collegiate sports programming. Escalators and elevators, exterior video boards and freestanding video signage elements. Suites: 40-60, new level closer to stage. Club seats: 1,750. Project design: MSA Architects.

**Capacity** 18,500
**Cost** US$200m-US$250m

## OH: Cleveland: Quicken Loans Arena renovation

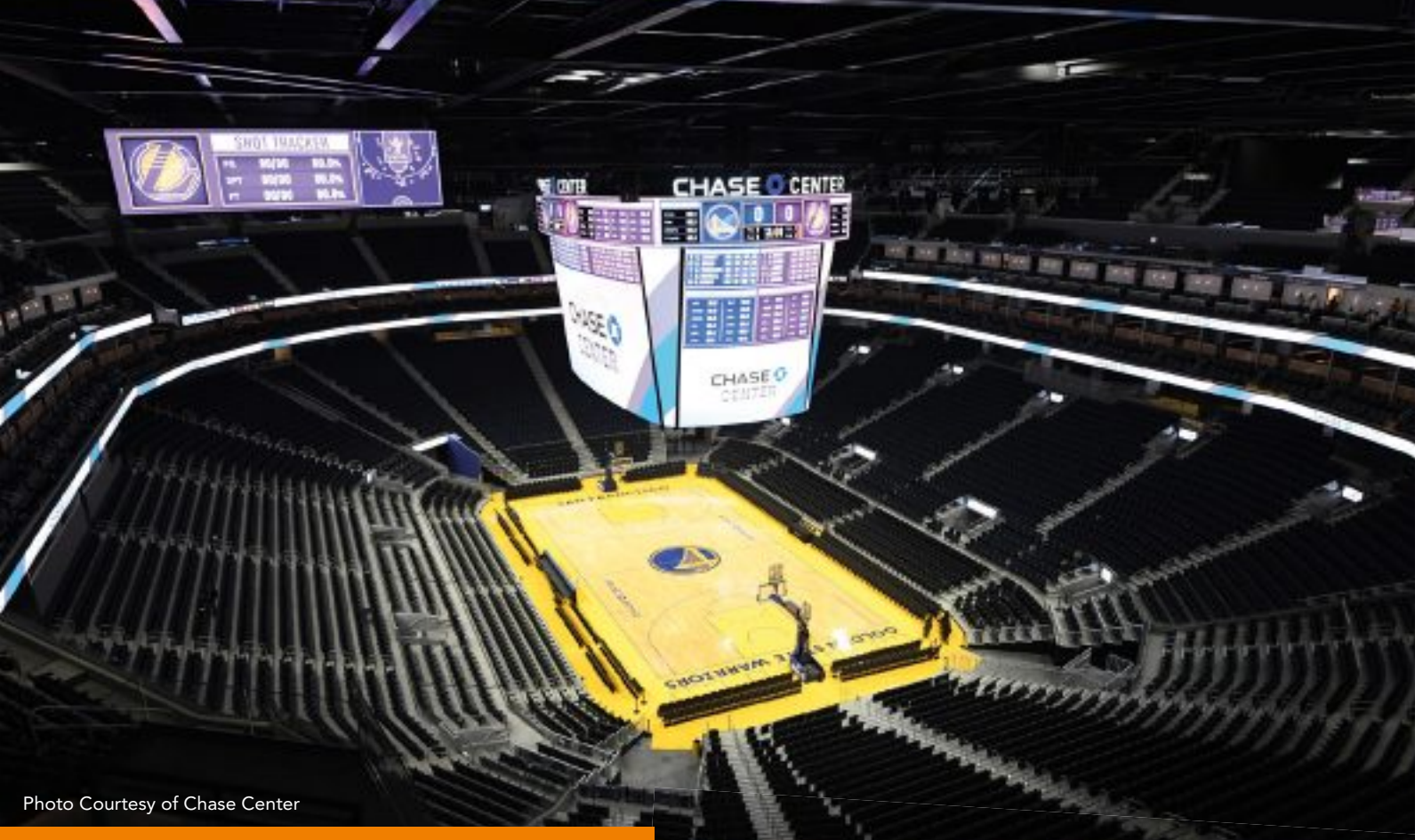
A major construction milestone has been reached in The Q Transformation to update and modernise the 25-year old publicly-owned Quicken Loans Arena. A special topping off ceremony to hoist the project's final steel beam into place atop of the arena, which is home to the NBA's Cleveland Cavaliers, has been celebrated. The initial phase of construction began on the exterior of the arena last February, and now that the Cavaliers NBA season has concluded, crews have been working on interior areas of the facility as well. The Q re-opened in the fall for the 2018-19 Cavaliers and Cleveland Monsters seasons along with a regular event schedule, beginning with the Justin Timberlake concert on October 2. Gensler & ROSSETTI are the architects and Whiting-Turner is contractor.

**Completion** 2020

## OH: Columbus: Ohio Stadium

The Ohio State University Ohio Stadium's four-year, $35 million renovation and expansion project was ready for fans as the 2019 Buckeyes' Big Ten football season kicked off for the new season in Columbus. With Barton Malow as general contractor, HNTB and Osborne as architects, the project included restoring & recoating the 94-year-old concrete on C-deck. The work also covered upgrade of power distribution systems for the east, west and south stands; improvement & upgrading of B-deck with better lighting, larger TVs, improved sound system & better scoreboards; renovation of the premium seating area to consolidate all University Suites into one University Suite, and adding 35 Loge Boxes & 16 Luxury Suites.
The Athletics Dept. used auxiliary funds, debt & private donations to fund the project. Design & build began in 2016 with overall capacity decreased from 104,944 to 102,854 seats before the 2018 season, with most of the seats removed having an obstructed view; new loge & suite seating, and final C-deck restoration were completed in 2019.

**Capacity** 102,000
**Cost** US$35m
**Completion** 2019

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## OH: University of Dayton

University of Dayton Arena to undergo a $72 million renovation in three phases from 2017 to 2019. Phase 1 from 2017-2018 will include: Upgrade courtside and press seating areas; New four-sided, center-hung video board; New LED ribbon boards on the fascia of Spectrum Flight Deck and suites; Move TV broadcast area from Southeast to Northeast corner of Arena; Upgrade Arena bowl audio system and broadcast infrastructure. Phase 2 from 2018-2019 includes: New concourse and 300/400 level seats; New Southside and Westside entrance and elevator and stairs to event level; New renovated event level locker rooms and training room. Phase 3 from 2019-2020 covers: New concourse and 300/400 level seats; New Club Seats between 200/300 levels and addition of concourse clubs; New four-corner Terrace Suites; Complete 360-degree concourse renovation with updated finishes and branding.

## OH: Dayton Arena

Proposed for Dayton Bombers hockey team and community teams and skating.

**Capacity** 5,500
**Cost** US$30m

## PA, Philadelphia: Wells Fargo Center

Operator Comcast Spectacor has revealed the next chapter of the "Transformation 2020" advancements. The next phase of the $250 million, multi-year initiative surrounds significant upgrades throughout the arena's Main Concourse level, which will deliver an impressive and energising welcome to every guest who enters the venue. The Wells Fargo Center is home to the Philadelphia Flyers of the National Hockey League (NHL), the Philadelphia 76ers of the National Basketball Association (NBA), the Philadelphia Soul of the Arena Football League (AFL) and the Philadelphia Wings of the National Lacrosse League (NLL). Among the many exciting developments include a re-conceptualized approach to dining and social interaction throughout the arena's Main Concourse level, 8,000 brand new seats within the lower bowl, a concierge-style box office and a dynamic LED video and lighting system that reacts in real time to carry the energy of the game to every corner of the Wells Fargo Center, including the concourse.

**Completion** 2019

## PA, Philadelphia: E-sports Arena

Plans unveiled fo next-generation Esports and entertainment venue in the heart of the Philadelphia Sports Complex. Adjacent to Xfinity Live!, the first-of-its-kind venue will seat up to 3,500 guests and stand as the largest new-construction, purpose-built Esports arena in the Western Hemisphere. Its primary tenant, the Philadelphia Fusion Esports franchise, is one of 20 international teams competing in the Overwatch League. Comcast Spectacor and The Cordish Companies said that in addition to serving as a premiere destination for competitive gaming events, Fusion Arena will also host a variety of live entertainment programming and experiences. Designed by Populous, an architecture firm with deep experience in the fast-growing Esports space, Fusion Arena will boast 60,000ft2 of new construction, featuring a stunning and futuristic design throughout. Construction is set to begin this summer.

**Cost** US$50m

## PA, Philadelphia: Villanova Basketball Arena

The Villanova University Board of Trustees has formally approved a comprehensive renovation plan for the 31-year-old Pavilion basketball arena on Villanova's campus.The significant renovation, which will be funded entirely by donor support, will transform the existing Pavilion – creating a high-quality, game-day experience for Villanova students, faculty, staff, alumni and fans. The renovation of the Pavilion is scheduled to begin in June 2017. The arena will officially be named the Finneran Pavilion when it is reopened.

**Cost** US$60m

## SC, Charleston: North Charleston Coliseum

Proposed upgrades to keep the 12,000-seat arena modern and competitive for at least the next 15 to 20 years. Two easy-access food courts on opposite sides of the building. Deeper and larger suites, a new arena bowl sound system and the addition of catwalks with wider platforms, which would allow for expanded rigging capabilities and spotlighting events.

**Cost** US$19m

## SD, Madison: Bahn Arena

Hockey practice arena adjacent to the Kohl Center for University of Madison-Wisconsin hockey teams. Concrete and steel construction, precast tiers. Ice system mechanical room is complete and the underfloor mechanical, electrical and plumbing installations are continuing. Women's hockey coaches offices, swim team lounge, hockey locker rooms.

**Cost** US$27.7m

## TN, Nashville: Bridgestone Arena

Nashville Predators have initiated a conversation with the Metro Sports Authority around the opportunities for development and enhancements. Possibilities include: a second sheet of ice on site, new event plazas, a hospitality tower housing a hotel, office and residential space, new team and facility offices, a conference center and hospitality and retail offerings; inside: wider concourses, new seating options and increased amenities at all levels.

## TX, Austin: University of Texas

The University of Texas at Austin (UT) has unveiled plans to build a world-class arena on campus that will be home to Texas men's and women's basketball games, graduations, concerts and other events. An innovative 35-year agreement between UT and ArenaCo — which includes Oak View Group, Live Nation, C3 Presents and actor Matthew McConaughey — will be groundbreaking in college athletics and provide a public benefit for UT and the City of Austin for decades to come.
The $338 million venue will be constructed on land fully owned by UT without using any university or public money. The arena will be located on a current parking lot south of Mike A. Myers Stadium. It will replace the 41-year-old Frank C. Erwin Center, which will make way for the future expansion of the Dell Medical School.

**Capacity** 10,000 sports; 15,000 events

## TX, Dallas: Robson & Lindley Aquatics Center

Robson & Lindley Aquatics Center/Barr-McMillion Natatorium as part of Phase 1 of Southern Methodist University Athletics' Facilities Master Plan. A new 42,000-square-foot facility that will feature an Olympic-sized, eight-lane indoor pool with a platform diving area, four springboards, a 10-meter tower, coaches offices, locker rooms and a classroom and meeting area. In partnership with AT&T and the city of Dallas,

**Mechanical Engineer** ME Engineers

ME is providing MEP and technology design.

## TX: El Paso Arena

Council has chosen to acquire 12-acre site south of the El Paso Convention Center for multipurpose arena. Consultants: HKS Urban Design Studio, International Facilities Group ($4.8m). Events: 120. Finance: public and private $60-$70m.

**Capacity** 12,750
**Cost** US$180m
**Completion** early 2020

## TX, Fort Worth: Dickies Arena

Dickies Arena has opened its doors and will host a variety of sporting, music and equestrian events. The venue is a 14,000 seat multipurpose arena located adjacent to the Will Rogers Memorial Center campus. It is also the new home to Fort Worth Stock Show Rodeo performances.
The arena has a seating capacity of up to 14,000 for concerts; 13,300 for basketball; 12,200 for family shows and ice hockey and 9,300 for rodeo and equestrian shows.
The arena is the result of a pioneering public-private partnership between the City of Fort Worth, Tarrant County, the State of Texas and a group of private-sector participants, including foundations, individuals and organizations. The $450 million project will complement the current Will Rogers Memorial Coliseum, which will continue to serve as a major equestrian show arena. HKS is Architect of record with design by David M. Schwarz Architects. The multi-functional area will seat 9,000 for rodeo and up to 14,000 for concerts, with a 28,915 ft2 event floor; Premium seating options such as suites, clubs and loge boxes; 86,932 ft2 of meeting space, including various multipurpose rooms, two dining areas, two clubs and four lobby spaces; Six loading dock bays; 5,228 designated parking spaces, including an attached 2,210-car parking garage.

**Capacity** 14,000
**Cost** US$450m
**Completion** November 2019

## TX, Huntsville: Propst Arena

Makeover of the Von Braun Center. Construction manager: Jeffords Associates. Construction: Vratsinas Construction. Finance: City and $5m donation (Propst).

**Cost** US$24.5m

## VA: Richmond Arena

Proposed new arena and redevelopment of the existing Coliseum site. Big enough to attract minor league hockey, professional women's basketball, and early-round NCAA men's basketball tournaments plus concerts. Consulting team: Barrett Sports Group, Populous, Weston Sports & Entertainment.

**Capacity** 15,000

## VA: Virginia Beach Arena

Plans for unnamed NBA or NHL team to re-locate to Virginia Beach. City council requires workable financial plan from the devreloper. Proposed sports authority and multi-purpose sports and entertainment venue. VB permitted to issue bonds for finance. Jobs: 3,944 during construction, 55 permanent and 322 part-time employees post-construction. Developer group: United States Management. Finance: private (city to pay for infrastructure).

**Capacity** 18,500
**Cost** US$210m

## VT, Burlington: UVM Multipurpose Arena

Both Burlington and South Burlington would like to have a long-anticipated multi-purpose arena that would host the University of Vermont hockey and basketball teams. South Burlington and UVM: replacement of the University Mall or the Rick Marcotte Central School. Burlington: new arena on Main Street at the current site of Memorial Auditorium. Reports commissioned, decision expected early 2017. Events: 60.

**Cost** US$50-60m

## WA, Washington DC: Capital One Arena

Monumental Sports & Entertainment has announced a second phase of renovations and cutting-edge upgrades to the fan experience at Capital One Arena in Washington, US. The revamp is part of an additional $15 million renovation investment in the venue.
The entirely privately-funded project will complement last summer's $40 million renovation at the arena. Phase II is scheduled to begin this summer at the conclusion of the 2018-19 Washington Wizards and Capitals seasons and is expected to be completed by Fall 2019. Capital One Arena will utilise the latest in LED video technology to completely transform the in-arena experience and bring fans closer than ever to all the action. Updates during Phase II will also include additional mouth-watering new concession options, expansion of luxury seating, a refurbished destination lounge, and the renovation of the 200 level concourse.

**Completion** fall 2019

## WI, Ashwaubernon: Brown County Veterans Memorial Arena

County considering renovation or reconstruction of 60-year-old arena that stands in the shadow of Lambeau Field.

## WI, Milwaukee: Marquette University Sports Center

University refining design concepts and budget for athletic performance research centre. Study: Cannon. The centre will provide locker rooms and office space for several athletic programs and combine indoor playing fields for Marquette's lacrosse and soccer programs. It will also feature an indoor track and a world-class athletic performance research facility. Architect: Sink Combs Dethlefs.

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# BIG IN JAPAN

## The Rugby World Cup 2019 was a huge success in Japan with countless records broken by the tournament.

The first **Rugby World Cup** in Asia was a phenomenal success with a multitude of records broken in the most impactful and ground-breaking Rugby World Cup in history.

With a record 99.3% attendance across the tournament resulting in 1.84 million tickets sold, in addition to more than 1.13 million people filling the official fanzones and over 400,000 international visitors enjoying the incredible hospitality of hosts Japan, Rugby World Cup once again took its place at the top table of global sporting events.

**Japan 2019** also smashed records for fan engagement around the globe with an incredible 1.7 billion digital video views and an estimated worldwide broadcast audience of 400 million, including a domestic all-time record television audience of 54.8 million for the unforgettable **Japan** v **Scotland** pool phase match.

**World Rugby** and the **Japan 2019 Organising Committee** announced record official fanzone attendance figures and World Rugby Chairman Sir Bill Beaumont praised the success of the fanzones.

He said: ***"With a variety of fun activities, partner activations and live screening of all the matches, the Rugby World Cup 2019 fanzones have become one of the major attractions of a special tournament.***

***"They are much more than a destination to watch matches, they are bringing together domestic and international fans in celebration of rugby, Japan and friendship."***

Japan 2019 CEO Akira Shimazu added: ***"The fanzones have been a wonderful part of this tournament - a place where people from all over the world have come together to experience this incredible tournament.***

***"Our Rugby World Cup 2019 Fanzones have introduced to Japan a whole new culture of coming together to watch and enjoy sport in an exciting, festival-like atmosphere. For many Japanese, visiting fanzones gave them their first experience of rugby and a taste of the unique and special atmosphere of a Rugby World Cup. I would like to thank the Host Cities for all their efforts and thank all the visitors to our fanzones who helped make them such a resounding success."***

**South Africa** won the tournament which was held in 12 stadiums across Japan: **Tokyo Stadium**, **Sapporo Dome**, **Kamaishi Recovery Memorial Stadium**, **Kumagaya Rugby Stadium**, **International Stadium Yokohama**, **Shizuoka Stadium Ecopa**, **City of Toyota Stadium**, **Hanazono Rugby Stadium**, **Kobe Misaki Stadium**, **Fukuoka Hakatanomori Stadium**, **Kumamoto Stadium** and **Oita Stadium**.

### RUGBY IMPACT

World Rugby and the Japan Rugby 2019 Organising Committee can look back on an incredible six weeks of action that saw competitiveness again increase on the field of play with the outstanding performances of Japan's Brave Blossoms and admirable efforts from the likes of Uruguay, Georgia, Namibia and Tonga contributing to a decrease in the average winning margin between established and developing nations, and demonstrating that the future of international rugby is increasingly competitive.

Off the pitch Japan 2019 has proved to be the most impactful in history with more than 1.8 million new rugby participants across Asia as part of World Rugby's Impact Beyond legacy programme, while the generosity of the global rugby family has seen a record breaking £2 million raised for the ChildFund Pass It Back initiative, Rugby World Cup's principal charity partner, benefitting over 25,000 underprivileged young people in Asia via rugby and life skills programmes.

With a record 437 billion Yen economic impact delivered for Japan, the Rugby World Cup has not only shone a spotlight on rugby in Asia but contributed significantly to business and commercial communities.

*Japanese supporter at the 2019 Rugby World Cup in Japan at the Ajinamoto Stadium*

Image Credit: *Faiz Azizan / Shutterstock*

Beaumont added: ***"Rugby World Cup 2019 has been one of the greatest, if not the greatest of all time, and certainly the most ground-breaking in terms of bringing the game to new audiences and attracting new fans to the sport we love.***

***"On behalf of the whole global rugby family, I would like to thank from the bottom of our hearts Japan and the Japanese people for being such wonderful, humble and history making hosts.***

***"While South Africa will rightly take home the Webb Ellis Cup following their outstanding victory, the amazing performances of the Brave Blossoms undoubtably brought some of the most memorable moments of the tournament.***

*World Cup Rugby Welsh fans before the event*
Image Credit: Distinctive Shots / *Shutterstock*

***"The way Japan reacted to the incredibly difficult events surrounding Typhoon Hagibis was a tribute to the resilience and determination of the people of this wonderful country and we continue to think about all those who lost loved ones or were affected by this tragic event."***

## RUGBY LEGACY

On the back of the Rugby World Cup, a new professional rugby league will be launched in Japan in 2021.

Kiyomiya Katsuyuki, vice president of the **Japan Rugby Football Union**, told the SBJ /Stadia & Arena Japan 2019 conference in Saitama that the league would be supported by the sale of broadcasting rights.

Saburo Kawabuchi, president of the **Japan Top Leagues Alliance** stressed, however, that the most important thing was to attract people to the games, and young people in particular.

He said it was important to build a strong home team culture in the cities where the rugby teams would be based. He added: ***"In my view there are only a few stadiums that can be used as professional venues for rugby in Japan. We can build and develop new stadiums but how are we going to support them?***

***"The very first thing that needs to happen for the rugby league to be successful is that people need to come and see the games."*** ■

## RUGBY WORLD CUP 2019 RECORDS

99.3 per cent attendance with 1.84 million tickets sold

1.13 million people in fanzones

54.8 million television audience for Japan v Scotland (Japan team involved in top 5 biggest ever television audiences)

437 billion Yen economic impact

More than 1.7 billion digital video views

Legacy programme with 1.8 million new participants

CSR programme with more than £2 million raised for ChildFund Pass It Back

Competitiveness with 30.5 average winning margin between Tier 1 and Tier 2

Attendance of 70,103 spectators at Yokohama International Stadium for the final

# STADIUM MANAGERS ASSOCIATION ANNUAL SEMINAR 2020

**The Stadium Managers Association is hosting its annual get together in Phoenix, Arizona in 2020.**

The **Stadium Managers Association** is heading to Phoenix, AZ, Pointe Hilton Tapatio Cliffs for the 46th Annual SMA Seminar, February 2 - 6, 2020.

The breath-taking Phoenix Mountain Preserve sets Tapatio Cliffs apart with several accessible trails to experience the Sonoran Desert up close.

Other features include award-winning golf, spa and fitness centre, a memorable restaurant at the top of the mountain, and access to all that the fifth largest city in America has to offer.

The hotel is 14 miles north of Phoenix Sky Harbor International Airport and is about a 19-minute drive.

All SMA meetings and events, with the exception of tours and dinner, will be held at this property. Seminar events include sponsored transportation from host hotel.

Review the complete agenda and register by January 10th at **www.stadiummanagers.org**

Registration fees include all Seminar sessions, event transportation, Tuesday & Wednesday breakfast & lunch, breaks, Wednesday dinner, and all evening social events. Your company must be a member of SMA in order to register.

Seminar highlights include facility tours to **Chase Field** and **State Farm Stadium**, and the premier dinner event at **ISM Raceway**.

These inside tours are an opportunity to see back of house areas and leave with ideas that could help solve operational challenges and goals.

Home to the **Arizona Diamondbacks**, Chase Field (formerly known as **Bank One Ballpark**) is located in downtown Phoenix.

From its signature swimming pool to its retractable roof, Chase Field has become one of the game's most recognisable landmarks. Since the air-conditioned facility first opened its doors to a regular-season game on March 31, 1998, millions of baseball fans have enjoyed the opportunity to watch the Arizona Diamondbacks without worrying about Phoenix's summer heat.

State Farm Stadium is a multi-purpose football stadium located in Glendale, AZ. It is home of the **Arizona Cardinals** of the **National Football League** and the annual **Fiesta Bowl**. Opened in 2006, the stadium offers outstanding, unobstructed views for 63,400 fans with the ability to expand to 73,000 for mega-events. The stadium's innovative approach to sports facility design incorporates the first retractable natural grass playing surface in North America and the first completely retractable roof operating at an incline.

## ISM RACEWAY

Located in Avondale, Arizona, ISM Raceway currently has an estimated grandstand seating capacity of around 51,000.

Completed in 1964, this 1-mile, low-banked tri-oval racetrack currently hosts two **NASCAR** race weekends annually—making it one of only 13 facilities on the NASCAR schedule to host more than one race weekend a year.

The racetrack has recently undergone a $178 million renovation in the past year. Some of the renovations included updating areas around the garages and pit row which would allow fans to get up close, new seating, upgraded suites, in-seat Wi-Fi and new food offerings.

Program highlights include Keynote Pedro Gomez, **ESPN**, an update from Industry Council leaders in every league, and multiple opportunities to share best practices across leagues and operational focus areas.

The SMA Scholarship Foundation has announced Topgolf as the location for the Scholarship Benefit Golf Tournament on Monday, February 3. Topgolf features an inclusive, high-tech golf game that attendees of all skills can enjoy. The Stadium Managers Scholarship Foundation (SMSF) provides annual scholarships to undergraduate or graduate students currently enrolled in sport administration/management programs. ■

Stadium Managers Association℠

# SEMINAR

*Focused on areas of concern for Operations Leadership and Key Suppliers in stadium and ballpark facilities.*

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# YOUR NEXT ISSUE

## PS&AM 4TH QUARTER ADVERTISERS' INDEX



The next edition of *PanStadia & Arena Management* magazine, our 1st quarter (Q1) 2020 will include:

**Architecture Roundtable Discussion** – Current approaches to stadia design for renovating venues or helping smaller venues compete in their localities.

**Current trends in sports venue engineering**, both for stadiums and multi-purpose arenas.

**Unlock your Arena** – How the use of design and technology can help make your venue more multi-purpose and increase revenues.

**Ones to watch in 2020!** 5 companies detail their recent project successes and innovations.

**Safe and Secure** – latest ideas in security technologies to best protect your venue.

**Connectivity is key** – an in-depth review of the technology needed to ensure the smooth production of live events and deliver real-time content demanded by the audience.

**Transforming your playing surface!** 6 leading companies explain their role in transforming a problematical pitch.

**Into the light!** – Our once a year review of lighting products and solutions for both stadiums and multi-purpose arenas.

**The Italian Job!** – A review of projects currently in the design through to build stage throughout Italy, plus an introduction to leading companies who are making a name in the sports venue sector.

Venues in Focus: **Yas Bay Arena** - the 18,000-seat arena in Abu Dhabi designed by HOK.

**North Queensland Stadium** - The 25,000-seat stadium will become the new home of the NRL's North Queensland Cowboys.

Florida's **Dunedin Stadium** - $102 million facelift and expansion as continuing winter headquarters for MLB Toronto Blue Jays.

**Rocket Mortgage Fieldhouse**, home of the **NBA Cleveland Cavaliers**, is the new name for former **Quicken Loans Arena** after completion of $185 million in renovations and new fan amenities.

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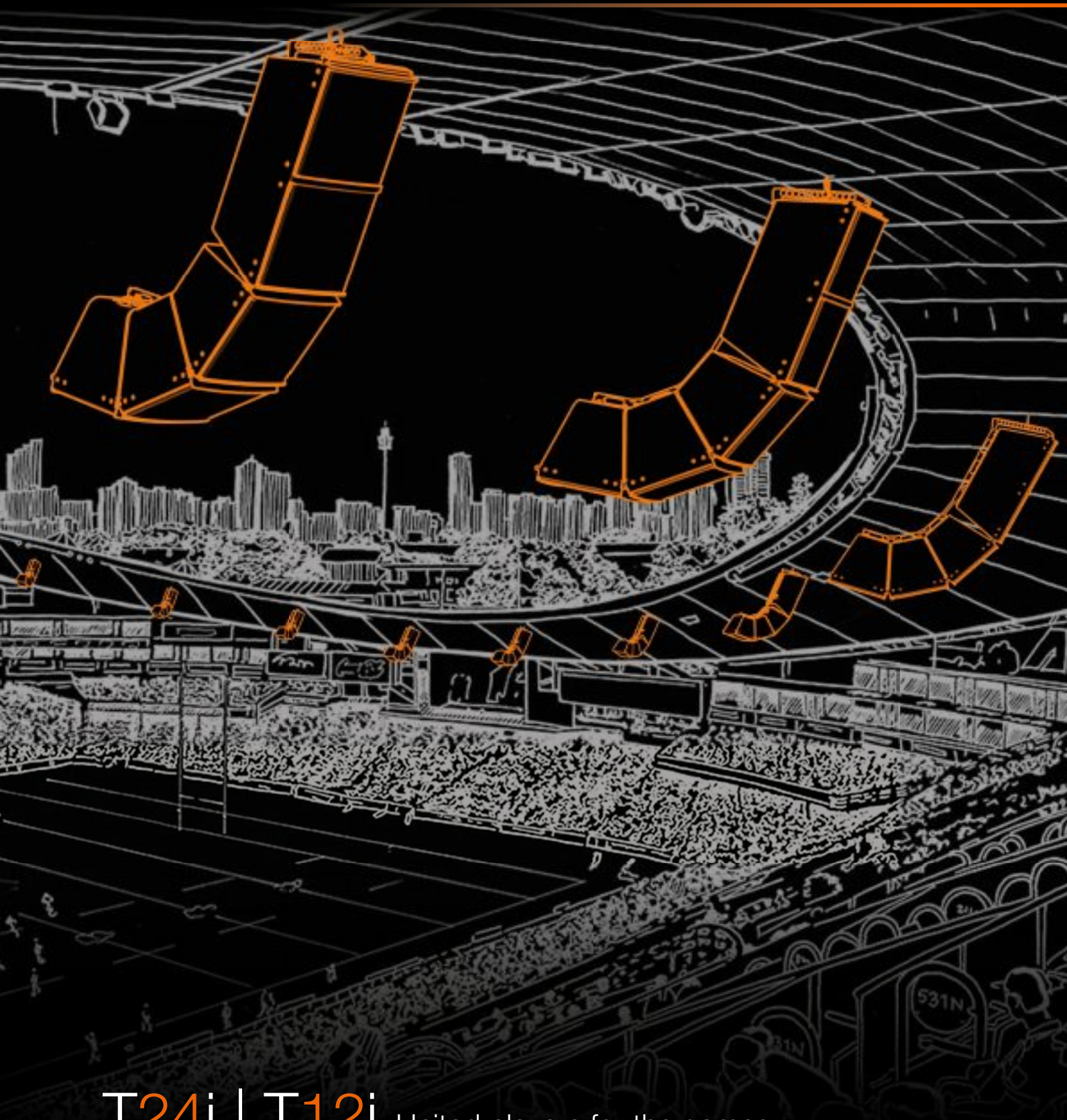

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