

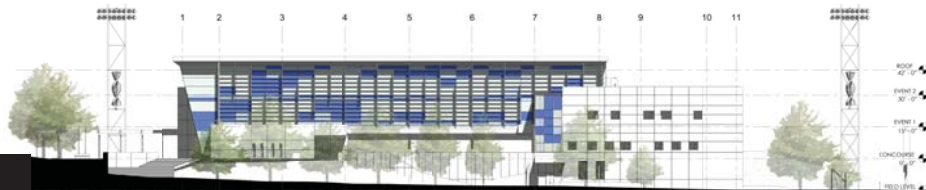
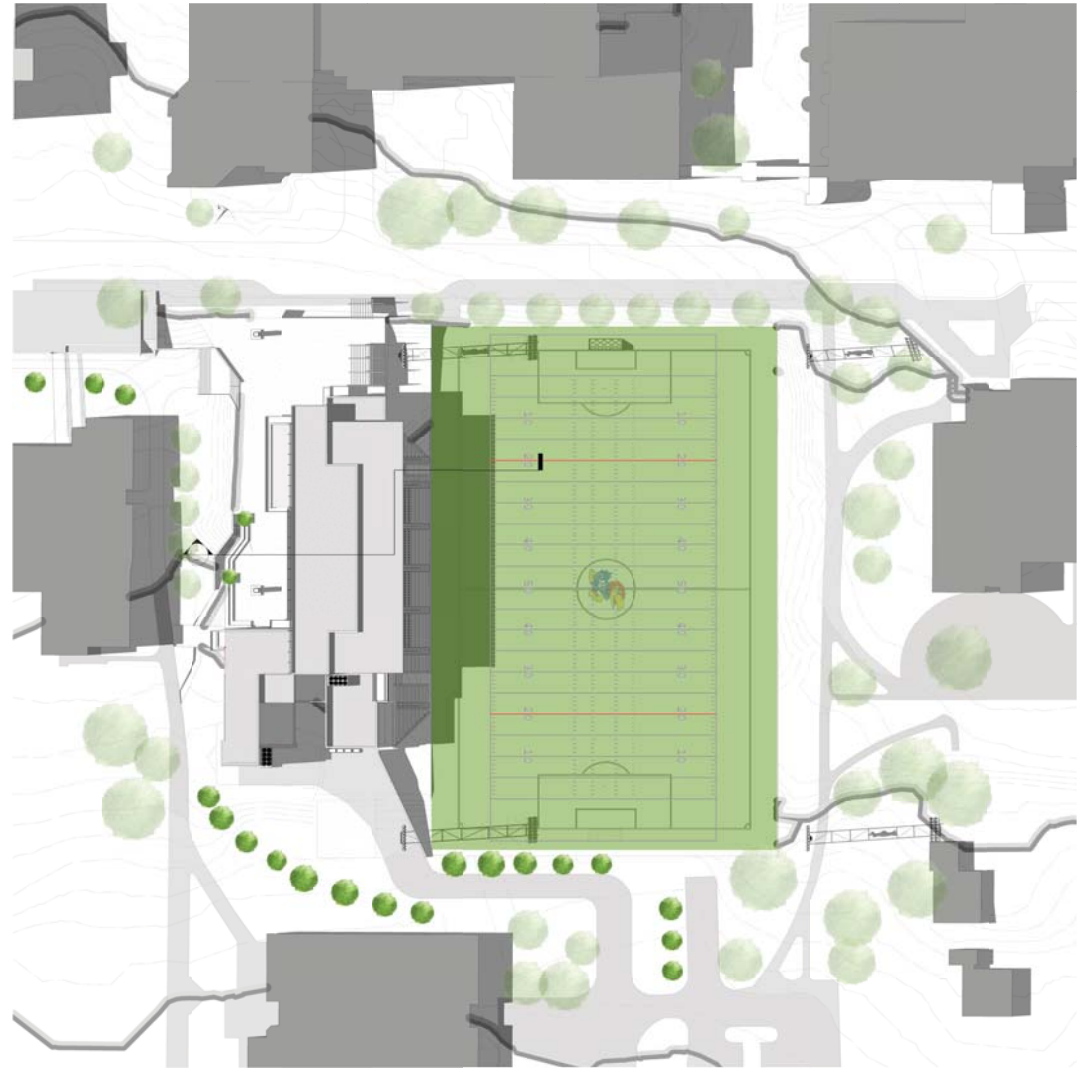


# UNIVERSITY OF KANSAS SOCCER STADIUM

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# PROJECT OVERVIEW

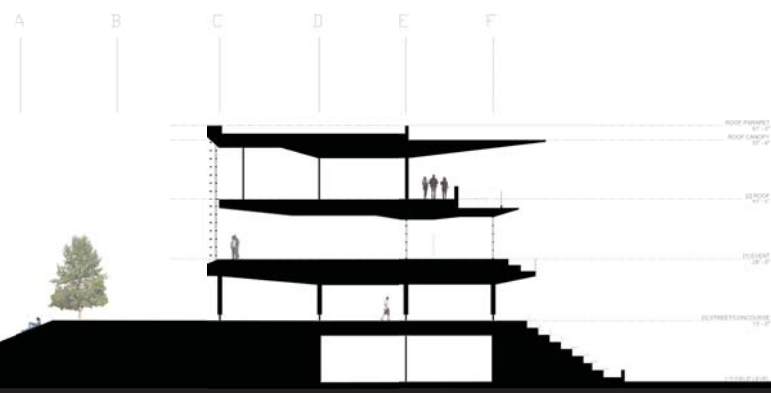
1,000 SEATS  
NORTH OF WATKINS HEALTH CTR  
STUDENT-ATHLETE-EVENT SPACES  
30,000 SQFT

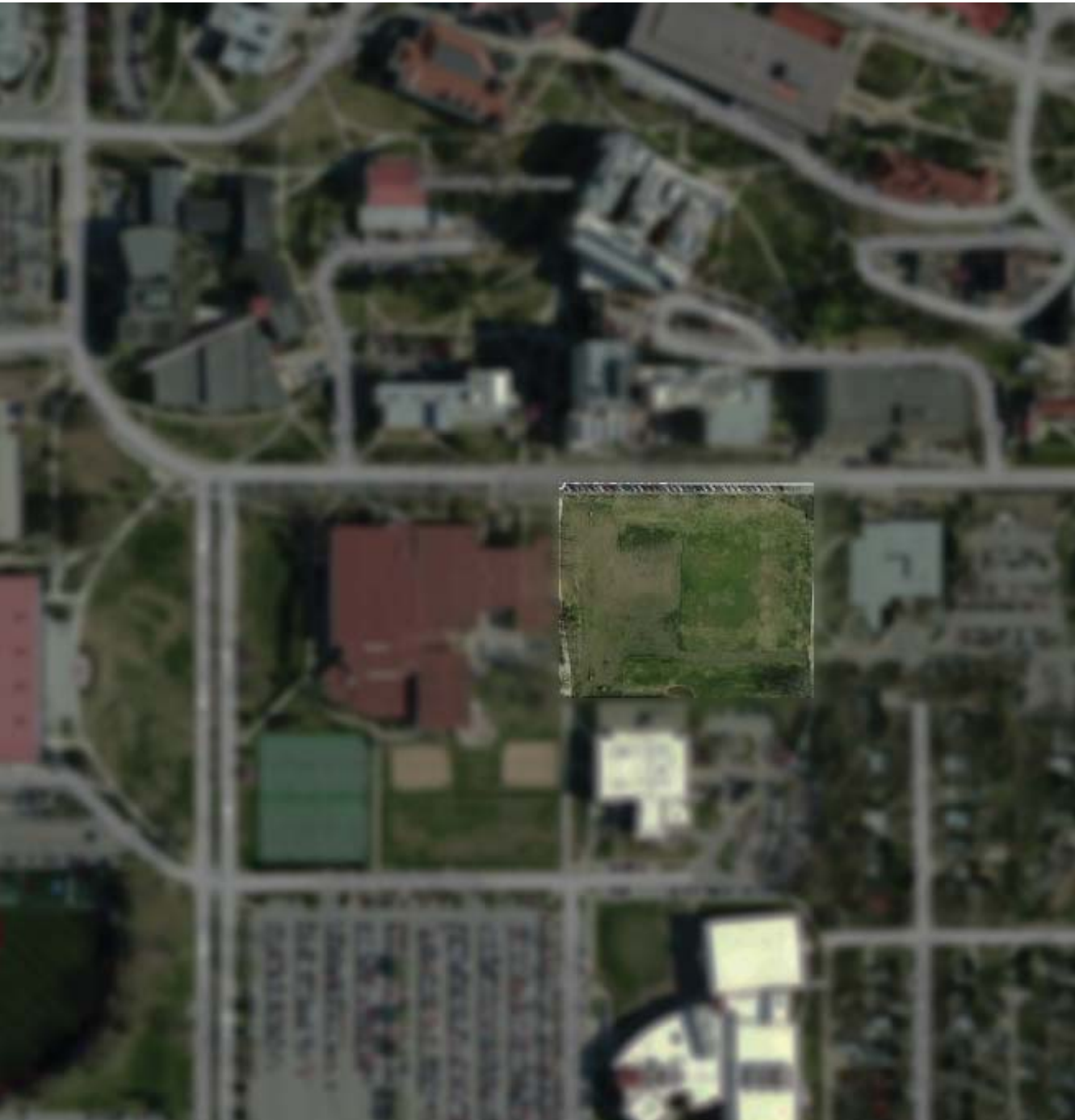




- METAL PARAPET CAP
- TPO ROOF MEMBRANE
- TAPERED ROOF INSULATION
- 2 LAYERS OF 2" RIGID INSULATION
- 1/2" SHEATHING
- METAL DECKING
- CUSTOM ROOF TRUSS
- 5X4 ALUMINUM PANELS
- 6" METAL STUD WALL
- 6" C-CHANNEL
- 8X5 ALUMINUM PANELS
- 2" GREY TRESPA PANEL
- 6X5 ALUMINUM PANELS
- 6" METAL STUD WALL
- 6" C-CHANNEL
- ROOFING MEMBRANE
- METAL DECKING
- RED ALUMINUM PANEL
- STOREFRONT GLAZING
- TEMPERED GLASS PARTITION WALL
- RAISED ACCESS FLOORING
- POURED IN PLACE CONCRETE
- METAL DECKING
- ELEVATED HEXAGONAL STONE PAVER
- CAST-IN-PLACE CONCRETE
- 18" PLASTIC STADIUM SEAT
- PLASTIC BLEACHER SEATING
- RIGID INSULATION
- CONCRETE FOUNDATION WALL
- 6" CONCRETE SLAB

- W30x118
- W16x36
- W12x26
- W12x26
- W16x36
- W10x49
- W16x36





# INTERPRETING THE PLACE TYPE

INTRODUCTION TO RESEARCH METHODS IN ARCHITECTURE



## How has this place type emerged and evolved responding to what socio-cultural and political issues in the society?

Recently, stadiums have become a hot-button debate topic in the political realm. It is much like the broad sweeping problem of “Free Lunch,” taking from the poor to benefit the rich. With the placement of club seating and exclusive areas in stadiums, owners realized the money making potential of sporting events. Public funds were being used to build new facilities to replace sometimes decade-old facilities to boost owner profits with lavish suites, again benefitting the rich. Teams will often leverage the possibility of moving the team to another city in order to get a city to pay for a new arena. Citing loss of money generated for the city by events, the team ownership panics residents and politicians into absorbing much or all of the cost. The Miami Heat out of Miami Arena for the modern suite-packed American Airlines Arena after just 10 years. Public subsidies were used to fund the arena. “There are certain politicians who just get stars in their eyes and don’t really think about what the real cost is going to be,” said Katy Sorensen, Miami-Dade Commissioner. The Miami Heat have not had to pay to use the facility (Miami New Times.) Another recent trend is for companies to pay millions of dollars to place their naming rights on stadiums because of their exposure to the media, further adding to profits for owners.

However, a positive example of stadium naming rights is the agreement between the LiveSTRONG foundation and Sporting Kansas City Soccer Club. The LiveSTRONG name gains exposure in fans, Sporting KC obtains exposure as a corporate socially responsible operation, and most importantly a portion of Sporting revenues are donated to the foundation for cancer research. When implemented, this was a completely innovative unprecedented idea (Corporate Partners - LiveSTRONG.) With the sheer amount of visitors that stadiums experience, political and social movements are within earshot of thousands of people on a regular basis. Potential areas of reach are event booths, PA announcements, and other naming rights agreements.





In regards to some socio cultural issues, stadiums have been relatively the same throughout history. The ancient Roman emperors and officials reserved the best profile seats in the venue. Today, the best seats are priced accordingly, creating a sort of social class representation within the stadium itself. The most famous of all stadiums, the Flavian Amphitheatre was built to commemorate a great victory in battle (Claridge, 1998), not unlike the countless “Memorial Stadiums” across the country, erected to honor those lost in battle.

In other socio cultural issues, stadiums are completely different in regards to the event. In ancient Rome, crowds gathered to watch Christians be mauled and executed, along with gruesome gladiator fights. Ancient Mayans observed a sport that sacrificed the winner of the match. The socio cultural acceptance of certain issues have had a direct correlation with laws of the time period and place, causing fatal violence toward others to become taboo in both the arenas and the public and private realms.

## How has this place type become a catalyst for growth and/or change in its physical context and the urban fabric?

Throughout history, stadiums have often served as a medium of urban growth and renewal. Roman and Greek Stadium typology established stadiums as public amenities as well as their intended performance space. Since, stadiums have varied in degree of public access but have often, especially at the small scale doubled in purpose as green space for public use. This establishes the space as a public node that draws from the surrounding areas. Crowds gather and intermingle within and surrounding the immediate site, making adjacent lots desirable and valuable to others. Urban entities are attracted to the vast amount of pedestrian traffic that stadiums bring. With this in mind, stadiums are often used as the principal element in an attempt to revitalize certain areas. This has proved both successful and unsuccessful throughout time. A stadium in itself will in most cases not revitalize a district. Location and means of transportation need to be analyzed in order to successfully revitalize an entire district.

In the 1970's Kansas City built a multipurpose arena in the rapidly clearing West Bottoms District in the former stockyards, thinking the amount of traffic would revitalize the area. This proved to be largely ineffective because of poor access to the area from population nodes and a new arena was being discussed just over 20 years later. The arena is now being prepared for demolition the area remains a subject of discussion for large-scale urban renewal after the completion of the Sprint Center.

Classic American stadiums (1800's – Mid 1900's) didn't need to be a catalyst for growth in urban centers because they preceded the creation of suburbia, when city centers were dense and active. Starting in the 1950's, the trend was to build large stadiums in a sea of parking lot, with little regard to the surrounding area. This stadium typology presented little opportunity for nearby businesses. Fans attended the event and drove home. This changed with innovative urban ballparks such as Camden Yards and Coors Field.





A once controversial example of attempted area revitalization that met and exceeded intended results is Coors Field in the once decrepit LoDo District immediately to the north of downtown Denver. “People were really skeptical, but Coors Field was a home run in just about every way,” says Sherman Miller, executive managing director of Cushman & Wakefield’s western region (National Real Estate Investor, 2006.) The major concern was that sports fans wouldn’t want to go to games in a rundown part of Denver, but the since the completion of Coors Field, LoDo has welcomed businesses wanting to tap into the thousands that attend the 81 home games, and subsequently mingle throughout the area. The area has since evolved into a hip, artsy gallery and residential district. The success of Coors Field is owed to proximity to transportation access and proximity to downtown. Since the success of Coors Field, cities have mostly built new stadiums and arenas with close proximity to its central core to mostly success, using both failed examples such as Kemper Arena and examples mentioned preciously for direction.



## What are the key expectations that this place type is supposed to deliver in today's societal and physical context with regard to your own project's site and community?

The key expectation is to meet the needs of the soccer team and its' constituents. In today's society, the project should meet those needs in a justifiable and sustainable way. Because the current soccer field is a set of metal bleachers, the coaches do not even show recruits the field. The field or stadium can be a prominent point of pride and identity, which is lost without one. A new state-of-the-art facility would set KU apart from many other programs and would instill a sense of pride within the coaches and players. The stadium should clearly reveal to recruits and their families what it means to be a KU soccer player, making it possible to draw high profile recruits that will help build KU into a championship contender to match its high class facility.

It should also provide a public compensation for what is lost on the site. Although the site is an under-utilized green space, it wouldn't be appropriate to take all of it away without compensating with some sort of public green space or access to the amenities of the facility. This could also calm concerns from neighbors that this facility will be a nuisance. If they know they are provided with an improved green space that could potentially increase the value of their property, they may be more inclined to make a compromise when discussions are being made about certain possible public nuisances like noise and light spill or blocking of sunlight into their homes. It is imperative that neighbors feel like their losses are minimal and their gain is more substantial than what is compro-





Within the physical context, it should not detract from surrounding spaces or buildings. With our site on Sunnyside, we are thinking about how to integrate mechanical spaces, trash pickup, and bus stops without much disruption to existing routes and routines. Constituents like trash pickup workers need to be considered because they experience the space and building as well. Integrating with existing spaces saves costs for the client that could be pocketed or spent on other architectural elements that enhance the project.

The space should be flexible for use by a number of different events or teams. This ensures that the facility will sit vacant less of the time, making the cost of construction more justifiable. The central location of the state of Kansas presents interesting opportunities to hold tournaments in the center of the country, reducing travel cost for many users and enabling draw from possibly the whole United States. Bringing in tourists from all over to spend money in town will appeal to the interest of KU and the city of Lawrence. Creighton's new stadium (Morrison Stadium) has hosted a wide variety of events like: National Soccer Team matches, conference tournaments, NCAA tournaments, State High School Championships, and concerts.

KU specifically, lacks much dedicated green space for student use. It is suggested with this project that it remain a campus green for student use. Other ways of campus usage have been explored such as: using seating berms for sitting areas when games are not being played, plazas that engage the nearby circulation path and encourage use, flexible spaces that are allowed to be used by all, and dedicated park space on site that engages the nearby neighborhood.

## How have architects who worked on this place type interpreted its societal and contextual role and expectations in their designs?

Populous, arguably the frontrunner in stadium and venue design has experience and expertise that is unprecedented in the field, so it was important to me to look to their proposals and look into their way of thinking and planning. A renovation of completely renovated ballpark at the University of San Diego was applicable to research because of its similarity in scale to our project (1,700 expandable up to 3,000). Populous' design intent with this project was to "give them an identity on campus along with a facility that will help them recruit top prospects and generate more interest in an up-and-coming program" (Populous). This is notable because of the desire for KU soccer to have an identity, just as the USD Baseball team does.

At the new park for Sporting Kansas City, Populous is being given credit for "the best stadium in Major League Soccer." And "raising the bar in stadium design" (Populous). "Every design decision we made was directed back toward the fan experience," said Jon Knight, Populous Senior Principal. "It was by paying special attention to even the littlest details that got us to this result – it's not just a stadium; it's a social experience." Even at a small scale (20,000), Populous was able to produce a stadium that gives a grand, Major League feel. The procession from locker room to field is enhanced by allowing club level members to see the players enter the field and fans can get a look into the press room with transparent openings. Subtle moves like this that are dynamic, unique and enhance the experience of the fan are moves that pertain to the scale of our project because of the assumed tight budget.

"Beyond building inspiring structures, we transform spaces to produce lasting economic and social returns while fostering human connection around shared passions. We use design to draw people together around teams, athletes, events, places, commerce, industry and ideas they wholeheartedly embrace and may even adore."

-Populous

Populous is the world's leader in sports architecture because they continue to stay innovative and look toward future trends in sport. They have looked beyond just sporting events and have examined all aspects of gathering space and venue, so they have a grasp on what a crowd wants and know how to appeal to the experience of the fan to make it a memorable one. They go beyond the traditional typology of stadiums and have single-handedly created revolutions in sports architecture.



## **Research Methods 03**

**Nichols**

### **Research Task 02: Defining User Needs**

#### **SITE OBSERVATION**

Based on direct observation of the site, the sidewalk on the West side of the site is determined to be a main artery through the area on the south slope of Mount Oread. As classes spill out of the nearby buildings, much of the foot traffic traverses along Sunnyside Drive to the north and spills onto the west sidewalk.

Most of the vehicular traffic around the site is limited to Sunnyside Drive with some traffic into the parking lots to the south and east. Shortly after 5PM, Sunnyside Drive backs up with traffic waiting for to leave campus. There is a bus stop to the west at Robinson Gym and another immediately east of the site at the Computer Center.

#### **USER OBSERVATION**

Currently students spend much of their time in the Wagnon Student Center. They train and study there and eat across the parking lot at the Burge Union. There is a long corridor of tutoring rooms with glass walls. Students wait outside of the rooms for their appointment with their tutor. The weight room is through a doorway at the end of the corridor. As of right now, the athletes of various sports teams form a student-athlete community within Wagnon, interacting and socializing with each other. A new soccer facility would likely hinder some of that, being that it would be some distance from Wagnon.

#### **User Group 1)**

Student-Athlete

The student-athlete is the main focus of this facility. The age of the subjects will most likely be in the range of 18-22 years old and live in the Jayhawk Towers. Players are recruited nation-wide and some foreign recruiting is done.

#### **User Group 2)**

Coaches

The soccer coaches will vary in age from recent college graduate – senior citizen. Because it has a larger influence abroad that is just beginning to gain steam within the United States, many coaches are foreign-born. The current head coach at KU is English.

### **User Group 3)**

Facilities/Stadium Operations workers

Stadium operations workers are involved in making the facility and the event run smoothly. Currently they range from office workers to groundskeeping of all ages.

### **User Group 4)**

Spectators

Spectators will range from parents of the players to general fans of the game of all ages. They will mostly see the facility on gameday, so they are directly related with the work of the stadium operations workers and will experience the success or ineffectiveness of the facility.

## **FACE-TO-FACE INTERVIEWS**

2 interviews were conducted to investigate user needs. The first interview was with the head of the KU Facilities Department and his assistant. Their main focus was income for the KU Athletics Department. The second interview was with Mark Francis, the head coach of the KU Women's team. He stated that he simply wanted a field with lights, and anything else would be an added bonus. Sacred space was important to him. It was beneficial to interview two very different user groups and learn how they want the facility to be used. These two user groups were chosen to interview because of their availability and already existing relationship and interest in the studio project.

## CONCLUSION

With the idea of an existing campus green becoming a tightly monitored and groomed field, it may not sit well with everyday students or neighbors who currently use the space. After meeting with facilities and the head coach, realistically it seems that the facility would be closed off to outsiders, at least in the off-season. Natural grass is adamantly favored over turf because of recruit preference. If this were to be the case, the field would have to be closed during the season to avoid abuse. With the idea that the field will have to be closed off, I have proposed grass seating berms and a terraced entry plaza for pedestrians to gather on to ensure that not all green space is lost to the community. While they aren't replacing the ability to roam and play sports as the site before allowed, they are creating more intimate spaces that people can relax in and enjoy.

Auxiliary locker rooms are not included in the program, but both user groups spoken with prefer them to be added. This maintains the locker room as a sacred space for the girls and allows them to have a sense of ownership on campus. Placement of the auxiliary locker space in my mind, will allow certain events to occur at the facility (soccer tournaments, 7-on-7 football camps, concerts) to occur at the facility on non gamedays without much distraction or disruption to the student athletes that may be using the another space in the building at the same time.

Both groups think a café is not needed. It is not in the program, but the decision was made to engage an existing active pedestrian circulation intersection with a corner node, allowing the public to experience the site, especially if they aren't able to use the field.

The field orientation that I chose (North-South) was strongly recommended by Mark as to require a goalie to look into the sun. This also allowed me to engage the "best corner" of the site with a plaza that flowed into that area, drawing people into the site.

It was definitely beneficial to talk to very different user groups with a different end goal in mind and final programmatic decisions will have to balance the two sides.



# STADIUM TYPOLOGY

RESEARCH METHODS UNIVERSITY OF KANSAS



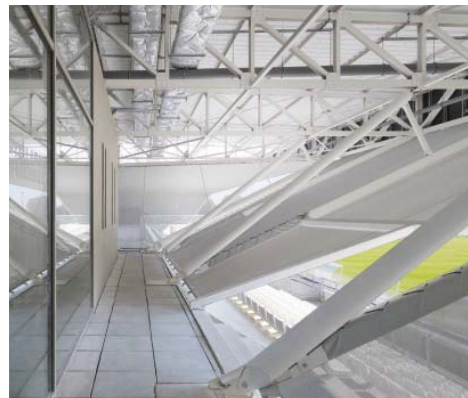
# STADIUM DU LITTORAL

GRANDE SYNTHÉ, FRANCE

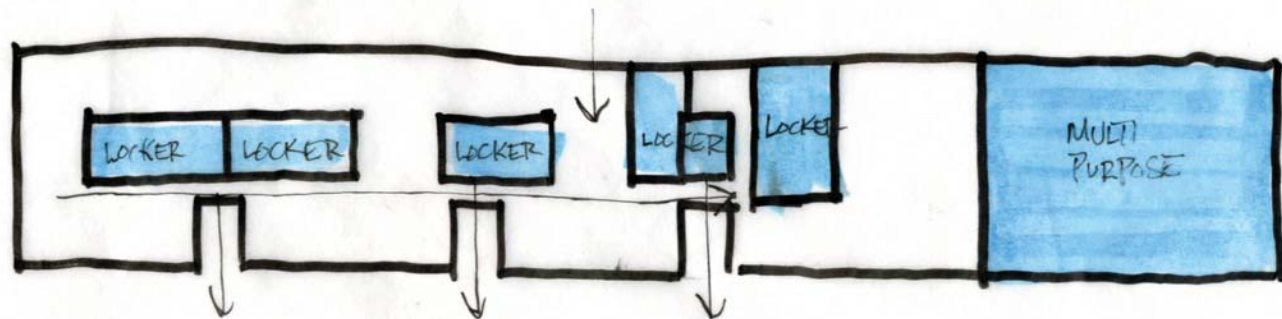
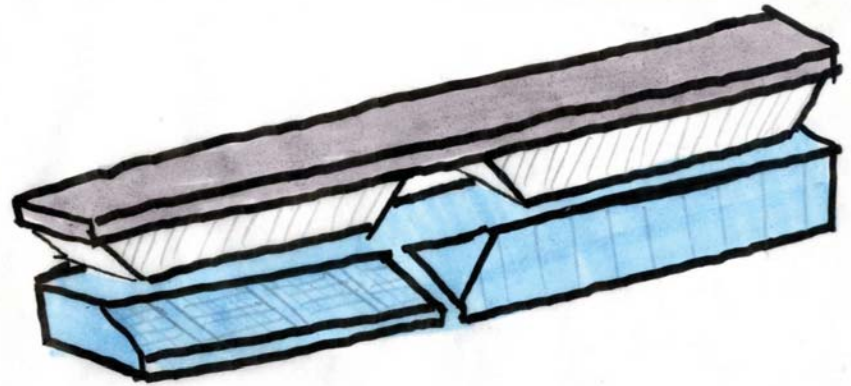
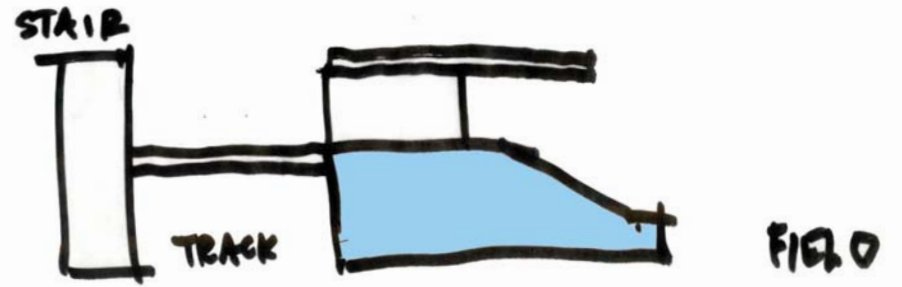


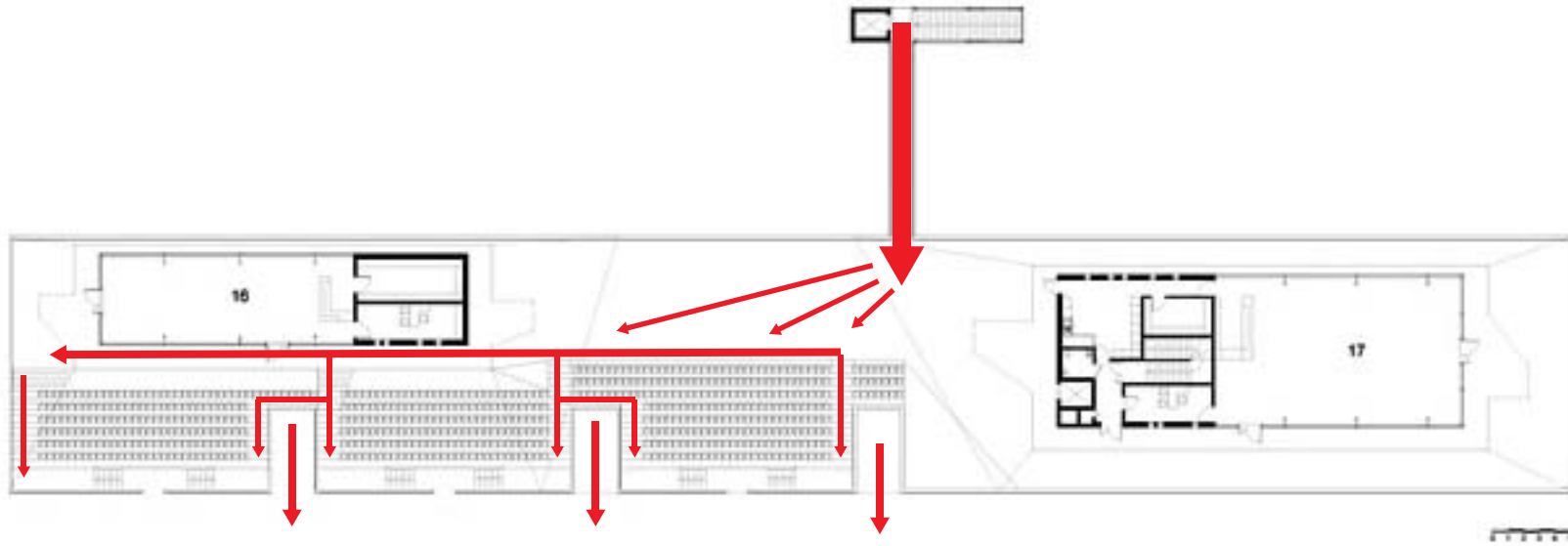
## SUMMARY

Stadium Du Littoral in France is a combined Soccer and Track Facility. The running track surrounds the whole facility because of the size required. A stair tower and bridge over the track connect spectators to the concourse level. This is an innovative solution to the combined facility. A steel truss system is wrapped in fabric, giving the appearance of a solid mass. The locker rooms and event support spaces are located under the seating bowl on the field level.



OLGGA architects





**CORE**  
 Locker rooms  
 Field  
 Stands

**PERIPHERAL**  
 Training Rooms  
 Toilets  
 Showers  
 Offices

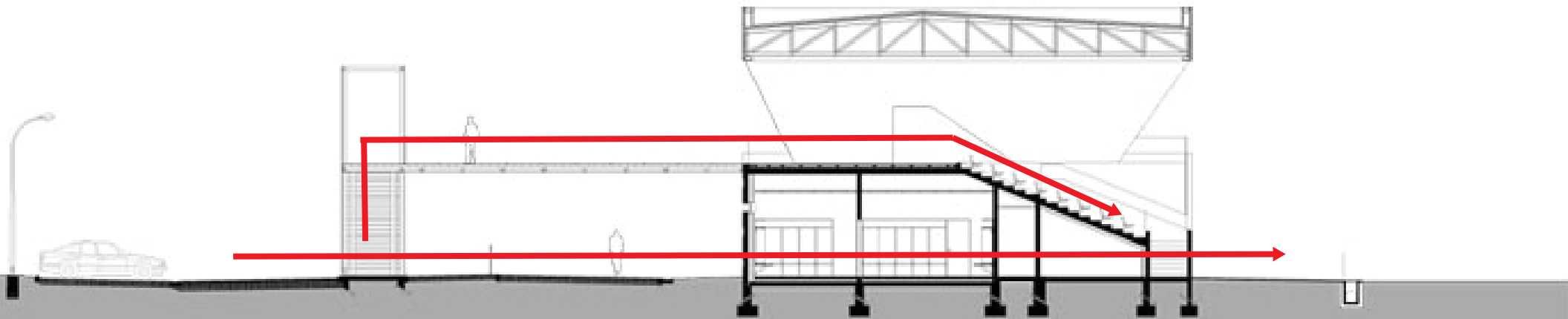
# CIRCULATION CONCOURSE LEVEL



- 1 Local stockage cyclisme.
- 2 Vestiaire rugby 1.
- 3 Vestiaire rugby 2.
- 4 Sauna.
- 5 Salle de musculation.
- 6 Vestiaires arbitres.
- 7 Vestiaires Football 1.
- 8 Vestiaire Football 3.
- 9 Bureau président / trésorier.
- 10 Salle polyvalente.
- 11 Local gardien.
- 12 Local stockage Tir à l'arc.
- 13 Chaufferie.
- 14 Piste cyclisme.
- 15 Terrain d'honneur rugby.
- 16 Club house cyclisme.
- 17 Club house rugby.

- 1 Cycling storage.
- 2 Rugby locker room 1.
- 3 Rugby locker room 2.
- 4 Sauna.
- 5 Fitness center.
- 6 Arbitrator locker room.
- 7 Football locker room 1.
- 8 Football locker room 3.
- 9 Office.
- 10 Multipurpose room.
- 11 Caretaker room.
- 12 Archery storage.
- 13 Technical.
- 14 Cycling ring.
- 15 Honor field for rugby.
- 16 Cycling club house.
- 17 Rugby club house.

# CIRCULATION FIELD LEVEL



CIRCULATION

# LIVESTRONG SPORTING PARK

KANSAS CITY, KS



## SUMMARY

Livestrong Sporting Park is one of the first European Soccer style stadiums built for Major League Soccer. The roof covers a majority of the seating bowl and mimics the upward flight of a kicked ball as it progressively rises. Once again, the locker rooms are located under the seating bowl and much of the event storage is located on the field level, under the seating as well. Livestrong is unique in that a section of stands can be removed for a temporary stage. There are dressing rooms programmed adjacent to the temporary stage. Club level seating and lounges are located on upper levels, ensuring an elevated view of the action. The banquet areas adjacent to the suites are also used on non-gamedays for miscellaneous functions.

# POPULOUS

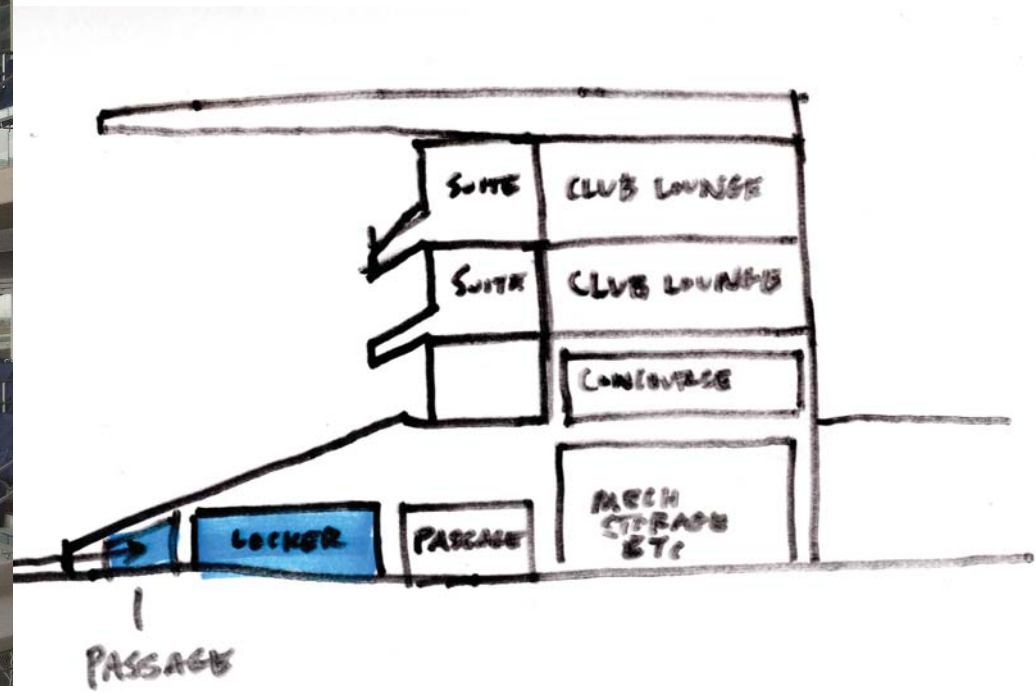
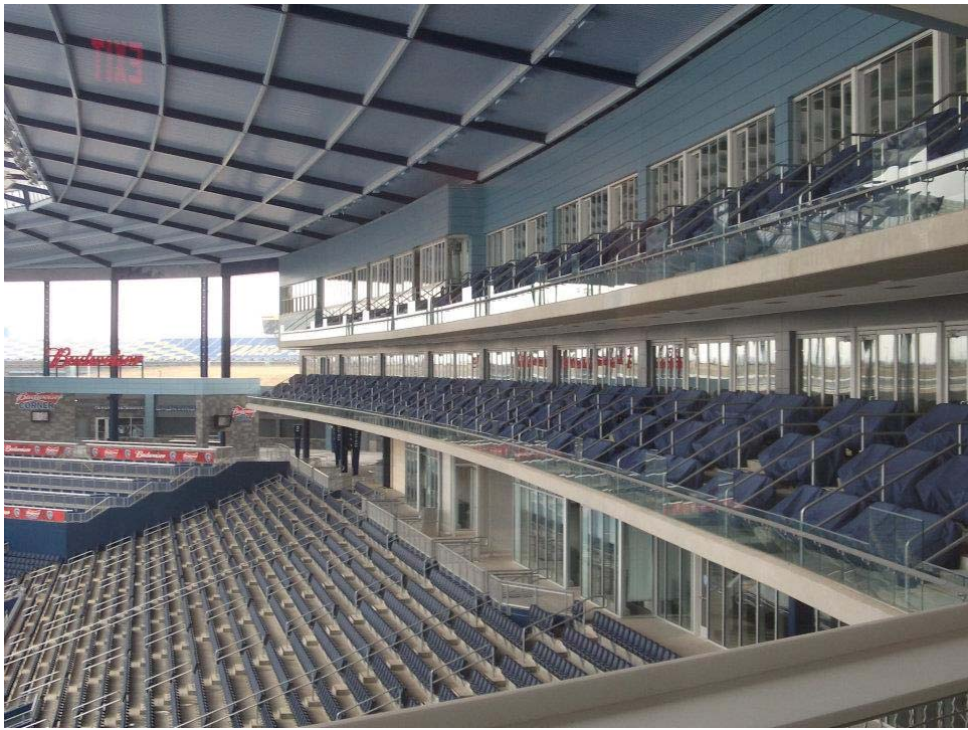
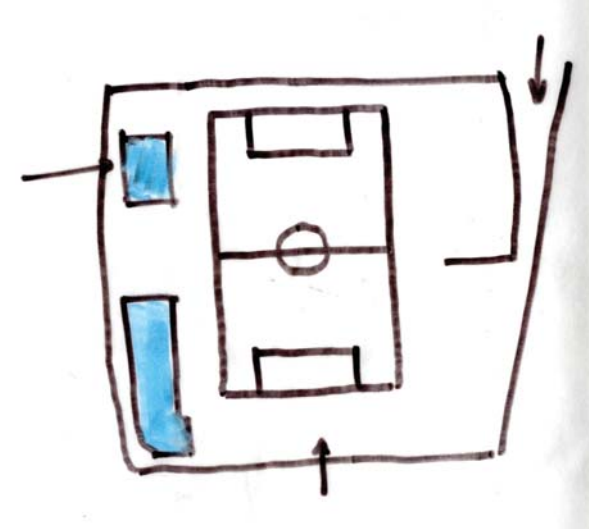


**CORE**

- Locker rooms
- Field
- Stands
- Suites
- Club Lounges

**PERIPHERAL**

- Training Rooms
- Toilets
- Showers
- Offices





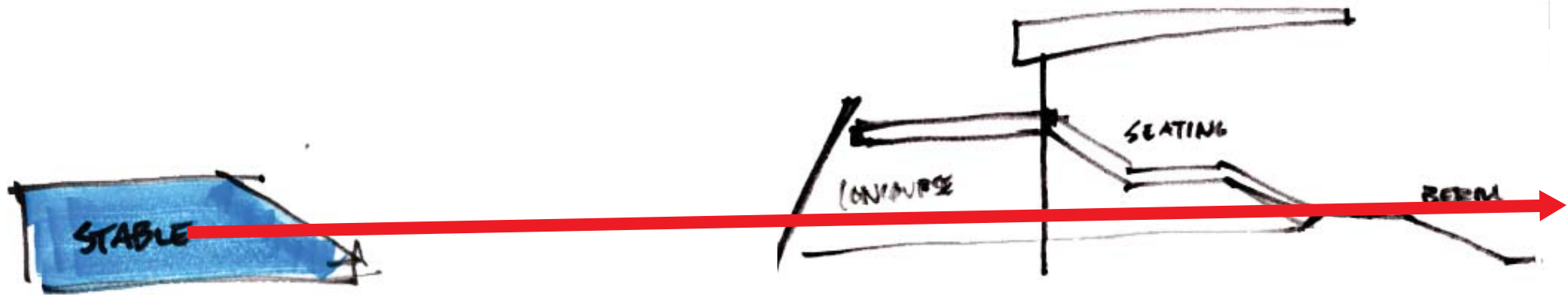
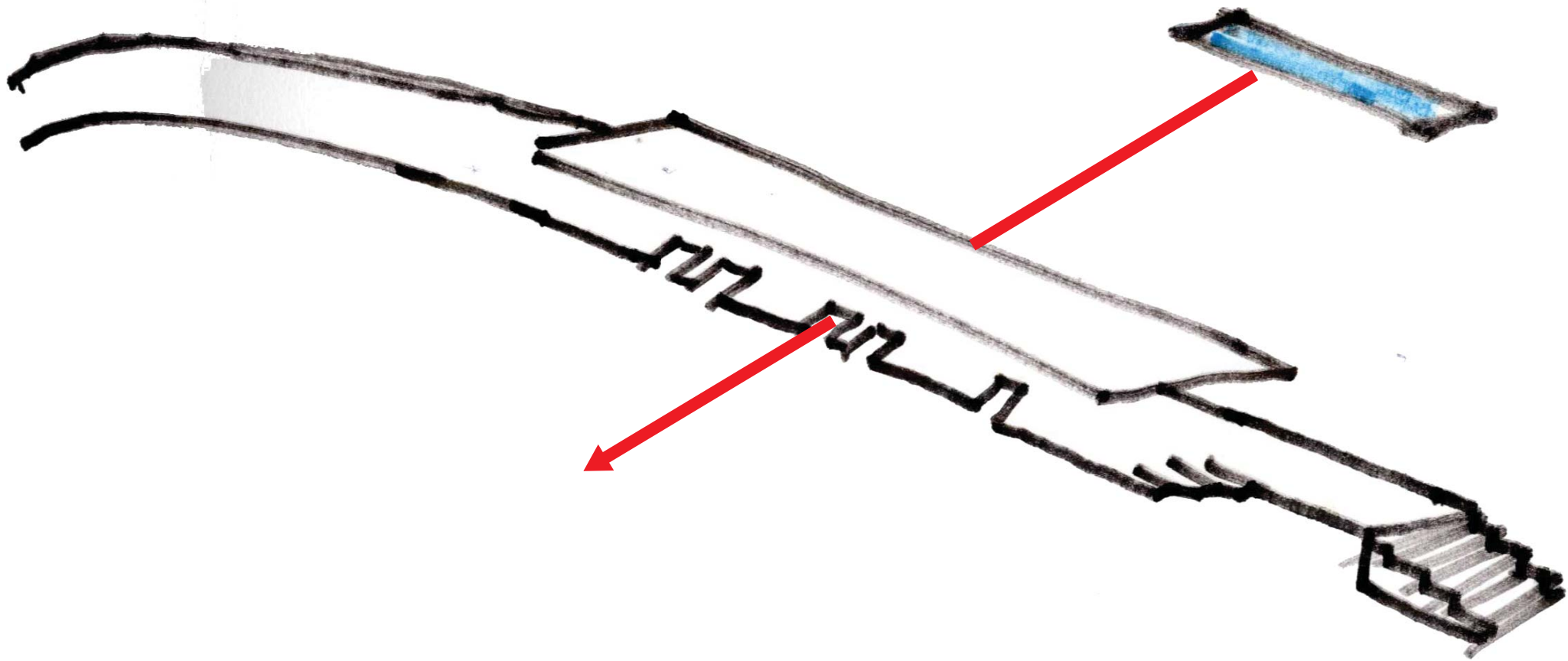




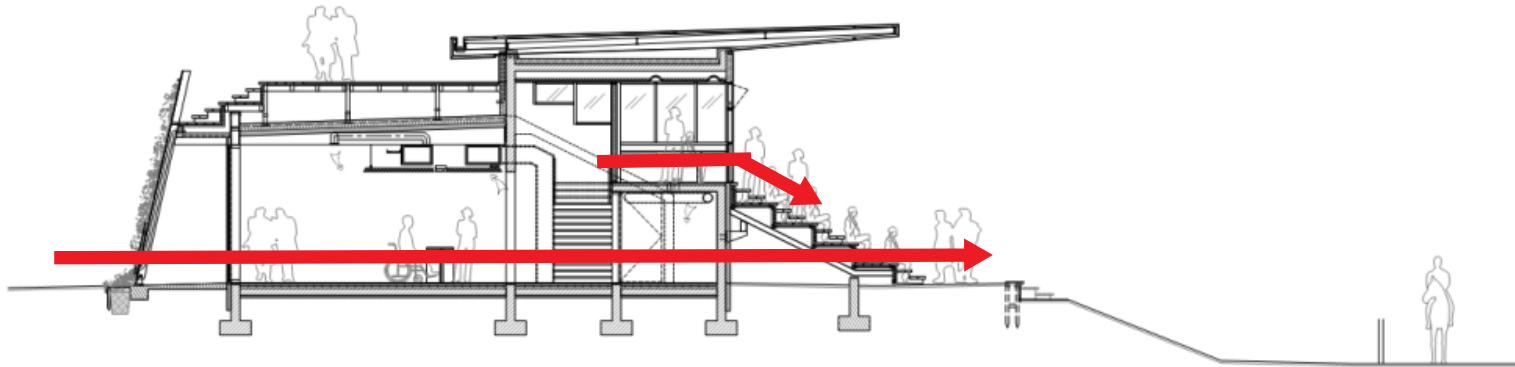
LE GRANDE PARQUET FONTAINEBLEAU, FRANCE



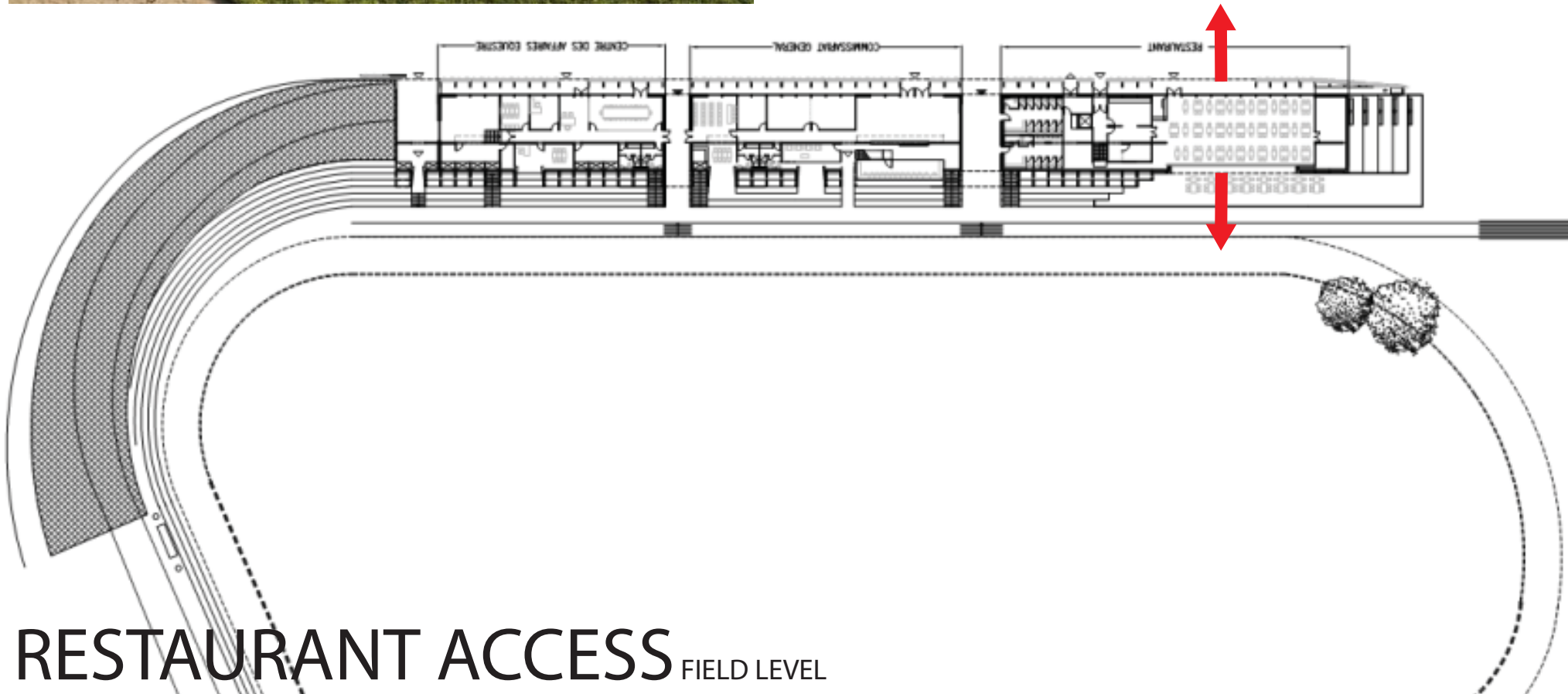
JOLY&LORIET



STABLE TO FIELD



**SPECTATOR CIRCULATION**



**RESTAURANT ACCESS** FIELD LEVEL



**CORE**

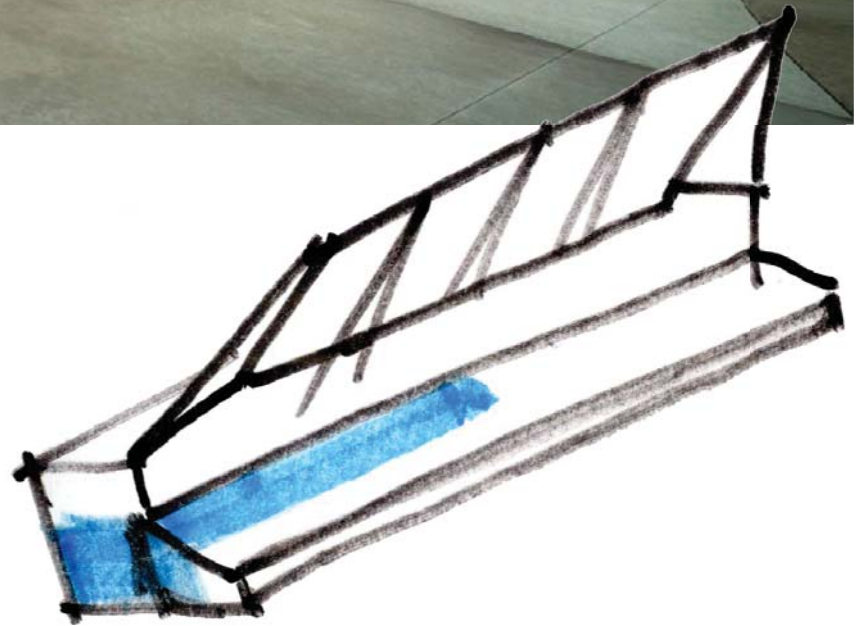
Stables  
Field  
Stands

**PERIPHERAL**

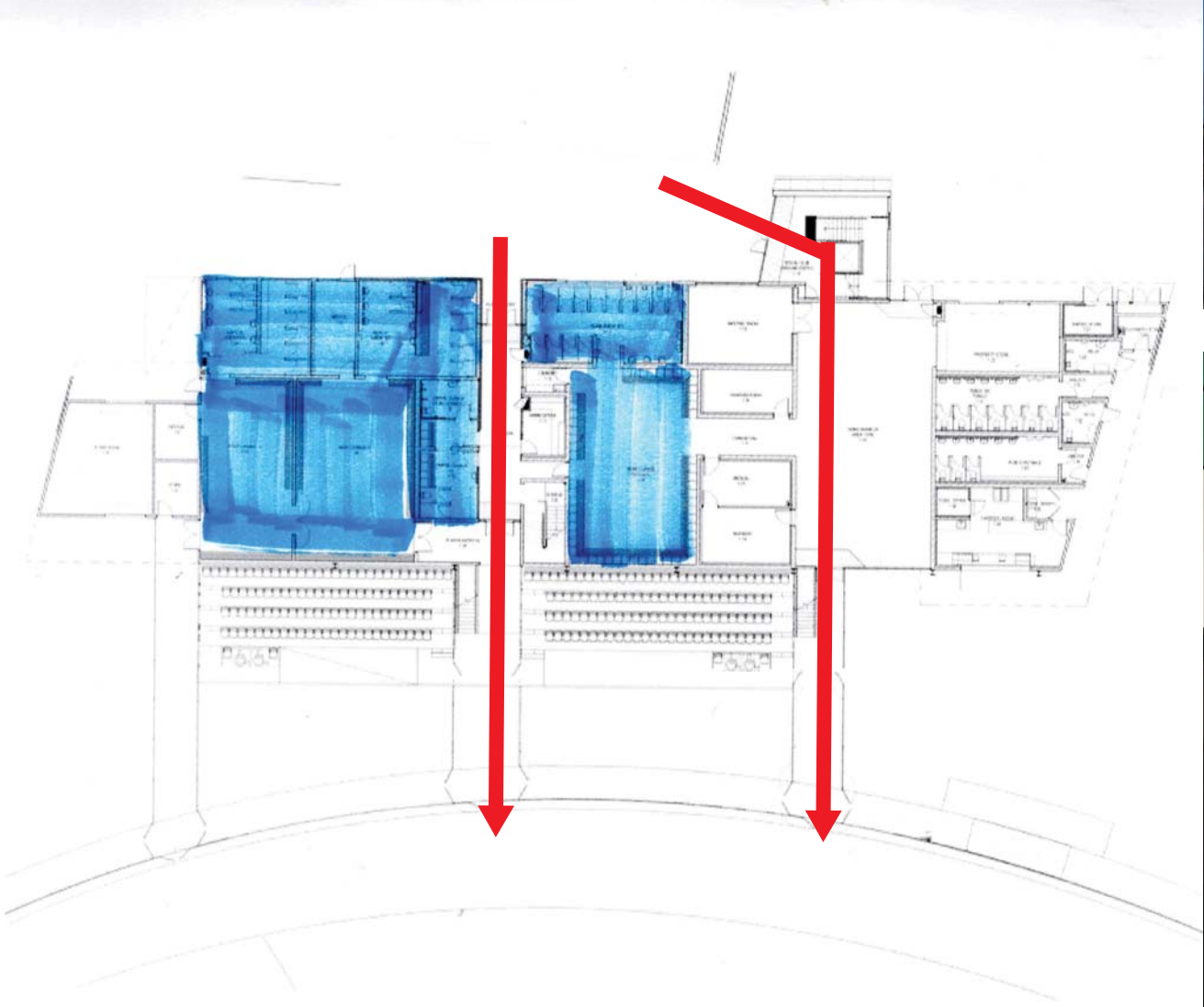
Restaurant  
Training Rooms  
Toilets  
Showers  
Offices



HIGHGATE REC PAVILION MELBOURNE, AUSTRALIA



SUTERS architects



CIRCULATION FIELD LEVEL

## SUMMARY

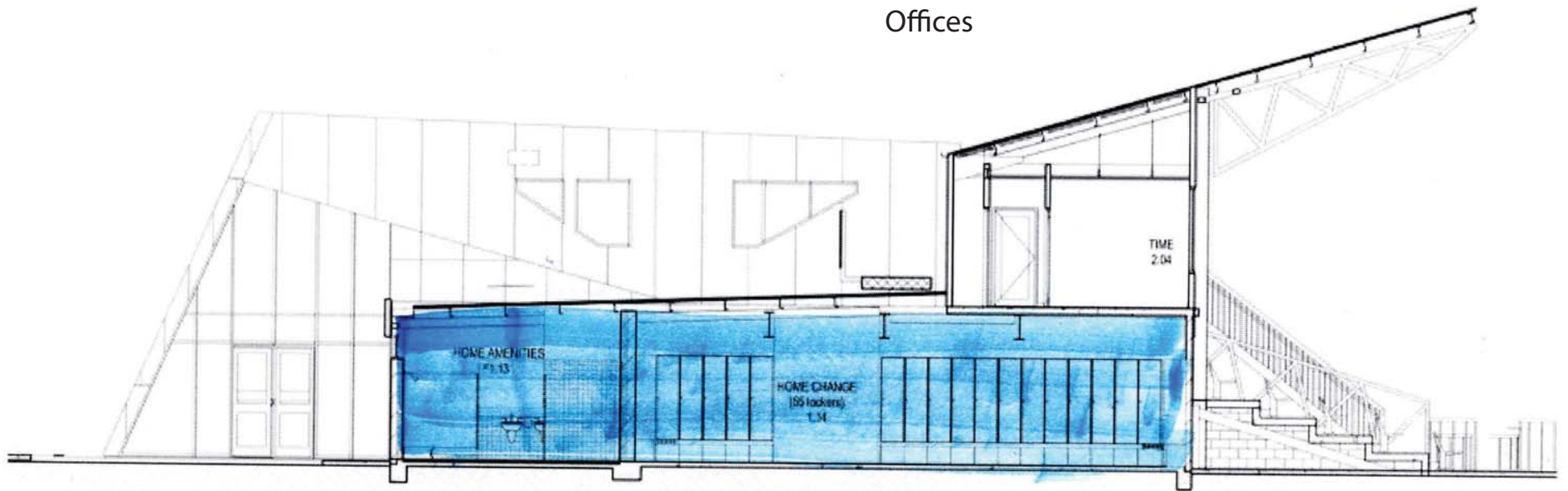
Highgate Recreation Pavilion is a new facility in Melbourne for the Richmond Reserves, a lower league affiliate of a popular Rugby team in Australia. It includes training rooms, locker rooms, massage rooms and medical facilities as well as press, film and administrative offices. Again, the locker rooms find their way to field level with press above.

## CORE

Locker rooms  
Field  
Stands

## PERIPHERAL

Training Rooms  
Toilets  
Showers  
Offices



# SERVICE AND PLAYER CIRCULATION



## REFLECTION

Since the craft of stadium building is thousands of years old, you can assume that a number of programmatic issues have been experimented with and solved over time. In almost every stadium built today, the locker rooms are located on field or court level, under the stands. This is due to a number of reasons.

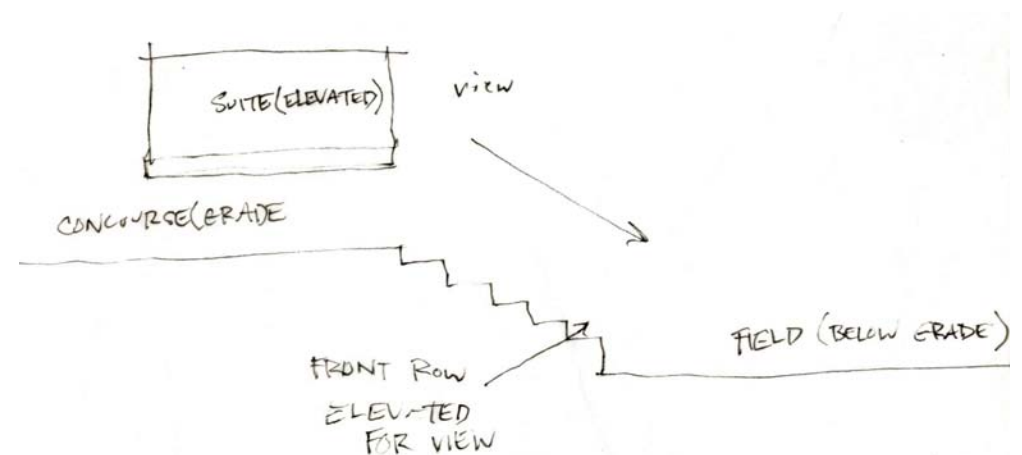
Because of the nature of sport itself, proximity to the locker room while on the field is important. Injuries, halftime meetings, player ejections to name a few circumstances ensure that there will be travel back and forth from field to locker room before, during and after the game. It would also not be advised to send players in cleats or on crutches up and down large flights of stairs. Locker rooms work best on the same floor as the field or court.

Another reason for the typical location of locker rooms is the need for elevated press rooms above. These obviously work the best when they are elevated above the seating bowl. The spectator concourses have a bit more flexibility in location and number than other program areas. It can be placed directly behind the back row of seating or under the seating bowl if the placement of locker rooms allow for that.

Core vs. Peripheral Program differs in some of these facilities because of their size and function. A large stadium like LIVESTRONG that depends on a large quantity of funds to operate, depends greatly on money earned from clubs and suites. A smaller facility like Grande Parquet simply needs a field and a place for spectators to watch the event.

A recent development that smaller scale stadiums have been exploring is the adaptation of the typical seating of a stadium. As opposed to a simple concrete deck, many have been exploring using more natural materials like grass and wood, with atypical seating (large plaza-like seating risers as opposed to chairbacks or bleachers). This provides a sense of freedom and flexibility in where you seat, creating a park-like setting.

## COMMON TYPOLOGY





# SUSTAINABLE DESIGN

RESEARCH METHODS UNIVERSITY OF KANSAS

# NET ZERO ENERGY

The nature of a university encourages new buildings to use less of the available resources. Many American universities are stuck with buildings that are incredibly inefficient, putting the residual responsibility on new construction.

With the advances in wind power and the interest of the Kansas legislature in wind and other renewable energies, this project presents such an opportunity. In 2006, the state of Kansas produced a mere 300 kW of power from wind. In 2010, that number was over 1,000 kW. Also in 2010, the governor of Kansas created the Kansas Interagency Working Group for Wind Energy. With the site situated at the base of Mount Oread, near several paths between multi-story buildings that create intense wind tunnels and the program requirement of stadium lighting at the corners of the field, there is a chance to integrate the systems. This has previously been completed at Fleming Stadium in Roanoke, VA with wind turbines supported by the same towers that support the stadium lighting. The lights begin producing electricity at 8mph winds with the power going directly to the stadium's power supply. If the stadium isn't using electricity at that point in time, then the power produced is funneled to the nearby high school for use.

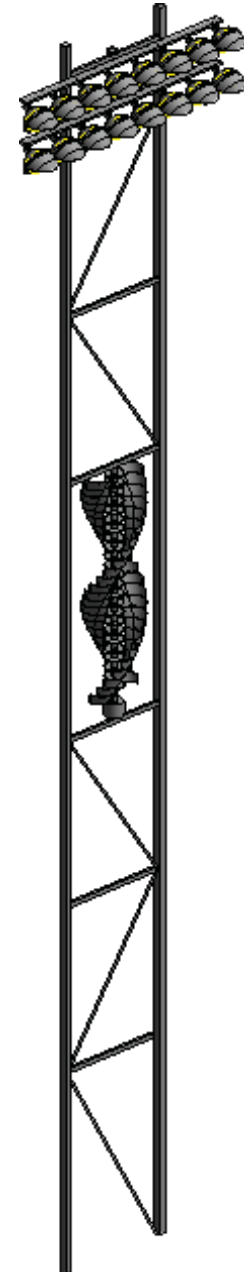
In addition to using wind power, there is a green roof at on the south end of the proposed stadium that would be optimum for photovoltaic panels to further reduce the energy consumption of the utilities on campus. The location would provide ample amounts of daylight consumption.

*100% energy needs must be supplied by on-site renewable energy on a net annual basis.*

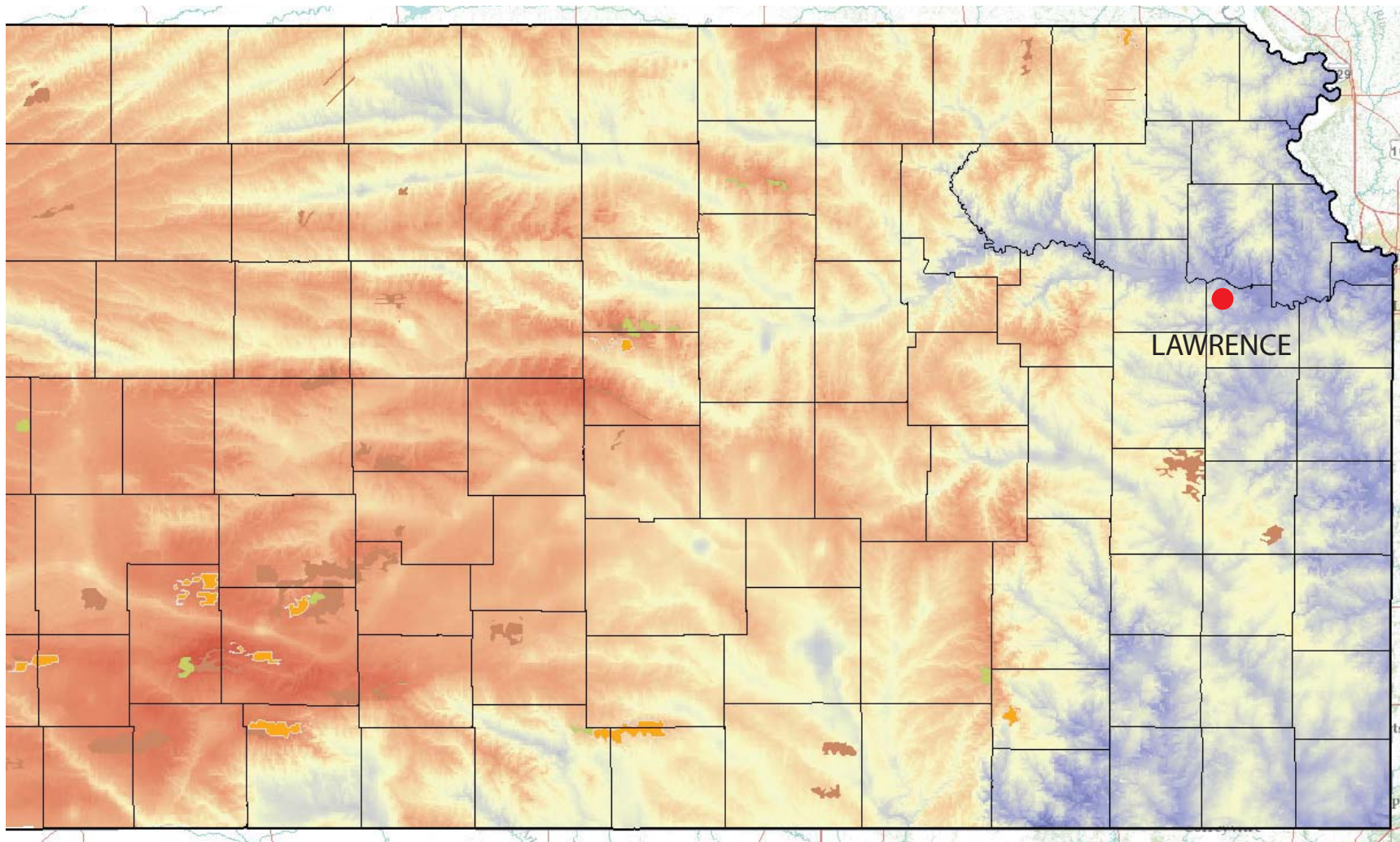


FLEMING STADIUM LIGHT TURBINES

NORTH WINDS CAPTURED AT LIGHT STANDARD LOCATIONS



PROPOSED LIGHT TURBINES



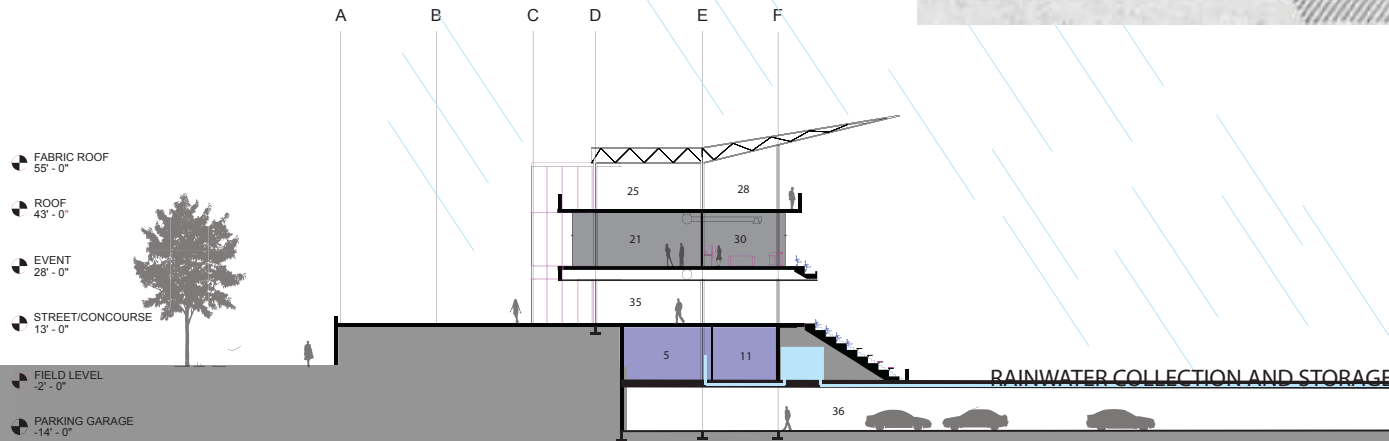
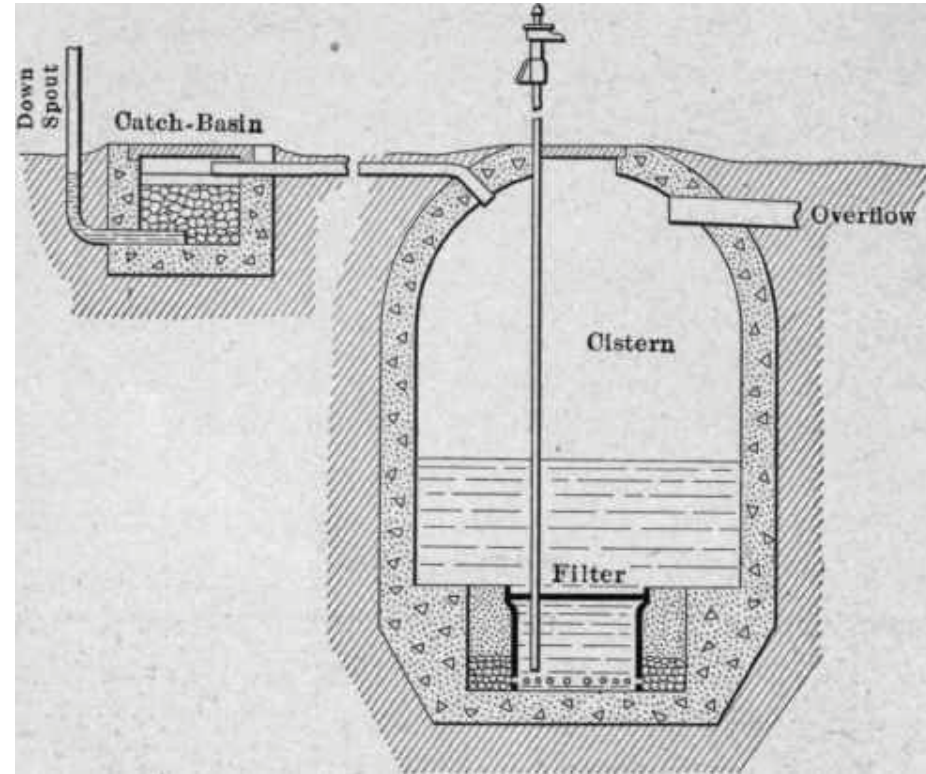
### EXISTING WIND FARMS IN KANSAS

Most of the Kansas wind farms are located in areas with higher average winds than Lawrence, but with the wind tunnel effect coming off the hill through the buildings, it should be enough to be effective because of location.

# NET ZERO WATER USE

While the ideas proposed would not bring the facility to net zero status, there would still be a significant reduction. Field and berm irrigation and toilet flushes would be carried out using potable water retrieved using water collection methods. The natural grass field provides a huge space on the site in which to collect water, which will be channeled into a cistern under the stands, immediately west of the field. The irrigation system could potentially be a closed loop system that would continuously recycle water used for field irrigation. Rain water will also be collected on the green roof in order to water it. The idea of sports field water collection has been pitched for an African soccer field in the past that would distribute water to those less fortunate. It has also been used in the 2008 Beijing Olympics and a new stadium in Melbourne, Australia.

The grass seating berms around the field and in the plaza would also be capable of collecting rainwater in the case that the soccer field would be converted to an artificial surface, which would be rubber based. Much of the large canopy roof runoff would be collected in the plaza area in either grass sitting areas or pervious pavers.



*100% occupants' water use must come from captured precipitation or closed loop water systems that account for downstream ecosystem impacts*

Much of the building would use a smooth-face limestone quarried from the St. Mary, Kansas area, which is a light-colored stone similar to Indiana Limestone. This would meet LEED standards by retrieving local materials for transport and use within 500 miles. The 52 miles that delivery trucks would have to travel is substantially under the 500 miles required by LEED. The metal panels that make up the roof would preferably be recycled corrugated panels to further enforce the idea of appropriate material sourcing for this project and to cut down on costs for the university. Aluminum was explored, but corrugated metal was chosen because it holds up well in harsh elements such as snow and high winds, which is imperative in Kansas' climate. The aluminum is also said to dent in hail much easier.



*the project must incorporate place-based solutions and contribute to the expansion of a regional economy rooted in sustainable practices, products and services*

# RIGHTS TO NATURE

Part of my reasoning for locating the stadium on the west side of the site is the distance from the neighboring homes to the southeast. The idea is to keep the possibly 3,000 people some distance away from the homes, but to still feel like the green spaces left on the site still belong to those neighbors. The benefit of having improved greenspace, a playing field that they are able to use in the off-season, and a café near their home will hopefully outweigh the possible complaints of game night light pollution and noise.

Placing the building on the west side of the site also allows the offices on the north façade of Watkins Memorial Health Center to continue to have pleasant north light. Trash services are hidden from view and wind by both part of the building and a seating berm, to prevent anyone on or near the site to have to see or smell trash.



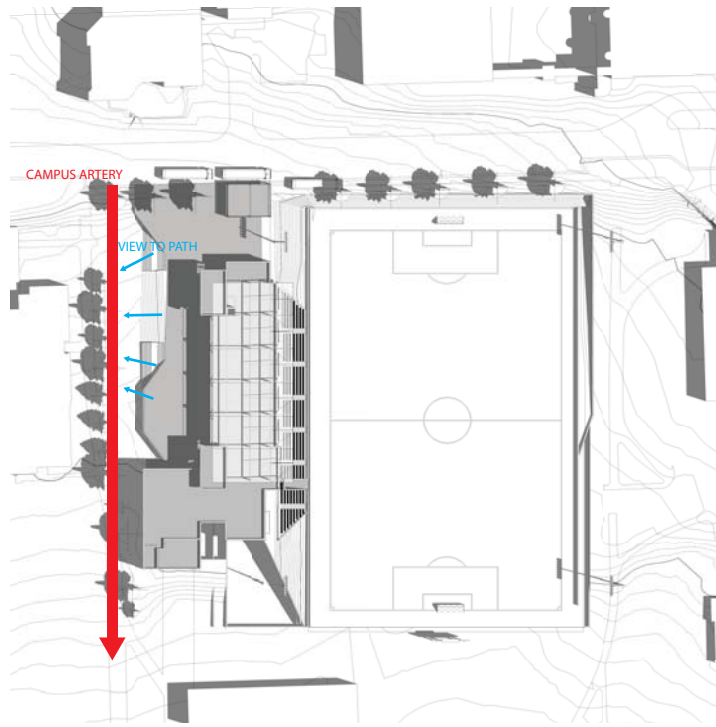
*the project may not block access to, nor diminish the quality of, fresh air, sunlight and natural waterways for any member of society or adjacent developments*



# DESIGN HYPOTHESIS AND EVIDENCE



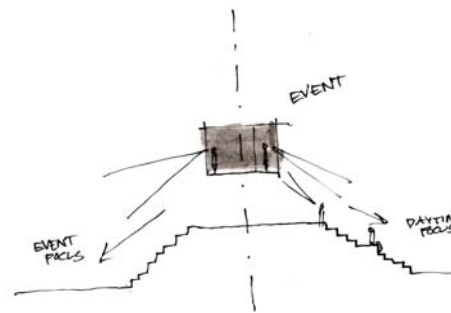
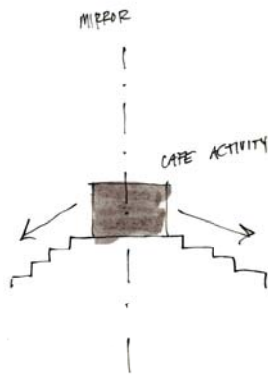
# HYPOTHESIS 01



**The plaza on the “back” side of the stadium would be a popular space used for people watching.**

The location of the plaza in proximity to an existing highly traveled campus artery would hopefully draw pedestrians into the space. It was important to me that this project address and benefit from the existing context by locating the plaza next to the most successful part of the site. People would be presented with a space in which to watch people travel this path, and a small park like setting to enjoy. In a way, the building and plaza would serve as a “reversible stadium.” During the event, the stadium would be evident as a typical stadium with raised fixed seating and grass berms that provide ample views of the field. When the event concludes, the focus moves to the existing pathway as people circulate through campus. This mirror image is used in hopes to maintain that the space will be used throughout the year when soccer is not in season and during the day before games. The grass berms are present on both sides, and the stairs on the plaza side are wide enough to allow people to both sit and also allow others to move through. This is concept is similar to riser seating on the stadium side that both allows people to sit and others to move up and down to their seats.

While the northwest corner of the site seems to be an active location, the rest of the site is underused, even though it is a much needed green field. The part of campus that sits on south of Mount Oread is as commuter oriented as a pedestrian location could be. People walk to their classes in the nearby halls, and either leave campus entirely or go up the hill to experience more successful social spaces. Many stadiums today are built to draw people into derelict or underutilized spaces. This project is no different and attempts to create a campus magnet similar to Wescoe Beach where people come to gather and socialize. This would be the only space south of Mount Oread that this would occur.



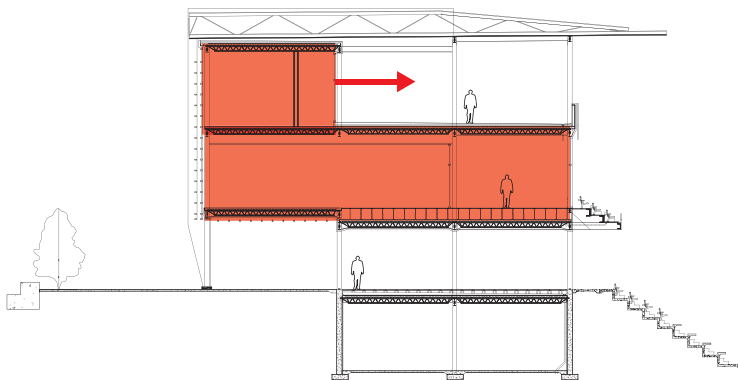


**This stadium would prove to be more useful than stadiums of the past in regards to frequency of use.**

Being constructed by a University, it was important to me to attempt to design this facility in a way that would make it attractive to multiple entities for different events throughout the year. This would ensure that the building isn't underutilized with banquets, dances, meetings, and parties occurring year-round. This would not only make the building more active and lively, it would present an opportunity for the athletic department to maximize revenue. Event spaces and adjoining classrooms could be rented out for a fee. In order to ensure that it would be desirable for these sorts of events, I designed these spaces with high ceilings, large-span bays and glass curtain walls with playful inlays of colored glass that makes the spaces interesting to be in. This contrasts with the traditional typology of a stadium that sits empty on non-gamedays, but fits with the evolving typology of contemporary stadiums that serve other uses other than sport.

This idea also responds to the campus context by engaging the existing campus and student body, bringing the building's surroundings into the site and integrating the site into the greater campus as opposed to remaining a dead zone.

## RENTABLE SPACE



In relation to the typology of stadiums, there didn't seem to be much opportunity to stray away from traditional notions of locker rooms buried beneath the seats with elevated suites. Other options were explored, but any drastic moves, hindered the usefulness of these spaces. Other spaces, such as the banquet hall, classrooms, offices and support spaces were able to be explored with more fluidity and creativity in regards to location.

# HYPOTHESIS 03



## **A new stadium with lights will significantly increase attendance for KU Soccer.**

The KU Women's Soccer team currently averages around 400 spectators per game. The program calls for around 300-1000 permanent seats with overflow room up to 3,000 spectators. I have designed the building with 1000 seats because of an anticipated increase in demand for tickets. The existing field is an underwhelming set of metal bleachers with no artificial lighting. The games are played in the early afternoon to avoid the games running into darkness. With a game played at 3:00, there are still many students in classes or daytime obligations and adults are still at work. Children are out of school, but without an adult to attend the game with. With the addition of artificial lights, games will be played in the evenings. This allows parents to get off work and bring their children to games in the evenings, and most everyone will be finished with class. A late start is a much more convenient time for a majority of those that would show up to a soccer game, making the increase in seats reasonable. I also assumed that there would simply be an increase in attendance due to curiosity surrounding a new stadium and also hosting games in a facility better equipped to entertain a large amount of people



# HYPOTHESIS 04

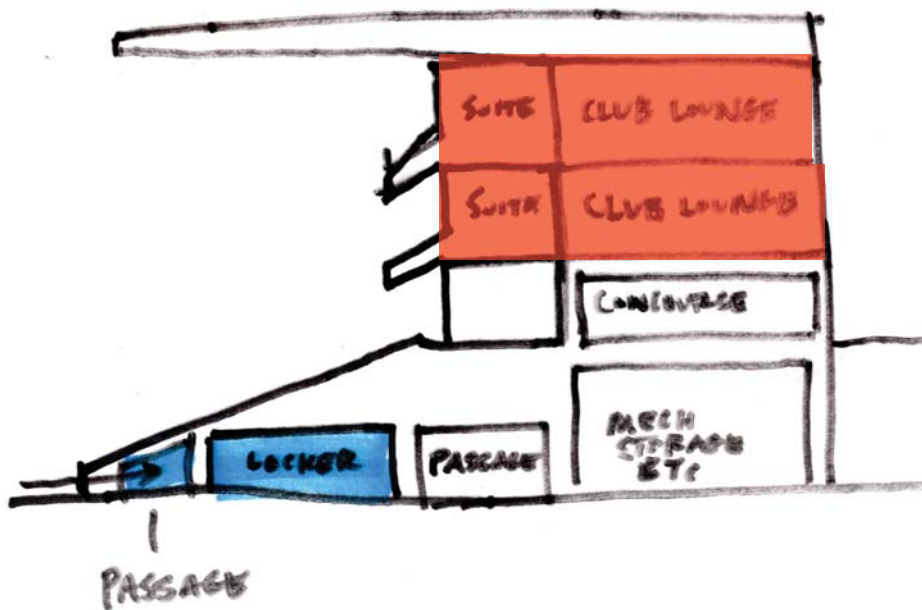


**Placing the large event space behind the suites will create a social gathering community . Its' prominence above the plaza will create a sense of importance for those donating thousands of dollars for a suite.**

During games, the large event space will be used for suite holders and donors to gather and interact. Food will be catered or cooked to be served in this space. Livestrong Sporting Park is a successful precedent to this concept. During games, fans populate this area. When there aren't games, the suites are locked and the space is rented out for events like banquets or weddings. According to the tour guide, it is rented almost every day, providing a substantial amount of money for the club and allowing the community to use the space. This will be a tremendous asset for the KU athletic department. It also increases exposure that can't be matched with a commercial or billboard. Users get to experience the design first hand.

Donors are given a separate entrance and ascend a staircase into a large feature event space with a view out over the plaza and lower walkway.

The challenge with this space was dealing with west sunlight. The nature of a soccer game lends itself to having coaches and players to prefer a North-South field orientation. Having played sports, I realize how much of an inconvenience the sun can be when it is in the wrong place. It can completely effect the outcome of the game. I decided that I would do my best to orient the field North-South. The stands and suites where then decided to be placed on the west side in order to protect suites, press boxes and television cameras from intrusive sunlight. This left the transparent event space as a west facing room. In order to make the building as efficient as possible, Vertical louvers block some of the sun in addition to a gradient of opaque and tinted blue panels that provide more solar protection.





# SIMULATING BUILDING ENVELOPE

# SUN EXPOSURE summer (EAST SIDE)



summer solstice 9am



summer solstice 12pm



summer solstice 3pm

It is essential that the east side (club suites, press box, coaching suites, television cameras) avoid direct sunlight because of glare. Those who donate thousands of dollars for the suites, should at the very least be able to see the game. This was much of the reason for the chosen orientation. The sun hits this part of the building early in the morning, but this is acceptable because most games are played in the afternoon or early in the evening. The roof blocks the sun in the early afternoon hours, making these seats useful from around noon, on. Starting around 3 pm, the roof also blocks the whole fixed seating stand. This will be helpful in August and September games when the temperature is high.

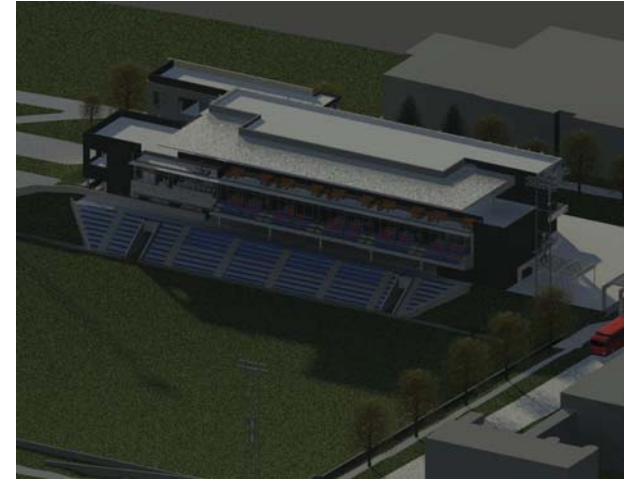
# SUN EXPOSURE winter (EAST SIDE)



winter solstice 9am



winter solstice 12pm



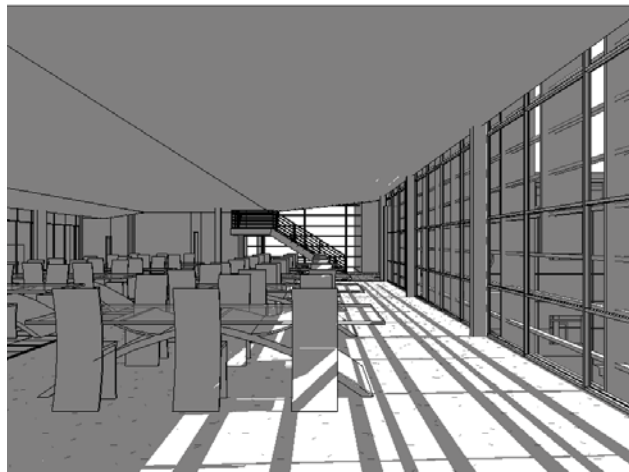
winter solstice 3pm

In the winter because of the low sun, much of the stands are exposed to sunlight later on into the day, which will be useful towards the end of the season in November when the weather is colder. The east side performed just as I had hoped for both the winter and summer months. and there is little that I would change.

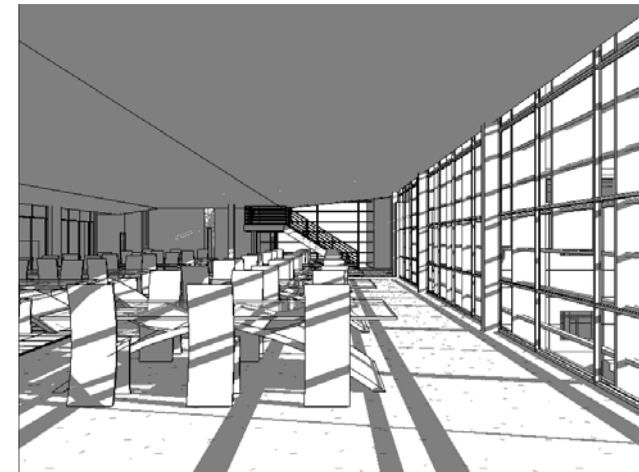
# SUN EXPOSURE summer (EVENT)



summer solstice 2pm



summer solstice 4pm



summer solstice 6pm

With the suites facing east, and a North-South field, as requested by the coach, this left the event space to be placed behind the suites on the west side. I wanted the event space to be the showcase element of the plaza on the west side and it seemed beneficial to place the event space adjacent to the suites to serve as a sort of community between suite users. The west placement, presented a problem with sun exposure. I included large vertical louvers with smaller horizontal louvers spanning between, emphasizing the linearity of the event space. After this investigation, it would appear that larger or more densely spaced vertical louvers would be necessary. During the summer months, there is quite a bit of sunlight that enters the space between 2pm and 7pm, adding radiant heat that will have to be conditioned.





# SUN EXPOSURE winter (EVENT)



winter solstice 2pm



winter solstice 4pm



winter solstice 6pm

I would prefer that there be more natural light in the event space during the winter months in order to passively heat it, even for a few hours. In order to do this, I think the angle of some louvers would have to be tweaked to allow more light in the winter and less in the summer. The final results of the west side are not satisfactory and would have to be changed.

For the most part, the research assignments were very beneficial and were assigned at just the right time to compliment the 609 studio.

### *Interpreting the Place Type*

This research assignment helped me think about what the stadium means to a community, now and throughout history and how its use is moving forward to a more useable and beneficial space for all. Using specific precedents used in studio, I believe it helped me go beyond the basic precedent study and look at the impact of the place type.

### *Place Typology*

Looking deeper into the precedents helped to understand how different sizes and stadium uses are handled.

### *User Needs*

This assignment involved direct observation at similar facilities and the actual site, and applying how the two would converge. It was also helpful to speak directly with some of the potential users and getting direct feedback from them.

### *Sustainable Design Principles*

This project allowed me to think about a new way to approach sustainability in stadiums. The field allowed for a large surface that could collect rainwater to be used in toilets and for laundry. The mass amount of electricity used by the stadium lighting could be offset by using wind turbines to power them. This was something that I didn't think about until this research assignment that was applied to my final design.

### *Design Hypothesis*

Thinking about the hypotheses that I had initially derived from the project and how they had changed throughout the project and if they would prove successful was an interesting assignment in order to gauge the success of certain aspects of the project.

### *Daylight Simulation*

The daylight simulation directly affected the amount of vertical louvers on the west side curtain wall. After the study, I discovered that more louvers were needed in order to provide sufficient solar protection.

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***Interview with Mark Francis (KU Women's Soccer Head Coach)***

**Is there a directional field orientation that is necessary?**

"The field should be North-South in orientation. It keeps the sun out of the eyes of the goalie."

**How would this facility affect recruiting?**

"A new facility would provide a 'wow' factor to recruits that would instantly help with recruiting. The current field has temporary bleachers and makes it difficult to impress recruits. The new stands and building would be the 'wow' factor."

**Are there any Big XII facilities that would be used as a precedent for the new facility?**

"Oklahoma has a similar scale to what we would be building. We came away very impressed with what Oklahoma has."

**Describe your ideal facility as far as setup and basic amenities.**

"Simply a grass field with lights. We want some permanent seating partially covered and a grass seating berm for overflow crowds and a sense of enclosure."

**Describe a typical day in the life of your student-athletes.**

"Most have class at 8 and are done by 1. In season they would come to the facility at 2 to get taped and dressed for practice at 3. Practice is over around 5:30. They would then shower and eat dinner. Freshmen have mandatory study hours and 6 hours of tutoring and upper classmen would study and do their homework either in the facility or elsewhere on their own. Tutoring and academic support also occur in the evening."

**How many locker rooms are needed?**

"It would be preferred to have 2 auxiliary locker rooms in addition to the home and visitor locker rooms that way the girls can always leave stuff in the locker room. With the other events that would be happening on the site, there would be little disturbance to the life of the girls. This would also allow them to have their own 'sacred' space in the facility."

**Do you prefer to have your office within close proximity to the locker rooms?**

"It needs to be within a reasonable distance so they can easily come to the office for a meeting, but sometimes it is nice to have some separation. Having it close but on another floor would be ideal."

**Where do the girls gather and socialize?**

"They have a lounge connected to the locker room where they hang out when they're on campus."

***Interview with KU facilities (Brad and J.D)***

**Is there a directional field orientation that is necessary?**

“The current field is North-South, but that orientation isn’t necessary.”

**Is a single location ticket booth preferred?**

“Temporary ticket booths can be located in multiple access points. Increasing the number of ticket booths however, increases the amount of event staff needed.”

**Can the athletic department look to methods other than simple ticketing for income in order to keep the site porous?**

“It could be considered but in reality it would probably be gated off.”

**Can ticket prices and seating types vary in a stadium this size?**

“Yes. There are a number of different types that could be implemented. Berm, Chairback, Bleachers, Club, etc. “

**What are the behind the scene event spaces that need street access?**

“Ambulance, Television trailers, and catering vans need to be as close to the facility as possible with easy access to a main street. The visiting team bus should also be able to be parked close to the players’ entry.”

**Is underground parking needed?**

“No. Because most games will now be played at night because of the lights, existing parking lots will open up at 5.”

**What are important sightline considerations?**

“Sightlines to the scoreboard/videoboard must be considered for all spectators. Rake of the seating must ensure that you can see over the head of the person in front of you.”

**Would this facility be an artificial surface or natural grass?**

“Mark (head coach) would prefer a natural grass surface but facilities would prefer an artificial surface in order to broaden the range of use. One thing that has to be considered is how the building shades the field from the sun and how it affects the growth of grass on the field.”

**What choice would be preferred if there came to be a surplus of funds at the end of construction out of: A café, auxiliary locker rooms, a large canopy roof, or additional lounges?**

“A canopy roof over some or all of the spectators.”

**How many event staff workers would be needed for a 3,000 seat soccer stadium on game day?**

“10-15 on staff.”

**Are there any spaces not included in the program that would be beneficial?**

“A permanent facility to sell merchandise.”

**Would everyday students be able to use the classroom spaces?**

“No. Most likely it would be reserved for student athletes of all sports.”

**Are there any sustainable features that would be realistically explored for use in the stadium, if any?**

“Water Collection.”

**How is recycling handled?**

“Currently it is taken to another location after games are over.”