Because of the immense operational costs of "multi-purpose" stadiums, the goal is to keep "dark time" to a minimum and keep a steady schedule of events going at all times.

- Professional baseball
- Professional basketball
- Professional football
- Professional ice hockey
- Soccer
- Track and field
- Collegiate athletics
- High school tournaments
- Boxing and wrestling events
- Music concerts
- Other stage events
- Exhibitions
- Trade shows
- National conventions
- Circus
- Rodeo
- Auto shows
- Truck and tractor pulls
Spectator Facilities

Seating:
- 60,000 seats (360,000 s.f.)
- minimum tread width (31")
- riser heights (6" min., 80" max.)
- maximum seats per row (24)
- minimum aisle width (44")
- minimum seat width (19")
- wheelchair seating area for 60
- plan configurations
- site lines
- riser mounted seats/benches

Public Toilets: (17,750 s.f.)
- Toilet rooms will be provided for men and women at every concourse level. The ratio of spectators to fixtures is based on 60% male and 40% female attendance.
- Lavatories (1 per 300 men) (1 per 200 women) 120 m / 120 w
- Waterclosets (1 per 500 men) (1 per 100 women) 72 m / 240 w
- Urinals (1 per 125 men) 388

Concession Stands: (16,250 s.f.)
- Concession stands will be provided at all concourse levels.
- 6 lineal feet of service counter per 400 spectators (900 l.f.)
- 650 s.f. per stand
- 36 l.f. of counter per stand (85 stands)
Vendors Commissaries: (5,500 s.f.)
- 1 vendor per 200 spectators
- These facilities will be located on all concourse levels. They will contain equipment for food handling and storage.

Circulation spaces: (45,000 s.f.)
- Admissions control
  - 1 turnstile for each 1500 seats (40)
  - There will be a minimum of 4 entrance gates to the stadium for the general public. The entrance level will be at the \( \frac{1}{2} \) to \( \frac{3}{4} \) level of the vertical height of the stadium.
- Public areas
  - Concourse levels
  - Vertical circulation
  - Drinking fountains - 1 per 1000 seats (60)
  - Telephones - 1 per 1000 seats (60)
  - 1 passenger elevator for handicapped persons

Graphics
- Signage will be coordinated to identify entrances, concourse levels, seating sections, toilet rooms, concessions, first aid, security, and other public facilities.
- Opportunities for color, banners, flags, and canopies will be provided to enhance the festive spirit of the stadium.
Spectator Facilities

Private Suites · (400 s.f. / suite)
· Plush entertainment areas with private viewing. Suites are leased on a yearly basis and generate high revenues.
· Seating for 20 - 25 per suite
· Reception area, bar, restroom, closed-circuit TV
· All suites will be located at the club level.

Security · (1,000 s.f.)
· Office facilities for the permanent stadium security force as well as a command post for the game day security force.
· Equipped with 2 small offices, 2 small temporary detention rooms, and a toilet room.

First Aid · (2,000 s.f.)
· Office facilities for emergency medical treatment.
· Equipped with offices for a physician and a nurse, a cot room for six patients, waiting room, toilet room, and storage room.

Ticket Facilities · (2,500 s.f.)
· Ticket booths for event ticket sales will be distributed around the entry level plaza. (10 windows)
· Advanced ticket sales will occur at 4 windows from the ticket office.
Press Box (5,000 s.f.)

- Press box facilities accommodating the news media will be provided and appropriately located and oriented within the stadium. The press box for baseball will be behind homeplate and the press box for football will be at the 50 yard line. These will serve other events as well.

- Working press (2,000 s.f.)
  - stations for approximately 100 writers

- TV broadcasting booth (320 s.f.)
  - broadcaster's counter and TV camera platform

- Broadcasting booths (120 s.f. each) 3 required

- Coaches (100 s.f. each) 2 required
  - spaces for home and visiting team coaches with writing desks and phone connections to player benches.

- Photographers (200 s.f.)

- Scoreboard operator (200 s.f.)
  - space for a writing counter and control panels

- Public address announcer (100 s.f.)
  - this space will contain all controls required for a public address system serving the entire stadium.

- Workroom (200 s.f.)
  - space for statisticians document reproduction and telecopy equipment.

- Press Club (2,000 s.f.)
  - Facility for press personnel will contain dining for 50 persons and food service area. It will also contain toilet facilities for male and female press members.
Press Facilities

Darkrooms: (200 s.f. each) 2 required
- Two photo darkrooms will be located at field level.

Player Interview Rooms: (300 s.f. each) 4 required
- Spaces for TV broadcast interviews adjacent to the home and visitors' locker rooms.

Owner's Box: (600 s.f.)
- To be adjacent to the press box. For use by the stadium tenant and guests. Seating for approximately 25 people.

General Manager's Box: (300 s.f.)
- To be adjacent to the press box. For use by the stadium tenant and guests. Seating for 12 people.

VIP Box: (300 s.f.)
- To be adjacent to the press box. For use by the stadium guests. Seating for 12 people.
All team facilities will be located at the playing field level and have direct access to the playing field. A passenger elevator will provide direct access to the Press Box. A service drive for access by vehicles will be provided to the team locker facilities.

Home team locker room: (8,000 s.f.) 2 required
- Locker room containing 50 dressing stalls (3,500 s.f.)
- Shower and toilet room (1,000 s.f.)
  - 12 shower heads, 3 waterclosets, 3 urinals, 6 lavatories, and mirrors
- First aid and trainer’s room (1,000 s.f.)
  - Trainer’s office, examination table, therapy equipment, storage, toilet room.
- Assistant coaches locker room (300 s.f.)
  - 10 lockers, 4 showers, 2 waterclosets, 2 urinals, and 3 lavatories.
- Head coach’s office (200 s.f.)
  - desk, locker, shower, watercloset, and lavatory.
- Team lounge (1,700 s.f.)
- Interview room (300 s.f.)
Team Facilities

Visitor's locker room: (5,500 s.f.) 2 required
  - Locker room containing 50 dressing stalls (3,800 s.f.)
  - Shower and toilet room (1,000 s.f.)
    - 12 showers, 3 waterclosets, 3 urinals, and 6 lavatories.
  - First aid room (200 s.f.)
  - Assistant coaches locker room (300 s.f.)
    - 10 lockers, 4 showers, 2 waterclosets, 2 urinals and 3 lavatories.
  - Head coach's office (200 s.f.)
    - Desk, locker, shower, watercloset, lavatory.
  - Interview room (300 s.f.)

X-ray Room: (200 s.f.)
  - To be adjacent to team locker rooms and accessible from the playing field. This facility will make provision for x-ray equipment for use by both teams during a game.

Officials' locker room: (350 s.f.) 2 required
  - Locker room containing 8 lockers
  - Shower and toilet room
    - 3 showers, 1 watercloset, 1 urinal, and 2 lavatories.
Access by service vehicles will be provided to all facilities. There will be 2 freight elevators provided within the stadium.

Concession Storage - (9,000 s.f.)
- Facilities for offices, food handling, food preparation, and storage.

Concession Lockers - (2,500 s.f.)
- Facilities for toilet and dressing rooms and uniform storage for approximately 500 employees.

Stadium Personnel Lockers - (2,500 s.f.)
- Facilities for toilet and dressing rooms and uniform storage for approximately 500 employees. These facilities may be used by bands, cheerleaders, and others requiring dressing facilities.

Maintenance Shop - (1,000 s.f.)
- Space for tools and equipment for general maintenance of the stadium. An office for the field maintenance supervisor and a toilet room will be provided.

Field Maintenance Storage - (20,000 s.f.)
- Storage for equipment and materials required for maintenance of the playing field. Also storage of game equipment, temporary seating, platforms, etc.
Stadium Service Facilities

Loading Dock and Receiving - (2,000 s.f.)
- A three-position truck dock will be provided at the entrance to the service facilities and in relation to the concession and maintenance facilities and the freight elevators. A trash compactor will also be in this area for processing all stadium refuse.

TV Van Parking - (2,000 s.f.)
- Parking for two network TV trucks will be provided adjacent to the stadium with adjacent electrical and telephone equipment rooms.

Mechanical Equipment - ()
- Space for mechanical, electrical, sound, scoreboard, and telephone equipment.
Playing Field (110,000 s.f.)

- A removable synthetic turf playing surface will be provided for baseball, football, and soccer over a concrete floor with surface drains and a utility grid for trade show hook ups.
- Maximum distance to playing field sidelines will be 60'-0" from stadium seating.

Baseball
Playing Field Facilities

Football

Soccer
P-13 Playing Field Facilities

Basketball

- Court Layout
- Dimensions:
  - 94' - 0" Collegiate
  - 84' - 0" High School
  - Neutral Zone Mark 12" Wide by 6" Deep
  - Lane Space Marks 2" Wide by 6" Deep
  - 6" Radius (Inside)
  - 6" Radius (Outside)

Hockey

- Player's Boxes
- Dimensions:
  - 200' - 0" Ideal
  - Blue Line 12" Wide
  - Center Line 12" Wide, Red (Interrupted at Intervals)
  - Goal Crease, Red, 2" Wide
  - Face Off Spots, Red, 2 - 6" DIA
  - Corner Radius 20', (Not Specifically Defined)
Playing Field Facilities

Field Entrances 
- An adequate opening for large trucks will provide access to the playing field from without the stadium.
- There will be at least two other entrances to the field for the players.
- There will be at least one entrance onto the field for the public at appropriate events.

Field Lighting 
- A complete field lighting system providing adequate illumination for color TV coverage will be provided.

Scoreboards 
- Space will be provided for a complete, remote controlled, illuminated scoreboard system with "instant replay" capability. The main scoreboard and supplemental scoreboards will be operated from the press box.

Roof Structure 
- A type of roof structure will be employed for the stadium to protect the seating and playing field from the weather.
Administrative Offices

- Building manager
- Accounting
- Personnel
- Booking
- Publicity
- Building engineer
- Secretaries and assistants
- Toilet rooms
Health and Fitness Club (25,000 s.f.)
- The professional player's physical training facilities will be combined together with a public health club to create a one-of-a-kind facility where the man off the street can rub elbows and "compete" with his favorite sport heroes.
- This facility will provide a waiting/reception area, locker and shower rooms, running track, 2 basketball courts, 4 racquetball courts, swimming pool, and 2 all-purpose rooms as well as a completely equipped weight training room.

Souvenir Shop (1,000 s.f.)
- This facility will sell souvenirs and gifts of all types that will support the professional teams, players, the stadium and Toledo.

Sporting Goods Shop (1,000 s.f.)
- This facility will offer the top of the line sports equipment and sportswear used by the pros.

Stadium Restaurant (2,000 s.f.)
- This restaurant will be located in a strategic location so that the dining area can take advantage of views both into the stadium and out to the river and cityscape.

Public Boat Marina
- The stadium plazas and environment will embrace the river and provide for a public boat docking facility.

Parking Garage (40,000 s.f.)
- parking for at least 2,000 cars
- space will be provided for 100 buses on the site
<table>
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<th>Facility</th>
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|                                  | 721,900     | net building area
|                                  | 759,685     | gross building area
schematic design
Fall Quarter was spent doing initial research on the problem and building type, developing a proposal and developing a project program. A quick schematic design was developed toward the end of the quarter to respond to the initial studies and investigations. The schematic design also enabled me to start to get a feel for the complexities and unexpected issues of the project.

I began by responding to program requirements and developing a general working plan which would suggest a building form. From my research I decided that the circular stadium form would work the best for a multi-use facility. The circular form generates the best site lines and seating locations for the variety of activity to be viewed. The circular shape also would simplify circulation and make for a better fit on the strange-shaped site.

The stadium plan was then worked out to a fairly sophisticated level in defining circulation and balancing the needed space requirements. Because the stadium was to be environmentally enclosed by an air-inflated fabric roof structure, it was decided that a minimum of entrances would be used in order to minimize opened doorways in order to maintain a positive air pressure on the interior. For this reason, revolving doors must be utilized while a minimum number of swinging doors assist in mass-volume exiting.

Four entrance points were developed at the four cardinal points on the circle. This would provide for optimum crowd control and make for more logical points of entry. These entrances would also be the logical place for vertical circulation to occur, adding another element of control.

The vertical circulation was originally conflicting with the other spaces along the concourses. Therefore, it was pulled to the exterior of the building and became an important visual expression. Although the expression was bad in this design, I felt that it was important that the approaching fan understand where he is going.

The main entrance level to the stadium is approximately in the middle. This lets the fan circulate either up or down once he has entered the building. This is more psychologically acceptable to the fan than walking all the way up to his seat from field level.

The main entrances scale down the height of the stadium and invite the spectators. In the schematic design, brick arched elements announce the entrances and attempts to relate to the entrance at Portside, a new marketplace, and the historical steamplant and other surrounding older buildings. Scaled-down shops at the plaza level also lessen the overwhelming size of the stadium as one enters it.
The north entrance is flanked by two tall stack forms. These are actually elevators which take patrons up to the upper level restaurant and bar. The stacks also define the axis from the stadium to Promenade Park and the stacks of the steamplant, creating a dialogue with the city. The two stacks also take on a power image that is prominent in the surrounding riverfront area, or perhaps a riverboat image.

In the schematic design, all of the service spaces got shoved to the exterior of the building along the concourses. One reason was to create a barrier to form enclosure for the positive air pressure. However, this did result in a very bland exterior and the important expression of "stadium" was lost. Fortunately, this was resolved very nicely later.

One problem with multi-use stadiums is their location of the press boxes. Almost always, when there is a switch from one sport to the other the press box is out location and a wasteful second press box is built. This takes up valuable space that could be used for the high-revenue-generating private suites. The obvious answer is to only build one press box, and then move it.

This solution came to me when studying the historical significance of the site. The site, the Middlegrounds, had once been a very important and active train yard where many transportation and trade routes all came together. If the problem was moving the press box, why not incorporate the whole level into a movable ring by introducing a train? The press box would occupy about four cars and the rest would be made into private suites for the owners, area dignitaries, and corporations. The train would not only serve its practical purpose of relocating the press box into its proper position, but it could also become an exciting, dynamic element by blowing its whistle and taking celebration laps after homeros and touchdowns.

This schematic design also explored the possibility of lessening the visual impact of the automobile on the site. This was accomplished by placing a parking structure beneath the stadium plaza. This was only a conceptual idea with circulation and entrance/egress unresolved.

In working on the problems of the stadium itself, the site design was not developed to a high degree. The main attempt at the schematic phase, however, was to carry the forces of the new riverfront park development on through the site. A terraced lawn would provide views to events on the river, and a marina would provide a unique element to the stadium.
development D
In working on improving the stadium expression from the earlier schematic design, I tried to open the upper portion of the building to reveal the underneath side of the upper seating deck. The seating was extended out beyond the last column line to augment the desired expressive quality of "stadium," which in essence is seating. In doing this I reversed the location of the upper concourse and its service spaces of restrooms and concessions. The concourse had to glass-enclosed to maintain the positive air pressure. But the glass will add to the drama. In the daytime the glass will give the stadium a dark, reflective quality, but then at night the concourse lights will shine through and reveal the bright colors and activity of the interior. Extensive use of glass in this landmark building will be appropriate in the "Glass City."

In keeping with the history of the stadium, extra amenities were explored that would help draw crowds and generate additional income. One feature is the shops at the plaza level. These shops take on a similar character to those of nearby Portside, a festival marketplace developed by James Rouse. The shops would not only cater to the game crowds, but would also help keep the stadium surroundings active and inviting during non-event times. As stated earlier, these shops also play an important role in humanizing the scale of the plaza and adds an inviting splash of color.

Upon developing a schematic design, the first sense of closure was achieved. This allowed me to step back and analyze the up-coming problems and issues that had to be dealt with. The design was then reopened with a fresh attitude for further development.

An important issue to be dealt with was the stadium aesthetic. A building holding great importance and pride by the people of the city should certainly be deserving of that. A stadium should look important and dignified while also being exciting and fun, arousing the curiosity of the observer. Most of all, a stadium should be welcoming—drawing in huge crowds who come to see and experience the stadium as much as they come to watch their team and players perform.

In exploring the building form at this level, it was of the utmost importance that I designed in model form rather than sketches on paper. Round objects on paper are very deceiving and can best be understood in three dimensions.
There is also an exclusive stadium restaurant. This is in a movable train-like vehicle at the top ring of the stadium. As one eats his dinner, he will have views into the interior of the stadium and breathtaking views out over the river and cityscape. This feature, however, posed a difficult structural problem and was eliminated in the final design.

The four entrances were also developed to improve the aesthetic qualities and functional aspects. The awkward brick arch forms of the original design were eliminated, but there needed to be some strong identifying element to direct the flow of circulation. Series of colorful steel free-standing arches were then developed. The more subtle rounded arch seems to accent the soft curve of the fabric roof. These arches add a dynamic festive quality to the composition.

Vertical circulation at these entrances were also improved. The round ramps were much too obtrusive to the plaza and were not well integrated to the building. The new solution pulled the ramps into the side of the stadium, using the same radius point. These glass-enclosed ramp structures seem to work well with the arches in defining the entry points. They also serve as anchor points between which the shops are nestled.

The use of color became a very important issue in this design. The bright colored elements add an important quality of festiveness to the stadium, but they serve important functions as well. Each entrance is assigned a particular color. In a building with a circular geometry, circulation can become quite confusing with no reference points. The color of each entrance is incorporated into banners along each concourse, with each quadrant of the stadium displaying its assigned color.

Site design and development was an important aspect of this design. The main concept was the extension of the stadium environment into the surrounding city environment. This was perhaps an idealistic, whole development type of approach. The site became its own entity but attempted to become an extension of the Promenade Park development. A wide promenade on axis to the stadium tied the stadium to the park. This walk was set at the bottom of a huge terraced green space. This lawn focuses on the river and would be a popular viewing point for river events. To the other side of the walkway is a large marina which would accommodate watercraft of various sizes.
This design introduced the idea of utilizing alternative modes of transportation to the car. The goal was to keep on-site parking to a minimum and only use the parking under the plaza. Automotive traffic could be lessened to a degree by introducing a shuttle bus system with satellite parking locations throughout the metropolitan area. There would also be a system of trains which would work the same way as the shuttle buses. Also, there would be locations along the river and lake for ferry boats to the stadium. These different modes of transportation to the city center is a statement to the lost importance of the stadium site as a transportation and trade center. Also, these new ways of arriving to the game would become a total event. Rather than driving to the game and then leaving immediately afterwards, fans would now enjoy an extension of their celebration of a victory while riding the party boat/train/bus back to their destinations.
CONCEPTS Stadiums have a unique feel to them. There is an ambience in a stadium that simply does not exist in any other building type or place. The atmosphere and surroundings are impressive. The sheer size of a stadium is awesome. The sensation of being there is a little unreal—difficult to describe. For a few hours, fans who do not know each other share a common goal, an interest, and a time of fun and excitement.

This is the unique experience of the people of the city and neighboring areas all coming together. The stadium is an important landmark of the city. In that sense, in this design the stadium is symbolically located at the heart of the city, in the downtown. The site is the old Middlegrounds, where historically it was once an important transportation and trading hub. Trains, ships, river boats, lake freighters, canal barges, wagons and trailers all came together at this one point. This abandoned train yard is now where the city may come together for celebrations and festive events.

The stadium in this design also serves as an important anchor point in the city for the coming together of several different environmental fabrics: the grid of the downtown, the old downtown, the new riverfront development, a future passive greenbelt park, and the river itself. The stadium composition attempts to knit these fabrics together; it addresses the downtown and welcomes the people; it ties the two parks together; and it embraces the river.

This project design also addresses the issue of transportation and circulation which is a big problem in stadium design and in dense urban areas. Possible solutions were looked at on several levels and include: improved access to the downtown from the interstate; on-site parking structures to augment existing parking in the downtown area; introduction of satellite parking locations throughout the metropolitan area for shuttle buses, trains, and riverboats; a marina for private water craft; a train shelter; a bus and taxi shelter; a continuation of the developing sheltered pedestrian walkway system; and a proposal for a new automated people mover system for the downtown core.
During Spring Quarter the stadium design was developed further and refined. The main focus was on refining the site concept and design. This quarter made evident that my project was actually two projects: a stadium design and an urban problem design. As stated earlier, these two must go hand in hand for a successful project.

My project now saw three main thrusts. First, there was obviously the stadium itself. The second and third parts stemmed from the urban design phase: environmental fabric and transportation/circulation.

In the stadium design the main concern was to work out the details. The plans were fine tuned at all of the concourse levels. At the Field Level, parking, truck access, loading docks, entrances, locker rooms, and storage were all worked out. All of the public concourses and their service spaces were refined at each level. At the Club Level, new exhibition spaces or meeting rooms were introduced for further opportunity for additional use and income. These spaces also take advantage of views out and natural daylighting through the glass roofs of the shops.

Treads and risers of the stadium seating were carefully calculated as were the rows and aisles. The vomitories from the concourses to the seating areas were designed for a smooth transition of circulation.

Technical aspects of the stadium were also investigated. A huge problem in such a stadium is the mechanical systems. These systems must be calculated and designed for in the architectural design phases as for their enormous size competes for valuable space. Calculations here showed that for the 90,477,865 cu.ft. of building volume, the supply-air duct needed 3,140 s.f. of cross sectional area for the high velocity system. The solution used a return-air duct encircling the stadium at the ring beam. The supply-air systems were divided into 16 smaller units, eight on each side, which were mounted above the lighting trusses. The flexible ducts are suspended from the cables of the roof structure. This creates a unique tension—air holds the roof up, but the element that produces the air is held up by the roof.

In developing the site, I took a closer look at the surrounding environmental fabrics. The site is then opened up in a more welcoming manner by extending the city grid across Swan Creek and into the site. The stadium was then moved over to be on axis with Lafayette Street which would be widened to become a boulevard connecting the stadium to Interstate 75. There would also be several other routes with improved access to the interstate.
The huge parking lot along the river in the previous design was exchanged for an on-site parking structure. There was a great need for the adjacent parking and a new park would be a much better use of the land. Also, when the stadium was moved to be on axis with Lafayette Street, there was an awkward void between the stadium and the bridge. The new parking structure helps to balance these masses.

The terraced lawn of the original design was scaled down and has become an ampitheatre. Its geometry is a bit amorphic in order to be a relief from the overlaid grid. It also is then more closely related to the new passive greenbelt park to the south with the stadium being only a brief interruption. There is a new bridge at the mouth of Swan Creek that connects Promenade Park to the stadium site. Each environmental fabric has been connected to one another.

The commuter train in this scheme no longer comes in to the stadium and encircles it, but now stops at a new shelter which extends underneath the bridge, reinforcing the connection of the stadium site with the new park. The train stopping short of the stadium is also somewhat symbolic of a transportation form giving way to a new form of transportation. This project also proposes the introduction of an automated personal transportation system for the downtown core.

This would be an automated vehicle that carries people non-stop to their destination in a separated network of guideways which serve the major activities in the urban center. The vehicle can be occupied by an individual or small group. There would be two stations for the people-mover system at the stadium. A route and the other station locations would be developed only after a comprehensive study is done of the downtown's major public facilities, activity zones, pedestrian generators, historic monuments, land uses, visitor destinations, employment centers, and future developments.