Research and design of a baseball stadium for the Albuquerque Dukes : Dukes Field

Aaron William Bilyeu
Iowa State University

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Research and design of a baseball stadium for the Albuquerque Dukes:

Dukes Field

by

Aaron William Bilyeu

A Thesis Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF ARCHITECTURE

Department: Architecture
Major: Architecture

Iowa State University
Ames, Iowa

1993
DEDICATION

This thesis is dedicated to my parents, Paul and Donna Bilyeu. They taught me the meaning of hard work, dedication, and commitment. In their great wisdom, they introduced me to baseball. Without them, this work would not have been possible.
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INTRODUCTION

"Major league baseball was an urban phenomenon and became a target for civic pride, many urbanites were able to find a sense of community at the ballpark" (Crepeau, 1980, p. 39)

This statement, by Richard C. Crepeau, is a reflection on baseball parks of a time past when a stadium was an integrated part of a larger community. Few teams have chosen to preserve and update their aging stadiums. Among the few historic stadiums left which were built prior to 1915 are Chicago's Wrigley Field, Boston's Fenway Park, and Detroit's Tiger Stadium.

Far more teams such as the Chicago White Sox, Toronto Bluejays, and the Baltimore Orioles, have chosen to build new stadiums. These modern stadiums, all completed after 1988, have design solutions which vary greatly from the historic stadiums. The modern stadiums, for instance, have to deal with the added issue of parking whereas the historic parks were built prior to the widespread use of the automobile. Each of these stadiums, built in a different time, in a different place, and for a different team, has a different solution to the challenges presented by a particular baseball stadium.

An evaluation of various design features in these six stadiums, features which contribute to a successful stadium design will be identified. The purpose of this thesis is to identify these design features and to use them in the design of a new
baseball stadium. The new baseball stadium will be designed for use by the Albuquerque Dukes. Dukes Field will then be evaluated according to the same design features as the six existing fields.

There are three major design features to be evaluated in all stadiums: location, field configuration, and spectator accommodation.

**Location**

The first major design feature to be discussed in terms of an overall stadium comparison is the location of the stadium. The location of a stadium can have great
impact on the character of a stadium (see figure 1). Stadiums placed in urban environments are often shaped by the urban infra-structure surrounding the site. Urban ballparks were built before the automobile was the preferred method of transportation. Because of this, there were no parking lots built adjacent to stadiums. The stadiums built prior to 1915 often took the shape of the street grids where they were placed. Urban ballparks tend to enhance the experience of going to the ballpark because they have decentralized parking. In ballparks located in urban areas spectators are often forced to park away from the stadiums. During their journeys to and from the ballparks, the spectators are exposed to a variety of stimulating environmental experiences such as restaurants, bars, shops, news stands, vendors, and other spectators. By extending the scope of spectator experiences beyond watching, the experience of going to the ballpark is heightened.

By contrast, baseball fields located in suburban settings, with acres of parking, and no surrounding street grid, have no boundaries to dictate the shape of the stadium (see Figure 2). Consequently, these stadiums are free to take any shape, including the "doughnut" shape, or the "ash tray" shape. The stimulating experience of the urban ballpark is lost in suburban ballparks where the surrounding neighborhoods are an asphalt parking lots rather than rich urban neighborhoods.
The second major design feature to be discussed is field configuration. To a certain degree, the configuration of all baseball fields is dictated by the rules of baseball. There is a precise layout of the home plate area, the pitcher’s mound, the bases and all other dimensions of the infield (see Figure 3). However, the exact configuration of the outfield and much of foul territory is left to the discretion of the designer. The ways in which the outfield area and foul territory are laid out affects the design of the stadium and ultimately the way the game is played. Many recent
stadium designs have incorporated symmetry about an axis bisecting home plate, the pitcher's mound, and second base. This produces a field that offers very few surprising and exciting plays. Philip J. Lowery, author of Green Cathedrals, states "The best plays in baseball, the triples and inside-the-park home runs, have almost been eliminated and occur only when an outfielder misses a diving catch or knocks himself out running into an outfield fence." (Lowery, 1992, p. 2)
Another design feature that affects fans in terms of field configuration is the location of the bullpens. Fans feel more involved when they can anticipate pitching changes in the game. Some dedicated fans claim the best seat in any stadium is the first row next to the bullpen because they are sitting near the players in the bullpen.

By maximizing fan intimacy with the field and the players, and by providing a field with the potential to provide an exciting game, the stadium designer has the opportunity to heighten the spectators experience of going to the ballpark.

**Spectator Accommodation**

The third major design feature to be evaluated in the stadiums is by far the most important, fan accommodation. All stadiums, by definition, have various forms of seating to accommodate spectators. This seating often includes bleachers, theater seating, and luxury boxes. Regardless of the name or cost of seating, the primary factor in determining the ultimate value of a seat is the location. Many seats are considered good seats because they are located in the first few rows directly behind home plate. However, this is only half the story. Some seats are considered the best in a particular baseball due to the history, proximity to the players, or obscurity of a seat. These highly sought after seats are nowhere near home plate, in fact some are over 400 ft away, yet they are some of the most prized tickets in professional baseball.
In addition to seating location, there are other issues that must be evaluated related to fan accommodation. Many stadiums are generic in the sense that they possess few features which serve to distinguish them, such as in play bullpens, and nostalgic scoreboards which heighten the spectators enjoyment of the experience of baseball.

A great ballpark possesses a balance of good location, interesting field configuration, and a variety of spectator seating. In addition, a stadium needs some indescribable quality which lends itself to the rich traditions and present day excitement of baseball.
PART I. LITERATURE REVIEW
WRIGLEY FIELD

"My grandchildren ask me why I keep comin' out here," he said. "I tell 'em everything else I grew up with is gone or turned to crap. 'Cept Wrigley. Wrigley's the last." (Rozin, 1984, p. 75)

Location

Wrigley Field is in an urban setting on Chicago's north side. It is nestled in a blue collar residential neighborhood. Built in 1914 by Charles Weegham, it was originally designed to be home to the Chicago Whales of the Federal League. After the league folded in 1916, Weegham bought controlling interest of the Cubs and moved them from their home at the West Side Grounds to Wrigley Field (Tackach and Stein, 1992).

Wrigley Field was developed on a small parcel of land comprising four square city blocks and is bordered by North Clark Street on the third base side, by West Addison Street on the first base side (see Figure 4), by Sheffield Avenue behind the right field wall and by Waveland Avenue behind the left field wall (Benson, 1989). The site of Wrigley Field was selected because of its close proximity to rail transportation so fans could visit from Milwaukee. At the time, Milwaukee had no team of its own (Lowery, 1992).

Today, Wrigley Field is part of the diverse urban fabric, much as it was during its inception. There is no parking lot surrounding the ballpark. Most Cubs supporters
Figure 4. Entrance to Wrigley Field at the corner of Clark and Addison (Tackach and Stein, 1992).

find modes of transportation other than automobiles, though there are some parking garages and some limited on-street parking. Many fans walk or ride the bus to get to the ballpark. The most popular means of transportation to the game, however, continues to be the train called the "El" which is an above ground public commuter train that runs throughout the entire city. The Addison Street stop lets patrons off near the right field corner.
The neighborhood where Wrigley is located is a diverse neighborhood that takes pride in the Cubs, and plays an active role in supporting Wrigley Field. In 1988, the end of an era came when on August 8th the first night game was played. The installation of lights was strongly opposed by a neighborhood association known as CUBS (Citizens United for Baseball in Sunlight) who claimed the addition of lights would have an adverse effect on their neighborhood. They engaged the team in a five year legal battle to try to block the installation (Bruning, 1988). Ultimately, the choice came down to install lights or move to “an unneeded new plastic suburban ashtray luxury toilet-bowl type dome is suburban Schaumberg,” as stated by Philip J. Lowery (Lowery, 1992, p. 29). Years earlier, when the bleachers were added, their height was limited to allow neighbors to continue to view games from their rooftops (see Figure 5). This type of compromise between the ballpark’s best interests and the neighborhood’s best interests allows for a mutually beneficial relationship.

**Field Configuration**

Dimensions of the playing field are as follows:

- **Left Field**: 355 ft
- **Left Center Field**: 368 ft
- **Center Field**: 400 ft
- **Right Center Field**: 368 ft
Figure 5. Spectators watch a game from the roof tops along Waveland Avenue (Reidenbaugh, 1983).

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<tr>
<td>Right Field</td>
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<tr>
<td>Backstop</td>
<td>62 ft</td>
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The field configuration at Wrigley Field appears on the surface to be a simple, symmetrical layout. Upon closer inspection, it is apparent that the field is asymmetrical. Subtle differences exist in the location of the outfield walls with regard to home plate. Much of the interest of the ballpark lies in the shape of the
field.

Perhaps the most distinguishing factor concerning the shape of the field is the existence of the wells in the left and right field corners. The wells are the areas defined by the foul lines and the outfield wall. This is where the outfield wall actually angles toward home plate, as opposed to the typical outfield where the wall extends from the foul line towards center field. These wells were a result of the addition of outfield bleachers to the stadium in 1937. Beyond the wall which defines the edge of the well is a catwalk leading from the grandstands to the bleacher sections. The bleachers start where the wells end. This odd field configuration gives Wrigley Field the distinction of being the only park in which it is easier to hit a home run 50 ft off the foul line than it is to hit one straight down the foul line (Lowery, 1992).

In addition to the walls being farther from home plate, the walls are also taller (at approximately 16 ft) in these areas, making it more difficult to hit a home run. The part of the wall that makes the transition from the well to the inner part of the well makes a transition in height from 11 ft 4 in in height to 16 ft in height.

The wall also is unique in its construction. Along the top of the entire wall is a chain link basket which was installed in 1970 to keep the famed bleacher bums from interfering with play (Mandernach, 1990). The main characteristic of the wall, and
perhaps the entire ballpark, is the ivy. A mixture of Boston and Bittersweet ivy was planted in the late 1930's by longtime owner Bill Veeck (Benson, 1989). The ivy has caused controversy over the years, including a Bill Buckner inside-the-park home run caused by a ball getting lost in the ivy (Lowery, 1992).

The unique distinguishing character of the outfield wall can be seen in the continuation of the wall around the remainder of the field. The brick construction of the wall is visible where the ivy is trimmed to an edge at the foul poles. The wall runs parallel to the foul line in both left and right field for about 75 feet at which point the wall pulls back from the field and tapers and slopes down to accommodate the bullpens. The wall is then continuous around the remainder of the infield with the exception where the dugouts are located. This enclosure is attained by straight segments running parallel to the base lines on either side of the field which are then joined by a series of short, straight segments to form a curve just 62 feet from home plate.

Spectator Accommodation

The seating configuration at Wrigley Field comes from a period in sports architecture that no longer exists. The fans are seated in close proximity to the field which heightens their experience of going to the ballpark. There are four major features that make this possible. These are the low backstop, the angling of the
grandstand towards the field, the presence of outfield bleachers, and the configuration of the upper deck. Another form of spectator accommodation is the original 1937, hand operated score board which adds to the fans experience of the ballpark by providing visual stimulation and allowing the fan to reminisce about an earlier time.

The first of the features that provides spectator accommodation is the brick wall that serves as a backstop and continues down both lines to the bullpen. This wall, being only 4 feet in height, allows for fans to be seated at the players eye level. By seeing things from the players perspective, and by being in close proximity to the players in the on deck circle, the fans are able to see and hear the game first hand. Nowhere is this close relationship more evident than in the bullpen. The relief pitchers, bullpen catchers, and bullpen coach observe the game from a bench in the bullpen near each respective team's foul line. Some of the stadium’s seats are so close to the bullpen bench that is seems as if the bullpen bench is the front row of the grandstand.

The second feature that brings fans closer to the game is the sharp angles of the wall just beyond the bullpens. The wall tapers slightly from 62 feet to the backstop, gradually down the lines until it is within 3 ft of the foul lines. At that point the wall turns to run parallel to the foul line until it meets the outfield wall. Many
parks use less taper than Wrigley Field does, thus allowing more foul ground in the corners. By resisting the temptation to do this, architect Zachary Taylor Davis (Benson, 1989) was able to angle the seats in the corners towards home plate. Along with the improved viewing angle came additional seats where foul territory would have been, and a reduced distance between the spectator and the playing field.

The outfield bleachers are the third feature that brings fans closer to the game. By providing bleachers whose front row borders on the top of the ivy covered brick wall, bleacher bums are brought close to, and in years past, into the action (see Figure 6). For example, in a 1962 game, fans in the bleachers showered peanuts on Dodger right fielder Frank Howard which caused him to miss Bob Lollos’s fly ball which was eventually ruled a single. It was later decided that this type of home field advantage was unfair and the Cubs were forced to install a basket along the top edge of the wall to limit such behaviors.

The final and perhaps most important feature relating to seating configuration that brings people closer to the action in Wrigley Field is the configuration of the upper deck. The width of the upper deck is more than half of that of the lower deck (see Figure 7). This large overhang allows the seats in the upper deck to be improved by moving them close to the field. To accomplish this, columns had to be instituted to support the upper deck. Many people are opposed to such an idea
Figure 6. Cubs left fielder Ralph Kiner watches as spectators in the first row of the bleachers catch a ball for a home run (Tackach and Stein, 1992).
based on the fact that this produces seats with obstructed views on the lower level. However, this is an acceptable compromise compared to the alternative, which is when the upper deck is moved far away from the field. In that type of a scheme, approximately 200 seats that were obstructed on the lower deck now have a clear...
view of the field. Unfortunately the quality of the approximately 16,000 seats in the upper deck have been diminished because they are further away from the field. A scheme in which the upper deck is above the lower deck provides a greater percentage of quality seats throughout the stadium. The decision to do this by the architecture firm of Holabird & Root in 1937 is one that has rarely been repeated (Benson, 1989).

The fully hand operated score board at Wrigley Field allows the spectator to be drawn into the experience of the ballpark (see Figure 8). It is the last score board of its type in major league baseball. The 27 ft high by 85 ft wide score board was added in 1937 (Lowery, 1992). This score board keeps track of all of the National League scores and all but one of the American League scores. In addition, the current pitchers in each game are constantly updated. All of this information is updated by people inside the score board who change plywood numbers. The line score of the Cubs game in progress is also displayed on the board. In addition, the score board also serves three other functions. The first of these functions is to display the time. A 10 ft diameter clock which was installed in 1941 (Lowery, 1992). The second function is the display of league standings. Atop the score board, there are two flagpoles. Each has six flags which represent the teams in the separate divisions of the National League. The flags are arranged to represent the current
Figure 8. Hand operated center field score board (Reidenbaugh, 1989).

standings within each respective division. The final function contained on the score board becomes apparent after the game when, atop the center field flagpole, a blue flag with a white W is raised to signify a Cub victory while a white flag with a blue L identifies a Cub loss (Wood, 1988).

In many ways, Wrigley field was designed to accommodate fans and to facilitate the playing of traditional baseball. The location within a neighborhood, the location,
of seats and a simple informative score board serve the practical as well as the aesthetic needs of the fans while serving to heighten the experience of the ballpark.
FENWAY PARK

Fenway "seems in curiously sharp focus, like the inside of an old fashioned peeping-type Easter egg... a compromise between man's Euclidean determinations and nature's beguiling irregularities." (Benson, 1989, p. 41)

Location

Much in the same tradition as Wrigley Field, Fenway is an urban ballpark fit into the surrounding urban fabric. Unlike Wrigley, which is square, Fenway is shaped by several surrounding streets.

The ballpark itself has 11 exterior facets, but is bordered by only 5 streets. Lansdowne Street is situated just behind the Big Green Monster in left field, while Ipswitch street rests behind the right field stands, Van Ness runs along the first base side and Yawkey Way, formerly Jersey Street, is situated on the third base side (Benson, 1989). The fifth street surrounding Fenway is Brookline Avenue. It cuts the corner of Yawkey Way and Lansdowne Street creating another odd angle at Fenway.

Fenway Park in Boston provides the spectator the opportunity to experience a stadium which exemplifies urban ballpark design. Parking is limited and expensive near the stadium which encourages many fans to find alternative means of transportation. The best way to get to Fenway is to take the subway to Kenmore Square, which is about two blocks from the ballpark (Wood, 1988). The walk from
Figure 9. Exterior facade and entrances to Fenway Park (Reidenbaugh, 1983).

Kenmore Square to the ballpark allows fans to experience Boston on foot which enhances their ballpark experience. The large quantity of pedestrians in the neighborhood making their way to the ballpark creates a temporary city around the ballpark.

The simple two story brick facades of Fenway permit the ballpark to assimilate to the surrounding neighborhood. There are no grand gates at Fenway, but rather several groups of small arched doorways serve as entrances (see Figure 9). These
small entrances keep with the human scale of the urban facades in the surrounding neighborhood. Incorporation of such factors and flexibility in shape, allows Fenway to exist as a member of a neighborhood in which it sits rather than becoming a neighborhood of its own.

Field Configuration

Dimensions of the playing field are as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Field</td>
<td>315 ft</td>
</tr>
<tr>
<td>Left Center Field</td>
<td>379 ft</td>
</tr>
<tr>
<td>Center Field</td>
<td>390 ft</td>
</tr>
<tr>
<td>Right Center Field</td>
<td>380 ft</td>
</tr>
<tr>
<td>Right Field</td>
<td>302 ft</td>
</tr>
<tr>
<td>Backstop</td>
<td>60 ft</td>
</tr>
</tbody>
</table>

The configuration of the playing field at Fenway Park is the most unique in professional baseball. With wall heights ranging from 37 ft to 3 ft and fence distances from 302 ft to 420 ft, plays occur which are not possible in any other baseball stadium.

Boasting 17 facets and barriers overall and 7 alone in the outfield (see figure 10), this layout can be troublesome for visiting outfielders who are not familiar with the nuances of playing the wall (Benson, 1989). The left field wall defines much of the
Figure 10. Plan showing the main concourse and the layout of the playing field

(Lowery, 1992).

playing surface as well as the entire ballpark. The Big Green Monster was
constructed during a rebuilding of the park which was instigated by a fire. The wall
is 37 ft tall with a 23 ft tall net on the top designed to protect the residences on the
adjacent Street. The wall runs perpendicular to the left field foul line for over 200 ft,
then turns 90 degrees straight towards the right field foul line. This facet of the wall is 10 ft in length. This begins the first of two walls that are 18 ft in height. The center field wall begins just left of second base and continues well into the stands and divides the center field bleachers into two sections. A wall 9 ft high intersects the center field wall in a perpendicular fashion and extends 15 ft back towards the infield. The wall which defines the front of the bullpen begins at the end of this wall. It is only 5 ft in height and angles slightly away from the infield as it moves toward the right field foul line. Before the right field barrier finally meets the foul line, there are two more short facets. The first is only 30 ft in length and is set at a 45 degree angle with the infield. The final facet is nearly parallel with the foul line and intersects it at a distance of only 302 ft from home plate. This distance is the shortest in the major leagues (Lowery, 1992).

Foul territory at Fenway is minimal. It has 11 facets not including dugouts. It is very irregularly shaped, including two areas in which foul territory is expanded down the foul lines. While this type of arrangement may seem peculiar, it allows accommodation of the bleachers beyond.

Spectator Accommodation

Whether it was intended by the architect or not, foul territory at Fenway park is almost nonexistent. By reducing foul territory, seats are brought closer to the field
which heightens the spectator experience of Fenway Park. In addition to close seating, the location of bullpens and the left field wall are also factors which accommodate spectators and heighten their ballpark experience.

Foul territory at Fenway is among the smallest in the major leagues (Lowery, 1992). This is the first factor which brings fans closer to the game. Down the left field line at 250 ft there is 3 ft of foul territory as the wall runs parallel to the foul line. The backstop, at 60 ft from home plate offers spectators a seat close to the game (see Figure 11). From the backstop, the wall continues towards the foul pole nearly parallel to the foul line. The wall tapers slightly towards the field on both sides until there is a sharp jut away from the field and then back towards it. This was done to accommodate seating in those areas. By changing the angles of the wall in relation to the field, the seats in these sections are angled to focus spectators attention on the game. The lack of foul territory is crucial in keeping fans close to the game. By minimizing foul territory, all seats in a given ballpark can be improved, thus improving the quality of the experience of going to the ballpark.

The second factor which improves the seating proximity throughout the stadium is the height of the wall around the infield. Behind home plate the wall is merely 4 ft high. Down the line and in right field the wall is as low as 3 ft high. This low wall serves to bring the fan closer to the field, the action and the players. Baseball is a
sport unique among major team sports in the fact that before the game there is very little hype or intensity. As a result players will often sign autographs for fans who are in the first row of the grandstand during batting practice. The building is brought to human scale by allowing fans to interact with players.
The official seating capacity of Fenway Park is 34,171 seats (Lowery, 1992). All but 1,568 of which are located in the main grandstand and a few others in luxury boxes. This lack of an upper deck is the third feature that brings fans close to the game. The seats which are located in the upper deck are actually rows of bleachers on the roof of the stadium. The remaining 32,603 seats in the lower deck create an extremely intimate stadium.

The second factor of spectator accommodation is the location of bullpens. The bullpens were moved from the niches down each line to deep right center field in 1940. It is rumored that they were not moved for convenience, but rather to make it easier for Ted Williams to hit home runs (Lowery, 1992). Whether located down the lines or in right field, the locations of the bullpens are important in this layout because there is fan seating directly adjacent to both their previous, and current location. As is the case with the low wall behind the infield, this allows fans to be next to the players during warm-ups and in the bullpen, during the entire game.

The final area of spectator accommodation in Fenway Park is the left field wall. Much as the score board and the ivy serve as trademarks at Wrigley, the Big Green Monster is the most distinguishing and dominating factor at Fenway. The Big Green Monster was erected in 1934 (Lowery, 1992). The wall is constructed of tin over concrete and railroad ties. The Big Green Monster became just that in 1947
with the addition of a coat of paint over the advertisements which covered the wall (Benson, 1989). The only ladder in the major leagues is located up the wall just inside the foul pole. This is to allow the grounds crew to retrieve home run balls from the net atop the wall. Balls have struck this ladder and changed the outcome of many plays.

The most interesting features of the wall is the partially hand operated scoreboard located at it's base (see Figure 12). Operated by two people, the scoreboard keeps track of runs, hits, errors, and current situation of the Red Sox game. The least known fact concerning this scoreboard is that the initials of longtime owner Thomas A. Yawkey and his wife Jean R. Yawkey who currently owns the team, are inscribed, in Morse Code vertically on the face of the scoreboard (Swift, 1992).
The Big Green Monster is the most recognizable architectural element in all of sports. The Big Green Monster is a unique element within the most asymmetrical ballpark in the major leagues. Fenway Park is the oldest and most unique ballpark in the major leagues. It represents the traditional aspects of baseball and ballpark design. The design present in Fenway Park represents the traditional aspects of baseball and stadium design.
TIGER STADIUM

"...only Wrigley Field and Fenway Park will stand with Tiger Stadium as places where baseball truly belongs...where the crowds of today echo those of yesterday as they applaud all the great plays that live in memory." (Kashdan, 1989)

Location

The location of Tiger Stadium is not universally considered desirable. It is located in an old, run down, deteriorating neighborhood on the southwest side of Detroit (Wood, 1988). This type of site is ideal for hosting a baseball stadium.

Tiger Stadium is bounded by Michigan Avenue on the first base side, by National Avenue on the third base side, by Kaline Drive along left field, and by Trumbull Avenue beyond the right field stands (Benson, 1989). When Tiger Stadium was first built, the plot of land on which it was located was a square. Michigan Avenue has since been altered and now runs slightly off the street grid of downtown Detroit. When this shift in the street grid occurred, Tiger Stadium grew to take advantage of the extra space added to its site. The ticket department, dining room, and hall of fame have all been added in these auxiliary spaces (see Figure 13).

The property which surrounds Tiger Stadium is largely devoted to residential use with the remainder being devoted to commercial use. Unlike other cities which play host to urban ballparks, Detroit is without a popular mode of public transportation to the ballpark. Around the ballpark there is no large parking lot to
accommodate fans, instead parking is obtained in a variety of spaces available around the stadium.

Parking spaces are obtained in small business parking lots, alleys, and boulevards (see Figure 14). One of the most popular places to park is the front yards of private residences. Residents who live near the stadium charge up to $20 to park
Figure 14. Aerial view of Tiger stadium taken from the southeast (photo courtesy of the Detroit Tigers).

in their yard for one game.

**Field Configuration**

Dimensions of the playing field are as follows:

- Left Field: 340 ft
The layout of the playing field at Tiger Stadium has a simplicity reflective of the simpler time in which it was built. The site of the park was used for baseball as early as 1900. The construction of Tiger Stadium as it is known today came in the form of Navin Field in 1912. Though various alterations have affected the location and size of the home run fence, it remains as solid as Tiger Stadium and city of Detroit itself.

The wall at Tiger Stadium is a consistent construction from the left field corner to the right field corner. The lower 5 ft of the wall is constructed of concrete. Two additional features have been added to the wall. The first is an item of safety. Padding has been added to protect outfielders who chase balls too aggressively. The pads are barely noticeable as they are painted blue to match the concrete wall whose top and bottom few inches are also blue. The second additional feature is a fence on top of the concrete portion of the wall. Similar to the basket in Chicago's Wrigley Field, this device was installed to prevent fans from interfering with play.
Figure 15. View of the interior of Tiger Stadium from the upper deck in right field (Pastier, 1991).

Many times the right fielder will set up to catch a fly ball near the wall but the ball never comes down. This is because the upper deck in right field actually extends 10 ft past the edge of the lower deck (see Figure 15) (Lowery, 1992).

The shape of the outfield is extremely simple. The left field wall is straight and runs parallel to the right field foul line. The right field wall is also straight but runs just off parallel to the left field line. This accounts for the asymmetry of the fence
distances. The joining point of these two straight walls is in center field where two short facets are angled to account for the 90 degree turn.

**Spectator Accommodation**

Tiger Stadium has the largest foul territory all the surviving ballparks built before 1914. While it is the largest from this era, it is small in relation to the current trends in stadium design. As is the case with Fenway and Wrigley, the configuration of the infield wall, the height of the backstop, the location of the bullpens, and the location of the upper deck (see Figure 16) are all features which bring spectators closer to the field and therefore closer to the game.

The configuration of the infield wall is the first feature which brings spectators closer to the game. The shape of the infield wall is a V formation most of the way down the line. Just before the bullpens the walls angle slightly more towards the field which produces better viewing angles. By angling the seats towards the field and by keeping a minimum distance between the stands and fair territory, Tiger Stadium keeps fans close to the game.

The second feature which brings spectators close to the game is the height of the backstop wall. The wall which surrounds the infield is only 4 ft tall. When the height of the backstop is decreased, the participation and interest of the fans is heightened.

The third factor which brings fans closer to the game is the location of the
Figure 16. View showing the columns in the upper deck and the upper deck's close proximity to the playing field (Pastier, 1991).
bullpens along the foul lines. The bullpen location in Tiger Stadium places the bullpens in the traditional location, which is along the foul lines. Placing bullpens in plain sight is a very important design feature because it serves to draw the fan into the game by allowing them to anticipate changes in the game. Fans seated near the bullpens have the opportunity to observe players in close proximity. This unique experience makes the seats behind the bullpen very popular.

The final factor which brings fans close to the game and gives Detroit an edge over all other current stadiums in the department of spectator accommodation is the location of the upper deck. Around the interior perimeter of the stadium, the front edge of the upper deck is in line with the front edge of the lower deck. This gives spectators holding tickets for the upper deck very good seats even though they are above the main concourse. Columns were installed to allow this alignment of decks to occur. These columns caused the view from some seats in the lower deck to be compromised. By compromising a few seats in the lower deck, the quality of all the seats in the upper deck were drastically improved.

One final note concerning Tiger Stadium. Tiger management is in the process of trying to relocate the Tigers to a new stadium. The National Trust for Historic Preservation has ranked Tiger Stadium, which was erected in 1912, as one of America’s Eleven Most Endangered Historic Places (Angeletti, 1991). The building
itself will survive because it is on the National Register of Historic Places. But if the Tigers move, the ballpark will be lost forever. The fans are the lifeblood of Tiger Stadium and without them the essence of the ballpark is lost (see Figure 17). If the Tigers move, the loss will be felt by baseball and the city of Detroit.
NEW COMISKEY PARK

"This is late-20th century professional baseball in competition for the American family and corporate leisure dollar, and the feel is much more that of nouveau affluent Chicago suburb than the working class (or even gentrified) Chicago neighborhood." (Bess, 1991)

Location

The architect's at HOK were presented with an opportunity to design an urban ballpark. Instead, they designed a baseball stadium with suburban characteristics and sited it in the south side of Chicago.

Situated directly adjacent to Comiskey Park, which was constructed in 1910, New Comiskey Park overwhelmed rather than adapted to the neighborhood. The older urban ballparks previously assessed (Wrigley, Fenway, and Tiger) all derived their greatness, at least in part, from the surrounding street grid and the adjacent neighborhood spaces. They were designed to fit the small sites on which they were located. Rather than fit within an existing site, New Comiskey Park created a site by destroying 80 privately owned buildings which were home to approximately 220 households. Most of which were black, working class poor, or elderly (Bess, 1991). Much of the adjacent land which was claimed was to allow for vertical circulation ramps which were attached to the outside of the stadium (see Figure 18). These ramps created such a large stadium that the traffic on all surrounding streets had to
be rerouted. The only exception to that is 35th street where a ramp is reconfigured to bridge the roadway.

New Comiskey Park is set in what was a historic neighborhood with over 120 years of history. No signs of that neighborhood remain. Comiskey sits by itself, centered in a parking lot. There are 7,136 parking spaces directly adjacent to the stadium (Pastier, 1989). The parking consideration around the stadium was so important in the design of New Comiskey Park that the actual playing field was sacrificed. The preferred orientation of the playing field was ignored. Project designer Ric de Flon justifies the switch in orientation by noting that the switch reduces the
distance from the stadium entrances to the parking lot (Pastier, 1989). One of the most important factors in experiencing a ballpark is how spectators travel from the front door of their house to the ballpark. At New Comiskey Park the large quantity of parking spaces encourages spectators to drive to the stadium. This diminishes the spectator experience by limiting their exposure to the surrounding neighborhood.

At New Comiskey Park the surrounding parking lots create a half mile barrier between the stadium and the nearest restaurant or commercial building (Bess, 1989). The most common spectator pattern is to drive to the ballpark, watch a game, and drive home. The experience of going to the ballpark is limited by reducing the activities to driving and watching baseball.

**Field Configuration**

Dimensions of the playing field are as follows:

- **Left Field**: 347 ft
- **Left Center Field**: 375 ft
- **Center Field**: 400 ft
- **Right Center Field**: 375 ft
- **Right Field**: 347 ft
- **Backstops**: 60 ft

The layout of the playing field at Comiskey Park is symmetrical (see Figure 19).
All stadiums designed and built in the past 30 years (with the exception of Royals stadium) have been multi-use facilities (Pearson, 1991). This type of field tends to be symmetrical in an attempt to accommodate a variety of functions. However, since New Comiskey Park is a baseball only facility, there is no need to accommodate other functions.
The backstop is placed 60 ft from home plate and consists of a wall 4 ft high with a railing set on the top edge. The wall continues on an arc, 60 feet from home plate until it is in line with each foul line. The wall then bows out and curves into the outfield corners (see Figure 20). The wall is continuous except for three interruptions. Two of the interruptions are for the dugouts on each side of the field. The
third is for a service gate. The gate was installed to allow service vehicles onto the field. The service gate is located directly behind home plate and forces the elimination of 75 of the best seats in the stadium (Bess, 1991).

The distance from home plate to the outfield wall is 347 ft down each foul line. From there the outfield wall runs parallel to each foul line to the point along the wall that is 375 ft from home plate. An arc running from left center field to right center field connects these two points in dead center field.

Spectator Accommodation

To properly assess how well the stadium accommodates spectators there are several factors which must be examined. In this facility there are three major factors concerning spectator accommodation. They are seating, circulation, and amenities.

Seating is the first major factor of spectator accommodation which must be examined. At Comiskey Park there are several levels of seating. The levels are broken down into four areas: lower deck, luxury level, upper deck and outfield (see Figure 21). Each deck has its own unique qualities.

The lower deck at Comiskey Park is the first seating area to be examined. Aisles are spacious and the seats are comfortable. There is a very gentle slope and the viewing angles are accommodating. There are two problems with this section of seating. The first problem is related to the fact that there is no cross aisle in the
lower deck. With 35 rows of seating it is cumbersome to traverse sections. Access to an adjacent section is gained either by stepping over fans or going up to the main concourse and across to the next section. The second, more serious problem, is common in many ballparks. The eye level of fans in the first row is seven feet above the playing field. When a spectator is placed at eye level with the players, they feel closer to the ballgame. It is easier for spectators to gain a sense of scale of the
building when they have the same perspective as the players.

The second level of seating to be examined, the luxury level is among the finest in baseball. It is comprised of three rings of seating. Two of the rings are primarily reserved for luxury suites. In the two rings there are 91 suites which seat between 10 and 26 people (Pearson, 1991). The majority of the suites are rented on a season long basis for between $55,000 and $90,000 (Pearson, 1991). The third ring of seats in the luxury level is a row of seats extending slightly over the lower deck. The luxury level was built to help pay for the construction costs of the stadium. It accomplishes the goal of being an economic asset as well as being quality seating.

The third seating area to be discussed is the upper deck. There are 19,000 seats in the upper deck all of which are poor seats. There are two problems with the upper deck.

The first problem with the upper deck is the location. In this design scheme, the architects were not allowed to use any columns. To meet this criteria the upper deck was placed behind the lower deck. There is no cantilever of the upper deck over the lower deck. This forces the upper deck away from the field. This means the first row of the upper deck in the new stadium is farther from the playing field than the last row of the upper deck of the old stadium (Bess, 1991). The top row the upper deck is 135 ft above the playing field.
The second problem with the upper deck stems from the first. It is the slope of the upper deck. By locating the upper deck farther away from the playing field, the slope had to be increased to allow good viewing angles. The slope of the upper deck is 33.27 degrees. This produces an effect that can be sickening to some patrons. One such account tells of a woman and her daughter seated on the concrete steps sliding down all 82 steps to the bottom (Pepper, 1991). This scenario is common in many stadiums in which the upper deck is placed behind the lower deck rather than above the lower deck.

The final seating area to be discussed are the seats located beyond the outfield wall. These 6,000 seats are all good seats, but, as with all the seats in the park, there is a problem. The outfield wall is only 8 feet high which should produce good fan interaction with the game. However, there is a 10 ft service corridor surrounding the outfield wall separating the bleachers from the field. By doing this the spectators are removed from the game.

Circulation is the second major factor of spectator accommodation to be addressed. Circulation is accomplished in two ways, vertical and horizontal.

The horizontal circulation is fairly effective in this scheme. It is accomplished primarily by a 40 ft wide corridor (Pearson, 1991). This main concourse is flanked by the grandstand on the interior side of the stadium and concession stands on the
exterior side of the stadium.

Vertical circulation is a matter which is a sore spot with many critics of and those associated with the stadium project. Most vertical circulation occurs via six large switch back ramps which are placed on the exterior of the stadium. Besides being long and tall, they also increase the size of the stadium. The ramps hide three-quarters of the carefully worked out architectural facade (see Figure 22).

Amenities are the third major factor of spectator accommodation to be discussed. Throughout the stadium several amenities serve to make the ballpark a more comfortable experience for a diverse user group. One such item is the stadium club. Located in the right field corner, the stadium club is an option for those who do not like the bleachers of cannot afford a luxury suite. An amenity which caters to a diverse user group is the kids corner. This offers a playground and day care facility for children. One amenity that is a carryover from the original Comiskey Park is the picnic area.

The scoreboard at New Comiskey Park keeps in the tradition of the original Comiskey Park. In the words of the White Sox publicity, the main scoreboard is a "state of the art Sony Jumbotron 'exploding' scoreboard with full color video replay and matrix capabilities." In addition, the scoreboard takes a page from the past by incorporation advertising on the flanks of the scoreboard.
Figure 22. Main Entrance to New Comiskey Park (photo courtesy of Chicago White Sox)
Putting aside the blatant disregard for context and site, New Comiskey Park is a successful ballpark in which to watch a baseball game.
SKYDOME

"Toronto has one of the most spectacular new structures in the world. What it does not have, alas, is a baseball field" (Goldberger, 1989)

Location

To the credit of the architects and urban planners, the Skydome has done much to be a part of the neighborhood in which it is located. The Skydome sits at the edge of the central business core of Toronto.

The Skydome is incorporated into two neighborhoods at the same time. The first neighborhood of which the Skydome is a part is downtown Toronto. The Skydome sits next to the CN tower which is billed as the world’s tallest structure (see Figure 23) (Goldberger, 1989). Both this structure and others such as Union Station are visible as a part of Toronto’s skyline when the roof of the dome is fully retracted.

The second neighborhood which incorporates the Skydome is the Skydome. With the massive amount of spectator amenities such as bars, restaurants, and even a hotel, the Skydome creates an identity of its own.

One area for which the Skydome should be commended is the lack of parking. There is little parking near the stadium which is reminiscent of older urban ballparks such as Wrigley Field and Fenway Park. Keeping in mind the sense of community around those older parks, the planners intentionally installed few parking spaces (see Figure 24). To ease fan transportation needs to the stadium,
Figure 23. View of the Skydome, CN Tower, and downtown Toronto (photo courtesy of the Toronto Bluejays).
public transportation in the area has been increased. In addition, for the environmentally conscious fans, hundreds of bike racks have been installed around the stadium. This variety of transportation sources around the stadium produces a large amount of pedestrian traffic which promotes a sense of community.

By incorporating the stadium into the urban fabric of downtown Toronto and encouraging the use of modes of transportation other than automobiles, the
Skydome as a building, takes a planning lesson from its predecessors and incorporates the building technology available today.

Field Configuration

Dimensions of the playing field are as follows:

- Left Field: 328 ft
- Left Center Field: 375 ft
- Center Field: 400 ft
- Right Center Field: 375 ft
- Fight Field: 328 ft
- Backstop: 60 ft

Toronto built a technologically advanced piece of engineering. In the center a baseball field was placed whose surface could be mistaken for any of the multiple purpose stadiums of the last three decades (see Figure 25). The dimensions conform to the averages for the league. In a building constructed with the latest available technology, this configuration is a contradiction.

The layout of the field does not facilitate spectator enjoyment of the game. The backstop is 60 ft from home plate. However, unlike most baseball stadiums, the radius of the backstop curve is greater than 60 ft. This pushes the grandstand far away from the playing field. In addition the arc of this circle does not end at the foul
Figure 25. Aerial view of the Skydome with the roof open during the 1992 All-Star game (photo courtesy of the Toronto Blue Jays).

lines. It continues to the point at which it is perpendicular with first and third base. The wall is then intersected by another arc which runs from first/third base to the right/left field corner. These arcs again are turned away from the field thereby further removing fans from the game.

The outfield wall is placed and constructed in a manner which creates no visual interest for the spectator. The wall is 10 ft tall and covered with a blue canvas pad.
The shape of the wall is a slight curve from the foul lines to the power alleys. From the power alleys to the center field curve is slightly greater (see Figure 26).

All of these curves are not conducive to creating an interesting ballpark. This shows the inexperience of the architect in designing baseball stadiums. The chief architect for the project was Canadian architect Roderick Robbie. In his first attempt at designing this building type, Robbie is successful at creating a building that functions marginally for a number of uses. In that regard, there was no improvement over the poorly designed multi-use stadiums designed and built in
the 60's and 70's. The only improvement in this facility is the use of a retractable roof. This allows for outdoor play during pleasant weather and indoor play during inclement weather.

**Spectator Accommodation**

The Skydome was built specifically to make money. In doing so, many amenities were incorporated to achieve this goal. Baseball purists would argue that the role of the baseball stadium is to facilitate the ideal playing and watching of baseball. This is a goal which has been ignored in the Skydome.

The primary measure of how well a stadium accommodates its spectators is how well the seating scheme is designed. In the Skydome there is three main problems with the seating. The first problem is the curved shape of the wall surrounding the field pulls spectators away from the field. This diminishes the quality of the viewing experience by increasing the distance between the spectator and the field. The second problem is the seats in the top deck of seating. Many of these seats have obstructed views of as much as 1/3 of the playing field. Some seats have such poor views that the Blue Jays ticket office refuses to sell them. For instance aisle 504, row 9, seat 101 is so bad it is not sold under any circumstances. (Lowery, 1992) The final problem to be addressed with regard to the seating is the service corridor directly behind the outfield wall. As was the case with the multi-
purpose stadiums of the 60’s and 70’s, a service corridor was placed behind the outfield wall. This forces those in the outfield stands, already at least 350 ft from home plate, even further from the action.

Another factor that proves the lack of concern for the fan and respect for economic aspects is the location of the bullpens. In recent years there has been a growing concern about potential injuries that may occur as a result of bullpen mounds being placed in foul territory adjacent to the outfield. Owners who are concerned over the revenue that may be lost by the injury of a star player have moved the bullpens off the playing field. This is an acceptable solution if the bullpens are still visible. However, in Toronto the bullpens are placed between the outfield wall and the bleachers. In this arrangement, the only fans who are able to view the bullpens are those in the first row above the bullpen. Managers cannot see the bullpens and must view them on television monitors in the dugout.

The final point to note in terms of the Skydome’s fan accommodation is amenities. The amount of amenities located in the Skydome is far greater than any other baseball stadium. The amenities include a health club, a theater, a Hard Rock Cafe, the largest McDonald’s in North America (see Figure 27) and a luxury hotel. The hotel is 11 stories high and contain 340 rooms, 70 of which offer views of the field (Tackach and Stein, 1992). The amenities have nothing to do with the baseball
Figure 27. The largest McDonald's in North America is in the Skydome. (Tackach and Stein, 1992).

The Skydome was designed to accommodate a variety of events, including concerts, conventions, and other large gatherings. The stadium and operate whether a game is in progress or not. The amenities actually deter from the game because the stadium was designed to accommodate them first and baseball second. These are blatant attempts to help cover the cost of constructing such a facility. Even with these attempts, the Skydome lost $18 million in 1991 and is expected to lose at least as much for the next several years (Symonds,
The Skydome is a money driven business venture oblivious to the activity which it is designed to facilitate. Given the Skydome's financial situation, it seems that neither the functional needs nor the fiscal goals were met.
ORIOLE PARK AT CAMDEN YARDS

“Every baseball fan should kneel down this moment and thank God for Baltimore.” (Cohen, 1990, p. 126)

**Location**

The architects of this project, HOK Sports Facility Group, were successful in the way they incorporated the stadium into the urban scheme of downtown Baltimore. This was accomplished in three ways. First the stadium was incorporated into the existing street grid. Second the existing context in which the building was placed, was preserved. And third the stadium is located near the downtown and Inner Harbor area of Baltimore.

Incorporating a stadium into the existing street grid is the first step is creating an urban ballpark. In Baltimore, an abandoned railroad yard stood with relatively little life. This area is roughly bounded by Greene Street, Camden Street, Howard Street, and Martin Luther King Jr. Boulevard (Baltimore Orioles Baseball Club, 1992). After clearing most of the parcel, an old-fashioned baseball stadium, complete with iron trusses and weather veins, was constructed. No traffic had to be rerouted, no business relocated, and no residents evicted. By doing so Camden Yards became a part of the neighborhood rather than eliminating the surrounding neighborhood (see Figure 28).

The context of the baseball stadium is a warehouse district on the outskirts of
Figure 28. Plan of area surrounding Oriole Park at Camden Yards (Baltimore Orioles Baseball Club, 1992).
downtown Baltimore. This is the second way the stadium was incorporated into downtown Baltimore. When the project was begun, there was little on the site. What few buildings were located on the site were destroyed except one. That building is the Baltimore & Ohio warehouse. It is a 1016 ft long warehouse and is billed as the longest building on the east coast. In an attempt to fit with the existing neighborhood, the brick for Camden Yards was picked to match exactly that used in the Baltimore & Ohio warehouse.

The third factor which allows the stadium to be incorporated into downtown Baltimore is its close placement to the downtown area. One of the main attractions in downtown Baltimore is the Inner Harbor. The Inner Harbor is an urban redevelopment project that is home to some of the most visited attractions in Baltimore. Three of the major attractions on the harbor are the Baltimore Science Center, the National Aquarium, and Harbor Place shopping center. This places an emphasis on Conway Street which connects the harbor to Camden Yards. The potential exists for interaction along Conway Street both before and after games. By fitting into an existing neighborhood, preserving the character of the neighborhood, and having a location in an urban area, Camden Yards has a similar planning scheme to stadiums of the first half of the century.
Field Configuration

Dimensions of the playing field are as follows:

- Left Field: 333 ft
- Left Center Field: 373 ft
- Deepest Left Center Field: 410 ft
- Center Field: 399 ft
- Right Center Field: 386 ft
- Right Field: 318 ft
- Backstop: 57 ft

The playing surface at Camden Yards is unique in dimension and layout. The highly irregular shape is the product of the architect's determination to fit the stadium within the existing urban context. It is surpassed only Boston's Fenway Park as being the most asymmetrical playing field in major league baseball (see Figure 29). This asymmetrical layout tends to produce a more exciting game which includes more plays such as triples and inside-the-park home runs. In its first full season of use, Camden Yards produced 36 triples. By contrast, old Memorial Stadium, former home of the Orioles, had produced an average of 18 over the last 10 years (Ballpark Notes, 1992).

In addition to producing a field where more exciting plays occur, a stadium was
Figure 29. Playing field layout and seating configuration of Camden Yards

(Baltimore Orioles Baseball Club, 1992).
produced using the more traditional straight walls instead of curved ones. Behind home plate, instead of a curved wall, several short, straight walls are joined to form the backstop. This series of short walls continues to the edge of the dugouts along both foul lines. After each dugout, there is a straight wall connecting the edge of the dugout to the outfield wall. In the right field corner there is an interruption in this wall as it juts towards the field. This allows for the entrance to the grounds keepers storage area which is located beneath the stands in the right field corner.

The outfield here has a unique shape (see Figure 30). It is bordered by 4 straight segments of wall. In the left field corner the first of the four segments is at an angle of nearly 60 degrees with the foul line. This is a fairly short wall and is intersected by the second wall which comprises the majority of the left field wall. This barrier runs nearly parallel with the right field line. Center field is bordered by a third wall set at an angle approximately 45 degrees with home plate. These three walls are all 7 ft tall and covered with green pads. The final wall is becoming one of the most easily recognized walls in baseball. It is 25 ft tall and covered with advertising and an out of town score board. This wall is the second tallest in the major leagues next to the Big Green Monster at Fenway Park in Boston.
Figure 30. Interior of Oriole Park at Camden Yards from the pressbox (Baltimore Orioles Baseball Club, 1992).

**Spectator Accommodation**

When a spectator comes to Oriole Park at Camden Yards, they can expect a quality experience at the ballpark. There are several factors present which enhance the experience. Three of which are the seating proximity, the imagery present in the
park, and the treatment of the bullpens.

Compared to seating schemes in recent stadiums the seating layout at Camden Yards is excellent. When compared to older stadiums built between 1910-1935, the seating is fairly average. There are some seating features implemented which make Camden Yards and excellent place to experience a baseball game.

The first feature which makes Camden Yards an excellent stadium in which to watch a game is the distance between the grandstand and the base lines. The distance is reduced to 45 feet (Fischer, 1991). This short distance between the grandstand and the playing field brings the fans close to the playing field and makes them feel closer to the game.

Another factor which allows excellent viewing is the scale of the stadium has been reduced by the configuration of the upper deck. In addition to spanning from foul pole to foul pole, the upper deck wraps around the left field foul pole. This helps to give the stadium a sense of enclosure. This makes the fan feel closer to the action. This gives spectators a fixed end to the stadium rather than an endless horizon line. As the grandstand in left field encloses one end of the stadium, the B&O warehouse does the same in right field. These two barriers create a tight and enclosed stadium and helps to
create a sense of space within the stadium.

The cross section of the stadium is a hybrid of new and old stadiums (see Figure 31). This is the third factor which provides good seating. Whereas older stadiums stacked decks one on top of another and new stadiums tend to put one behind another, at Camden Yards each successive deck of seats is placed above and slightly behind the deck below. This allows the architects to accomplish two goals. The first goal is common to many new stadiums. That is, no columns. The second goal was
to bring seats in the upper deck closer to the field. While the situation here is not ideal it is certainly a step in the right direction.

The final factor that makes Camden Yards an ideal place for viewing a ballgame is the picnic area. In left center field beyond the bullpen is a picnic area. This area is available for use both before and during the game. It offers another seating choice in an already diverse stadium.

These various seating areas are even more impressive because they are also accessible to fans who use wheelchairs. Handicapped accessibility is an area in which Camden Yards excels. Many stadiums have areas which are designated for wheelchairs. In Camden Yards there are 428 seats designed for wheelchair users. The seats are a form of folding chairs that allow seating for spectators who use wheelchairs as well as spectators who do not. As is the case with many other aspects in Camden Yards, this is an option that represents a direction in stadium design that will produce a stadium that facilitates a quality experience for everyone.

The architectural qualities present provide imagery which enhances the overall experience of the ballgame. There are literally hundreds of features present which enliven the imagination of the spectators. Steel trusses, stair towers, and arched windows are all features reminiscent of stadiums constructed during previous
generations. The B&O warehouse in right field evokes nostalgic thoughts in fans. Constructed in the early 1900’s, it was the inspiration for many of the features of Camden Yards.

Perhaps the feature which best reflects the imagery present in Camden Yards, is the score board. Located above the bleachers in right center field, it looms as testament to the traditions of baseball while recognizing the time in which it was built. The central portion of the score board displays player and game information on a lighted score board and Sony Jumbotron video display screen. These two pieces of technology are set into a traditional looking framework. A steel truss surrounds both screens. Atop the score board are flags, weather veins, and a clock. These items are all styled after vintage items found in parks around the country.

The final feature in the ballpark which provides fan accommodation is the way the bullpens are handled. One of the most requested features fans have of ballparks is that they be able to see the bullpens (Masello, 1989). With concern over the safety of in play bullpens, the architects found an innovative solution. Behind the left center field wall they elevated on bullpen 4 ft above the playing field. The other bullpen is behind that and elevated another 4 ft (see Figure 34). By doing so, the fans are able to see the action in the bullpen without the action posing any threat to the players. This type of design feature is typical of the architect’s commitment to
enhancing the game and the user experience.

Camden Yards is representative of a new era in stadium design. Future ballparks should take a lesson from Oriole Park at Camden Yards. While not perfect, it is a step towards developing a ballpark that respects the rich traditions of baseball as well as the technological advances of the 90's.
RESEARCH FINDINGS

Throughout the literature review, several recurrent features were identified which contribute to a successful stadium design. In an attempt to create a successful stadium for the Albuquerque Dukes, these features will be identified and as many as possible will be implemented in the stadium design.

Location

1. A stadium with little adjacent parking encourages spectators to interact with the surrounding neighborhood both before and after the game and expands the experience of baseball beyond the stadium.

2. A stadium which fits into an existing site tends to assimilate into and become a part of the neighborhood in which it is located.

Field Configuration

1. A field which is asymmetrical in layout in the outfield creates an opportunity for an exciting game.

2. An outfield wall which varies in height creates an opportunity for an exciting game as well as creating visual interest for the spectator.

Spectator Accommodation

1. A backstop wall which allows the eye level of the spectator in the first row to be even with the players in the field decreases the scale of the building.
2. Seats which are angled towards the infield produce better viewing angles.

3. Outfield bleachers create a sense of enclosure and reduce the scale of the stadium.

4. Nostalgic features create a sense of excitement within the stadium which expands the experience of going to the ballpark.

5. Reduced foul territory brings fans closer to the playing field.

6. Placing bullpens in plain sight allows spectators to anticipate changes in the game.

7. Locating the upper deck above the lower deck rather than behind it, brings fans close to the game.
PART II. DUKE'S FIELD
DESIGN INTRODUCTION

The main form determinant of a baseball stadium is the site on which it is located. Before any type of design decisions can be made, the site must be identified. In addition the specific needs of the user groups must be considered.

In an academic setting, a project must be undertaken that is not so overwhelming that it prevents the student from exploring a variety of design options. A project should also be large enough to challenge the student. For this thesis, such a project has been undertaken.

The Albuquerque Dukes have agreed to participate in this project as a hypothetical user group. The Dukes are a minor league baseball team affiliated with the Los Angeles Dodgers. The team is a member of the Pacific Coast League. The league is comprised of AAA teams. AAA teams are those with players on their roster who are one step below the major leagues. The talent level within the league is very near that in the major leagues.

The Dukes currently play at Albuquerque Sports Stadium. A facility that is home to many events besides Dukes games. High school baseball and soccer games are played there as well as many concerts and other city sponsored events. This facility no longer meets the needs of the Dukes and they are currently exploring their options to relocate.
In accordance with this goal, the Dukes have selected a site for a new stadium. The Dukes have requested that a stadium be designed for the site. The remainder of this project describes the design for Dukes Field.

The type of facility associated with this level of play has many of the features that are present in major league facilities. The only difference is the scale. The cities that host these teams are smaller than cities which host major league teams and draw fewer fans. To allow for this reduction in attendance, the number of seats is greatly reduced. Most AAA stadiums seat 10,000-12,000 fans.

While the size of the stadium has been greatly reduced, the factors which make a stadium successful remain consistent. Playing field layout, location, and fan accommodation are all areas which need to be addressed in any stadium. Through an evaluation of existing stadiums, several common factors were found in successful stadiums. Many of these factors are incorporated in Dukes Field. To achieve a consistent and fair evaluation, the design will be assessed on the same criteria as the existing stadiums which have already been discussed.
FACILITY PROGRAM

The following program is a set of goals that will be met during the design process. By specifying the needs of the stadium at the outset, a fully developed design that meets the criteria of the Dukes can be achieved. The program is designed to insure the needs of the stadium, team, and spectators are met. During the design process the perceived need of the various user groups may change. The program is flexible by design and will allow such changes to occur.

All quantities for the stadium outlined in the program meet or exceed the standards set forth in *Standards for Minor League Playing Facilities*. All specifications for the playing field shall be in compliance with section 1.04 of the *Official Baseball Rule Book*. In addition, all facilities within the stadium will be in compliance with the *Americans with Disabilities Act of 1990*.

Section 1

1.1 Seating Capacity

A. Seating capacity for the stadium shall be set at approximately 12,000 seats.

B. All seats will be of molded plastic and will include a back and side arms.

C. The last row of seats in each section will be mounted folding chairs to allow for universal seating.
1.2 Grades of Seating

A. Three grades of seating shall be used. They will be Box Seating, Reserved Seating, and General Admission.

B. In addition to the three grades of grandstand seating, luxury box seating will be provided.

1.3 Seating Distribution

A. Distribution of seats will be equal to provide approximately 4,000 seats of each type within the stadium.

B. In addition to the 12,000 seats in the grandstand, 20-28 luxury boxes will be provided. Additional seating capacity of the suites will be approximately 350.

1.4 Handicapped Accessibility

A. The stadium will have a minimum of 2% (240) seats accessible to wheelchair bound patrons.

B. The 240 seats will be located in various area of the stadium and will be included in all categories of seating.

Section 2

2.1 Comfort Station Distribution

A. Location of public comfort stations will be in accordance with location of
seating to provide minimum walking distance from any part of the facility to a public comfort station.

B. On each level there will be a minimum of one family comfort station. The purpose of these stations will be to allow those who may need assistance in using the restroom, to have opposite sex family members or companions assist them.

2.2 Plumbing Fixtures

A. Public comfort stations will be designed to accommodate 60% male and 60% female users.

B. Total number of plumbing fixtures will be a minimum of:

- **Water Closets**
  - 58 women
  - 16 men

- **Lavatories**
  - 48 women
  - 48 men

- **Urinals**
  - 58 men

2.3 Handicapped Accessibility

A. A minimum of one water closet in each public comfort station will be designed to meet specifications set forth in the American’s with Disabilities Act of 1990.
B. The family comfort stations that are to be located on each level will be completely handicapped accessible.

Section 3

3.1 Concession Area

A. A minimum of 5 lineal feet of counter space will be provided for concessions per every 350 spectators.

B. Based on the 12,000 seat capacity, no less than 172 feet of counter space will be provided. The concession stands will have appropriate support space attached which includes food storage and preparation.

C. Concessions areas will be distributed throughout the stadium in accordance with the seating distribution.

D. As no beer is sold through vendors or concession stands, accommodation will be made to provide separate beer stands beyond the 172 feet of lineal feet of counter space provided for concessions.

3.2 Vendor Stations

A. Based on a figure of one vendor per 300 spectators, storage space will be allotted for approximately 40 vendors.

B. To insure adequate vendor commissary space, storage space will be allotted at the rate of 20 sf per vendor.
Space Allocation .......................... 800 sf

3.3 **Concession Storage and Novelty Stands**

A. Concession storage will consist of a minimum of two areas located near the main concessions area and will be at least 500 sf each. In addition, a storage area near the loading dock will be a minimum of 1,000 sf.

Space Allocation .......................... 1,000 sf

B. Each beer stand will have a minimum of 100 sf of cold storage space.

Space Allocation .......................... 200 sf

C. A novelty store will be provided with access from both inside the stadium as well as from the exterior. This shop will be open during games as well as during normal business hours. The shop will be a minimum of 1,000 sf and have 500 sf of storage space. It will be furnished and operated in a manner with standards equal to modern retail stores.

Space Allocation .......................... 1,500 sf

D. An additional novelty store will be located within the stadium for sales during game times only.
Space Allocation ................................................. 400 sf

Section 4

4.1 Stadium Club

A. A stadium Club will be implemented within the stadium. The team preference would dictate that the stadium club be located near a corner of the stadium.

B. The stadium club must have a view of the field to be used during the game. In addition, the club should have an outside entrance for use during times other than when a game is being played.

C. The stadium club should be furnished with a fully operational kitchen to serve both the stadium club and the luxury boxes.

4.2 Picnic Facility

A. A tiered picnic facility will be located within the stadium. It will be equipped with some form of picnic tables oriented towards the playing field.

B. Rest room facilities will be located near the picnic facility. In addition, a concession stand will be located in close proximity to the picnic facility.

4.3 Family Area

A. Within the General Admission seating, an area will be designated for
families in which no beer will be permitted. This area is designed for use specifically by families.

4.4 **ATM**

A. Locate on site, an automatic teller machine that is accessible from both inside the stadium during games and outside the stadium when there is no game is being played. This may be accomplished by having two separate Automatic Teller Machines.

4.5 **Public Phones**

A. Public telephones will be located both within the stadium for use by fans, and outside the stadium for use by the general public.

**Section 5**

5.1 **Ticket Windows**

A. The main ticket facility shall have no fewer than 8 ticket windows. One of which will be accessed from inside the facility to sell tickets to future events.

Space allocation ................................................. 250 sf

B. Directly adjacent to the ticket window facility will be the ticket managers office. It will have access to the team administration facility and include a counter for money counting, locker for ticket storage and a vault.
Space Allocation .......................................................... 120 sf

C. In addition to the main ticket facility, near each additional gate, a small ticket booth will be provided to sell general admission seats. The booths will be no larger than 30 sf each. The booths may be freestanding or part of the facility.

Space Allocation .......................................................... 120 sf

5.2 Entry Turnstiles

A. Using a standard of one turnstile per every 1500 seats, a minimum of eight turnstiles will be provided. Each turnstile shall be registering, reversible and portable.

B. Each entrance will have a minimum of one turnstile.

5.3 Handicapped Accessibility

A. In accommodation of the intent of the American’s with Disabilities Act of 1991, any gate which will potentially serve a seat which may be used by a wheelchair bound visitor will be wheelchair accessible.

Section 6

6.1 Security Station

A. Office space will be provide for stadium security personnel.

B. Within the security station, provide two rooms for holding of spectators
detained by security personnel.

C. Locate the security station on the concourse level to allow for efficient removal of unruly patrons.

Space Allocation .................................................. 250 sf

6.2 First Aid Station

A. Provide a space for emergency medical treatment. Space will be large enough to accommodate a desk, two treatment areas and minimal storage.

B. Parking for emergency vehicles will be located in close proximity to the first aid station

Space Allocation .................................................. 250 sf

Section 7

7.1 Parking Spaces

A. On site provide parking spaces reserved for use by team officials, players, and luxury box spectators.

B. Insure additional parking spaces to bring total parking allotment of 1 spot per 4 visitors. Parking off site will be within a 1/2 mile (10 minute walk) radius. Total parking allotment will be 3,000 spots.

C. Within the parking lot, the following parking spaces will be reserved. They will be in close proximity to any special entrances that may apply.
1. Provide parking to accommodate 2 television trucks.
2. Provide 5 parking spots for visiting officials.
3. Provide 20 parking spots for front office personnel.
4. Provide 40 parking spots for players, coaches, and manager.
5. Provide 10 parking spots for visiting team’s front office personnel and visiting team guests.
6. Provide 8 parking spots for umpire’s and other game officials.
7. Provide 2 parking spots for each luxury suites.
8. Provide 1 parking spot for the visiting team bus.
9. Provide 10 parking spots for media personnel such as newspaper reporters, radio broadcasters, and television broadcasters.

7.2 Handicapped Parking Spaces

A. Insure that within close proximity to the stadium there are at least 240 handicapped parking spots.

Section 8

8.1 Score board

A. Provide an electronic score board with accommodation for a minimum of line score, situation, and player at bat.

B. Provide advertising space on the score board.
8.2 **Score board Location**

A. Team preference dictates the score board be on the right field side while being located as near to center field as the batter’s eye will allow.

8.3 **Clock**

A. Provide a clock that is to be in full view from the beginning of batting practice to the end of the game.

**Section 9**

9.1 **Press Box**

A. All media facilities will be centrally located in a structure behind home plate on an upper level. It will have operable windows facing towards the field in all appropriate locations.

B. A securable entrance will be implemented to control access to the press box.

9.2 **Public Address/Score board Personnel**

A. PA announcer and Score board Operator will share one booth. Within the booth there will be built in counter tops with a minimum of 12 lineal ft of space. Accommodation will be made for an organ and organist.

**Space Allocation** ................................................................. 300 sf
9.3 Radio Broadcast Booth

A. Three radio broadcast booths will be provided. One each for home and visiting trams as well as one extra for any special events. Each booth will be provided with counter space.

Space Allocation ........................................... 225 sf

9.4 Television Broadcast Booth

A. TV broadcasting requires one booth for broadcast. Built in counter space will be provided.

Space Allocation ........................................... 100 sf

9.5 Print Media Area

A. Provide working space for a minimum of 10 reporters. Each reporter requires a minimum of 6 feet of lineal counter space.

Space Allocation ........................................... 400 sf

9.6 Media Toilet Facilities

A. Provide separate male and female rest rooms within the press box. Each one to be equipped with one water closet and one lavatory.

Space Allocation ........................................... 60 sf

9.7 Media Work Space/Lounge

A. A workroom/lounge will be provided for use by the media. It should be
located within the press box.

B. Within the workroom/Lounge space should be provided for working tables and also storage for concession items for the press.

Space Allocation .......................................................... 300 sf

9.8 Handicapped Accessibility

A. All facilities within the press box will be handicapped accessible.

Section 10

10.1 Stadium Personnel Dressing Facilities

A. Provide two locker rooms for stadium personnel. One each for male and female employees.

B. Each locker room will have no fewer than 125 lockers. In addition, each locker room will be equipped with a small bathroom facility.

10.2 Team Administration Area

A. Administration will have a separate and securable entrance. It will be located so that it is easily recognizable to the public. The offices will be located and designed so as to be functional both independently and inter actively with the stadium.

B. Provide private office for team President and General Manager.

Space Allocation .......................................................... 250 sf
C. Directly adjacent to the GM's office provide an efficiency apartment. This apartment is to be sufficient size to accommodate a bed, bathroom facilities, and a kitchenette.

Space allocation ........................................... 600 sf

D. Provide private office for Director of Administration.

Space Allocation ............................................ 200 sf

E. Provide space in a central location for a conference room with meeting space for 10-12 people.

Space Allocation ............................................ 400 sf

F. Provide space for receptionist and waiting area.

Space Allocation ............................................ 175 sf

G. Provide space for a copy room and kitchenette.

Space Allocation ............................................ 75 ft

H. Provide open office space for 15 additional administration employees.

Space will be allocated at a rate of 300 sf per employee.

Space Allocation ............................................ 4,500 sf

I. Provide rest room facilities for both male and female employees.

Space Allocation ............................................ 150 sf

J. In addition to the 6,000 sf of administration space, provide an additional
10% for circulation.

Space Allocation .................................................. 600 sf

Section 11

11.1 Home Clubhouse/Dressing Area

A. The home team locker room shall contain 30 individual lockers.

B. Each locker will be 3'-0" wide and 2'-6" deep and will contain a lockable storage area.

C. Provide direct access to dugout and field.

Space Allocation .................................................. 2,000 sf

11.2 Shower and Toilet Areas

A. The following are to be the number of fixtures in the rest room portion of the locker room:

   Shower Heads 10
   Water Closets  2
   Urinals        2
   Lavatories    4

Space Allocation .................................................. 750 sf

B. Within the shower area, provide space for drying.
11.3 **Training Room**

A. Provide space for four training tables.

Space Allocation ........................................... 750 sf

B. Provide a wet area for two whirlpools and ice machine.

Space Allocation ........................................... 100 sf

C. Provide an office for the trainer to be also used as office and exam room for team doctor.

Space Allocation ........................................... 250 sf

D. Provide lockable storage area with direct access to Doctor's/Trainers office.

Space Allocation ........................................... 100 sf

E. Provide a rehabilitation area to contain free weights, cybex, nautilus, etc.

Space Allocation ........................................... 600 sf

11.4 **Team Laundry Facility**

A. Provide a laundry facility adjacent to the locker room. Provide a one way drop off door for dirty laundry.

B. Provide space for two commercial washing machines and two commercial dryers as well as folding counters.

Space Allocation ........................................... 500 sf
11.5 **Team Equipment Room**

A. Provide a storage space with double doors in direct access locker room.

Space Allocation ................................................. 500 sf

11.6 **Coaches Lockers**

A. Provide an office for the coaches. It will be located near the managers office. There will be three desks and seating for additional visitors. In addition there shall be six lockers. Provide a locker area and toilet facilities to accompany this space.

Space Allocation ................................................. 400 sf

B. Located between the managers and coaches office, there will be a conference room to accommodate up to 8 people. This room will serve as a conference room as well as a video room.

Space Allocation ................................................. 300 sf

11.7 **Field Manager’s Office**

A. Located near the locker room there will be the manager’s office. Within the office there will be space for a desk as well as visitor seating. In addition there will be a bathroom facility which will include one shower, one water closet, one lavatory, and two lockers.
11.8 **Visitor Clubhouse/Dressing Area**

A. Provide 30 lockers in the locker room.

B. Each locker will be 3'-0" wide and 2'-6" deep and will include a lockable storage area.

C. Provide direct access to the field from the locker room.

D. Visiting coaches will share locker space and wet area with the team.

11.9 **Visitor Shower and Toilet Facilities**

A. The following are to be the number of fixtures in the rest room portion of the locker room:

   - Shower Heads 8
   - Water Closets 2
   - Urinals 2
   - Lavatories 4

B. Within the shower facility a drying space will be provided.

11.10 **Visitor Training Room**

A. Provide space for two training tables.

   Space Allocation ........................................ 250 sf
B. Provide a wet area to contain one whirlpool and an ice machine.

Space allocation .................................................. 150 sf

11.11 Visiting Field Manager’s Office

A. Provide an office with one desk and adequate meeting space for four coaches. Adjacent to the office provide a rest room with one shower, one lavatory, one water closet, and one locker.

Space Allocation .................................................. 250 sf

11.12 Umpire’s Facilities

A. Provide space to accommodate four  umpires.

B. Each Locker will be 3’-0” wide and 2’-6” deep.

C. The rest room facility will contain the following number of fixtures:

Shower Heads 2

Water Closets 1

Urinals 1

Lavatories 2

11.13 Hitting/Pitching Tunnels

A. Within the stadium and in close proximity to the home team clubhouse two net tunnels will be provided for batting practice and pitching work outs during inclement weather. The indoor practice facility should also
have access from the visitor clubhouse.

B. The tunnels will be at least 80' long and 15' wide.

Space Allocation ........................................................... 3,200 sf

11.14 Family Waiting Area

A. Located near the home team clubhouse, there will be a waiting area for the families of players and other uniformed personnel.

B. Within the family waiting area there will be a rest room to include one water closet and one lavatory.

Space Allocation ........................................................... 500 sf

Section 12

12.1 Dimensions

A. The playing field will have dimensions of approximately:

   Left Field               335 ft
   Left Center Field       385 ft
   Center Field            410 ft
   Right Center Field      385 ft
   Right Field             335 ft

if any smaller dimensions are used there will be some type of compensation so as not to allow any unfair advantage to hitters.
12.2 **Field Wall**

A. The outfield will be no lower than 8 ft at any point.

B. The outfield wall may be higher than 8 ft if necessary.

C. The entire outfield wall will be utilized for advertising except for the batter’s eye in dead center field. The batter’s eye will be a minimum of 16 ft high and 40 ft wide.

12.3 **Bullpens**

A. Each team will have a bullpen consisting of two mounds each and a bench.

B. The bullpens will be near each dugout, outside the field of play, and in plain sight of all spectators and the opposing team.

12.4 **Dugouts**

A. There will be two dugouts, each with direct access to the respective team’s clubhouse.

B. Each dugout will be large enough to accommodate up to 40 players and personnel.

C. Within each dugout place one water closet within a small room.

12.5 **Field Lighting**

A. Locate light equipment to illuminate the outfield to 70 foot-candles the
outfield and 100 foot-candles on the infield.

12.6 Playing Field Tarps

A. Locate space for a full infield tarp within the stadium. Tarp must be located so application to will be minimal.

Section 13

13.1 Facility Maintenance Storage Area

A. Locate a storage area for maintenance equipment for the stadium. Within this storage space provide room for cleaning supplies as well as trash removal.

Space Allocation 1,500 sf

13.2 Field Maintenance Area

A. Provide space for grounds crew storage. This space will include space for manual tools, area tarps, drying agent and power equipment.

Space Allocation 2,000 sf

13.3 Lighting Room

A. Provide a securable space within or near the maintenance area to serve as a control room for the lighting system.

Space Allocation 50 sf
DUKES FIELD

“I don’t have to tell you that the one constant through all the years has been baseball. America has been erased like a blackboard, only to be rebuilt and then erased again. But baseball has marked time with America has rolled by like a procession of steamrollers. It is the same game that Moonlight Graham played in 1905. It is a living part of history, like calico dresses, stone crockery, and threshing crews eating at outdoor tables. It continually reminds us of what once was, like an Indianhead penny in a handful of new coins.” (Kinsella, 1982, p. 213)

Location

The neighborhood into which Dukes Field is placed is quite diverse. Dukes field is located on a small parcel of land within this neighborhood.

The land which surrounds Dukes Field is dedicated to a variety of uses. The land to the north is primarily dedicated to residential use. To the east is a movie theater and some light commercial buildings. To the south is a large shopping mall. On the west side of the stadium there is a mixture of retail and office spaces.

This site was selected over others because it had characteristics which were similar to the sites of the great older ballparks. Two of these features are the lack of parking on site and the location of facilities, such as shopping and restaurants, directly adjacent to the stadium. The reduction of parking encourages spectators to find alternative means of transportation to the game. This helps to create a neighborhood around the stadium both before and after the game with people moving a variety of directions with a variety of goals other than finding their car.
The site is bordered by a major shopping center and a multitude of restaurants. By presenting spectators with the opportunity to integrate activities such as shopping and dining into the ballpark experience, the experience is expanded beyond baseball and transportation.

The parcel of land on which Dukes Field is located is an irregularly shaped plot which encompasses 13.8 acres (see Figure 33). The stadium sits along the west...
edge of the plot and runs from the north edge to the south edge. The right field line is diminished as the south edge tapers towards the northeast. The east end of the site is dedicated to a small parking lot is reserved for Dukes personnel and other VIP parking.

**Field Configuration**

<table>
<thead>
<tr>
<th>Field Configuration</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Field</td>
<td>360 ft</td>
</tr>
<tr>
<td>Left Center Field</td>
<td>385 ft</td>
</tr>
<tr>
<td>Center Field</td>
<td>416 ft</td>
</tr>
<tr>
<td>Right Center Field</td>
<td>390 ft</td>
</tr>
<tr>
<td>Right Field</td>
<td>322 ft</td>
</tr>
<tr>
<td>Backstop</td>
<td>60 ft</td>
</tr>
</tbody>
</table>

The field configuration of Dukes Field is one which creates opportunities for an exciting game. The outfield fence is comprised of 5 segments and has two heights.

The shape of the outfield is somewhat dictated by the constricted site. The Dukes desire to have the flexibility to add outfield bleachers further restricted the confines of the outfield. The first of the outfield wall segments, which begins in the left field corner, runs nearly parallel to the right field foul line for 150 ft. The second segment angles slightly more towards the right field line and is 100 ft in length. The
third segment, which is the center field wall, is set at 45 degrees with home plate and is also 100 ft long. The fourth segment is 125 ft long and runs parallel to the left field line. These walls are all covered with advertising except for the center field wall which will be painted blue to act as a batters eye. The final segment of wall is actually the west wall of the administration/stadium club portion of the stadium (see Figure 34). This wall is 96 ft long and 40 ft tall. The construction of the wall is unique in that there will be a variety of materials such as stucco, glass and steel in
the wall. For a ball to be considered a home run, it must land at least in the outdoor eating area of the stadium club, which is on the top level of the building.

Foul territory at Dukes Field is relatively small. Comprised of a series of straight segments, the backstop wall begins 60 ft from home plate and tapers to the foul pole in each corner.

The field configuration of Dukes Field is unique and intimate. It allows the opportunity for a unique and exciting game while conforming to the practical constraints of a baseball field.

**Spectator Accommodation**

Five design factors contribute to spectator accommodation in Dukes Field. These five factors are a low backstop, small foul territory, nostalgia, bullpen visibility, and location of the upper deck.

A low backstop, on 3 ft in height, allows fans to be on the same eye level as the players. This is the first design feature which accommodates spectators at Dukes Field. This low height is consistent around the playing field. Spectators are brought closer to the game and their experience of the ballpark is increased.

The second design feature which accommodates spectators is the lack of foul territory. When the distance between the playing field and the grandstand is diminished around the entire perimeter of the field, each and every seat is
The final design feature of spectator accommodation is the location of the upper deck. It is aligned with the front edge of the upper section of the lower deck. This arrangement allows spectators in the upper deck to have quality seats. To improve this, columns were used to support the upper deck. However, no views were difficult to acquire. The nostalgic images present in Dukes Field are the third features of spectator accommodation. Traditional construction of the stadium is one way nostalgic images are presented. Exposed steel trusses and tie rods evoke images of stadiums that no longer exist (see Figure 35). Another feature which lends to the nostalgic feel at Dukes Field is the scoreboard. The scoreboard is a combination of old traditions and
new technology. Two of the traditional features are hand operated line scores on the scoreboard and an out of town scoreboard. Images which evoke nostalgic thoughts from fans serve to heighten their experience of going to the ballpark by expanding the scope of the experience beyond the game at hand.

The fourth design feature which accommodates spectators is the location of the bullpens. Located just off the playing field, the bullpens allow spectators full view during the game. When spectators are able to see bullpens they can anticipate changes in the game. In addition to allowing spectators to view the bullpen, the safety of fielders is protected by moving the mounds from the field.

The final design feature of spectator accommodation is the location of the upper deck. The upper deck is placed above the lower deck. The front edge of the upper deck is aligned with the front edge of the upper section of the lower deck. This arrangement allows spectators in the upper deck to have quality seats. To accomplish this, columns were used to support the upper deck. However, no views were obstructed as the columns were placed at the rear of the seating areas.

Dukes Field incorporates many of the features which were found to contribute to successful stadium design. It is a stadium with a balance of traditional stadium design features and the latest available design technology.
Figures 36-46 are drawings of the design for Dukes Field.

Figure 36. Site Plan. All major circulation routes are shown as well as some of the available parking. The shape of the site dictates the shape of the field.
Figure 37. Lower level plan. Some of the major spaces on the lower level include the locker rooms, indoor hitting area, family waiting room, groundskeeper storage, and employee locker rooms.
Figure 38. Main concourse plan. The main concourse contains the main circulation space as well as many spectator amenities such as concession stands, public comfort stations, and novelty stands. In addition, the main level of the team offices are on this level.
Figure 39. Main level seating plan. The second level of the team offices are shown as well as the rear circulation path behind the upper portion of the main concourse.
Figure 40. Upper level plan. This plan shows the layout of the press box and the luxury suites. The top level of the office area serves as a stadium club. In addition, the upper level of seating and the corresponding amenities are shown.
Figure 41. Elevation of main entrance. Showing main entrance to stadium and ticket windows.
Figure 42. Elevation of south facade. A typical elevation of the stadium showing the proximity of the upper level to the lower level and the connecting structure. A typical stair tower is also shown.
Figure 43. Elevation at north end of stadium. The circulation ramp at the north end of the stadium compliments the stairs and elevators around the other parts of the stadium.
Figure 44. Elevation inside stadium. Shows the relationship of the outfield wall, the team offices and the stadium.
Figure 45. Stadium section. This drawing shows the relationship of spaces through the stadium on all levels.
Figure 46. Circulation section. The relationship of circulation corridors through seating sections is shown.
CONCLUSIONS

The goal of this thesis was to determine factors which contribute to successful baseball stadium and to implement those features into a design. The process started with a need for a new stadium for the Albuquerque Dukes.

After identifying the need for a new stadium, a set of criteria was established to assess existing stadiums. The stadium which were selected for evaluation were selected for evaluation were selected because they are the three oldest (Wrigley Field, Fenway Park, and Tiger Stadium) and the three newest (Skydome, New Comiskey Park, and Tiger Stadium) stadiums in the major leagues. By assessing the oldest and newest stadiums, successful design features of both traditional and modern stadiums were identified. These features were then summarized for use in the stadium for the Albuquerque Dukes. A program for the stadium was developed based on the needs of the Dukes players, management, and fans. A design was conceived which incorporated all features from the program and many of the design features identified from existing stadiums.

When the design was complete, it was presented to the Dukes management and ownership. There was a consensus of overwhelming support for the design. Three aspects of the design were particularly well received. They are the team offices, the asymmetrical playing field, and the relationship of the upper deck to the
lower deck.

The process which was used to develop this stadium is one that worked extremely well in an academic setting. There was learning primarily in three areas. The first area is the archival research. Learning to fully research a topic is a learning experience in itself. The second area where learning occurred was in the design process. Trying a variety of design solutions and obtaining input from a variety of sources introduced a diverse range of possibilities to the problem. The final area where learning occurred is the contact with a real client. The Dukes, as the clients, had final power in any decisions regarding the design. Too often in academic settings, design parameters are changed to ease or enhance the solution. By working with a real user group, the temptation to change the program for convenience was eliminated. Instead, all changes had functional reasons. This type of adherence to original goal is important as it gives students a view of design which is closer to actual practice.

This process is one which allows learning on many levels. It is a fairly simple process which could be duplicated for many building types. Any student who has a user or a building type identified for their thesis should consider a similar format for their academic explorations.
BIBLIOGRAPHY


