

**A STUDY OF A FEASIBLE METHOD OF  
BUILDING AN ATHLETIC COMPLEX  
FOR A MEDIUM SIZED HIGH SCHOOL**

---

**PHILIP C. HORSEY**



A STUDY OF A FEASIBLE METHOD OF BUILDING AN ATHLETIC  
COMPLEX FOR A MEDIUM SIZED HIGH SCHOOL

---

An Abstract  
Presented to the  
Graduate and Research Council of  
Austin Peay State University

---

In Partial Fulfillment  
of the Requirements for the Degree  
Education Specialist

---

by  
Philip C. Horsey  
April 1984

## ABSTRACT

This study was designed to investigate the most economical way to build an athletic complex for a rural school in Montgomery County, Tennessee.

The athletic complex became reality in four steps: long-range planning, physical educational planning for the particular complex, architectural planning and the actual construction. The Clarksville-Montgomery County Board of Education and Dr. William B. Abel had responsibilities in each of the four stages.

The architect and school officials met many times to discuss plans for an outdoor athletic complex at Montgomery Central High School. Next, the architect studied the site on which the complex would be built. He saw how much land he could use and what buildings stood nearby. Finally, the architect and the committee prepared a detailed program. The program outlined the requirements the complex must meet. It described the complex's size, location, and general appearance. The program also included a proposed budget for the construction. Then the architect prepared rough sketches of the complex and presented these to the school officials.

After the school authorities had approved the design, the architect prepared the final plans for the workmen who would build the athletic complex.

The architect made separate drawings which showed the site plan and elevation, detail and layout plan of the pier, seats and bleacher

plans, floor plan of the dressing rooms, concession stand and storage area, ramp elevation, site plans: electrical, fence layout, pressbox and sprinkler system.

The school officials showed the working drawings to several contractors. The contractors submitted bids that outlined the cost of building the athletic complex.

The complex became a reality as construction began on the Montgomery Central Athletic Facility.



A STUDY OF A FEASIBLE METHOD OF BUILDING AN ATHLETIC  
COMPLEX FOR A MEDIUM-SIZED HIGH SCHOOL

---

A Field Study  
Presented to the  
Graduate and Research Council of  
Austin Peay State University

---

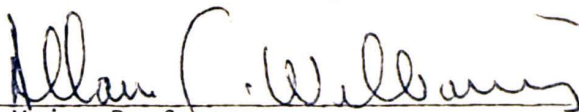
In Partial Fulfillment  
of the Requirements for the Degree  
Education Specialist

---

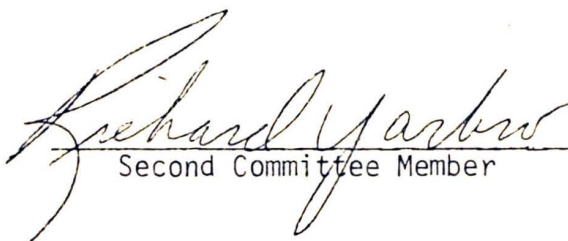
by  
Philip C. Horsey  
April 1984

To The Graduate and Research Council:

I am submitting herewith a Field Study written by Philip C. Horsey entitled "A Study of a Feasible Method of Building an Athletic Complex for a Medium-Sized High School." I have examined the final copy of this paper for form and content, and I recommend that it be accepted in partial fulfillment of the requirements for the degree of Education Specialist

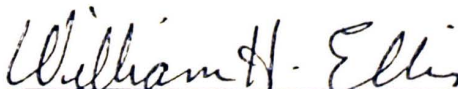
  
Major Professor

We have read this field study and  
recommend its acceptance:

  
Second Committee Member

  
Third Committee Member

Accepted for the Graduate and  
Research Council:

  
Dean of the Graduate School



## ACKNOWLEDGEMENTS

The author wishes to thank the Clarksville-Montgomery County School System, and the many individuals who contributed time, materials and information toward the preparation of this study; especially Mr. Jack Hunt and Mr. John Atkins, who participated in the actual construction of this complex, are thanked for their assistance.

Additionally, the author wishes to thank those professors who served on the committee and took time to read this study. The author is truly grateful to Dr. Allan S. Williams, Dr. Richard Yarbrow, and Dr. George Rawlins for their expert judgment, contributions and advice.

My sincere gratitude is extended to my wife, Linda, for her support throughout this writing and for her assistance in typing this paper.

## TABLE OF CONTENTS

	PAGE
List of Plates . . . . .	vi
List of Figures . . . . .	vii
 CHAPTER	
I. INTRODUCTION . . . . .	1
The Setting . . . . .	4
Statement of the Problem . . . . .	4
Importance of the Study . . . . .	5
Rationale . . . . .	5
Hypothesis . . . . .	6
Limitations . . . . .	6
II. REVIEW OF THE LITERATURE . . . . .	8
Codes and Regulations . . . . .	8
Planning Athletic Facilities . . . . .	9
Types of Recreational and Athletic Facilities . . . . .	12
III. METHODOLOGY . . . . .	18
Beginning of a New Era . . . . .	18
Site Plan and Elevation . . . . .	19
Piers, Seats and Bleachers . . . . .	19
Dressing Rooms . . . . .	23
Concession Stands . . . . .	23



Storage Area . . . . .	23
Ramps . . . . .	31
Press Box . . . . .	31
Restrooms . . . . .	33
Walkways . . . . .	33
Field Development . . . . .	33
Goal Posts . . . . .	37
Retaining Fences . . . . .	37
Sprinkler Systems . . . . .	44
Lighting System . . . . .	46
Parking Area . . . . .	48
Practice Field . . . . .	48
Baseball Complex . . . . .	48
Track Complex . . . . .	48
Timeclocks and Scoreboards . . . . .	49
Public Telephones . . . . .	49

IV. SUMMARY, FINDINGS AND CONCLUSIONS . . . . .	51
---	----

Summary . . . . .	51
Findings . . . . .	51
Conclusions . . . . .	52

REFERENCES . . . . .	54
----------------------	----

# APPENDIXES

A. Rules, Regulations, and Minimum Standard . . . . .	56
B. Sealed Bids . . . . .	61
C. Glossary . . . . .	70

## LIST OF PLATES

	PAGE
PLATE	
1. Site Location . . . . .	20
2. Concrete Footing . . . . .	27
3. Aluminum Boards . . . . .	28
4. Stadium Press Box . . . . .	34



## LIST OF FIGURES

FIGURE	PAGE
II-1. Pier Layout Plan . . . . .	24
II-2. Detail Pier . . . . .	25
II-3. Plan and Elevation . . . . .	26
II-4. Floor Plan Dressing Rooms . . . . .	29
II-5. Concession & Storage Areas . . . . .	30
II-6. Ramp Elevation . . . . .	32
II-7. Paved Walkways . . . . .	35
II-8. Playing Field Development . . . . .	36
II-9. Goal Posts . . . . .	38
II-10. Fence Layout . . . . .	39
II-11. Seat and Fence Plan . . . . .	40
II-12. Sprinkler System Layout . . . . .	45
II-13. Site Electrical . . . . .	47

## CHAPTER I

### Introduction

The growing school population and new teaching techniques have outdated many existing physical education facilities. The traditional gymnasium is no longer adequate to provide a modern physical education and recreational program for all students. During the last few years, programs have been greatly altered with respect to both content and teaching techniques, and change continues. The growing emphasis on lifetime sports, coeducational instructional programs, and interscholastic sports for women require more practice facilities. The widespread use of individual teaching stations with multiple use for physical education classes and increased interest in physical fitness create new factors to consider in planning.

Designing facilities to meet these changing needs calls for creating new thoughts and concepts. The task of designing such an explicit structure takes a great deal of planning. The emphasis was on factors involved in planning, development, and evaluation of criteria for presenting facilities in relation to program needs. Each feature has to be very precise in order to fulfill the requirements of a successful complex.

The areas the author researched and explored are as follows:

1. Proper location of the complex in relationship to the Montgomery Central High School building. In order to have a



constructively designed complex, the structure had to be built according to the layout of the existing school building. For instance, the distance must be determined far enough away from the school in order not to interfere with other activities planned within a specific time period.

2. Seating within the complex. The seating classifications must stipulate a satisfactory establishment projection of ten years. The sufficient viewing by the public must also be considered when deciding the location of the stands.

3. Dressing room facilities. The coaches and players need an official structure suitable for conference and preparation for the upcoming game.

4. Concession stand. The concession stand must meet the standards of the spectators. It needs to be organized in order to maintain the public's needs.

5. Maintenance structure to store field equipment. This structure must be a secure place to provide a retainment of expensive field equipment.

6. Ramp elevation. The ramp should be made accessible and available for use by the physically handicapped using wheelchairs, braces, or crutches.

7. Press box. The press box would have to be located in a place suitable for the outlay of the field. It would house an area for filming, scouting, and communications.

8. Restroom facilities. Restroom facilities will be built to accommodate the needs of both men and women. In cold weather heaters

would be installed for the comfort of the public. Maintenance of the restrooms would provide pleasant conditions.

9. Walkways to the seating stands, concession stand, and restroom areas. Walkways were projected to provide spectators with a safe way of reaching these areas.

10. Field development. This involved a thorough study of the soil and grass. Maintenance of the grass and upkeep of the field were important factors which needed consideration.

11. Goal posts. The dimensions of the goal posts must be adequately determined. The type of alloy used to make up the goal posts has to measure up to the specified state standards.

12. Retaining fences. Fences would have to be installed around the playing area of the football field and stadium seats.

13. Watering system for the field. The watering system would have to be designed to provide a simple means of sufficiently helping to maintain grass maintenance. An example of these means would be auxiliary pumps.

14. Lighting system. An adequate lighting system would have to be considered for the lighting of the playing field. The lighting must be suitable for uncertain weather conditions as well as to enhance the viewing by the spectators.

15. Parking areas. The parking areas that are designed for the athletic complex must provide sufficient parking for the spectators.

16. Practice field. A practice field is needed in relation to the playing field. Throughout the year various athletic teams, as

well as physical education classes, would utilize this field to practice and for class time activities.

17. Baseball complex. The baseball complex would be constructed on one end of the football field.

18. Track complex. A track runway would be utilized by the track team and physical education classes within the school. The runway must be suitably constructed in order to promote the best possible conditions for the track athletes.

19. Time clock and scoreboard. Clocks and scoreboards are furnished to provide spectators, coaches and players with a means of keeping abreast of the action on the playing field.

20. Public telephone. A public telephone should be provided for every one thousand spectators.

### The Setting

The location of the research was conducted at Montgomery Central High School, Cunningham, Tennessee. Enrollment includes middle school students as well as high school students. Grades seven through twelve are housed in the school.

### Statement of the Problem

Planning ahead is essential to success. It was the purpose of this study to research, investigate and devise a feasible method of constructing an outdoor athletic complex at Montgomery Central High School located in a rural community in which the school is the primary recreation center. This method would be functional and could be expanded to meet significant changes in enrollment if necessary.



Keeping in mind the amount of available money reserved for the purpose of building the athletic complex was another consideration.

### Importance of the Study

The physical education program at Montgomery Central High School consists of five major divisions: development and movement skills, manipulative and perceptual motor skills, creative and rhythmic activities, simple games, and unstructured activities (free play).

The primary purpose of this study was to explore the various techniques used by the architects and engineers in their provisions to construct a reputable athletic complex at Montgomery Central High School in relation to the physical education program needs. The secondary purpose was to provide the students of Montgomery Central High School with a complex that would be used for extra-curricular activities.

### Rationale

As professional educators, we should emphasize the importance of involving all students in a daily, planned physical education program. Movement is central to our complete development as fully functioning, contributing members of society.

The rationale behind the construction of the outdoor complex was justified by the physical, emotional, and motivational needs of the students. The present physical educational programs at Montgomery Central High School, which are conducted in the athletic complex, give those students who have little drive, weight problems, no self concept, and are shy a better opportunity to participate in various



outdoor programs. Students find soccer, flag football, baseball, etc. can be fun as well as beneficial to their physical growth.

It has been said that the difference between an adult and a child is the difference between being and becoming. A child must develop his/her own strengths in all areas to become the healthy, alert being. (Danko, 1981)

### Hypothesis

1. The athletic complex at Montgomery Central High School gives all students, regardless of size and grade level, an equal opportunity to participate in group activities.
2. Social skills will improve as a result of pairing the students for teams.
3. Students will acquire a stronger sense of their responsibility.
4. The self-esteem of those students who are overweight, shy, etc. will improve when given an exercise by which they can succeed.
5. Extra-curricular activities (sports) will give all students a chance to excel in sports of their choice.

### Limitations

Some limitations should be noted in the study. There was little time to visit or observe other systems and/or to collect data from other school systems. Therefore, the only data compiled was from the Clarksville-Montgomery County Board of Education.

Also, the engineer who was in charge of the construction had almost total control of the overall project. Lack of communication

existed between the school's administration and the community.

Other circumstances that delimited the study included:

(1) A practice field currently under construction. This area was not large enough to construct a track around the field as projected in the plans. This will be a great disadvantage to the total athletic programs at Montgomery Central High School.

(2) The size of the complex under construction was based on the 1980-81 school population. The size of the complex did not reflect the true projection of the school's size in the future.

## CHAPTER II

### Review of the Literature

#### Codes and Regulations

Most school athletic facilities serve a long time. In their several decades of normal use they must accommodate changes in curriculum content, professional personnel, and community characteristics and student population. Their suitability following each change is largely established in the beginning when they are erected, in terms of the basic design of the structure and the ease with which it lends itself to modifications (McClurkin, 1964).

Economy denotes a choice between alternatives which the planner must make. Sound judgment requires knowledge of the factors which should be involved in the decision. Each of these factors has definite characteristics: building codes, cost in dollars, performance capability or efficiency, upkeep, and life expectancy.

State and local building codes are to provide minimum requirements to safeguard life, health, and public welfare, and to protect property as it relates to the safeguards by regulating and controlling the design, construction, repair, equipment, use and occupancy, location, maintenance, removal and demolition of all building or structures and apparatus thereto (Southern Building Code Congress International, Inc., 1976).

## Planning Athletic Facilities

The facilities, both indoor and outdoor, should be developed to take advantage of all important features of the site. Appropriate attention should be given to design and aesthetics. The grounds about the building should be properly landscaped. All elements of the school facilities should be used whenever they are appropriate to learning activities. School facilities should be made available to the community they serve (Evaluative Criteria, 1968).

The school facilities consisting of the site, buildings, equipment, and utilities are major factors in the functioning of the educational and athletic programs. The facilities provide more than a place for instruction; the physical environment assists or limits student achievement of desirable learning outcomes.

The text researched in the criteria stressed the school facilities should provide a physical environment which contributes to the successful conduct of the program designed to meet the educational needs of youth. This requirement encompasses provisions for a variety of areas for instruction and for extra-curricular recreational and community activities.

The facility must provide illumination and acoustical conditions and sanitary facilities essential to the health and well being of its occupants. The facility should be designed, equipped, and maintained to provide the greatest amount of protection to the occupants in the event of fire, accident, or other emergency or disaster conditions.

The criteria also stated both present and future physical and recreational needs of students are met through: (1) participation



in a wide variety of physical activities that will lead to the development of coordination, strength, skills, and endurance; (2) participation in a variety of physical activities having continuing lifetime values; and (3) experiences designed to develop knowledge, understanding, and attitudes which result in desirable practices necessary to maintain physical, social, emotional, and mental health.

The facility should be adequate to meet current demands. The space within should be sufficiently flexible to provide for multiple uses of the areas in the overall educational and activity program.

Designing athletic facilities to meet the changing needs of lifetime and interscholastic sports, as well as physical education classes, calls for creating new thoughts and concepts (Meditch, 1974).

Meditch believes appropriate areas and facilities must be initiated by those close to the new philosophies, namely, the physical educators themselves. For this reason, a course in the areas and facilities has been inaugurated for graduate students majoring in physical education at Ball State University.

Throughout the course, the students gained a greater appreciation of the existing facilities and ways to improve them. Students were made aware of the amount of time, effort, and money spent in planning and construction of the new facilities. The emphasis was on factors involved in planning, the development of criteria, and evaluation of criteria for presenting facilities in relation to program needs. To meet the course objectives, a project geared to the individual interest levels of each student was assigned.

During the first class meeting Meditch reports each student was given a list of different facilities from which to choose; for example, intramural facility, outdoor athletic facilities and elementary school gymnasiums. This information was then condensed and given to the instructor. The instructor then assigned individual projects to the students. Each student was responsible for making a scale model of the proposed project and a drawing showing the floor plans. Each student was responsible for writing a paper defending the proposed project.

Meditch stressed the students were fortunate to have a School of Architecture on campus and faculty members who lectured and showed slides of present and future trends in design of physical and educational and recreational facilities. However, with all of these resources available, students were encouraged to obtain articles from magazines to supplement the textbook and photographic material. The architectural library furnished the students with resource materials not found in the general school library, but at least one trip was scheduled to view and inspect facilities where construction was taking place.

The students found the physical educators to be very helpful in planning their projects. Graduate students eagerly displayed models that reflected actual projects in the construction phase.

Meditch discussed the results of the course and found it was encouraging to see the splendid job physical educators, with individual help and some creative initiative, could do in planning facilities.

Meditch believes physical educators play a main role in the planning of an athletic facility. He stressed any competent physical education teacher can save his or her organization several times his salary each year by the application of knowledge gained through a course in planning facilities for physical education and recreation. Meditch also believes the design of a building serves as evidence of the foresight of its planners, and teachers should have and accept responsibility in the area of its planning.

#### Types of Recreational and Athletic Facilities

There are many types of recreational buildings which serve the needs of the public. A small community in Turkey, which has fifteen to twenty percent of its country unemployed and a yearly per capita income of only \$550.00, has installed an athletic facility called "The Bubble" (Cladins, 1980).

The bubble is a term used in recreation for a type of building that houses an area for physical exercises. Many parts of the country are finding the bubble very feasible because of its inexpensiveness and availability to have the exercises on areas undesirable for other types of recreational facilities. Most of the bubbles allow space for a basketball court, volleyball court, two handball courts, and a 100-meter, two-lane track. These facilities also have room for a shot put area, high jumping and long jumping pit, which students use in the track programs.

According to Cladins, the construction of the bubble can be completed by six men and when inflated, can be in full operation in one



day. The cost of the bubble is only fourteen thousand dollars and this includes the cost of the blowers.

Cladins points out that even a small country like Turkey, with its high unemployment and low income, feels physical education is very important. The construction of the bubble has served the needs of the students and the community.

Another type of recreational facility researched by the author was the enclosed stadium. The world's largest domed stadium is the Silverdome in Pontiac, Michigan. The Silverdome can seat 80,600 people and has 38 fast food counters, 102 private viewing rooms, 44 restrooms, and parking for over 22,000 cars and buses (Debman, 1982).

Debman reports the roof of the Silverdome is the world's largest air-supported type. It is made of a specially coated fabric that lets in the outside light. The roof is ten acres in size and weighs two hundred tons.

Many events take place in the Silverdome, including sports and concerts. The Silverdome is forty minutes from Detroit, Michigan and within one hour's flying time from sixty percent of the United States population, according to Debman's report.

Other enclosed stadiums and their seating capacity researched by the author are as follows:

New Orleans - - - - - 72,000

Houston - - - - - 66,000

Seattle - - - - - 65,000

In little more than a decade, a small women's college, James Madison University in Harrisburg, Virginia, grew into a university of



eight thousand (Carrier, 1981). Developing and planning of several new courses was a determining factor for change, but one of the major strong points of the small college's growing to a university was the sports programs. These programs offered a public relations value, especially for an institution whose character was changing dramatically.

According to Carrier, a full range of recreational programs was developed for those with average skills; for those with better than average skills, an intensive intramural program was developed. The facilities made this possible. The facilities consisted of an outstanding indoor athletic facility which housed five thousand. The facility was used for basketball and varied other sports.

As the university grew, Carrier reported a new outdoor field was needed for general use by the students in intramural and recreational programs. Making the problem more difficult was the topography of the campus. Three hundred and sixty-five acres are located on a hilly terrain. The logical site for a multi-purpose field was built with an artificially surfaced field on site. The astro turf field was put into effect and quickly and enthusiastically accepted by the students. At the present time, the field is being used day and night for intramurals, recreational programs, soccer, field hockey, band practice and many other activities. Many other athletic facilities have been added to the campus; among these are a baseball field, tennis courts, and a soccer field.

Carrier pointed out many areas made the university grow, but the major reason the university grew larger was the importance the administration and students placed on the physical well being of its students

instead of the total mental aspects. Along with the boom in attendance at major athletic events, individual sports participation, and family recreation, there is also an increasing amount of school-community recreation (Weston & Kleindienst, 1964).

In countless communities the schools are open day and night, weekends, and all summer for citizens of all ages, with programs encompassing a wide variety of physical, intellectual, and creative activities. Weston reports one of the largest total community-school programs in the nation occurs in Flint, Michigan, a city of more than two hundred thousand people, where over twelve thousand visitors a year come just to observe what is going on.

The Flint program is thorough and extensive. It is indicative of what will occur in more and more large cities as populations grow and people in close proximity to each other try to meet the need for physical activity.

New York University faced political obstacles, urban pressures and sky-high land values when planning the Coles Sports and Recreation Center. But the result was a remarkable facility that today is being used to serve students, faculty, staff, and alumni and the community (Cladins, 1982). Cladins stated that planning the facility meant negotiations with countless municipal, political and neighborhood groups.

One particularly difficult issue was the demand by local residents for access to the facility. With a full-time student population of 19,000 to serve, in addition to 6,000 faculty and staff, there were considerable potential usage conflicts.

The university offered 1,000 memberships to the community residents

at off-peak hours. Special hours were set up for community users, at a time of relatively low use by students (Cladins, 1982). The impact on university use was minimized.

Extensive statistics that have been kept since the opening of the Coles Center show students from all fourteen of New York University's schools are presently using the facility. Cladins states the commuter student use is heavy during the day while students in dorms make use of the center in the evening. The center has allowed the university to serve the recreational needs of men and women.

The facility is also open to the community, most of whom live in a 30 to 40 block radius of the center. The understanding with the community is that it is a student facility; there is no special treatment.

The Jerome S. Coles Center, opened in the fall of 1981, stands as an outstanding example of using limited space to create a multi-purpose, functional facility that fits in well with its surroundings, and fills a tremendous need for students and the community today. Nearly all cities and towns of any size now make some provision for recreation. But recreational facilities vary throughout the country.

Community facilities usually include parks, playgrounds, swimming pools, tennis courts, and golf courses. Some rural communities arrange for the use of school playgrounds, auditoriums, and gymnasiums in the evenings.

The playground has long been a popular school facility. Throughout the school year and during the summer, youngsters have traditionally made the most of the open space provided for them (Walker, 1966).



Youth sports began as an extension of the public needs of boys. Today, urban and suburban, as well as rural communities, attempt to offer a variety of agency-sponsored programs to boys and girls that are comparable to those provided by the public schools.

The Jaycees is an organization that stresses individual development through leadership training and civic involvement. They sponsor programs on youth development, health, and safety. Some programs which are played on school facilities that are sponsored by the Jaycees are football, baseball, and softball.

The Young Men's Christian Association (YMCA) is another organization which has given outstanding aid to the recreation needs of the rural community. Local associations offer physical fitness programs for the entire family and many families have learned to swim through the YMCA's Aquatic Program. Boys and girls learn basketball skills and personal values in the YMCA's Youth Basketball Association. Soccer is another sport which is provided by the YMCA.

Nearly all public, private, and voluntary organizations in recreation need trained workers to direct and operate their programs. In some instances the teaching and coaching methods come from physical educators who act as volunteers for the agency-sports programs.

The programs become highly competitive in a short period of time and stimulate an amazing growth in sports. Sharing leads to a smoother transition between school and agency programs.



## CHAPTER III

### Methodology

#### Beginning of a New Era

September 18, 1981, marked the dedication of a modern, beautiful Montgomery Central High School Stadium, a new home for the Indians and a renewed commitment to excellence in all phases of the athletic program. With the completion of the facility came a rejuvenated spirit, signaling the beginning of a new era in Montgomery Central athletics.

"On behalf of Montgomery Central High School staff and student body, I wish to express our deepest thanks and appreciation to everyone who has contributed time, effort, and support to making this new and magnificent football stadium a reality," said James Young, principal. A reality it was. After ten years of playing on a cow pasture, Montgomery Central was building a competitive and successful athletic program.

The impressive steel and concrete structure offers participants and spectators alike the finest in comfort and convenience. Some of the most innovative and imaginative architectural and engineering concepts have been incorporated into its construction.

The new stadium was built on the previously existing physical education practice field. Construction began April 1, 1981.

### Site Plan and Elevation

The site location of an athletic facility is just as important as the size of the complex. The site is more than just a plot of land--it is part of the school complex. Every effort should be made to take full advantage of site characteristics in planning the athletic facility. For example, a flat topography lends itself to a suitable area for an athletic facility.

The site, next to the facility, is probably the most expensive item of investment. It must be evaluated carefully to realize its potential as a vital part of the school and its setting.

The Montgomery Central High School Stadium is located on a site of approximately three acres (Plate 1). Built in 1981, the athletic facility consists of one main playing field for football. A new baseball complex will be constructed on one end of the football field. The lighting features and the baseball diamond have to be designed in order not to interfere with the established football field zones.

### Piers, Seats and Bleachers

The most intricate part of the construction of an athletic facility is the bleachers. Several factors should govern the selection of materials used for bleachers and bleacher supports, including expected capacity, intended use of the structure, availability of funds, climatic conditions, and desired aesthetic qualities. The inclusion of service and other facilities under the stadium makes mandatory a solid, continuous, and waterproof deck of concrete or



Plate 1. Site Location

metal. Appearance, tensile strength (the resistance of a material to longitudinal stress), adaptability, exhaustibility, durability, and cost of construction and maintenance are items that should guide the buyer in selection of building materials.

Stress standards were considered at all times in stadium construction. Regardless of the materials used, all spectator structures were designed to meet all state building codes.

The supporting structures of the stadium rest upon foundations of concrete; therefore, reinforced concrete columns or steel columns and beams are used in the construction of stadiums.

Seating standards require all seats to carry a line load (continuous line) of not less than one hundred and twenty pounds per linear foot (measured in a straight line).

In the seating desk of a spectator structure, the trends (general course) form of the horizontal surface while vertical surfaces form the risers. To minimize expenses, trends and risers were as small as possible but sufficient in size for comfort and good viewing. The height of the first riser was kept to a minimum because it affects the ultimate height of the entire structure and, therefore, affects the cost. The width of the trends was governed by factors of economy and comfort.

State and local building codes set the standards for aisles, entrances, and portals for spectator structures. Planners were cognizant of such codes. Aisles may not be necessary in small seating structures. For structures with many rows and larger capacities, however, aisles are necessary. Sections between aisles contain tiers



with twenty-one to thirty-two seats. The first aisles are located eleven to sixteen seats from the ends of the structure.

Aisles have a minimum width of thirty-six inches, and if divided by a portal or obstruction, each side should be at least twenty-four inches wide. When the riser exceeds nine inches, an intermediate step is necessary.

The seating capacity and the number of seats in each section determine the number of entrances and exits required. It is important that spectators be dispersed in a minimum amount of time. It is desirable to have exit ramps leading from stepped aisles. Ramps, stairs, and passageways are as wide as the deck aisles served.

The ends, backs, and in some instances the fronts of the seating structures are bordered by walls or railings. These walls or railings extend at least forty-two inches above the trends and are designed to prevent spectators from sitting on them.

In the construction of the Montgomery Central Stadium, Figures 4-2 through 4-4 show the pier features of the stadium.

Twelve type "A" 17" x 4' 8" and seventy-eight type "B" 12" x 2' 8" piers are used in the columns to support the bleachers. The base consists of a thirty-six by fourteen inch concrete footing (Plate 2 ), with four number five steel rods used for reinforcement. The design of the first row of bleachers is four feet high and rises one foot with a total of fourteen rows. Aluminum boards are then installed on pre-stressed slabs (Plate 3 ).

Mobile bleachers have been installed for the spectators of the visiting team. Two sections consisting of two rows, twenty-four feet in

overall length, and four sections, consisting of five rows, twenty-four feet in overall length, provide for sufficient comfort and good viewing.

### Dressing Rooms

The space underneath a stadium serves a variety of purposes. The most common facilities located in this area are public restrooms, storage rooms, concession booths, and dressing rooms for competitors. Montgomery Central Stadium has two areas designated as dressing areas to accommodate the players; one for the home team, and one for the visiting team (Fig. II-4).

### Concession Stands

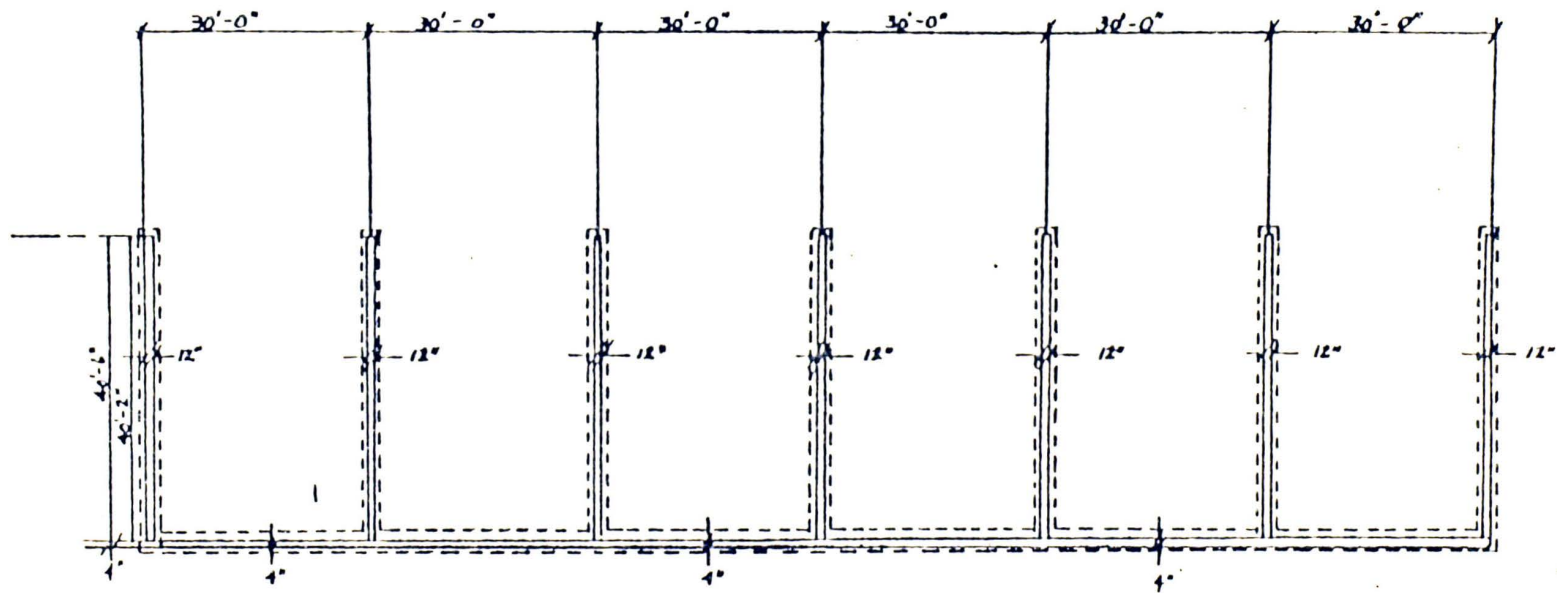
The concession stands are equipped with electric or gas stoves, sinks, running water, and sewer connections and are located where they do not interfere with the normal flow of traffic. The booths are accessible from all seats. Approximately one hundred square feet per one thousand spectators has been allowed for permanent concession booths.

The Montgomery Central Stadium concession stand is located on the south end of the stadium (Fig. II-5). At the present time, it is equipped to meet the needs of the spectators; however, future plans include an additional concession booth on the north end of the stadium.

### Storage Area

Stadium service facilities are located to satisfy the storage purposes, but also with consideration of the facilities under the stadium. Common errors made in the development of this area have been the failure to provide a watertight seating deck with the necessary inclusion of expansion joints and insufficient fenestration and ventilation.

Fig. II-1. Pier Layout Plan



Hand-drawn architectural drawings of a bridge structure, likely a pedestrian bridge or walkway, showing a side elevation and details.

**Main Elevation:**

- Overall length: 23'-9"
- Overall height: 40'-6"
- Roof slope: 12'-9" (vertical) to 10'-0" (horizontal)
- Wall construction: 12" Solid Block, Half Solid Block
- Max Height without Plaster: 31'-6"
- Foundation: 4'-0" x 4'-0" x 4'-0" (concrete)

**Details:**

- Top Right Detail:** Shows a "Weld Vee To R" and a "1" Steel pipe Drivest for wooden wire fence". It also indicates "Solid Blocks" and "Closure".
- Bottom Right Detail:** Shows a "Guard Rail (14" Dia)" and "Solid Blocks".

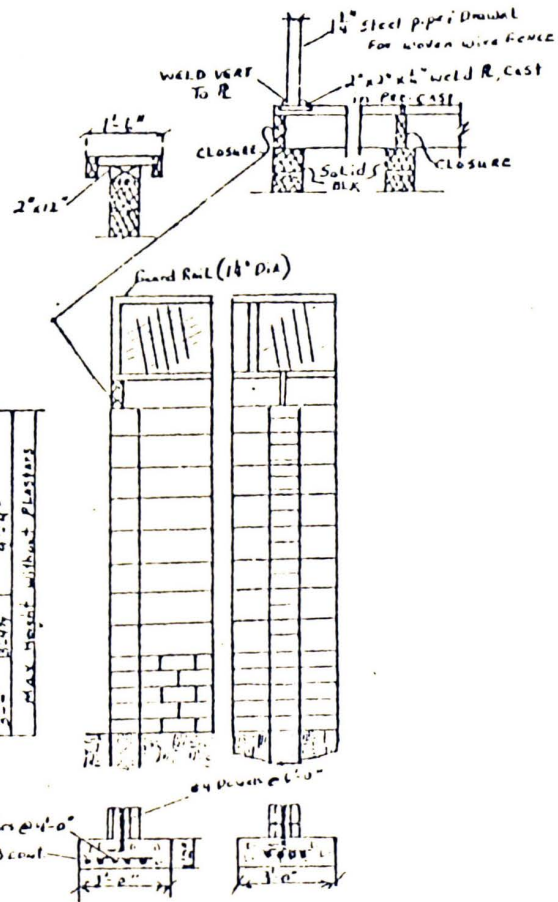
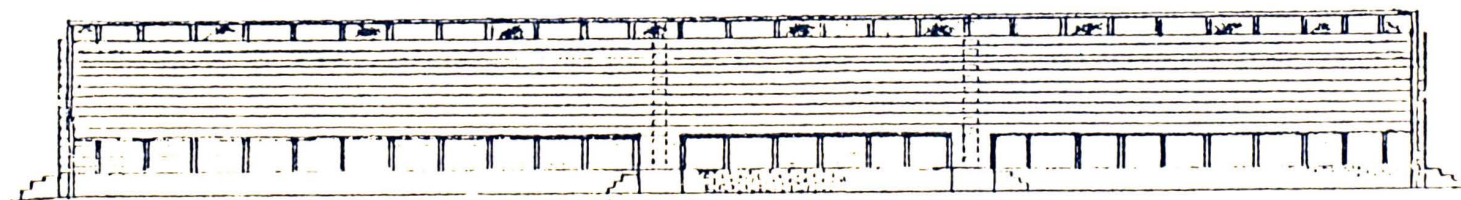
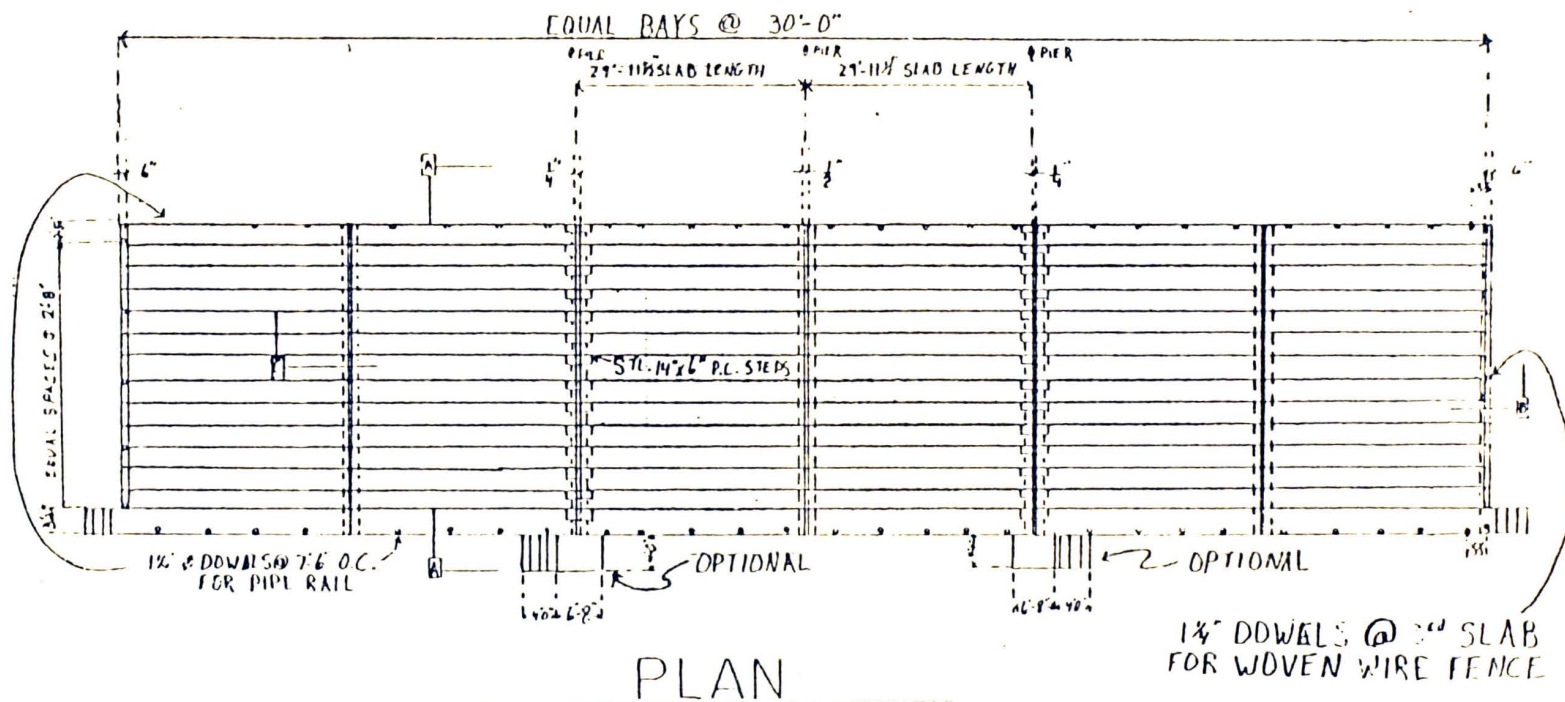




Fig. II-3. Plan and Elevation



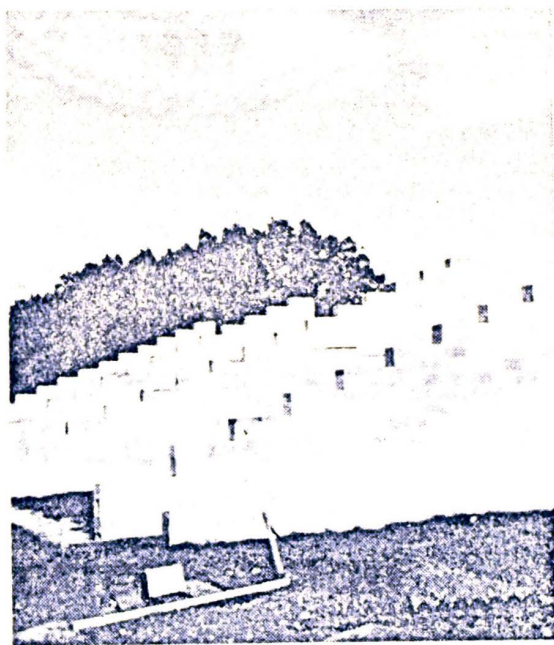
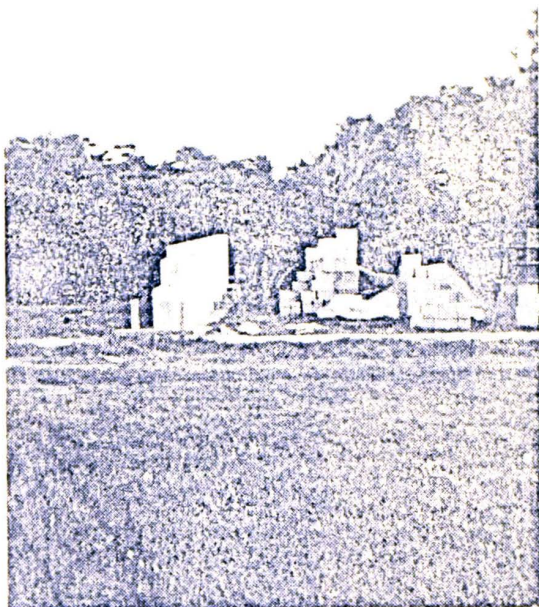
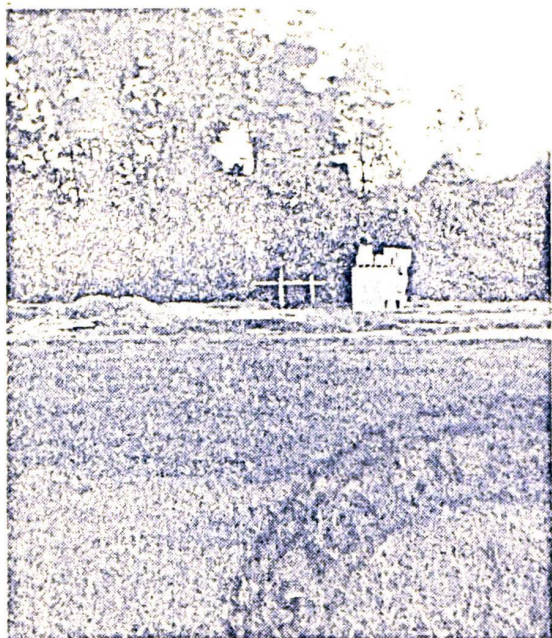


Plate 2. Concrete Footing



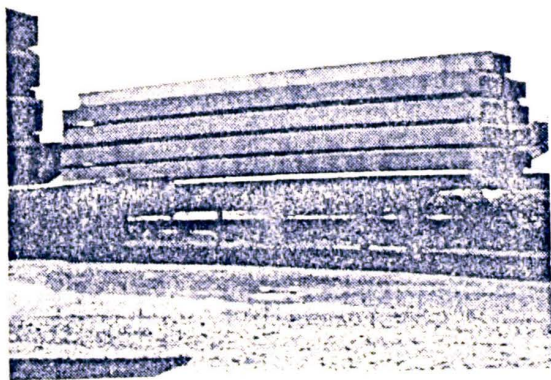
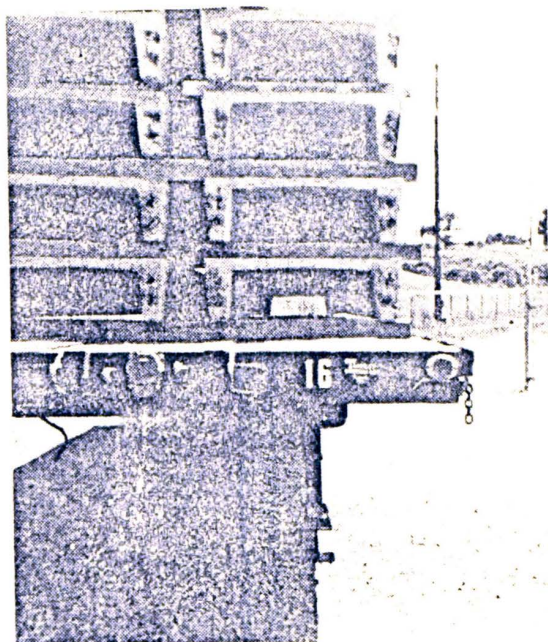
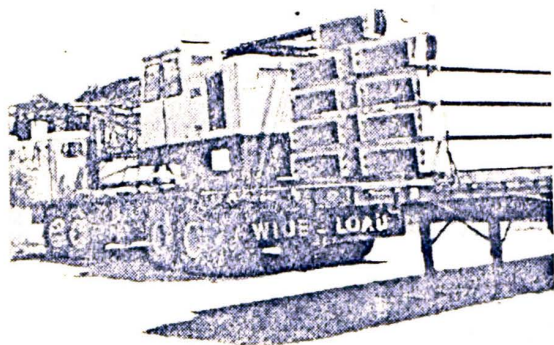


Plate 3. Aluminum Boards

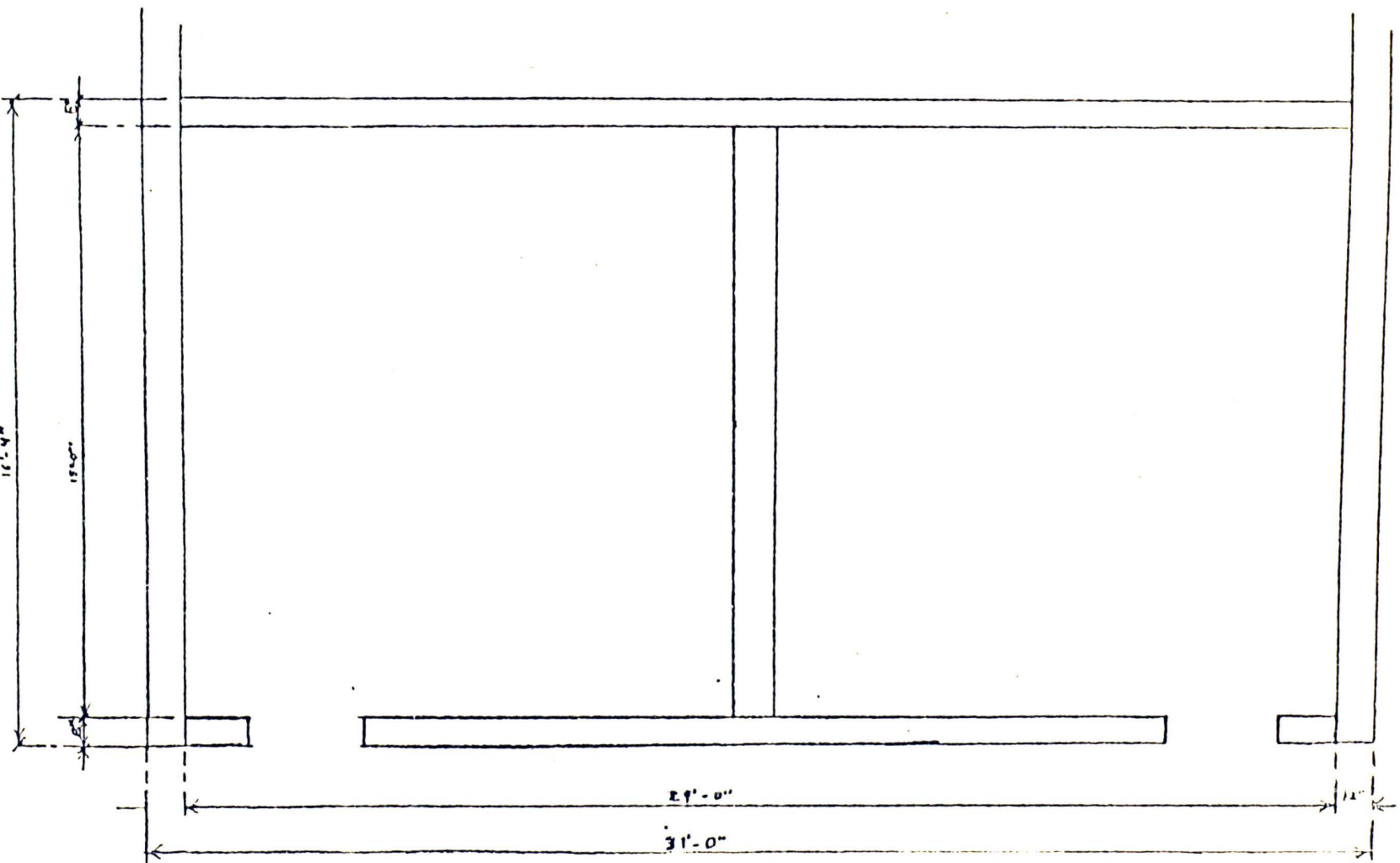


Fig. 11-4. Floor Plan Dressing Rooms



Fig. II-5. Concession & Storage Areas

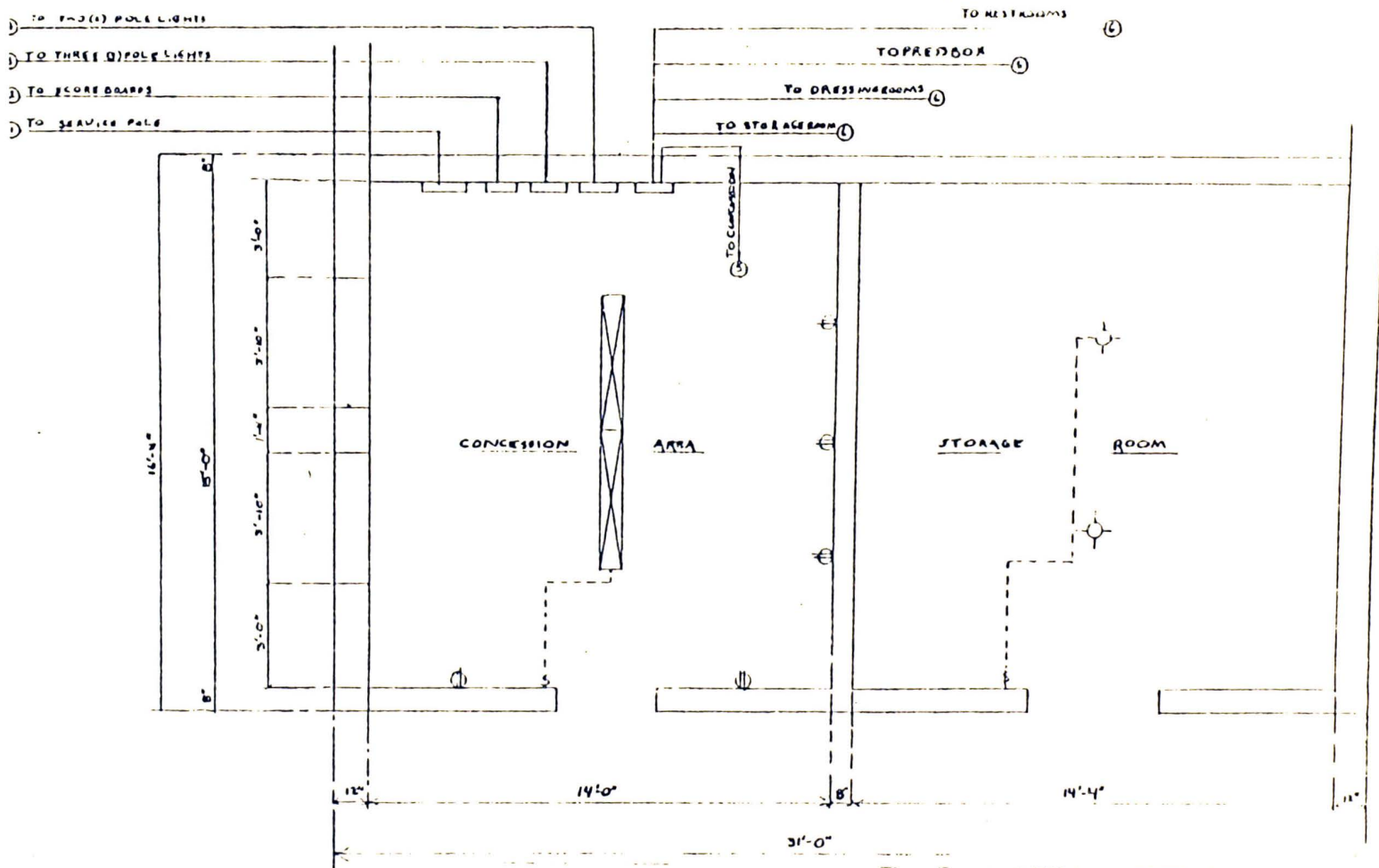


Figure II-5 shows the location of the Montgomery Central Stadium storage area. At the present time, the storage area is not used to full capacity because of the leakage and dampness in this area.

### Ramps

Stairs or ramps are sloping passageways connecting different levels. Ramps not opening directly into a street have lanes of at least twenty feet in width leading out of the area. Ramps do not exceed a slope of one vertical to ten horizontal feet and have landings of at least five feet in length measured in the direction of the ramp run at the top to the bottom and at least one intermediate landing should be provided for the physically disabled or handicapped and should be unobstructed, devoid of curbs, stairs or other abrupt changes in elevation.

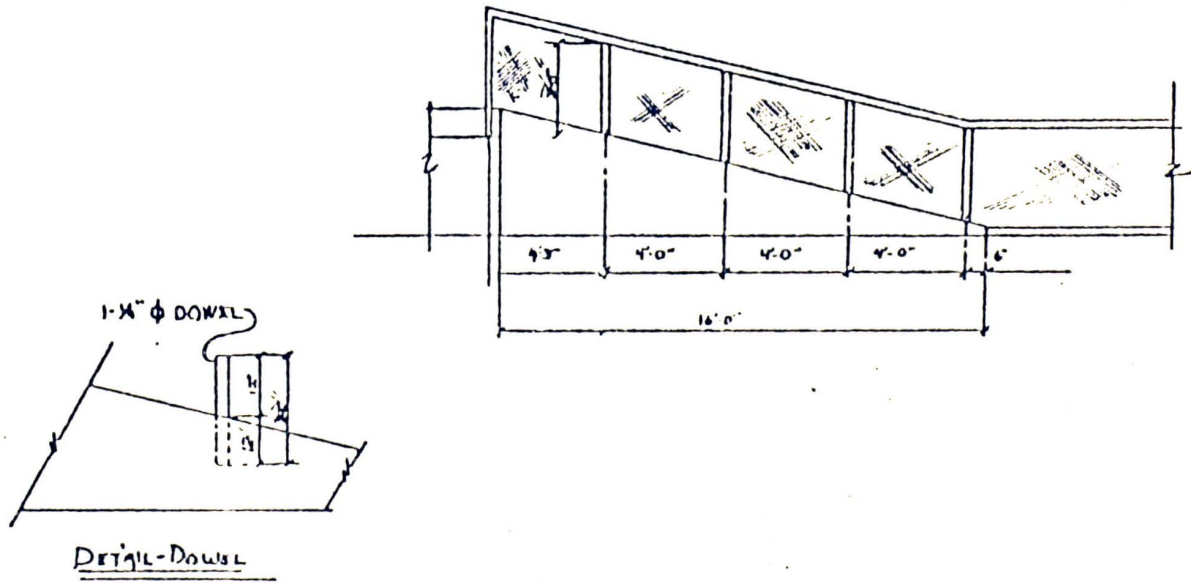
The Montgomery Central Stadium ramps (Fig. II-6) are built on the north and south ends of the stadium. They are accessible for the physically disabled or handicapped.

### Press Box

Accommodation for reporters, sports broadcasters, video cameramen and scouts was planned in the original design of the press box. In the original design of the Montgomery Central Stadium provisions were made for a press box. It is a sturdy, permanent construction and it is high enough to permit the occupants to see over the spectators in the row in front.

In cooler weather, consideration is given to providing overhead

Fig. II-6. Ramp Elevation



cover with an open area in front from which pictures can be taken. The Montgomery Central Stadium press box is located opposite the fifty-yard line on the wide side of the stadium (Plate 4).

### Restrooms

Public toilet units are located in an area that is easily reached from the seating area. The restrooms accommodate the needs of both men and women, as well as the handicapped.

The Montgomery Central Stadium restrooms are located at the north end of the stadium. The restroom facility is a fourteen by twenty foot building. There are both men's and women's restrooms. The roof has a drop of one-half inch to a foot. The Montgomery Central restrooms contain heaters which are added features to the facility. All plumbing has been constructed so it can be completely drained of water and water lines are buried beneath the frost line of the locality. The building contains lights, sinks, heaters, paper towels, and mirrors, which are found in public restrooms on a high school campus.

### Walkways

Walkways are constructed of such types of material as crushed limestone rock, concrete or asphalt which provide spectators with a safe way of reaching the stadium, restrooms and concession. Montgomery Central Stadium walkways are paved with asphalt. Areas paved include entrances to the stadium, restrooms and concession (Fig. II-7).

### Field Development

Figure II-8 details the size of the playing field of the Montgomery



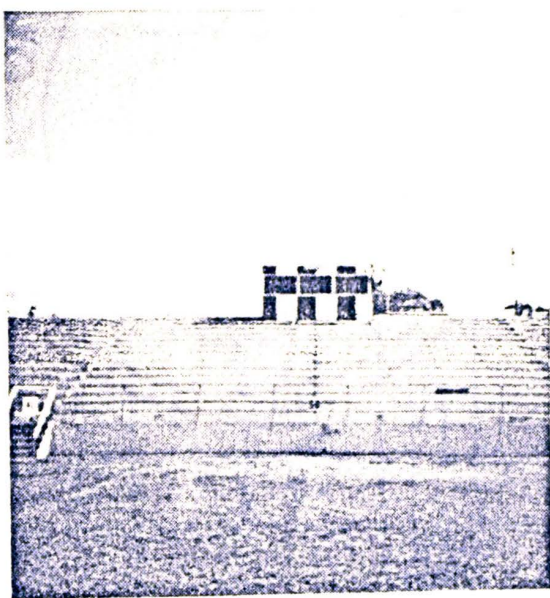
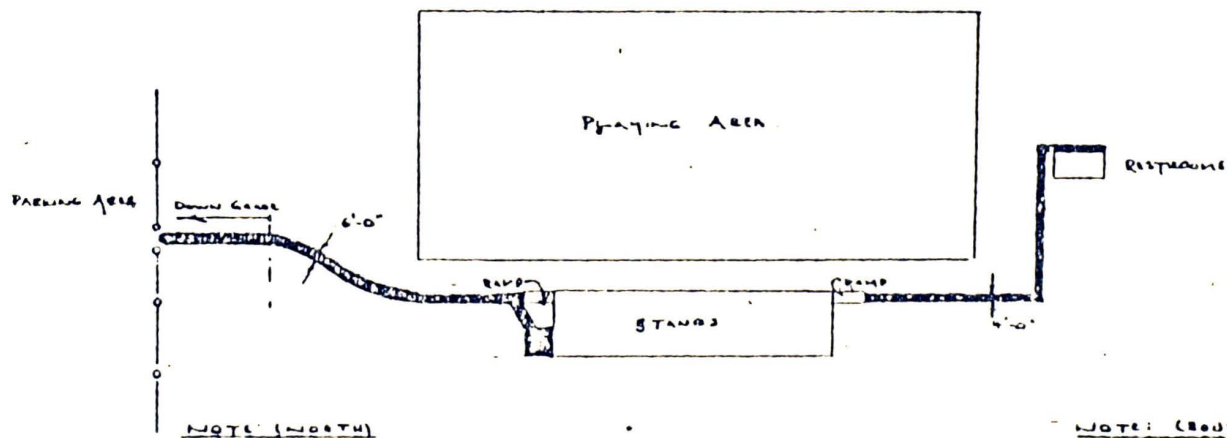


Plate 4. Stadium Press Box

Fig. II-7. Paved Walkways



NOTE: (NORTH)

1. 200' FROM EDGE OF RAMP TO GATE
2. 20' FROM RAMP TO PAD
3. 12' x 16' PAD AT CONCESSION STAND

NOTE: (SOUTH)

1. 225' FROM EDGE OF RAMP TO RESTROOMS

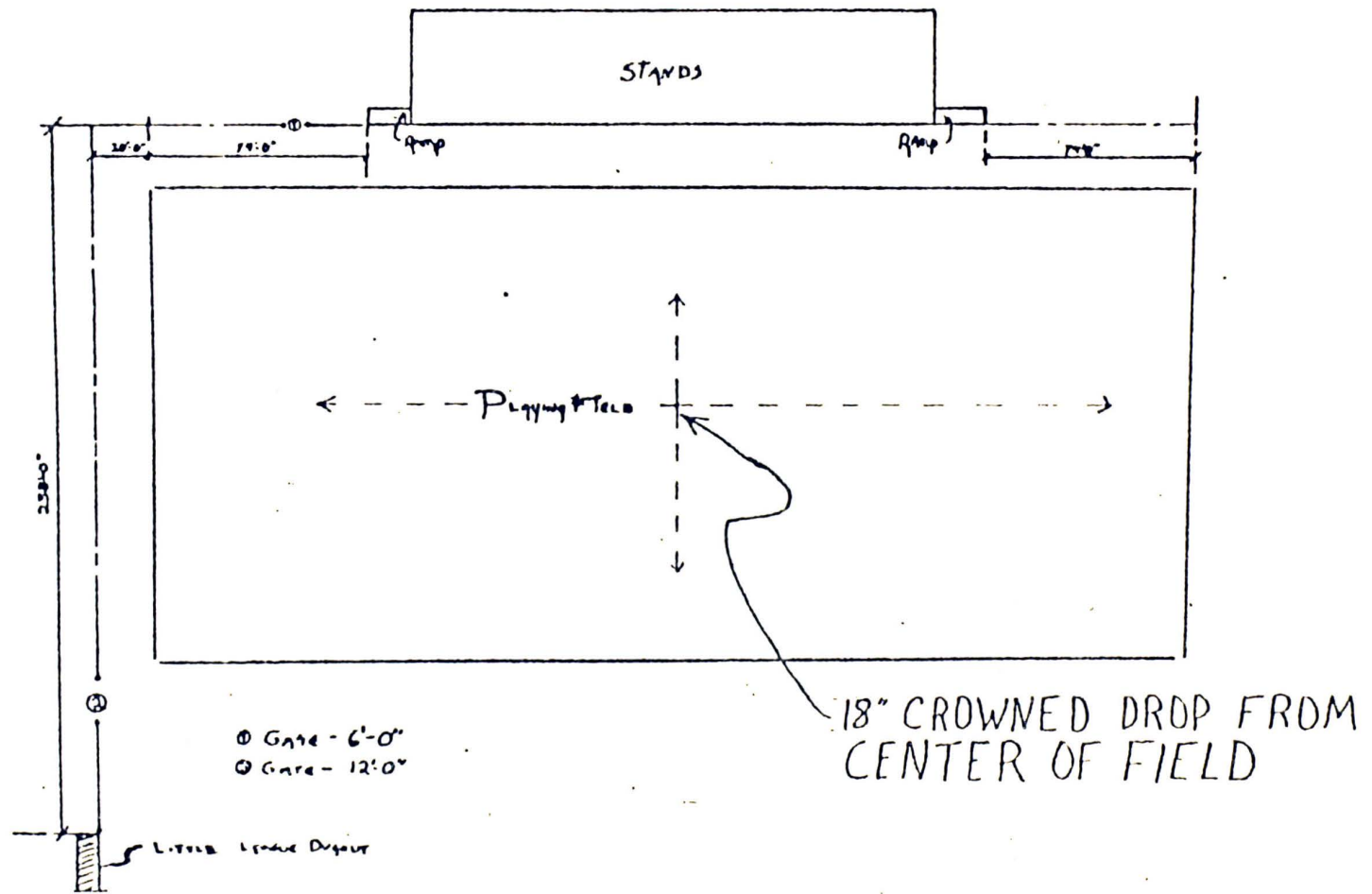
GENERAL NOTE:

WALKWAY MAY VARY IN DIRECTION. CALCULATE GIVEN DISTANCE AND WIDTHS. WHEN RIBBING, NOTE IN 8-10 PER LINEAR FOOT FOR EACH WALKWAY. TO ALLOW ADDITIONAL FOOTAGE, IF REQUIRED.  
FOR MIXTURE AND BASE SEE SPECIFICATIONS

MONTGOMERY CENTRAL HIGH SCHOOL

PAVING - FOOTBALL AREA

Fig. 11-8. Playing Field Development



Central Stadium. The field is crowned for drainage at an eighteen inch drop, starting from the enter of the field. Chert, which is a compact rock consisting essentially of microcrystalline quartz, was used at the beginning, and one inch of top soil was added to the base. Fertilizer (12-24-24) was added to the top soil in the amount of six hundred pounds. Two hundred pounds of nitrate was added and mixed with the fertilizer. The final phase was the transplanting of Bermuda grass sprigs. Five hundred bushels of sprigs were laid along with the sowing of fifty pounds of Bermuda grass.

The grass, after germination, has to be cut every four days. Any weeds mixed in with the grass are cut; if weeds are not cut, shadows will be created, preventing the Bermuda grass from growing. Bermuda grass needs full sun for good growth.

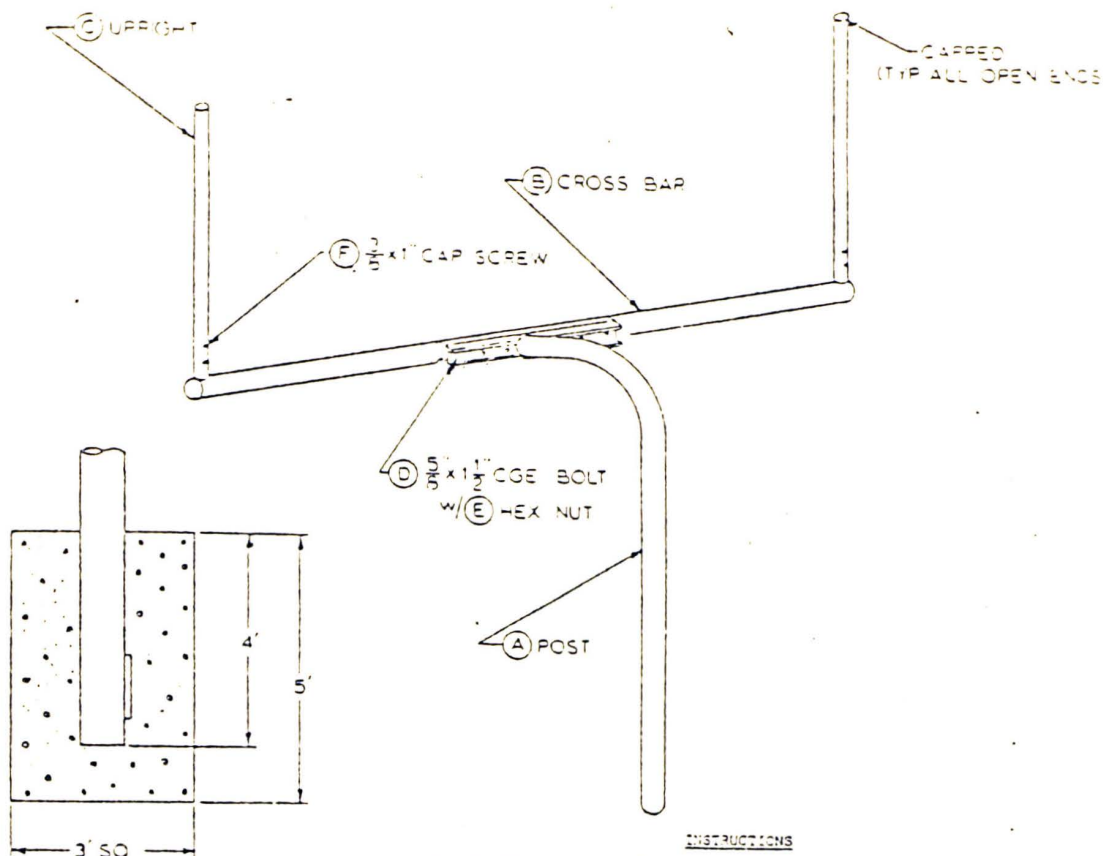
### Goal Posts

The Montgomery Central Stadium goal posts are located on the north and south ends of the stadium. Specifications for the steel goal posts are as follows:  $2\frac{1}{2}$ " O.D. upright;  $4\frac{1}{2}$ " O.D. post; 4" Channel 5.4; Crossbar (Fig. II-9).

### Retaining Fences

All fences are constructed so as not to obstruct the vision of the spectators. Figures II-10 and II-11 show the fence layout and plan for the Montgomery Central Stadium. Specifications for furnishing and installing chain link fencing for the Montgomery Central football field are as follows:





#### INSTRUCTIONS

1. DIG FOOTINGS AS SHOWN. (HOLE SIZES MAY HAVE TO BE INCREASED TO MEET LOCAL CONDITIONS.)
2. PLACE 2 POST IN FOOTINGS, BLOCK UP, PLUMB AND LEVEL.
3. POUR CONCRETE. (APPROX. 45 CU. FT. / FOOTING) ALLOW TO HARDEN AT LEAST 48 HRS.
4. ATTACH UPRIGHTS TO CROSS BAR AND ASSEMBLE TO POST.

#### SPECIFICATIONS

**POST:** MFG. FROM 4 1/2" O.D. GALV. STEEL PIPE WELDED TO 3/8" X 4" GALV. STEEL BAR FOR ATTACHING CROSS BAR.

**CROSS BAR:** MFG. FROM 4 1/4" O.D. X 1/4" WALL ALUM. TUBING WELDED TO 4" X 1.72 ALUM. CHANNEL FOR ATTACHING TO POST.

**UPRIGHTS:** MFG. FROM 2 3/8" O.D. ALUM. PIPE

**BOLTS:** PLATED

**SIZE:** HEIGHT OF CROSS BAR - 10', MEASURED TO TOP EDGE.  
EXTENSION - 5' FROM POST TO CROSS BAR.

UPRIGHTS - EXTEND 15' ABOVE CROSS BAR AND MEASURE 23'-4" BETWEEN INSIDE EDGES.

**SHIPPING WEIGHT:** 754 LBS./PR.

Material: Or approved equal.

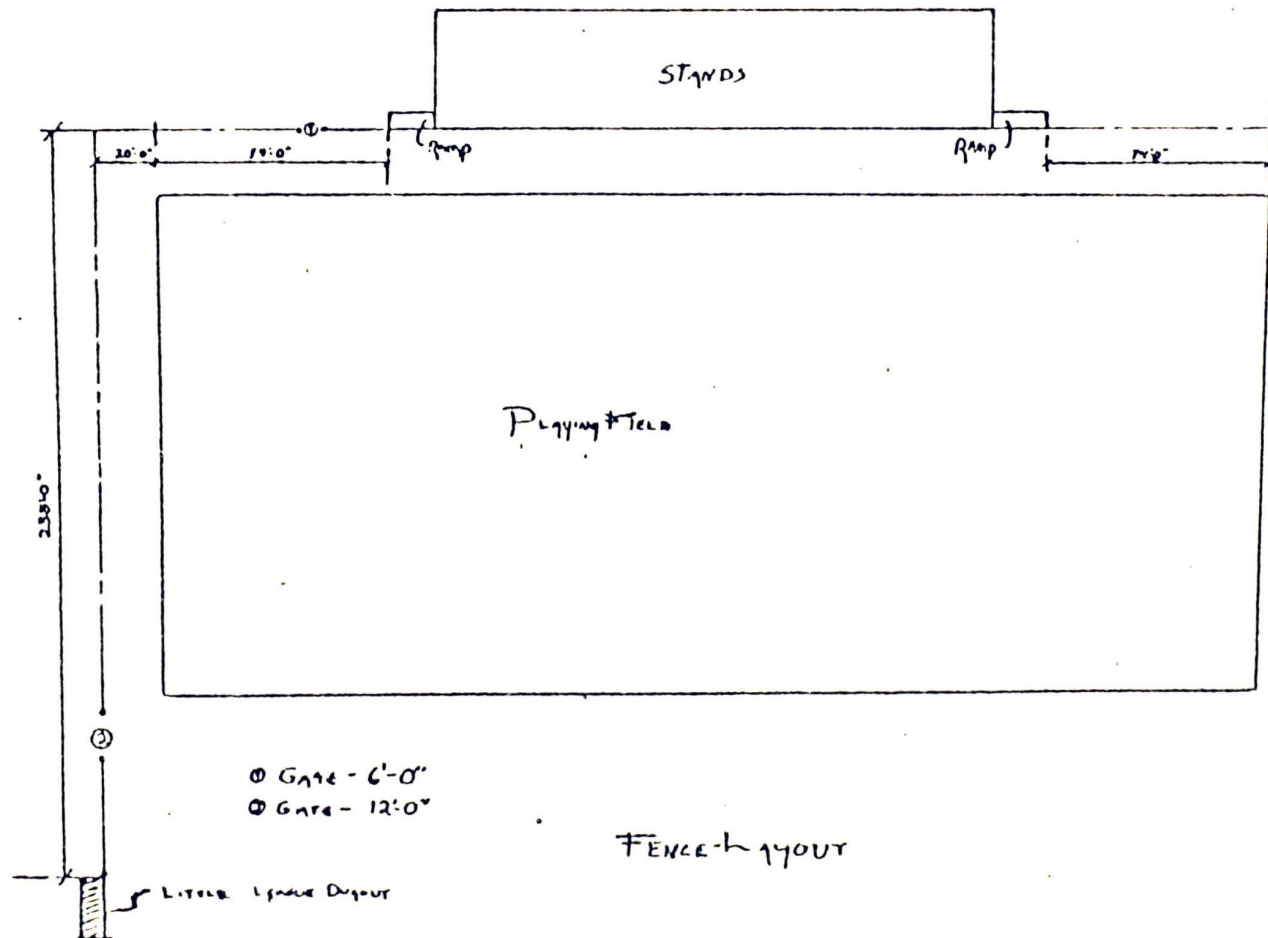
FOOTBALL GOAL POST

1020094	1/8" X 1" CAP SCREW	8	F
1020072	5/8" HEX NUT	12	E
1020085	5/8" X 1 1/2" CGE BOLT	12	D
911-011	UPRIGHT	4	C
911-004	CROSS BAR	2	B
911-003	POST	2	A
PART NO	DESCRIPTION	QTY	ITEM

DATE 6-1-76 REV A 911-000

Fig. II-9. Goal Posts

Fig. 11-10. Fence layout



SHEET 1 OF 1

[illegible]

GATE AND FENCE PLAN  
SCALE 1/4" = 1'-0"

DETAIL - DOWELS  
NO SEAL

1. Height. Fence stands four feet high above grade.
2. Fabric. Hot dipped galvanized steel chain link, 48 inches high, No. 11-gauge woven in two inch mesh.
3. Intermediate Posts. Intermediate posts are two inch galvanized pipes, meeting the requirements of ASTM (American Standard Testing Material) specifications SS20 (thickness of material).
4. Intermediate Post Spacing. Posts are evenly spaced in the line of fence no farther apart than ten feet centers.
5. Terminal Posts. All end, corner, and pull posts are 2½ inch OD standard weight pipe, SS20.
6. Gate Posts. Gate posts are standard weight pipe of the following nominal sizes for single swing gates or one leaf of double gates. Up to 6 feet wide, 2½" OD nominal weight, SS20; over 6' to 13', 2-7/8" OD weight, SS20.
7. Post Setting. All posts are of sufficient length to provide twenty-four inch setting in concrete footings, eight inch diameter holes.
8. Top Rail. The top rail is standard weight pipe, 1-3/8" OD, SS20. The top rail is to pass through intermediate post tops and form a continuous brace from end to end of each stretch of fence. The top rail should be fastened to terminal posts by heavy pressed steel connections; SS20 is acceptable.
9. Fittings. All fittings used in the complete fence assembly are of malleable, cast iron or pressed steel.



10. Post tops. All posts are equipped with tops. Tubular post tops are designed as to exclude moisture from the posts. All intermediate post tops are designed to hold the top rail.

11. Swinging Gates. Gate frames are made of 1-3/8 inch OD standard weight pipe, SS20, with all welded frames. Fabric to match the fence shall be installed in the frame by means of tension bars and hook bolts. All gates are equipped with a positive type latching device with provision for padlocking. All drive gates are provided with center plunder rod, catch and semi-automatic outer catches to secure gates in opened position.

12. Fabric Connections. The chain link fabric is securely fastened to all terminal posts by 1/4 by 1/3 inch tension bars with heavy 11-gauge pressed steel bands spaced approximately fourteen inches apart and to the top rail with 9-gauge tie wires approximately twenty-four inch centers.

13. Installation. Installation shall be made by skilled erectors, experienced in erection of this type fence. The fence has been erected on lines and to grades as provided by the owner. All posts are set in concrete foundations in the ground to a minimum depth of twenty-four inches. Diameter of the foundation is a minimum of eight inches. The foundation is a 1-2-4 mixture of concrete. All foundations extend approximately one inch above grade and slope away from the post to assure proper drainage. The fabric and barbed wire stretches to proper tension between terminal posts and securely fastens to framework members as covered in the material specifications. The

bottom of the fabric is held as uniformly as is practical to two inches above the finished grade. All property line stakes and grade stakes were established by owner.

Specifications for furnishing and installing chain link fence for the stadium stand are as follows:

1. Height. The fence stands forty-eight inches high along the back (top) and the ends, and stands thirty-six inches high along the front (walkway and down ramp).

2. Fabric. Hot dipped galvanized steel chain link forty-eight inches and thirty-six inches high, No. 11 gauge wire woven in two inch mesh.

3. Intermediate Posts. Intermediate posts are 1-5/8 inch galvanized steel pipe, meeting the requirements of ASTM specifications SS40.

4. Intermediate Post Spacing. Posts are spaced in accordance with drawing.

5. Post Settings. Post settings are placed over dowel, as shown on drawings (Fig. 4-15).

6. Top Rail. The top rail is standard weight pipe, 1-3/8 inch OD, SS40. It should pass through the intermediate post tops and form a continuous brace from end to end of each stretch of fence. The top rail is fastened to terminal posts by heavy pressed steel connections, SS40 acceptable.

7. Fittings. All fittings used in the complete fence assembly

are malleable cast iron or pressed steel.

8. Post Tops. All posts are equipped with tops. Tubular post tops are designed to exclude moisture from the posts. All intermediate post tops are designed to hold the top rail.

9. Swinging Gates. Gate frames are made of 1-3/8 inch OD standard weight pipe, SS40, with all welded frames. Fabric to match the fence has been installed in the frame by means of tension bars and hook bolts. All gates are equipped with a positive type latching device.

10. Fabric Connections. The chain link fence is securely fastened to all terminal posts by 1/4 by 1/3 inch tension bars with heavy 11-gauge pressed steel bands spaced approximately fourteen inches apart and to the top rail with 9-gauge tie wire on approximately twenty-four inch centers.

11. Installation. Installation has been implemented by skilled erectors experienced in erection of this type fence. The fence has been erected on line and to grades as provided by the owner.

### Sprinkler Systems

The sprinkler system is designed to furnish enough water to the playing area, especially in dry, hot weather. This is of major importance when building a complex. Without adequate water supply the playing area cannot function in a complete and safe manner.

The Montgomery Central Stadium has a very adequate sprinkler system (Fig. II-12). The complex has two rows of sprinklers to cover the entire playing field. The two rows that provide the water have

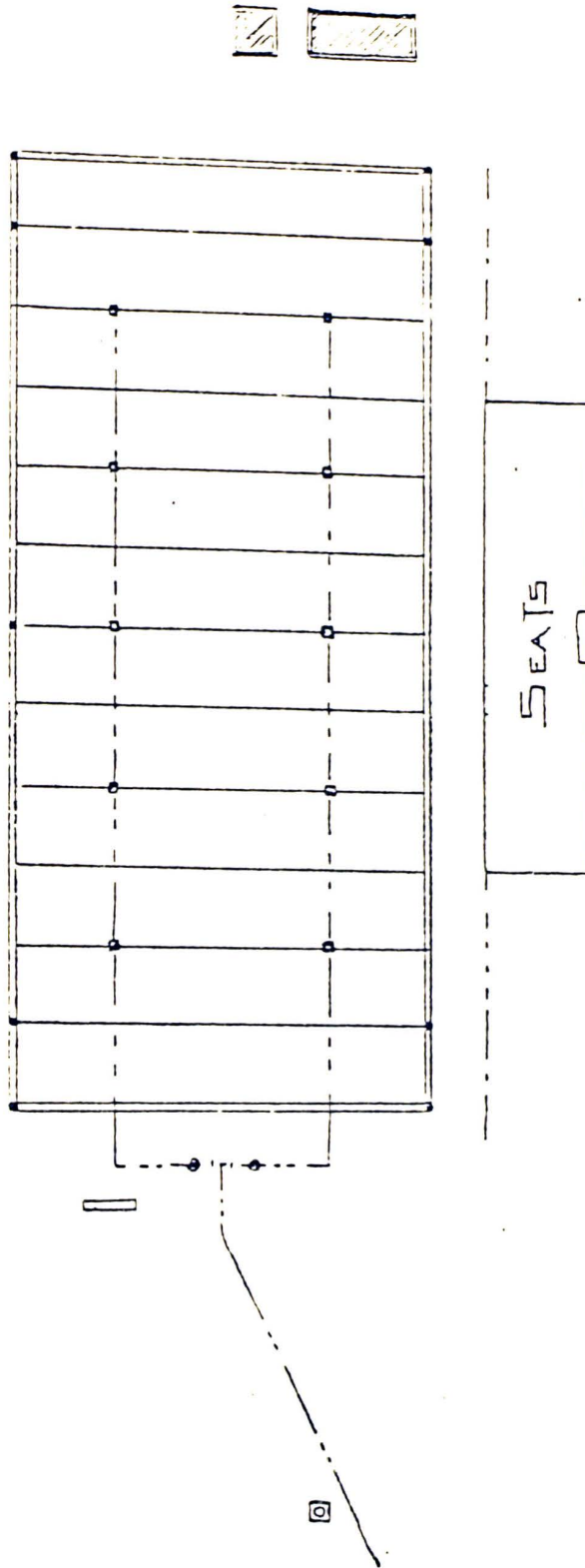


Fig. II-12. Sprinkler System Layout



five spouts that give a seventy foot radius spray. The two rows have a three inch main pipe as the source of feed. The pipe lines with PVC feeds off the three inch main line. A pump is used when the water pressure is not desirable. This pump is housed on the south end of the playing field. The spout heads are made of a plastic substance that will protrude out of the ground when pressure is applied to them.

### Lighting System

Every playing field needs an adequate lighting system. The Montgomery Central Stadium lighting system (Fig.II-13) consists of a lighting system called HI-TEK. The HI-TEK is a system of mercury vapor lamps which give off greenish-blue light as well as ultraviolet rays. Mercury vapor lamps have a longer life than other electric lights of similar brightness, but they do not produce full brightness immediately after being turned on. They take from three to seven minutes to build up the mercury vapor pressure and reach full brightness. However, the HI-TEK is the cheapest lighting system on the market today. It requires fewer lights to provide the ample amount of required candlepower. Only nine lights are mounted on each pole at the Montgomery Central Stadium:

The lighting poles are mounted eight feet deep in a concrete base that has been set in the ground. Reinforced steel wire has been mixed with the concrete that has been poured into the base. Large-structured bolts were used to hold the poles in position. The poles are fifty feet in length and the diameter is three feet. High carbon

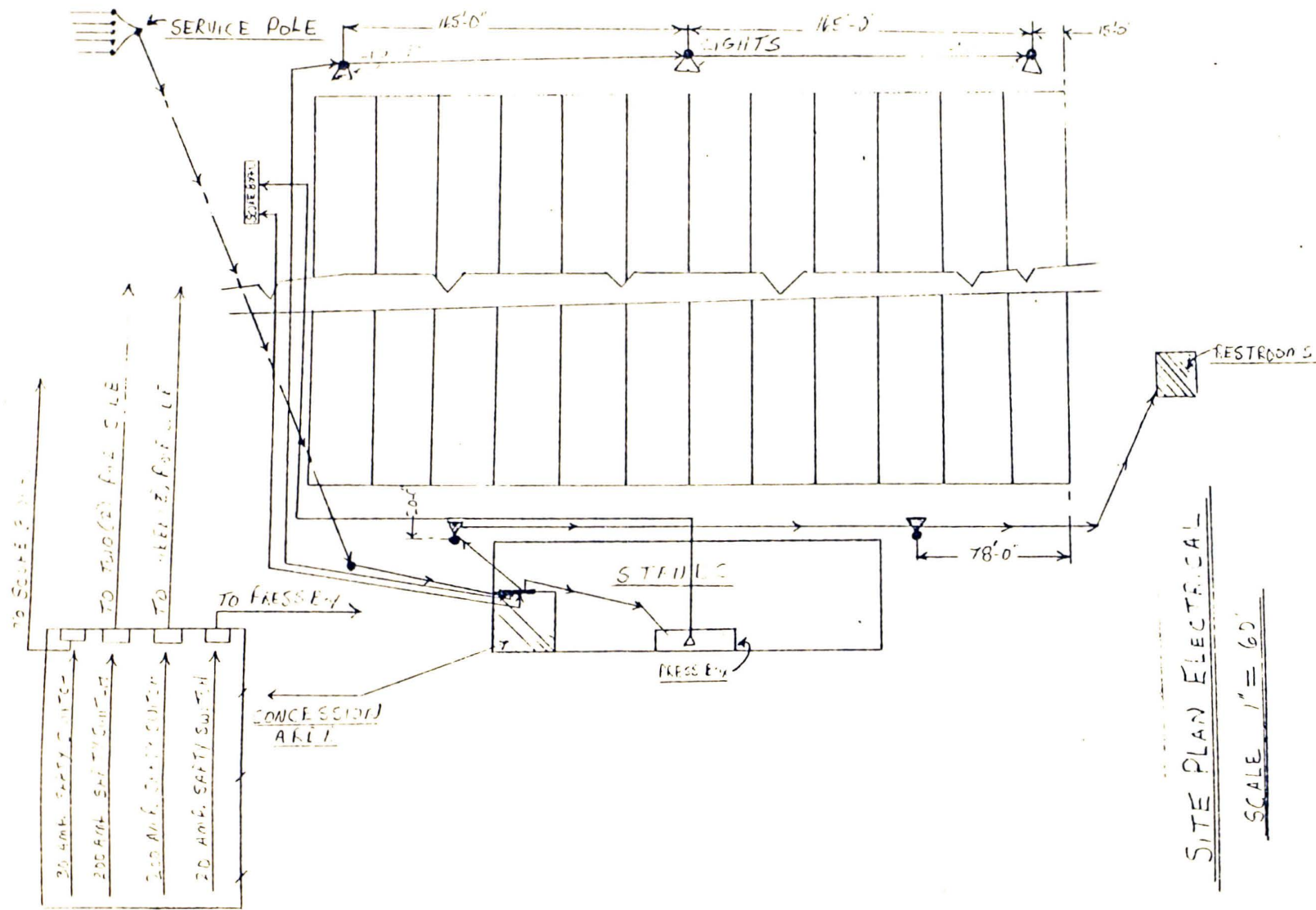


Fig. II-13. Site Electrical

steel has been used to withstand the stress of the lighting system. The electrical system (also Fig. II-13) provides current to the lights and the electrical system is secured by circuits placed underground.

There should be a low cost maintenance factor because of the small number of lights used. The only other maintenance will be the painting of the poles every five years.

### Parking Area

The parking area already established for the Montgomery Central High school building provides area for the stadium parking. This area provides sufficient parking for the spectators.

### Practice Field

An area located on the south end of the football field, adjacent to the goal posts, is being utilized for a practice field. At the present time there is not a designated practice field at Montgomery Central. Future plans include construction of a field to be utilized by the physical education classes and football team.

### Baseball Complex

Also included in the future plans for the Montgomery Central Stadium is a baseball complex. At the present time an area located on the northeast end of the field is being utilized by the women's softball team. The future plans include a complex for both men's and women's activities.

### Track Complex

A track complex has been proposed in the plans of the athletic

complex; however, because of the limited space, there is not enough area to build a complete runway. The track and field runway has to be modified because there is not enough room to put the entire 440-yard track around the field. A straight-away area is used to accommodate the sprint events, and the football playing area is used for the field events.

Hopefully, Montgomery Central will be able to construct a cinder track in the near future. This can be utilized by physical education classes and all athletes within the school.

#### Time Clocks and Scoreboards

Time clocks and scoreboards are provided for the convenience of the coaches, players and spectators. It is advisable to have the scoreboard as an integral part of the structure, especially in the case of larger stadiums.

The press box houses the electrical outlets for the communication systems and the scoreboard. The time clock and the scoreboard are operated out of the press box by authorized school personnel.

The Montgomery Central Stadium time clock and scoreboard are located on the southeast end of the football field. All spectators have full vision of the clock and scoreboard. The Clarksville Coca Cola Bottling Company donated the time clock and scoreboard to the school.

#### Public Telephones

A public telephone is provided for every one thousand spectators,



with a minimum of two for the stadium, regardless of the seating capacity. Booths are enclosed to eliminate noise and are placed in accessible locations.

## CHAPTER IV

### Summary, Findings, and Conclusions

#### Summary

The new Montgomery Central High School Stadium stands proudly as the "home of the Central Indians," on a hill once known as the cow pasture. Built on the same site where the Indians have practiced football for ten years, the two thousand seat facility is the result of extensive renovation and offers the latest in spectator comfort and convenience.

Construction of the new stadium was initiated in early April of 1980, as the new aluminum bleacher seats were installed and bolted down and the Bermuda grass playing surface set out. At the same time, new home and visitor dressing rooms were built, along with the concession stand and storage area. The new press box with an area for press, broadcasting and filming was added as well. Extensive landscaping, renovation of the restroom facilities, an asphalt walkway, one entry pavillion, fencing and ticket booth were also included.

The completed project was dedicated on September 13, 1981.

#### Findings

It takes a great deal of time and planning to complete an athletic facility. This study has revealed the many facets that go into planning and building an athletic facility. Perhaps more than anyone else, Mr. John Atkins and Mr. Jack Hunt have been the driving forces

behind the completion of the Montgomery Central Stadium.

The overall assessment of the project went well. The contractors, Mr. Atkins in particular, have done an outstanding job in bringing the various parts of the project together. When the amount of available money is considered, building the stadium was a gigantic undertaking. From that standpoint in particular it was very successful.

The detailed overlays or blueprints, which were studied and reviewed, proved to be invaluable in the writing of this study. The original blueprints may be obtained from the author, as they are located at Montgomery Central High School.

The detailed drawings included in the text of this study will give the reader a complete understanding of the many areas that have been covered in the construction of the Montgomery Central High School Stadium.

### Conclusions

The author concluded that the stadium has had a great impact on the 1982 football program at Montgomery Central. The team posted its best record of 8-2 for the 1982 season. The team also received a bowl bid to the Boyce Smith Bowl in Springfield, Tennessee--the first for the school.

The stadium is also a tremendous plus for Montgomery Central in generating community enthusiasm and involvement in Central athletics. The stadium gives Montgomery Central an opportunity to have more people in the seats, which helps generate the income necessary to maintain Central's program on a competitive level.

The stadium also had a real impact on the band programs at the school. For the first time ever, Montgomery Central hosted a Marching Festival for seventeen bands. The festival was a huge success and future plans include having the festival as an annual event. The new Montgomery Central Stadium made all of this possible.

Perhaps as to the future, the author includes plans for a baseball/softball complex, track runway, and an additional concession stand. These are very vital options.

As a final statement, the author would like to express the opinion that the complex of the football stadium has to be considered the most significant accomplishment to date and perhaps the one that will have the greatest influence on the future success of all the school's programs. There is a sense of pride, a sense of accomplishment and certainly a feeling that a major step has been taken in the direction of putting Montgomery Central's athletic programs on a course toward being competitive and very successful in the future years.



## References

- "Advances Encapsulated Fieldhouse." American School and University, November 1971, pp. 31-32.
- Baas, Alan. "Physical Educational Facilities." Educational Facilities Review No. 14. New York: Educational Facilities Laboratories, 1973.
- Brown, James. "A Million Dollars Worth of Growth." Parks and Recreation, August 1976, pp. 6, 11, 38, 49 and 50.
- Carrier, Ronald C. "Sports Help Turn a College Into a University." American School and University, Vol. 53, No. 6, February 1981, pp. 40-42.
- Challenge: A Report Suggesting How an Old School Can Continue to Serve Youth if the Educational Program is the Prime Consideration. Chicago: Great Cities Research Council, July 1968.
- Cladins, John. "The Big Apple Beats the Athletic Facilities Crunch." Journal of Physical Education and Recreation, Vol. 51, No. 6, June 1980, pp. 26-28.
- Crookham, Joe P. "Guidelines for Recreation and Athletic Field Lighting." Parks and Recreation, Vol. 17, No. 6, June 1982, pp. 23, 26, 28.
- Danko, Ina A. "No P.E. Today." Tennessee Teacher, Vol. 48, No. 6, February 1981.
- Debman, Betty. "The Silverdome in Pontiac, Michigan." Appeared in The Mini-Page, a supplement to the Clarksville, Tennessee Leaf-Chronicle, January 15, 1982, p. 2D. United Press Syndicate.
- Elarche, Harry. Techniques of Football Coaching. New York: Lippincott, 1969.
- "Evaluative Criteria." National Study of School Evaluation. Arlington, Virginia, Fifth Edition, 1978, pp. 13, 53, 317.
- Jones, Thomas E. How To Build a Track. Madison, Wisconsin: Wisconsin University, 1955.

- Kicklighter, Clois E. Architecture. Illinois: The Goodheart-Wilcox Co., Inc., 1976.
- Life Safety Code Handbook, 1981 Edition. Southern Building Code Congress International, Inc., Birmingham, Alabama.
- McClurkin, W. D. School Building Planning. New York: The Macmillan Company, 1964.
- Meditch, Carl. "Physical Educators Plan Facilities." Jopher, Vol. 45, No. 1, January 1974, pp. 32-33.
- Rehling, Conrad H. The Physical Education Teacher and Coach. New York: McGraw-Hill, 1954.
- Rules, Regulations and Minimum Standards. Tennessee State of Vocational Education, Nashville, Tennessee, 1979, 1980, 1981, 1982.
- Smith, Andrew, ed. "Planning Facilities for Athletics." Physical Education and Recreation. Washington, D.C.: Athletic Institute, 1974.
- Tneibert, Richard P. "Facilities for Lifetime Sports." American School and University, November 1971, pp. 14-18.
- Walker, Thomas. Playing Fields and Hard Surface Areas. London: Department of Education and Science, 1966.
- Weston, Arthur and Kleindienst, Viola. Intramural and Recreational Programs for Schools and Colleges. New York: Appleton-Century Crofts, 1964.
- Webster's New Collegiate Dictionary. Springfield, MA: G. & C. Merriam Company, 1974.
- Willgoose, Carl E. The Curriculum in Physical Education. New Jersey: Prentice-Hall, Inc., 1969.

## APPENDIXES

## APPENDIX A

### RULES, REGULATIONS AND MINIMUM STANDARD



## CHAPTER V

### SPECIAL OCCUPANCY REQUIREMENTS

#### SECTION 501 — TEMPORARY STRUCTURES

A special building permit for a limited time shall be obtained before the erection of Temporary Structures such as construction sheds, seats, canopies, tents and fences used in construction work or for temporary purposes such as reviewing stands. Such structures shall be completely removed upon the expiration of the time limit stated in the permit.

#### SECTION 502 — GREENHOUSES

Greenhouses more than thirty-five (35) feet in height shall have a non-combustible structural frame. Greenhouses not over four-hundred (400) square feet in area, or fifteen (15) feet high, shall be considered accessory structures and may be of any construction except that a greenhouse with wood frame construction shall be located not less than five (5) feet from an adjoining structure or property line.

#### SECTION 503 — REVIEWING STANDS, GRANDSTANDS AND BLEACHERS

##### 503.1 — SCOPE

Reviewing stands, grandstands and bleachers shall conform to the provisions of this Section.

##### 503.2 — DEFINITIONS

**BLEACHERS:** Bleachers are tiered or stepped seating facilities without backrests in which an area of three (3) square feet or less is assigned per person for computing the occupant load.

**FOOTBOARDS:** Footboards are that part of a raised seating facility other than an aisle or cross aisle upon which the occupant walks to reach a seat.

**GRANDSTANDS:** Grandstands are tiered or stepped seating facilities wherein an area of more than three (3) square feet is provided for each person.

**OPEN AIR GRANDSTANDS AND BLEACHERS:** Open air grandstands and bleachers shall refer to seating facilities which are located so that the side toward which the audience faces is unroofed and without an enclosing wall.

**PERMANENT:** Permanent stands are those seating facilities which remain at a location for more than ninety (90) days.

**REVIEWING STANDS:** Reviewing stands are elevated platforms accommodating not more than fifty (50) persons. Seating facilities, if provided, are normally in the nature of loose chairs. Reviewing stands accommodating more than fifty (50) persons shall be regulated as grandstands.

**SAFE DISPERSAL AREA:** Safe dispersal area shall mean an area which will accommodate a number of persons equal to the total capacity of the stand and building which it serves in such a manner that no person within the area need be closer than fifty (50) feet from the stand or building. Dispersal areas are based upon an area of not less than three (3) square feet per person.

**TEMPORARY:** Temporary seating facilities are those which are intended for use at a location for not more than ninety (90) days.

#### 503.3 — HEIGHT OF GRANDSTANDS AND BLEACHERS

(a) Grandstands and bleachers, other than those of open skeleton frame type, when more than one (1) story in height or four hundred (400) square feet in area, shall be of not less than one (1) hour fire resistive construction. When the space under such structures is used for any purpose, it shall be separated from all parts of the grandstand or bleacher, including exits, by walls and floor-ceiling assemblies of not less than one (1) hour fire resistive construction.

##### EXCEPTION:

1. Exits under temporary grandstands need not be separated.
2. The underside of continuous steel deck grandstands, when erected outdoors, need not be fire protected when occupied for public toilets.

Grandstands or bleachers employing combustible members in the structural frame shall be limited to eleven (11) rows or nine (9) feet in height. Seatboards, toeboards, bearing or base pads and footboards may be of combustible materials.

#### 503.4 — DESIGN REQUIREMENTS

See Chapter XII.

#### 503.5 — GENERAL REQUIREMENTS

(a) Row spacing. There shall be a clear space of not less than twelve (12) inches measured horizontally between the back or backrest of each seat and the front of the seat immediately behind it.

The minimum spacing of rows of seats measured from back to back shall be:

1. Twenty-two (22) inches for seats without backrests.
2. Thirty (30) inches for seats with backrests.
3. Thirty-three (33) inches for chair seating.

(b) Rise between rows. The maximum rise from one row of seats to the next shall not exceed sixteen (16) inches unless the seat spacing from back to back measured horizontally is forty (40) inches or more.

(c) Seating capacity determination. Where bench type seating is used, the number of seats shall be based on one person for each eighteen (18) inches of length of the bench.

(d) Aisles. Aisles required. Aisles shall be provided in all seating facilities except that aisles may be omitted when all of the following conditions exist:

1. Seats are without backrests.
2. The rise from row to row does not exceed twelve (12) inches per row.
3. The number of rows does not exceed eleven (11) in height.
4. The top seating board is not over ten (10) feet above grade.
5. The first seating board is not more than twenty (20) inches above grade.

(e) Obstructions. Obstructions shall not be placed in the required width of any aisle or exitway.

(f) Width. Aisles serving seats on both sides shall have a minimum width of forty-four (44) inches. When serving seats only on one side, the aisle shall have a minimum width of thirty-six (36) inches.

1. Cross aisles and vomitories. Cross aisles and vomitories shall be not less than fifty-four (54) inches in clear width and shall extend to an exit, enclosed stairway or exterior perimeter ramp.

2. Stairs and ramps. All stairs have a maximum rise of every step in a stairway of seven and one-half ( $7\frac{1}{2}$ ) inches and a run of not less than ten (10) inches with a one-quarter ( $\frac{1}{4}$ ) inch tolerance.

Ramps shall not exceed a slope of one (1) vertical to ten (10) horizontal and shall have landings of at least five (5) feet length measured in the direction of the ramp run at the top and bottom and at least one intermediate landing shall be provided for each five (5) feet of rise.

3. Guardrails. Perimeter guardrails or enclosing walls, or fencing shall be provided for all portions of elevated seating facilities more than thirty (30) inches above grade or floor. The height of the

guardrail shall be forty-two (42) inches above the front edge of the walking surface and measured vertically and shall comply with Section 1204.2. Where the seatboard is the walking surface, the height shall be measured from the front edge of the seat board.

EXCEPTION: Guardrails at the front of the front row of seats which are not located at the end of an aisle and where there is no cross aisle may have a height of thirty (30) inches with a midrail.

4. Toeboards. A four (4) inch high vertical barrier shall be installed along the edge of walking platforms whereon guardrails are required.

EXCEPTION: Toeboards shall not be required at the end of footboards.

5. Footboards. Footboards shall be provided for all rows of seats above the third row or beginning at such a point where the seating plank is more than two (2) feet above grade. Where the same platform is used for both seating and footrests, footrests will not be required provided each level or platform is not less than twenty-four (24) inches wide. Footboards in bleachers at a level below the seat board it serves are not to be considered as walking platforms but shall be not less than a structural grade of 2-inch by 8-inch lumber or equivalent. When bleachers exceed eleven (11) rows in height, a walking platform not less than eighteen (18) inches in width shall be provided.

#### 503.6 — SPECIAL REQUIREMENTS

(a) Grandstands and Bleachers Within Buildings. Except as otherwise provided in this Section, grandstands and bleachers shall comply with the other applicable sections of Chapter XI.

EXCEPTION: When seats are without backrests, there may be nine (9) seats between any seat and an aisle.

(b) Open Air Grandstands and Bleachers. Except as otherwise provided in this subsection, open air grandstands and bleachers shall comply with the other applicable sections of Chapter XI.

1. Dead ends. Dead ends in vertical aisles shall not exceed a depth of sixteen (16) rows for permanent grandstands and twenty-six (26) rows for temporary grandstands.

2. Distance to exit. The line of travel from any seat to a safe dispersal area exit ramp, enclosed stairway or vomitory shall not be more than two-hundred (200) feet. When the seats do not have backrests, the distance may be measured by direct line.

3. Safe dispersal area. Each safe dispersal area shall have a minimum of two (2) exits. If more than six-thousand (6000) persons are to be accommodated within a dispersal area, there shall be a minimum of three (3) exits and for more than nine-thousand (9000)



persons there shall be at least four (4) exits. The aggregate clear width of exits from a safe dispersal area shall be determined on the basis of not less than one (1) exit unit of twenty-two (22) inches for each five-hundred (500) persons to be accommodated and no exit shall be less than forty-four (44) inches in width.

4. Two exits required. Two (2) exits shall be provided from every stand which accommodates more than three-hundred (300) persons.

— 5. Three exits required. Three (3) exits shall be required where a grandstand or section thereof accommodates more than one-thousand (1000) persons.

6. Four exits required. Four (4) exits shall be provided where a grandstand or section thereof accommodates more than three-thousand (3000) persons.

7. Determination of exit width. The total width of exits in feet shall be not less than the total occupant load served divided by one hundred fifty (150) when exiting by stairs and divided by two hundred (200) when exiting by ramps, corridors, tunnels or vomitories.

8. Minimum exit width. No exit shall be less than forty-four (44) inches in width.

## SECTION 504 — FARM BUILDINGS

Farm Buildings shall include those structures other than residences and structures appurtenant thereto, for on-farm use (barns, sheds, poultry houses, etc.). Maximum allowable deflection for structural members of such farm buildings shall not exceed 1/180 of span. Design limitations based on deflection as prescribed elsewhere in this code shall not be applicable.

## SECTION 505 — COVERED AND ENCLOSED WALKWAYS AND TUNNELS

### 505.1 — SCOPE

This section shall apply to connections between buildings such as walkways or tunnels, located at, above, or below grade level, that are used as a means of travel by persons.

### 505.2 — DEFINITIONS

(a) Covered walkway. A roofed, unobstructed walkway, where the least horizontal dimension is less than thirty (30) feet, connecting buildings and used as a means of travel by persons and where less than fifty (50) percent of the perimeter is enclosed.

(b) Enclosed walkway. A roofed, unobstructed walkway, where the least horizontal dimension is less than thirty (30) feet, con-

APPENDIX B  
SEALED BIDS

Following are the bids submitted by companies whose names appear on the mailing list of the Clarksville-Montgomery County School System.

# INVITATION FOR SEALED BIDS

## CLARKSVILLE-MONTGOMERY COUNTY SCHOOLS

61

BID FOR: Montgomery Central High School

BID DATE: July 13, 1981

BID NO: \_\_\_\_\_

BID TIME: 10:00 a.m.

THE UNDERSIGNED, HAVING READ THE CONDITIONS AND SPECIFICATIONS OF THE BID, AGREES TO FURNISH AND DELIVER PRODUCTS AND SERVICES SPECIFIED HEREIN. WE FURTHER PROPOSE THAT THE PRICES INCLUDED ARE CORRECT AND ACCURATE AND WILL REMAIN IN EFFECT FOR A MINIMUM OF 45 DAYS AND A MAXIMUM OF 90 DAYS UNTIL THE PROPOSAL OR BID IS ACCEPTED OR REJECTED. PRICES WILL REMAIN IN EFFECT UNTIL THE MERCHANDISE IS DELIVERED OR INSTALLED (IF SPECIFIED) UNLESS OTHERWISE INDICATED. IN THE EVENT OF SUBSEQUENT ORDERS ARE PLACED FOR ITEMS INCLUDED IN THIS PROPOSAL OR BID, THE PRICES WILL REMAIN IN EFFECT FOR 90 DAYS FROM DATE OF BID OPENING. IN ADDITION TO THE PRICES LISTED BELOW, WE OFFER THIS ADDITIONAL DISCOUNT 0%

ITEM NO.	SPECIFICATIONS (MFG. BRAND NAME, CATALOG NUMBER OR MODEL NUMBER AND OTHER NECESSARY INFORMATION)	QUANTITY	UNIT PRICE	TOTAL PRICE	VENDOR BRAND AND MODEL NUMBER
	Furnish, deliver and install the following:				
	Seats: To be installed on existing concrete stands. (Note: Drawing SF-001)	as specified		\$10,646.00	Dant Corpora
	Mobile Bleachers: Medalist Standard Steel, or approved equal, 2 sections, 10 rows x 24' overall length.	2	\$2,516	\$ 5,032	Dant #ZA-211
		2	\$3,128	\$ 6,256	**Alternate bid
	Medalist Standard Steel, or approved equal, 4 sections, 5 rows x 24' overall length.	4	\$1,036	\$ 4,144	Dant #ALS-140*
		4	\$1,222	\$ 4,888	Dant #ZA-215
					**Alternate bid
	Wheel Assemblies: 1 pair mobile hydraulic wheel assemblies with 1 tow bar.	1	279.	\$ 279	Dant #ALS-370
	Delivery and installation date <u>42 days</u> from notice to proceed				
	If there are any questions, contact Jack Hunt 615-647-5681				

### AFFIDAVIT OF VENDOR

STATE OF TENNESSEE, COUNTY OF MONTGOMERY

Affiant states that with respect to each contract of sale to the Clarksville-Montgomery County Board of Education, of Clarksville, TN, the firm is in compliance with Sections 49-217 and 49-225, Tennessee Code Annotated concerning Adverse Interest of Montgomery County, TN, County Commissioners, Board Members and Director of Schools. The affiant further states that no Clarksville-Montgomery County School System employee will receive a gift or other things of value as a result of this order.

David L. Eason  
signature of authorized officer

District Sales Manager  
title of authorized officer

502/634-3626  
area code and phone number

Dant Corporation  
company name

1500 Bernheim Lane  
street address

Louisville, Ky. 40210  
city, state and zip code

Section 49-217. Adverse Interest of Board Members and Justices Prohibited. No member of the county Board of Education or of the County Commissioners shall take or make, as the adverse party, any contract which his board is competent to make, nor shall he become the owner of a school warrant, except for his compensation as provided by this title; provided that nothing in this title shall prevent any member of the county commissioners from entering into a contract with said board to teach any of the schools coming under the provisions of this title.

Section 49-225. Adverse Interest of Superintendent Prohibited. It shall be a misdemeanor in office for any county superintendent to take any other contract under the county board of education or to perform any other service for additional compensation, or to act as principal or teacher in any public school or become the owner of a school warrant other than that allowed for his services as superintendent; and for any violation of any provision of this section he shall be fined not less than fifty dollars (\$50.00) nor more than two hundred and fifty dollars (\$250.00) and be dismissed from his position.



# INVITATION FOR SEALED BIDS

## CLARKSVILLE-MONTGOMERY COUNTY SCHOOLS

62

BID FOR: Montgomery Central High School

BID DATE: 18 (by and) May 17, 1981

BID NO: \_\_\_\_\_

BID TIME: 10:00 a.m.

THE UNDERSIGNED, HAVING READ THE CONDITIONS AND SPECIFICATIONS OF THE BID, AGREES TO FURNISH AND DELIVER PRODUCTS AND/OR SERVICES SPECIFIED HEREIN. WE FURTHER PROPOSE THAT THE PRICES INCLUDED ARE CORRECT AND ACCURATE AND WILL REMAIN IN EFFECT FOR A MINIMUM OF 45 DAYS AND A MAXIMUM OF 60 DAYS UNTIL THE PROPOSAL OR BID IS ACCEPTED OR REJECTED. PRICES WILL REMAIN IN EFFECT UNTIL THE MERCHANDISE IS DELIVERED OR INSTALLED (IF SPECIFIED) UNLESS OTHERWISE INDICATED. IN THE EVENT OF SUBSEQUENT ORDERS ARE PLACED FOR ITEMS INCLUDED IN THIS PROPOSAL OR BID, THE PRICES WILL REMAIN IN EFFECT FOR 120 DAYS FROM DATE OF BID OPENING. IN ADDITION TO THE PRICES LISTED BELOW, WE OFFER THIS ADDITIONAL DISCOUNT 1% 10th proc Net 30 days

ITEM NO.	SPECIFICATIONS (MFG. BRAND NAME, CATALOG NUMBER OR MODEL NUMBER AND OTHER NECESSARY INFORMATION)	QUANTITY	UNIT PRICE	TOTAL PRICE	VENDOR BRAND AND MODEL NUMBER
	Furnish and install precast, prestressed concrete slabs, as per specifications and drawing.				ALTERNATE BID as per BID ADDENDUM & DWGS MCH-S-002
	1. Delivery days after receiving order <u>45</u>	12	536.80	\$6441.60	Type "A" - 17"x4 Channels
	2. See attached drawing and specifications.	78	319.00	\$24882.00	Type "B" - 12"x4 Channels
	If any questions contact Jack Hunt 615-647-5681	TOTAL Alt Base Bid		\$31,323.60	
		Optional Bid			
		28	15.00	420.00	14"x6"x3'0" sta
		28	25.00	700.00	14"x6"x5'0" Precast steps

### AFFIDAVIT OF VENDOR

STATE OF TENNESSEE, COUNTY OF MONTGOMERY

Affiant states that with respect to each contract of sale to the Clarksville-Montgomery County Board of Education, of Clarksville, TN, the firm is in compliance with Sections 49-217 and 49-225, Tennessee Code Annotated concerning adverse interest of Montgomery County, TN, County Commissioners, Board Members and Director of Schools. The affiant further states that no Clarksville-Montgomery County School System employee will receive a gift or other things of value as a result of this order.

  
Signature of authorized officer

Vice President  
Title of authorized officer

615/793-6811  
Area code and phone number

Dixie Concrete Pipe Co., Inc.  
Company name

D. Buchanan St. P.O. Box 337  
Street address

Laverne, Tennessee 37086  
City, state and zip code

Section 49-217. Adverse Interest of Board Members and Justices Prohibited. No member of the county Board of Education or of the County Commissioners shall take or make, as the adverse party, any contract which his board is competent to make, nor shall he become the owner of a school warrant, except for his compensation as provided by this title; provided that nothing in this title shall prevent any member of the county commissioners from entering into a contract with said board to teach any of the schools coming under the provisions of this title.

Section 49-225. Adverse Interest of Superintendent Prohibited. It shall be a misdemeanor in office for any county superintendent to take any other contract under the county board of education or to perform any other service for additional compensation, or to act as principal or teacher in any public school or become the owner of a school warrant other than that allowed for his services as superintendent; and for any violation of any provision of this section he shall be fined not less than fifty dollars (\$50.00) nor more than two hundred and fifty dollars (\$250.00) and be dismissed from his position.



# INVITATION FOR SEALED BIDS

## CLARKSVILLE-MONTGOMERY COUNTY SCHOOLS

63

BID FOR: Montgomery Central High School

BID DATE: May 20, 1981

BID NO: \_\_\_\_\_

BID TIME: 1:30 p.m.

THE UNDERSIGNED, HAVING READ THE CONDITIONS AND SPECIFICATIONS OF THE BID, AGREES TO FURNISH AND DELIVER PRODUCTS AND/OR SERVICES SPECIFIED HEREIN. WE FURTHER PROPOSE THAT THE PRICES INCLUDED ARE CORRECT AND ACCURATE AND WILL REMAIN IN EFFECT FOR A MINIMUM OF 45 DAYS AND A MAXIMUM OF 45 DAYS UNTIL THE PROPOSAL OR BID IS ACCEPTED OR REJECTED. PRICES WILL REMAIN IN EFFECT UNTIL THE MERCHANDISE IS DELIVERED OR INSTALLED (IF SPECIFIED) UNLESS OTHERWISE INDICATED. IN THE EVENT OF SUBSEQUENT ORDERS ARE PLACED FOR ITEMS INCLUDED IN THIS PROPOSAL OR BID, THE PRICES WILL REMAIN IN EFFECT FOR 45 DAYS FROM DATE OF BID OPENING. IN ADDITION TO THE PRICES LISTED BELOW, WE OFFER THIS ADDITIONAL DISCOUNT None

ITEM NO.	SPECIFICATIONS (MFG. BRAND NAME, CATALOG NUMBER OR MODEL NUMBER AND OTHER NECESSARY INFORMATION)	QUANTITY	UNIT PRICE	TOTAL PRICE	VENDOR BRAND AND MODEL NUMBER
	Furnish and install lighting system for Montgomery Central High School Football Field, as per drawing (MCH-E-001) and specifications.				As Specified
	1. Starting date of installation (All ground work could be done immediately) and estimated completion (Completion time is dependent on delivery of materials. Approximately 60 to 100 days.				
	2. See attached drawing and specifications (August 31, 1981)				
	If any questions contact Jack Hunt				
	Base Bid			\$ 328,455.00	
	Alternate 2.1	Add		\$ 2,515.00	
	Alternate 2.2	Add		\$ 31,000.00	

### AFFIDAVIT OF VENDOR

STATE OF TENNESSEE, COUNTY OF MONTGOMERY

Affiant states that with respect to each contract of sale to the Clarksville-Montgomery County Board of Education, of Clarksville, TN, the firm is in compliance with Sections 49-217 and 49-225, Tennessee Code Annotated concerning adverse interest of Montgomery County, TN, County Commissioners, Board Members and Director of Schools. The affiant further states that no Clarksville-Montgomery County School System employee will receive a gift or other things of value as a result of this order.

Forrest S. Crow  
Signature of authorized officer

Forrest S. Crow Contractors, Inc.  
company name

Sec. & Treasurer  
title of authorized officer

1274 Paradise Hill Road, P. O. Box 707  
street address

(515) 645-3097  
area code and phone number

Clarksville, Tennessee 37040  
city, state and zip code

Section 49-217. Adverse Interest of Board Members and Justices Prohibited. No member of the county Board of Education or of the County Commissioners shall take or make, as the adverse party, any contract which his board is competent to make, nor shall he become the owner of a school warrant, except for his compensation as provided by this title; provided that nothing in this title shall prevent any member of the county commissioners from entering into a contract with said board to teach any of the schools coming under the provisions of this title.

Section 49-225. Adverse Interest of Superintendent Prohibited. It shall be a misdemeanor in office for any county superintendent to take any other contract under the county board of education or to perform any other service for additional compensation, or to act as principal or teacher in any public school or become the owner of a school warrant other than that allowed for his services as superintendent; and for any violation of any provision of this section he shall be fined not less than fifty dollars (\$50.00) nor more than two hundred and fifty dollars (\$250.00) and be dismissed from his position.

# INVITATION FOR SEALED BIDS

## CLARKSVILLE-MONTGOMERY COUNTY SCHOOLS

64

bid for: Montgomery Central High School

bid date: June 15, 1981

bid no: \_\_\_\_\_

bid time: 10:00 a.m.

THE UNDERSIGNED, HAVING READ THE CONDITIONS AND SPECIFICATIONS OF THE BID, AGREES TO FURNISH AND DELIVER PRODUCTS AND/OR SERVICES SPECIFIED HEREIN. WE FURTHER PROPOSE THAT THE PRICES INCLUDED ARE CORRECT AND ACCURATE AND WILL REMAIN IN EFFECT FOR A MINIMUM OF 45 DAYS AND A MAXIMUM OF \_\_\_\_\_ DAYS UNTIL THE PROPOSAL OR BID IS ACCEPTED OR REJECTED. PRICES WILL REMAIN IN EFFECT UNTIL THE MERCHANDISE IS DELIVERED OR INSTALLED (IF SPECIFIED) UNLESS OTHERWISE INDICATED. IN THE EVENT OF SUBSEQUENT ORDERS ARE PLACED FOR ITEMS INCLUDED IN THIS PROPOSAL OR BID, THE PRICES WILL REMAIN IN EFFECT FOR \_\_\_\_\_ DAYS FROM DATE OF BID OPENING. IN ADDITION TO THE PRICES LISTED BELOW, WE OFFER THIS ADDITIONAL DISCOUNT \_\_\_\_\_.

ITEM NO.	SPECIFICATIONS (MFG. BRAND NAME, CATALOG NUMBER OR MODEL NUMBER AND OTHER NECESSARY INFORMATION)	QUANTITY	UNIT PRICE	TOTAL PRICE	VENDOR BRAND AND MODEL NUMBER
	Furnish and deliver the following list of items. If not bidding specified items, submit manufacture specifications.				
	Give delivery date <u>10 days after receipt of order.</u>				
	Questions: Contact Jack Hunt 615-647-5681			\$905.25	

### AFFIDAVIT OF VENDOR

STATE OF TENNESSEE, COUNTY OF MONTGOMERY

Affiant states that with respect to each contract of sale to the Clarksville-Montgomery County Board of Education, of Clarksville, TN, the firm is in compliance with Sections 49-217 and 49-225, Tennessee Code Annotated concerning adverse interest of Montgomery County, TN, County Commissioners, Board Members and Director of Schools. The affiant further states that no Clarksville-Montgomery County School System employee will receive a gift or other things of value as a result of this order.

*Marcus Hunt*  
signature of authorized officer

*James Mark*  
title of authorized officer

(615) 647-2325  
area code and phone number

RANDOLPH, HALE & MATTHEWS, INC.  
company name

25 Crossland Ave. / P. O. Box 828  
street address

Clarksville, TN 37040  
city, state and zip code

Section 49-217. Adverse Interest of Board Members and Justices Prohibited. No member of the county Board of Education or of the County Commissioners shall take or make, as the adverse party, any contract which his board is competent to make, nor shall he become the owner of a school warrant, except for his compensation as provided by this title; provided that nothing in this title shall prevent any member of the county commissioners from entering into a contract with said board to teach any of the schools coming under the provisions of this title.

Section 49-225. Adverse Interest of Superintendent Prohibited. It shall be a misdemeanor in office for any county superintendent to take any other contract under the county board of education or to perform any other service for additional compensation, or to act as principal or teacher in any public school or become the owner of a school warrant other than that allowed for his services as superintendent; and for any violation of any provision of this section he shall be fined not less than fifty dollars (\$50.00) nor more than two hundred and fifty dollars (\$250.00) and be dismissed from his position.



# INVITATION FOR SEALED BIDS

## CLARKSVILLE-MONTGOMERY COUNTY SCHOOLS

65

BID FOR: Montgomery Central High School (Football Field)

BID DATE: July 20<sup>th</sup>, 1981

BID NO: \_\_\_\_\_

BID TIME: 10:00 a.m.

THE UNDERSIGNED, HAVING READ THE CONDITIONS AND SPECIFICATIONS OF THE BID, AGREES TO FURNISH AND DELIVER PRODUCTS AND/OR SERVICES SPECIFIED HEREIN. WE FURTHER PROPOSE THAT THE PRICES INCLUDED ARE CORRECT AND ACCURATE AND WILL REMAIN IN EFFECT FOR A MINIMUM OF 45 DAYS AND A MAXIMUM OF 30 DAYS UNTIL THE PROPOSAL OR BID IS ACCEPTED OR REJECTED. PRICES WILL REMAIN IN EFFECT UNTIL THE MERCHANDISE IS DELIVERED OR INSTALLED (IF SPECIFIED) UNLESS OTHERWISE INDICATED. IN THE EVENT OF SUBSEQUENT ORDERS ARE PLACED FOR ITEMS INCLUDED IN THIS PROPOSAL OR BID, THE PRICES WILL REMAIN IN EFFECT FOR 30 DAYS FROM DATE OF BID OPENING. IN ADDITION TO THE PRICES LISTED BELOW, WE OFFER THIS ADDITIONAL DISCOUNT Net 10%

ITEM NO.	SPECIFICATIONS (MFG. BRAND NAME, CATALOG NUMBER OR MODEL NUMBER AND OTHER NECESSARY INFORMATION)	QUANTITY	UNIT PRICE	TOTAL PRICE	VENDOR BRAND AND MODEL NUMBER
	Furnish and install fence as follows:				
I.	Fence around playing area of football field. Drawing SF-02 Sheet <u>1</u> of <u>1</u> .				\$1,344. <sup>00</sup>
II.	Fence and guard rail to be installed on stadium seats. Drawing SF-01, Sheets <u>1</u> of <u>2</u> and sheet <u>2</u> of <u>2</u> .		\$3.46 per foot		2,196. <sup>00</sup>
	Date of installation after awarding of bids				
	If there are any questions, contact Jack Hunt, 615-647-5681.				
				Total.	\$3,540 <sup>00</sup>

### AFFIDAVIT OF VENDOR

STATE OF TENNESSEE, COUNTY OF MONTGOMERY

Affiant states that with respect to each contract of sale to the Clarksville-Montgomery County Board of Education, of Clarksville, TN, the firm is in compliance with Sections 49-217 and 49-225, Tennessee Code Annotated concerning adverse interest of Montgomery County, TN, County Commissioners, Board Members and Director of Schools. The affiant further states that no Clarksville-Montgomery County School System employee will receive a gift or other things of value as a result of this order.

Robert J. Howell  
Signature of authorized officer

President  
Title of authorized officer

615-865-6347  
Area code and phone number

AAA Fence Co., Inc.  
Company name

596 Old Hickory Blvd  
Street address

Madison, Tenn. 37  
City, state and zip code

Section 49-217. Adverse Interest of Board Members and Justices Prohibited. No member of the county Board of Education or of the County Commissioners shall take or make, as the adverse party, any contract which his board is competent to make, nor shall he become the owner of a school warrant, except for his compensation as provided by this title; provided that nothing in this title shall prevent any member of the county commissioners from entering into a contract with said board to teach any of the schools coming under the provisions of this title.

Section 49-225. Adverse Interest of Superintendent Prohibited. It shall be a misdemeanor in office for any county superintendent to take any other contract under the county board of education or to perform any other service for additional compensation, or to act as principal or teacher in any public school or become the owner of a school warrant other than that allowed for his services as superintendent; and for any violation of any provision of this section he shall be fined not less than fifty dollars (\$50.00) nor more than two hundred and fifty dollars (\$250.00) and be dismissed from his position.

# INVITATION FOR SEALED BIDS

## CLARKSVILLE-MONTGOMERY COUNTY SCHOOLS

66

BID FOR: PAVING WORK - Re Bid

BID DATE: AUGUST 6, 1981

BID NO: \_\_\_\_\_

BID TIME: 2 p.m.

THE UNDERSIGNED, HAVING READ THE CONDITIONS AND SPECIFICATIONS OF THE BID, AGREES TO FURNISH AND DELIVER PRODUCTS AND SERVICES SPECIFIED HEREIN. WE FURTHER PROPOSE THAT THE PRICES INCLUDED ARE CORRECT AND ACCURATE AND WILL REMAIN IN EFFECT FOR A MINIMUM OF 45 DAYS AND A MAXIMUM OF \_\_\_\_\_ DAYS UNTIL THE PROPOSAL OR BID IS ACCEPTED OR REJECTED. PRICES WILL REMAIN IN EFFECT UNTIL THE MERCHANDISE IS DELIVERED OR INSTALLED (IF SPECIFIED) UNLESS OTHERWISE INDICATED. IN THE EVENT OF SUBSEQUENT ORDERS ARE PLACED FOR ITEMS INCLUDED IN THIS PROPOSAL OR BID, THE PRICES WILL REMAIN IN EFFECT FOR \_\_\_\_\_ DAYS FROM DATE OF BID OPENING. IN ADDITION TO THE PRICES LISTED BELOW, WE OFFER THIS ADDITIONAL DISCOUNT \_\_\_\_\_

ITEM NO.	SPECIFICATIONS (MFG. BRAND NAME, CATALOG NUMBER OR MODEL NUMBER AND OTHER NECESSARY INFORMATION)	QUANTITY	UNIT PRICE	TOTAL PRICE	VENDOR BRAND AND MODEL NUMBER
1.	<u>LOCATION:</u> Montgomery Central High School Football Field	321 sq. yds.			
2.	<u>AREA TO BE PAVED:</u> See attached drawing.		@ \$6.00 per sq. yd.		
3.	<u>GENERAL:</u> A. All labor, tools, materials and equipment shall be furnished by the Contractor. B. Each Contractor shall inspect the job site prior to bidding. C. All debris shall be removed from school property by the Contractor.			Total Bid--\$1,926.00	

### AFFIDAVIT OF VENDOR

STATE OF TENNESSEE, COUNTY OF MONTGOMERY

Affiant states that with respect to each contract of sale to the Clarksville-Montgomery County Board of Education, of Clarksville, TN, the firm is in compliance with Sections 49-217 and 49-225, Tennessee Code Annotated concerning adverse interest of Montgomery County, TN, County Commissioners, Board Members and Director of Schools. The affiant further states that no Clarksville-Montgomery County School System employee will receive a gift or other things of value as a result of this order.

Bo Elliott  
signature of authorized officer

owner  
title of authorized officer

615-645-9482  
area code and phone number

Elliott Paving Company, Inc.  
company name

114 Virginia Drive  
street address

Clarksville, Tennessee 37040  
city, state and zip code

Section 49-217. Adverse Interest of Board Members and Justices Prohibited. No member of the county Board of Education or of the County Commissioners shall take or make, as the adverse party, any contract which his board is competent to make, nor shall he become the owner of a school warrant, except for his compensation as provided by this title; provided that nothing in this title shall prevent any member of the county commissioners from entering into a contract with said board to teach any of the schools coming under the provisions of this title.

Section 49-225. Adverse Interest of Superintendent Prohibited. It shall be a misdemeanor in office for any county superintendent to take any other contract under the county board of education or to perform any other service for additional compensation, or to act as principal or teacher in any public school or become the owner of a school warrant other than that allowed for his services as superintendent; and for any violation of any provision of this section he shall be fined not less than fifty dollars (\$50.00) nor more than two hundred and fifty dollars (\$250.00) and be dismissed from his position.



ITEM NO.	SPECS. (MFG. BRAND NAME, CATALOG NUMBER OR MODEL NUMBER AND OTHER INFORMATION)	QUANTITY	UNIT PRICE	TOTAL PRICE	VENDOR BRAND AND MODEL NUMBER
	D. A written guarantee of one year on all materials and labor shall be provided for each job.				
	E. All work shall be completed by August 21, 1981.				
4.	<u>SPECIFICATIONS:</u>				
	A. Grade and base with 4" compact crush/run.				
	B. Bituminous hot plant mix shall be placed upon the primed surface and compacted to a thickness of 1 1/2" minimum.				
5.	<u>OTHER:</u>				
	A. All work shall be done during non-school hours. Work shall not interfere with school operation.				
	B. Bidders shall submit bids as follows:				
	(1) Total Price				
	(2) Price per square yard				
	C. Contractor shall install at no extra cost, traffic barriers to allow the pavement to cure before traffic uses it.				
	D. Contractor shall pay for all permits, licenses, fees and taxes.				

# INVITATION FOR SEALED BIDS

## CLARKSVILLE-MONTGOMERY COUNTY SCHOOLS

68

BID FOR: Montgomery Central High School

BID DATE: July 27, 1981

BID NO: \_\_\_\_\_

BID TIME: 10:00 a.m.

THE UNDERSIGNED, HAVING READ THE CONDITIONS AND SPECIFICATIONS OF THE BID, AGREES TO FURNISH AND DELIVER PRODUCTS AND/OR SERVICES SPECIFIED HEREIN. WE FURTHER PROPOSE THAT THE PRICES INCLUDED ARE CORRECT AND ACCURATE AND WILL REMAIN IN EFFECT FOR A MINIMUM OF 45 DAYS AND A MAXIMUM OF 45 DAYS UNTIL THE PROPOSAL OR BID IS ACCEPTED OR REJECTED. PRICES WILL REMAIN IN EFFECT UNTIL THE MERCHANDISE IS DELIVERED OR INSTALLED (IF SPECIFIED) UNLESS OTHERWISE INDICATED. IN THE EVENT OF SUBSEQUENT ORDERS ARE PLACED FOR ITEMS INCLUDED IN THIS PROPOSAL OR BID, THE PRICES WILL REMAIN IN EFFECT FOR 45 DAYS FROM DATE OF BID OPENING. IN ADDITION TO THE PRICES LISTED BELOW, WE OFFER THIS ADDITIONAL DISCOUNT -4-

ITEM NO.	SPECIFICATIONS (MFG. BRAND NAME, CATALOG NUMBER OR MODEL NUMBER AND OTHER NECESSARY INFORMATION)	QUANTITY	UNIT PRICE	TOTAL PRICE	VENDOR BRAND AND MODEL NUMBER
1	<p>Furnish and deliver goal post as specified in drawing.</p> <p>Estimated time required for delivery. <u>2 weeks</u></p> <p>Contact Jack Hunt, 647-5681, if you have any questions.</p> <p>All material steel delivered to job site.</p> <p>2 1/2" O.D. upright 1 1/2" O.D. Post 4" Channel S.L. 1" Crossbar</p> <p>..... Specifications according to your drawing. ....</p>		\$332.60 ea.		

### AFFIDAVIT OF VENDOR

STATE OF TENNESSEE, COUNTY OF MONTGOMERY

Affiant states that with respect to each contract of sale to the Clarksville-Montgomery County Board of Education, of Clarksville, TN, the firm is in compliance with Sections 49-217 and 49-225, Tennessee Code Annotated concerning adverse interest of Montgomery County, TN, County Commissioners, Board Members and Director of Schools. The affiant further states that no Clarksville-Montgomery County School System employee will receive a gift or other things of value as a result of this order.

Shelby's Welding, Inc.  
Signature of authorized officer

Shelby's Welding, Inc.  
company name

President  
Title of authorized officer

1340 Pettus St.  
street address

615-618-2506  
Area code and phone number

Clarksville, Tenn. 37040  
city, state and zip code

Section 49-217. Adverse Interest of Board Members and Justices Prohibited. No member of the county Board of Education or of the County Commissioners shall take or make, as the adverse party, any contract which his board is competent to make, nor shall he become the owner of a school warrant, except for his compensation as provided by this title; provided that nothing in this title shall prevent any member of the county commissioners from entering into a contract with said board to teach any of the schools coming under the provisions of this title.

Section 49-225. Adverse Interest of Superintendent Prohibited. It shall be a misdemeanor in office for any county superintendent to take any other contract under the county board of education or to perform any other service for additional compensation, or to act as principal or teacher in any public school or become the owner of a school warrant other than that allowed for his services as superintendent; and for any violation of any provision of this section he shall be fined not less than fifty dollars (\$50.00) nor more than two hundred and fifty dollars (\$250.00) and be dismissed from his position.

## APPENDIX C

### GLOSSARY

## Glossary

Athletic Field: A specialized type of an outdoor recreational area intended primarily for highly organized games and sports, such as football, track, and baseball. Permanent seating facilities are usually provided and the area is often enclosed by a fence or wall. Athletic fields which are equipped with permanent seating facilities are often referred to as stadiums.

Athletics: Sport activities based on organized competition, requiring a set of rules and a code of ethics, a high degree of skill, conditioning, and training. Examples of athletic contests are college football games, amateur athletic track and field events and softball games.

Brightness Balance: Specified limitations of brightness differences and brightness ratios within the visual fields which, if observed, will contribute toward visual comfort and good visual performance.

Community: A small city or a section of a larger city, primarily a residential area usually composing three to five neighborhoods, representing the service area of a secondary school and containing a business center. The people are bound together by psychological, sociological, and economic bonds and may act together consciously or unconsciously in their chief concerns of life. The community creates, as a result of its common interest, certain institutions of legal, protective, educational, economical, recreational, and religious character. A community includes factors of interdependence and belonging and a sense of usefulness through contributing to the common good.

Competition: Activity involving conscious or unconscious rivalry, in which one person or a group try to gain over the other; involvement of two or more opponents in a contest. This term can also mean rivalry with a previous record of an individual or group. Competition can occur without conflict, as in a friendly game of cards.

Concession: Authority, granted under contract with mutually acceptable provisions by all parties concerned, given by recreation departments to operators permitting them to provide services and/or to sell commodities to patrons of recreational areas and facilities.

Co-recreation: Activities engaged in jointly by both sexes such as dances, mixed choruses, and hiking.

Crowned Field: A curved field with a summit or highest point (crown) at the middle, running lengthwise. (A football field is crowned for the purpose of drainage.)



Equipment: Movable furnishings as opposed to stationary property; relatively permanent articles, furnishings, machinery, and devices used in administering, operating, and maintaining recreational programs and services.

Footing: A masonry section, usually concrete, in a rectangular form wider than the bottom of the foundation wall or pier it supports.

Frostline: The depth of frost penetration in soil. This depth varies in different parts of the country. Footings should be placed below this depth to prevent movement.

Incandescent Lamp: A lamp in which a filament gives off light when sufficiently heated by an electric current.

Pier: A masonry pillar usually below a building or structure to support the floor.

Survey: A description of the measure and marking of land, including maps and field notes which describe the property.

Tract: A specified area of land.