

**A FIELD HOUSE FOR  
VIRGINIA POLYTECHNIC INSTITUTE**

by

**Charles E. Hall, Jr.**

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**APPROVED:**

---

**Director of Graduate Studies  
Louis A. Pardue**

**APPROVED:**

---

**Head of Department  
Leonard J. Currie**

---

**Dean of Engineering  
John W. Whittemore**

---

**Major Professor  
Charles S. Worley, Jr.**

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## INTRODUCTION

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For all those sports enthusiasts within the Blacksburg area; for all members of the student body interested in intercollegiate, intramural, or individual sports competition; for all members of the administration interested in school prestige; and for all members of the athletic plant staff; a new building to house intercollegiate sports activities is a very vital and realistic problem - vital because of the present inadequacy and inflexibility of the War Memorial Hall, and realistic because of actual plans now in progress to expand the athletic facilities of Virginia Polytechnic Institute. This thesis deals with the design of a building that will meet the needs of adequacy and flexibility.

**PART I - BACKGROUND AND HISTORICAL EVENTS**

## BACKGROUND AND HISTORICAL EVENTS

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### APPROACH TO THE PROBLEM

In approaching the design problem there are certain aspects that, if ignored, will make an intelligent, straightforward solution impossible. These aspects include the historical background of the building type and recent trends in the design of buildings of similar nature, as well as the more obviously important intended function of the proposed building. In reviewing the historical development of the building type, it appears that physical education and competitive sports developed along somewhat independent lines, and they will therefore, be discussed separately.

### HISTORY OF PHYSICAL EDUCATION

Physical education can be traced as far back as pre-historic man. Physical exercise at that time was life itself with survival depending upon the very physical fitness and dexterous skill of the individual. Fathers must have trained their sons from early youth to become

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proficient hunters; skilled in the arts of throwing, running, jumping and climbing; and capable of great endurance.

Until the Greeks made their contribution to the world, however, little is known of organized physical education. It was the year 400 B. C. that witnessed the development and culmination of physical education in Greece. Here two trends of thought prevailed - that at Sparta and that at Athens. Sparta was surrounded by an unfriendly and subject people. Individual welfare, therefore, became subordinated to that of the community, and education became a function of the state, striving for physical hardiness, skillful use of weapons, self-reliant courage, and iron discipline through gymnastics and military training. Literary training was neglected in this program.

Athens, on the other hand, strove for a complete and harmonious development of the individual. Schools were



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private, devoting much time to literary training, with music esteemed for its refining influence on character and its contribution to social enjoyment. Gymnastics, however, were no less essential than at Sparta.

Through the years, certain social, economic and political influences have operated to use physical education for various purposes. But it was not until the Industrial Revolution that athletics began to take the form that is characteristic today. Roman training, up to the middle of the third century A. D., was restricted to military training on the Field of Mars. The hiring of mercenary troops and consequent bodily indulgence on the part of the Roman public was synonymous with the decay of the Roman Empire and its fall in the year 476 A. D. Physical training was lacking as a part of the program in the Early Christian Church, Medieval Monasteries, and Cathedral Schools, as well as in the Universities of the Middle Ages, due to the prevailing spirit of asceticism. The evil of this spirit of bodily

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punishment is well attested by the plagues and pestilences that accompanied this period. Even within the schools of Chivalry, which flourished between the eleventh and the sixteenth centuries, athletic training served much the same purpose as the training of early man, i.e., developing physical prowess to cope with daily conflicts. But with industrialization, physical education became a necessary requirement for each nation in order to maintain robust health. A diversion from the rigors of a more confining daily routine was found in spectator sports; while at the same time the biological urge for vigorous exercise was seeking an outlet through large scale participation in competitive sports and supervised exercise.

Today sports play an even more vital role in the daily life of the college student than ever before. If colleges are to train men and women for a healthy and vigorous life after graduation, they must cultivate not only the mind but also the body. The situation is

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unfortunate where people have to be taught to relax and to exercise in order to keep their bodies functioning properly, but it is even more unfortunate when there are not sufficient facilities to accommodate those interested in maintaining their own health. We have already seen, in our brief review of the development of physical education, that physical education has often received more emphasis in the past than at the present time. There have never been more mechanical devices to save human labor: man no longer walks, climbs steps, or uses his arms to the extent that he has in the past. The woeful physical condition of our young people that has resulted from this vegetal type of existence is well attested by a look at the fitness of our Armed Forces draftees.

It seems significant that during the Golden Age of the Greeks, when probably more was contributed to the mental culture of man than at any other period, there was also a marked emphasis on the physical culture of man. And

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it is more than coincidence that this correlation of achievement and physical education was marked during the height of the Roman Empire and the productive period of the Renaissance. To attempt to revive a system of physical education identical to that of the Greek Golden Age or other periods would be no better than attempting to copy their architectural details; what we must do is seek the proper relationship between mind and body and provide the necessary facilities to accomplish this unity. It seems that the most important role that colleges and universities can play is to make it possible for their students to acquire the skills and interest in such sports as basketball, tennis, swimming, golf, baseball, and touch football that can easily be incorporated in their lives after graduation. Virginia Polytechnic Institute has, encouragingly enough, already made extensive plans for such intramural activities. A golf course, additional tennis courts, and recreation fields will soon be

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realities. Then, too, the new building to house intercollegiate sports activities, with which this thesis deals, while not providing directly for intramural activities, will permit the present gymnasium to be used entirely for intramural and individual activities.

## HISTORY OF COMPETITIVE SPORTS

The origin of competitive sports, like the origin of physical education, is concurrent with that of civilization itself. "As man laboriously acquired an intellect and learned to control his environment so that he was increasingly relieved of the pressures of mere existence, he began to organize the biological urge to play into objective games of various kinds." (1)

Surviving forms of art and literature from the ruins of the ancient river villages of the Tigris and Euphrates in Mesopotamia, the Hittite kingdom, and the Assyrian and Persian empires of the eastern Mediterranean group, give ample evidence of such organized

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(1) Harry A. Scott, Competitive Sports in Schools and Colleges, Scribner's Sons, New York, p. 1.

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activities as wrestling, hunting, and swimming, as well as acrobatics, ball playing, and dancing. As skills improved and man gradually perfected the art and science of communal living, competitive sports played an important part in the ceremonials, festivals, and pageantry of each succeeding era. The most ancient of these sports festivals, and undoubtedly the forerunner of the Olympic Games<sup>(2)</sup>, was the Tailteann games or Lughnasa, established more than 3000 years ago in Ireland.

The Olympic Games, consecrated to Olympian Zeus, were held at four year intervals between the years 776 B. C. and 394 A. D. This festival was so highly regarded that all hostilities between tribes were temporarily suspended for the seven days during the month of August when the games were held. The events consisted of foot races of various distances, ranging from the stadia race of approximately 210 yards, to a distance race of

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(2) The Encyclopedia Britannica, Vol. 2, 14th Ed. p. 615.

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about three miles; armour races; boxing; chariot races; relay races; the Pentathlon, consisting of long jumping, running, throwing the discus, throwing the javelin, and wrestling. Although the most popular contests were athletic and equestrian, there was also competition in music, poetry, drama, and recitation. The victors in the various athletic events became public heroes, were adorned with crowns of olive leaves, and many were made wealthy through gifts, exemption from taxes, and favors resulting from their athletic prowess.

The pertinence of the Olympic Games to this design problem lies in the observation that the athletic games of each era reflected the social, educational, and political character of the period. When the Olympic Games first began, the contestants were required to take an oath to compete fairly; but, by the time the Romans had completed their conquest of Greece in 31 B. C., the prizes had attracted a professional type athlete whose objective was to kill or maim the opponent in contact

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sports. After more than 1000 years of existence, the Olympic Games had degenerated to the point that the Christian Emperor, Theodosius, was led to abolish the games. This era marked the end of the Greek ideals of grace, beauty, science, skill, fairplay, and sportsmanship.

Competitive sports, like physical education, led a dismal life through the ensuing Dark and Middle Ages, not advancing until the period of the Renaissance and Reformation, when governments became more stable, methods of communication were improved, important scientific discoveries were made, and great impetus was given to the development of sports, both in the communities and in the educational programs, by such scholars as Elyot, Asham, Rabelais, Montaigne, Rousseau, Pestalozzi, Froebel, and Spencer.

In the United States, early conditions were not favorable for competitive sports. Life was strenuous; the



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price of existence was neverending toil and vigilance against the forces of nature that conspired with the inhospitable soil to resist the efforts of the settlers to eke out a livelihood. Then, too, current religious views degraded anything that savored of play or worldly pleasure. Play was considered a form of idleness or a means of dissipating valuable energy that might otherwise be spent in useful work. The philosophy of the era was one that exalted labor and eschewed any unproductive activity. Activities of survival, such as hunting, fishing, barn raising, and cornhusking, supplemented by cock fighting, horse racing and the combative activities of wrestling and boxing formed the sports life of the period.

As life became more secure and leisure time more abundant, for old and young alike, sports began to fill their place as a means of recreation. Since many of the immigrants were from Great Britain, the English influence on games and sports was marked. Games typical of the English

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people could be found wherever a piece of land could be cleared - football, cricket, rounders, and fives. Physical strength, always necessary in pioneer life, became the basis of many types of competition. To boxing and wrestling were added rail splitting, rail hurling, log cutting and feats of lifting heavy objects such as the blacksmith's anvil.

Following the Revolutionary War, the new spirit of nationalism, coupled with the trend toward urbanization, had marked effect on sports. By the first quarter of the nineteenth century, mechanical inventions and industrial development were shaping the cities of our country. Factory workers were turning to commercial entertainment and spectator sports for amusement. These artificial devices did not immediately fill the vacancy created by the loss of outdoor activity. Footraces, horse races, boxing and rowing were favorite events, with each town sporting its champion athletes. At this time there were many

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professionals who traveled from town to town challenging the local champions. Many of these professionals later appeared in the colleges of the country as coaches and trainers of athletic teams.

Towns and cities of the nineteenth century were not planned for health, welfare, or recreation. Housing conditions were crowded and there was little or no space for play. Seasonal employment, frequent periods of depression and an endless stream of rural and foreign immigrants supplied the surplus of idle time under which spectator sports continued to flourish.

As the economy began to stabilize, two distinct classes of people emerged in American society: the working class and the owner class. These classes inherited sports respective to their social status that had originated in England, where there was stratified society marked by upper and lower castes. It became evident early, therefore, that the upper class would

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play an important role in the germination of certain sports through the founding of social, country, and athletic clubs. Tennis, golf, rowing, sail boating, and pony polo were sports that were to lend themselves to the exclusive type of development, while college football and crew were to form examples of sports that were developed in colleges of the East.

The turning of the nineteenth century showed a marked effect on public recreation. Parks and beaches, Y. M. C. A.'s and Y. W. C. A.'s began to dot the cities and suburban areas of the United States. These Y. M. C. A.'s had an indirect but definite effect upon the form of present-day gymnasiums. In the year 1891, there were already 250 Y. M. C. A. buildings in the United States. These buildings were in need of a competitive indoor sport and were quick to adopt the game of basketball, invented in that year by James Naismith. The rapid dissemination of basketball through the Y. M. C. A. did much to popularize the game and so

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deeply enroot it in the hearts of Americans that it is the favorite winter sports today. Prior to the invention of basketball most school and college gymnasiums were thought of as exercise halls where students engaged in body-building and corrective activities; seldom were they considered as places for pleasurable games and sports. Basketball is credited with transforming the gymnasium from an exercise hall into a sports arena. When the Western Intercollegiate Conference began to promote the sport in 1905 an impetus was given to the game that carried it into almost every school and college in the United States and then to nearly every civilized country on the face of the globe until, in 1936, it was adopted as an Olympic games sport.

For many years the area of the basketball court determined the size of the gymnasium, since most other indoor sports can be played within the area. Track

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and field sports are the one exception to this rule. Private clubs sponsoring track on a competitive basis in this country appeared as early as 1860 and the first intercollegiate meet held in 1874, but it was not until a comparatively recent date, 1922, that the Intercollegiate Association of Amateur Athletics of America sponsored its first indoor championship meet. Since that time, indoor track has advanced in importance until it too has influenced the design requirements of the present-day field houses.

## RECENT TRENDS

In recent years college athletic buildings have taken one of three forms: (1) the gymnasium, (2) the coliseum, or (3) the field house. They will be defined below as used in this paper.

The gymnasium was a popular form prior to 1930. This type of building attempts little more than to provide a basketball court with modest spectator accommodations.

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In the East between 1920 and 1940 there was a tendency to provide a board running track above the basketball court, but this tendency has given way in recent years to either eliminating the track or to provide a cinder track. Schools at the junior and senior high level, along with many junior colleges with insufficient funds and limited athletic programs, are still employing this building of limited function.

Production is the main function of the coliseum. Schools like North Carolina State College at Raleigh, North Carolina, and Rensselaer Polytechnic Institute at Troy, New York, are attempting to present a great variety of events to keep their buildings in continual use. Commercial attractions, ranging from basketball, wrestling, gymnastics, and boxing to ice shows, concerts, plays, and operas are booked in rapid succession. This type of building does not usually contain a running track and is therefore supplemented by a building to accommodate track and other teams during practice hours.

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The field house attempts to provide practice space for all teams and also include seating for basketball games ranging from 4,000 seats, as at Virginia Military Institute,<sup>(3)</sup> to over 12,000 as at the new field house at the University of Maryland.<sup>(4)</sup> This type of building seems to be the ideal solution for a school with a limited budget that wishes to seat large numbers of spectators, but is unable to provide an additional building for practice.

## DESIGN PHILOSOPHY

The intercollegiate sports building today fills a very vital need on the campus. What other building reaches as many of the public or seats as many of the student body at one time? This building, which symbolizes the spirit of the school and, therefore, the spirit of the nation, is a greater design responsibility than any

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- (3) Arena Auditorium Stadium Guide, National Sports Publication, New York, N. Y., 1945, p. 105.  
(4) The Evening Star, Evening Star News Syndicate, Washington, D. C., August 12, 1954, p.B-1.



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other. It must meet the needs of the administration, the students, the public, and the athletic plant staff.

For the administration the field house must symbolize a progressive attempt to meet the demands of the college and the community with adequate facilities, it must be constructed with economical materials but must not be a compromise regarding requirements or equipment. The architectural form should be of prime importance to the school. No pseudo period revival can reflect an attitude of progress, achievement, conviction, decision, function, skill, efficiency, ability, or even realism. This building must be a completely contemporary structure in every respect.

The field house must serve the students, not only the comparatively few that take an active part in intercollegiate sports, but also those who attend competitive events. No other phase of college life has a greater effect on the "school spirit" than does

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intercollegiate sports. The united effort of rooting for a team; the opportunity to forget, for a brief moment, individual problems; and the feeling of personal and group victory when the team is successful all have an important psychological effect on the student.

This building, in addition to the obvious necessity of seating spectators comfortably, adequately, and with unobstructed vision, must also provide the teams with ideal practice conditions so that they can be trained to perform to the limit of their capabilities and can contribute as much as possible to the "school spirit". In addition to basketball games, the field house will serve as a meeting place for visitors from all over the state, attending agricultural meetings, educational meetings, and any type of rally that can not be accommodated at Burruss Hall. Therefore, it is evident that the field house will have a far reaching effect, not limited to Blacksburg.

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For the coaching staff the field house is a long awaited necessity. Light airy offices have a definite effect on the efficiency of a working day, while proper facilities make instruction less difficult and the effort of coping with team moral less strenuous. Then, too, a complete athletic plant will be a great aid in securing high school graduates of outstanding ability by impressing them with the adequate facilities that they will be using.

PART II - PROGRAM

## PROGRAM

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### FUNCTIONAL ANALYSIS

Since one aim of this program is to be as realistic as possible, the present recommendations, made after a recent study by Virginia Polytechnic Institute staff members, will be used as criteria for program development. These general recommendations suggest a field house type of building with provision for seating approximately 8,000, equipped with a dirt floor, basketball court, cinder running track, and adequate facilities to service all teams. The following program outline is based on the committee's recommendations; conferences with Mr. Moseley, the athletic director; and the writers' personal opinions and observations.

### PRACTICE AND ARENA AREA

The practice area should be designed for flexibility. It should provide adequate space for teams in basketball, track, football and baseball. An attempt to run a coliseum-type building, with continual booking of

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commercial entertainment, tends to rob the school of the usefulness that this structure should provide; therefore, no provision for ice shows or ice hockey should be made. Valuable hours of team practice, that cannot be measured in monetary receipts, are lost during the conversion time necessary to produce this type of entertainment. The practicability of this building is derived from its usefulness to the teams. From early fall through late spring it will provide protection from the elements so that sports, normally played out-of-doors, may be practiced regardless of weather conditions.

Nothing more than an open space within the one-eighth of a mile track is required for football and baseball, while special provision must be made for basketball and field events. In addition to a running track with a forty-yard straight-away for dashes and hurdle races, jumping pits must be provided for pole vaulting, broad-jumping, and high jumping. The basketball floor should

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be large enough for two courts so that freshmen and varsity teams can both practice during the afternoon.

Bleacher stands seem to be the most desirable type of seating from all standpoints except those of the spectator. They require less space for both cross and transverse aisles and furnish more seats per linear foot. Giving due consideration to the spectator, backless seats will not be undesirable since the longest anticipated sitting time will average no more than one hour.

## OFFICES

Offices must be provided for the athletic director, secretary, business manager, cashier, coaches, and publicity director. The office of the athletic director should be convenient to the main entrance for conferences with visitors and adjacent to the cashier's office for facility in checking records and giving advisory council. This office should provide a quiet

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atmosphere for research and study, the preparation of reports and speeches, and should provide adequate space for interviews. It should be equipped with a desk, three or four comfortable chairs, a bookcase, have provisions for hanging several pictures, and, like all other offices, be equipped with a telephone and interoffice communication system. Adjacent to this office there should be an outer secretarial office with desk, typewriter, mimeograph machine, bookcase, file, and five or six comfortable seats for waiting.

Adjacent to both the main entrance and the office of the business manager should be the cashier's office. This office should be provided with two or three windows and cash drawers for the sale of tickets and for business transactions. Within the office, space must be provided for a desk, typewriter, file cabinets, controls for the interoffice communication system, a walk-in fireproof vault, and, if not provided



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close by, toilets for the women employees. Through this office all sales transactions will be made, money distributed, and records processed.

The business manager should have his office adjacent to the cashier. His function is to book events and to coordinate schedules, supervise productions, and control maintenance, as well as act as financial administrator. His office should be equipped with a desk, three or four comfortable chairs, a bookcase, a small file, and provisions for hanging pictures.

The offices for eight coaches and two publicity managers should be located so that they are convenient to the athletic director, the conference rooms, locker rooms, and practice areas, but not necessarily directly adjacent to any of the four. These offices should form a friendly grouping with perhaps two coaches per office, with each office equipped with two desks, three or four chairs, a bookcase, and tack boards. The

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publicity office, in addition, should be equipped with two typewriters, a mimeograph machine, a drawing board, and a photographic dark room. Coaches' offices will function as areas for research, planning strategy and schedules, and as a place for conferences with students when necessary; while the publicity office provides space for the preparation of campus and public releases, as well as morale articles for the locker rooms.

## LOBBY AND TROPHY AREA

The lobby serves as a transitional area between the entrance and the arena, as a standing and lounge area during intermissions, and as a display area for athletic trophies. It should provide a number of couches, drinking fountains, cigarette urns, and standing room for the time between halves of basketball games and during intermissions at other events.

## REFRESHMENT STAND AND STORAGE

The refreshment stand is an excellent source of income.

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It should be easily accessible from more than one side. Counter space should be provided that is adequate to serve six or eight lines of customers buying ice cream, soft drinks, bakery products, and cigarettes. Storage space should be provided close-by.

## TEAM ROOMS

Team rooms should be directly accessible to the practice areas. They should provide lockers adequate for the storage of uniforms and playing equipment as well as street clothes. Also included should be a tack board, black board, and manager's locker for storage of playing apparatus. A breakdown of team rooms is recommended that groups all freshmen teams, except freshmen football, in one large room and provides freshmen football and all varsity teams with individual rooms. These individual team rooms could be monitored as a unit by the team managers and could be equipped with open stalls for hanging clothes and storing equipment.

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This system would not only be more economical to install, but would aid in drying wet clothes.

TRAINING ROOM

The training room is the health center of the athletic plant. It should be included in the team room suite. The unit consists of a minimum of one large room and two smaller rooms. The large room should serve for bandaging and readying the players for practice sessions and games, and it should be of sufficient size to provide one plinth for each ten athletes likely to use the facilities at one time.<sup>(5)</sup> This room should also contain a slop sink and a storage closet large enough to store all medical and training room supplies. The smaller rooms should contain the hydrothermal equipment and the electric therapeutic equipment. The hydrothermal room should contain a tub equipped with shower attachment, a lavatory, foot and leg baths, a movable whirlpool

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(5) Supra 1) p.514

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therapeutic bath, several electrical outlets, and it should be finished with a non-skid floor and tile wall. The therapeutic room should be equipped with numerous electrical outlets, electric therapeutic equipment, and should be as light and airy as possible.

## VISUAL MATERIALS AND BRIEFING ROOM

In any complete program of competitive sports it is necessary to provide a large room for the use of visual materials and other aids utilized in the theoretical aspects of teaching and learning competitive sports. This room should be provided with a blackboard, bulletin board, chairs with desk-arms, and equipment for showing movies. This room could also be used for a student study hall and for coaching schools.

## SHOWER ROOMS

Two large shower rooms are recommended. They should be located adjacent to the team dressing rooms and so arranged that the humid air from the showers does not infiltrate the dressing areas. Shower heads should be

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placed high enough on the wall to clear the head of the tallest student, a minimum of 6'7".<sup>(6)</sup> Liquid soap dispensers fed from a central tank provide an efficient method of dispensing soap and preventing the accumulation of soap on the floors. Tile walls and skid proof flooring provide hygienic and safety guarantees.

In addition to the two team shower rooms, there should be shower facilities for the visiting teams, and the coaches' and officials' dressing quarters.

WRESTLING ROOM

Separate from the main indoor practice area should be a wrestling and exercise room providing area for three or four regulation wrestling mats and such necessary apparatus as wall pulleys. An indispensable requirement for this room is protection from injury through padded walls to a height of eight feet.

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(6) Supra 1) p.518

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### EQUIPMENT ROOM

The equipment room should be located so that it is easily accessible from the team rooms for the daily exchange of equipment. In addition to the collection and distribution of equipment, this room must serve for: the proper marking of items, sorting and shelving or storing, checking-in and drying suits, laundering, daily inspection of items for repair, packing for trips, replacement of worn equipment, care of playing equipment, and an inventory at the close of each season.

### COACHES' AND OFFICIALS' DRESSING ROOM

A room should be provided for coaches' dressing. It should be directly accessible to the practice fields and adjacent to the coaches' offices. The furnishings of this room should include lockers, easy chairs, and a bookcase. By providing four extra lockers, this room could also serve as dressing area for game officials. Toilet facilities should be located adjacent to this room.

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### TOILET FACILITIES

In addition to the toilet facilities already mentioned, rest rooms must be provided for men and women spectators as well as the contestants. Rest rooms should be located adjacent to the lobby but within the ticket gate. The women's room should provide, in addition to water closets and lavatories, a mirror with shelf below for make-up. The men's room should provide water closets, urinals, lavatories, and like the women's room, have tile walls and floor and an acoustically treated ceiling.

Toilet facilities for contestants should be located adjacent to the showers and be easily accessible from the team rooms.

### MECHANICAL EQUIPMENT

Sufficient space to house heating and electrical equipment must be provided in a central location. It should include space for conversion equipment for electrical



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systems, for hot water storage tanks, and for necessary heating equipment.

### MONOGRAM CLUB ROOM

A club room for those who have been awarded letters in varsity sports is also recommended to be included in this building. It is important to provide a friendly comfortable atmosphere for meetings. Furnishings should include a table for officers, radio, television, comfortable chairs, and provision for hanging pictures.

### VISITING TEAM'S DRESSING ROOMS

The visiting team's dressing room should meet the same requirements as the resident team's dressing rooms with the exception of the lockers. It is felt that the security of lockers is more important than the circulation of air for drying of clothes, since uniforms are not likely to be hung while wet. Providing lockers that may be locked in groups would increase flexibility. A large room, such as required by a football team,

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could then be utilized to accommodate several smaller teams to meet requirements such as occur during a track tournament.

QUANTITATIVE ANALYSIS

The following analysis is meant as a guide to the design of the building and was arrived at by giving consideration to the equipment and activity space required for each area. In most cases average requirements are represented rather than absolute maximum or minimum areas.

ARENA AND PRACTICE AREASSeating (7)

8,000 seats	@ 2'-1" x 1'-6"	
plus aisle	@ 2'-0" per 28 seats - equals	
	3.14 sq. ft. plus 0.15 sq. ft.	
totals		3.29 sq. ft. per seat.

Basketball courts (8)

(Including Marginal areas). . 96' x 62'

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- (7) Time-Saver Standards, F. W. Dodge Corporation, New York, N. Y., p.389-392.
- (8) Participants in National Facilities Conference, Planning Facilities for Athletics, Recreation, Physical and Health Education, Athletic Institution, Chicago, Illinois, 1947, p.39.

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High Jump (9)

runway radius . . . . . 35'  
 pit . . . . . 14' x 12'  
 between standards . . . . . 12'

Pole Vault (9)

runway . . . . . 4' x 100'  
 pit . . . . . 14' x 12'  
 between standards . . . . . 12'

Broad Jump (9)

runway length . . . . . 90' - 120' x 5'  
 pit . . . . . 5' x 20'  
 take-off board from pit . . . 12'

Running Track

The running track requires one-eighth of a mile measured twelve inches from the inside curb. A straightaway for the forty-yard dash is mandatory, with sufficient room provided to decrease speed safely after the finish.

Wrestling Room

To accommodate four wrestling mats @ 24' x 24' (10)  
 the wrestling room would have to be 50' x 60'.

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(9) Supra 8) p.369  
 (10) Supra 7) p.43

## PROGRAM

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### TEAM ROOMS

#### Varsity and Freshmen Football and Varsity Track

The varsity football team room must contain 50 lockers, each two feet square.<sup>(11)</sup> These two feet by two feet lockers plus two feet to the centerline of the adjacent aisle<sup>(12)</sup> gives an area of eight square feet per locker. If four rows of lockers were used with six feet of circulation area at the front of the room and two feet at the rear, an area of approximately 600 square feet would be required.

The same size room would serve for the freshmen football and varsity track teams.

#### Freshmen Team Room

The freshmen team room, for all sports other than football, should contain 40 lockers for track and 20 each for basketball, baseball, and wrestling.

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(11) Supra 1) p.34

(12) Supra 8) p.578

## PROGRAM

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The room would be approximately twice the size of the varsity football team room.

### Varsity Basketball, Baseball, and Wrestling

Team rooms for varsity basketball, baseball, and wrestling require approximately 20 lockers each. A convenient arrangement for these rooms would be to place the lockers around the perimeter of the room, leaving the center free for pre-game talks. Using two feet by two feet lockers, and allowing eight feet between lockers for circulation and benches, these rooms would be approximately 240 square feet.

### Visiting Team Rooms

The visiting teams' rooms should consist of one room the size of the varsity football team room and one room the size of the varsity basketball team room.

PROGRAM

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SHOWER ROOMS

After considering the average shower time (approximately three to five minutes) and allowing for the improbability of all teams finishing practice at the same time, it was decided that the ratio of players to showers should be three to one. This ratio would give approximately thirty showers for each shower room with a floor area of sixteen square feet per shower head. (13)

TEAM TOILET ROOMS

After finding no data for the ratio of fixtures to players, it was estimated that eight water closets, eight lavatories, and fourteen urinals would be sufficient. Minimum floor areas recommended by the American Standards Association are listed below: (14)

Water closets.....	2'-8" x 3'-6"
Lavatory.....	2'-0" x 3'-6"
Urinal.....	2'-0" x 3'-6"
Clearance between fixtures	8'-0"

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(13) Supra 1) p.514

(14) Supra 8) p.574

## PROGRAM

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### TRAINING ROOM

The largest combined number of athletes requiring training aid at one time are probably the combined teams of varsity and freshmen football. One plinth for each ten athletes<sup>(15)</sup> would require approximately ten plinths @ 20 inches by 84 inches<sup>(15)</sup>. Allowing two feet between plinths for circulation each plinth would require 20 square feet of floor space excluding aisle space.

The hydrothermatic and the electric therapeutic rooms should each be 10 feet by 20 feet.<sup>(15)</sup>

### VISUAL MATERIALS AND BRIEFING ROOM

The visual materials and briefing room should be capable of seating the varsity and freshmen football teams at one time. One hundred desks @ 22 square feet<sup>(16)</sup> requires an area of 2,200 square feet.

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(15) Supra 1) p.487

(16) Supra 8) p.338

PROGRAM

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EQUIPMENT ROOM

For the equipment room the athletic director has suggested an area of 4,500 square feet.

OFFICESAthletic Director

Furniture (17)

desk . . . . .	4' x 5'-6"	=	22 sq. feet
5 chairs . . . . .	2' x 2'	=	20 sq. feet
circulation . . . . .		=	120 sq. feet
	Total		<u>162 sq. feet</u>

Secretarial Office and Business Office

The secretarial office and business office, based on the same data used for the office of the athletic director will require an area of 162 square feet.

Cashier's Office

The cashier's office should include a fire-proof vault of 80 square feet plus approximately 800 square feet for desks, files, mimeograph equipment, and circulation.



PROGRAM

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Coaches' Offices

The coaches' offices, based on the same data used for the office of the athletic director will each require an area of approximately 210 square feet.

Conference Room

The conference room requires a table 3 feet 6 inches by 8 feet<sup>(17)</sup> with a clear area around the table of 5 feet. The total area is 242 square feet.

Publicity Office

The publicity office requires roughly twice the area of one of the coaches offices or 420 square feet.

LOBBY AND TROPHY AREA

It is assumed that approximately one-half of the spectators leave their seats during halftime or intermission. If two and one-half square feet is

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(17) Supra 8) p.193

PROGRAM

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provided for each person likely to use the lobby facilities, the area required is 2.5 square feet by 4,000 or 10,000 square feet.

PUBLIC TOILETS

Toilet facilities should be provided in the following ratio: (18)

Water closets:

Men - 3 plus 1 for each additional 500 above 400.

Women - 3 plus 1 for each additional 500 above 400.

Lavatories:

3 plus 1 for each additional 500 above 750.

Urinals:

3 plus 1 for each additional 300 above 600.

Assuming a ratio of one woman to two men, fixtures must be provided as tabulated:

Women: 8 water closets  
7 lavatories

Men: 13 water closets  
13 lavatories  
20 urinals

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(18) U. S. Department of Commerce, Report of the Coordinating Committee for a National Plumbing Code, Government Printing Office, Washington, D.C., p.38.

PROGRAM

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COACHES AND OFFICIALS DRESSING ROOM

The coaches and officials dressing room should include the following areas:

Two showers..... @ 4'-0" x 4'-0"	=	16 sq. ft.
Fourteen lockers @ 1'-0" x 1'-6" (19)	=	21 sq. ft.
Three chairs.... @ 2'-0" x 2'-0"	=	12 sq. ft.
Lavatory and water closet... @ 4'-0" x 6'-0"	=	24 sq. ft.
Circulation space approximately....		120 sq. ft.
		<hr/>
Total..		193 sq. ft.

MONOGRAM CLUB ROOM

The Monogram Club room should be large enough to accommodate 60 persons @ 20 square feet per person in comfortable sofa seats. Total: 1200 square feet.

MECHANICAL EQUIPMENT ROOM

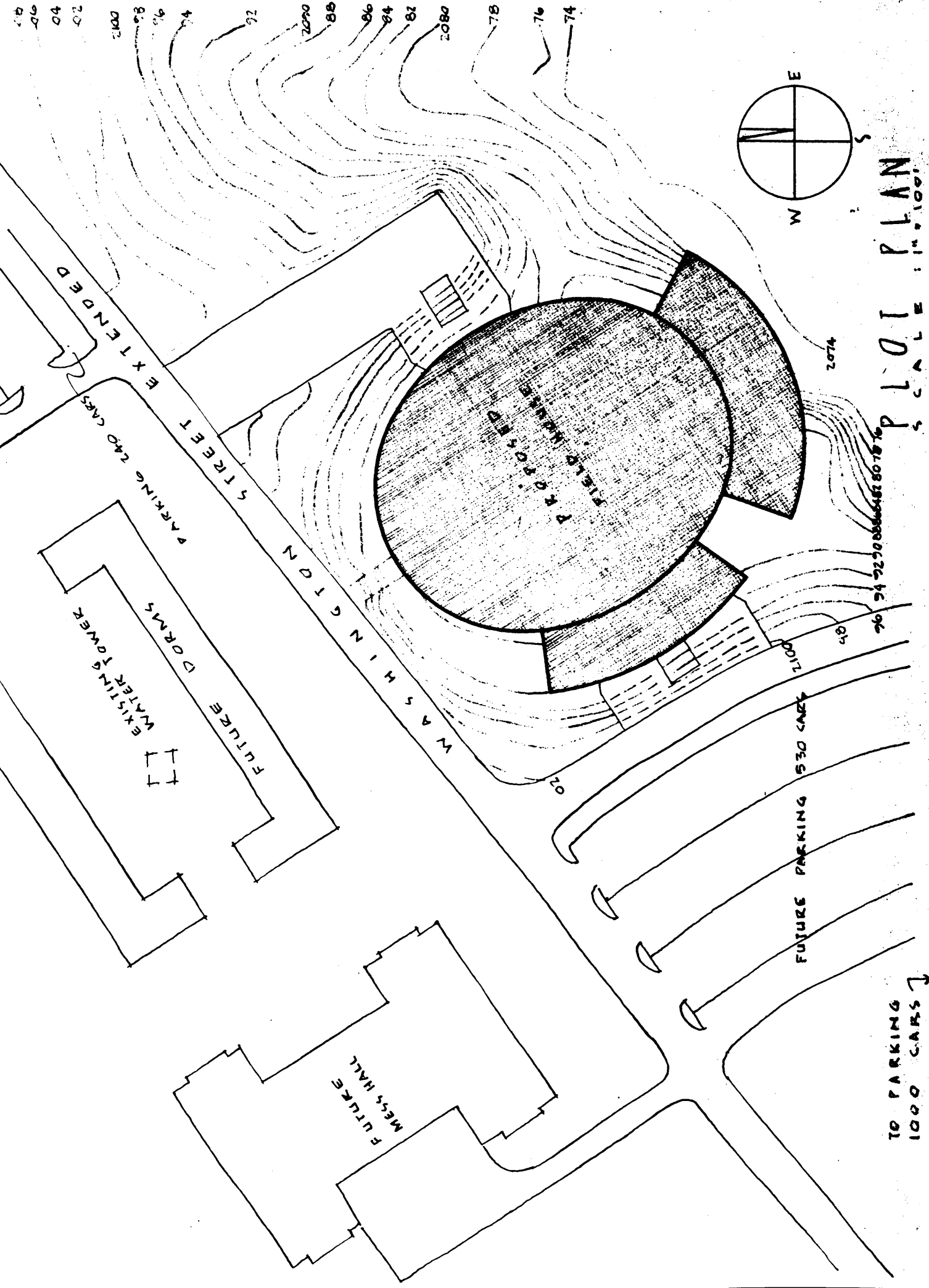
The mechanical equipment room has been estimated at 1000 square feet.

**PART III - PRESENTATION**

**PRESENTATION**

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**PLOT PLAN**



P L O T P L A N  
 SCALE: 1" = 100'

TO PARKING  
 1000 CARS

**PRESENTATION**

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**MAIN FLOOR PLAN**

TRACK ENTRY  
EL. + 2092

ARENA ENTRY  
EL. + 2116  
TRACK & PRACTICE AREA  
OPEN BELOW AT EL. 2082

STUDENT ENTRY  
TRACK ENTRY  
BELOW  
EL. 2092

BRIDGE  
16'-6"

BASKETBALL  
COURT  
EL. 2100

RAMP UP  
TO EL. 2116

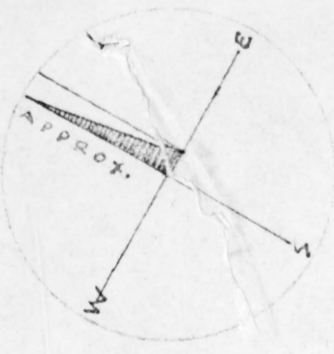
TRACK & PRACTICE AREA  
OPEN BELOW AT EL. 2082

ARENA ENTRY  
EL. + 2116

STORAGE  
PUBLISITY

COACHES  
COACHES

TEAM WIN 9



4216.0  
4212.94  
4190.86

WOMEN  
MEN  
LOUNGE

RAMP UP  
TO EL. 2116

OFF HEAD WAREHOUSE  
BRIDGE

TROPHY CASES

CONCESSIONS

LOBBY  
EL. + 2100

TROPHY CASES

RAMP UP  
TO EL. 2116

ATHLETIC DIRECTOR

SECRETARY

ATH. DIR.  
TRACK ENTRANCE  
BELOW EL. 2085

VAULT

GENERAL SECRETARY

CONFERENCE

VALCUT AT  
EL. 2116

COACHES  
DRESSING

COACHES  
COACHES

TEAM WIN 9  
EL. + 2085

MAIN FLOOR + RAMP PLAN  
SCALE: 1/16" = 1'-0"

PUBLIC ENTRY

PUBLIC ENTRY

BRIDGE

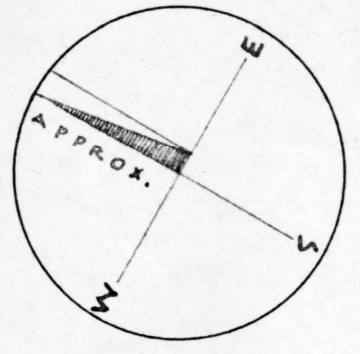
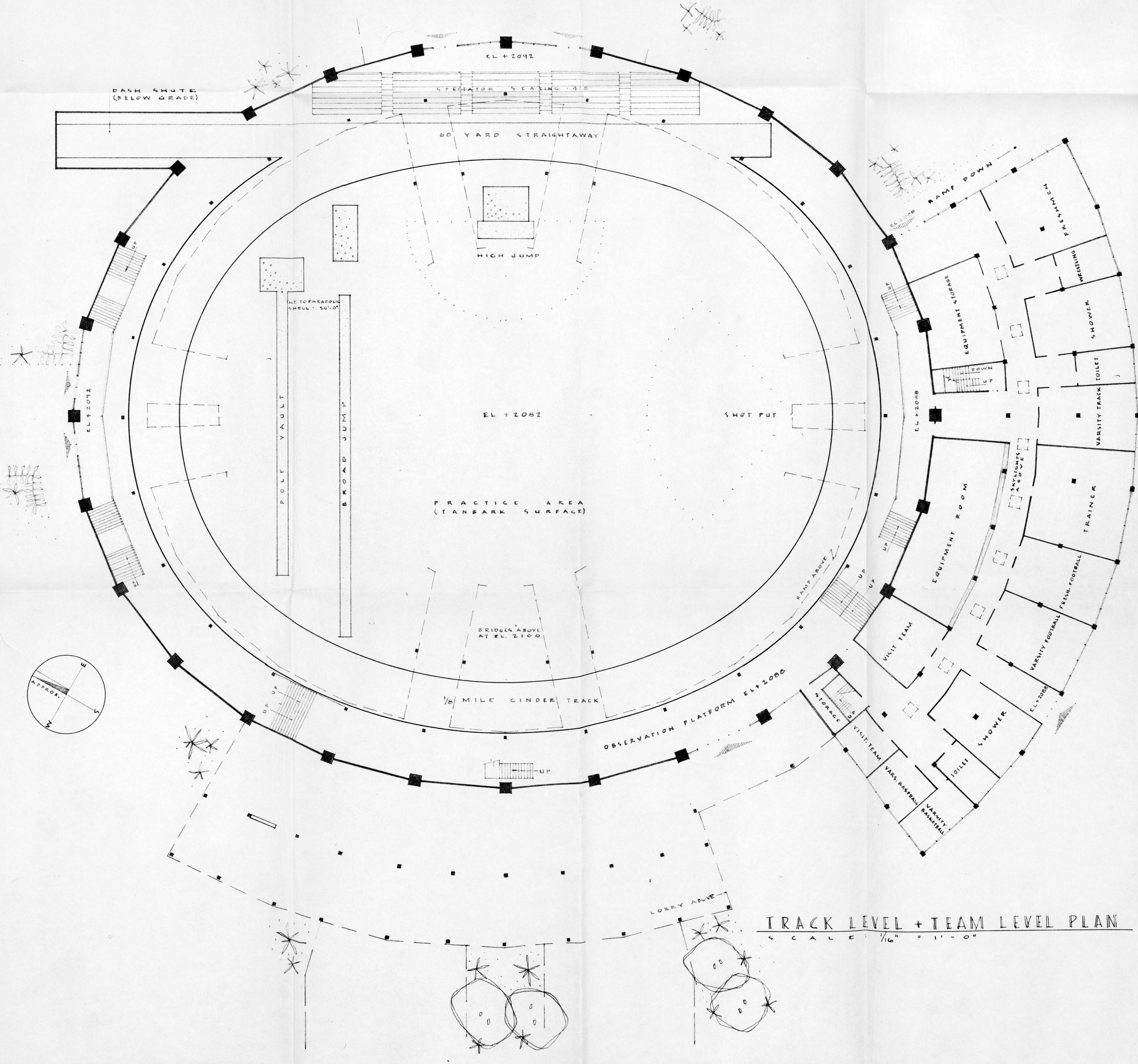
BRIDGE



**PRESENTATION**

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**TRACK AREA AND TEAM WING PLAN**

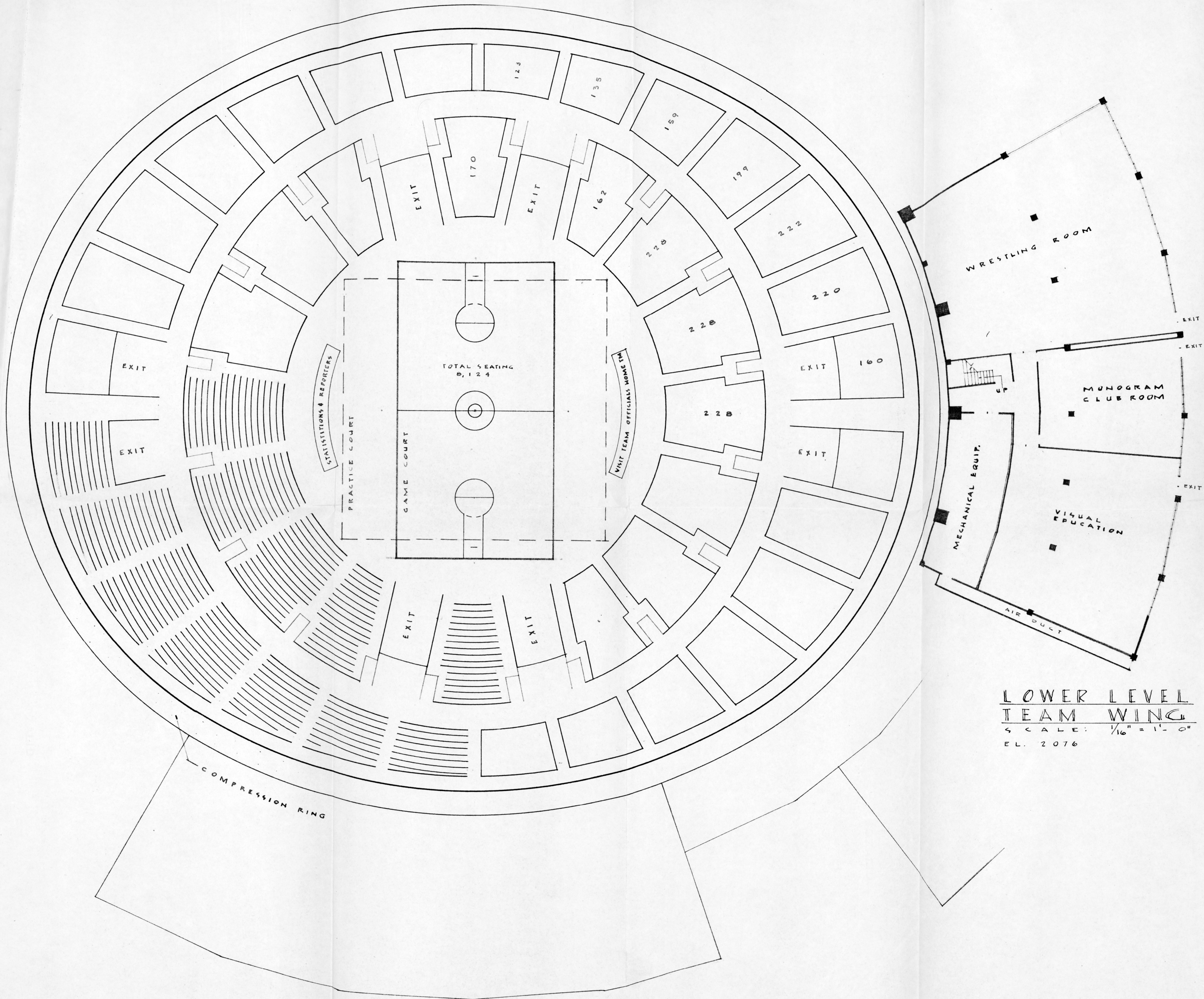


TRACK LEVEL + TEAM LEVEL PLAN  
 SCALE: 1/16" = 1'-0"

**PRESENTATION**

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**SEATING PLAN AND LOWER LEVEL TEAM WING PLAN**



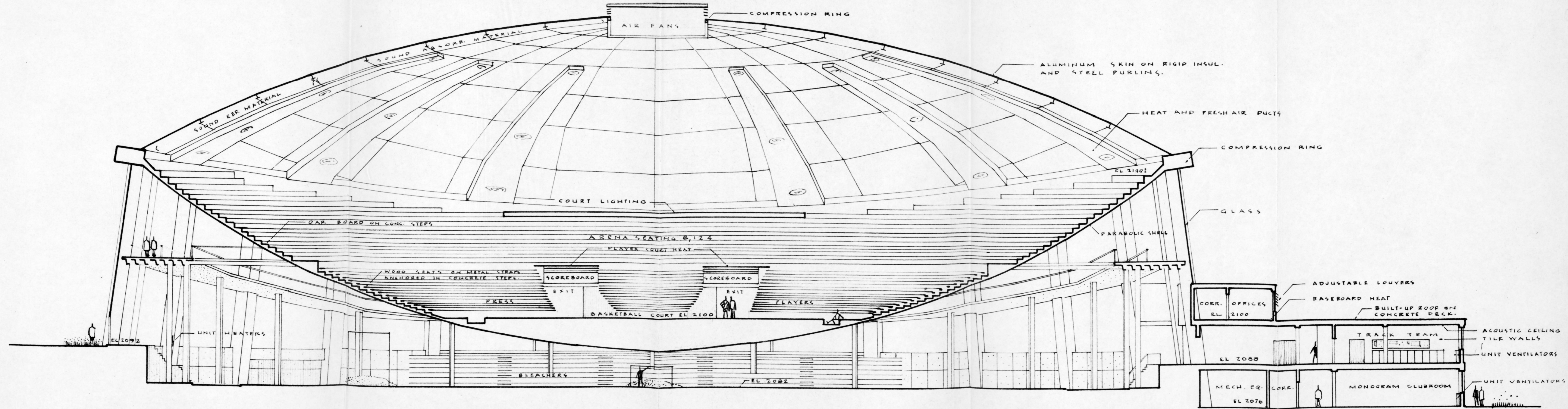
LOWER LEVEL  
 TEAM WING  
 SCALE: 1/16" = 1'-0"  
 EL. 2076

SEATING PLAN  
 SCALE: 1/16" = 1'-0"

**PRESENTATION**

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**LONGITUDINAL SECTION**

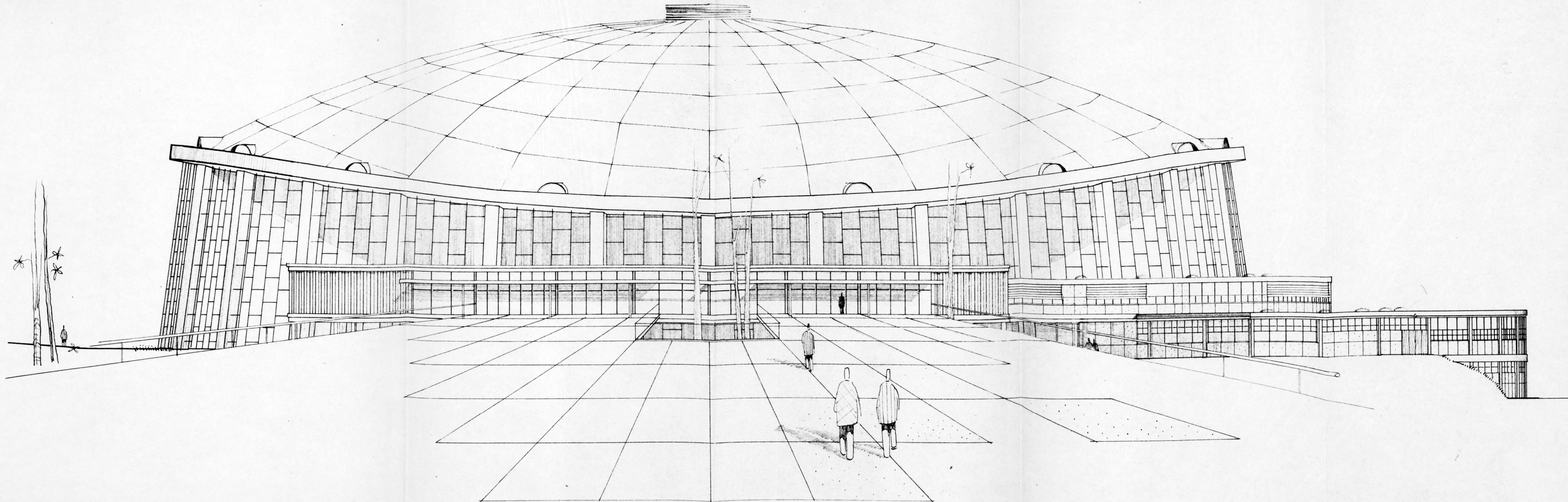


LONGITUDINAL SECTION

**PRESENTATION**

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**SOUTHWEST ELEVATION**



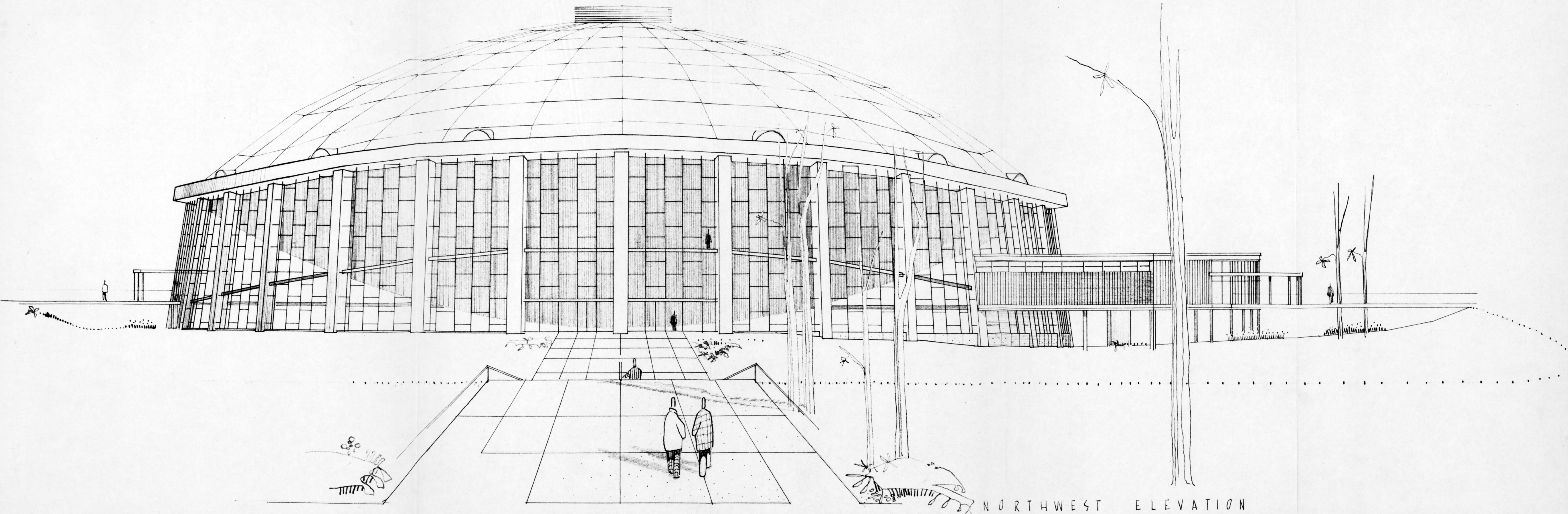
SOUTHWEST ELEVATION



**PRESENTATION**

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**NORTHWEST ELEVATION**

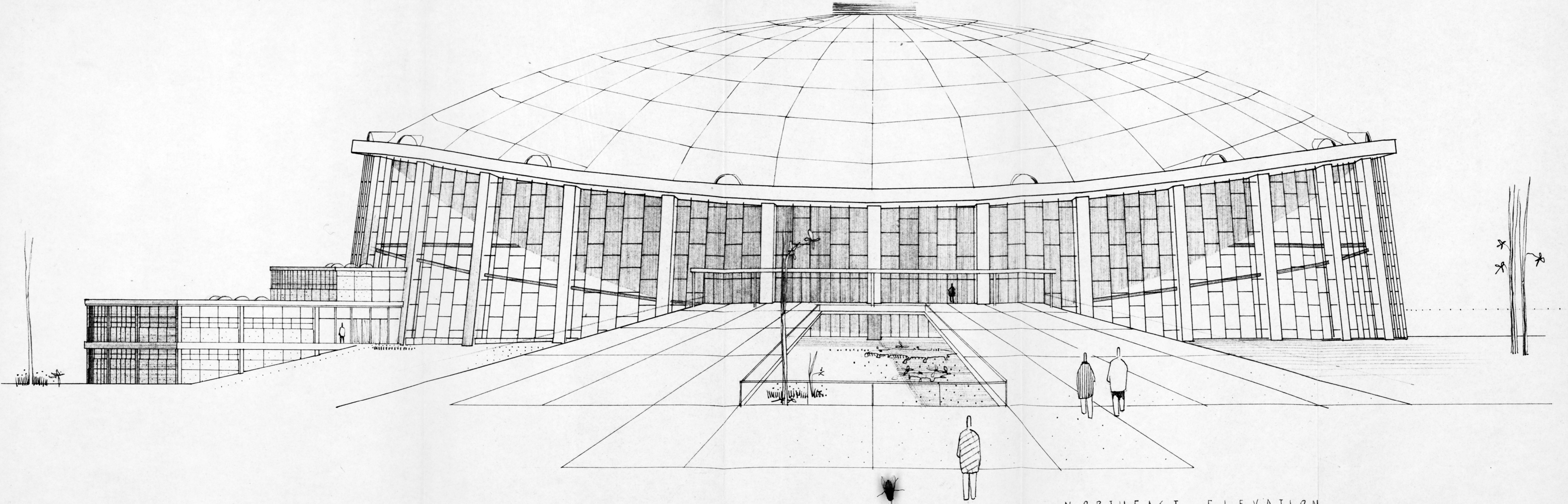


NORTHWEST ELEVATION

PRESENTATION

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NORTHEAST ELEVATION

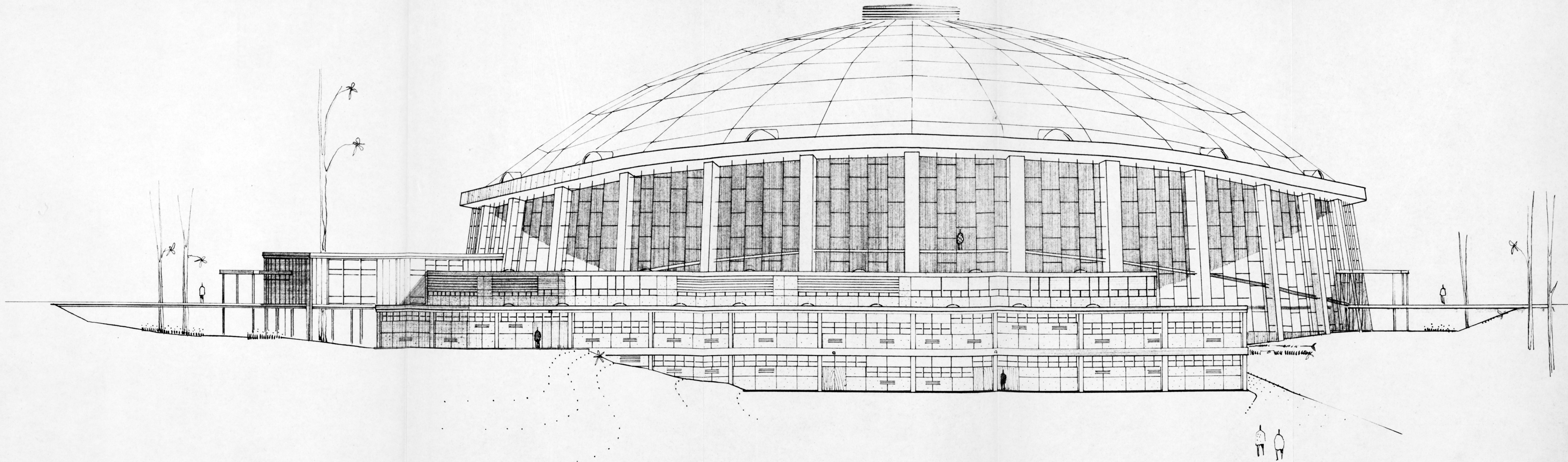


N O R T H E A S T   E L E V A T I O N

**PRESENTATION**

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**SOUTHEAST ELEVATION**

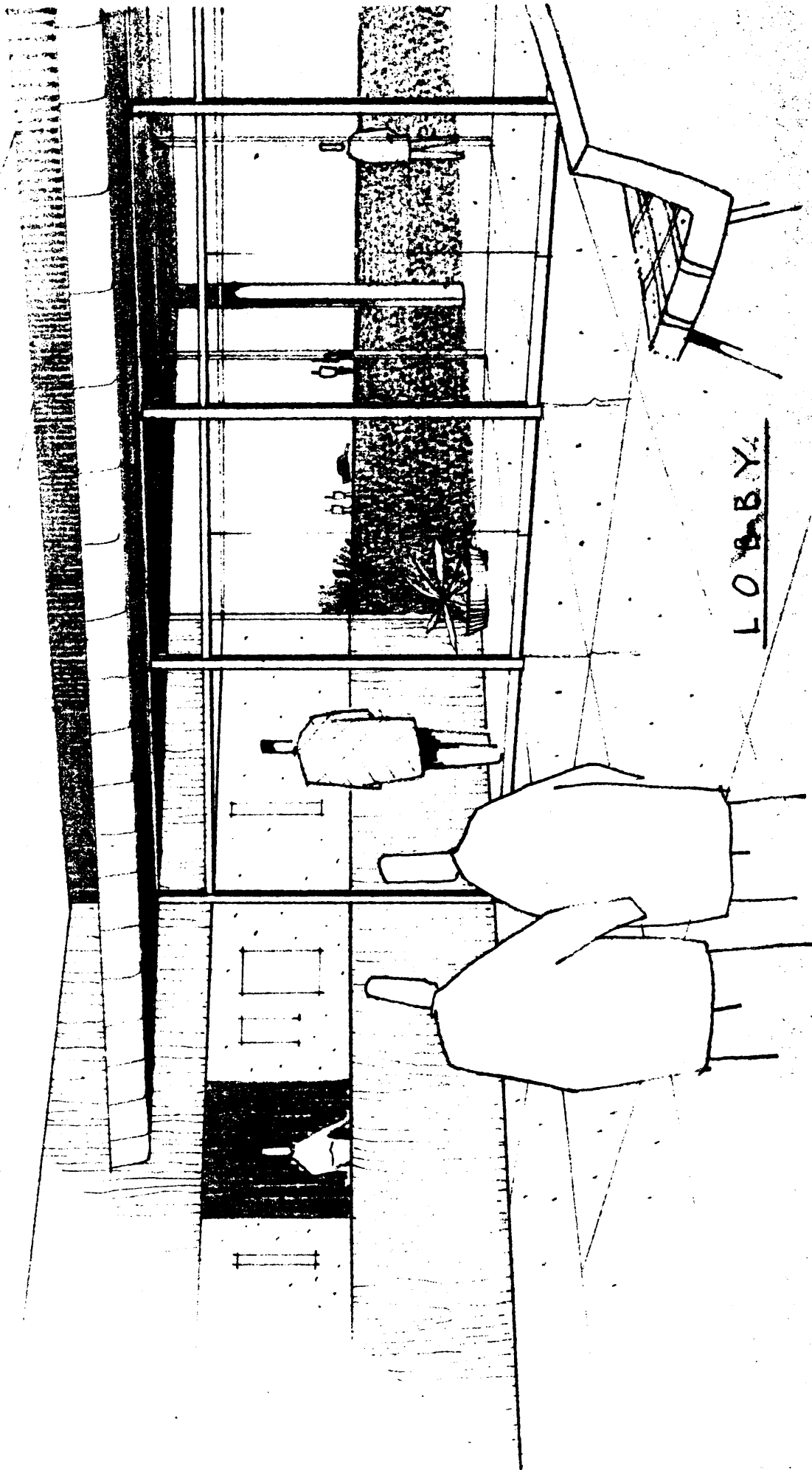


S O U T H E A S T E L E V A T I O N

PRESENTATION

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LOBBY



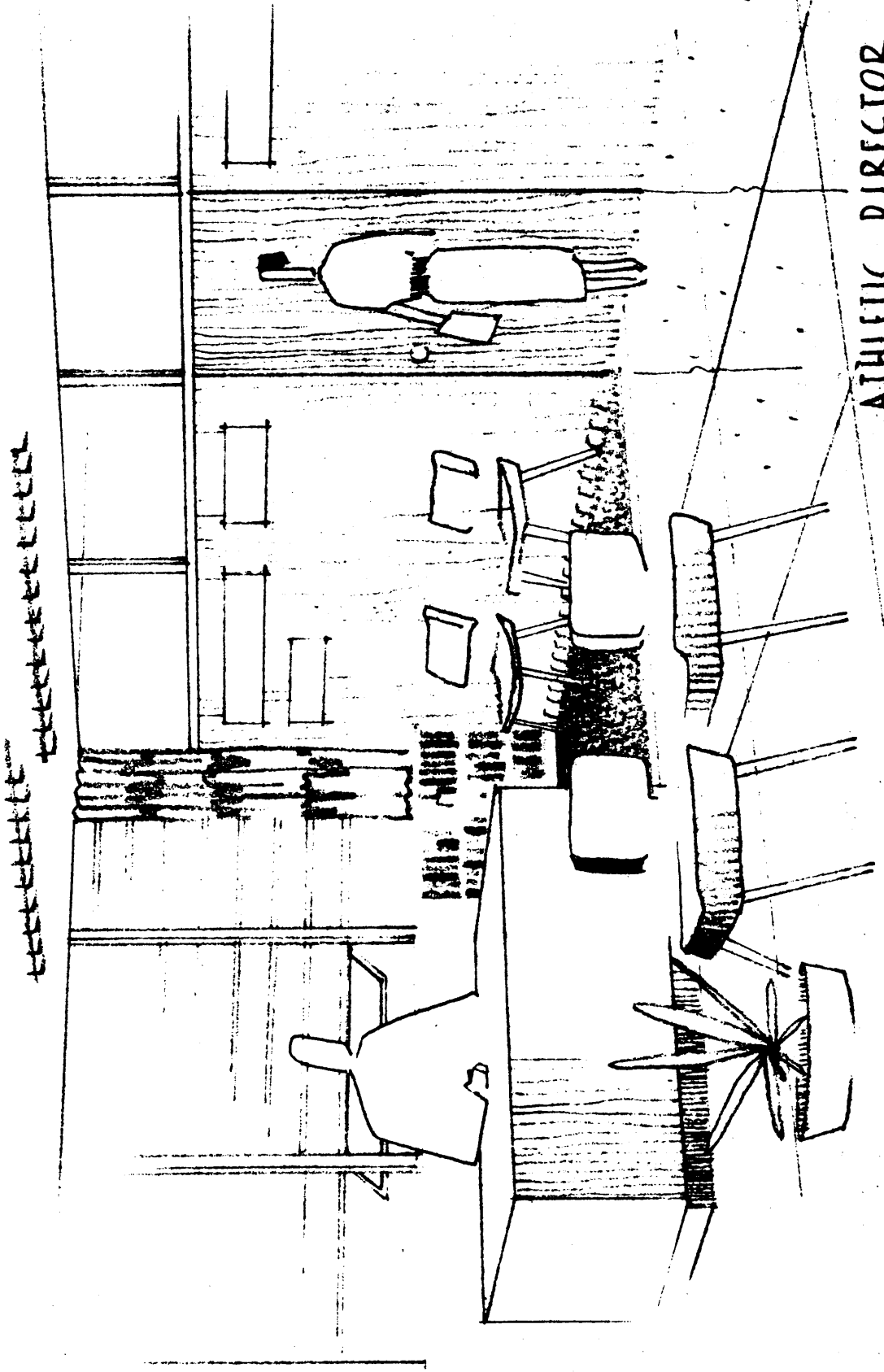
LOBBY



**PRESENTATION**

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**ATHLETIC DIRECTOR'S OFFICE**



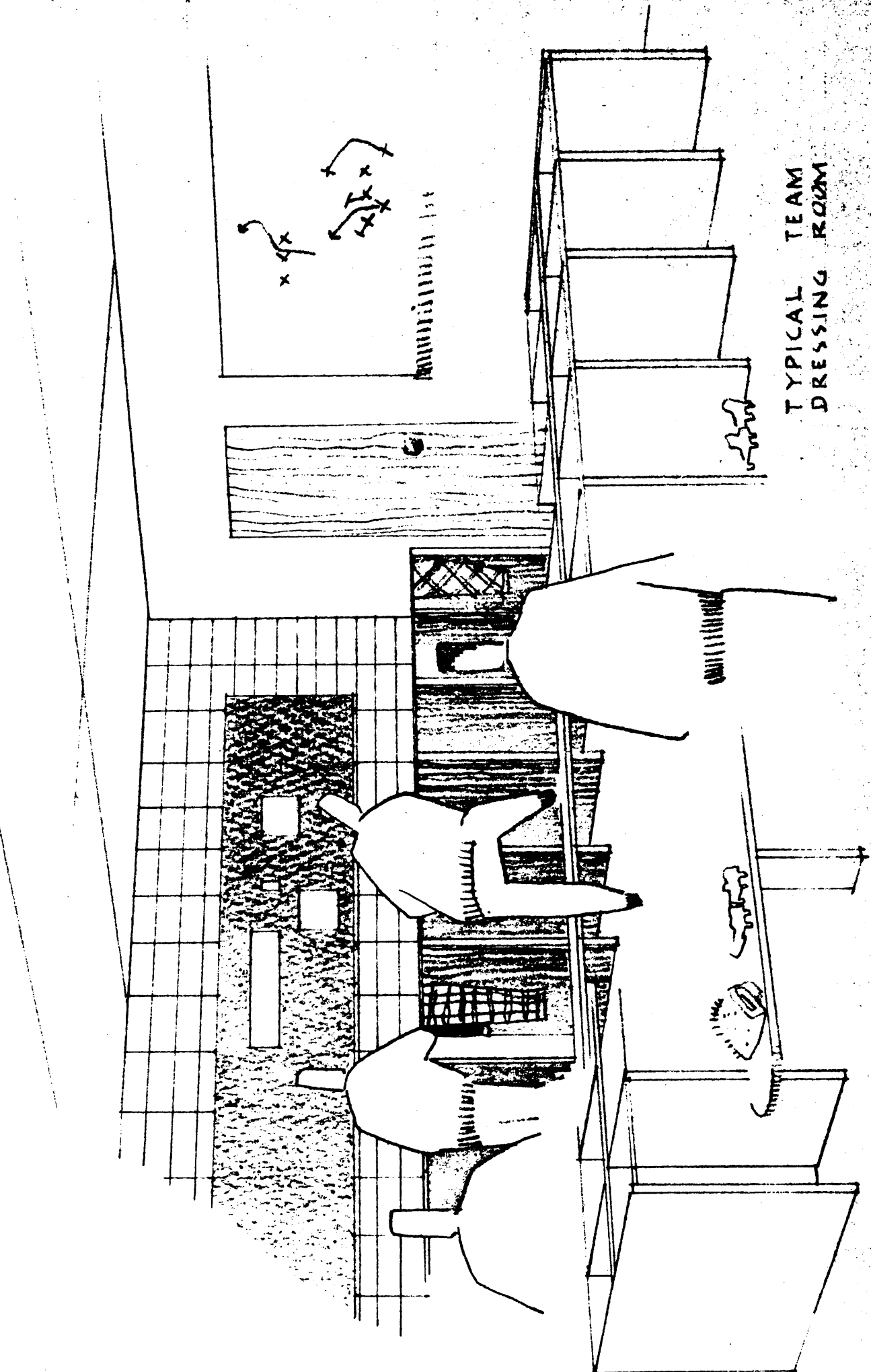
ATHLETIC DIRECTOR

**PRESENTATION**

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**TYPICAL TEAM DRESSING ROOM**

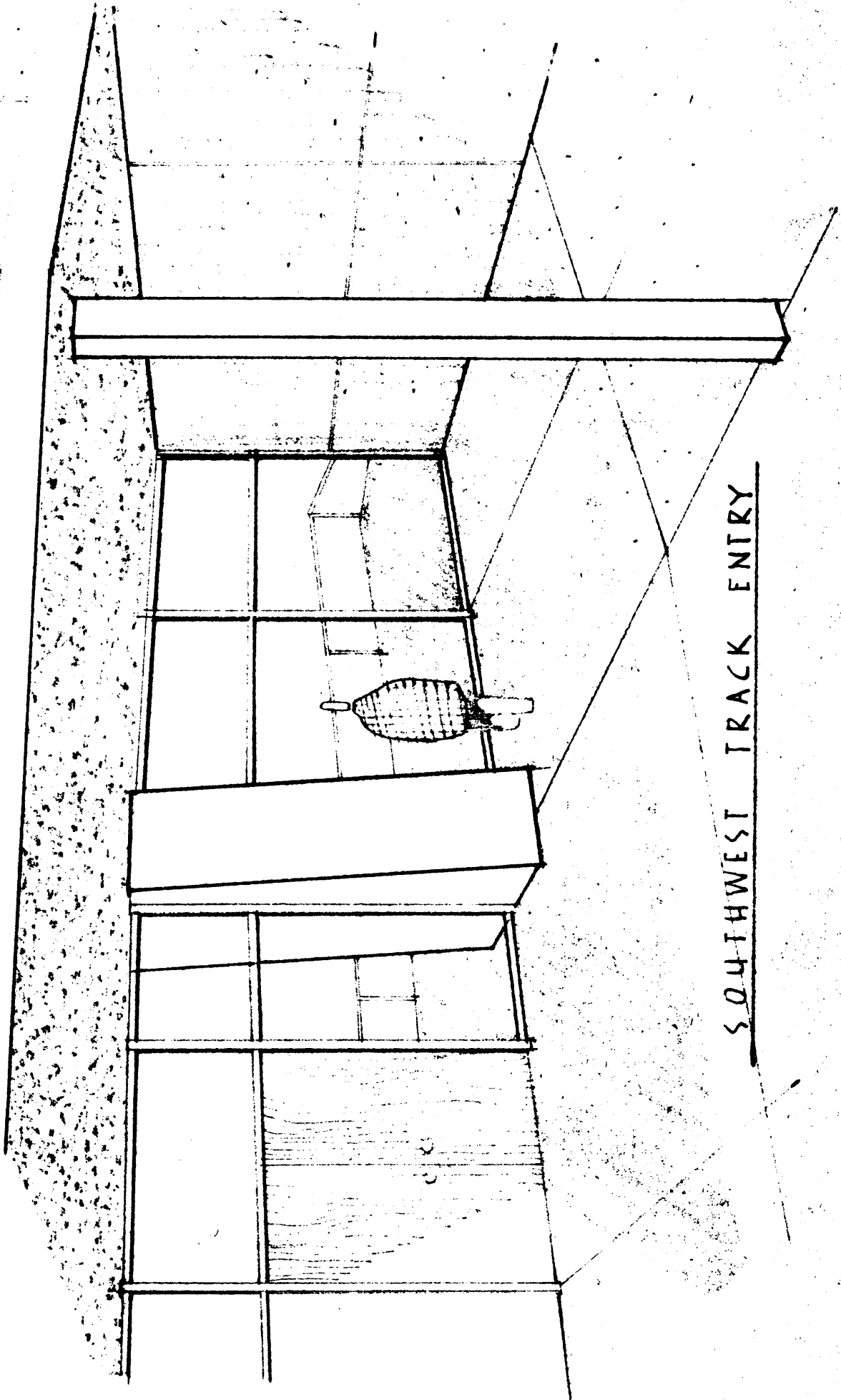
TYPICAL TEAM DRESSING ROOM



**PRESENTATION**

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**SOUTHWEST TRACK ENTRY**



SOUTHWEST TRACK ENTRY

PART IV - CONCLUSIONS

## CONCLUSIONS

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There will be no attempt to justify the aesthetic and functional success of the design. It will be left to the reader to determine from the presentation drawings whether or not the design has achieved the ideals set forth in the preceding sections. It is felt that this thesis has been a valuable experience and it is hoped that this paper will not be merely another theoretical study, but will be of constructive value as the actual plans for a field house for Virginia Polytechnic Institute are developed.



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