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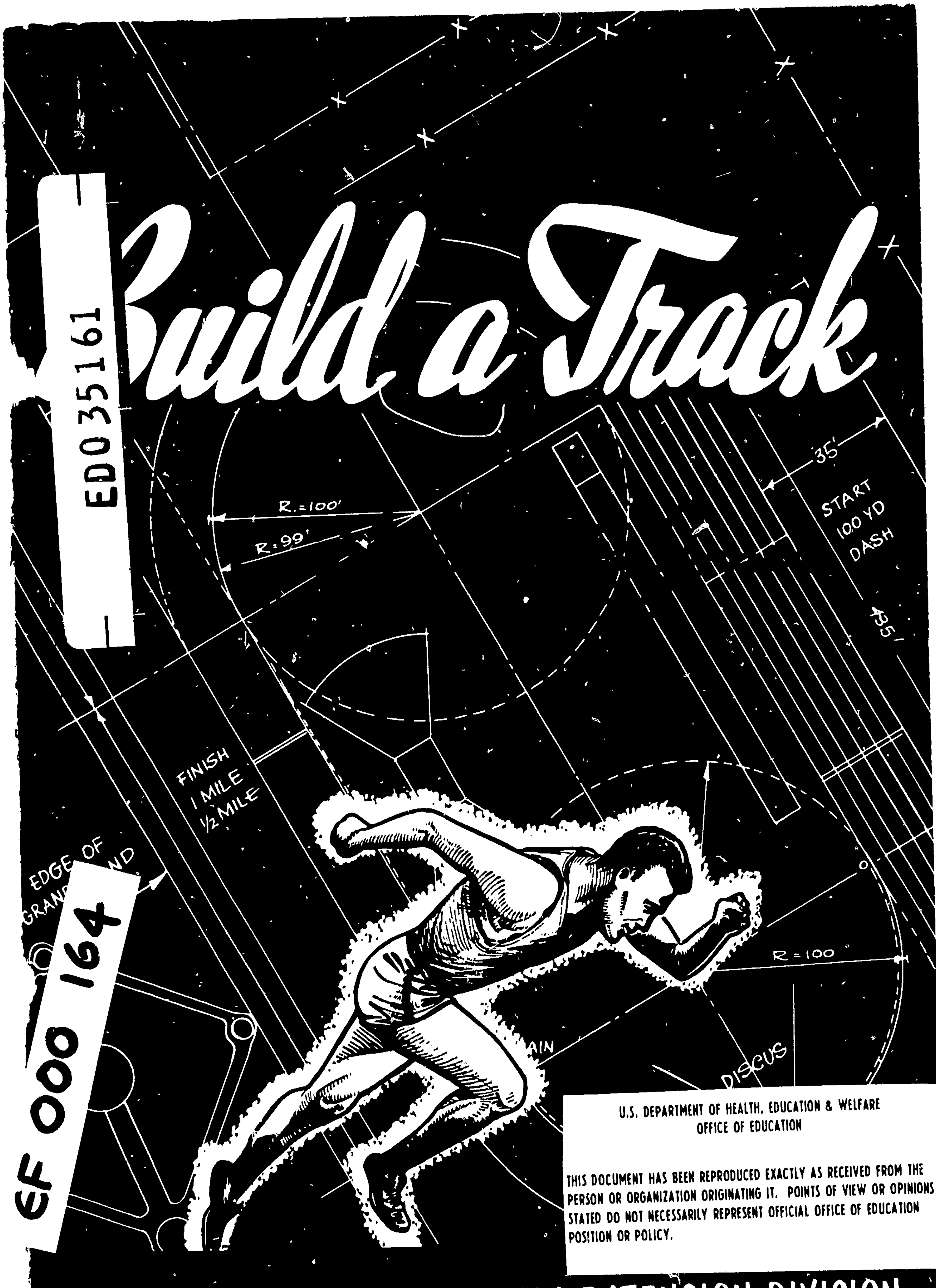
ABSTRACT

Information on various aspects of track construction is provided, divided into the following areas--(1) general requirements for a standard track, (2) selection of a site, (3) construction of the body of the track, (4) track measurements and markers, (5) specifications for construction of takeoffs, runways, circles, and field areas, (6) care of the track, (7) minimum requirements for high school tracks, (8) construction and care of indoor tracks, and (9) preparation for conducting a track meet. Diagrams and specifications of some of the best tracks in the world are included. (FS)

Build a Track



THE UNIVERSITY OF WISCONSIN EXTENSION DIVISION

How to Build a Track

by THOMAS E. JONES

Former Head Track Coach and Director of Intercollegiate Athletics
The University of Wisconsin

A University of Wisconsin Extension Division Publication

The cover, diagrams, and specifications of tracks were drawn by William C. Schafer, Jr., Art Director, University Extension Division, The University of Wisconsin

ABOUT THE AUTHOR

Thomas E. Jones, Sr., stands today as one of the truly great figures on the American athletic scene. Track and cross-country coach emeritus at the University of Wisconsin, he is one of the nation's most respected authorities on track and field athletics.

His *How to Build a Track* represents some 50 years of study and research into the complicated problems of track construction and maintenance. It is the first time that such a work has been made available to track and field coaches.

Jones was born in Cresco, Iowa, on November 14, 1877. He was graduated from Cresco High School, where he had won honors in track, running sprints and hurdles,and throwing the hammer and shot. At Iowa State Teachers' College, Cedar Falls, he won four letters in football and track and three in basketball.

In the fall of 1904, he became principal of the Algona, Iowa, High School, with additional duties as coach of football, basketball, and track. Two years later he left to enroll at the Springfield YMCA College, Massachusetts, then the nation's outstanding physical education school. During this period he also attended Dr. Sargent's School of Physical Education at Harvard, studying training methods under James Lathrop, venerable track coach. In 1908 he was graduated with a bachelor's degree from Springfield College.

That summer Jones came to Madison, Wisconsin, as head of the city's playground system and coach of the high school football, basketball, and track teams. Shortly afterwards, he introduced ice hockey to the athletic program.

From 1910 to 1912 Jones served as acting director of athletics at the University of Missouri, coaching track and football. In 1912 he returned to Madison to begin his long association with the University of Wisconsin. He served continuously as head track coach until the summer of 1948 when he climaxed his outstanding career by serving as one of the United States' Olympic coaches.

During his four decades at the University, Jones held virtually every coaching position. He coached track, cross-country, basketball, and football. From 1916 to 1925 he served as chairman of the department of physical education. In 1920 he received his full professorship, and, as chairman of the department of physical education, he served as director of intercollegiate athletics.

During his long tenure as head track coach, Jones' teams won 14 Western Conference cross-country titles and three indoor and three outdoor Conference track crowns. His teams stand third in the all-time Big Ten record, just behind Michigan and Illinois.

His outdoor teams won 71 of 96 dual meets, 7 of 11 triangular meets. In quadrangular meets his teams won 3 of 9 and placed second in 4. His indoor squads won 16 triangular meets without a loss, and took 52 of 74 dual meets. After he resumed active coaching of cross-country in 1926, his teams won 70 of 88 dual meets.

Jones coached many individuals to track stardom. Team members won 71 individual outdoor and 65 individual indoor championships in the Western Conference. Many of his charges won victories in the National AAU and Central States AAU championships, and at such special meets as the Drake, Penn, and Kansas Relays.

Jones served as first president of the NCAA Coaches Association, and for many years was a member of the National Collegiate Track Rules Committee. He was among those who pioneered the organization of national intercollegiate meets. In addition, he has published numerous articles and has authored one of the first textbooks on track and field athletics.

In the half-century gone by Tom Jones has helped to make track and field athletics a contributing force in the American educational scheme. His present work, *How to Build a Track*, should perpetuate his beneficent influence on high school and college athletes for many years to come.

PREFACE

My purpose in writing this bulletin is to provide a source of information on track construction which I hope will be a valuable guide to administrators in their efforts to obtain adequate track facilities.

For the many diagrams and specifications of some of the best tracks in the world which are included, I am deeply grateful to those architects, city engineers, and college and high school track coaches who have provided blueprints and specifications as well as the fruits of their experience in track construction.

Specifically, I wish to acknowledge my indebtedness to: C. E. Pratt, architect, Maxwell Construction Co., Vancouver, B.C., for assistance on the British Empire Games track; and to the following for information on college and university tracks: Albert McGree, former head track coach, and Robert Giegengack, present coach, Yale University; Harry L. Hillman, former president of the Association of College Track Coaches of America, and Elliot B. Noyes, head coach at Dartmouth, for information on the Dartmouth College track ; Clyde Littlefield, University of Texas head track coach; Frank R. Castleman, former track coach, and Larry Synder, present coach, Ohio State University; Jim Kelly, University of Minnesota track coach; George Bresnahan, former track coach, University of Iowa; Frank Hill, former track coach, and C. Russell Walter, present coach, Northwestern University; Ralph Young, former director of athletics, Michigan State College, Conrad Jennings, director of athletics, and Melvin Shimek, track coach, Marquette University; Flint Hanner, track coach, Fresno State College; George Gauther, director of athletics and track coach, Ohio Wesleyan University; Gordon Fisher, track coach, Indiana University.

These men provided information on high school tracks: Ole Jorgensen, director of athletics, Neenah (Wisconsin) High School; F. A. Bishop, superintendent of schools, Washington High School, Two Rivers, Wisconsin; Lowell Goodrich, former superintendent of schools, Fond du Lac (Wisconsin) High School; Edward Jankowski, director of athletics, Whitefish Bay (Wisconsin) High School; and Tom Frederick, director of athletics, Barrington (Illinois) Consolidated High School.

Oliver Kuechle, director of the Milwaukee Journal relays, was also most helpful.

A word of thanks, too, for the editorial and production assistance provided by Richard J. Loftus, Margaret Allen, Lois Brunngraber, and Felice Goodman, all of the University of Wisconsin Extension Division, and Art Lentz, UW Athletic Publicity Director.

And finally, a special note of appreciation to Professor Carl Sanger, chairman of the department of physical education, the University of Wisconsin Extension Division, for his encouragement and his assistance in making this publication a reality.

Thomas E. Jones

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HOW TO BUILD A TRACK

1. General Requirements for a Standard Track

Build track in area easily accessible to school and gymnasium or field house.

Install bleachers or grandstand facilities for spectators.

Provide parking areas and road entrances.

Run field north and south to minimize sun glare.

Locate in area protected from excessive wind.

Provide proper and adequate drainage.

Build circular track, four laps to the mile, with 120-yard straightaway on one side where dashes and hurdle races may be run.
(*Note:* an extended 220-yard straightaway is more desirable than 120-yard straightaway because it eliminates running the low hurdles and 220-yard dash around a curve.)

Employ civil engineer to insure proper measurement of track.

Provide three-level body of track (first layer of rough fill, second layer of coarse cinders, and top dressing of finely screened cinders).

Build curbing (preferably concrete) around track.

Construct track with minimum width of 16 feet on curves and back straightaway, and minimum width of 25 feet on long straightaway.

2. Selection of a Site

In selecting a site suitable for track and field facilities, major consideration must be given to the proposed size, accessibility for athletes and spectators, topography, and soil composition.

The size of the area depends upon the sports program contemplated. Usually a running track is built around an area which can be used for football, baseball, and other sports activities. Because of this, it is desirable that the field area be readily accessible from the school, gymnasium, or field house so that athletes' training and bathing quarters need not be duplicated.

The area also should include space for parking facilities, bleachers or grandstand, and adequate road approaches to provide easy traffic flow.

Preferably, the field should run north and south. This helps prevent sun glare which might handicap competitors both in the running and field events. In the field events, where the approach of competitors is not against the sun, pits for the broad jump and pole vault can be located in the center to provide approaches from either direction.

Consideration also must be given to selecting an area with natural protection from excessive wind. Direction of the straightaway races is influenced by this decision since all races should finish on the same side (prevailing wind direction).

Since the cost of track construction will depend in part on the original condition of the site and other variable factors, it is advisable to engage the services of an architect and a civil engineer.

The engineer can best determine the amount of grading necessary to make the available area suitable, ascertain the cost of installing an adequate drainage system, and estimate the over-all costs based on type, width, and depth of track bed, type of curb, and whether or not a 220-yard straightaway is contemplated.

Drainage Requirements

Drainage must be considered in the building of a running track. Drainage problems vary with the immediate surroundings of the field and its subsoil. Land that is sandy will require less artificial drainage than heavy clay subsoil. Where artificial drainage is required, storm sewers and catch basins should be placed inside and outside the track itself. Climatic conditions in various parts of the country (arid regions, rainy sections, etc.) dictate drainage needs and type of construction.

Surface Drainage

Good surface drainage in the surrounding area is the most effective method of handling rainfall. Catch basins should be placed every 100 feet, both inside and outside the track curbs, and should be connected to the lateral drains by a 4- or 6-inch tile or iron pipe that empties into a storm sewer.

The purpose of the outside drains is to prevent water outside the track from flowing onto the track. The purpose of the outlets, or holes, along the inside curb is to permit speedy drainage of the track itself.

These outlets should be a trifle below the surface of the track and should be covered by a heavy wire screen or grating. Even if finances are limited, it is wise to invest in a carefully planned surface drainage system and a good sprinkling system with hose taps to supply an even amount of moisture.

Subsurface Drainage

The natural drainage of the ground area should be preserved wherever possible. If the surface drainage of the area enclosed by the running track and the area outside of the track is adequately cared for, there is little need for subsurface drainage of the track itself. *Water which seeps through the body of the track makes it faster.*

Suggested Procedure for Laying Out A Running Track

The most practical track is a circular one measuring four laps to the mile, having a 120-yard straightaway on one side where the 100-yard dash and the 120-yard high hurdles may be run.

A 220-yard straightaway is desirable, though not essential. Without it, the 220-yard dash and the 220-yard low hurdle events must be run around a curve.

In European meets, and in the Olympic Games, the longest straightaway race is the 110-meter high hurdles. The 220-yard and 200-meter dashes always are run on the curve while the 400-meter and 440-yard dashes are run around two turns.

The ideal track usually is laid out with approximately a 100-foot radius for the curves. Actually, the radius of the curve of an official quarter-mile track can vary anywhere from 90 to 120 feet; most range from 100 to 110.

The actual layout, of necessity, will have to conform to the existing area in which the track is to be placed and to the area allowed for accommodations outside the track.

The first step in laying out a track is to determine the radius of the curves which will best fit the area. Take into account that track measurement is based on the inside curb and that the width of the track must be added to that measurement.

Having determined a radius point at one end of the field, swing a steel tape around in a complete circle (see diagram).

To find the distance from one radius point to the opposite radius point, use the following formula:

2R x 3.1416 (R is the radius of one curve)

This gives the distance around both curves. Subtract this number from the total length of an official quarter-mile track (1320 feet) and divide by two to obtain the distance required on each straightaway and also to determine the opposite radius point (see diagram).

Example: Assuming the radius is 100 feet, and, using the formula 2R x 3.1416, the total distance for the curves is 628.32 feet, or 314.16 feet on each curve. This number subtracted from 1320 feet leaves 691.68 feet. Divided by two, this equals 345.84 feet, which is the length of each straightaway and also the distance between the two radii points.

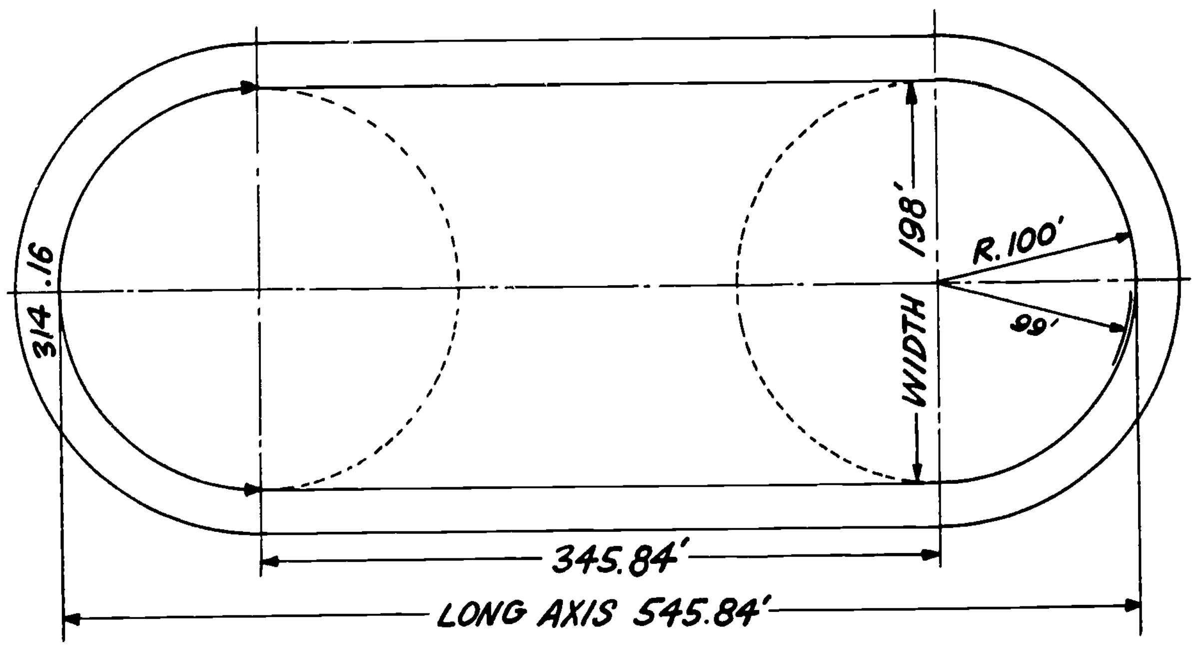
Official tracks are measured so that the inside curbs are set in 12 inches from the actual radius. Thus the distance from one straightaway curb to the opposite curb would be 198 feet (see diagram) while the track measurement actually would be 200.

The shape of the track will vary with the length of the radius selected. A long straightaway is considered an advantage because a straight course is easier to run than a curved one. In general, the amount of curved running and straight running should be approximately the same distance. A radius of 105.4 feet will make the length of each arc correspond approximately to the length of each straightaway (330 feet).

In a standard outdoor track, the width of the straightaway where the sprints and hurdles are run should be 25 to 30 feet whenever possible. NCAA and Olympic tracks specify eight lanes for the final races.

The width of the curves and back straightaway should be at least 16 feet. Where one-half mile relays are contemplated, the width should be 24 feet.

Banking the turn is not necessary on a quarter-mile track. Banking causes the surface water to wash the cinders and clay toward the curb. Most of the tracks now are level on both straightaway and curve.



3. Construction of the Body of the Track

Prior to the construction of the body of the track, a careful study should be made of local conditions--the soil bed, the temperature, rainfall, and other weather conditions, and the availability of materials.

The total depth of the material used in constructing a track is determined by the amount of money to be invested. Tracks vary in depth from 8 inches to 36 inches. Some tracks, considered very fast, have no greater depth than 8 inches. However, the best college tracks are from 15 to 18 inches in depth.

Kind and Relative Amount of Material Needed

Using 18 inches in depth as standard, here is a construction table:

1. First excavate track area to a depth of 18 inches.

2. Then apply the *First Layer* (rough fill) on the bottom, using 4 to 6 inches of crushed rock, limestone slabs, slag, broken brick, or coarse gravel. Level this to a uniform thickness and roll with a heavy roller.

3. The *Second Layer* of material should be 6 inches in depth and should consist of large cinders and clinkers (as they come from the heating plant). These should be raked, leveled, water-drenched, and rolled with a 5- or 6-ton roller.

4. The *Third Layer* should be 4 inches thick and composed of fine cinders, screened through a ¼-inch mesh. This layer should be raked level, soaked thoroughly, and rolled. A lighter roller (about two tons) should be used on this layer.

5. The *Top Dressing* is the most important factor in track construction. Many good tracks have been spoiled by lack of knowledge and care in mixing top surface materials. Most tracks require some binder-type material added to the cinders.

Here are the best types of top dressing:

1. *Ashes from soft coal.* These consist of a 3-inch layer of sifted soft coal or coke ashes, mixed with fine sifted cinders through 1/8-inch mesh in the proportion of about three of cinders to one of ashes.

This type of top dressing has been used satisfactorily by the Universities of Illinois, Wisconsin, Chicago, and Drake for the past 20 years.

If this surface is laid in the fall of the year, winter snows will turn the ashes into a binder for the cinders. However, if the surface is put on when the track is needed for immediate use, it should be thoroughly drenched.

This type of surface requires daily wetting or spraying with ~~sodium~~ calcium chloride. The advantages of using a soft coal ash surface rather than a screened cinders and clay mixture are that it is never sticky after a rain; packs more readily; does not get hard and bake; and requires less care since weeds will not grow in it.

2. *Clay and cinder mixture.* This type of top dressing should be a layer 3 inches

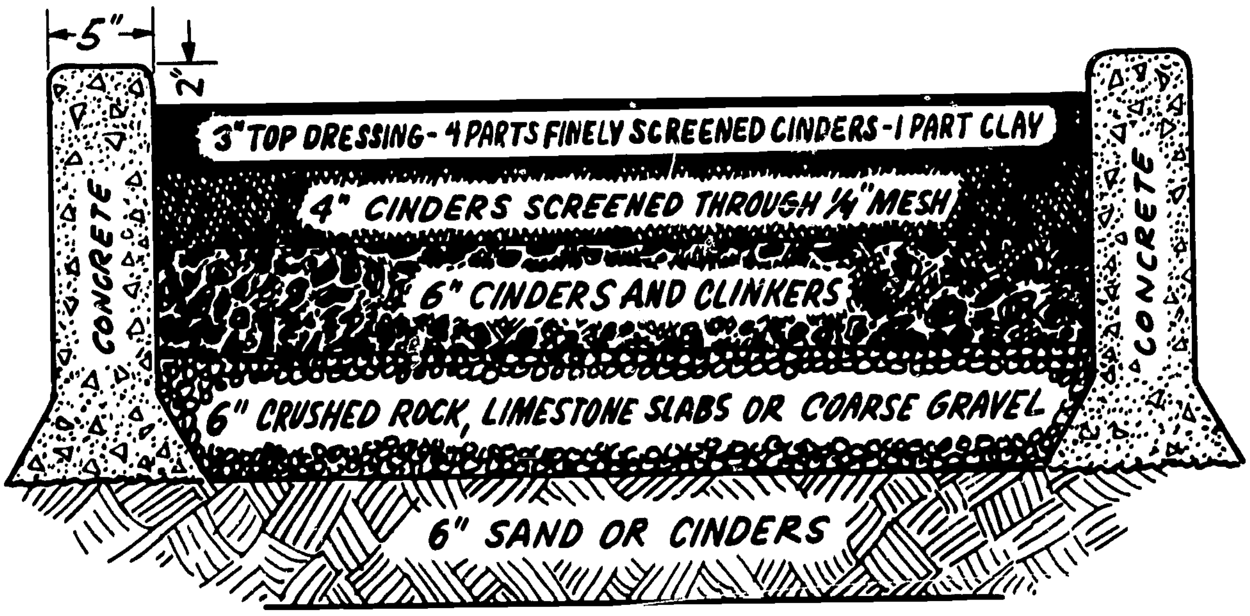
ERRATUM ON HOW TO BUILD A TRACK

Page 6, fifth line from the bottom should read:

"This type of surface requires daily wetting or spraying with calcium chloride."

deep, made up of "sparks," or front-end cinders* (if obtainable), and clay. The mixture should be four parts cinders and one part clay; both sifted through a ¼-inch mesh, and mixed.

To achieve an even surface, the mixture should be carefully raked in and floated when spread on the track. It must be mixed carefully for an excess of clay will cause the formation of a nonporous shell which will retain the water on the surface and thus prevent downward seepage into the body of the track. Proper moisture makes a track faster if the track is not sticky on the top.



Note: Gravel-crushing machines, which can be set to crush cinders and clinkers to any size, are in general use in the United States at present.

3. *Cinder and black loam mixture.* Many of the most recently constructed college tracks (e.g., Michigan State) have used, with good results, a top dressing consisting of two parts fine cinders and one part black loam (or peat). This type drains quickly, has excellent resilient binding qualities, and will not bake like clay.

The use of a heavy roller should be avoided on any type of top dressing as it affects the resilience of the surface. A half-ton (or less) roller is best.

Curb (Concrete, Wooden, or Iron)

The services of a civil engineer are necessary when a track curb is being laid, in order to insure correct measurement. A track must conform to NCAA or Olympic specifications before a record will be accepted.

* Sparks, or front-end cinders, are those that come out of the front end of a coal-burning railroad engine. These were in common use as a binder in the older running tracks. In this kind of a cinder, the combustion is not completed, leaving lobes or spicules that inter-mesh. This type of cinder is difficult to obtain at the present time because cinders are usually processed through forced air to a more complete burning.

The curb may be made of cement, wood, rope, iron, or other durable material which extends 2 inches higher than the track surface.

The curb always is set 12 inches inside the measured track and always should be put in before the track is filled with material. Curbing on the outside of the track is desirable but not necessary.

Generally, concrete or creosoted wood (2 inches x 6 inches placed on edge in the ground) is used in curb construction. The concrete is expensive, but it is neater and more durable.

The concrete curb should extend below the bottom of the track and should be laid on 6 inches of sand or cinders to prevent buckling in cold weather. It should be 5 inches thick and at least 24 inches deep, deeper in northern climates.

The concrete curb should be flanged at the bottom and each section should be at least 16 feet long, reinforced with two ¼-inch iron rods, one at least 2 inches, the other 6-8 inches beneath the track surface. Both edges of the top should be rounded. The curb should extend 2 inches above the track surface.

Scuppers (Drain Stations for Surface of Track)

For speedy drainage of surface water on the track, it is wise to place scuppers (small openings) every 100 to 150 feet through the concrete curb 2 inches below track level (or 4 inches below the top of the curb). Behind each scupper, excavate to the inside of the drain pipe and place a 4-inch tile or iron pipe which connects to the lateral drains. These outlets in the curbing permit surface water to run off and thus prevent water from standing or depressions from forming.

If the surface of the track is higher than the surrounding area, drain pipe connections are not necessary.

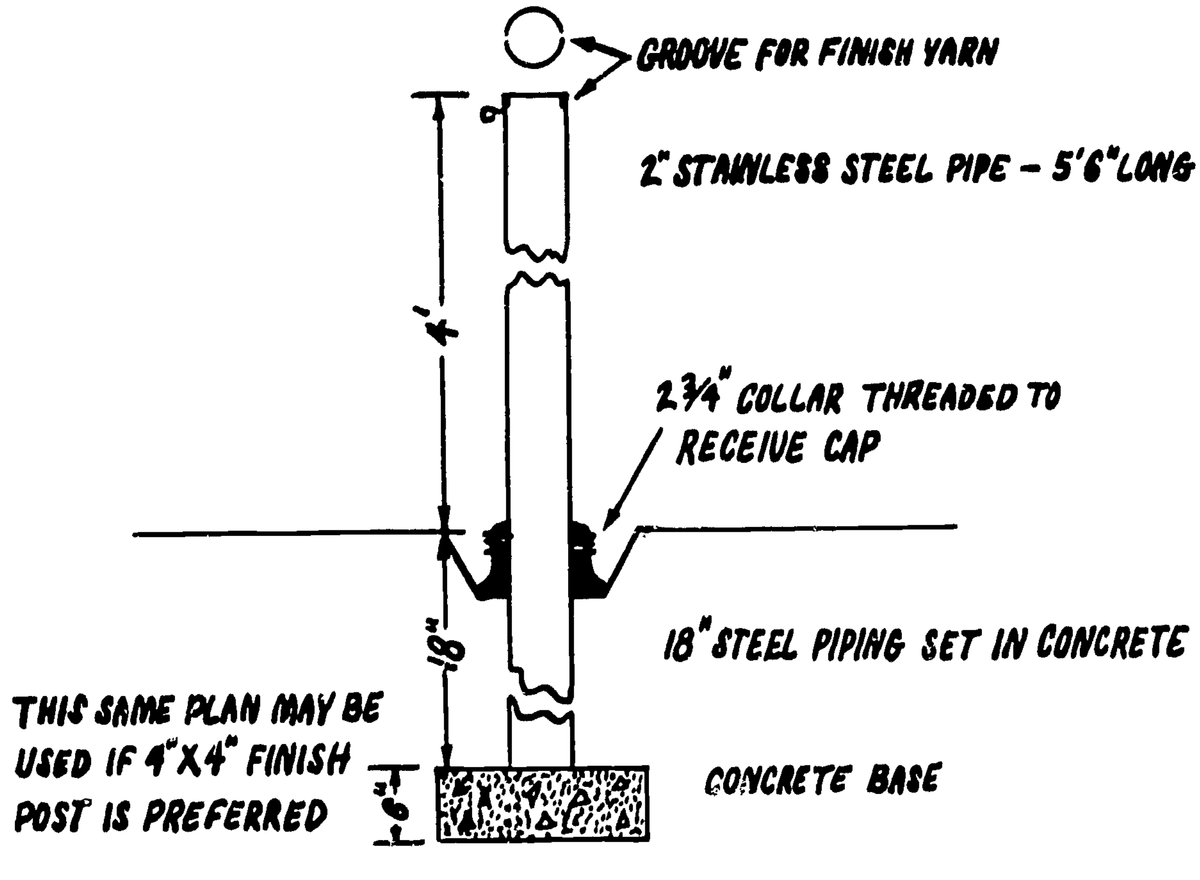
The openings should be marked on the curb so that they may be found easily when there is need to drain off surface water.

4. Measurements, Starts and Finishes

Markers (Starts, Finishes, Posts)

Bronze markers or stainless steel plates should be set in the cement curb to indicate the start and finish points of all races. Location marks for setting up the hurdles and offsets for relays should be painted on the curbs to facilitate lane marking for all races.

Finish posts, 4 feet in height, should be set in concrete boxes placed outside the curbs. The posts should be removable, and the boxes should be covered when not in use.



All distance runs should be measured with a steel tape 12 inches outward from the inside curb.

All straightaway races must be measured in a direct line from the starting line to the finish line. These lines must be clearly marked on the track perpendicular to the course to be run and should be 2 inches wide.

Since the marked starting line must be just *within* the measured distance of the course, no competitor may touch the track with any part of his body *on* or *ahead* of this marked line. The line at the finish must be just outside the measured distance.

Lanes for sprint races should not be less than 36 inches in width. A width of 42 inches or 48 inches is preferred, however. The left-hand boundary of a lane must be marked so that it is outside the runner's lane.

Staggered Starts

When races are run in lanes around turns, it is necessary to stagger the starts in order that each competitor be required to run the same distance. All lanes, except the one on the border (Lane No. 1, which is measured 12 inches away from the inside curb), must be measured on a line 8 inches outward from the inner whitewash line on the left. The width of the lanes can vary from 36 inches to 48 inches.

The official NCAA Rule (No. 17) states that the staggered distances may be determined from the following tables which give the handicaps a runner should receive over the runner on the next lane to the inside:

TABLE FOR DETERMINING STAGGERED STARTS

For 30-inch lanes				
Number of turns to be run	4	3	2	1
Handicaps for lane 2 over lane 1................	27'2½"	20'4-7/8"	13'7¼"	6'9-5/8"
Handicaps for lanes 3-4-5-6-7-8 over next lane to the inside..............	31'5"	23'6¾"	15'8½"	7'10¼"
For 36-inch lanes				
Number of turns to be run	4	3	2	1
Handicaps for lane 2 over lane 1................	33'6"	25'1½"	16'9"	8'4½"
Handicaps for lanes 3-4-5-6-7-8 over next lane to the inside..............	37'8-3/8"	28'3¼"	18'10¼"	9'5-1/8"
For 42-inch lanes				
Number of turns to be run	4	3	2	1
Handicaps for lane 2 over lane 1................	39'9½"	29'10-1/8"	19'10¼"	9'11-3/8"
Handicaps for lanes 3-4-5-6-7-8 over next lane to the inside..............	43'11¾"	32'11-7/8"	21'11-7/8"	11'

For 48-inch lanes

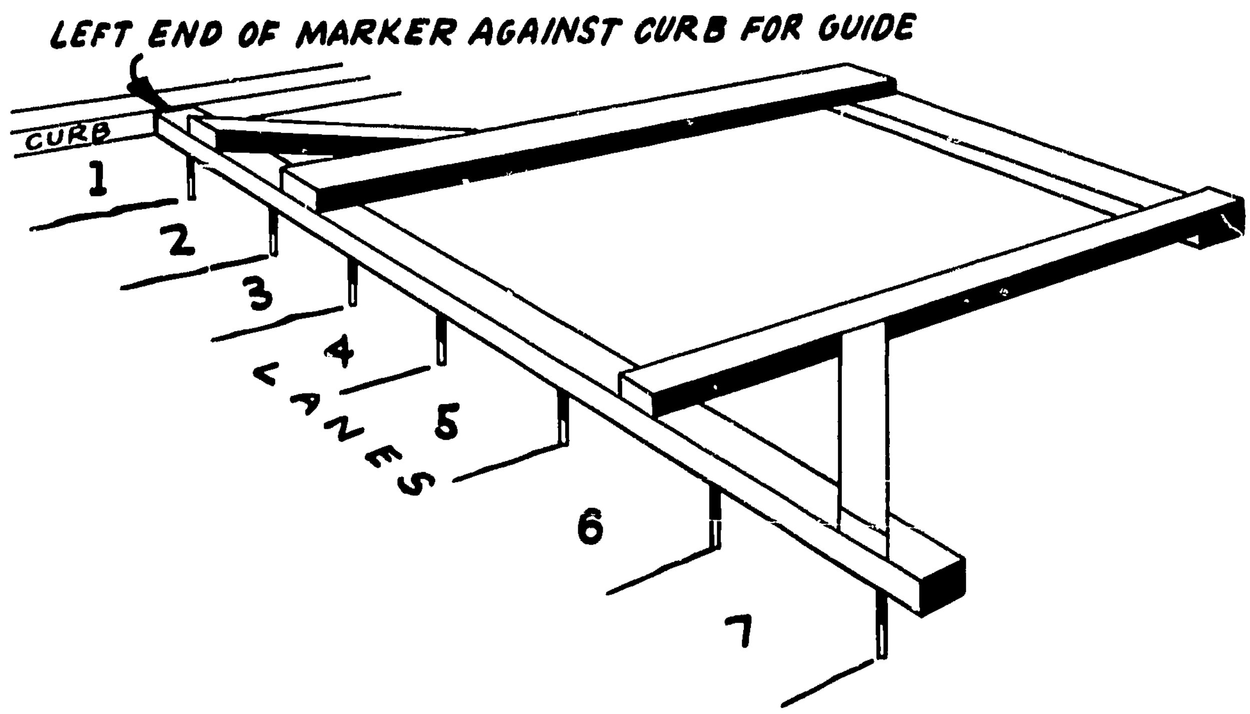
Number of turns to be run	4	3	2	1
Handicaps for lane 2 over lane 1..................	46'	34'6"	23'	11'6"
Handicaps for lanes 3-4-5-6-7-8 over next lane to the inside...............	50'	37'6"	25'	12'6"

If lane No. 1 is laid out four inches wider than the other lanes, the staggered schedule for lanes 3-4-5-6-7-8 can be applied to lane No. 2.

Lane Markers

A marker to indicate track lanes is easily made from a 2 x 4, 12 to 16 feet long, with a 1 x 2 frame handle attached to it for pulling, with adjustable spikes projecting through at 3-inch, 3½-inch, 4-inch, or any desired intervals. The curb which extends 2 inches above the track serves as a guide for one end of the marker.

The lines are scratched on the track, then marked with lime.



Construction and Placement of Hurdles

Different heights, distances, and number of hurdles may be selected for hurdle races. However, all hurdles for National Championship meets must conform to the following specifications:

1. Hurdles may be made of wood or metal with two bases and two uprights supporting a rectangular frame reinforced by one or more cross bars. The uprights must be fixed at the extreme ends of the base.

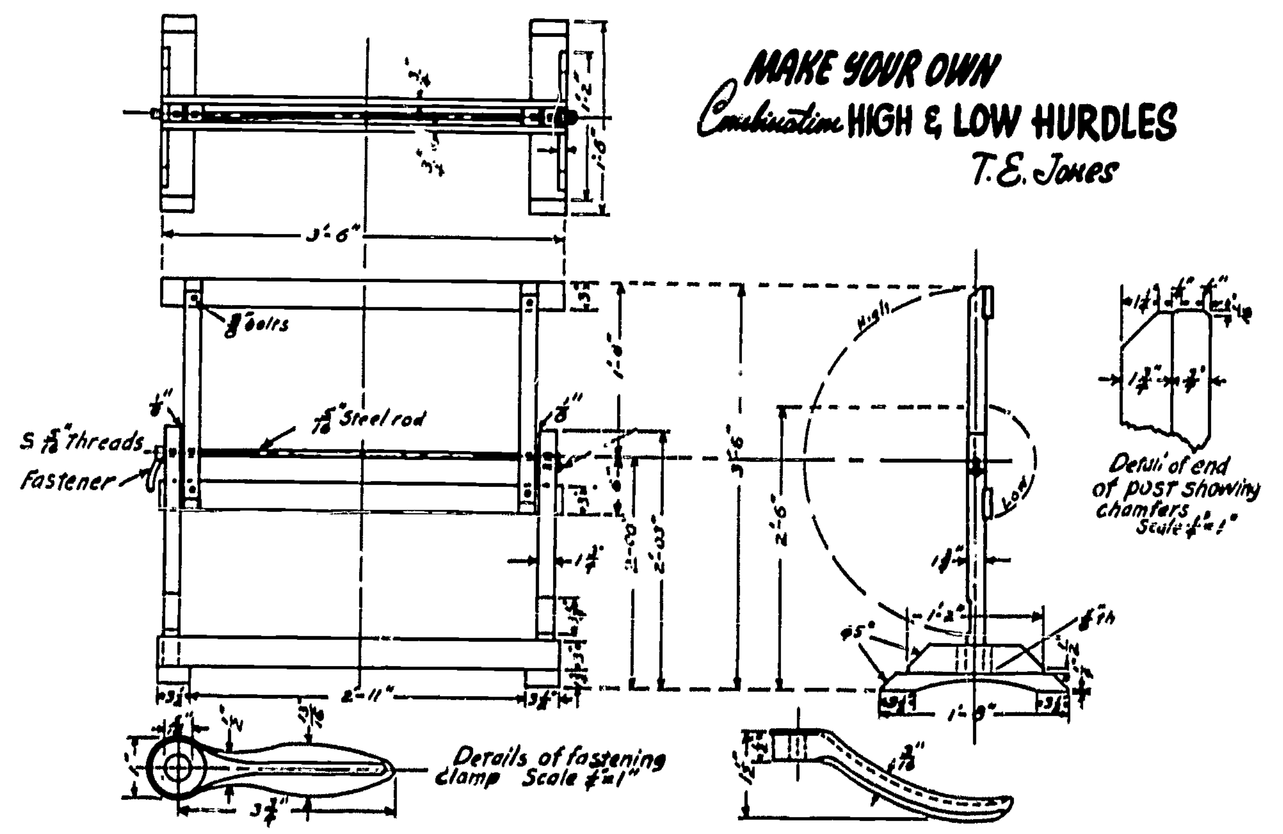
2. The hurdle may be adjustable in height, but should be rigidly fastened at the required height for each event.

3. The total weight of the hurdles must be not less than 22.22 pounds (AAU and Collegiate).

4. The maximum length of the base is 27½ inches. The top bar of the hurdle should have a minimum length of 42 inches and a width of 3 inches. It should be painted white or diagonally striped in light and dark colors.

5. The hurdle should be of such weight and balance as to require an overturning force of at least 8 pounds, irrespective of its height. The "T" type of hurdle still is being used, but the "L" type hurdle is to be preferred because it does not rise when overturning.

There are many different makes of "L" type hurdles on the market. Many high school officials, because of the expense involved, prefer to build their own hurdles and the following specifications for constructing a combination high and low hurdle may fit their needs.



5. Specifications for Construction of Takeoffs, Runways, Circles, and Field Area

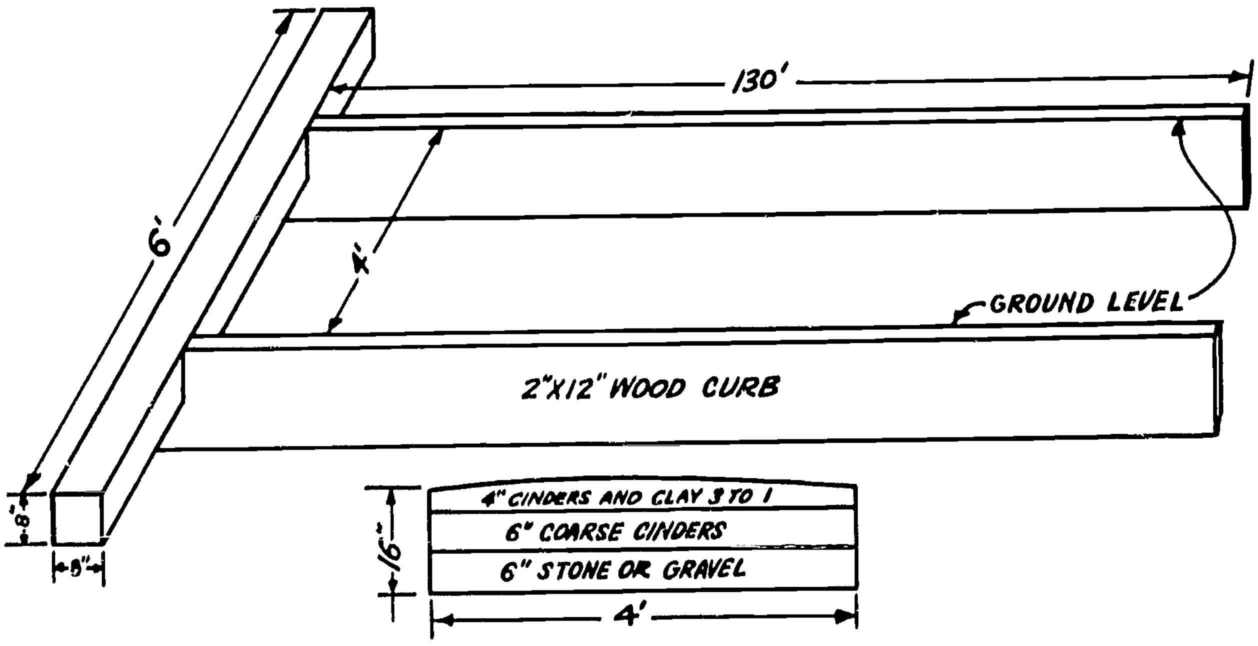
Improved performances in the field events generally can be attributed to better approaches, better takeoffs, and better footing in the circles.

The life of runways and circles is dependent upon the foundation and materials used in construction. Runways or approaches for the pole vault and the jumps should be constructed of the same material and in the same three-layer manner as the running track. However, more clay should be added to the top layer surface to provide better footing.

It is also advisable to build up a slight crown to these surfaces to provide better drainage. However, it should be remembered that the actual takeoff area must be flat and level with the takeoff board in the broad jump and the base of the standards in both the pole vault and the high jump.

The field events should be arranged to avoid running into the sun or against the prevailing direction of the wind. It is common practice to provide approaches from two directions by placing the vaulting pit in the center and a broad jumping pit at both ends.

Curbed runways are not desirable because the curbs present a football and baseball hazard and make difficult the use of a field roller.



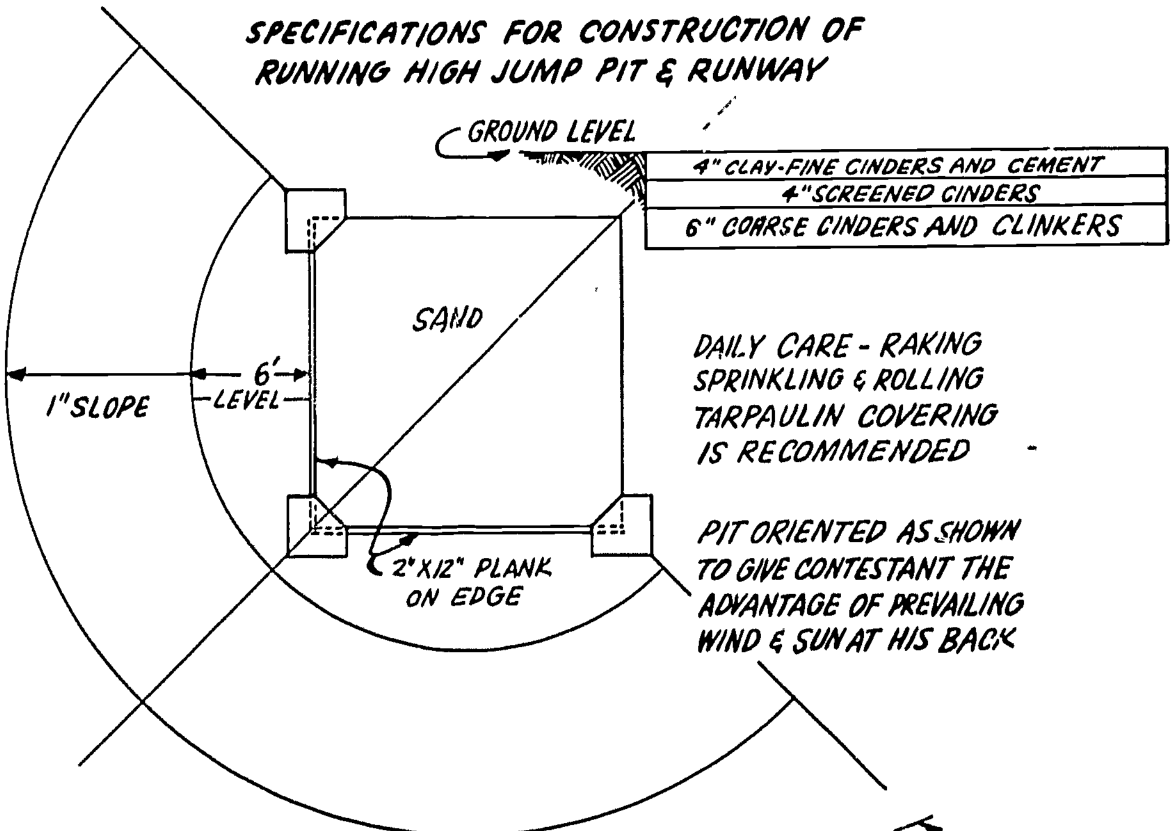
The Running Broad Jump--Approach

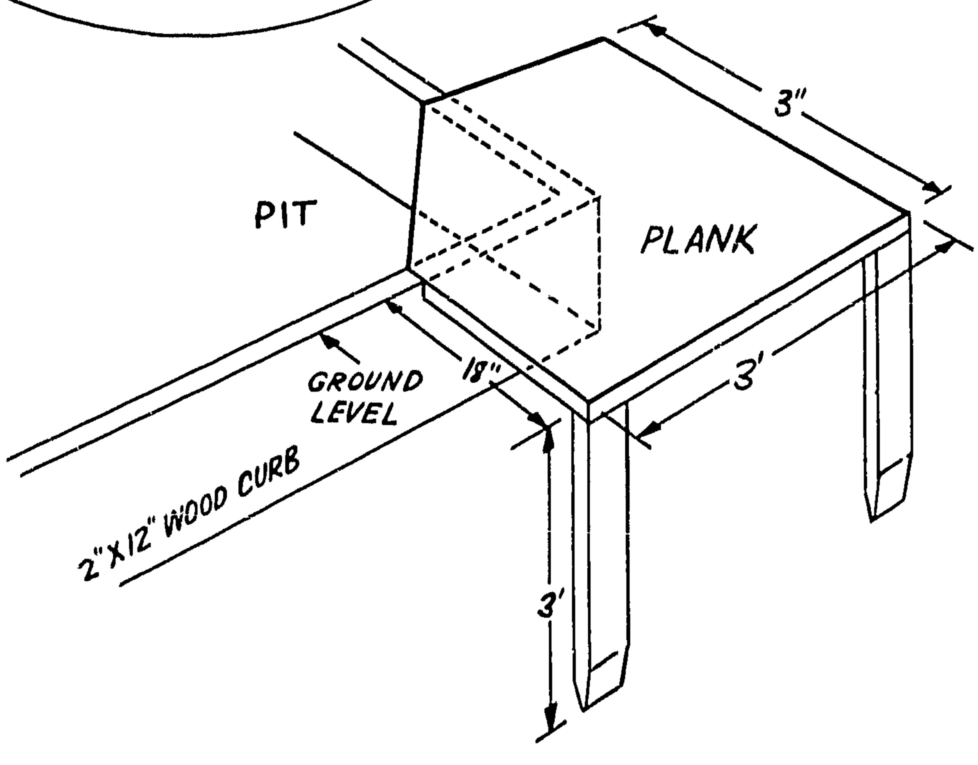
The approach distance for the broad jump should be about 120 feet (the run is unlimited), while the width of the path should be 4 feet. The takeoff board *must* be a joist, *8 x 8 inches*, and at *least 4 feet long*, which should be set firmly in the ground on the same level with the runway and should be painted white. The ground in front of the scratch line (the edge of the board nearest the pit) must be flush with the scratch line. Two 2- x 8-inch planks nailed together sometimes are used.

The Running Broad Jump--Landing Pit

The running broad jump landing pit should be placed about 10 or 12 feet from the takeoff board. It should be 18 feet long and at least 6 feet wide. It must have an elevation the same as that of the takeoff board.

The pit should be 18 inches deep and enclosed with a wooden curb painted white and set flush with the ground. It should be filled with builders' sand up to a level with the takeoff board.





The Running High Jump--Approach

The approach, or runway, for the high jump should extend out from the side of the pit, fan-shaped on a 16-foot radius so that jumpers can approach the bar from any direction in front of the standards. The actual takeoff area (approximately 15 feet) should be level.

In constructing the high jump takeoff, the three-layer plan should be used as in the other runways with one exception--the top dressing (3 inches) should be composed of the best available clay.

To provide better drainage the outer half of the approach should be sloped away from the pit, and clay takeoffs should be spread lightly with fine cinders or portland cement.

The Running High Jump--Landing Pit

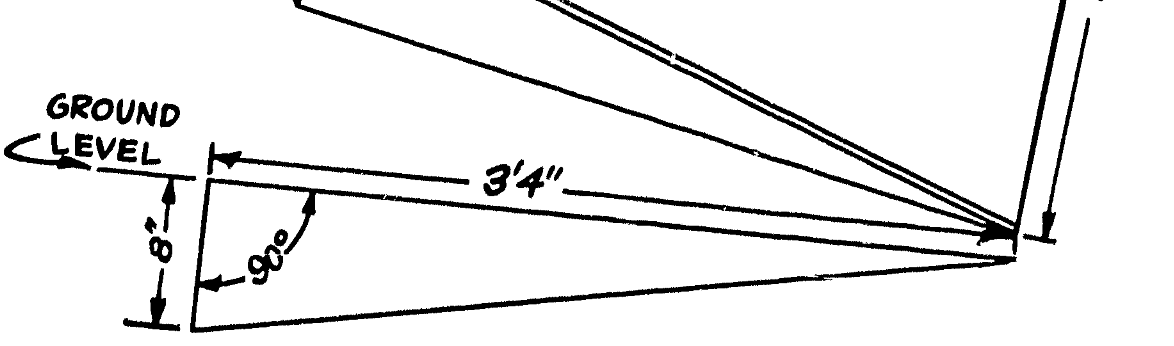
Official rules state that the high jump pit must be at least 16 feet in width and 12 feet in length. However, many injuries can be avoided if the pit is made 16 feet in length.

The pit should be at least 12 inches in depth and should be filled with builders' sand or wood shavings, preferably sand.

The Pole Vault--Approach

As in the running broad jump, the pole vault runway should be long enough to enable the vaulter to build up speed in his approach. The runway should be 130 feet long and approximately 4 feet wide, built of the same material and in the same manner as the track.

Runways from opposite directions are essential.



The Pole Vault--Landing Pit

The landing pit should be 16 feet wide, 14 feet long, 2 feet deep and filled with soft wood shavings 2 to 3 feet deep.

Indoors, where a pit cannot be dug, a temporary landing pit can be constructed of stuffed burlap bags with the hollow square filled with soft wood shavings or sawdust.

The Pole Vault--Pole Planting Box

The official rule book recommends that the pole planting box be of wood or metal. This box should measure 3 feet 4 inches in length, and 2 feet in width at the front, tapering to 6 inches in width at the stop board which should be 8 inches deep. The box shall be so placed that the top edges of the front, sides, and stop board will be flush with the ground and the landing pit.

Weight Circles--Footing Areas

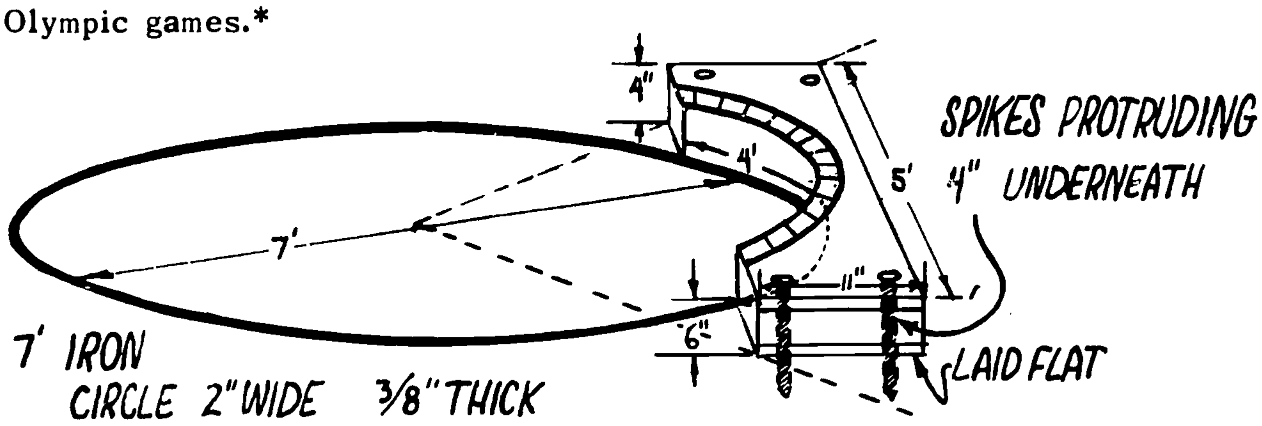
In constructing the footing areas for the weight events, both subsurface and surface drainage, as well as firmness of area, should be considered.

The footing area, 12 feet by 10 feet, should be excavated to a depth of 12 inches and then built up in three layers as follows:

1. 4 inches of crushed rock or coarse gravel on the bottom
2. 4 inches of cinders in the middle
3. 4 inches of top dressing material composed of one part cinders and one part clay

All layers should be well packed; and by making the area 12 feet by 10 feet, the competing circle itself is easily moved about within the area to provide new footing.

By mixing portland cement with the top dressing of clay and cinders, solid footing and simplicity of maintenance are insured. Some institutions use black top surfaces, 4 to 6 inches in depth, for both indoor and outdoor areas. However, a hard clay surface always is preferable. This is the approved type for the Olympic games.*



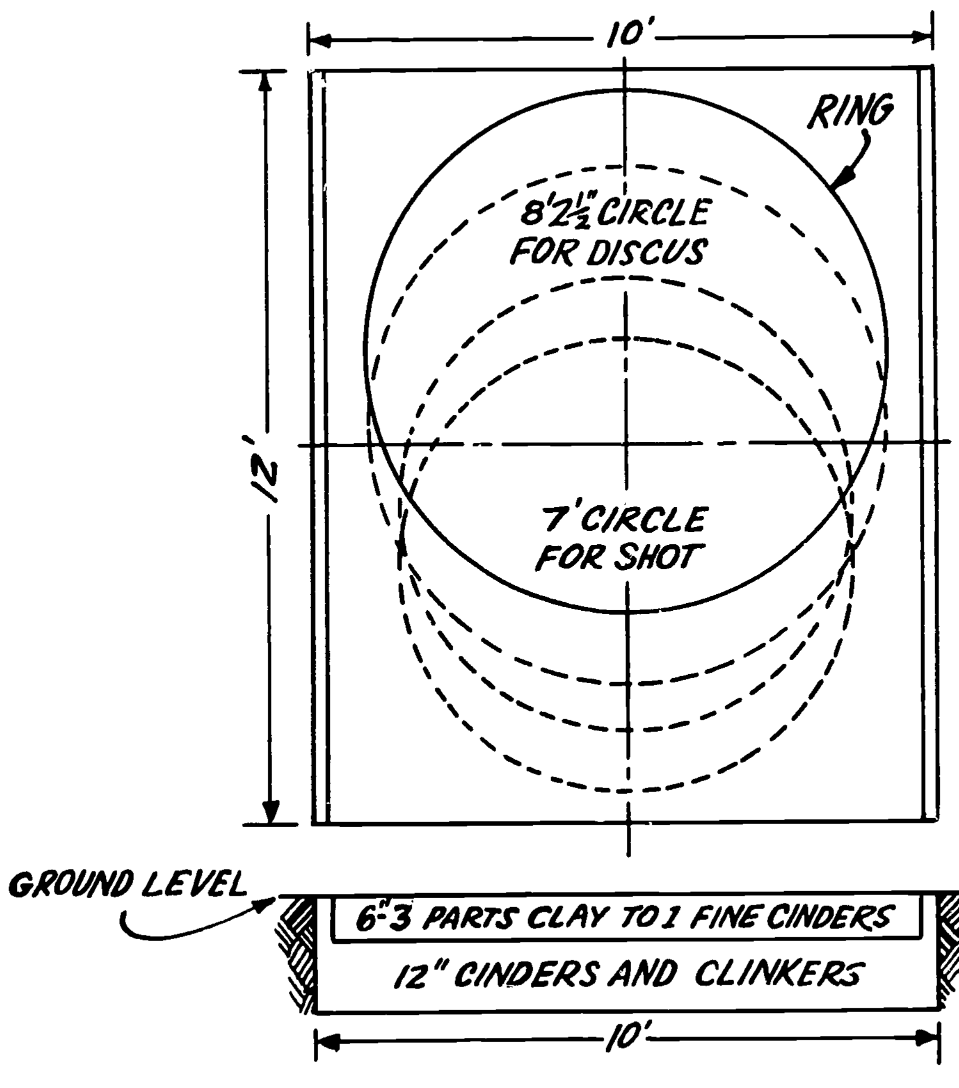
* Several leading institutions are at present experimenting with asphalt black-top for use in approaches, takeoffs, and weight circles. For ten years the University of Nebraska has had satisfactory results with black-top footing for field events by placing a 4-inch layer of asphalt over the existing cinder or dirt base. Some of the other experiments now in progress: at Ohio State, a black-top consisting of sand and 6 per cent asphalt (70-80 penetration), mixed when hot and rolled with a 5-ton roller; at Purdue University, a mixture of three grades of sand, including 25 per cent blow sand for hardening and 8 per cent asphalt (60-70 penetration). With a view towards maintenance, extended study into the use of black-top for foot racing tracks would be well worthwhile.

Shot-Put Circle

The official rules call for a 7-foot circle of inside measurement enclosed by an iron or wooden band. A wooden toe or stop board, 4 inches high, should be placed on the circle and extended 4 feet along the circumference.

The ground on which the shot falls should be of clay or loam and on a level with the circle. The circle and the stop board, or toe board, should be painted white.

A 7-foot circle also is required for the 35-pound and 56-pound hammer throw events.

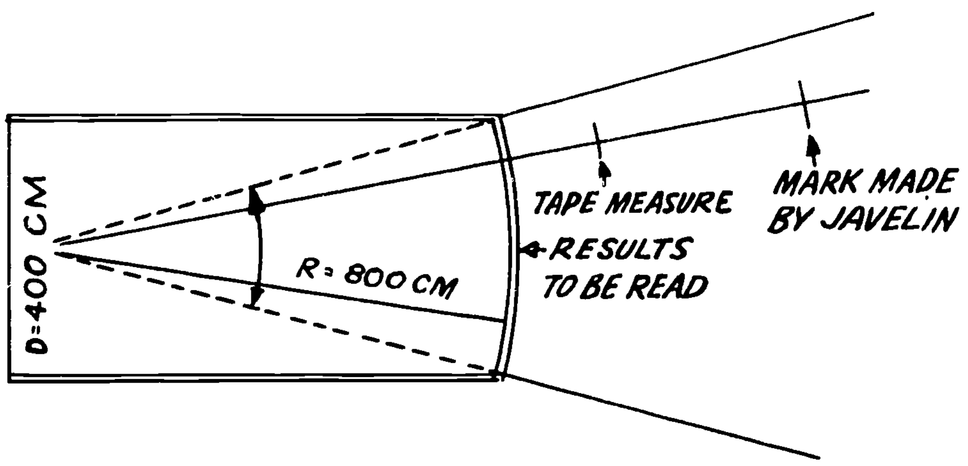


The Discus Throw--Circle

The discus is thrown from a circle having a diameter of 8 feet 2½ inches (2.5 meters). The circumference of the circle should be marked by an iron or wooden band sunk flush with the ground. No toe or stop board is used.

The Javelin Throw--Approach Area

The approach area for the javelin throw needs no special construction. It may be turf or bare ground. The run-up (or runway) must be marked by two parallel lines, 13 feet 1½ inches (4 meters) apart. The throw is made from behind an arc of a circle drawn with a radius of 26 feet 3 inches (8 meters). Such an arc should be marked by a board or metal strip, 2¾ inches (7 centimeters) in width, painted white, and sunk flush with the ground.



Field Area Construction--Specifications and Maintenance

Construction and care of the enclosed area which provides space for field events, football, and other recreational activities call for a careful study of local conditions. It varies in different parts of the country due to different local soil and climatic conditions.

The first step in laying out the area is to determine the amount of grading, cutting, and filling necessary to bring it to the desired level. Preferably the field should run north and south. Careful preparation of the ground is necessary to insure a good turf.

The football field should be cross-drained every 30 feet with 4-inch tile, set 15 inches below the surface. The tile should be covered with 10 inches of coarse gravel or cinders. On top of this 5 inches of loam should be placed to bring it level with the surface of the field.

The cross-tile should be connected to 6-inch lateral drains placed 3 feet inside the running track. The catch basins should be placed every 50 feet and should discharge into the sewer pipe. They should be made of concrete with cast-iron perforated covers and frames set 2 inches below ground level.

A football field should be crowned 12 inches to provide good surface drainage. Special drains should be placed in front of the bleachers or stadium.

When the subsoil is sand or natural gravel, the drainage problems are relatively simple. Subdrainage may not be necessary.

The bottom layer of the field may be filled with coarse gravel, brickbats, loam, or sand. It should be graded or raked level, watered, then rolled with a 10- or 12-ton roller. On this should be spread a 6-inch layer of black loam and fertilizer. This layer should be pulverized or roto-tilled, harrowed, raked, and leveled. On top of this layer should be placed a rich screened 3-inch mold of black loam and commercial fertilizer. The following fertilizer is recommended--700 lbs.per acre of 10-10-10 (nitrogen, phosphorus, and potash); 1500 lbs.per acre of 0-10-30 (nitrogen, phosphorus, and potash). This is to be spread evenly and roto-tilled to a depth of 3 or 4 inches. Soil tests are advised to determine the most suitable grass seed mixture.

The following grass seed mixtures are recommended:

No. 1

42% Kentucky blue grass
25% Coarse fescue
8% Red fescue
8% Red top
17% Timothy or rye grass

No. 2

50% Kentucky blue grass
15% Chewing fescue
10% Red fescue
6% Perennial rye grass
9% Colonial bent
10% Highland bent

No. 3

The seed mixture used on the Camp Randall gridiron was:

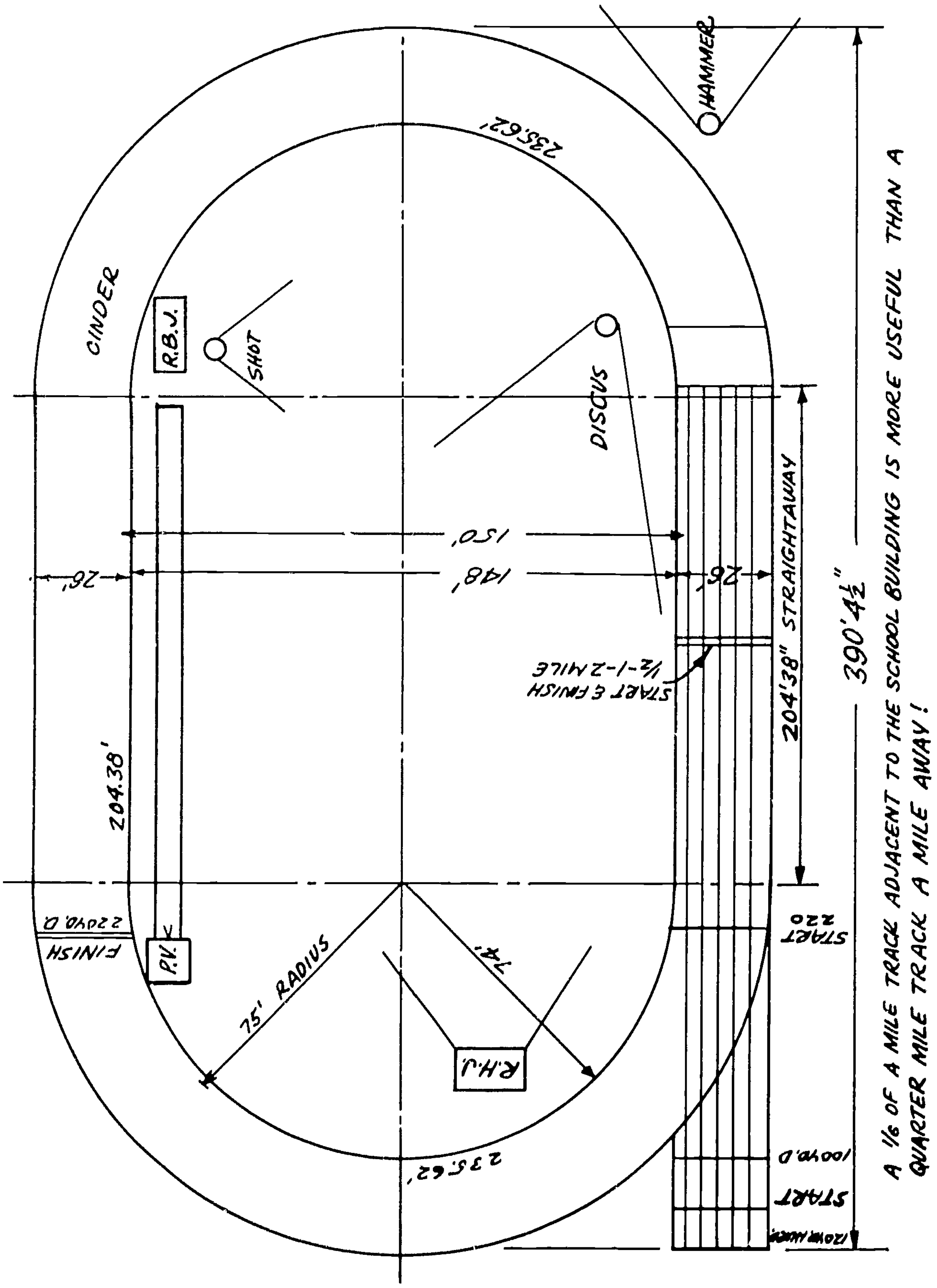
65% Kentucky blue grass
15% Red top
10% Rye grass
5% Timothy
5% White clover

Seventy pounds of grass seed mixture is recommended per acre.

The grass seed should be scattered evenly and raked in, then rolled and watered frequently. In maintaining a good turf, commercial fertilizer and grass seed should be applied annually. On clay soil use a *West Point aerified* as advised--then a top dressing composed of 1 part light soil, 1 part coarse sand, and 1 part peat.

Rolling in early spring is very beneficial since the winter weather may have separated the soil from the grass roots.

STANDARD SIX-LAP (293 1/3 Yards) OUTDOOR TRACK



6. Care of the Track

Daily Upkeep

Daily maintenance is necessary to keep a running track smooth, level, firm, and resilient.

Raking or scarifying: First operation in daily care of running tracks is raking. This may be done with a garden rake or by using an improvised drag whichis made by driving spikes through a 2- by 12-inch plank, 3 or more feet long. The spikes should be staggered, and the weight should be made adjustable by adding weight on the top of the plank. The track should be cross-raked once a week.

Brushing: Chief purpose of brushing is to fill spike holes. Fiber barn brushes, fairly wide, are best for this work.

Floating: Leveling and planing are accomplished by dragging a sharp metal door mat (shoe scuffer), 6 by 6 feet, around the track. This levels high places and fills low spots.

Rolling: Heavy rolling should be confined to early spring. During the regular season the track should be rolled with a light roller. (Not more often than once a week.)

Sprinkling: The amount of moisture must be controlled. Water pipes with taps every 100 feet should be provided along the inside of the curbs so that the track and runways can be sprayed as desired.

An application of calcium chloride to the track is desirable because it helps to hold the moisture and also to prevent high winds from blowing away top dressing.

Many leading colleges now use a light gasoline truck or roller equipped with rakes, drags, and brushes.

Top Dressing

A thin layer (½ inch) of top dressing should be worked into the surface of the track each year. This should be applied in the fall so winter rains and snow can settle it.

It is best to have available a supply of this surface material to fill depressions which appear after a rain.

Resurfacing

A new 2-inch or 3-inch top dressing should be laid on a track every five or six years, since in that time a track becomes packed, losing its recoil, or bounce. The following steps in resurfacing a track should be observed:

1. Brush to one side all fine dead cinders or dust.

2. Use a farm disc or roto-tiller to cut through the packed cinders to a depth

of 2 or 3 inches so that the surface water will drain through.

3. Apply a top dressing of 2 inches from a mixture of four parts cinders and one part of light clay. Screen this material through a ¼-inch mesh, then harrowor rake this top dressing into the track surface thoroughly.

4. Level or float this application. Also spray fine cinders lightly on top.

Resurfacing of a track should be done in the fall so that the winter snow will help settle it.

In order to get better surface drainage, Larry Snyder, Ohio State track coach, resurfaced the Ohio stadium track with clinker cinder which had been ground to 1/8 inch. A 2-inch layer of this fine material without additional binder was placed on the track, disked into the track, raked, and floated.

Gordon Fisher, Indiana University track coach, used this method in resurfacing his track:

First, all old dead cinders and dust were removed. Then a 2-inch layer of ½-inch screened cinders was applied. On this was placed a top dressing layer of 2 inches, consisting of four parts ¼-inch screened cinders to one part of light clay. This was spread uniformly over the cinder surface and carefully and thoroughly raked into the cinders.

7. Minimum Requirements for High School Tracks

There is nothing very complicated in track construction, but it does merit careful study in order to avoid mistakes.

The cost of a standard quarter-mile track varies, of course, with the type of facilities desired and the money available. A very serviceable track can be built without great expense provided that:

1. The area is level.

2. The surface drainage is adequate.

3. No subsurface drainage is necessary

4. Coarse gravel is readily available.

5. Cinders can be furnished from school and city heating plants.

6. The services of the city engineer can be obtained for surveying and supervision.

7. A civic-minded road contractor will excavate the body of the track at a reasonable cost.

There are several ways to reduce costs without sacrificing basic essentials. *First,* eliminate the 220-yard straightaway. *Second,* reduce the depth of the body of the track to 8 or 12 inches of material.* *Third,* reduce the track width to 16 feet on one curve and on the back stretch, while retaining a 120-yard straightaway and one curve with a width of 24 feet. *Fourth,* use 2-inch by 6-inch creosoted pine for curbing the inside of the track only. *Fifth,* eliminate curbing on the field runways and build runways 4 feet in width which permit approach from either direction, using clay or loam as a binder for the body of the runway.

This type of track will provide adequate opportunity for participation in track sports at a minimum cost of construction.

* Some good tracks consist of only two layers, 4 inches of coarse cinders and clinkers, and 4 inches of finishing material. Such a track body possesses adequate spring and resilience. It will stand up under constant use with reasonable care in maintenance.

8. Construction and Care of Indoor Tracks

There is great variance in the size of indoor tracks, depending upon the type and size of building in which they are housed. Track sizes include 1/16, 1/14, 1/12, 1/11, 1/10, 1/8, and 1/6 mile per lap.

The eight-lap-to-the-mile track is desirable whenever possible. It allows even laps in all standard races, with identical starting and finishing points.

The 1/8-mile clay indoor track is considered standard for colleges. Such a track, with a radius of 60 feet, need not be banked, and sprint races can be held on it with little difficulty. Indoor tracks with a radius of less than 60 feet should be banked on the curves.

Construction of Indoor Clay Tracks

The standard college indoor clay track, 1/8 mile in circumference with true curves of 60-foot radii, has a solid and safe footing which a cinder surfaced track cannot provide. With a roof sheltering the track from rain and snow, the need for cinders as a surfacing material is eliminated.

Consequently, construction of a pure clay track, the fastest possible running surface when properly moistened, is possible. The mixture for the track bed should consist of 6 inches of the best clay obtainable, laid on a solid, level base of loam clay.

Care of Clay Track Needs Study and Experience

Following a period of disuse, a clay track first should be drenched, then allowed to rest a week to permit the moisture to soak down 3 to 4 inches into the clay. A thin layer of fine dry clay then should be spread over it, raked lightly, and brushed to fill in the cracks and uneven places. A clay track needs careful and constant attention daily. It should be lightly sprayed with water immediately following daily workouts, then brushed and rolled the next morning.

A light spray of sawdust often is used to help retain the moisture. This should be swept off at the end of the competitive season or it will cause the clay to disintegrate and lose its resilience.

The length of spikes on runners' shoes used on a clay track should be limited to 3/8 of an inch. This spike length is best for the competitors, reduces shin splints, severe spike wounds, and ankle sprains, and causes less wear on the track itself.

9. Preparations for Conducting a Track Meet

Staging a track meet requires attention to a great number of details. These details, with some added suggestions, are listed below.

General preliminary preparations

1. Announcement of the meet:

   Entry blanks
   List of events and time order
   Prizes, if any
   Date of closing of entries

2. Selection and notification of officials

3. Competitors' numbers and safety pins

4. Assignment of dressing quarters for visiting teams

5. Programs

6. Tickets:

   General and reserved admissions
   Contestants' tickets
   Passes

Preparation for track events

1. Tools:

   Hand roller
   Two tampers
   Sprinklers or hose
   Two rakes, two or three spades
   Two small spades or hand trowels for digging starting holes
   Cord and iron stake for making lanes
   Lawn tennis marker and lime
   Finishing posts
   Starting blocks (6 or 8)

2. Equipment:

   Ten hurdles for each lane (40 for 4 competitors, 50 for 5 competitors, etc.)
   Whistles for starter and head judge of finish (2)
   Stop watches
   Finishing tape (twine or yarn)
   Starting pistol (.22 or .32)
   Blank cartridges
   Relay batons (6 or more)
   Elevated stands for judges and timers

3. General procedure:

Have a track raked, sprinkled, leveled, and rolled
Have lanes carefully marked, each with a minimum width of 3 feet
Mark off all starts, finishes, relay zones, and hurdle stations
Set sector flags or lines

Preparation for field events

1. Equipment:

Twelve- or 16-pound shot, iron, brass, and brass shell
Discuses (2 or 3)
Javelins (2 or 3)
Hammer (extra handles)
Scales for weighing above implements
Standards for high jump and pole vault
Cross bars (6 or more)
Vaulting poles (4 or more)
Forked stick for placing cross bar on vaulting standards
Rod for taking actual height in high jump and pole vault--
ladder painted white on one side, steel
Measuring tapes:
Fifty feet (broad jump and shot-put)
One hundred and fifty feet, or 200 feet (hammer, discus, and javelin)
Iron or lime-marked circles for weight events (7 feet for shot and hammer; 8 feet 2½ inches for discus)
Toe board for javelin (12 feet by 3 inches)
Benches for field event competitors

2. General procedure:

Have all pits spaded
Mark balk lines with lime (high jump, broad jump, pole vault)
Paint broad jump takeoff board, javelin toe board, pole vault stop board, iron circles for all events white
Mark out 90-degree-angle sector for discus, hammer, and shot

General equipment:

1. Score board
2. Megaphones
3. Individual scoring sheets
4. Clipboards (8) and pencils for officials
5. Typewritten field event rules on back of clipboards

6. Tables for recording scores
7. Tables for trophies and prizes
8. Public address system
9. Radio arrangements if meet is to be broadcast
10. Anemometer
11. Rub tables in dressing rooms
12. Lot numbers (pocket billiard or "Kelley Pool" set)
13. Rule book
14. Badges for officials
15. First-aid supplies

General suggestions:

1. Keep one track event and two field events (one jump and one weight event) in progress at the same time
2. Have callers notify competitors regularly in advance of their event
3. Safeguard against accidents in throwing javelin, shot, hammer, and discus
4. Get hurdles ready near their stations in the 220-yard race immediately following the 120-yard race

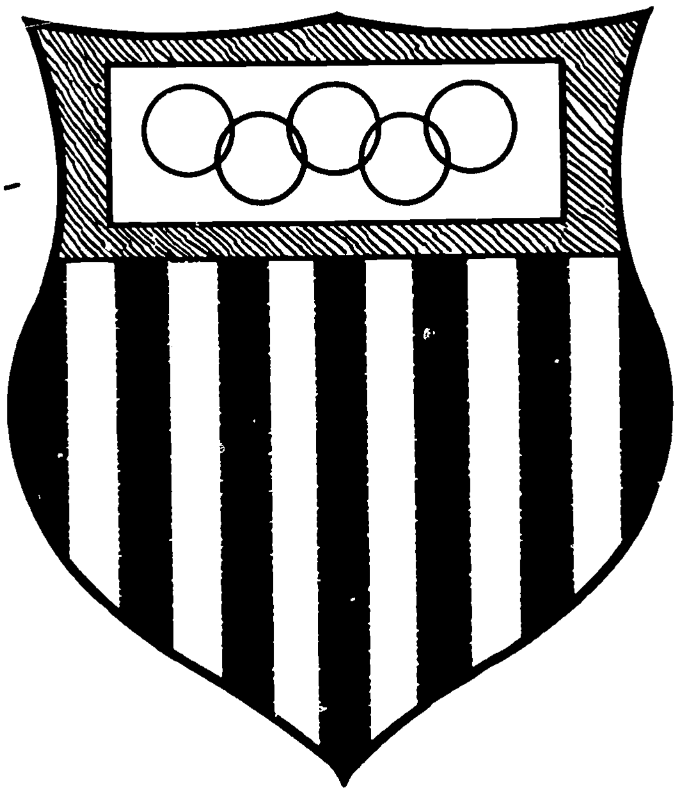
List of officials:

1. Referee and starter (1)
2. Timers (4)
3. Judges of finish (4 or more)
4. Judges of field events (8)
5. Clerk of course, assistant clerk of course, clerk of track events, clerk of field events
6. Inspectors (4)
7. Callers (2), starting block setters, messengers, custodians
8. Announcer (1)
9. Scorer (1)
10. Marshal (1 or more)
11. Ushers and police
12. Ticket seller and ticket takers

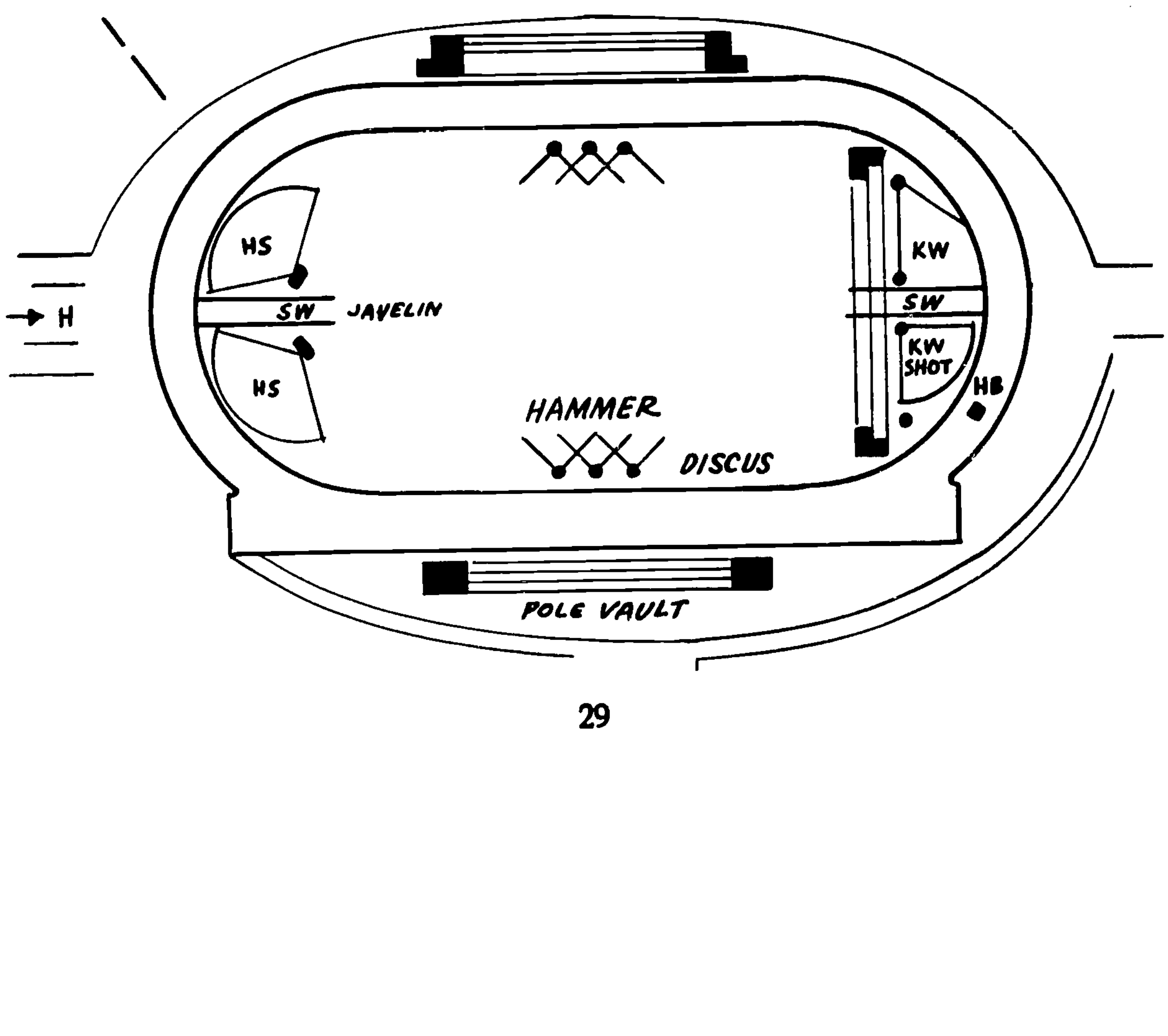
10. Diagrams and Specifications of Leading Tracks

The following descriptions, listings of specifications, and diagrams are included to demonstrate how track construction varies in different sections of the country. Prior to planning construction, a careful study should be made of local conditions--the soil bed, the temperature, rainfall and other weather conditions, and the availability of materials.

OLYMPIC TRACKS



Berlin Track, 1936



Olympic Stadium at Stockholm, 1912

The site of the Stockholm Olympic Stadium in Sweden is ancient bog land, bounded on the north and east by a rocky height, and on the south by a grove of silver birch. For years it had served as an old athletic ground which included a cycling track.

In its reconstruction for Olympic competition, consideration was given to many other types of athletic endeavors. To finance the enterprise, a grant of public money was raised by lottery. Charles Perry, an English engineer, was employed as track expert.

The track itself measures 400 meters in circumference. Its width is 10.5 meters (34.3 feet) on the finish straightaway and 7.5 meters (24.5 feet) on the back straightaway. All races finish at the same place on the north straightaway.

The curbing consists of 2-inch by 7-inch planking, coated with tar, and painted white on top. The surface of the running track at the curb lies 4.5 centimeters (1.764 inches) below the level of the turf-covered area (or infield).

The track is level on the straightaway and on the inner side next to the curb. However, on the curves, the middle point on the outer side lies 30 centimeters higher than the level of the inner side (ends banked).

The body of the track was excavated to a depth of 45 centimeters (1.47 feet) and filled with three special layers as follows:

1. An 18-centimeter (7.056-inch) layer of macadamized stone, brick, and coarse slag

2. A 12-centimeter (4.704-inch) layer of coarse boiler slag

3. A 15-centimeter (5.88-inch) layer of surface material (top dressing) consisting of these ingredients:

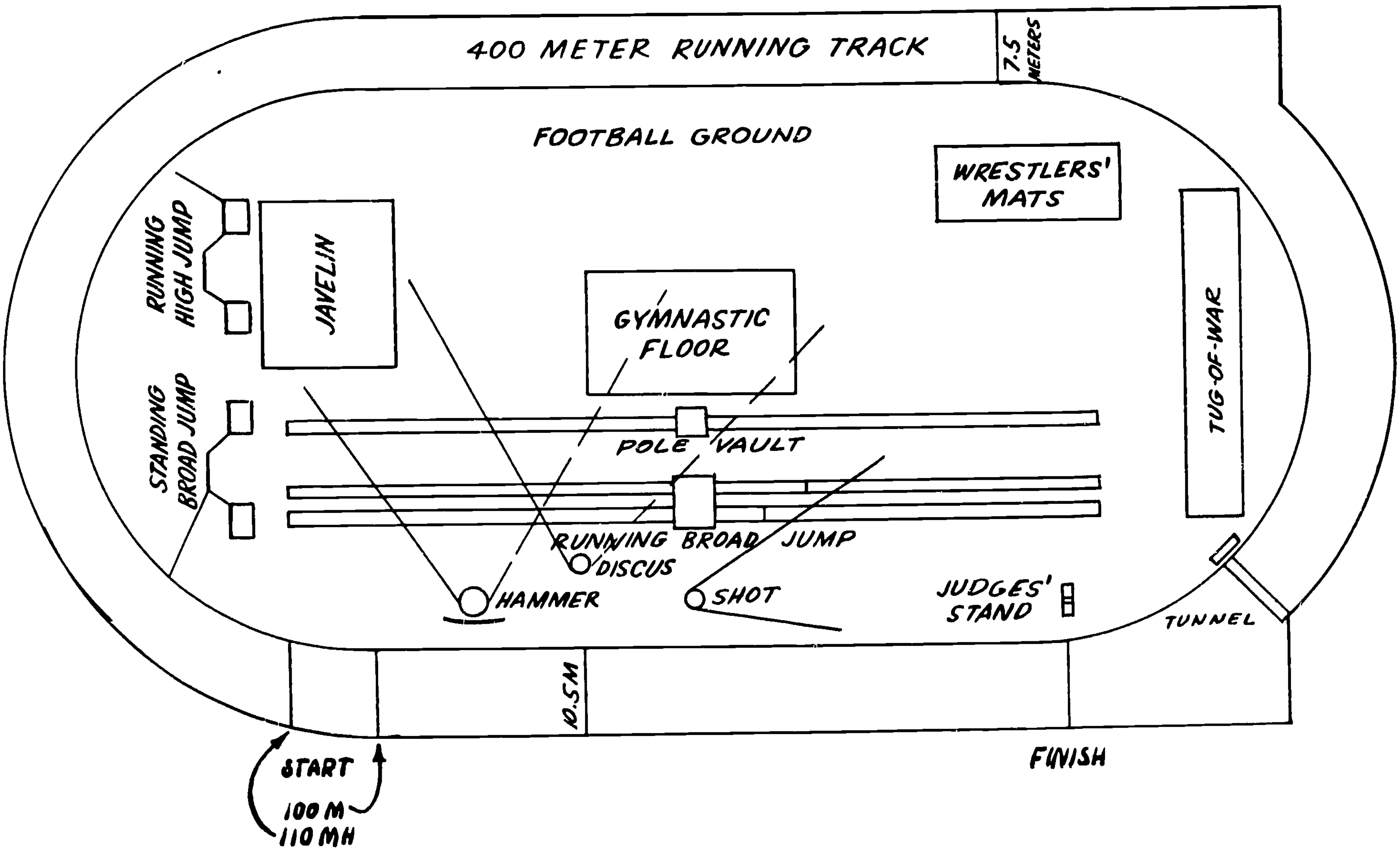
50% slag from locomotives, free from ashes and clay
10% slag from electric works
30% mold, mixed with sand free from clay
5% marl
5% mortar sand, clean and large grained

The three-layer plan of track construction for the Stockholm Olympic track generally has been followed since 1912, for the track is considered one of the very best in the world.

Pits here excavated to a depth of one meter, (39.2 inches) with a 2-inch base of macadamized stone, covered with 30 centimeters (11.76 inches) of sand.

Runways and circles were excavated to a depth of .8 meter (31.36 inches). Five inches of macadamized stone were placed on the bottom with the bodies then built up on the same plan as the running track. Iron rings 5 centimeters (1.96 inches) wide with flat side upward, marked the circles.

For protection, jumbo nets were erected back of the hammer circle.


400 METER RUNNING TRACK
7.5 METERS
FOOTBALL GROUND
WRESTLERS' MATS
RUNNING HIGH JUMP
JAVELIN
GYMNASTIC FLOOR
TUG-OF-WAR
STANDING BROAD JUMP
POLE VAULT
RUNNING BROAD JUMP
DISCUS
HAMMER
SHOT
JUDGES' STAND
TUNNEL
10.5M
START
100 M
110 MH
FINISH

London Olympic Games of 1948

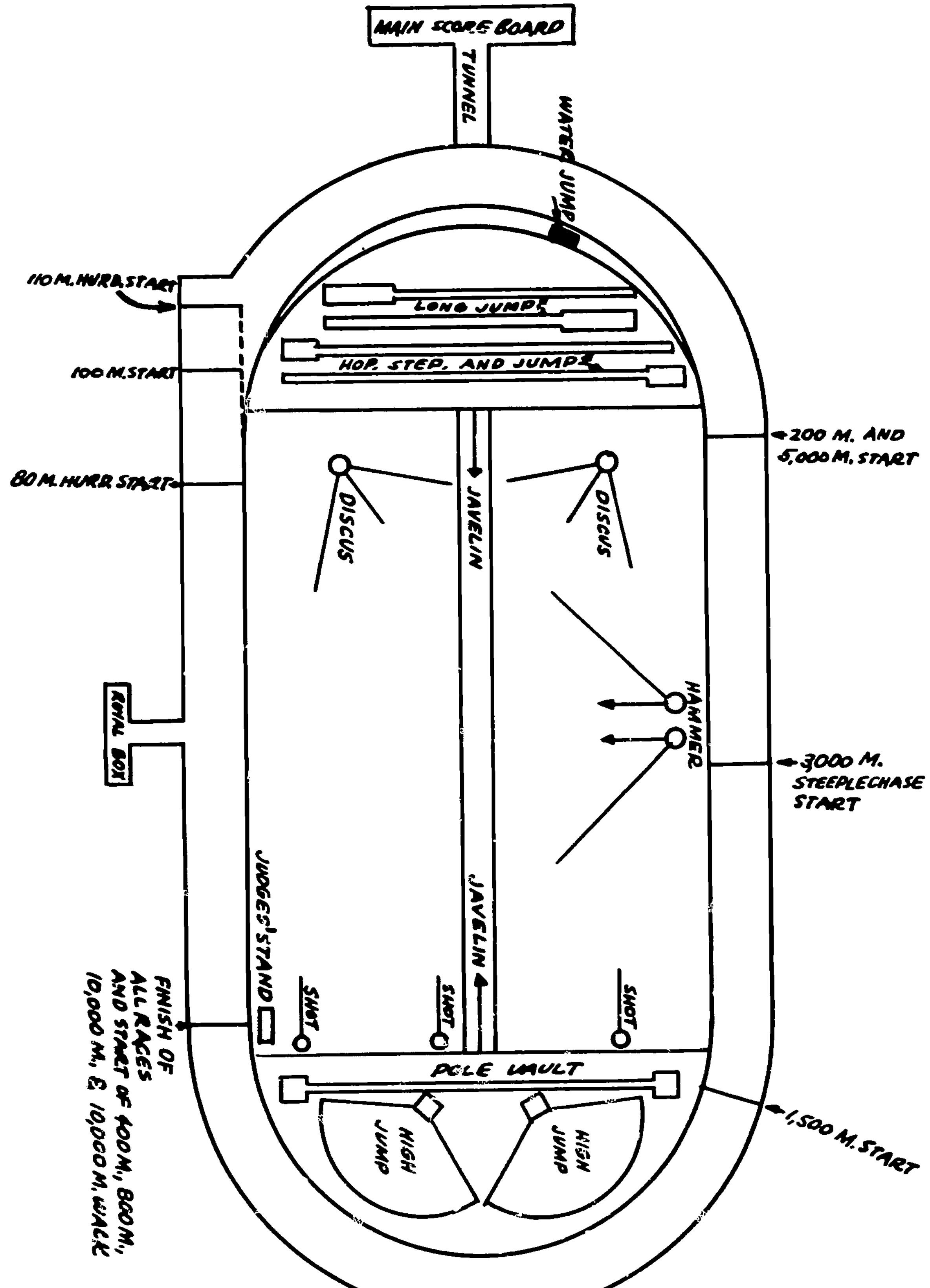
England did not build a special stadium and track for the 1948 Olympic Games. Instead, the games were held at the Empire Stadium at Wimbley, a suburb of London. The stadium and track had been built for the Empire Exposition of 1924.

The track is 400 meters in circumference, 33 feet wide, with a 130-yard straightaway on one side. It has been used for championship events in many sports such as soccer, auto speedway racing, and dog racing as well as track. As a matter of fact, dog races were held on the track just three weeks prior to the opening of the Olympic Games.

For the 1948 Olympics, a top dressing was laid on the foundation of the track. This top layer is 4 inches thick, consisting of a mixture of native soil, cinders, clay, and brick dust. The material was evenly spread and rolled on the old track just as a street paving contractor applies the last layer of concrete on the street.

Unfortunately the track had too great a proportion of clay, and, when it rained four or five days during the games, workmen were busy between races boring holes through this nonporous top dressing so that surface water could drain down to the cinder base of the old track.

However, the track has held up well. Because it is extremely fast when dry, many new records have been established on this track.


MAIN SCORE BOARD
TUNNEL
WATER JUMP
110 M. HURD. START
100 M. START
80 M. HURD. START
ROYAL BOX
LONG JUMPS
HOP, STEP, AND JUMPS
DISCUS
DISCUS
JAVELIN
JAVELIN
HAMMER
SHOT
SHOT
SHOT
JUDGES' STAND
POLE VAULT
HIGH JUMP
HIGH JUMP
200 M. AND 5,000 M. START
3000 M. STEEPLECHASE START
1,500 M. START
FINISH OF ALL RACES AND START OF 400 M., 800 M., 10,000 M., & 10,000 M. WALK

Los Angeles Memorial Coliseum - Olympic Stadium, 1932

The Los Angeles Memorial Stadium was built in an abandoned horse racing course once known as Exposition Park but now called Olympic Park.

The cost of the entire enterprise, including running track, field, and stadium (with seating capacity of 105,000), was financed by the sale of California state bonds to the sum of $1,000,000. Arrangements were made with a competent firm of architects to handle all construction on a cost basis.

The running track, 440 yards in circumference originally, was constructed at the same time as was the stadium, but later was shortened to exactly 400 meters in order to meet Olympic requirements in 1932.

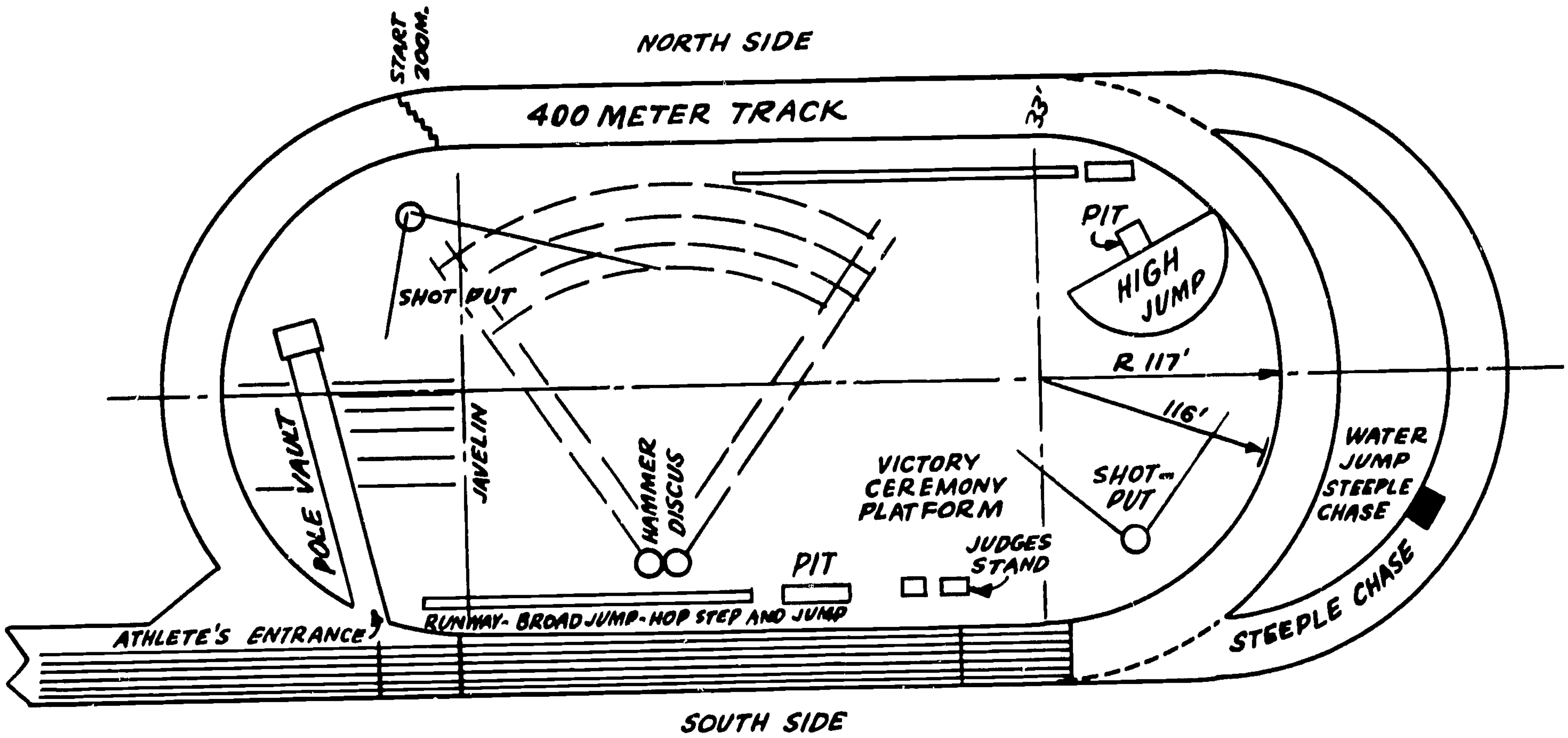
The width of the track is 33 feet (allowing for eight lanes), the radius 117 feet, the length between the curves 297 feet, and the straightaway 220 yards.

Because the subsoil was natural gravel, no subdrainage of the track was necessary.

The body of the track consists of selected soils of sand and native clay. No cinders were used. The track body slopes 1 inch in 8 feet to the inside curb.

The field is cross-drained, and catch basins are located 25 feet apart inside the concrete curb. Dirt runways for the field events are composed of the same materials as the track body.

All installations were made according to a plan submitted and approved by the International Olympic Federation.


NORTH SIDE
START 200M.
400 METER TRACK
33'
PIT
HIGH JUMP
SHOT PUT
R 117'
116'
POLE VAULT
JAVELIN
HAMMER
DISCUS
VICTORY CEREMONY PLATFORM
SHOT-PUT
WATER JUMP STEEPLE CHASE
PIT
JUDGES STAND
STEEPLE CHASE
ATHLETE'S ENTRANCE
RUNWAY-BROAD JUMP-HOP STEP AND JUMP
SOUTH SIDE

British Empire Games Track

Vancouver, B.C.

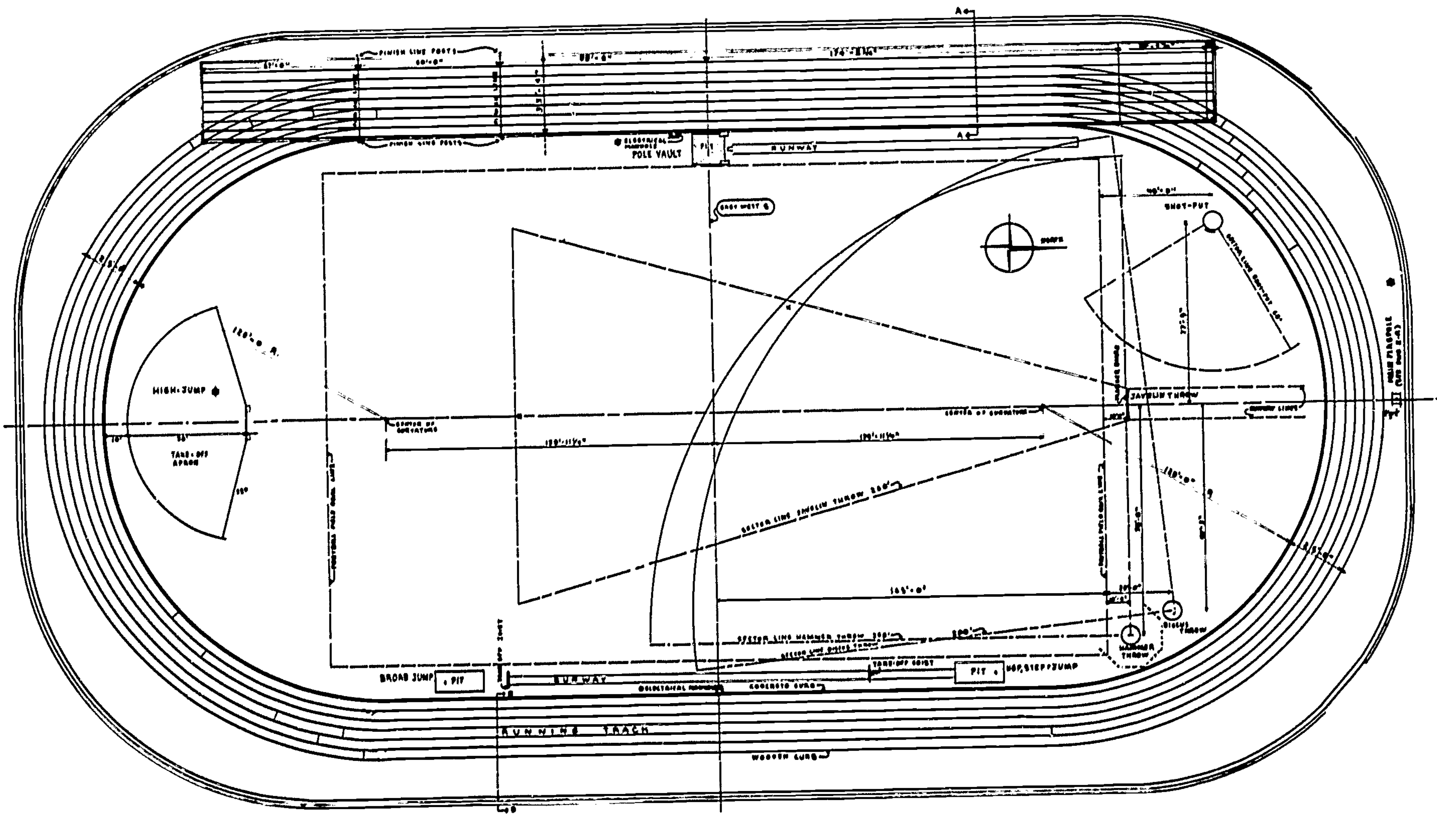
The British Empire Games track has become a center of international interest since Roger Bannister and John Landy ran the "Mile of the Century" there in the summer of 1954. Both men ran the mile in less than four minutes--Bannister in 3:58.8 and Landy in 3:59.6.

This track, built in 1953, is a full quarter-mile in circumference and is constructed on a radius of 120 feet. It is 25 feet wide on both curves and the backstretch, and 33 feet 4 inches on the straightaway which runs north and south on the west side of the oval. The straightaway section accommodates eight 4-foot lanes. The track is sloped 2 inches in 25 feet to the inside curb.

Both of the "Miracle" milers, Bannister and Landy, were extremely enthusiastic about the track and commented that they liked its springy feeling under foot. The construction of the track was begun by excavating the quarter-mile oval to a depth of 18 inches. From bottom to top, the excavation then was filled with: 8 inches of crushed rock; 1 inch of pea gravel; 8 inches of Palco wool compressed to 2 inches in thickness; another inch of pea gravel, and 6 inches of a cinder and clay mixture in 2-inch layers.

The track is circled on the inside with concrete curbing 18 inches in depth and 6 inches in thickness. The outside edge is curbed by a 3- by 12-inch plank placed on edge atop 2- by 4-inch cedar posts set 3 feet in the ground.

Subsurface drainage of the oval area was provided for in the construction of the Exhibition Park stadium. The track drains were connected directly into a series of catch basins and sewers. Two lateral 6-inch tile drains extending the entire distance were laid at the track's base. One of these tile drains is 3 feet from the inside curb and the other is 20 feet from the same curb. Catch basins were placed inside of the field.


FINISH LINE POSTS
60'-0"
POLE VAULT
PIT
RUNWAY
EAST WEST ℄
NORTH
SHOT-PUT
HIGH-JUMP
TAKE-OFF APRON
CENTER OF CURVATURE
JAVELIN THROW
SECTOR LINE JAVELIN THROW 260'
165'-0"
SECTOR LINE HAMMER THROW 200'
HAMMER THROW
DISCUS THROW
BROAD JUMP
PIT
RUNWAY
TAKE-OFF JOIST
PIT
HOP, STEP & JUMP
CONCRETE CURB
RUNNING TRACK
WOODEN CURB

UNIVERSITY AND COLLEGE TRACKS

University of Wisconsin - Camp Randall Stadium

The over-all drainage of the Camp Randall stadium surface area is toward the southeast. The football field is cross-drained every 20 feet with 4-inch tile laid in cinders 12 inches below the surface of the ground. The center of the gridiron is crowned 1 foot at the center.

For inside track drainage, a lateral 6-inch drain pipe was laid 2 feet below the surface, 3 feet inside the curb, around the outline of the field.

For outside drains, a 6-inch tile drain was laid along the outside of the running track with the water discharging to a catch basin to the south.

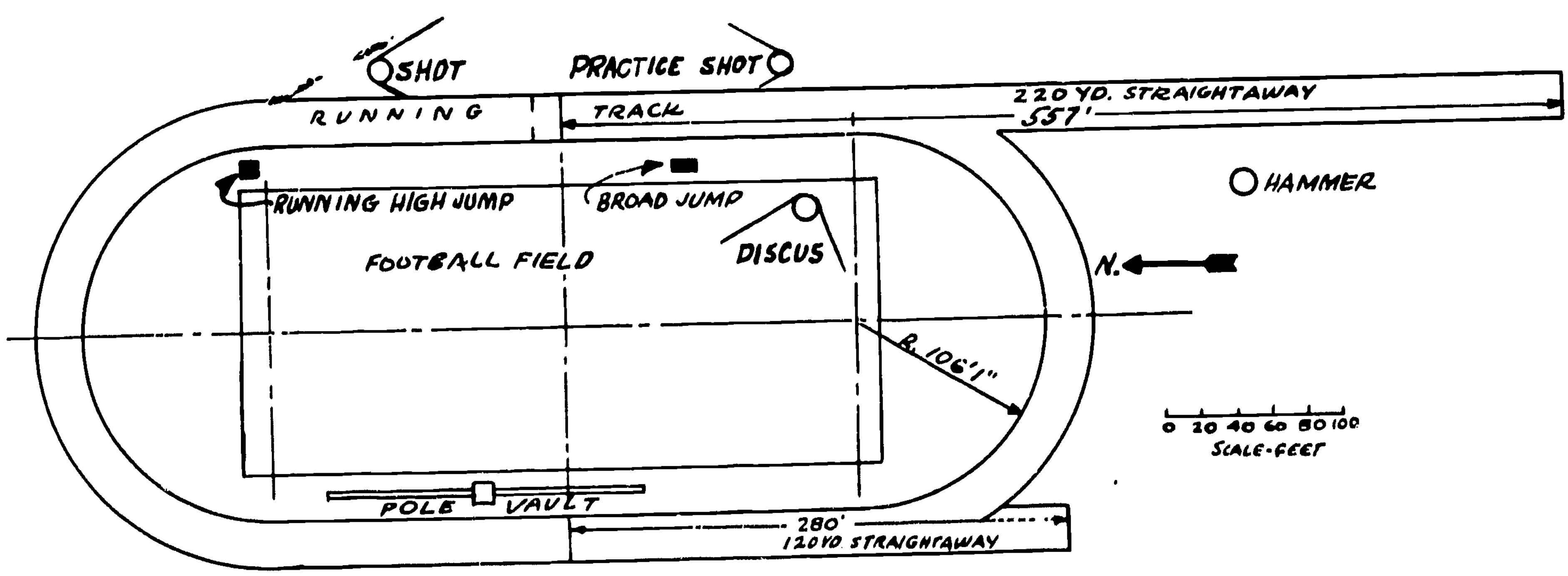
In addition, six catch basins of concrete, with cast-iron perforated covers and frames, were set flush with the ground. Six other special drains were placed in front of the stadium and connected to the special drainage system.

A curb was put in before the track was filled. A trench was excavated 10 inches below the bottom of the track and 5 inches of cinders were laid. The curb was constructed on these cinders. The concrete curb is 24 inches in depth; 4 inches thick; rounded on top; built in sections 5 feet long and reinforced. The curb extends 2 inches above the level of the track. Scuppers were placed every 100 feet and set 5 inches below the top of the curb.

The body of the Camp Randall track is pitched transversely from the center to the sides. The depth of the filling material is 15 inches at the center and 18 inches at the sides.

Four inches of coarse crushed stone were laid upon the excavated surface. Then a 6-inch layer of coarse cinders was added. After vigorous raking settled clinkers to the bottom of the layer, the material was rolled smooth with a 5-ton roller.

Next to be added were two 4-inch layers, the first composed of ½-inch cinders, the second a mixture consisting of four parts ¼-inch cinders to one part fine dry clay. Finally, a top layer, ½ inch deep, consisting of 1/8-inch front end cinders and 3/8-inch soft coal ashes, completed the construction. All layers were raked level and drenched with water to insure good packing when rolled.


SHOT
PRACTICE SHOT
220 YD. STRAIGHTAWAY
557'
RUNNING
TRACK
HAMMER
RUNNING HIGH JUMP
BROAD JUMP
FOOTBALL FIELD
DISCUS
N.
R. 106'1"
0 20 40 60 80 100
SCALE-FEET
POLE VAULT
280'
120 YD STRAIGHTAWAY

Yale University Track

The Yale University track is a full quarter-mile with two 260-yard straightaway sides extended from the oval. The radius at the curb is 90 feet, making a full circular arc. The track is 25 feet wide and 3 feet deep. To construct it, a deep layer of brush wood was covered with a layer of large rock, and then with afootbed of coarse clinkers. The final cover of 8 inches was made of a mixture of *head-on clinkers,* clay, and loam.

According to Yale's head track coach, Albert McGree, this construction was unnecessarily expensive.

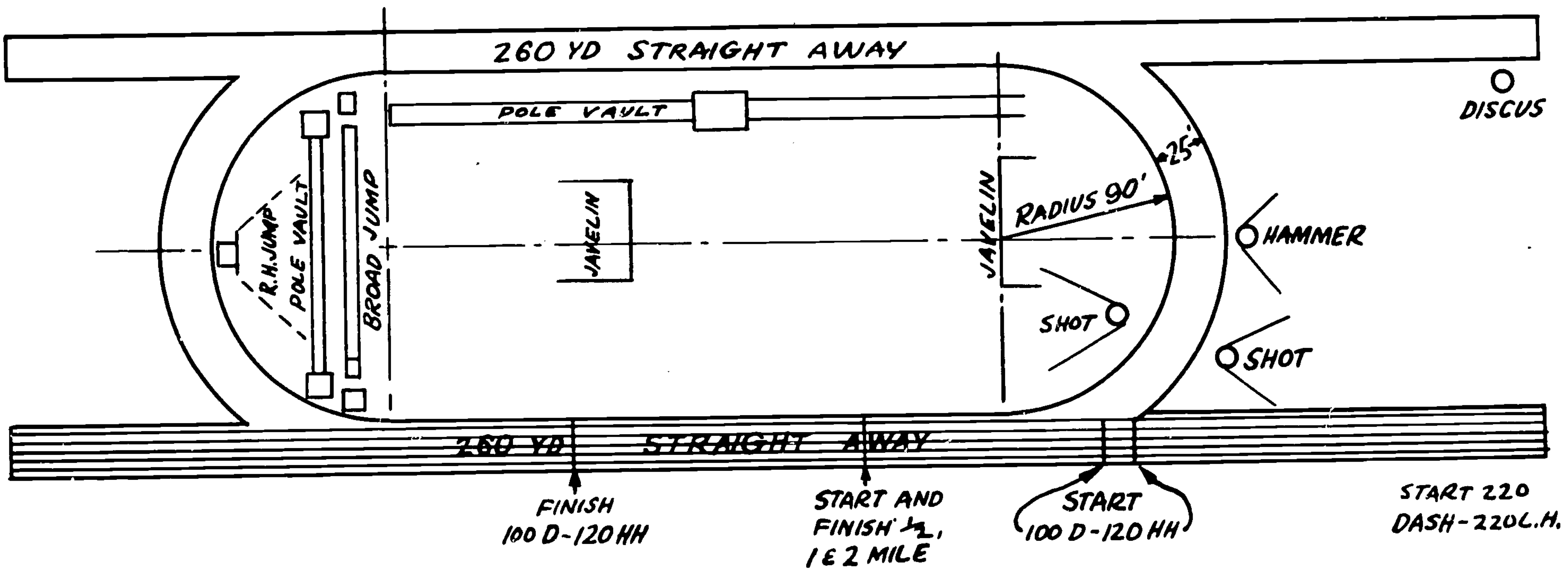
"We believe," he comments, "that a fine track can be built by heavy rolling of the area (5-ton roller); applying factory cinders--not ashes--rolled down with a heavy roller; and finishing with 6 inches of fine screened cinders or coke ashes mixed with powdered clay and loam, and rolled with a 2-ton roller."

The track's high jump pits (2), pole vault pits (2), and broad jump pits (2) are within the oval, lying inside the central arc. The runs are all cross-field with the high jump nearest the apex of the arc. The pits for the high jump are 60 feet apart, and the running ground is circular.

The vaulting and broad jump runways are 4 feet wide and 110 feet long with the pits at each extremity of the runs. This arrangement was necessary because of local wind and sun peculiarities. The javelin is thrown within the oval in either longitudinal direction from turf.

The hammer and discus throws are held on adjacent fields outside the track. And the two shot circles lie between the long legs of the track. The ground on which the shot falls is covered with clay and cinders.

All the runways contain more clay than the track itself. In addition, in the runway top dressing of 4 inches, a *mixture of one bag of portland cement to 15 of cinders, clay and loam* was used. The quantity of clay and loam depends on the quality of the local soil. The shot, hammer, and discus circles are composed of a similar mix, except that the proportion of cement is one to ten.


260 YD STRAIGHT AWAY
POLE VAULT
DISCUS
R.H. JUMP
POLE VAULT
BROAD JUMP
JAVELIN
JAVELIN
RADIUS 90'
25'
HAMMER
SHOT
SHOT
260 YD STRAIGHT AWAY
FINISH 100 D-120 HH
START AND FINISH ½, 1 & 2 MILE
START 100 D-120 HH
START 220 DASH-220 L.H.

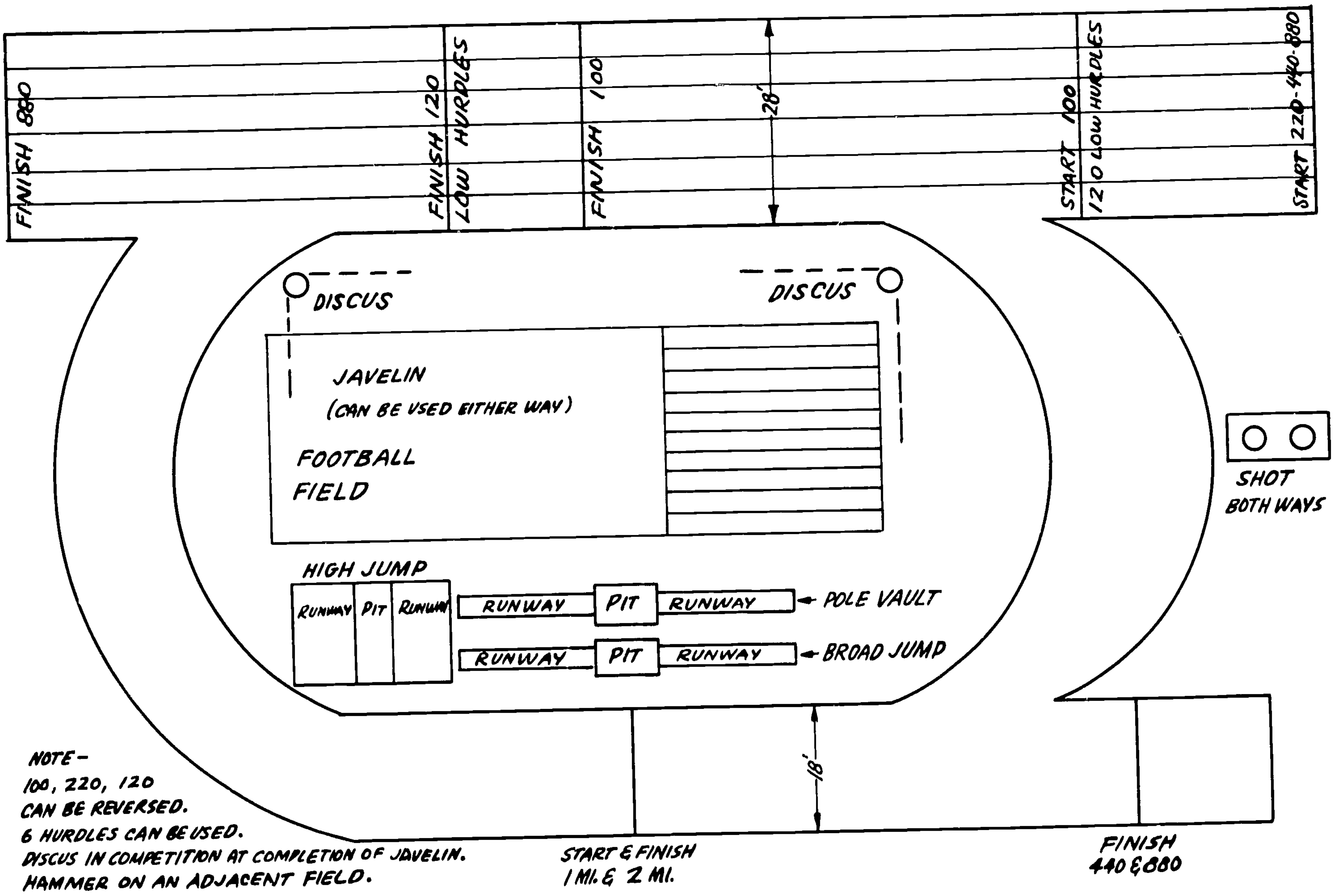
Dartmouth College Track

The Dartmouth College track is constructed on a radius of 106 feet. Its 220-foot straightaway is 24 feet wide, and its curves and back stretch are 20 feet wide. The cement curb is 24 inches in depth with a widened bottom to prevent heaving from frost.

The track is constructed of loam and cinders, 3 feet deep in the center and 2½ feet on the sides. It has a base foundation of heavy cinders. Gradually the cinders were reduced in size until about 6 inches from the top; then a mixture of sifted cinders and loam was used. The same construction is found in the field and throwing event runways.

Track drainage at Dartmouth is particularly good. A large drainage pipe was sunk 3 feet at the center of the track; outside the oval, drains were located every 25 yards.

The Dartmouth track has been in use for a quarter of a century and is still in excellent condition. A few changes have been made in the layout of field events: they are now concentrated at one end of the field to facilitate coaching and improve spectator interest. New clay runways and approaches have been elevated to provide better drainage. Cement circles for the hammer, discus, and shot have been installed for use in the early spring and during bad weather. Dartmouth's head track coach, Elliot B. Noyes, reports there is a trend in northern New England to make these cement circles standard equipment.



NOTE–
100, 220, 120
CAN BE REVERSED.
6 HURDLES CAN BE USED.
DISCUS IN COMPETITION AT COMPLETION OF JAVELIN.
HAMMER ON AN ADJACENT FIELD.

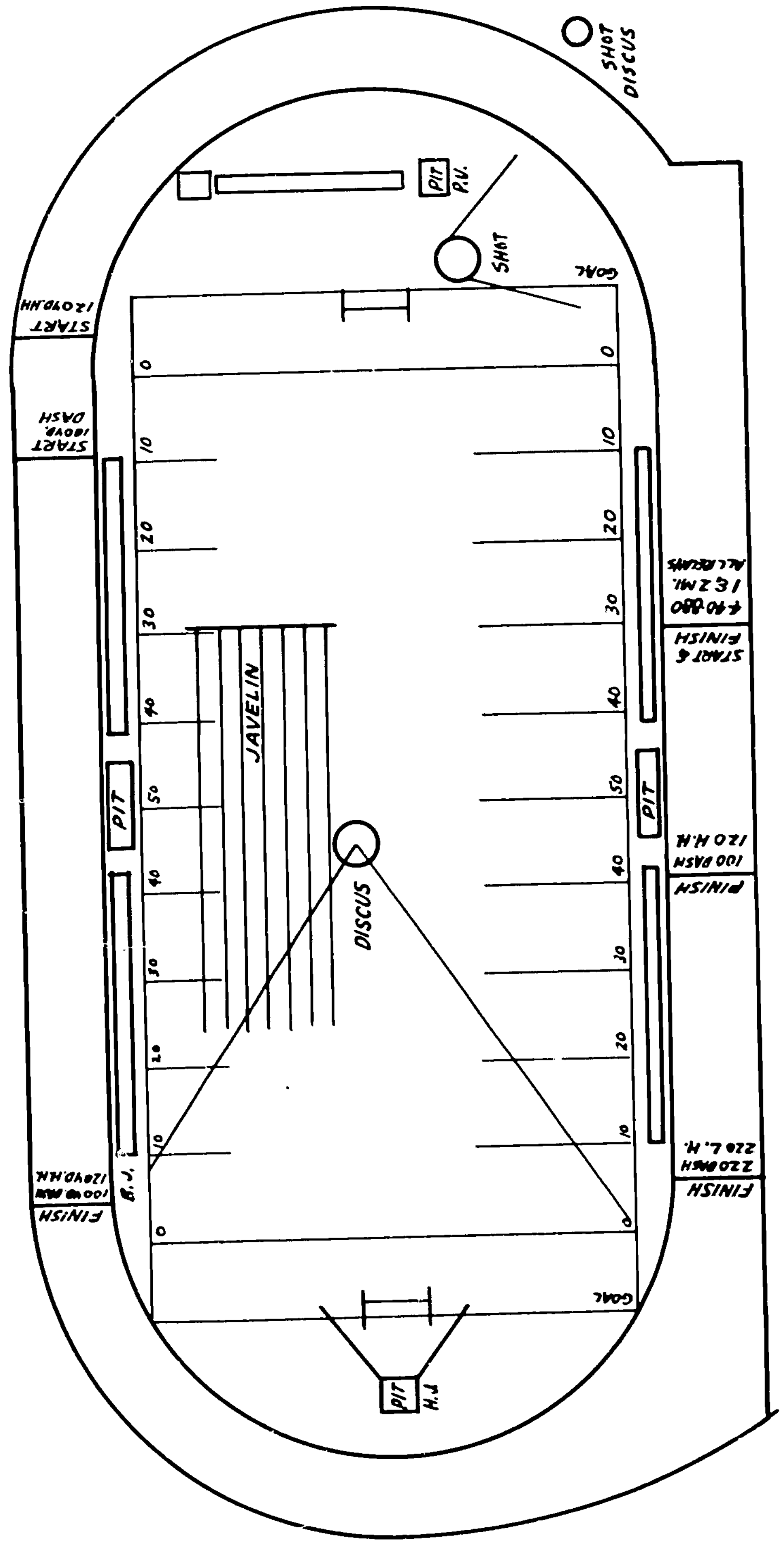
The University of Texas Track

The University of Texas track has a curve radius of 95 feet 8 inches. The 220-yard straightaway is 30 feet wide, accommodating nine 40-inch lanes, while the curved portion is 25 feet wide with seven lanes. The entire track is enclosed by a concrete curb, 4 inches wide and 3 inches high.

The base of the track is composed of a foot of crushed Austin chalk rocks, topped by from 8 to 10 inches of old, weathered, hard coal cinders. Larger cinders from lignite coal, sometimes mixed with clay, are used to maintain the track in good condition. Although lignite cinders are not the best for maintenance purposes, they are the only kind available in the southwestern part of the country.

Field event runways at the Texas track are composed of one-third clay and two-thirds cinders. The same material is used for the field event circles.

The track is drained to the inside. Water goes through openings in the curb and drains through outlets between the track and the football field.



SHOT
DISCUS
PIT
P.V.
SHOT
GOAL
START
120 YD. HH
START
100 YD.
DASH
JAVELIN
DISCUS
PIT
PIT
START &
FINISH
440-880
1 & 2 MI.
ALL RELAYS
FINISH
100 DASH
120 H.H.
FINISH
220 DASH
220 L. H.
FINISH
100 YD DASH
120 YD. H.H.
B. J.
GOAL
PIT
H.J

Ohio State University Track

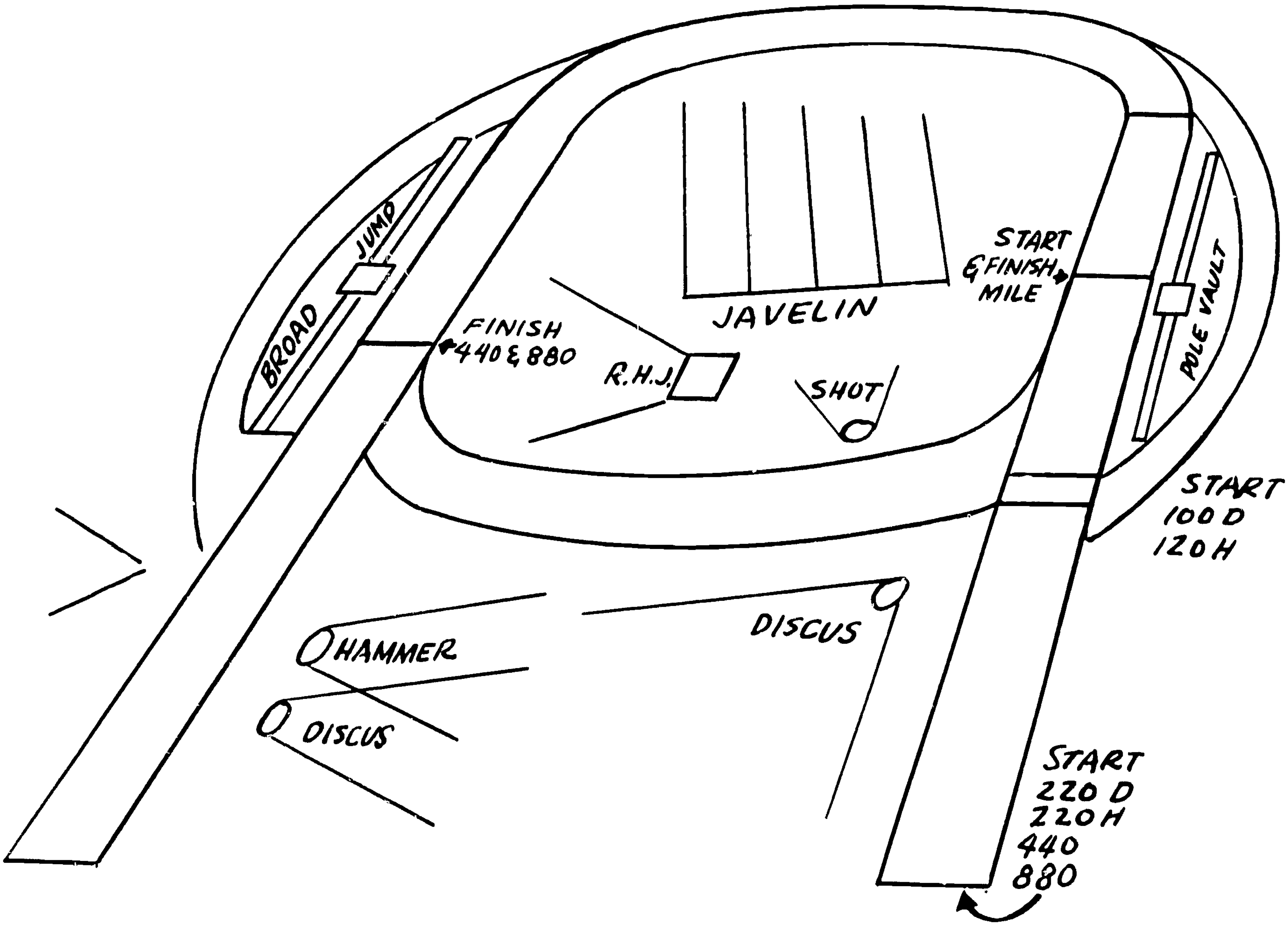
The Ohio State University track was constructed of crushed stone and coarse cinders, dressed with top cinders and loam. Tile drains were located on the field and beneath the track.

Regarding the construction, Frank R. Castleman, track coach, wrote: "I cannot give you the exact proportions, but I know we have too much loam. It has washed down and makes the drainage inadequate, holding water on the surface."

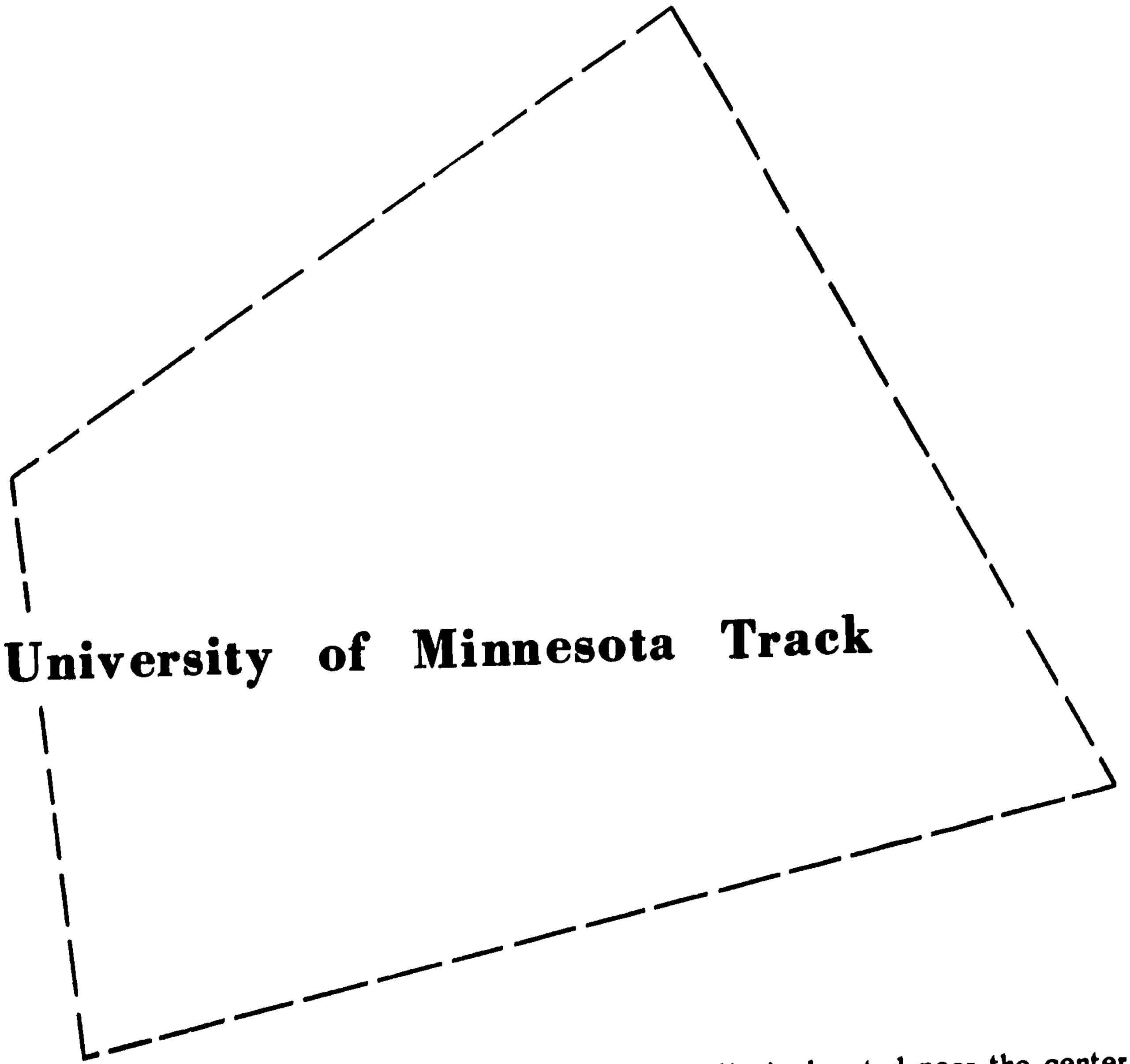
"It has been my experience," Castleman continues, "that the best material for track construction is the carbon material that falls behind the firebox of a railroad engine--a material which is hard to obtain. It does not get soft and mushy, sheds water readily, and seems to have abundant spring."

The pits for the jumps at Ohio State are of standard width and length; the 150-foot approaches are constructed of the same material as the track. For the hammer and discus throws there are circles of three kinds: clay, turf, and cinder. The broad jump and pole vault have runways in two directions. The material in the vaulting pit is mature sawdust; in the jumping pit, a mixture of sand and loam.

There are no specific takeoff points for the javelin throw. Boards sunk midway on a football field provide an opportunity for throws in either direction. A string of about 60 yards is laid along the scratch line for the javelin throw.


JAVELIN
BROAD JUMP
FINISH 440 & 880
R.H.J.
SHOT
START & FINISH MILE
POLE VAULT
START 100 D 120 H
HAMMER
DISCUS
DISCUS
START 220 D 220 H 440 880

University of Minnesota Track



The University of Minnesota track in Minneapolis is located near the center of the campus on the east bank of the Mississippi River. Built on sandy subsoil, it is the widest track in the nation, being 39 feet wide on the west straightaway and both ends and 30 feet wide on the east straightaway. The track is built on a radius of 100 feet on the curves, while the straightaway is 420 feet in length.

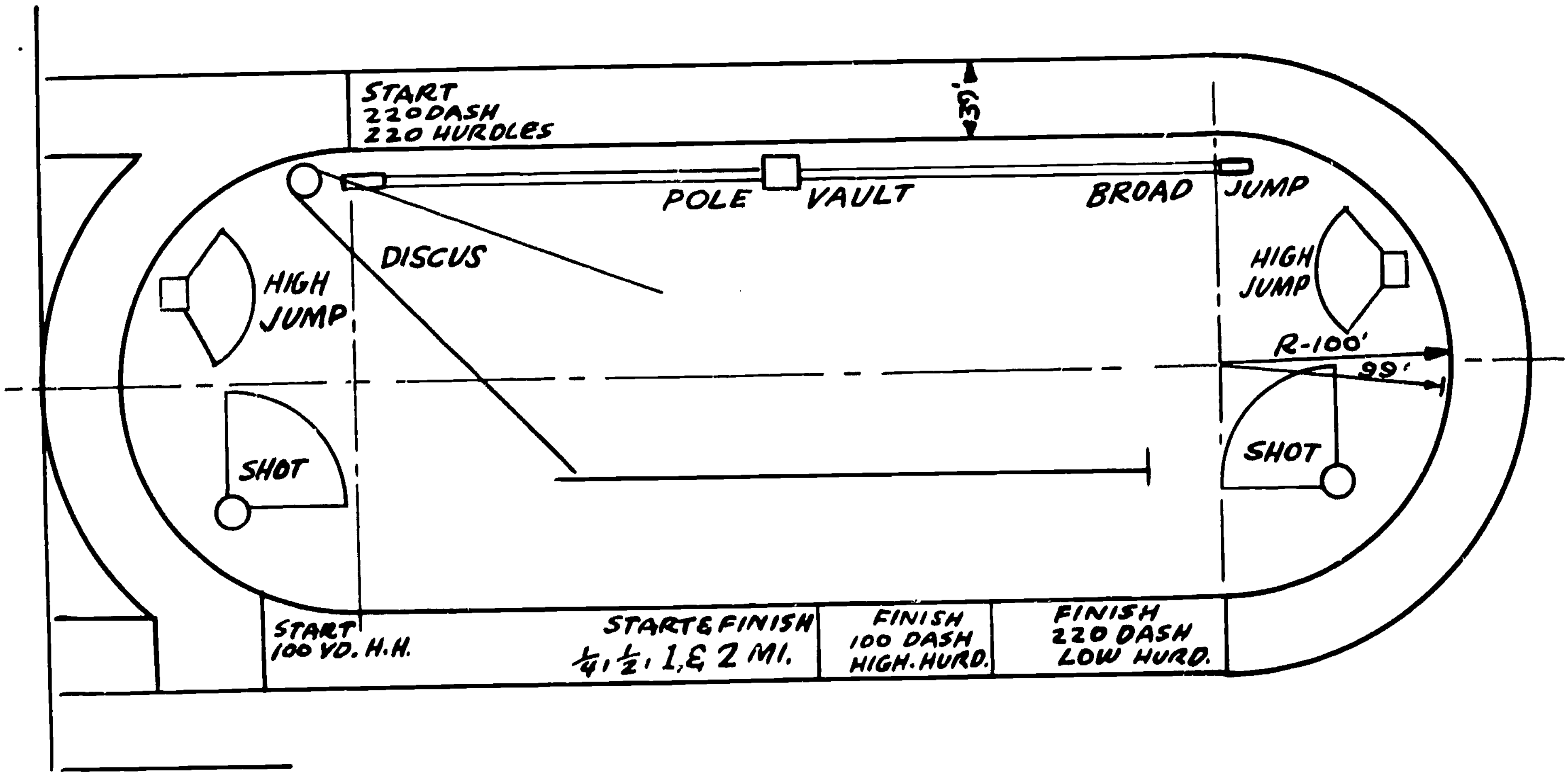
Drainage problems are relatively simple since the track rests on a gravel subsoil.

The track body was constructed in three layers.

The bottom layer consists of 6 inches of coarse cinders and clinkers. The middle layer is 6 inches of ½-inch cinders, and the top layer is 4 inches of a mixture of three parts ¼-inch cinders to one part loam.

The runways for the pole vault and broad jump permit approach from opposite directions. They are 4 feet wide, constructed of 6 inches of clay, as are the circles and approach for the high jump.

The track is curbed on the inside along the curves, and on both inside and outside along the straightaways. The curbing is made of 2-inch by 6-inch creosoted planks placed on edge.


START
220 DASH
220 HURDLES
POLE VAULT
BROAD JUMP
DISCUS
HIGH JUMP
HIGH JUMP
R-100'
99'
SHOT
SHOT
START
100 YD. H.H.
START & FINISH
1/4, 1/2, 1, & 2 MI.
FINISH
100 DASH
HIGH. HURD.
FINISH
220 DASH
LOW HURD.

University of Iowa Track

University of Iowa track facilities in Iowa City were moved in 1926 from the east bank of the Iowa River (which annually overflowed) to higher ground on the west bank along with other sports areas.

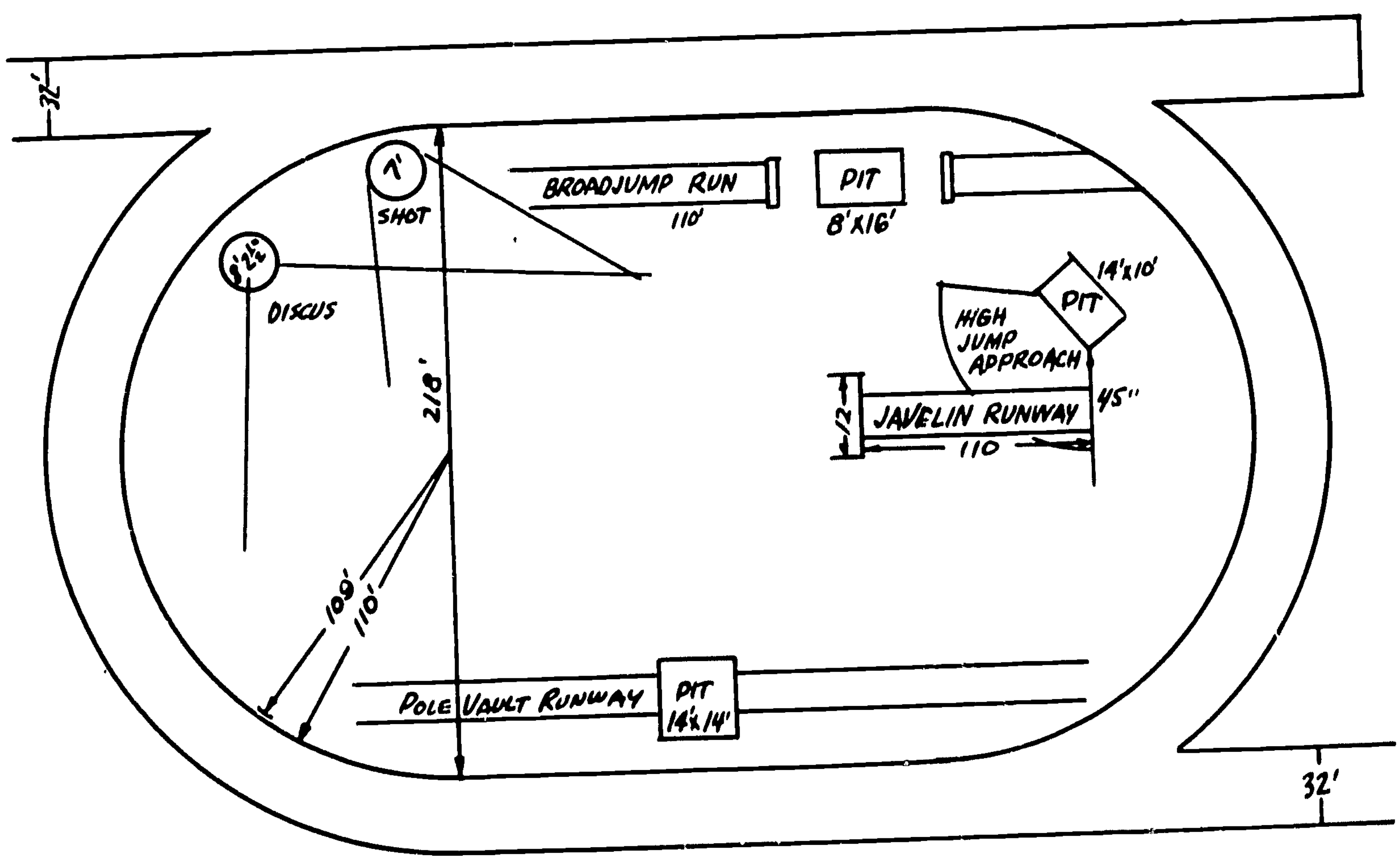
The Iowa track ranks as one of the best planned and best constructed in collegiate circles.

Built on a 100-foot radius on the curves, the track is 32 feet wide at all points, has a 222-yard straightaway, and its surface lies 4 inches above ground level.

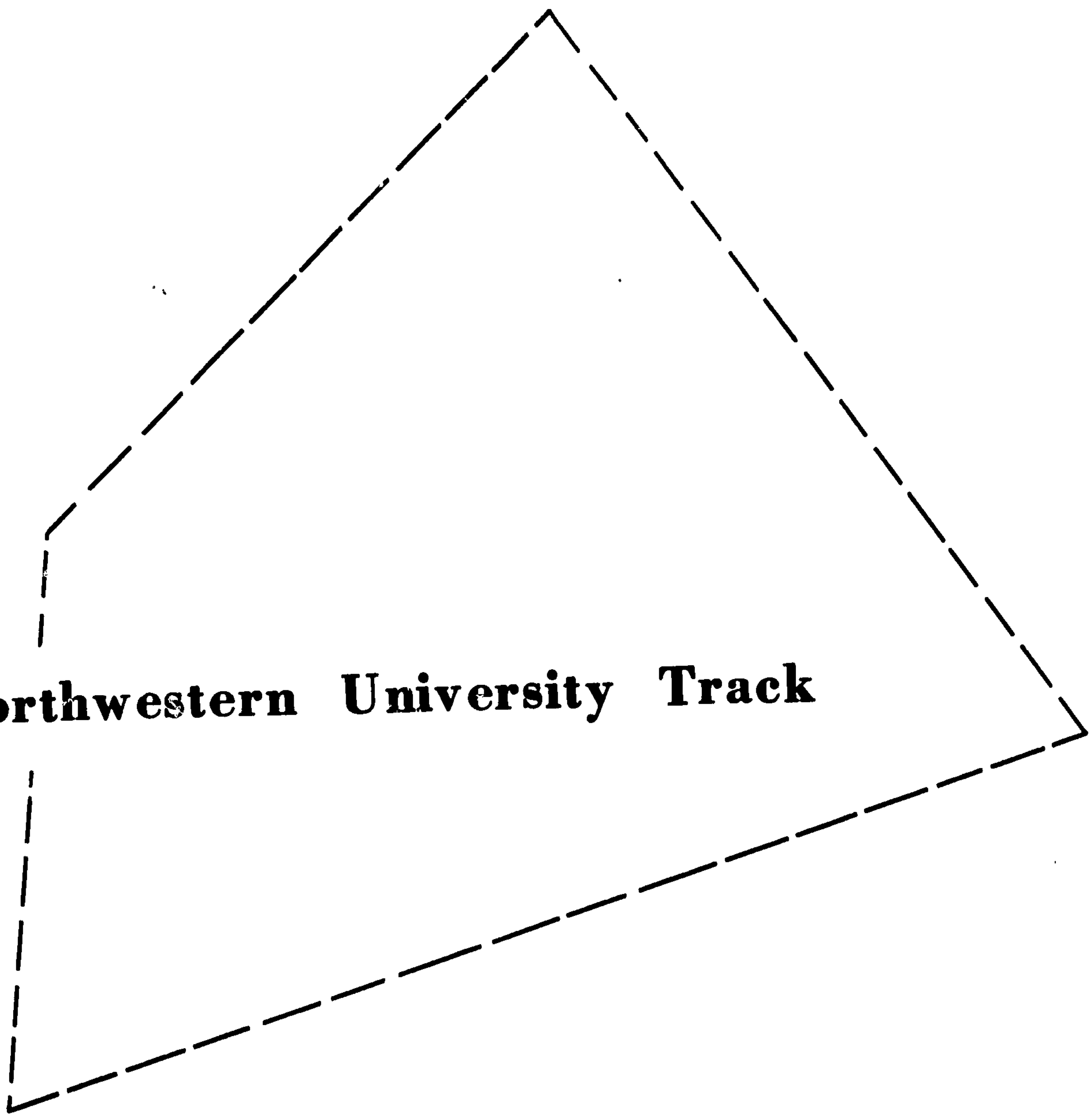
Three layers make up the body of the track: a 6-inch mixture of crushed rock and gravel as a base; a 4-inch middle layer of screened cinders; and a top layer of three parts cinders to one part clay loam.

Runways for the pole vault and broad jump permit approach from two directions. They are constructed on the same three-layer plan as the running track.

The Iowa track has a steel curb made of rails discarded by a defunct railroad line. The rails, 30 feet long, are supported by concrete pillars at 15-foot intervals. Bolts, set in the concrete and attached to flanges, hold the rails secure. The unique steel curbing has proved highly satisfactory.


32'
7'
SHOT
BROADJUMP RUN
110'
PIT
8'x16'
DISCUS
218'
14'x10'
PIT
HIGH
JUMP
APPROACH
45"
12
JAVELIN RUNWAY
110
109'
110'
POLE VAULT RUNWAY
PIT
14'x14'
32'

Northwestern University Track



The Northwestern University track at Evanston, Illinois, is built on a clay loam subsoil. The football field is cross-drained every 20 feet with a 4-inch tile laid in cinders 12 inches below the surface. The football field is crowned one foot.

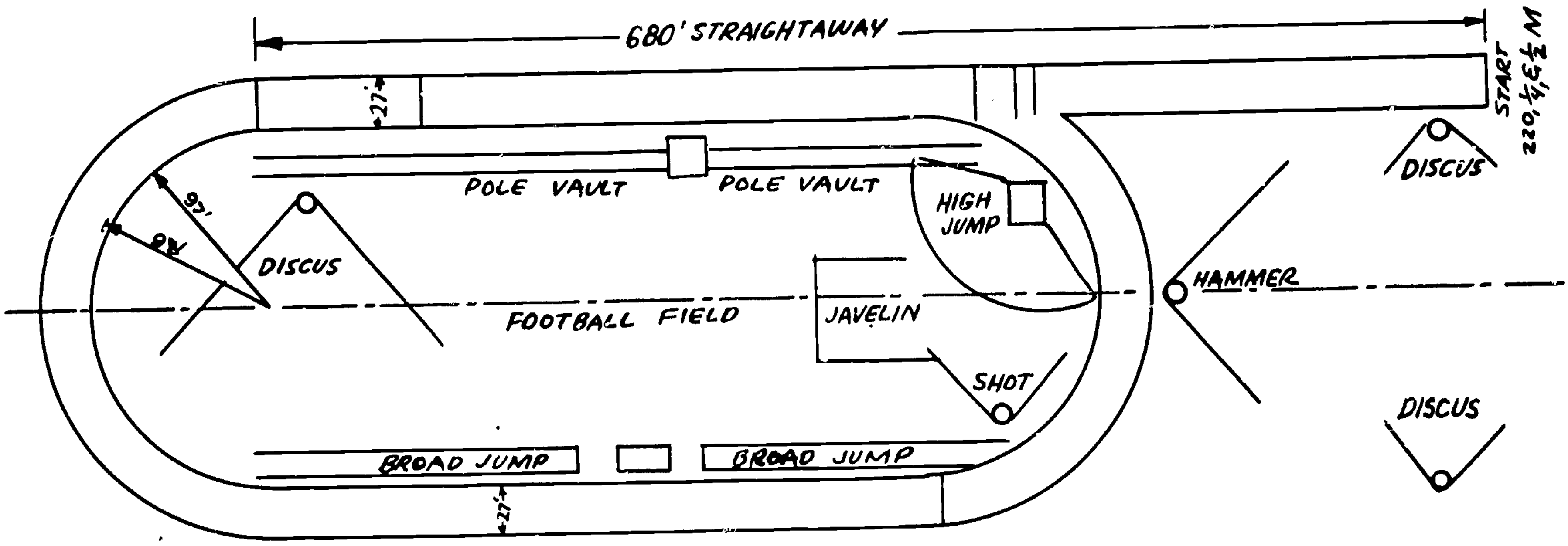
The track is built on a radius of 98 feet on the curves. It is 27 feet wide on both straightaways and both turns. The length of the straightaway out of the chute is 680 feet.

Lateral drains were placed inside and outside of the track along the curb. These discharge into catch basins which drain into the city sewer. Other special drains are located in front of the stadium.

The concrete curb is 24 inches deep, 5 inches thick, rounded on top, and rises 2 inches above the track level.

Scuppers of cast iron were set at track level every 100 feet.

The body of the track consists of a bottom layer of 6 inches of 2¾-inch crushed limestone. On this was laid 1 inch of ¼-inch cinders, then 4 inches of ½-inch cinders, and finally a 4-inch top dressing consisting of two parts ¼-inch cinders, one part clay, and one part marsh loam.


680' STRAIGHTAWAY
START
27'
27'
POLE VAULT
POLE VAULT
HIGH JUMP
DISCUS
FOOTBALL FIELD
JAVELIN
SHOT
HAMMER
DISCUS
DISCUS
BROAD JUMP
BROAD JUMP

Michigan State College Track

The Michigan State College track at East Lansing was constructed in 1936 with WPA funds. The work was begun only after careful planning and consultation with many of the country's leading track authorities.

The circumference of the track measures an even 440 yards. Since the "railroad" curves were built on a 104-foot radius, each curve and each straightaway within the oval is approximately 110 yards. In addition, both straightaways were extended to a length of 250 yards for use in sprints. The track is 35 feet wide at all points, allowing for 8 to 12 individual lanes.

In competition, the pole lane is used only in the distance events. Dash and hurdle races are held in the lanes farthest away from the pole.

The track's top dressing is a mixture of two parts fine cinders to one part black loam soil containing about 15 per cent organic matter. This type soil has excellent resilient binding qualities and does not bake like clay. For drainage, catch basins were staggered on both sides of the track every 35 feet, some 3 feet from the curb. In addition, the running track, field event runways, circles, pits, and landing areas were raised 3 inches above the level of the adjacent field for run-off drainage in wet weather.

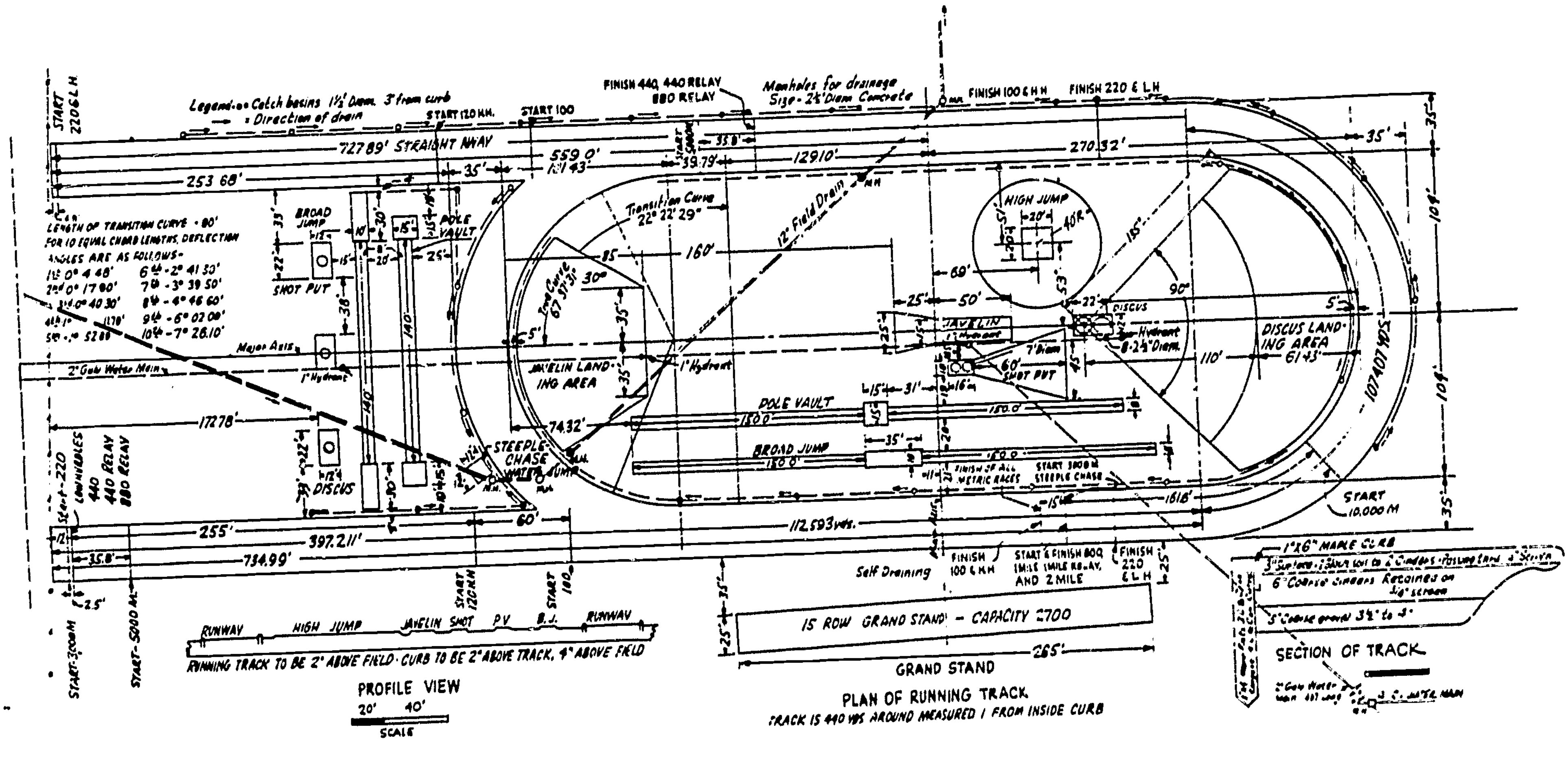
Permanent runways, pits, rings, etc., were constructed for all six field events in such a manner that all these competitions may be conducted simultaneously. The sites are located between the two straightaway legs.

The rings and runways have a top dressing of portland cement mixed with cinders and clay to provide added resistance to wear. The same mixture was employed for the shot-put landing area to provide a hard landing surface, which insures maximum credit for competitors' efforts.

The broad jump and pole vault pits have runway approaches from two directions. Each is 150 feet long and 8 feet wide. A false bottom of plank was set 2 feet below the ground level of the pole vault landing pit for extra "give."

The high jump has a 20-foot square landing pit in the center of an 80-foot circular cindered area permitting approach from any direction. The javelin runway, 25 by 136 feet, is constructed of cinders. There are three separate rings for meet competition in both the shot-put and discus.

The spectator stands are located 25 feet from the track at an angle to the straightaway in order to provide the best possible vision.



PLAN OF RUNNING TRACK

TRACK IS 440 YDS AROUND MEASURED 1' FROM INSIDE CURB

Marquette University Track

One of the better college tracks is the one owned by Marquette University in Milwaukee, Wisconsin. The track has frequently been selected as the site for National AAU and intercollegiate meets. It measures 440 yards in circumference, and it is built on a 104-foot radius.

Drainage was achieved by a 6-inch lateral tile drain pipe laid at the base of the track and connected to empty into the storm sewer. Scuppers or surface drains, which empty into the 6-inch tile base, were placed at 40-foot intervals in the base along the surface of the track.

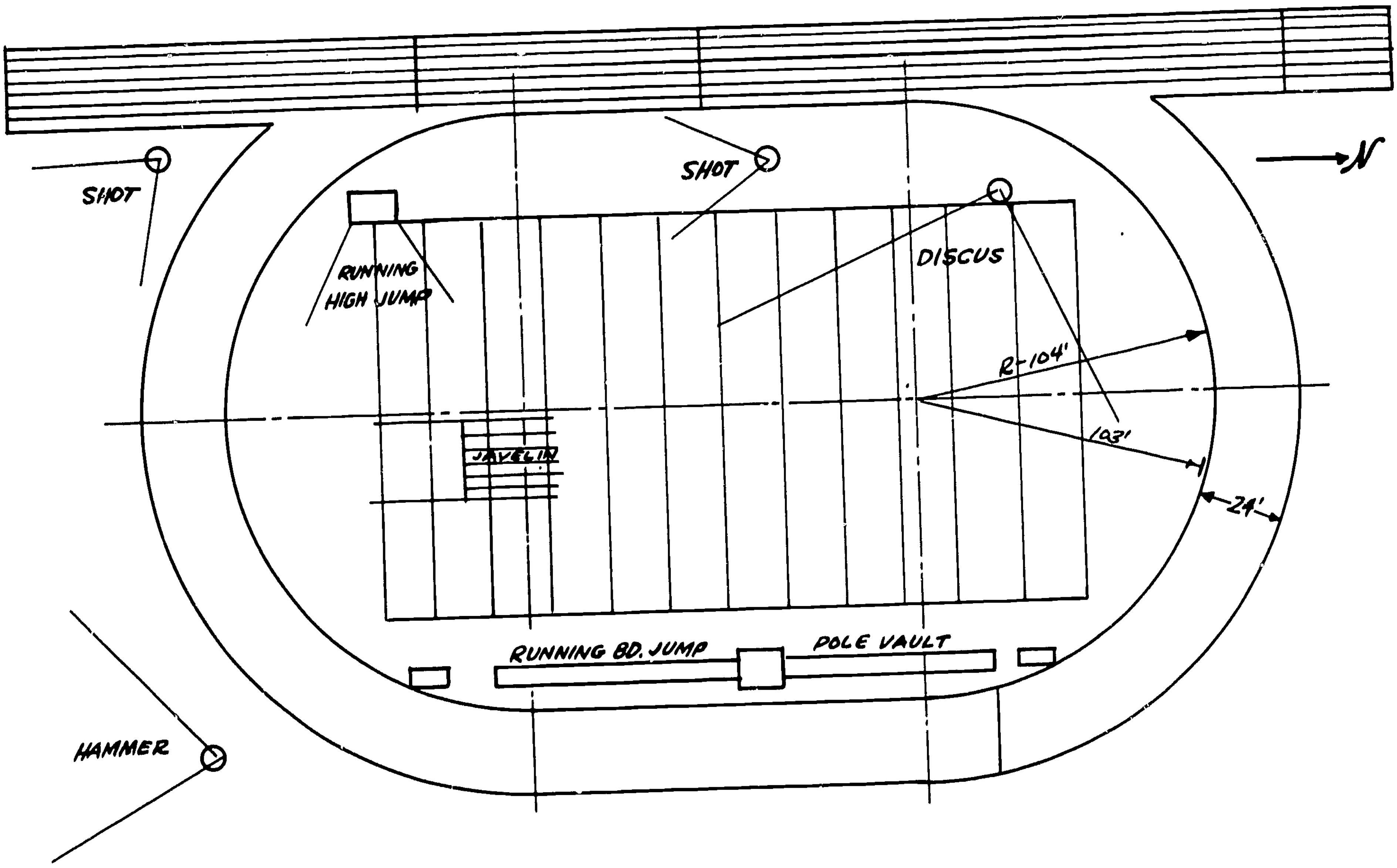
A concrete curb, 24 inches deep and 5 inches thick, projects 2 inches above the track level and is rounded on the top.

The body of the track consists of four layers 24 inches deep.

On the bottom was placed a 12-inch layer of roughage (mostly broken brick, coarse gravel, stone, clinkers, and cinders). This layer was drenched and rolled with a 10-ton roller.

Next a 6-inch layer of ½-inch cinders and a 4-inch layer of ¼-inch cinders were laid. The top 2-inch layer consisted of four parts ¼-inch screened cinders to one part light clay.

Runways for the pole vault and broad jump permit approach from two directions. Discus and shot-put circles are constructed of clay.


SHOT
SHOT
RUNNING
HIGH JUMP
DISCUS
R-104'
103'
24'
N
JAVELIN
RUNNING BD. JUMP
POLE VAULT
HAMMER

Fresno State College Track

It was on the Fresno State College track that Mel Patton in 1949 set the world record of 9 and 3/10 seconds for the 100-yard dash.

The track is especially interesting because of its unusual construction. Inasmuch as rainfall is slight during the track season, it was possible to build a solid clay track, which is much faster than a cinder track.

A full quarter-mile measured 12 inches from the pole, it has a radius of 112 feet with true curves. It is 36 feet wide, with nine 4-foot lanes, on the 280-yard straightaway; and 24 feet wide, with six 4-foot lanes, on the backstretch and turns. The straightaway runs north to south.

The body of the track is composed entirely of red clay, 4 inches deep, with no fill underneath. Because of the nature of the soil and the lack of moisture, no surface drainage is needed. The straightaways slope 3 inches and the curves 12 inches from the outside to the curbs. The curb is constructed of concrete, 6 inches deep and extending 2 inches above the level of the track, with drain outlets placed every 10 feet.

Starts and finishes for all races and hurdle and relay stations are marked according to both metric and linear measures.

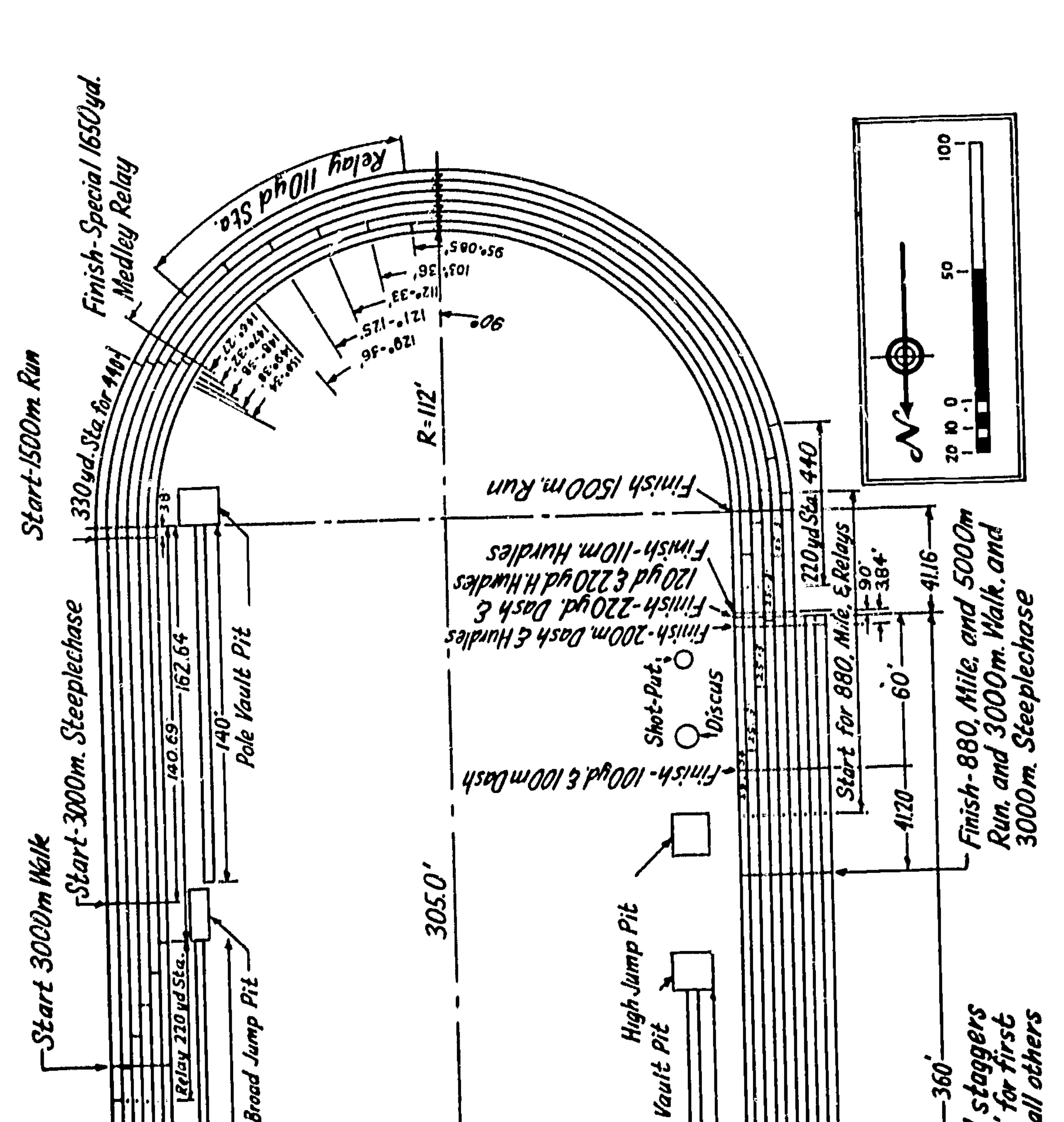
All runways and circles for the field events are composed of the same 4-inch red clay layer as the running track.

The two pole vault runways are 160 feet long and 4 feet wide. Pit number one is located midway on the west side of the field. Pit number two is placed in the southeast corner with the runway starting on the 50-yard line.

The javelin approach is on the north goal line. The shot-put ring is located at the 20-yard line on the west side of the field. Two practice rings are placed in the north end zone of the football field.

The discus throw circle is in the southwestern area of the field near the 30-yard line. An additional circle is located on the north practice field.

The running high jump pit is on the 40-yard line between the discus ring and the pole vaulting pit. The running broad jump is placed on the east side of the field on the 50-yard line with the run from north to south. The approach is 160 feet long and 4 feet wide.



Finish-400m. Dash and 400m. Hurdles and 800m. & 1000m. Run
Finish-440 yd. Dash
Start 3000m Walk
Start-3000m. Steeplechase
Start-1500m. Run
330 yd. Sta. for 440
Finish-Special 1650 yd. Medley Relay
Relay 110 yd Sta.
Relay 220 yd Sta.
Broad Jump Pit
Pole Vault Pit
High Jump Pit
Shot-Put
Discus
Javelin Runway
R=112'
305.0'
360'
Finish-1500m. Run
Finish-110m. Hurdles
Finish-220yd. Dash & 120 yd & 220 yd. H. Hurdles
Finish-200m. Dash & Hurdles
Finish-100yd. & 100m Dash
Start for 880, Mile, & Relays
Finish-880, Mile, and 5000m Run, and 3000m. Walk, and 3000m. Steeplechase
220 yd Sta.
440
110 yd. Sta. 440
Start 440
Start-100m. Run
Start-10,000m. Run
Start-800m. Run
Start-200m. Dash and Hurdles and 400m Dash
Start-220yd. Dash and 220yd High Hurdles
Start-5000m. Run
Relay 330 yds. Sta.
Start 100 yd. Dash, and 120 yd. H. Hurdles, and 100m. Hurdles
Note: Undimensioned staggers are staggered 11.52' for first lane and 12.56' for all others

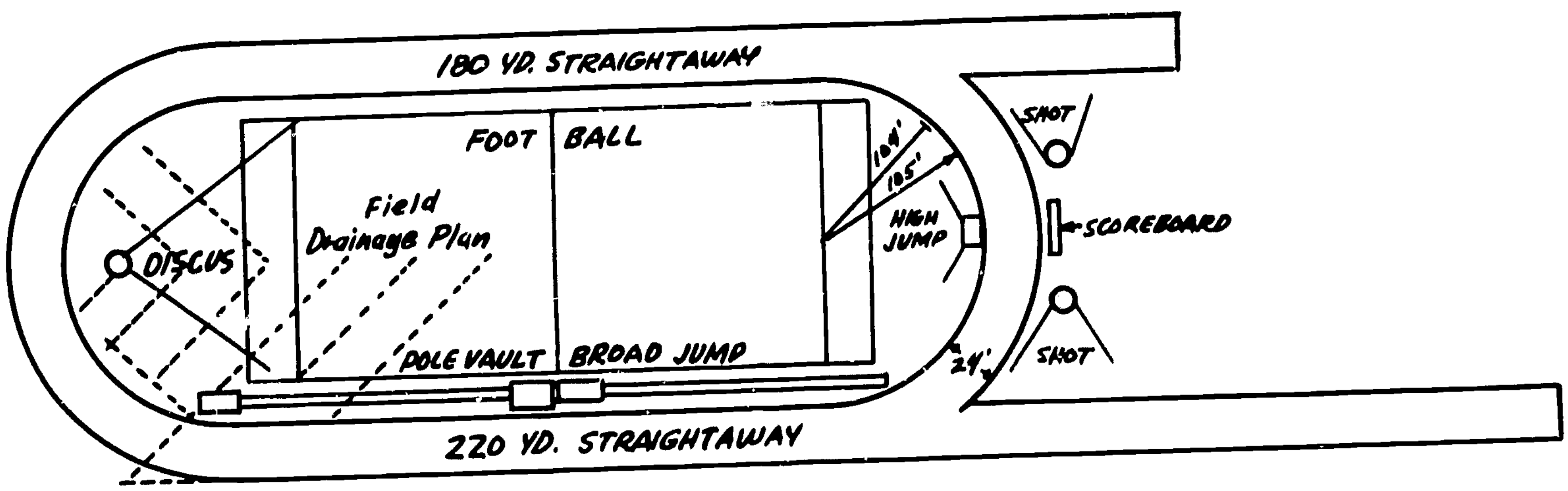
Ohio Wesleyan University Track

The Ohio Wesleyan University track is considered one of the best in the country by many track authorities. It is a full quarter-mile in circumference, with a 105-foot radius, has a 180-yard straightaway on the backstretch as well as an extended 220-yard straightaway chute, and is 24 feet wide.

The 15-inch body of the track was constructed of three layers: a bottom layer of 5 inches of rubble, broken brick, and crushed rock, leveled and rolled with a 5-ton roller; a middle layer of clean ¾-inch cinders, leveled and rolled with a 3-ton roller; and a 5-inch top layer, one part clay loam to two parts ¼-inch cinders, leveled and rolled to a smooth surface with a 1-inch slope to the inside of the track.

A concrete curb, 6 inches wide and 18 inches deep, extends 2 inches above the surface of the track. Along this curb, 4-inch vents were set flush with the surface every 150 feet and connected to outside catch basins. Surface water drains away from the inside lane through these vents.

The runways and circles were built of the same materials and in the same manner as the running track.


180 YD. STRAIGHTAWAY
FOOT BALL
Field Drainage Plan
DISCUS
POLE VAULT
BROAD JUMP
184'
185'
HIGH JUMP
SHOT
SCOREBOARD
SHOT
24'
220 YD. STRAIGHTAWAY

Old Camp Randall Track at Wisconsin

The original Camp Randall track at the University of Wisconsin in Madison was built in 1903 by George Keachie. At the same time, the track area was drained, graded, and leveled for football and baseball playing fields.

Since the area was a basin between two hills and the subsoil was clay, careful drainage facilities were required.

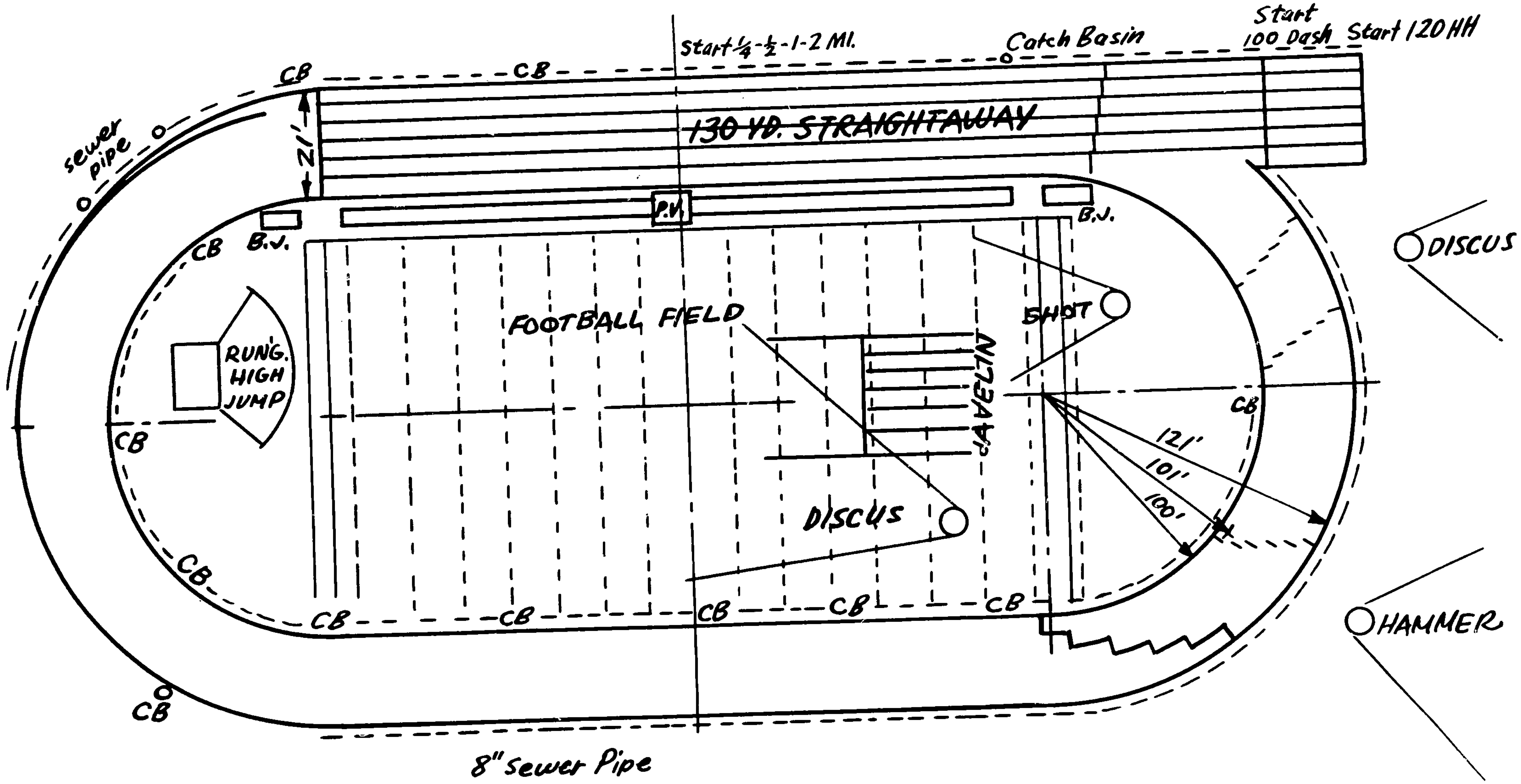
The football field was crowned 8 inches, cross-drained every 20 feet with 4-inch tile packed in cinders, and set 12 inches beneath the ground. These tiles were connected to a lateral 6-inch tile drain, placed 3 feet inside the curb of the running track. Catch basins were placed every 150 feet. Lateral drains emptied into a cistern at the east end of the area beyond the track with an automatic pump attached to the cistern.

The track was a full quarter-mile in circumference and 21 feet wide, accommodating 6 lanes, with a 130-yard straightaway on the south side. It was built 2 inches below the field with 2-inch by 6-inch creosoted wooden curbing placed on the inside of the track 2 inches above the track level.

The two-layer body of the track was 10 inches deep and composed of cinders. The bottom layer consisted of 6 inches of cinders, with the clinkers and coarse cinders raked to the bottom, leaving a finer grade of cinders for the middle of the track body. This layer then was rolled with a 3-ton roller.

The top layer consisted of 4 inches of cinders, screened through a ¼-inch screen. No clay or loam binder was used. However, a small amount of fine cinders afterwards was applied to the surface. This material, with organic matter carried by rain, served as a binder.

The old Camp Randall track was fast and compared well with costly modern tracks. It served the University of Wisconsin for 20 years--and the cost of construction was estimated at $800.



Start 1/4-1/2-1-2 MI.
Catch Basin
Start 100 Dash
Start 120 HH
CB
CB
130 YD. STRAIGHTAWAY
21'
sewer pipe
P.V.
B.J.
B.J.
CB
DISCUS
SHOT
FOOTBALL FIELD
RUNG. HIGH JUMP
JAVELIN
CB
121'
101'
100'
CB
DISCUS
CB
CB
CB
CB
CB
CB
HAMMER
CB
8" Sewer Pipe

Madison Municipal Athletic Field

The Madison, Wisconsin, Municipal Field, now known as Breese Stevens Field, was purchased by the city council on April 17, 1923, for $25,000.

Originally marsh land, the 594- by 300-foot area was filled in with cinders and rubbish by the city. The area is centrally located, being only 8 blocks from the State Capitol Square and equidistant between Lakes Mendota and Monona.

The field was constructed to provide a football gridiron, a baseball diamond, and a quarter-mile running track, as well as other recreational facilities.

Because of the general nature of the subsoil, careful study of subsurface drainage was required. The field was cross-drained every 30 feet with 4-inch tile laid 18 inches below the surface in 12 inches of cinders. The cinders were covered with a 3-inch layer of loam. The cross-drains were connected with the lateral drains.

For inside drains, a lateral 6-inch drain pipe was laid 2 feet below the surface, 3 feet inside the curb around the outline of the field.

Along the outside of the running track, a 6-inch tile drain was installed so that it discharged into eight concrete catch basins with cast-iron perforated covers set flush with the ground. These, in turn, emptied into the city storm sewer system.

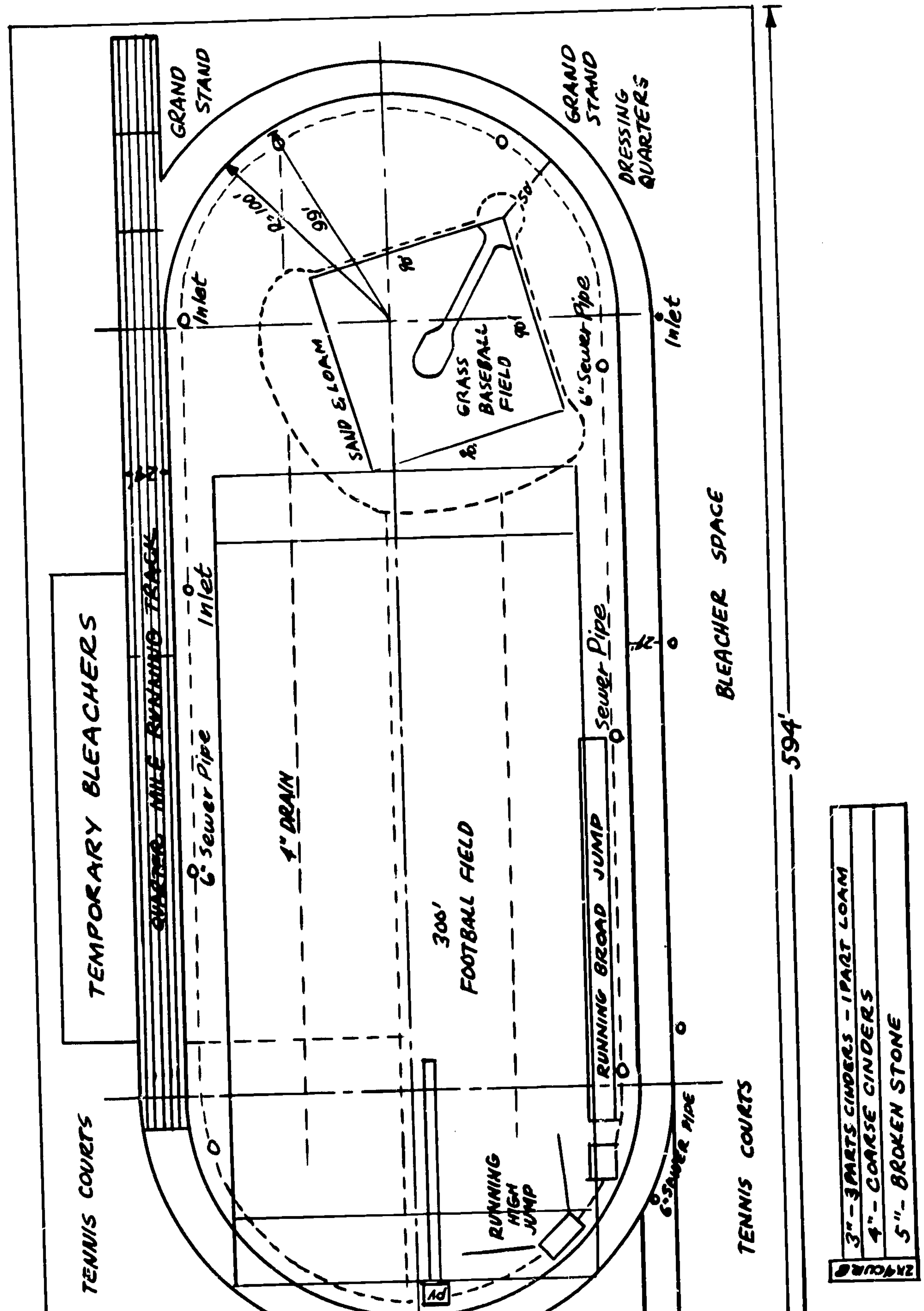
The football field is crowned 12 inches to provide good surface drainage.

The track itself is 440 yards in circumference with the curves on a 100-foot radius. The straightaways are 340 feet long, while the track is 24 feet wide except on the east curve which narrows to 18 feet.

For curbing, 2-inch by 6-inch creosoted wooden planking was used.

The 12-inch body of the track was constructed in three compact layers. Upon a 6-inch bottom layer of coarse broken stone a 4-inch layer of screened ½-inch cinders was laid. A 2-inch top layer consisted of two parts screened ¼-inch cinders to one part loam. Approaches and circles were constructed in the same fashion.

A floodlighting system was installed in 1928 to accommodate night programs.


TEMPORARY BLEACHERS
QUARTER MILE RUNNING TRACK
GRAND STAND
GRAND STAND
DRESSING QUARTERS
Inlet
Inlet
Inlet
6" Sewer Pipe
6" Sewer Pipe
Sewer Pipe
6" Sewer Pipe
SAND & LOAM
GRASS BASEBALL FIELD
4" DRAIN
300'
FOOTBALL FIELD
RUNNING BROAD JUMP
RUNNING HIGH JUMP
PV
BLEACHER SPACE
TENNIS COURTS
TENNIS COURTS
594'
330'
3" - 3 PARTS CINDERS - 1 PART LOAM
4" - COARSE CINDERS
5" - BROKEN STONE

HIGH SCHOOL TRACKS

Neenah, Wisconsin, High School Track

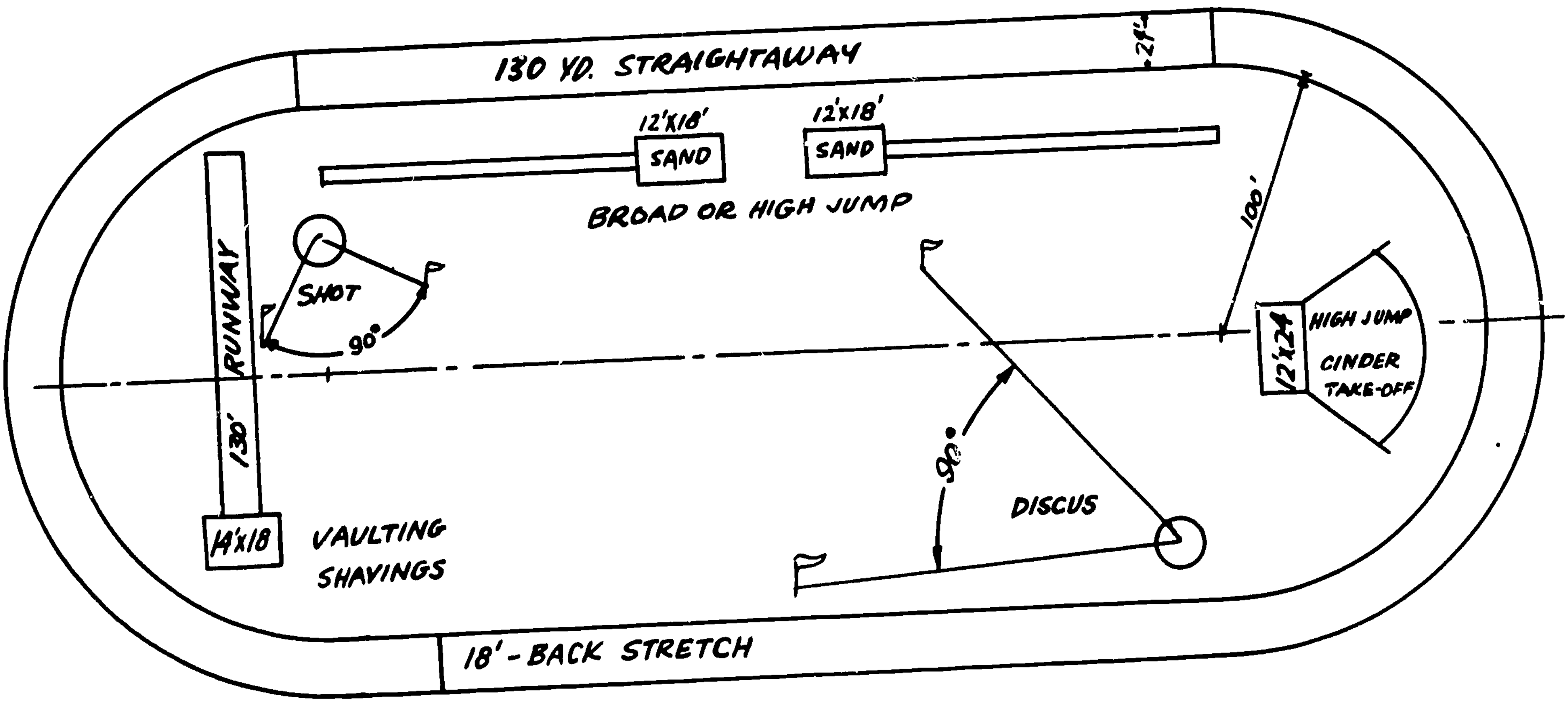
The entire Neenah High School athletic field area is cross-tiled, with the tile continuing under the running track to provide good drainage.

The field was built a few inches lower at the north end so that all drainage is to the north. The surface water drains off and empties into a catch basin at that end.

Jumping pits are drained by an opening into the drain tile which is buried in the center of each pit.

The running track is a full quarter-mile, 24 feet in width on the straightaway and on a 220-yard distance around one curve. It narrows to 18 feet in width on the backstretch. The radius of the curves is 100 feet.

The track body is 24 inches deep and was built with a 12-inch base of coarse cinders and clinkers. On top of this was placed a 6-inch layer of cinders screened through ½-inch mesh; a 4-inch layer of fine cinders screened through a ¼-inch mesh; and a top 2-inch layer of two parts cinders screened through a ¼-inch mesh with one part dry clay loam. All runways, circles, and takeoffs were built of the same materials and in the same manner as the track. The track is curbed with concrete on both the inside and the outside.


130 YD. STRAIGHTAWAY
12'X18'
SAND
12'X18'
SAND
BROAD OR HIGH JUMP
100'
RUNWAY
130'
SHOT
90°
HIGH JUMP
CINDER
TAKE-OFF
12'X24'
DISCUS
90°
14'X18
VAULTING
SHAVINGS
18' - BACK STRETCH

Washington High School Track --

Two Rivers, Wisconsin

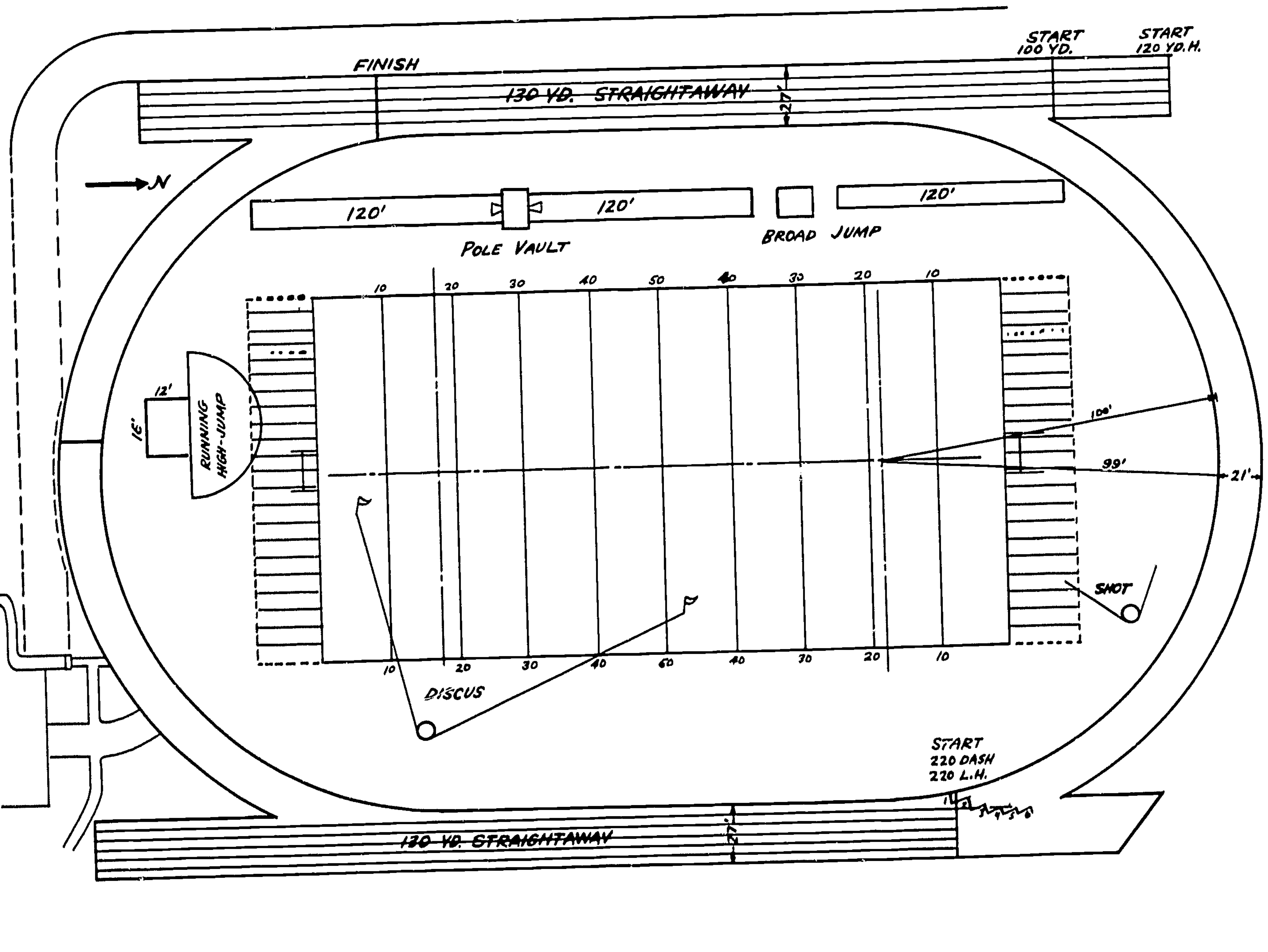
One of the finest athletic plants in the state of Wisconsin was constructed by the city of Two Rivers for its Washington High School. The running track rates with those of colleges and universities and is suitable for large meets.

The entire sports area, set in a natural bowl, is adjacent to the school. It was developed under the direction of F. G. Bishop, school superintendent, during the period of 1938-1940. The estimated cost was about $10,000.

The running track, a full quarter-mile in circumference, is 21 feet wide on the curves with two 130-yard straightaways each 27 feet wide.

The track area was excavated to a depth of 18 inches with material laid in four layers as shown in the accompanying diagram.

A curb, 5 inches thick, rounded on top, and 24 inches in depth, rests on 4 inches of cinders. Both inside and outside curbs were set on the same level as the field, with the surface of the track 2 inches below the top of the curbs. The curb was reinforced and built without expansion joints. Scuppers were located in the curb to drain surface water from the track to the catch basins. These openings are clearly marked on the curb as are the starts and finishes of all races.


START
100 YD.
START
120 YD.H.
FINISH
130 YD. STRAIGHTAWAY
27'
N
120'
120'
120'
POLE VAULT
BROAD JUMP
12'
16'
RUNNING HIGH-JUMP
100'
99'
21'
SHOT
DISCUS
START
220 DASH
220 L.H.
130 YD. STRAIGHTAWAY
27'

Fond du Lac, Wisconsin High School Track

The Fond du Lac, Wisconsin, High School track is located adjacent to the senior high school building. It was designed as part of a recreational area embracing a gridiron, a baseball diamond, and a track as well as other facilities.

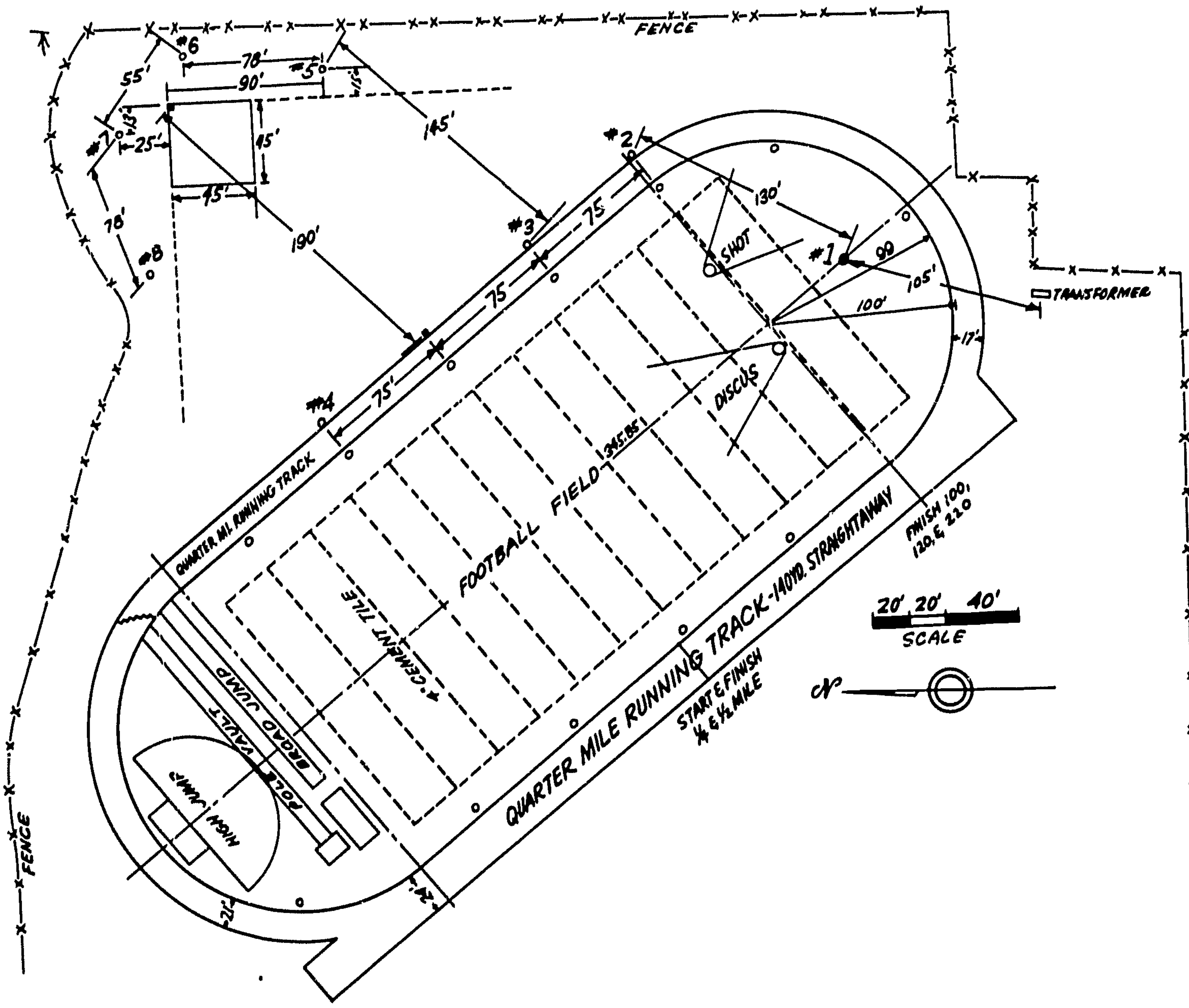
The construction of the track required unusual study and work in order to provide adequate drainage. The site was low marsh land, located on the east branch of the Fond du Lac River, which often overflows its banks.

The field is cross-drained every 30 feet with 4-inch cement tile set 15 inches below the surface of the ground. This tile was covered with 12 inches of gravel and 3 inches of loam. The cross tiles were connected to a 6-inch lateral drain pipe placed under the center of the track. Catch basins were placed every 50 feet at the curb.

The track itself is a full quarter-mile in circumference with its curves built on a 100-foot radius. There is a 140-yard straightaway 24 feet in width on the north side, while the east curve and the south straightaway are 18 feet wide. The west curve is 21 feet wide, allowing 6 lanes for the running of the 220-yard dash and hurdles.

The curb is concrete, 24 inches in depth, and flared at the bottom.

High jump, pole vault, and broad jump pits are located at the north end of the infield, while the weight circles are placed at the south end. The runways and circles are constructed according to the same plan as the track body (shown in accompanying diagram).



FENCE
#1
#2
#3
#4
#5
#6
#7
#8
78'
90'
145'
190'
45'
55'
25'
75'
130'
99
105'
100'
17'
SHOT
DISCUS
TRANSFORMER
QUARTER MI. RUNNING TRACK
FOOTBALL FIELD
4" CEMENT TILE
BROAD JUMP
POLE VAULT
HIGH JUMP
QUARTER MILE RUNNING TRACK-140YD. STRAIGHTAWAY
START & FINISH
1/4 & 1/2 MILE
FINISH 100, 120, & 220
20' 20' 40'
SCALE

Whitefish Bay, Wisconsin

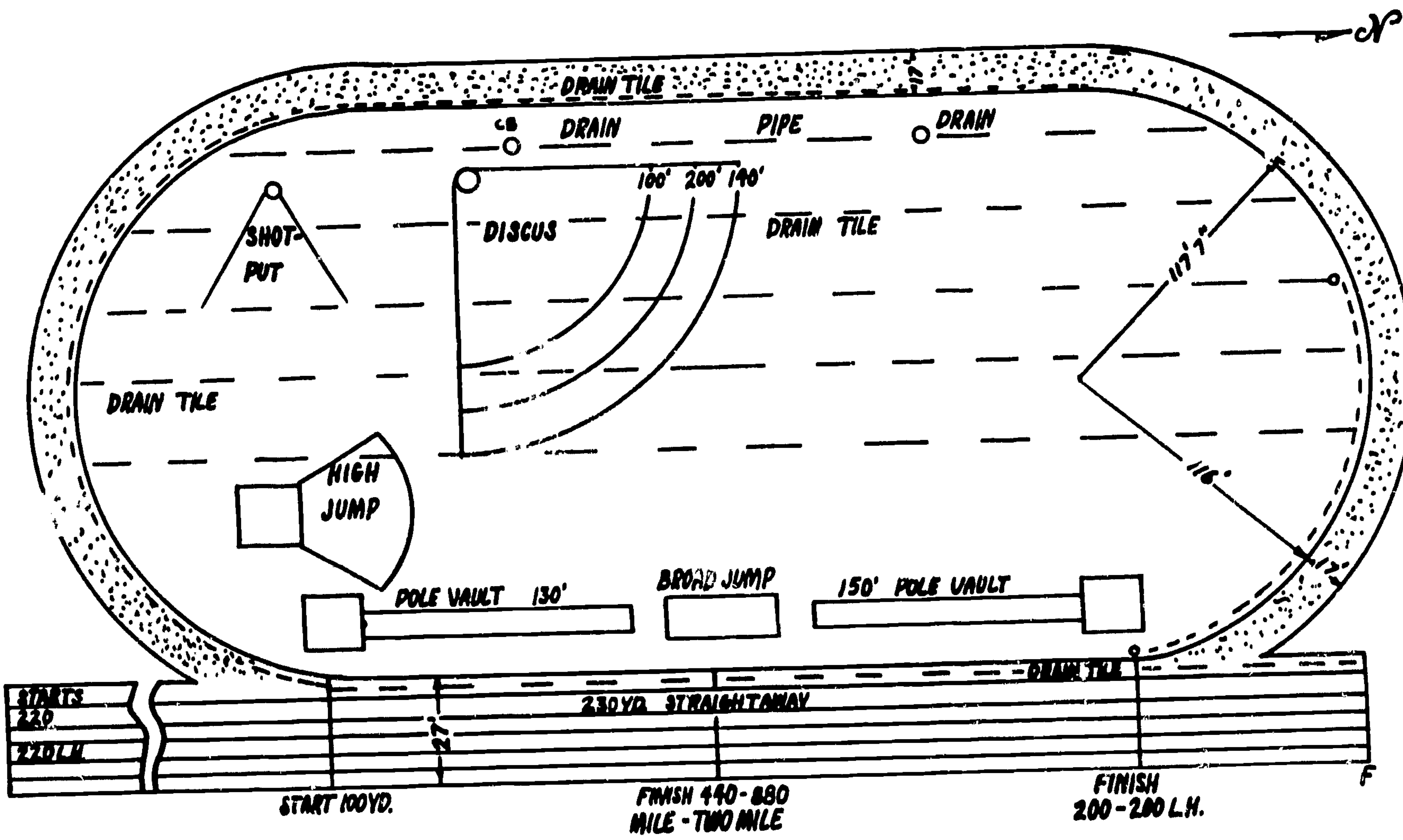
High School Track

The Whitefish Bay High School track is one of Wisconsin's first-class tracks. It is a full quarter-mile in circumference with a 230-yard straightway, 27 feet wide, on the east side. The track is 17 feet wide on both curves and on the backstretch. The curves have a radius of 117 feet.

There is a 5-inch concrete curb, 24 inches in depth, and projecting 2 inches above the surface of the track.

The field is laterally drained with 6-inch drain tile extending the entire length of the field and around the curved ends. Catch basins, placed every 150 feet, empty into a sewer pipe at the south corner of the field. A 6-inch drain pipe also was placed under the track next to the curb toward which the base of the track has been slanted.

Runways permit approach to the pits from two directions and were constructed of the same material and in the same manner as the track body. See diagram.


N
DRAIN TILE
CB
DRAIN PIPE
DRAIN
SHOT-PUT
DISCUS
100' 200' 140'
DRAIN TILE
DRAIN TILE
HIGH JUMP
117'7"
116'
POLE VAULT 130'
BROAD JUMP
150' POLE VAULT
DRAIN TILE
STARTS 220
220 L.H.
220 YD. STRAIGHTAWAY
27'
START 100 YD.
FINISH 440-880 MILE - TWO MILE
FINISH 200-220 L.H.
F

Barrington, Illinois

Consolidated High School Track

The Barrington, Illinois, Consolidated High School track was built in 1951 after a study of the latest advances in track construction.

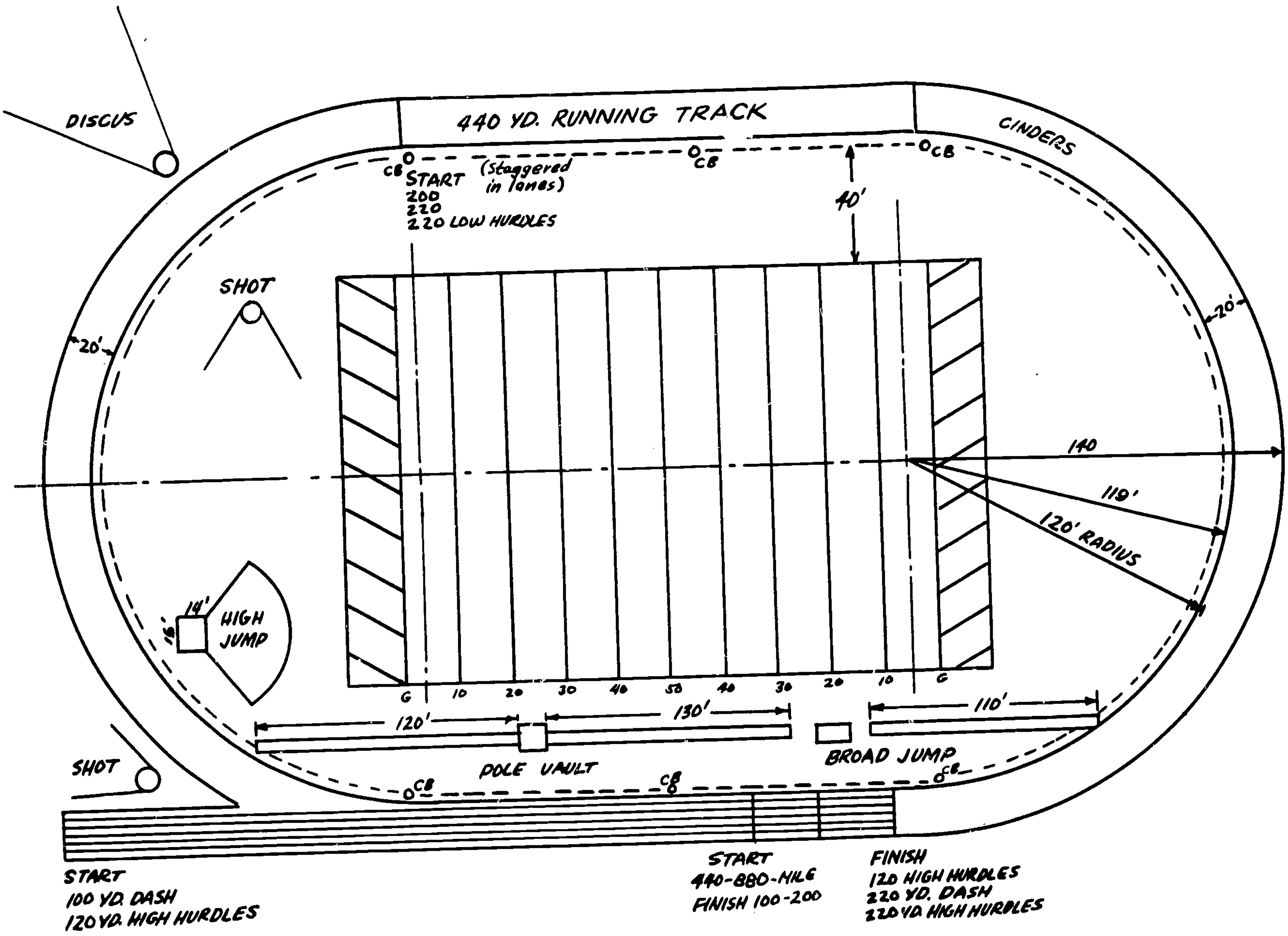
The running track, 440 yards in circumference, has a width of 24 feet on a 130-yard straightaway and a width of 20 feet on both curves as well as the backstretch. This permits 6 lanes for the 220-yard dash, hurdle, and relay events.

The radius of the curve is 120 feet, making the entire length of the field 519 feet 9 inches and the width 240 feet (238 within the curbs). The track depth is 15 inches at the center and 18 inches at the curbs. A three-layer fill makes up the track body. The bottom layer is 3 to 6 inches of washed gravel. On this is a cover of pea gravel for binding. A middle layer consists of 6 inches of large cinders and clinkers, raked, leveled, drenched, and rolled with a 6-ton roller. The top dressing consists of two parts ¼-inch cinders to one part loam mixture.

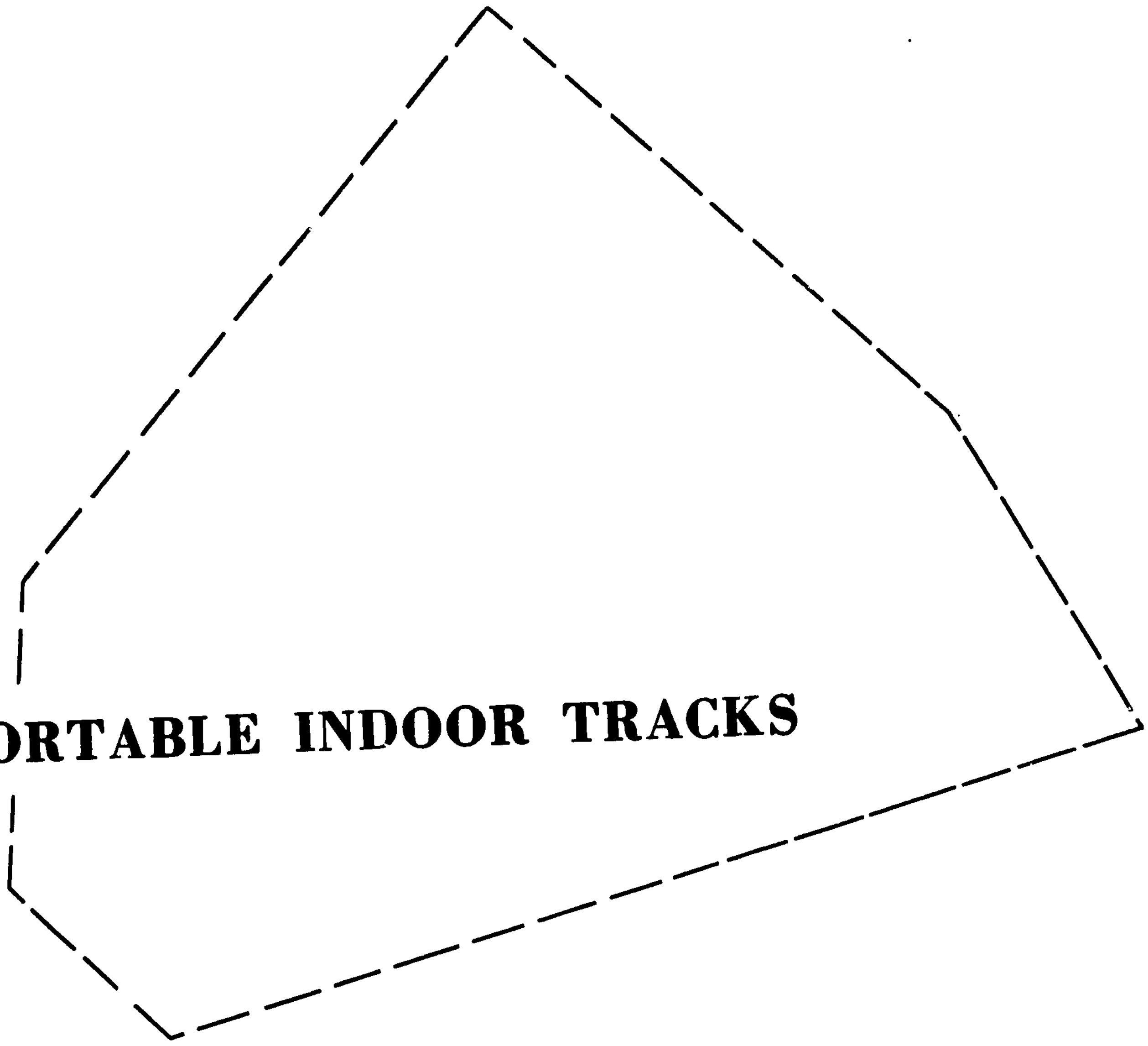
The enclosed field is cross-drained every 45 feet with 4-inch tiles connected to a 6-inch lateral drain which is laid 3 feet inside the curb. Catch basins are located along both straightaways.

The track is curbed with 2-inch by 12-inch pressure creosoted fir projecting 2 inches above the track level. The finish posts are of 2-inch steel set in concrete sleeves. The latter are removable and are capped.

Runways, 3 feet 6 inches in width, permit approach to the pits from two directions.


DISCUS
440 YD. RUNNING TRACK
CINDERS
START (Staggered in lanes)
200
220
220 LOW HURDLES
CB
40'
SHOT
20'
20'
140
119'
120' RADIUS
14'
16'
HIGH JUMP
G 10 20 30 40 50 40 30 20 10 G
120'
130'
110'
POLE VAULT
BROAD JUMP
SHOT
START
100 YD. DASH
120 YD. HIGH HURDLES
START
440-880-MILE
FINISH 100-200
FINISH
120 HIGH HURDLES
220 YD. DASH
220 YD. HIGH HURDLES

PORTABLE INDOOR TRACKS



Because of the growing popularity of indoor track competition during the winter season, a careful study is being made by promoters in an effort to standardize the construction of indoor tracks.

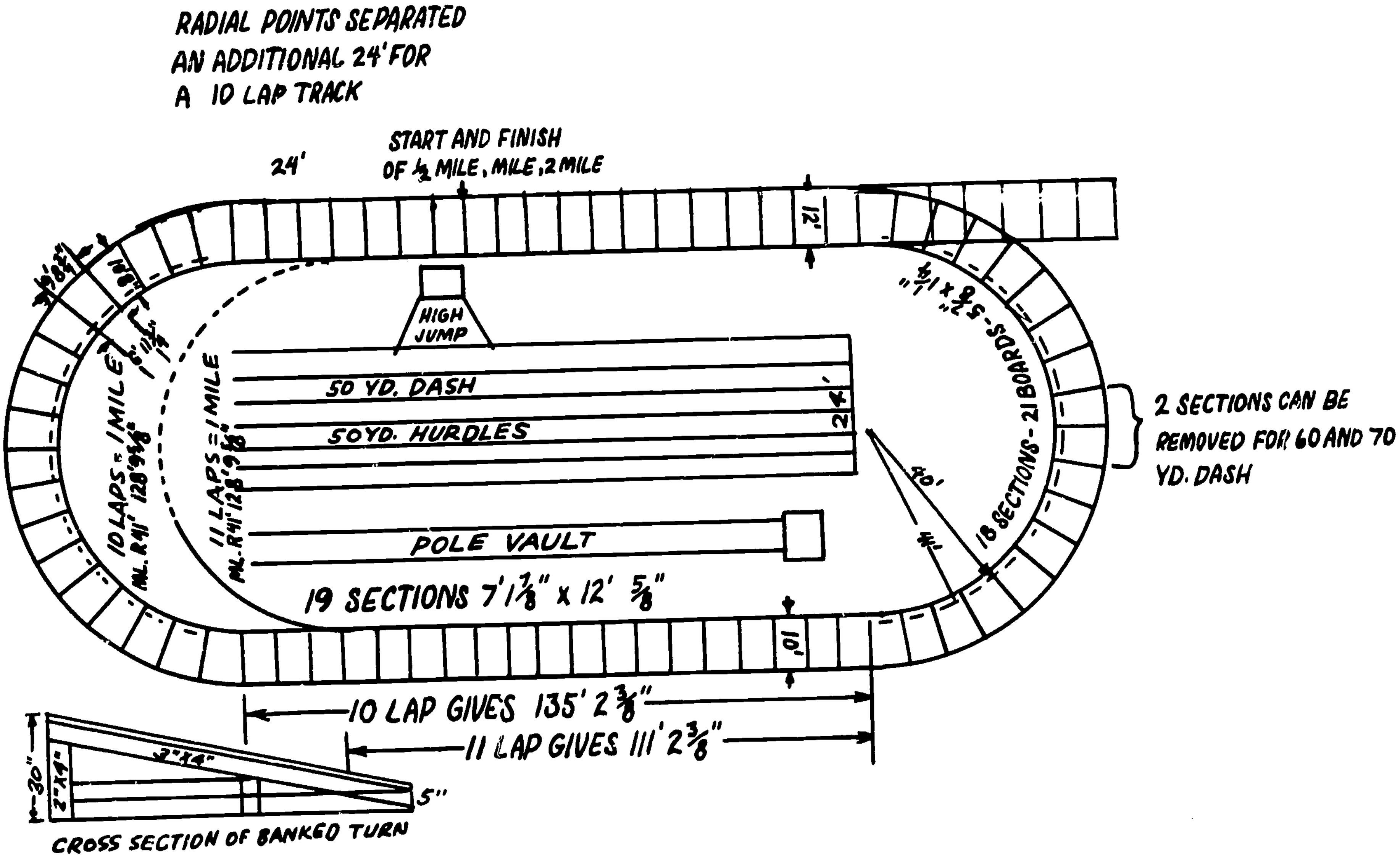
The drawing shows the interlocked section method now in general use for board construction.

The sections are 10 feet or 12 feet wide and can be easily put together or taken apart. The running surface is made of interlocking spruce boards, 1¼ inches by 6 inches. The banking varies up to 30 inches at the high points of the turns. There are 18 sections similar in size on each turn.

The diagram shows a 10-lap track with a radius of 40 feet and a straightaway tangent of 135 feet 2-3/8 inches An 11-lap track is indicated in dotted lines. The same size turns are used, but the straightaways are reduced by 24 feet.

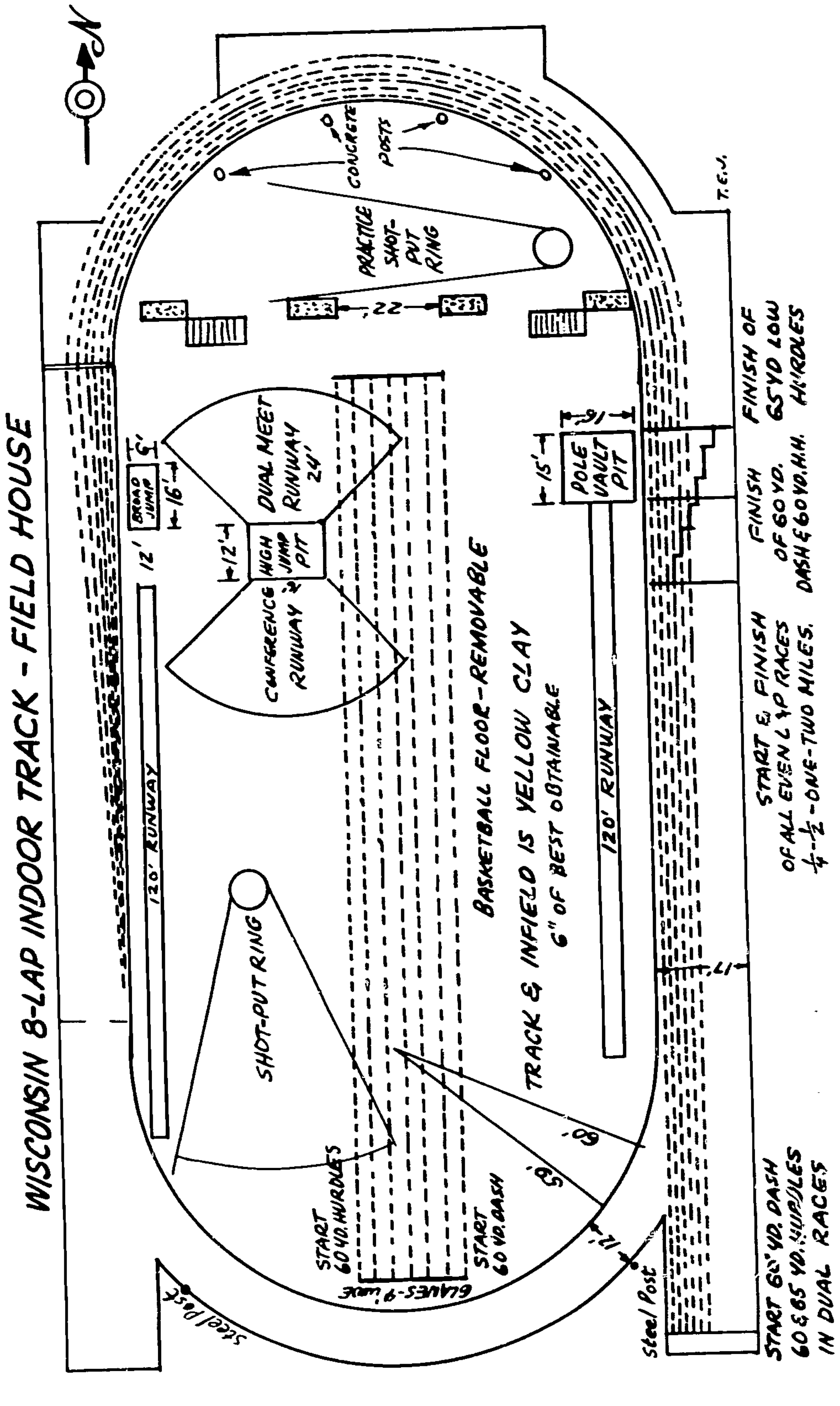
Sections at the center of each curve are removed to permit running of the 60- or 70-yard sprint and hurdle races through the center of the arena.

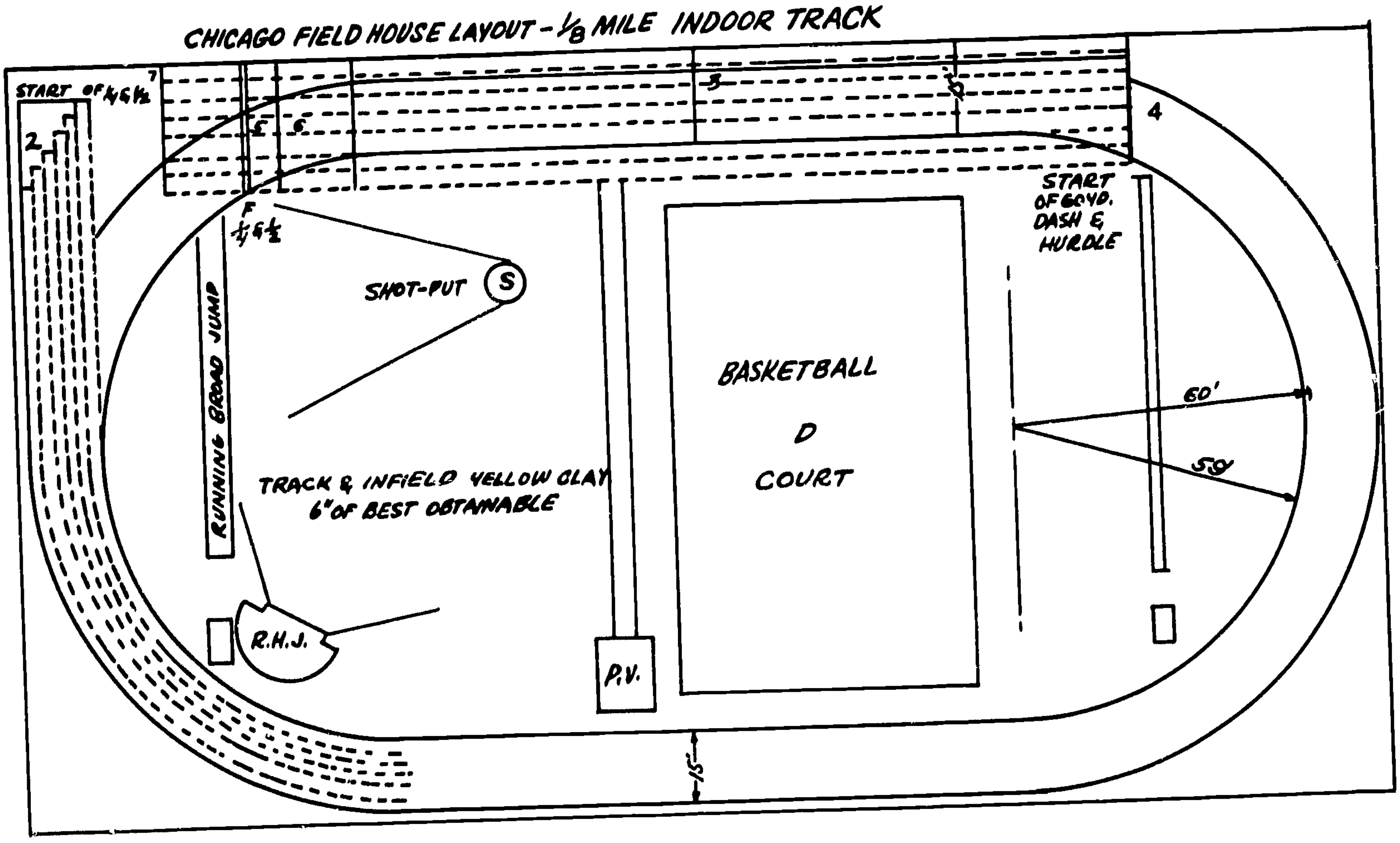
The board tracks put down annually in Madison Square Garden and in the Chicago and Milwaukee arenas are 11-lap tracks of this type.


RADIAL POINTS SEPARATED
AN ADDITIONAL 24' FOR
A 10 LAP TRACK
24'
START AND FINISH
OF ½ MILE, MILE, 2 MILE
12'
HIGH JUMP
50 YD. DASH
50YD. HURDLES
24'
POLE VAULT
40'
10 LAPS = 1 MILE
11 LAPS = 1 MILE
18 SECTIONS - 21 BOARDS
2 SECTIONS CAN BE
REMOVED FOR 60 AND 70
YD. DASH
19 SECTIONS 7' 1⅞" x 12' ⅝"
10'
10 LAP GIVES 135' 2⅜"
11 LAP GIVES 111' 2⅜"
30"
2"x4"
5"
CROSS SECTION OF BANKED TURN

STANDARD INDOOR COLLEGE TRACKS

Wisconsin

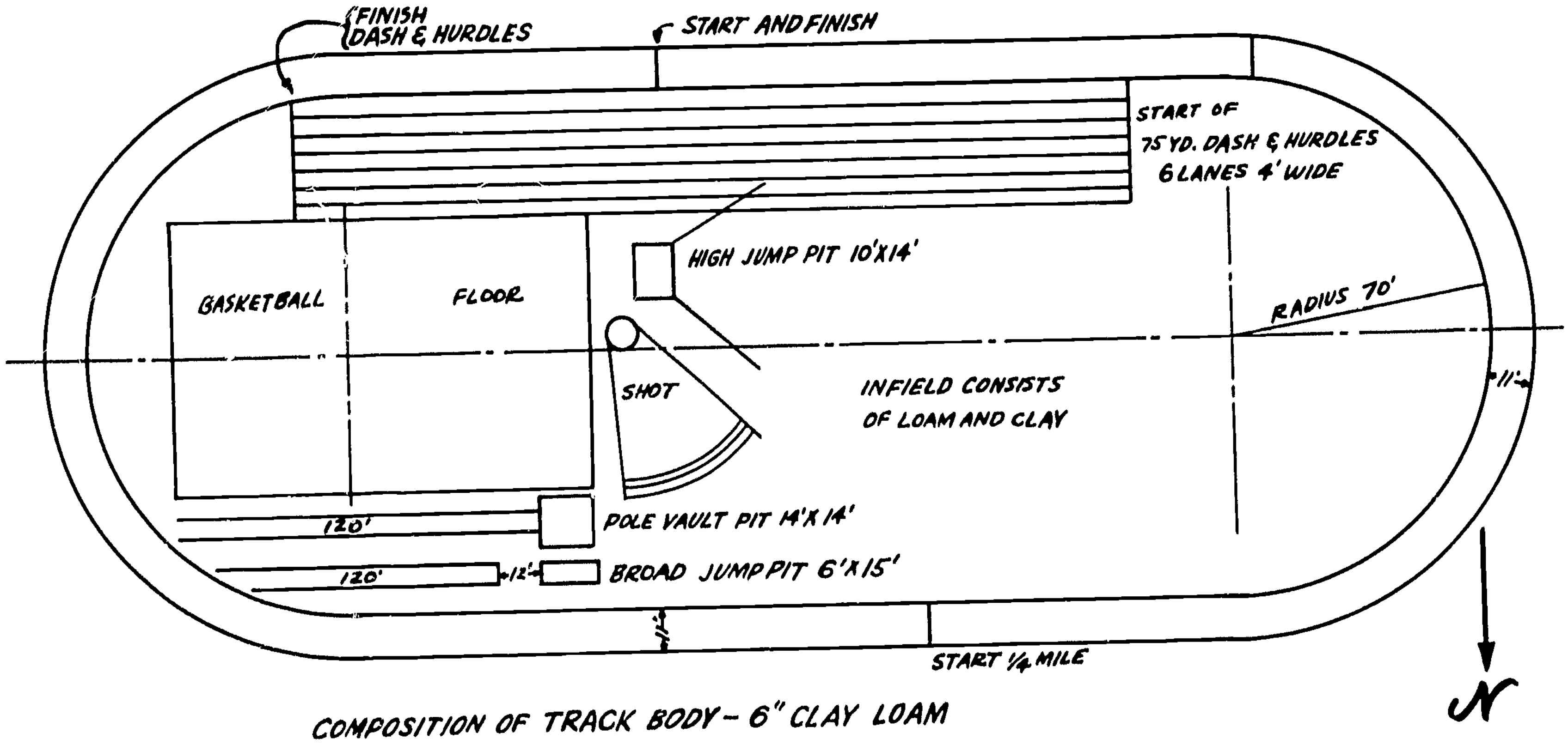



CHICAGO FIELD HOUSE LAYOUT - 1/8 MILE INDOOR TRACK
START OF 1/4 & 1/2
START OF 60 YD. DASH & HURDLE
SHOT-PUT
RUNNING BROAD JUMP
BASKETBALL
D
COURT
TRACK & INFIELD YELLOW CLAY
6" OF BEST OBTAINABLE
R.H.J.
P.V.
60'
59'
15'

UNIVERSITY OF IOWA - INDOOR TRACK

SIX LAPS = 1 MILE
LENGTH OF TRACK = 293⅓ YDS.
LENGTH OF STRAIGHTAWAY = 88 YDS.

WIDTH OF TRACK = 11 FT.
RADIUS OF CURVE = 70 FT.



COMPOSITION OF TRACK BODY - 6" CLAY LOAM