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Frontispiece A CORNER IN ONE OF NEWTON'S PLAYGROUNDS

THE NEW PLAY AREAS

THEIR DESIGN AND EQUIPMENT

Edited for
National Recreation Association

By GEORGE D. BUTLER



NEW YORK
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1938

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Foreword

A large number of recreation workers and planners throughout the country have helped to make this volume possible by sharing their experiences with the National Recreation Association. The many plans and illustrations which are reproduced in it give evidence of this cooperation. Grateful acknowledgment is made to F. Ellwood Allen of the Association for his helpful comments on the manuscript and especially for his assistance in the preparation of Chapter VIII. Thanks are also due to Charlotte W. Morrell of the Association who prepared many of the drawings used in this volume and to Albert D. Taylor for his permission to use several plates.

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INTRODUCTION

In order to meet an urgent demand for a book dealing with the design and equipment of playgrounds and other active recreation areas, the National Recreation Association prepared "Play Areas—Their Design and Equipment," which was first published in 1928. The widespread use of this book not only in the United States but in other countries has demonstrated the need for and usefulness of such a publication. Because of the marked progress in the development of play areas during the past decade and because of the changes in the court requirements for a number of games, a thorough revision of "Play Areas" has been made.

The present volume deals with the same general subjects as the earlier publication but it has been completely rewritten and much new material has been added. The first four chapters deal with the essential features and factors with which a planner must be familiar before attempting to design a play area. Chapters V, VI and VII contain suggestions for the planning of a playground, playfield and athletic field, respectively. These are the three types of areas with which the book is primarily concerned. The emphasis which is placed upon equipment and facilities in no way minimizes the importance of competent leadership. On the other hand, most effective results can be attained from such leadership only when play areas are intelligently planned and well developed.

The usefulness of the present volume is due in large part to the many plans and illustrations. They are more numerous than in the earlier volume and on the whole represent a marked advance in design and construction. They have been selected either because of outstanding merit or because they illustrate some principle or suggestion presented in the text. The comments which accompany them are intended to provide pertinent information concerning the areas or facilities portrayed, or to call attention to significant features.

It is believed that the "New Play Areas" will be of even greater usefulness and service than the earlier volume, which reflected the combined judgment and experience of many leaders in the recreation and planning fields.

CHAPTER I

ESSENTIAL FEATURES

During the past decade there has been a great expansion in the number of park and recreation areas and facilities in American cities. These areas comprise many different types of properties and they have been developed to serve a wide range of activities and uses. Several types, however, are recognized as essential in order to provide a well-rounded park and recreation service. Some of them are designed primarily as landscape parks; others provide opportunities for participation in varied forms of recreation activity.

Classification of Recreation Areas

In general, spaces set aside for active recreation may be classified under the following headings:

The play lot. This is a small area intended for the use of children of pre-school age. It serves as a substitute for the backyard and is usually owned and maintained by private rather than municipal agencies.

The children's playground. This area is intended to provide opportunities for children, primarily between the ages of five and fifteen, to take part in a variety of fundamental and enjoyable play activities. It is perhaps the best known and most numerous of all types of municipal recreation areas. Most playgrounds in addition provide facilities which may be used under certain conditions for the play of young people and adults.

The neighborhood playfield. This area, sometimes called a district playground, is primarily to provide varied forms of recreation activity for young people and adults, although a part of it is usually developed as a children's playground. Frequently a section of the neighborhood playfield is developed as a landscape park.

The athletic field. This is a specialized type of center intended primarily for highly organized games and sports.

The large park. This area is intended primarily to provide the city dweller with an opportunity to get away from the noise and rush of city traffic, to refresh his senses by contact with nature. It affords a pleasant environment for engaging in the varied recreation activities which are usually carried on on this type of area.

The reservation. The reservation is a large tract of land which is kept primarily in its natural state but which is made available for the recreational use of the people for such activities as hiking, camping, picnicking, nature study and winter sports. Most municipal areas of this type are located either near the boundaries of the city or outside the city limits. Many cities do not have this type of area but utilize accessible state or county owned areas which provide this type of service.

Special recreation areas. Many cities have acquired other areas which serve a particular recreation purpose. Among the best known are the municipal golf course, municipal camp, bathing beach or swimming pool. Sometimes these facilities are to be found in the types of areas previously mentioned, but in the last few years many cities have acquired special areas for such facilities.

There are very few municipal play lots although a section of the children's playground is often set aside for the exclusive use of the children up to five and six years. Most of the outdoor play of this age group takes place in the backyard; in apartment developments it is the responsibility of the developer to set aside land for use as a small children's playground. The large parks and reservations are such extensive properties and present problems which require such individual treatment that they are not discussed in this publication. Much excellent literature is already available on the design and equipment of such special areas as camps, golf courses and tennis courts. Therefore this book will deal largely with the children's playground, the neighborhood playfield and the athletic field.

LOCATION

Play areas have come to be recognized as essential municipal features which require the same careful consideration by city planning authorities as streets, schools and other public properties. In order to assure an adequate provision of such areas throughout the city, it is essential that a definite plan for acquisition and development be made and that sites be acquired while suitable property is still available. Because of the relationship between the location of play areas and school sites, it is desirable that city officials and recreation authorities cooperate closely with school boards in planning for future school and playground sites.

It is universally accepted that there should be a children's playground in every neighborhood. Its location is influenced by a number of factors such as the center of population, zoning, trends in the growth of the neighborhood, the location of railroads, main thoroughfares and other factors which reduce the accessibility of play areas, particularly a children's play-

ground. Wherever possible, it is desirable that a single playground should be developed in each neighborhood which will take care of all of the play needs of the children living in the neighborhood, rather than that these needs should be taken care of at two or three separate but inadequate areas.

Many cities have adopted the policy of providing children's playgrounds either on their elementary school sites or adjacent to them. This is usually a sound method of locating playgrounds if the school system is well planned, because an elementary school is within easy walking distance of every child and the children attending the school in a given neighborhood are the same group that the neighborhood playground will serve. Since it is an accepted principle that each elementary school requires playground space, expensive duplication in land cost, equipment, leadership and maintenance is avoided if playgrounds are established in connection with elementary schools. It is frequently cheaper in the long run to add to the size of existing school yards, even if land is expensive or buildings have to be removed, than to purchase separate sites elsewhere. It may be advisable to establish playgrounds away from school buildings in cities in which the school officials are not sympathetic to the playground idea, where the schools are poorly located or where more suitable land is available elsewhere.

It is very important, however, in acquiring ample school sites with a view to using them for playgrounds, that a definite understanding be reached that they are to be equipped and conducted not merely for school play but as year round community playgrounds for children and, in some instances or under certain conditions, for adults. Because school sites do not have the status of permanent play areas it may be advisable for the title to the school playground to rest with the city in order to assure its becoming a permanent play area. It is also well to keep in mind the fact that street frontage is not essential to a well designed playground although one or more adequate means of access should be provided. It is sometimes possible to secure land inside large blocks or in undeveloped areas adjacent to houses bordering on a street, at a much lower cost than if a site with large street frontage were purchased. The cost of assessments can often be avoided by such action.

Studies in a number of large cities have shown that nearly one-half of the children attending the playgrounds live within a quarter of a mile of the areas studied and that comparatively few children walk more than a half-mile in order to reach a playground. Danger from street traffic is perhaps the most important factor in determining the distance children will walk to attend a playground, and as a rule playgrounds attract children

from a greater distance in smaller communities than in the larger cities. Experience has shown that the maximum effective radius of a children's playground is one-half mile or less, and it is generally agreed that a playground should be provided within one-half mile of every home. In congested districts it is essential that the distance be reduced, and in several cities an effort is made to provide a playground within one-quarter mile radius of every home.

Neighborhood playfields are often developed in conjunction with neighborhood parks. Sometimes special areas are acquired for them, but frequently they are provided at or adjoining junior or senior high school sites.

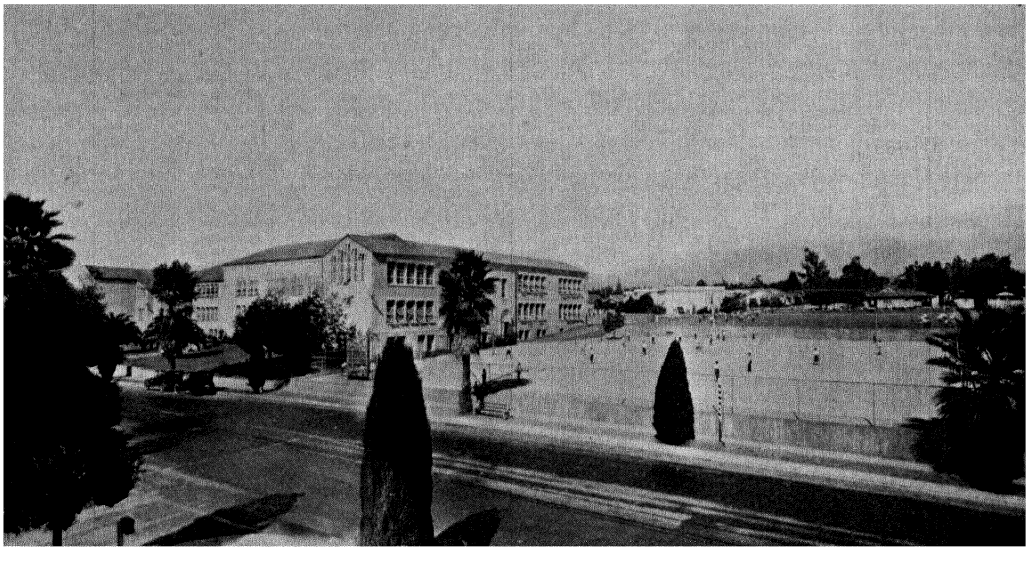


PLATE NO. 1

LONGFELLOW SCHOOL, PASADENA, CALIFORNIA

Few American cities have as large or well designed school sites as Pasadena.

The neighborhood playfield affords many of the facilities and areas which are essential to a high school recreation program, and there are many advantages in having a single area serve both school and community needs, especially if the schools are well distributed throughout the city. In cases where school sites are not adequate and where it is not practicable to enlarge them, or in cases where school authorities are not favorable to a community recreation program, it is necessary to acquire special areas as near as possible to the center of the neighborhood or district to be served.

Young people and adults will usually walk or ride a longer distance than children to reach a play area and consequently fewer neighborhood play-

fields than playgrounds are needed. From one-half mile to one mile may be taken as the effective radius and a playfield should be provided within a mile radius of each home in the community. Some of the larger cities have adopted a standard of one playfield for every square mile of the city's area.

The problem of selecting a location for an athletic field differs somewhat from that of selecting a site for a playground or playfield. The athletic field, unlike the other two types, is not a general play area intended for continuous use by community groups, but is used for highly organized, specialized activities and events; most people served by athletic fields are spectators and make use of them only occasionally. An athletic field will attract a larger number of people than the playground or playfield and they will travel a longer distance to reach it. Consequently it is not essential that the athletic field be located near the center of the district or community it is intended to serve. In fact because the attracting of large numbers of people to athletic events is likely to result in considerable noise and congestion, it is not desirable that the athletic field be located in the heart of a residential district. Naturally the seriousness of this problem will depend in part on the number of seats to be erected at the field.

In any case it may well be established near the borders of the district or city, provided there are good access roads or transportation facilities. A large, fairly level, well-drained area is desirable. In many cities low, swampy or marshy areas have been filled with ashes and developed into athletic fields. When this is done ample time should be allowed for settling, especially if permanent structures are to be built. As previously mentioned, athletic fields have been constructed on many high school sites although there is an increasing tendency to develop these areas as playfields in order to provide for a more varied use.

SIZE

It is obvious that the number of children to be served by a playground influences the total amount of space needed. On the other hand, the practise of determining playground space needs on the basis of a definite number of square feet per child is not satisfactory because the essential play needs of even a small number of children require a certain minimum sized area in order to afford the essential equipment and game spaces. Careful study of the play requirements of children indicates that under normal conditions three and a half acres are needed to provide a well-balanced play program where the present or estimated future child population is approximately 600 children between the ages of five and fifteen. If an opportunity

to play baseball is to be provided on the playground, an area of five acres should be provided. The playground may be reduced in size to two and a half acres if a much smaller number of children are to be cared for, whereas five or six acres will be required to take care of the needs of 1,000 children. If in a given neighborhood it is impossible to acquire more than an acre or so, the use of the playground may well be restricted to children up to ten years of age. A comprehensive analysis of the space requirements for the children's playground is available in pamphlet form from the National Recreation Association.* A reasonable standard for the total children's playground space in a city is one acre for each 1,000 of the total population.

Ten acres are needed in order to provide space for the facilities essential in a neighborhood playfield. Smaller areas may be preferable to none at all, but if the playfield is to provide various desirable facilities and game areas at least ten acres are required. A twenty-acre tract is preferable, and this makes possible the setting aside of a portion as a neighborhood park. It is seldom practicable to acquire larger neighborhood areas that are suitable. A reasonable standard for total neighborhood playfield space is one acre for each 1,000 of the total population.

Since the neighborhood playfield is frequently located at or near high school sites it is significant that educational leaders are demanding large sites, and encouraging that many cities are acquiring them. Professor George D. Strayer of Columbia University in addressing the National Recreation Congress has stated, "We are proposing from one end of the United States to the other that an elementary school shall have five acres of land as a minimum; a junior high school shall have ten acres, and a senior high school twenty acres as minimum requirements."

One of the foremost city planners in the country has expressed the opinion that twenty acres is the ideal size for a neighborhood recreation area, stating that smaller areas are expensive because of the overhead and that larger areas are wasteful. According to reports gathered in the study of municipal parks conducted in 1936 by the National Park Service and the National Recreation Association,† the average size of the neighborhood playfields throughout the country was 9.6 acres.

Since the athletic field, devoted exclusively to highly organized games and to track and field sports, is more or less standardized as to its layout, the minimum of required space may be readily estimated. In order to provide a quarter-mile track, a combined football and baseball field and some

* Space Requirements for the Children's Playground. National Recreation Association. 1934.

† Municipal and County Parks in the United States, 1935. U. S. Department of the Interior. 1937.

seating provisions, an absolute minimum of five acres is required. Since it is highly desirable that facilities be provided so two or more groups may use the field at the same time, and since it is frequently necessary to provide parking facilities for automobiles, a minimum area of eight or ten acres should be acquired. Many cities have developed an athletic field with stadium on areas several times this size. Athletic fields are more frequently established on high school sites than are neighborhood playfields.

Survey

It is very important that the boundaries of play areas be established accurately and this should be done before the property is acquired. If the property is already in public ownership such a survey should be made before preparing a plan for the area. A topographical survey is also essential except in the case of very small and level properties. Among the factors which should be included in the survey are the location and size of sewers and water supply system serving the area, type and structure of soil, water and drainage conditions, the size and type of existing trees and any other natural features which would affect the planning of the area. A knowledge of these is essential before a plan can be made. It may be advisable to submit samples of the soil to the State Agricultural Department for analysis if a special surfacing of part or all of the area is contemplated. The surveys are usually made by the city or county engineer's office or by the engineer of the local park department.

General Plan

It is exceedingly important that a general plan for a play area be prepared and adopted before the work of development is actually commenced. It is recommended that the plan be prepared by a competent landscape architect, if possible, in order to assure a good design as well as an effective use of the area. Unless he has specialized in the planning of recreation areas, he should secure the collaboration of a recreation planner, even in the preparation of the preliminary plan, in order that from the functional point of view, the plans may be adequate and satisfactory.

In the case of a large area involving special problems of drainage or construction the advice of the city engineer should be secured, and if the plan involves the construction of a building, the services of an architect will be required. It has been suggested that before a plan is adopted it is well to submit it to the maintenance superintendent or foreman who may be able to suggest minor changes which will result in a reduction in maintenance costs.

The plan as finally adopted should be acceptable to the recreation authorities who are responsible for its operation.

The most important consideration in preparing the plan is how the area can best provide the facilities and activities most needed by the various groups to be served. No play area can meet all of the play and recreational needs of the community, and in preparing the plan it must be decided what special functions the area will perform and how it can best fit into the community plan for meeting these needs. The plan should afford the greatest possible opportunity for valuable and enjoyable activities in an attractive setting. It should be economical to create and to maintain and should enable the program to be administered efficiently. Topography, size, shape and natural features such as streams and trees influence the selection and arrangement of the play facilities and game areas.

It may not be possible, because of limited funds, to complete at one time all of the features included in the plan, but its adoption will assure an orderly and effective development of the area. Naturally minor changes in the arrangement of game areas, apparatus, planting and other features can be made later as conditions make them advisable. Greater interest is often taken in the play program by both children and adults if new features are added from year to year than when the area is opened completely equipped and developed.

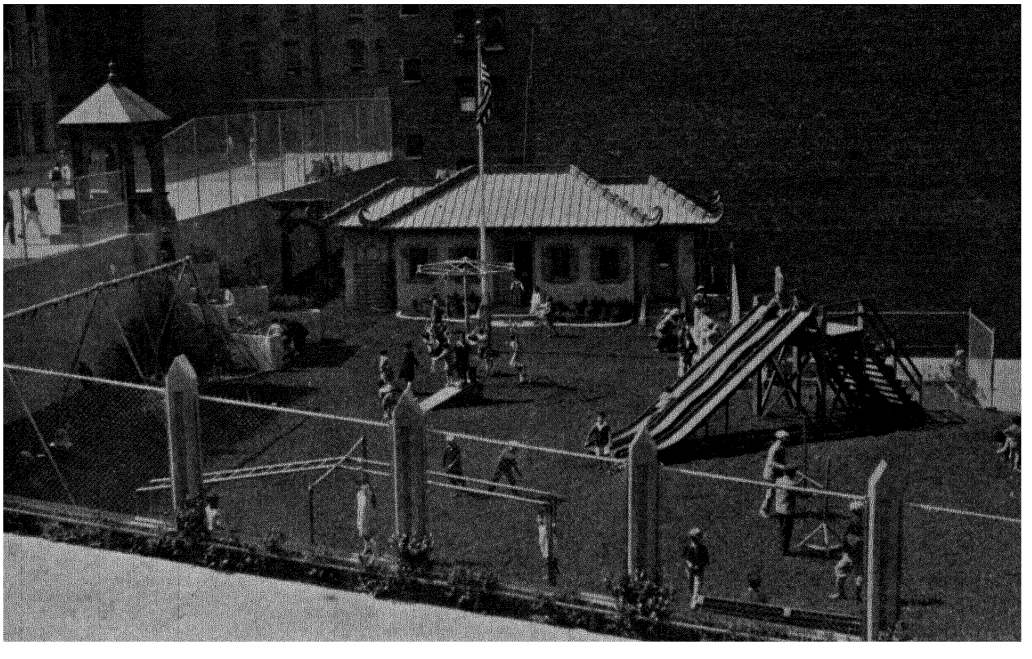
In addition to the general plan, detailed plans will be needed for various features essential to the development of the area such as drainage, grading, water, lighting and planting. Buildings and pools, walks, backstops, benches and game courts are among the items for which detailed construction plans are or may be required. As a rule these should not be prepared, however, until the general plan has been submitted to and adopted by the authorities responsible for the development of the area.

Grading and Drainage

In general, comparatively level areas are best suited for play purposes. It is possible to use uneven surfaces for some kinds of playground apparatus, for some winter activities and for such areas as picnic grounds and the outdoor theater, but most of the organized games and sports require a level field. Where only uneven land is readily available it may be necessary to grade it to two levels, separated by a wall or terrace, thus securing the maximum use. However, the cost of grading and maintaining an area of this sort should be compared with the additional cost of acquiring a level area. Frequently the cost of grading and drainage is the largest item of expense in the construction of a playfield or athletic field. On the other hand,

it is sometimes possible to acquire swampy accessible land at low cost and to have it filled in at little or no expense. It is not only economical for a city to purchase such an area, but by making a playground out of it the city gains a health and esthetic as well as a recreational asset.

Grading is the process of changing the existing levels of the play area. This is often necessary in order to provide suitable places for games and other activities and also to facilitate the removal of surface water which



(Courtesy of San Francisco Recreation Commission)

PLATE NO. 2

CHINESE PLAYGROUND, SAN FRANCISCO, CALIFORNIA

This three-level playground illustrates the ingenious use of a small, uneven area. The attractive building reflects the racial character of the neighborhood. Tanbark affords a safe and pleasing surface for the section devoted to apparatus. Even on this tiny playground space is found for some appropriate plantings.

must not be permitted to remain on the playground. On the other hand, the slope should be gradual so that the surface will not be washed out during or after a heavy rain. The slope on playgrounds and sports fields is usually from the center to the sides where catch basins are provided. In case the play area is to be used in the winter for skating, the field should be depressed in the center, with drainage from the sides. A grade of six inches to each one hundred feet is usually satisfactory. The slope should not extend more than 200 feet on a dirt surface or more than 300 feet on turf, unless the

ground is very porous, because ruts are likely to be formed after a heavy rainfall. The subgrade should parallel the finished surface. If extensive grading is necessary, care should be taken to remove the top soil before cutting and filling.

The purpose of drainage is to remove surface and excess ground water from the play area. It is usually of special importance around and under pools, buildings, paths, game areas such as tennis courts, and at the foot of slopes. The location, size and number of drains can be determined only after a careful study of topographical and soil conditions. Surface water is usually cared for by cast iron gratings, inlets and catch basins installed at low points on the area, whereas ground water is carried off by tile drains set under the surface. In heavy clay soil the lateral drains are generally laid approximately 3 to 3½ feet deep. The deeper they are laid the slower the action but the wider the area drained. Subdrainage helps to sweeten the soil and stimulate the growth of turf. Too much subdrainage, on the other hand, deprives the turf of needed moisture. Practice has shown the 4-inch agricultural tile to be the best minimum size for general ground water drainage and the 6-inch vitrified tile the most satisfactory for drainage from inlets and catch basins. Location, size and levels of city storm sewers must be taken into consideration if drains are to be connected with them. Water is sometimes carried off into a nearby stream or lake. Adequate provisions for drainage are essential if the area is to be available for use during a maximum playing season.

SURFACING

The importance of providing a good surface for play activities cannot be too strongly emphasized. A resilient, smooth surface which presents a good appearance adds tremendously to the enjoyment of active play. On the other hand, a dusty, muddy, abrasive or uneven area may be detrimental to children's health, hard on their clothing, cause abrasions in case of falls or make satisfactory play impossible.

Different parts of play areas require different kinds of surfacing. Turf is the best surface for the play of small children, for games such as bowling and clock golf, and for major sports such as football and baseball. Games such as handball, shuffleboard and roque, however, require a hard smooth surface, such as cement or asphalt. Other features such as the running track require a special surface, whereas games such as volley ball may be played on almost any type of area.

Among the factors which must be considered before determining the most suitable surface for a given area are the following: climatic conditions

—especially the effects of freezing and thawing, extreme heat and rainfall; natural soil conditions; location and size of area; type of activities to be carried on; length of playing season; intensity of use; suitability for night lighting; local tastes and preferences; availability of materials and initial and maintenance costs.

Among the qualities that are desirable in a play surface are: resilience, good drainage, freedom from dust, durability, non-abrasiveness, cleanliness, firmness, smoothness, general utility, good appearance and reasonable cost. One of the reasons why so many playgrounds are badly surfaced and that



PLATE NO. 3

GILLISPIE PLAYGROUND, SARASOTA, FLORIDA

This illustrates the lighting of game areas for night use. This playground is also an example of an effectively surfaced and attractively landscaped area. Note the benches along the game courts.

the problem is such a vexing one is because it is difficult to find a material which combines all these qualities and is suitable for use under the various conditions listed. Different types of surfacing materials are therefore required for various parts of a large play area.

Sometimes natural or existing surfaces are satisfactory for play or can be made so by adding some form of suitable material. In case the area on which the playground is to be developed has a surface unsuited for play, an entirely new surface must be built up, at least on portions of the playground. Usually some cutting and filling are required and sometimes existing soil

may need to be removed from the entire area before the surfacing materials are applied. Usually they are applied in three layers; the first a base course, primarily for drainage, consisting of several inches of material such as cinders, crushed stone or gravel, next a binding course of finer materials, and lastly a thin wearing course which gives an even, firm playing surface. Each layer should be of uniform thickness throughout, be laid parallel to the finished grade and be compacted thoroughly.

Methods of surfacing children's playgrounds are described in Chapter V and suggestions as to suitable surfaces for special areas are referred to throughout this volume.

Fencing

It is essential that the children's playground be fenced, except perhaps in rural communities. As a rule the neighborhood playfield should also be fenced, or otherwise enclosed, although if it is extensive in area and park-like in character a fence may not be necessary. In any case, it is advisable to enclose the section of the playfield devoted to the children's playground. Since most athletic fields are used for events to which an admission fee is charged, such areas are almost always enclosed.

Perhaps the most important reason for fencing the playground is that it deters the children from running heedlessly into the street after batted balls and also prevents injury to passersby. The fence not only protects the playground from vandalism but also prevents trespassing by the children upon neighboring property. The fence greatly simplifies the problem of maintenance by putting the playground under complete control and keeping out mischief makers. It enables the playground to be locked when not in use and relieves the authorities of a degree of liability in case children enter the playground and are injured during such periods.

The playground leader considers the fence an effective ally in the operation of the playground because the problem of discipline is minimized and the children take greater interest in the activities because outside distractions are lessened. The fence often provides the solution for the problem of landscape development, for if it is set a few feet inside the property line, shrubs, grass and flowers may be planted outside, where they will not be harmed by the children's play. Not the least of the reasons for fencing the playground is that the fence adds to it a degree of individuality.

As previously stated, it is generally desirable to erect a fence a few feet inside the property line on the sides of the playground which border the street. The distance may be 6 to 12 feet, depending largely upon the amount of play space available. If it is intended that the plantings along the fence

serve as an effective screen it will be necessary to have them outside rather than inside the fence. Under certain conditions it may be advisable to have a double fence, one to enclose the play area and the other to protect the plantings. Sometimes the fence serves as a support for plant materials such as climbing roses or vines.

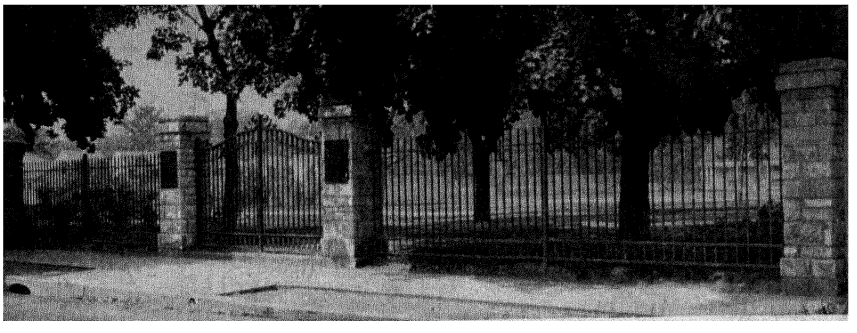


PLATE NO. 4

MEMORIAL ENTRANCE GATE, METCALF PLAYGROUND, ORANGE, N. J.

An attractive, dignified entrance gate is an asset to any playground.

Fencing serves a useful purpose not only on the boundaries of a play area but also as an enclosure for game courts and other special features. It is difficult to arouse an interest in the game of tennis, for example, or to develop skill on the part of the players unless an adequate fence is provided at the tennis courts. The fence also eliminates much wasted time chasing or looking for balls—an activity which is annoying to players and detrimental to flowers or shrubbery. A fence—not necessarily a high one—at the ends of volley ball, horseshoe or other courts makes possible more satisfactory play, economizes space and contributes to safety on the playground.

Chain link fabric made of copper-bearing steel wire, galvanized after weaving, is generally believed to be the most satisfactory fencing for playgrounds and athletic fields. Either No. 6 or No. 9 gauge wire with a 2-inch mesh is generally used, and the height of the fence is usually 6 to 7 feet. If the fence also serves as a tennis court backstop, a height of 12 feet may be required. In certain areas such as athletic fields it may be necessary to have an overhang with barbed wire, but this type of fence is dangerous, unattractive and is frequently forbidden by law.

Iron fences of the picket type are sometimes used for the entrances to playgrounds, for enclosing sections of a playground such as the pre-school children's area or for surrounding a special feature such as a wading pool.

Stone or brick walls are often used on play areas in communities where suitable building materials are abundant or inexpensive. The frontispiece shows a wall separating a playground from adjoining private property. A fence about 12 inches high which looks like an overlapping series of croquet wickets has proved efficacious in keeping people off the grass in the parks of New York City, and it is suitable for enclosing planted areas on the playground. For photographs of enclosed areas see pages 4, 9, 16, 31, 97, 113, 191 and 194. Detailed information on fencing may be secured from the leading fence manufacturers.

LIGHTING

To help meet the increasing demand for more play facilities and to secure the greatest service from existing play areas, the number of playgrounds and playfields lighted for night use has increased rapidly during the past few years. Play areas can be successfully illuminated for night use —not only areas for general play but for such games as tennis, softball, hockey and football, which require a high degree of illumination. Swimming and bathing centers are almost universally lighted for night use, and lighting equipment is being used widely at ponds and other areas used for skating. Most lighting equipment on public play areas illuminates areas or facilities used by a considerable number of people. Sometimes, however, features such as tennis or handball courts are provided with lights which are controlled by a meter. When an individual inserts a coin in the meter the lights go on for a definite period. In one city which has many lighted tennis courts, the following is painted on all meter boxes: "All money is taken from box at end of day." This discourages thefts, which are almost unknown.

Even though an area is not used at night, it may be advisable, as an aid to policing, to provide sufficient light to make all sections readily visible.

The question of lighting play areas is a technical one, and until methods have become more standardized the advice of competent illumination engineers is essential to securing the best results. A different location, intensity and type of light are required for the various games, sports, and activities. Many types of reflectors and other equipment are now on the market and new and improved methods are being devised. Electrical companies have issued literature on the subject which should be studied carefully. It contains diagrams of the installations recommended for lighting many types of recreation areas, descriptions of equipment and other valuable data.

It is important that the position of lights be determined before work on the playground has begun in order that conduits for wires may be laid be-

fore surfacing is completed, and poles and other equipment may fit in with the general plan for the area. In general, the use of overhead wires should be avoided. Lighting outlets may well be installed at various locations on the area so as to facilitate the lighting of special evening activities such as a dance, circus or play festival. For illustrations of play facilities equipped for night use, see pages 11, 46, 48, 97, 109, 136, 212, 217 and 219.

Water

Water has many uses on play areas and provision should be made to care for water needs before work on the playground is begun. Water connections should be provided at frequent intervals on areas which are to be sprayed or flooded for skating during the winter months, along the running track, on the athletic field, and near shrub plantings and flower beds. The field or shelter house requires a considerable water supply for the toilets and showers. Drinking fountains are needed where people congregate. If the facilities are to include a swimming or wading pool obviously the question of water supply is an important problem. In sections of the country where there is a long dry season and where a good turf surface is desired it may be desirable to install an underground sprinkling system, although its cost is much higher than that of other types of sprinklers.

Water supply pipes and drains should be laid while the grading is being done in order to save expense and to prevent interference with the use of the area. An expensive mistake to be avoided is that of using pipe that is not large enough to serve probable future as well as immediate needs. This is especially true of pipes carrying water to and from wading and swimming pools. Inadequate pipes result either in long periods when the pools cannot be used or in expensive and sometimes unsatisfactory replacement. Three-quarter-inch pipe is generally satisfactory for water lines to be used for sprinkling purposes. It is usually laid one foot underground and is drained each fall if necessary, but in extremely cold climates it should be placed below the frost line.

Entrances and Paths

The design of a play area is often influenced by the location of the homes of the people who are to use it. Entrances to the area should be placed so as to enable people to reach the various parts of the playground or playfield as easily and directly as possible. The fewer the entrances, the easier the problem of supervision. If a certain section of the area, such as a battery of tennis courts, is to be available for use during periods when

the other parts are not open, a separate entrance is desirable. It has been suggested that where a playground borders on a busy street, the entrances should be at the corners rather than in the middle of the block so children leaving the playground will not run into the street between intersections.

Paths should lead from the entrances to the main centers of interest or activity, such as the shelter or field house, wading pool, small children's corner, outdoor theater or baseball diamond. They enable people to reach the various parts of the area without crossing spaces in active use. Paths

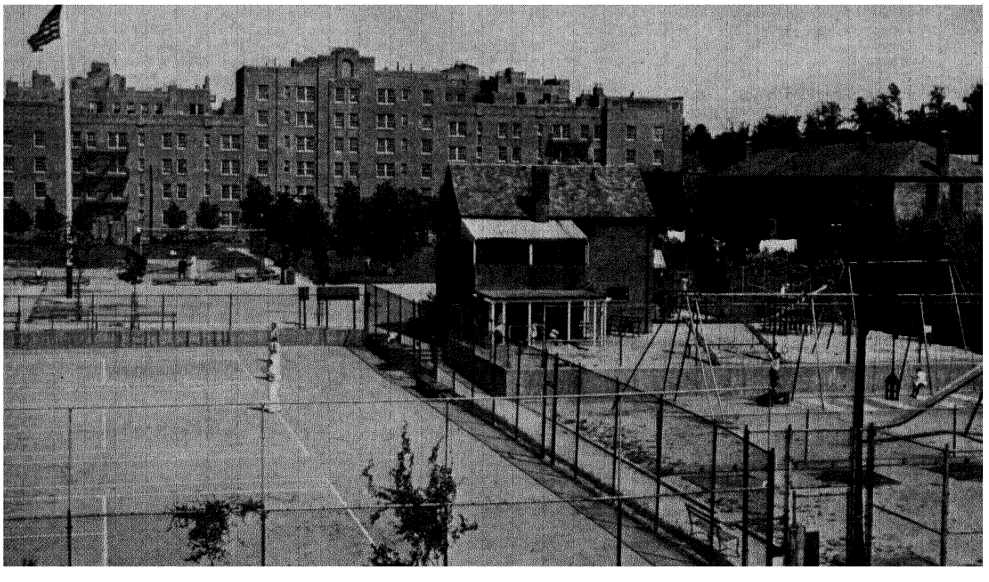


PLATE NO. 5

SUNNYSIDE PLAYGROUND, NEW YORK CITY

This playground serves a large housing development. In order to economize space, afford a variety of activities and make play safe, fences separate the sections used for small children's play, apparatus, horseshoe courts, tennis, baseball and as a small park.

not only serve pedestrians but also help to prevent interference with games and play activities. They further help in maintaining plantings by keeping people in restricted areas while crossing the playground, especially when the paths are bordered by prickly or dense shrubbery. They may serve as a dividing line between the various divisions of the play area. Because of the valuable space which they occupy, paths should be placed only where needed. Unless they lead as directly as possible to the points to be reached, short cuts will be taken; consequently the tendency to use curved paths unnecessarily on play areas should be avoided.

Most paths are of gravel, asphalt or concrete, the selection depending upon such factors as the funds available, the nature of the path, the desired appearance, length of season and intensity of use. Stepping-stone paths with grass joints may be used effectively in connection with special landscape features and tanbark is suitable for naturalistic paths. The main paths, especially near the entrance, should be of ample width, but the secondary paths can be narrower. Ample space must be devoted to paths where large groups congregate, as at the entrance to the grandstands on a playfield or athletic field.

Roads should be reduced to a minimum. Few if any playgrounds will need more than a service drive leading to the playground shelter or service building. Pleasure drives have no place in the neighborhood playfield and should be excluded from it. A service drive will be needed and it may be advisable in large playfields to have a drive leading to such special features as a swimming pool or outdoor theater. A parking area is needed in connection with most athletic fields or playfields attracting large numbers of people to special features or events.

Maintenance

A well conceived and carefully executed plan is an essential factor in making a play area attractive and successful, but efficient maintenance and control are also of great importance. Unless the playground is designed and constructed so as to facilitate upkeep, excessive maintenance costs or unsatisfactory conditions are likely to result. Selection and location of plant materials, type of surfacing, adequacy of water outlets and connections, and building layout and materials are only a few factors which influence the problem of maintenance.

Continuous care is needed to keep the property in good condition and the playground budget should carry an appropriation sufficient to provide for this. Play leaders will do well to try and develop in the persons using the areas a sense of pride in the appearance of the property and a feeling of responsibility for maintaining it in good condition. A few of the factors involved in keeping a play area in good condition are frequent inspection and constant upkeep of playground apparatus, painting and repairing all structures, resurfacing all worn or washed out areas, rolling, marking and upkeep of all special game courts and watering, pruning, fertilizing and spraying of the plantings. Without proper maintenance the playground cannot render effective service.

CHAPTER II

COMMON TYPES OF APPARATUS

It is almost universally agreed that apparatus has an important place on the playground because it is a body developer, the children enjoy it, it is useful in developing skills and its presence on the playground makes possible the caring for a larger number of children than would otherwise be possible. Furthermore, it permits a variety in the program, tends to prevent too much organization and helps relieve the pressure on the director. Apparatus also serves as an inducement to children to enter the playground and it may prove a means of interesting them in other types of playground activities. On the other hand, there is a considerable difference of opinion as to the relative merits of the various kinds of playground apparatus and many recreation executives believe that only a minimum amount of apparatus should be installed. Unquestionably less space is being allotted to apparatus on public playgrounds today than a decade or two ago, but this makes a careful selection even more important.

Perhaps the greatest value of playground apparatus is that it provides an outlet for the well-known play interests of children such as climbing, swinging, hanging with hands and feet, sliding and balancing, and also a means of enjoying various kinds of motion. The modern town and city provide little opportunity for children to do these things which children have done from time immemorial, and in filling this need even under a less naturalistic environment, apparatus serves a very worthy function. In selecting apparatus for a given playground it is advisable to include the types which serve the various outstanding play interests. Apparatus that has a biological appeal will be found most valuable, although that which provides fun as well as that which has definite developmental possibilities should receive consideration.

Some of the factors that influence the decision to include or omit a certain piece of apparatus on a given playground are the size of the area, the trained leadership available, intensity of use and the ages and interests of the children using it. Certain apparatus might be installed in a park or municipal playground that would not be suitable on a school playground used primarily in connection with the physical education program. On a

large playground it may be advisable to install a set of traveling rings, although in a limited area this piece of apparatus should be omitted altogether or the circular type used. Some apparatus, such as the slide, may be safely used with comparatively little supervision, whereas gymnastic types such as the parallel bars require careful and expert supervision. Climatic conditions are also a factor and such riding apparatus as swings and the merry whirl is much more popular with children in the Southern States, especially in the summer, than the slide, giant stride and horizontal bar, which require more exertion on the part of the children.

Where limited funds make it possible to purchase only a few pieces, it is advisable to select apparatus which will accommodate the largest numbers. A slide, for example, offers greater service than a set of swings, although it does not accommodate as wide an age group. If the playground is in a neighborhood where people are interested in gymnastics, or if it is to be used by school children in connection with the physical education program, more apparatus of the gymnastic type, such as the horizontal bar or flying rings, may well be introduced than is necessary in the park or community playground. The ages of the majority of the children who will use a given playground are a factor in determining the selection of apparatus. The slide, swings and sand boxes appeal especially to the younger children, whereas such apparatus as the horizontal bar, giant stride and traveling rings are more popular with the older ones. Experience has shown that apparatus of the best construction is most satisfactory and cheapest in the long run.

The following pages summarize the opinions of many experienced leaders in regard to the selection, use and care of the common types of playground apparatus. Additional suggestions concerning the location of apparatus are found in Chapter V.

The Sand Box

No place on the playground is more popular with very young children than the sand box, and an opportunity for sand play should be provided on every playground. The size and shape of the sand box vary according to local conditions and needs. Frequently it is rectangular in shape and its dimensions vary from 6 feet by 10 feet to 12 feet by 20 feet. There is much to be said in favor of a large sand box, and on many English playgrounds considerable sand court areas are provided which make possible opportunity for varied forms of imaginative and constructive play. Sometimes the sand box or court is located near the wading pool—an arrangement which

is very popular with young children, although there is a disadvantage in that sand is liable to be carried into the pool.

The walls of the sand box, which are usually of concrete or wood, vary from 12 to 15 inches in height. If made of wood, 2-inch planks should be used, but the thickness and depth of concrete walls will depend somewhat upon the climate. The concrete walls and bottom are preferable because they are more permanent and prevent the dirt from working in. It is very desirable to have a shelf 10 or 12 inches wide around the top of the box or on at least two sides. This is used as a seat and also for modeling. If the

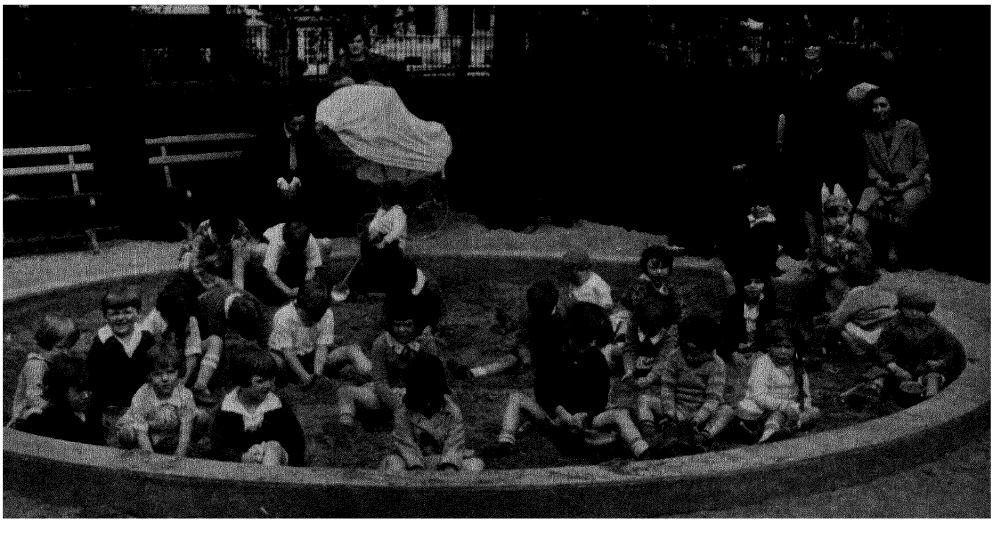


PLATE NO. 6

THE EVER POPULAR SAND BOX

The desirability of providing large sand areas on the playground is illustrated by this photograph.

shelf extends inside the wall a few inches it tends to prevent the sand from being spilled out of the box. In one city circular or hexagonal sand boxes are used, the walls being in the form of a continuous seat with a back rest.

Some playground authorities have suggested that portable sand boxes be installed with removable steel sides, the top edge of which should be either rolled or with an angle iron riveted on to prevent injury. The advantages of steel are that it lasts longer, does not warp or splinter, is more economical to maintain, and is more sanitary. The plates used for portable sand boxes should be 10 feet by 10 inches and made of 14-gauge or ⅛-inch steel.

If the sand box is on soil that is naturally porous, no special base needs

to be prepared for the sand, which is generally from 12 to 15 inches deep. The ground should be cleared of grass which tends to rot or to grow up through the sand if it is not deep. Sometimes a concrete sand box is provided with a bottom, and when this is done provision for drainage must be made as in the case of the one shown in Plate No. 11, page 39. This is equally true when the sand is on a heavy clay surface. Most authorities prefer beach sand for the sand boxes. It is not always necessary to have a cover, but if the playground is open at night, one should be provided so animals cannot get into the boxes. Sometimes the cover is made of wire mesh on a frame, which is light in weight, but on some playgrounds a solid wooden cover is used which may be slid off during the day and used as a building platform. (See Plate No. 56, page 110.)

It is desirable for the sand box to be in the shade, which may be provided either by trees, a building, a trellis or a canvas awning. On the other hand, the sand box should be exposed to the sun part of the day. Benches for mothers may be placed nearby. It is usually advisable to have two sand boxes so that one may be reserved for special sandcraft projects and the other for general play. The same end may be gained by dividing a large box into two sections. Sand to be used by the older children should be kept moist for modeling, but the very small children like the warm dry sand.

Every effort should be made to keep the sand not only in a sanitary condition but in a condition which invites sand play and modeling. It should be raked thoroughly every day, turned over and exposed to the sun and air. Sprinkling with a thin solution of bichloride of mercury will insure against fleas. The sand should be changed at least twice a season. Where used by large numbers of children it may be necessary to change it more frequently. The old sand can be used to advantage under the apparatus and in the jumping-pits.

The Slide

If there is any one kind of apparatus which competes for popularity with the swing among children of all ages, it is the slide. It accommodates large numbers of children, is "self-discharging," provides valuable exercise, encourages the taking of turns and satisfies the universal desire to slide down something. Because of the intensive use to which it is subjected, the slide must be well constructed of the best materials and carefully maintained.

The three important parts of a slide are the stairway, the chute and the supporting structure. The stairway leading to the top of the chute should be at an angle with the ground of not more than 60°, the steps not too far

apart, and a hand rail should be provided on both sides. If steps are wood, the wear is reduced by fastening metal plates on them. It is desirable to limit the width of the stairway so as to permit only one person to ascend at a time. It is recommended that slides be provided with an equilibrium platform at least 8 inches in width at the top of the steps in order to give a child an opportunity to be properly seated before going down the slide.

The bottom of the chute may be built either of galvanized iron or rock maple; a chute of rust-proof stainless steel is also available at a somewhat higher cost. If maple is used, the slats comprising the chute should be beveled at the edges, and they are frequently set about ⅛ inch apart to allow rain to run off readily and to provide for expansion of the wood when wet. Many authorities prefer the steel chute because when the maple slats are used it is possible for children to stick nails or other sharp objects in the openings, thereby causing serious accidents. The chute should be curved near the bottom to reduce the shock of landing. It is desirable to have the sides of the chute 6 inches to 8 inches higher where they are fastened to the platform than near the bottom, and to have them graduated downward a distance 3 feet or 4 feet from the platform to reduce the danger of falling from the slide. The use of a rail along the top of the chute is not recommended since children are likely to catch their arms or legs in it.

If necessary the chute may be waxed or paraffined occasionally, and if the slide is put away for the winter, a coat of hot linseed oil helps to preserve the wood. The slide supports are usually set in concrete although portable slides may be used, especially for the very small children.

The slide most commonly used on children's playgrounds is the 16-foot straight slide, the starting platform of which is approximately 8 feet high. Many experienced playground workers do not favor the use of a higher slide. For the smaller children, 8- and 12-foot slides are recommended. These are usually portable. There are many wave slides on the market but they are more expensive than the straight slides and do not have a great deal of additional value. The double racer slide, an adaptation of the simple slide, accommodates a larger number of children and is popular in many playgrounds, but it is not considered essential on the average playground.

Occasionally playgrounds have a wooden slide several feet wide, known as the gang slide, which is safe and accommodates a large number of children. The ample platform at the top is reached by a wide stairway erected alongside the chute. In Newport, R. I., a similar slide, except that it is constructed of reinforced concrete, has been in use for several years. The chute has a 1¼-inch surface of coarse and fine marble chips, marble dust

and Portland cement in equal parts rubbed to a polish. In the same city the roof of a shelter house serves as the platform for a playground slide. (See Plate 7.) Steps at one end of the building lead to the roof, and at the other end is the top of the slide. This has a surface of one part gray cement and two parts marble chips running from ½ inch to dust, cast in place rather dry, floated and hand rubbed smooth. These unusual types suggest the possibility of varying the standard apparatus so as to secure greater

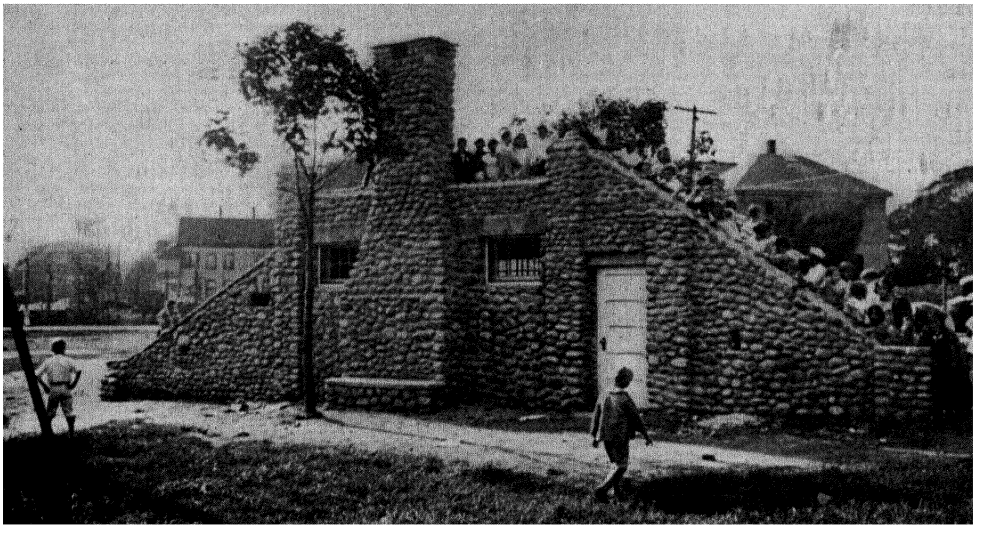


PLATE NO. 7

SHELTER HOUSE, NEWPORT, R. I.

This building is shown here not because of its architectural merit but because it is an example of a multiple-use structure. It serves not only as a shelter but as a band stand and playground slide. Facilities within this sturdy building include a clubroom 16 feet square with a fireplace, workshop, dressing room and toilets and showers for boys and girls. For a description of the slide see top of page.

safety, more interesting design and the accommodation of larger numbers of children.

Whenever possible the slide should be placed in the shade, as the chute gets very hot after standing for a while in the sun. This is especially true of metal slides. The ground where the children leave the chute should be free from stones, and it is advisable to keep it soft by spading or raking. It is recommended that a box about 5 feet long and 3 feet wide constructed of 2-inch planks be sunk into the ground at the foot of the slide and filled with shavings, sand or sawdust in order to provide a soft landing place.

Children should not be permitted to walk or crawl up the chute, to crowd on the ladder or to slide down in any position other than feet first.

THE SWING

The ever-popular swing in many forms and with many adaptations is an important type of playground apparatus. Among the most common forms are hammock, chair and regulation swings.

Hammock swings are sometimes provided for babies brought to the playground by mothers or older sisters. Their use is not favored by most playground workers, however, because older children are likely to put the babies in the hammocks, then go off and leave them. Furthermore, it is difficult to keep these swings in a sanitary condition and their use must be restricted to children not more than three years of age.

Chair swings are the type enjoyed primarily by children between three and six and they are found on most playgrounds serving this age group. Older children should not be allowed to use them. At least one manufacturer builds swings with a curved seat which tends to prevent the child's slipping out and is also more comfortable. An adaptation of the chair swing is used with great satisfaction in several western cities. It is constructed of leather belting about 5 inches wide, crossed in such a way as to form a comfortable seat for the child. There are holes through which the child's legs are inserted and which make it almost impossible for the child to fall out of the swing.

It is recommended that in the frame for hammock and chair swings the top suspension rail be not less than 2 inches I.D. pipe and the supports not less than 1½ inches I.D. pipe. The horizontal pipe does not need to be more than 7 or 8 feet high and 3½ to 4 feet are required for each swing. Uprights are required for every three swings.

The standard type of swing is the one in most frequent use and is most serviceable for the older children. The standard height of the swing suspension is 12 feet, although some authorities believe that 10 feet is adequate, especially if playground space is limited. Steel frames from which suspensions are hung should have a 3-inch I.D. pipe rail and the supports should be 2-inch I.D. pipe. It is recommended that the frame be supported at each end by three poles. Each swing requires from 4½ to 5 feet on the supporting frame, and uprights are required for every three swings.

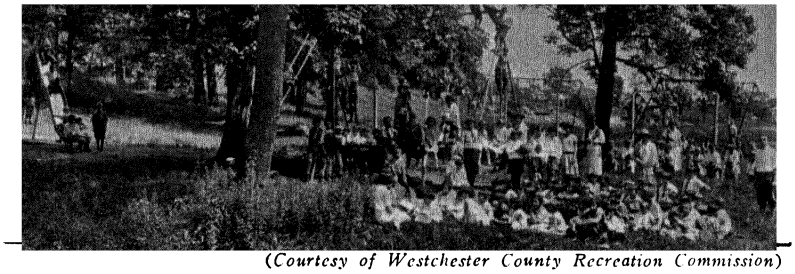
Two precautions are suggested in building or purchasing swings. The collar about the pipe which supports the rope or chain should be so made that it will grip like a vise, as it has to bear the strain of the swinging, and the ring holding the chain should be supported by roller-bearing hangers.

Steel chain is generally used for suspensions for the swing seats and the long links are considered most satisfactory. Rope is not as practicable as chain for suspending the seats, but if used, hemp will be found more suitable than manila, which must be shrunk before using. Swings with ball bearings and steel links may be chained to the uprights at night, but rope swings are usually hung on hooks and may be taken down easily.

The swing board that is light in weight helps to minimize the liability of accident. Some manufacturers make a safety seat with a rubber bumper. If a board is used, it is suggested that a piece of old garden hose be screwed onto the edges. Since most of the accidents for which swings are responsible are caused by children at play running into them, it is advisable to place the swings at one side of the playground parallel to a fence or building. Frequently a low railing or iron pipe fence is erected in front of the swings to prevent children from heedlessly running into them. This is especially needed if the playground is small or if children are permitted to play games near the swings. A chain or rope around the swings serves the purpose of the fence or railing. Sometimes, as a safety measure, a white line 2 or 3 inches wide is marked on the ground surrounding the swings.

The Giant Stride

The giant stride consists of an upright pole from 14 to 16 feet in length, with a pivot head from which are fastened several ropes or chains with ladder handles. It is usually made of a galvanized steel pipe 4 inches in diameter and set about 4 feet in concrete. It has been suggested that a 1-inch cross pipe be put through the upright near the bottom to keep it from turn-



(Courtesy of Westchester County Recreation Commission)

PLATE No. 8

A PLAYGROUND IN THE WOODS, RECREATION PARK, PORT CHESTER, NEW YORK

Playground apparatus does not require a perfectly level space and a wooded area is much better suited for some activities than one that is bare and open.

ing in the concrete. The standard height recommended for the giant stride is 12 feet above the ground. The rotating head with ball and roller bearings is set on the top of the upright pipe and attached to this head are from 4 to 8 ropes or chains to which are fastened handles in the form of ladders. Although many workers prefer the rope because it is lighter in weight, the chains last longer than the rope. The ladders may be of wood, steel or aluminum. Because of their light weight, either the wooden or aluminum handles are considered best. Frequently ropes without ladders are used, 2 or 3 knots being tied at 18-inch intervals near the free end of the rope. It is advisable to fill the upright pipe with sand or concrete to deaden the sound of the chain ladders striking the post.

Some play leaders do not favor the use of the giant stride because they believe it presents too much of a hazard, but with the improved and lighter weight materials of which the ladders are now constructed, the probability of accidents has been materially reduced. The stride has considerable developmental value and also gives much joy to the children. It is important, however, that the children be taught how to use it properly. They should not be permitted to twist or tie the ropes, to push anyone around or to sit in the ladders, and they should learn to dodge out of the way as soon as they leave the stride, so as to avoid being hit. The stride is often placed in a corner of the playground and sometimes a circle 30 feet in diameter is marked on the ground around the giant stride as a safety measure. One authority believes that the stride should be used only by children who have passed a qualifying test.

Horizontal Ladder

The horizontal ladder is considered a very valuable item of playground equipment because of the excellent body development which results from its proper use. It provides for climbing, swinging, chinning and many other forms of exercise. Important considerations in setting up and using the horizontal ladder are its height and the condition of the ground underneath. If intended primarily for the use of children, a height of 6½ feet is recommended, but if it is installed in a section of the playground for older boys or young men, 7½ feet is a preferable height. It is recommended that the rungs of the ladder, before galvanizing, be welded or riveted through the sides of the ladder, or otherwise assembled, to prevent turning of rungs while in use. Some authorities favor the use of elliptical pipe on the long horizontal sections, to eliminate the danger of sagging. The ground underneath should be well spaded or excavated and filled with sand, shavings or similar material.

Traveling Rings

This piece of apparatus is popular with the boys and girls and provides healthful exercise, but because it accommodates few children and occupies a great deal of space it is not found on many playgrounds. The height of the cross pipe supporting the rings should be 12 feet, and it is recommended that it be 36 feet in length. It should be supported at each end by three 2-inch pipes and in the center by two similar pipe supports. The rings, six in number and preferably of aluminum, are suspended by galvanized chain supports spaced at approximately 6-foot intervals. The height of the rings is such that the average child can jump from the ground and seize them. Sometimes a low platform is provided at one end of the apparatus so the child may have more of a swing at the start. If the rings are intended primarily for the use of boys 16 or more, it is advisable to have the cross pipe from 14 to 16 feet above the ground.

A circular traveling ring outfit which occupies much less space and serves nearly the same purpose is replacing the traveling rings "in line" in many cities. The rings are suspended from a circular frame about 10 feet in diameter and supported by a 4-inch upright pipe. The chief difference in the use of the two types is that in one the children progress in a line and in the other, in a circle.

The Climbing Structure

Several types of apparatus have been designed primarily to provide climbing opportunities for boys and girls. They consist of various arrangements of galvanized steel tubing which is bolted or clamped together to form horizontal, vertical or slanting ladders, horizontal bars, climbing poles and other combinations. Typical of this group is the junglegym, which is available in several sizes, varying in height and ground space requirements. There are a number of other climbing structures which provide to a greater or lesser degree the main features of the junglegym and in some of which new features have been incorporated. Typical of these structures are the following: climbing tree, castle tower, circular climb, climb-a-round.

The climbing structure is highly endorsed by many recreation leaders as a popular and valuable piece of apparatus which may be used by a large number of children at one time. It provides a place for many types of races, stunts and games encouraging skill, ingenuity and physical development. Reports indicate that few children have been hurt while using this type of apparatus. Its strongest appeal is to boys and girls from 6 to 10

years of age, although it is used by older children. When, like the junior junglegym, it is constructed especially for children of pre-school age, it is very popular with this age group. This type of apparatus may well receive consideration, especially in selecting the equipment for a playground to serve a large number of children.

Horizontal Bar

The horizontal bar or turning bar is an excellent piece of equipment requiring very little space and it is found on most playgrounds. It is especially attractive to the older boys, who can be taught to do many interesting stunts upon it. If many children of different ages are to be served, more than one bar may well be erected. The height of the bar varies from 5 to 7½ feet, depending upon the size of the children using it. Three-quarter-inch galvanized steel pipe is used for the bar itself. It is essential that the space under the bar be kept clear and soft to avoid injuries in case of falls.

The Balance Beam

This simple piece of apparatus is not used on many playgrounds but it is valuable in the development of poise and balance. Another reason for installing the balance beam is that it is required for the conducting of cer-

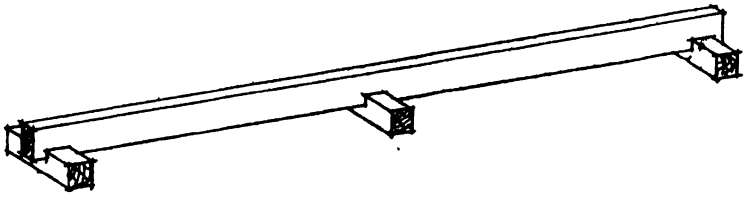


Plate No. 9
BALANCE BEAM

tain standard girls' athletic test events. It consists merely of a 2-inch plank 12 feet or more in length, set on edge and securely held in place as illustrated in Plate No. 9.

The See-Saw

Everyone is familiar with the see-saw or teeter as a piece of play apparatus. It has less value than some of the other types and is not highly favored by many playground workers. A few see-saws, however, are generally provided for the young children. The lower the board, the safer it is. The horizontal pipe support should not be more than 24 inches above the

ground, and preferably less. The boards should be 12 feet long. It is recommended that they be made of spruce, fir or selected North Carolina pine, 2-inch dressed material, rounded, saddled and provided with proper hand holds. Special care should be taken in selecting the boards since only vertical grain stock free from splinters should be used. They should be painted frequently. An adjustable fulcrum is often provided on the under side of the board, and it is secured by a rod or chain so the board cannot be removed. See-saws are sometimes constructed with safety bumpers under the ends of the board to keep them 6 or 8 inches off the ground and help to prevent any squeezing or pinching of feet and limbs. The bumpers also reduce the wear on the see-saw boards. Children should not be allowed to stand on the end of the see-saw or to work it alone from the middle, and they should give ample warning to the person on the other end before getting off.

Other Apparatus

There are many additional types of apparatus available from manufacturers and used on children's playgrounds. Climbing ladders, ropes and flying rings encourage valuable bodily exercise. The climbing rope can be used for one of the girls' athletic badge test events. As a rule this type of equipment is not as popular as some of the others unless children are taught and encouraged to use it. It is frequently combined with other apparatus in the so-called gymnasium frame. In general, however, it is believed to be better to provide these types of apparatus separately than to combine them in the gymnasium frame.

The merry-go-round and ocean wave represent a type of whirling or revolving apparatus found on a number of playgrounds. They are popular with the children and accommodate a large number at one time, but they have limited value. It has been suggested by one worker that if installed they should be enclosed so as to be used only when carefully supervised. Because they sometimes have a harmful effect upon the children using them, provide a hazard due to the cumulative power developed on them because of the large number of children accommodated, and can be kept in motion by one or two older children, many playground workers believe they should not be installed. On the other hand, one experienced worker believes that the training which this apparatus provides in taking turns and in learning to step on and off is of great value in later life. In all probability they are less valuable than some of the other types of apparatus. It has also been suggested that the unusual or thrill types of apparatus be placed in the large parks where children go occasionally for a day's outing, where

there is no organized play and where supervision is provided by parents or caretakers.

Some playgrounds are equipped with parallel bars, horse, buck and similar apparatus, and if expert instruction in their use is provided, they have considerable value. However, they are essentially gymnasium apparatus, and since most playground workers are not trained gymnasts, they are not considered essential for the average playground.

Most of the other pieces of apparatus such as the rock-a-bye or log swing, the teeter ladder, the tree climb and the spiral slide are adaptations of one or more of the simpler units. They may be desirable under certain conditions, but the fact that they are not generally used and are not favored by leading playground authorities seems to indicate that they are of minor importance. Some of them require careful supervision, whereas the beneficial effect from the use of others may better be gained in other ways.

Home-made Apparatus

Most playground authorities purchase their apparatus from the manufacturers although in some of the larger cities it is constructed in the workshops of the departments which operate the playgrounds. In small communities where funds are very limited and where the playgrounds are used by comparatively few children, apparatus is sometimes made locally by a carpenter or in the manual training department of the school. In general, however, home-made apparatus is not recommended for community playgrounds serving a considerable number of children, although it may be suitable for use in rural communities and in backyard playgrounds. The standard steel apparatus is likely to give longer service, require less repairs, prove more safe and in the long run be less expensive and more satisfactory than the apparatus which is constructed locally.

The sand box, on the other hand, is usually constructed to meet the requirements of the individual playground. The balance beam (see Plate No. 9) can be built easily. In several cities simple portable play houses with canvas roofs, side walls of wire netting and furnished with small tables, chairs and other furnishings, have been constructed for use of the small children. (See page 31.) Dr. E. H. Arnold suggested the installation and use of several other features which may be constructed at small expense and which afford opportunities for various types of informal play. They are briefly as follows:

Balancing-tree or Jolly-log. "The balancing-tree is a large and perfectly straight tree, 50 or more feet long, freed of the bark and rounded off. It is held in place by two or three wooden supports, one at the extreme thick

end, another one sufficiently far from the thinner end to allow it free play to swing. At the thicker end the tree may be 2 or more feet in diameter, tapering to 4 or 6 inches in diameter at the other end which is free to swing. The tree is so supported that at its thicker end its upper edge is 3 feet to 3½ feet from the ground. The tree is then placed securely on its supports so that its long axis is horizontal. This tree, as its name implies, gives a



PLATE NO. 10

ONE OF THE SEVERAL ATTRACTIVE PLAYGROUNDS FOR LITTLE CHILDREN IN THE PARKS OF HARTFORD, CONNECTICUT

Note the small play houses, the home-made baby slide and the benches arranged to form a fence.

chance for balancing exercises on a broad and steady and also on a more and more narrow surface which sways and swings. It may also be used for jumping and for vaults of all kinds. In the more solid parts of the tree holes may be drilled and pommels may be fastened on it; then it serves all the purposes of a horse or saddle-boom. Children may ride on it astride or may swing on the movable part, finding great enjoyment in it.

Hillock. "The hillock consists of a small elevation on the playground, 3 feet to 5 feet high, from 3 feet to 6 feet wide at the base, tapering off toward the top, well covered with turf. Deep jumping, high jumping and hurdling may be done on and off and over this. Pole vaulting may be taught from it. This gives an opportunity for the much-enjoyed frolic, rolling of children. In winter, when it is covered with snow, it gives a fine start for the sled. It invites contests for the possession of the top of it.

Climbing-tree. "The climbing-tree is a straight tree no less than 30 feet high, made smooth, but not necessarily altogether even, securely implanted. Its top is protected by a platform sufficiently wide not to allow its edge to be grasped by the climber. While this apparatus serves climbing primarily, until the ingenuity of the child makes it the center for other games, it furthers that type of climbing which is the normal and natural one, and which can be practiced only on trees and for which the gymnasium climbing pole gives no chance at all.

Jumping-stairs. "These are wooden stairs of ordinary construction leading with 10 or 12 steps to a height of from 6 to 8 feet either to a platform, or, better, to stairs of the same type, leading down on the other side of the platform. If the sides of this are enclosed by boards and a door cut in, it may be made the receptacle for playground apparatus. These stairs are surrounded on all four sides with sand of at least 6-inch thickness. Any one who has ever watched the enjoyment of children in jumping from stairs will know that the installation of this apparatus is only half completed before the children are beginning to make use of it for broad, high and deep jumping.

"The platform at the top of the stairs may be used as a support for a wide wooden slide which is very popular with the children. This platform and slide may be used in the winter as a starting place for coasting. The platform should be protected by a railing on the open sides."

A Suggested Set of Apparatus

Because of widely divergent opinions among playground authorities as to the relative merits of different types of apparatus and because many communities were seeking guidance in the selection of apparatus, the National Recreation Association appointed a committee to study this problem. After considerable study and discussion, a committee composed of seventeen leading recreation executives submitted a report * which included a recommended list of apparatus. The committee made it clear, however, that its report was not to be regarded as a final statement on the subject but rather

* Standards in Playground Apparatus. National Recreation Association. 1929.

as a guide to communities in selecting apparatus for their playgrounds. The statement which follows is from the committee's report as revised in 1937:

"The following list of apparatus is recommended as the minimum standard for the average playground. The standard suggested is not intended to serve primarily the special requirements of a school physical education program although to a considerable extent it will meet these needs in addition to providing apparatus of the playground or fun type. It is recognized that it will often be necessary to adapt the standard to meet local conditions and special needs. The apparatus listed, however, is believed to include the various types having the greatest value.

"Standards are suggested for the use of both the pre-school children and those of elementary school age. One set of apparatus will serve the latter group in most communities, but standards are also suggested for the guidance of communities where it is considered desirable to provide separate apparatus for different groups of school age.

The minimum standards recommended are:

For pre-school age children (under 6 years)	Chair swings (set of 6) Sand box Small slide Simple low climbing device
For children of elementary school age (6-12 years and older)	Swings—frame 12′ high (set of 6) Slide—8′ high (approx. 16′ long) Horizontal ladder Giant stride Balance beam Horizontal bar
Optional—if available funds, space and attendance justify.	Traveling rings See-saws (set of 3-4) Low climbing device

"In case boys and girls of school age are to be separated on the playground and separate apparatus is to be provided for each of the sexes, the apparatus recommended in the standards should be installed for each group except that the horizontal bar may be omitted from girls' section and the balance beam from the boys. When two sets of apparatus are to be provided for the children of school age, one for all girls and for boys up to 10 years old, the other for boys above 10 years, practically the same types should be provided as when all the boys and

girls are separated, except that the climbing device may be omitted from the older boys' section."

It is suggested that communities equipping playgrounds be guided by the committee's suggestions and install primarily the kinds of apparatus that have proved their worth. On the other hand, it should be kept in mind that manufacturers are striving to improve apparatus with a view to eliminating the dangerous features and to develop more attractive and beneficial types. Therefore, the newer and less standard types merit careful investigation.

The Construction of Playground Apparatus

Because apparatus on public playgrounds is used by large numbers of children of varying ages, it is essential that it be constructed in such a way as to minimize hazards and to withstand the strenuous use to which it is subjected. A committee of recreation executives appointed by the National Recreation Association gave careful study to the problems involved in the construction of playground apparatus. In its report * the committee agreed that the design, materials and workmanship should be such as to insure:

1. Safety—absolute minimum of danger resulting from ordinary use.
2. Durability—capable of withstanding action of diverse climatic conditions without crystallization for the longest possible period of years.
3. Serviceability—capable of withstanding continued hard use with proper care.
4. Economical maintenance—parts easily replaced.
5. Simplicity of supervision—use readily controlled with minimum of necessary restrictions.
6. Developmental and recreational value.

A sub-committee on engineering problems gave careful study to existing common types of playground apparatus to determine the degree to which it is fulfilling the preceding requirements, and also to suggest changes which in its opinion would bring better results. Cooperation was secured from several leading manufacturers of playground apparatus. Because its findings disclosed a surprising uniformity in the construction specifications of the leading manufacturers, and because it was apparent that they were making every effort to produce the best and safest types, the recommendations of the subcommittee which were later adopted by the entire committee were rather general in nature. A few of them which are of general interest follow:

* Report of the Committee on Standards in the Construction of Playground Apparatus. National Recreation Association. 1933.

1. That all pipe used in construction of apparatus be of standard weight hot galvanized steel pipe, factory tested.
2. Only annealed or malleable iron clamps and fittings, except in base flanges, should be used, because malleable fittings on overhead construction are less liable to break under sudden thrusts and strains. All exposed pipe, clamps or fittings should be hot galvanized to prevent rust.
3. Methods of lubrication:
   a. Bearings that turn fast and bear large weights should be equipped with alemite valves or equally effective means of lubrication.
   b. Bearings that sway back and forth should be alemited or packed with hard grease and the fittings provided with a covered slot to renew the grease, if packed.
   c. Ball and socket fittings, where possible, should turn in oil.

Some of the committee's other recommendations have been incorporated in the suggestions presented earlier in the chapter.

Additional Suggestions

A few additional suggestions which should be considered by local authorities in selecting, erecting and caring for playground apparatus are:

Limit the height of apparatus, especially for the very small children.

Avoid use of dangerous apparatus; at the same time do not make it so safe as to be unattractive and useless.

Set frames and supports for swings and traveling rings in concrete, checking with spirit level to make certain that pipes are absolutely vertical or horizontal. The top of the base should be crowned and troweled smooth to shed water.

Allow concrete to harden thoroughly before permitting use of the apparatus. This usually requires from 3 days to a week.

Tighten securely all bolts and nuts and batter threads at protruding ends of bolts.

Place swings, giant stride and other revolving or swinging apparatus along a fence, in a corner or between the divisions of the playground so as to reduce danger of accidents caused by children running into them while in use.

Make certain that the ground under the apparatus is free from stones and obstructions, and provide soft landing pits under bars and ladders and at foot of slides.

When the playground is not open under leadership take down or fasten apparatus that is dangerous when its use is not supervised.

Erect apparatus in the shade if possible or plant trees nearby to provide shade.

Creosote all wood set in the ground; oil ladder rungs and swing seats.

Contracts for Purchasing Apparatus

In securing quotations from manufacturers, standardized bid forms are generally used. In some cities, special municipal forms have been worked out for this purpose. It is always best to make use of a carefully prepared contract in purchasing apparatus. The following items should be considered:

1. Time and place of delivery and responsibility for meeting delivery charges.
2. The assembly and erection of all parts of the apparatus, including foundations.
3. Removing all materials or debris resulting from the erection of the apparatus.
4. Provision of a clause to cover extra or incidental expenses.
5. Requirement of a guarantee on the part of the manufacturer against defective material, faulty construction and workmanship, covering a period of at least 3 years.

Frequently a separate contract is let for the erection of the apparatus.

A list of manufacturers of playground apparatus, athletic equipment and supplies may be secured from the National Recreation Association of America, 315 Fourth Avenue, New York City. Catalogues and price lists will be sent gladly on request by any of the firms listed.

Space Requirements for Apparatus

In the following table are given the dimensions and the approximate amount of ground space which should be allowed for several kinds of apparatus frequently installed on children's playgrounds. Since the types of equipment made by the various manufacturers differ somewhat, the dimensions and areas given are merely suggestive. Obviously, it is not likely that all of the apparatus listed will be found on a single playground.

Type of Apparatus	*Dimensions of Apparatus*		*Approximate Use Space Requirements in Feet*	*Space in Square Feet*
	Length in Feet	*Height in Feet*		
Balance Beam	12	.5	6 × 20	120
Climbing Structure (average)	10	10	20 × 20	400
Climbing Tree or Ladder	5 dia.	12	10 × 10	100
Giant Stride		12	32 × 32	1,024
Horizontal Bar	6	8	12 × 20	240
Horizontal Ladder	12–16	6.5–7.5	10 × 30	300
Junglegym (junior)	6.5	7	12 × 15	180
Junglegym (medium)	10	10.5	20 × 20	400
Merry-go-round	10 dia.	3.5	25 × 25	625
Sand Box	6 × 10 (min.)	1	15 × 20 (min.)	300
See-saws (set of 4)	12	2	20 × 20	400
Slide	16	8	12 × 30	360
Slide, Gang	16	8	25 × 40	1,000
Slide, Kindergarten	8	4.5	8 × 20	160
Slide, Racer	16	8	20 × 30	600
Swings (set of 3)	15 at top	12	30 × 35	1,050
Swings (set of 6)	30 at top	12	30 × 50	1,500
Swings (set of 4)	18 at top	10	24 × 30	720
Swings, chair or hammock (set of 3)	10 at top	8	20 × 20	400
(set of 6)	20 at top	8	20 × 30	600
Traveling Rings (in line)	40 at top	12	20 × 60	1,200
Traveling Rings (circular)	10 dia.	12	25 × 25	625

CHAPTER III

POOLS, STRUCTURES, EQUIPMENT AND SUPPLIES

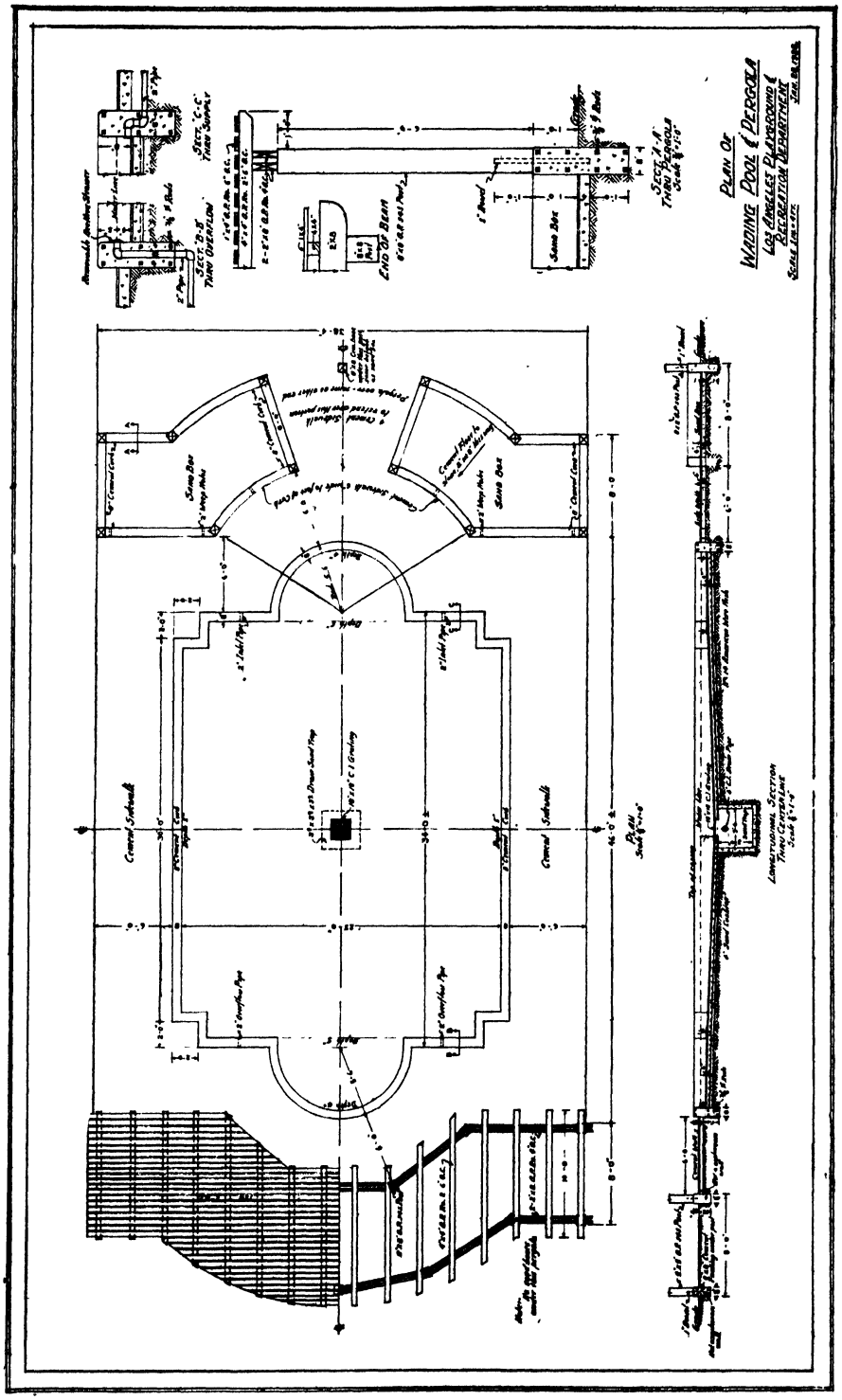
In this chapter are discussed a number of features which are not classified as playground apparatus but which have an important place in play areas. They include a variety of recreation, service and rest facilities such as the wading pool, shelter building or field house, drinking fountain, benches, tables and flag pole. Suggestions are also given for selecting the supplies necessary for a successful play program.

The permanent equipment needed in connection with games and sports, such as baseball backstops, volley ball posts, basketball backstops, football goals and tennis posts will be discussed in the chapter on *Areas for Games and Sports.*

The Wading Pool

No playground feature is more popular on a summer day than the wading pool, and few playgrounds should be without one. Such a pool is used not only for wading but as a sailing pond for small boats. If a stream of pure water flows through the playground it may be made into an ideal pool by damming it. Such an arrangement is seldom possible on a city playground; consequently an artificial pool must be built, usually of concrete. The size depends largely upon the area of the playground and the number of children to be served, but a circular pool about 50 feet in diameter is satisfactory for the average playground. Most wading pools are either circular or rectangular, although an irregular shaped pool, the edges of which follow the natural contours of an uneven area, may be more interesting and attractive, provided it is in harmony with the design motive of the area. The rectangular pool is the cheapest to build.

A very important factor in constructing a concrete wading pool is the drainage. The ground under and around the pool must drain readily so that ground or surface water will be carried away quickly and, in the northern states, the concrete will not be cracked by the frost. The concrete reinforced bottom is usually laid on a base of broken stone or cinders and its thickness depends largely upon the climate but usually varies from 4 inches to 8 inches. In the severe climate of Minneapolis a reinforced monolithic


PLAN OF
WADING POOL & PERGOLA
LOS ANGELES PLAYGROUND
RECREATION DEPARTMENT
General Sidewalk
Sand Box
Sand Box
General Sidewalk
Pergola
Pergola
Pergola
Pergola
Sand Box
Sand Box
General Sidewalk
General Sidewalk
Pergola
Pergola
Pergola
Pergola

slab 8 inches thick is required for the wading pool floor. In a large pool the floor expansion joints may be sealed with asphalt or tar. Side walls are usually 8 inches thick, and it is desirable if possible to pour them in the same operation as the floor so they will form a part of a composite structure.

It is very desirable to have a concrete walk several feet wide around the pool, but water splashed from the pool on to the walk should not be permitted to drain back into it. To prevent this the walk may slope away slightly from the pool. Care should be taken, however, that the ground at the outer edge of the walk be sufficiently porous to prevent the surrounding area from becoming muddy. The walk, on the other hand, may slope toward the pool if it has a raised curb, in which case drain outlets are placed at intervals in the walk to carry off the water. If the pool is several inches deep at the edges it is especially desirable to have a concrete curb extending a few inches above the walk and around the entire pool. The curb can be used as a seat by the children using the pool.

The water is brought into the pool through a pipe or fountain in the center, through a grating in the floor of the pool at the point of greatest depth or through openings in the pool walls which sometimes are in the form of shower heads which throw a spray of water into the pool. It is essential that there be one or more overflow pipes at the water line to carry off excess water and to prevent the water level from rising above the desired elevation. It is well to have brass strainers at the ends of the pipes to prevent their becoming clogged. As a rule overflow pipes should be set in the pool walls and opposite the inlet so as to make a continuous current. If the prevailing wind is with the current toward the overflow, dust and oily surface water will be carried off more easily. Ordinarily the wading pool does not have a scum gutter although this feature is found in some pools, especially in congested sections of large cities. The outlet pipe or drain, usually covered by a grating, is of course placed at the deepest point of the pool. It should be large enough to permit the pool to be emptied quickly and sand traps or catch basins should be provided so the pipes will not become clogged. It is advisable to have the box or chamber containing the valves and sand traps outside but near the pool so it is not necessary to enter the pool in order to empty it. Where the climate requires it, protection against freezing in winter should be provided for the valve box. All water pipes should be galvanized, and if inlet pipes, fittings and sprinkler heads are of brass or other rust-proof material, rust streaks will be avoided. The importance of using pipes of ample diameter cannot be overemphasized.

It is very desirable to color the cement used in finishing the wading pool and surrounding walk because the natural color is trying on the eyes on a

sunny day. The added coloring, if used judiciously and in moderation, also improves the appearance of the pool. The floor of the pool, curb and walks should be slightly roughened to prevent slipping. In making one pool small smooth pebbles were sprinkled over the cement on the pool bottom and walk for the same reason. The side walls of the pool and curb, however, should be as smooth as possible. If the corners and all intersections are rounded, the pool can be cleaned more easily.

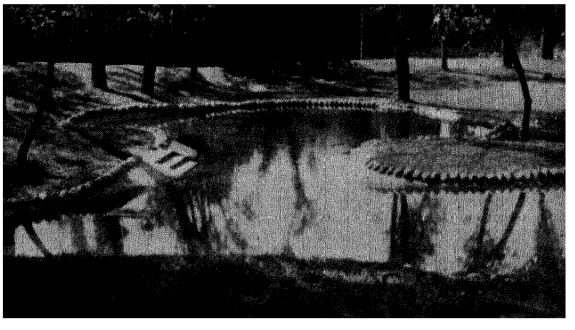


PLATE NO. 12

WADING POOL, MINOT, N. D.

This is an example of a naturalistic type of pool—"a toy sea for toy ships."

If the pool is to be used exclusively for wading, the water does not need to be more than 12 inches in depth at the deepest point. Many playground workers do not approve of wading pools more than 12 or 15 inches deep because they require constant supervision on account of the danger to very small children. It is advisable for the pool to be shallow around the edges where children enter the pool, and for the deep point to be at or near the center. The circular pool is particularly adapted to such an arrangement although it is also practicable in a rectangular pool (See Plate No. 11, page 39.) Sometimes in a rectangular pool the bottom slopes from one end to the other, but because small children are likely to step off or fall into the deep water at one end, this type of pool is not recommended unless it is enclosed by a fence. It is especially important that all slopes in the wading pool floor be very gradual.

On many playgrounds pools have been constructed with a maximum depth of 24 or 30 inches. These so-called wading pools are essentially swimming pools for children because they are used for bathing and swimming, and they present a real hazard to small children unless continuous supervision is provided. Such pools present the same problems of sanitation and safety as the swimming pool. Consequently they should be fenced, the water be kept continuously pure, children be required to take a shower before entering the pool, facilities for changing clothes be provided and the pool used only while supervised. Because of these requirements many playground authorities believe it is preferable to provide shallow wading pools for the smaller children and to encourage the older ones to make use of

swimming facilities in the neighborhood or community. Occasionally a wading pool is constructed for the small children in close proximity to or actually adjoining a swimming pool.

Sometimes a fence 3 to 4 feet high is erected around the wading pool, and in small, intensively used playgrounds this may be advisable. The fence prevents children from entering the deep end of a pool, or its purpose may be to require all children to walk through a disinfecting foot bath before stepping into the pool. This provision may be essential in neighborhoods where standards of personal cleanliness are low or on playgrounds where the surface is such that much dirt would be carried into the pool on the children's feet.

Special care must be taken to insure the purity of water, especially when the pool is used by large numbers, and tests should be taken from time to time to determine the bacteria count. If necessary, chlorox or chlorine should be added in amounts recommended by the city health authorities. If algae growths develop on the sides and bottom of the pool it may be necessary to treat the water with copper sulphate. In many pools there is a constant flow of fresh water, but where this is not possible the water should be changed daily during the playground season. In a few cities, especially in the larger pools, chlorinating equipment has been installed.

Because mothers like to watch their small children at play in the pool, it is well to provide some benches nearby. A very satisfactory arrangement found in many cities is for a covered arbor or pergola to be erected near the pool, preferably on the south or west side of the pool. Under the pergola benches are placed where mothers may sit in the shade, and sand boxes are provided for the small children.

There is an increasing tendency to use wading pools for other activities during seasons when wading is not practicable. In some of the large pools roller skating is a popular activity, and others are partly filled with water and used for ice skating during the winter months. The bottom of one rectangular pool has been marked off in large squares to serve as a checkerboard. Pools may also be used for fly casting. In New York City rectangular pools serve as basketball or volley ball courts. The basketball backstops are supported by posts fastened to the fence surrounding the pool and project over the pool walls to a position just inside the pool curb. In larger pools the standards, which are removable, are set 3 feet in a cast brass sleeve resting on a plate, and are held in place in a concrete block 18 inches square extending 3 feet below the pool floor. Removable volley ball standards are also erected. Illustrations and plans of wading pools will be found on the frontispiece and pages 39, 41, 43, 187 and 194.

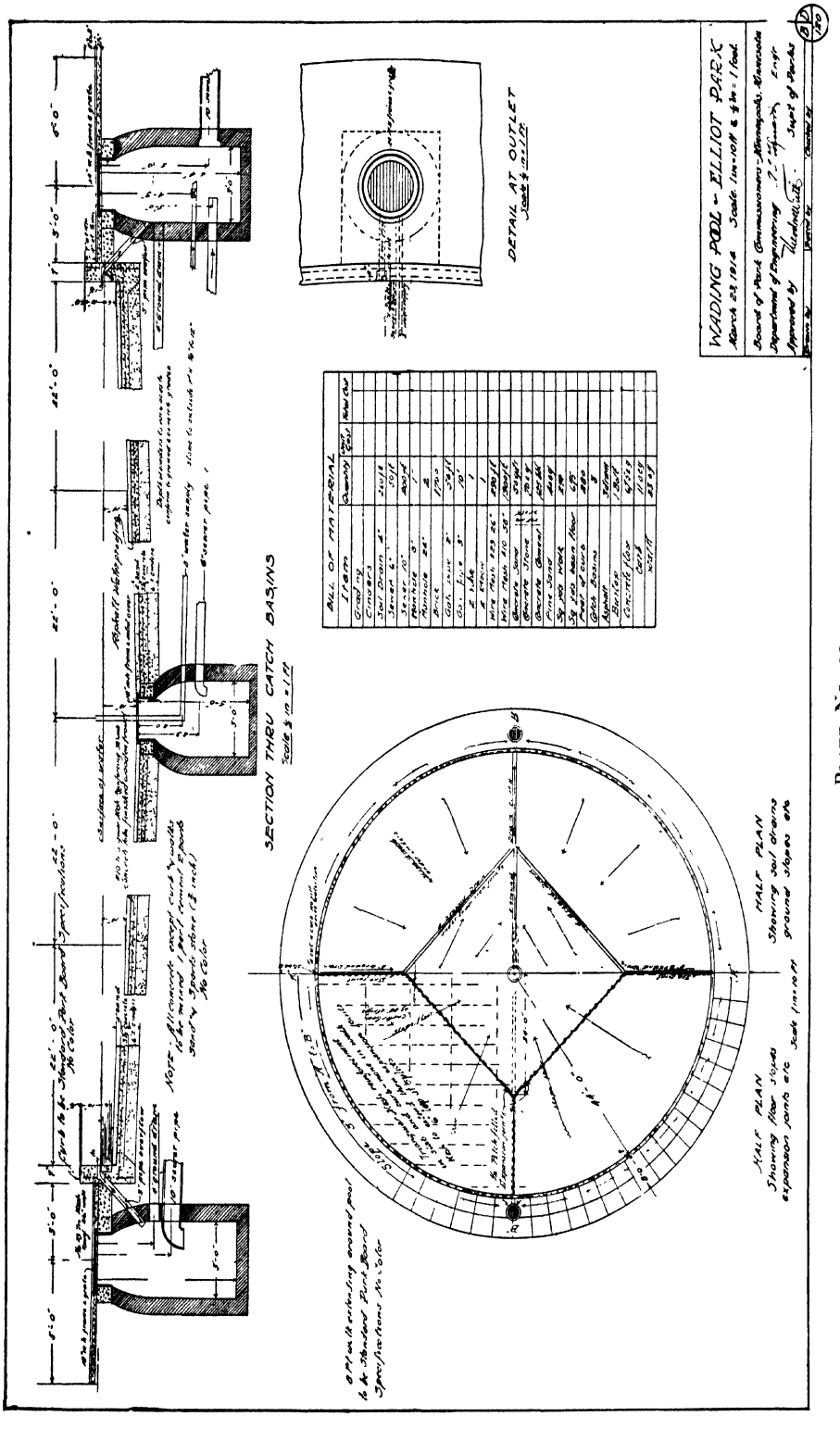


PLATE NO. 13

WADING POOL, ELLIOT PARK, MINNEAPOLIS

The plans and specifications for this large and well constructed pool should be especially helpful to northern cities. Note the reinforcement of the pool, the subdrainage plan, the curb and wide surrounding walk with drain outlets. The depth of the water varies from 6 inches at the edge of the pool to 18 inches in the center. Apparently the filling and emptying of the pool are controlled by valves on the pipes in the catch basin shown in the upper right hand corner of the plate. A smaller pool with a maximum depth of 15 inches would meet the needs of most playgrounds.

The Playground Shower

On some playgrounds where it is not possible to have a wading pool a substitute is provided in the way of a shower. Various types are in use which throw a fine spray of water over an area up to 50 feet from the nozzle or shower head. It is not practicable to use such a spray unless the playground has an area with a hard surface and with facilities for draining off the water. In one city several shower basins with a bituminous surface have been constructed in the center of which is erected a pipe some ten feet high equipped with a special spray nozzle. The outlet drain near the center of the basin may be stopped up while the shower is in use, affording a temporary wading pool. A shower of this sort is greatly appreciated on a hot day, but it should be considered merely as a substitute for a wading pool.

The Swimming Pool

Few children's playgrounds include a swimming pool as a part of their equipment, but it is an important feature of many neighborhood playfields. The rapidly increasing interest in swimming has created a popular demand for more facilities which must be met by recreation authorities. Because the construction of a swimming pool involves a large expenditure of funds and because its operation places upon them an obligation for safeguarding the lives and health of the bathers, recreation officials should study thoroughly the various problems involved before proceeding with plans for a pool. The two most important types of problems confronted in pool construction are (1) those relating to the location, type, size and general design and (2) engineering problems, such as the thickness and reenforcement of pool walls, drainage, waterproofing, water supply, heating, purification and recirculation. These are obviously problems which require expert advice, and it cannot be urged too strongly that communities secure the services of an engineer who has specialized in swimming pool construction. Likewise the advice of a competent architect is needed for the planning of the bathhouse. In order that the pool may have a suitable setting and may be so designed as to fit into the general plan of the play area, the advice of a landscape architect is desirable. There is perhaps no recreation facility in the planning of which cooperation is more essential than in the case of the swimming pool.

A great deal of study has been given the question of swimming pool construction and operation during the past few years and some very valuable literature on the subject is now available. A list of publications on swimming pools is to be found in the bibliography on page 236. The pamphlet

entitled "Swimming Pools and other Bathing Places—Standards for Design, Construction, Equipment and Operation," is an outstanding example of such literature. It is urged that recreation officials considering a swimming pool project should study carefully these publications.

A detailed discussion of the swimming pool is not practicable here, but the following statement suggests a number of factors which should receive careful consideration and contains some general comments on municipally operated swimming pools. It is intended merely as an outline for a further study of the subject.

The outdoor pool is generally of reenforced concrete; if small, the rectangular shape is best, but the shape of large pools depends on local conditions. The length of most pools is in multiples of 15 feet, and the width in multiples of 5 feet so as to be suitable for swimming races. The tendency today, however, is to build pools intended for competition in multiples of 5 meters. As large a percentage of the total pool area as possible should be wadeable or less than 5 feet in depth. The depth of the water in the diving area depends upon the height of the diving boards. The slope of the bottom in the shallow part should be not more than 1 foot in each 15 feet; a more gradual slope is preferable.

The size of pool required for a given community or neighborhood is determined by the estimated number of users and the amount of pool space required by each. Twenty-seven square feet has been determined as the average space requirement for each swimmer using the pool, and 10 square feet as the allowance for each non-swimmer. Twelve persons represent the maximum number which should be permitted in the area within a 10-foot radius of each diving board or platform. It was assumed, in arriving at these figures, that all of the swimmers and bathers are not actually in the water at one time.

Inlets and outlets must be located so the water will circulate freely and must be of sufficient size that the pool may be emptied and filled quickly. Scum gutters with frequent drainage outlets should extend around the entire pool. Depth markers should be conspicuous. Steps or ladders which are needed at the deep part of the pool should be recessed into the pool wall and hand rails provided at the top. Runways of non-slip material at least 4 feet wide should be constructed around the entire pool; these may slope toward the pool, draining into the scum gutter or away from the pool into special drains. The pool area should be completely enclosed and made accessible only to bathers. If desired, bleachers for spectators may be provided, but separated from the pool area by a woven wire fence. If it is to be used at night, as is normally the case, an adequate lighting system must be installed.

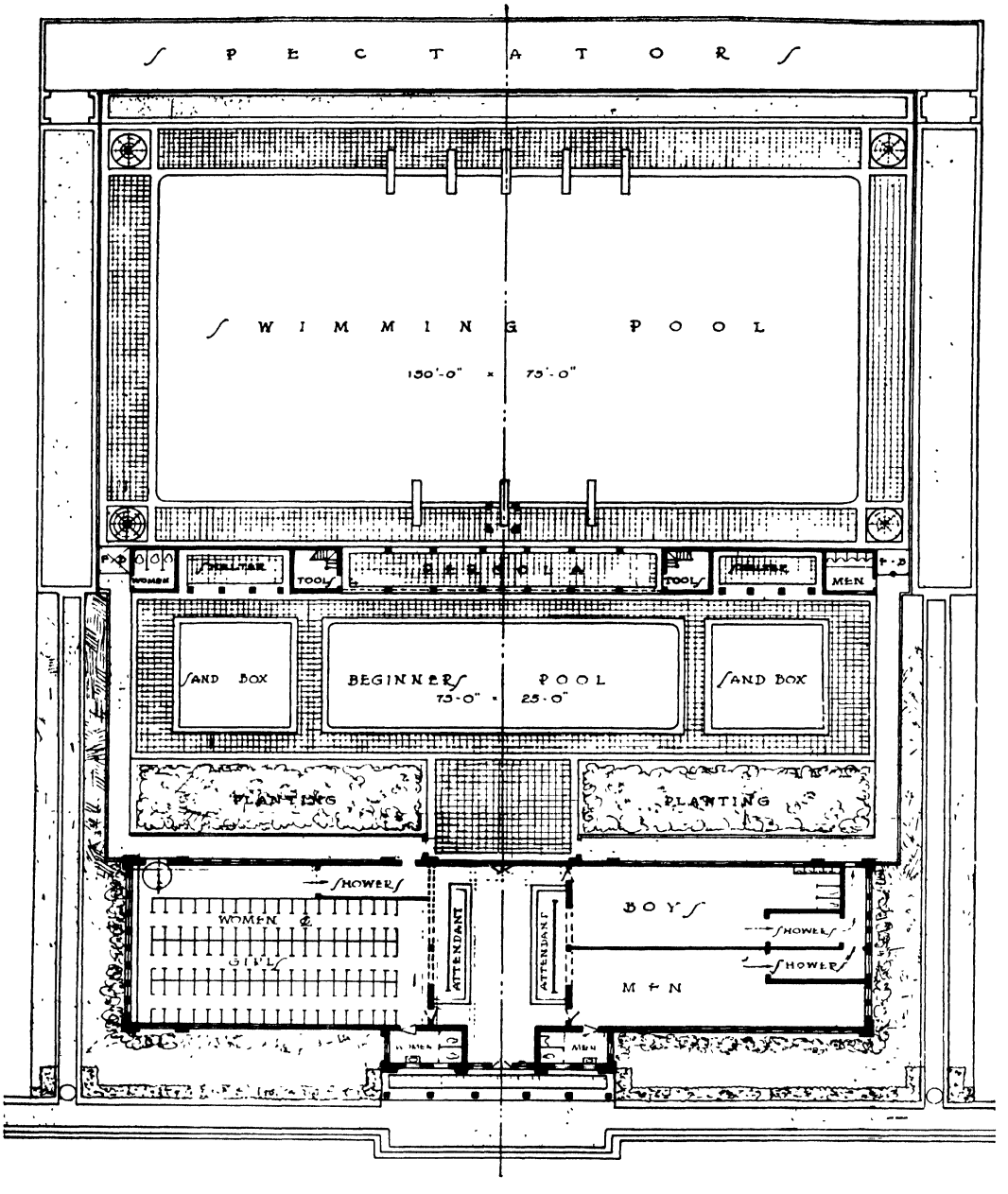


PLATE NO. 14

McKINLEY HIGH SCHOOL POOL, WASHINGTON, D. C.

This pool was designed by the Hasbrouck Company for the Department of Public Buildings and Grounds, Washington, D. C. The bathhouse features are well arranged and special attention is drawn to the toilets near the pool proper and also to the foot baths at the entrances to the pool areas. A pergola is provided for the swimmers, and two shelters in connection with the beginners' pool. Underneath the pergola and tool rooms are the filters, pumps and chlorinating equipment. The plan calls for four flood lights at the corners of the pool enclosure and three searchlights near the top of the diving tower where the life guard is stationed. According to one observer, some bathers object to the long walk from the bathhouse to the pool.

The bath house is an exceedingly important part of the plant and requires most careful planning both as to its design and location. If the pool is located on a neighborhood playfield, the bath house may be included as a feature of the field house or recreation building serving the entire area. Materials used should be impervious to moisture and easily cleaned. Adequate lockers, showers, toilets and lavatories should be provided, and their arrangement is most important from the point of view of supervision and circulation. Heating, lighting and especially ventilation require careful consideration. The filters and chlorination plant are often housed in the basement of the bath house.

The condition of the water is of prime importance and the equipment needed to insure its purity will depend somewhat upon the available water supply. Chlorine is the most common means of disinfecting pool water, and it is generally done by means of a chlorinator. Pumps, filters, strainers, and perhaps a heater, are required. Copper sulphate is commonly used to control the growth of algae. A careful study of the literature on water purification is recommended.

Among the items of equipment used in connection with swimming pools are diving boards, diving towers, floats, first-aid kits, life-saving equipment and vacuum cleaners. Suits and towels are furnished at many pools. Increasingly pools are designed so as to be used for recreational activities during seasons when swimming is not practicable. Volley ball, basketball, shuffleboard, paddle tennis, handball and many other games are played in some pools. Certain types of pools also may be flooded for ice skating.

Many cities are building rectangular pools 150 to 200 feet long and 60 to 75 feet wide, with shallow sections at each end and a deep section about 50 feet wide in the center, extending across the pool. In this type of pool the two ends may be used for general swimming, instruction and water games, while the center section of the pool where the diving boards are placed is used by advanced swimmers for diving, races and general activities. Another advantage of this type of pool is that it permits simultaneous service to both sexes, if segregation is desired. (See Plate No. 14, page 46.)

Another type which has recently been constructed in several cities and which merits study is the multiple type of pool consisting of two or three separate units. One unit, intended exclusively for diving, has deep water throughout and is usually the smallest in area. (See Plate No. 15, page 48.) The other larger unit is intended for general swimming and the water is of moderate depth. Sometimes a third pool is provided for the non-swimmers and beginners, or it may be a wading pool for children.

Where a wading pool is provided the swimming unit should have at least two and one-half and preferably three feet of water at the shallow end. Otherwise children will tend to use this unit rather than the wading pool. One advantage of the multiple unit pool is that the section used for general swimming has a very gradual slope and is therefore suitable for many types of games during seasons when the pool is not used for swimming.

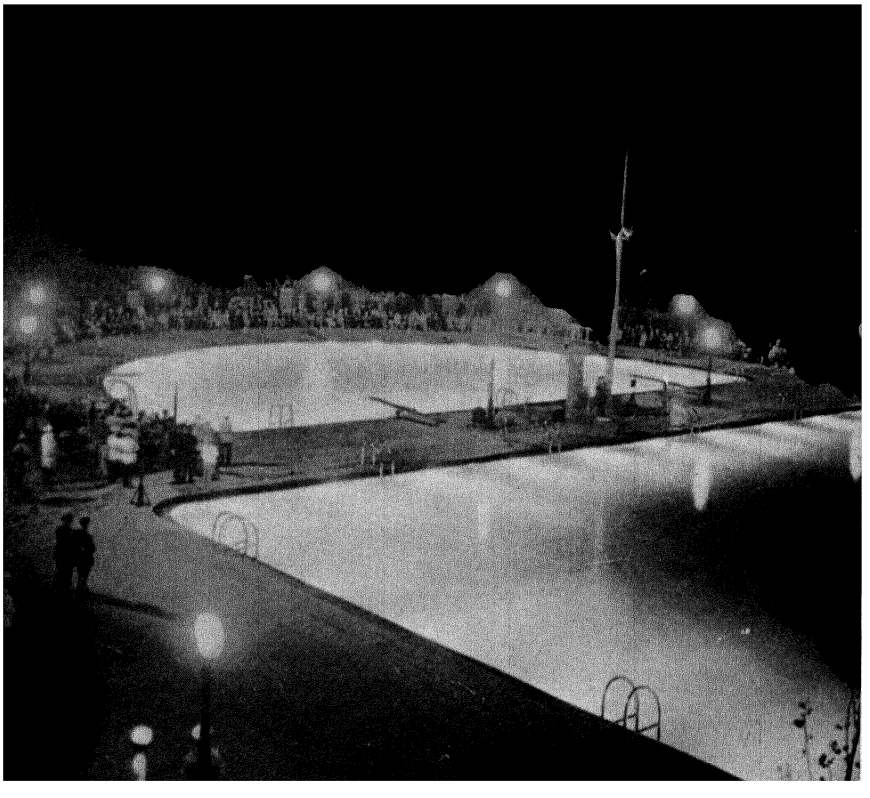


PLATE NO. 15

SWIMMING POOL, SUNSET PARK, BROOKLYN, NEW YORK

This photograph, taken during the dedication ceremonies, shows the special diving section of this large, well-lighted pool.

As previously mentioned, in cities where swimming facilities are meager or are not well distributed, small swimming pools for children are sometimes constructed on the playgrounds. Such pools are usually about 25 to 30 feet wide and 40 to 60 feet long, with the depth of water varying from 2 to 4 feet. The pool area is fenced and children may use the pool only while a leader is present. Dressing facilities are required although two rooms, one

for boys and the other for girls, will suffice. In one city a movable rack is placed near the entrance to such a pool and on it bags containing the children's clothing may be hung. When the clothing rack is full, indicating that the maximum number of children who can be accommodated at one time are in the pool, the entrance gate is locked. Bathing periods last for one-half hour after which time children are required to leave the pool and another group is taken in. This arrangement enables many children to learn to swim and to enjoy the water at a reasonably low cost.

BUILDINGS

A building of some type is needed on every public play area, except perhaps on a school playground where the necessary facilities are available within the school building. Even on the school playground an open shelter is desirable not only for playground activities but as an outdoor class room. The size, type, functions and facilities of buildings on play areas differ widely. The playground shelter house is usually a fairly simple building affording an office, storage room, toilets for boys and girls, an open porch and usually a room for small group activities. The neighborhood playfield building, on the other hand, is a more elaborate structure often containing, in addition, shower and locker rooms, an assembly room with stage and fireplace, kitchen, club rooms and other features serving various community groups. The facilities commonly provided in the athletic field building, or field house, are of a more limited type—showers, toilet and dressing rooms, director's office and storage space for equipment. Sometimes these facilities are incorporated in the athletic field stadium or grandstand. Special-use buildings include dressing rooms in connection with the outdoor theater, the bath house at the swimming pool or bathing beach, pavilions for crafts or quiet games and shelters near a battery of tennis courts or a wading pool. Sometimes movable play houses are an attractive feature of playgrounds for young children.

Every building must be designed to meet most effectively the requirements of the area or neighborhood it is intended to serve. Therefore a careful study should be made in order to determine the kinds and number of rooms to be provided and their sqace requirements. In planning the building, consideration must be given to many factors, among them the location, its relation to the various sections of the area, the number of persons to be accommodated and their ages, the types of facilities desired and the uses to be made of them, amount of leadership and maintenance service likely to be available, the length of season building will be in use, local building regulations and the amount of money available. It is essential that the plan be



PLATE NO. 16

FIELD HOUSE, EAST ORANGE OVAL, EAST ORANGE, NEW JERSEY

This attractive building contains a playroom approximately 18 feet by 38 feet, toilets, store room and two rooms for directors. The cost of this building, which was erected in 1923, was $12,750 exclusive of the clock and bell which were donated. This photograph, taken soon after the building was completed, shows the effective landscape treatment of the area in front of it. The concrete fish pond is an interesting feature.

prepared by a competent architect in cooperation with the recreation executive who is familiar with the requirements to be met and who will be responsible for the operation of the building.

Buildings should be attractive, situated and designed so as to fit into the general plan for the area, and so arranged as to give the most effective service with the least supervision. Enduring and non-destructible materials in both the exterior and interior keep down maintenance costs. Stucco, brick or stone are favored in many cities for exterior walls—one advantage of a rough surface is that it is less easily defaced than a smooth one. In the toilet rooms glazed tile has been found most satisfactory, and translucent glass, generally reenforced, is used in the windows of these rooms. Cement floors are favored for toilet, shower and storage rooms. The use of wood on the interior of buildings which are closed for many months of the year is

unwise because of the dampness, and steel frames are recommended for windows. It is desirable that as far as possible all pipes, traps, valves and other plumbing fixtures be placed in a corridor between the walls in order to facilitate the making of necessary repairs.

The outside and inside of every building should be made as interesting and in as good taste as possible so that the children and adults will be encouraged to respect and care for it. It is possible for an imaginative designer to combine in a building both utilitarian features and architectural merit. A well-planned building not only renders necessary service but also forms the center for the playground or playfield program. More detailed statements concerning the planning and requirements of buildings for the playground, playfield and athletic field will be found in the chapters relating to those three types of play areas. Plans and photographs of various types of buildings will be found throughout this volume.

The Outdoor Stage

One reason why some of the most valuable and enjoyable activities are frequently omitted from the playground program is that no suitable space or facilities are provided for them. This is particularly true of dramatic activities which require a quiet place away from the sections of the playground used for noisy, strenuous play. If possible, a section should be set aside on every playground for storytelling, simple dramatic and music

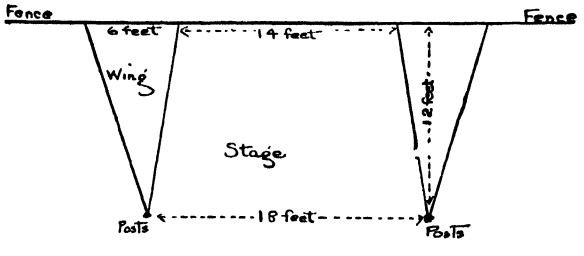


Plate No. 17

DIAGRAM FOR LAYOUT OF A SIMPLE OUTDOOR THEATER

activities. If there is a suitable room in the playground building it may be used, but it is preferable to carry on these activities out of doors during the summer months.

A corner or section of the playground near the border, with a shaded area, a background of trees, shrubbery or vine covered fence and with a carpet of turf, makes a suitable location for the outdoor stage. Occasionally a simple wooden platform is erected to serve as a stage. See Plate No. 61,

page 118. If there are no dressing facilities nearby it may be necessary to erect tents or hang some curtains to serve as dressing rooms. The lack of trees and shrubs is not sufficient reason for failure to provide a stage, however, as successful plays have been given on playgrounds without such a background. In such cases a section of the playground fence not bordering a street may be used for the back of the stage by hanging on it misprint cretonne, which can be secured from the manufacturers at small cost, or cheap unbleached muslin, which can be dyed dark blue with Diamond dyes.

The sides or wings of the stage may be formed by erecting two posts the same height as the fence, 18 feet apart and 12 feet from the fence. Wires are strung from the top of the posts to points at the top of the fence about 14 feet apart, and from them are suspended the curtains (see Plates Nos. 17 and 18). Some of the seams are not sewed so as to permit them to be used



PLATE NO. 18

PRESENTING "KING ALFRED AND THE CAKES" ON THE COLUMBIAN PLAYGROUND, EAST ORANGE, NEW JERSEY

This illustrates a playground stage designed according to the plan in Plate 17. This type of stage can be built on any fenced playground. Properties were made by the playground children.

for entrances and exits. By carrying the wire from the top of the posts to the top of the fence at points about 6 feet from each side of the stage, and hanging curtains from it, two dressing rooms are readily provided. All of the curtains may be taken down easily when the stage is not in use.

In a number of cities growing interest in playground dramatics has resulted in the construction of buildings which serve as a combined shelter house and outdoor theater. The plan usually followed comprises a stage elevated a few feet above the level of the playground and flanked

on either side by dressing rooms behind which are toilet rooms. The stage floor usually projects in front of the main structure, sometimes in the form of a semi-circular apron. The back of the stage may be completely enclosed or it may be left open. If large numbers of children are likely to be engaged in play activities on the opposite side of this building, a wall at the back of the stage is advisable to minimize the noise and prevent distractions during rehearsals or while programs are being presented. The dressing rooms on either side are usually connected by a roof extending over the back of the stage. Steps in front of the dressing rooms provide access from the playground to either side of the stage. A floor plan of such a building is shown on page 134.

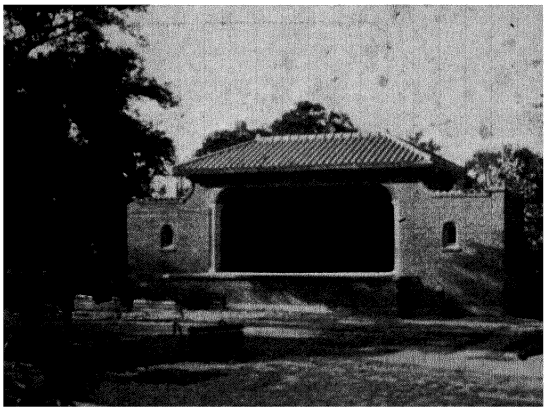


PLATE NO. 19

COMBINED SHELTER AND LITTLE THEATER, FORT WORTH, TEXAS

Several cities have constructed similar multiple-use buildings on public play areas. For a floor plan of another Fort Worth shelter and theater, see page 134.

Although intended primarily for dramatic activities such a structure can be put to a variety of uses. It serves as a band stand, as a place for holding playground exhibitions, for folk dancing, orchestra rehearsals, concerts, playground dances and other activities. The stage might be marked off and used for shuffleboard, hop scotch and other games. Permanent seating facilities are rarely necessary in connection with the playground theater.

On the neighborhood playfield it is often desirable and possible to construct a naturalistic outdoor theater which in some instances may be combined with a band shell. This feature can be a thing of beauty and also affords a center for a variety of valuable community activities such as plays, pageants, band and orchestral concerts, holiday programs and civic celebrations. A slope which can be used as an amphitheater, especially if it is in a section of the playfield distant or well screened from noisy streets and from intensively used play areas, provides a desirable setting. Trees should be planted behind the stage unless there is a natural wooded background. Essential or desirable features of the outdoor theater, in addition to the seating facilities and stage, are dressing rooms for participants, amplifying equipment, suitable location for the orchestra, water

basin between stage and audience and lighting equipment. Fountains or water curtains with colored lights are installed in some of the more elaborate theaters. Provision must be made for the parking of automobiles.

PLATFORM

If the playground does not provide an indoor or outdoor space suitable for folk dancing, a wooden platform or a bituminous area may well be constructed. A platform of maple flooring set on two by fours with 14 inch centers has proved satisfactory. It should be a few inches from the ground, supported by concrete posts and the under side should be painted



PLATE NO. 20

BUILDING PLATFORM, EDEN AVENUE PLAYGROUND, WEST NEWTON, MASSACHUSETTS

This photograph should convince everyone that the building platform has a place on the playground. Of course the shade and the generous supply of building blocks help to make it popular.

with creosote. The size of the platform may be 20 feet by 30 feet or larger, and if made in several sections it can be moved about and stored in winter. It can be used by the children as a building-block platform and for various handcraft and dramatic activities. A smooth, firm level space is desirable for many of the small children's activities which help to develop skill, and the platform is important on this account. It should be

treated occasionally with raw linseed oil applied hot. In one city a portable, folding platform with adjustable supports and mounted on a chassis has been designed for multiple use.

Tables, Benches and Seating Facilities

Tables of sturdy construction are used for quiet games and also for many handcraft activities, especially on the children's playground. They are also appreciated by adults who enjoy such games as chess and checkers. In some cities concrete tables are used, in the top of which square tiles

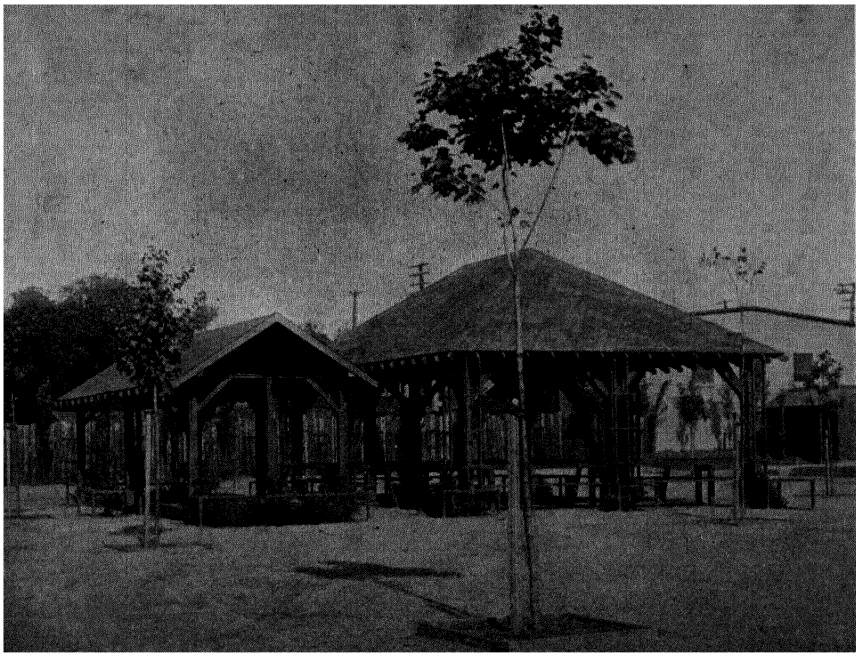


Plate No. 21

SHELTERS ON HAWTHORNE PLAYGROUND, NEWTON, MASSACHUSETTS

The smaller shelter protects the sand boxes and the larger one provides a shady place for quiet games and handcraft activities. Note the benches for mothers. This simple and inexpensive type of shelter is found on many playgrounds. In a few years the trees and vines will make this a well-shaded and attractive play center.

have been set to form checkerboards; in others the games are painted on the top of the tables. Sometimes folding tables which can be stored in the playground building are set up where needed for handcraft projects, table games and other activities. Table tennis or ping pong is popular on many playgrounds; if open only during a short season, it is preferable to use removable tables, but in some year round playgrounds permanent concrete tables have been constructed.

Benches are an essential feature of every play area. Mothers enjoy watching their small children at play, and on the playground benches should be placed near the sandbox, wading pool and small children's apparatus. A few benches near the tennis courts, baseball diamonds and similar facilities are appreciated by the players and by those waiting for a chance to play. They should be provided for use with tables set up on the playground and also in the landscaped areas.

Bleachers or other seating facilities for spectators are seldom provided on the children's playground although they are occasionally set up temporarily for some special event such as a circus or pageant. The playfield is intended primarily for participants in the various activities, but at least one section of bleachers or a small grandstand is frequently erected. This may be placed along one side of the football field where it will also serve for watching baseball games and track meets, if a track is included in the layout. When additional seats are required, movable bleachers are used. Some of the standard makes have proved satisfactory and are considered preferable to a permanent grandstand for the neighborhood playfield. They are less expensive, can be moved about and placed to the best advantage, require less space and can be transferred to other outdoor or indoor centers when needed.

Because the athletic field is primarily a center for highly organized sports and for important meets and competitive events which attract large numbers of spectators, the provision of seating facilities is a matter of primary importance. The degree to which they are provided varies from the knockdown bleacher to the stadium seating thousands of people. A discussion of this subject will be found in Chapter VII.

The Fireplace and Council Ring

The playground and playfield are not suitable locations for picnic facilities for large groups but it may be desirable to provide in these areas opportunities for small neighborhood or playground groups to cook out. If there is an isolated corner, preferably wooded, where one or more fireplaces or ovens may be erected, it is likely to be used frequently for steak or marshmallow roasts or picnic suppers. Occasionally a cook-out is arranged at noon for the playground children. It may not be necessary to provide tables and benches for an informal corner of this type although receptacles for rubbish should be available. A playground fireplace is shown on page 197.

Another feature which merits wider use on the playground—or preferably on the playfield—is the council ring. The space required is not great

and the construction cost is small. Planks or half logs on short supports are arranged in a circle about 40 feet in diameter with two or more narrow openings to provide entrance to the ring. In the center of the circle is built a fireplace about 8 feet in diameter. In one city a concrete post with cross arms is set up in the center of the ring to facilitate the building of the fire. At one side of the circle is an elevated platform for the speaker or master of ceremonies. A council ring of this type is used by playground and scout groups for meetings, camp fires and cook-outs, for storytelling, stunt nights and a variety of other occasions.

Accessory Equipment

Each area should be provided with a flagpole which will fly an American flag. A sign giving the name of the area and placed at the entrance identifies and helps to advertise it. Bulletin boards upon which are posted rules and announcements may well be placed near the entrance or on the porch of the building. Sanitary drinking fountains should be installed at suitable locations. It is essential that these be as nearly indestructible as possible and care should be taken to prevent their freezing in winter. The small children need a lower fountain than adults, and it is desirable to provide a special one for the small children's play area or to furnish a step so they can use the fountain readily. If many boys and girls use bicycles to reach the playground, a bicycle rack should be installed.

Ordinarily the game and handcraft supplies are kept in the shelter or field house, but if for some reason storage space is not available it is desirable to have a well-made equipment box provided with a padlock. Such a box is often needed at special isolated areas such as a battery of tennis courts, and on a large play area it may be needed in addition to the storage facilities in the building. The box should be provided with brackets and shelves for keeping the equipment in an orderly manner. A box of this sort is shown in Plate 56, page 110. An eight-day clock, placed where it can be seen from the play area, is a valuable asset. Boards are often erected near tennis, handball or other courts, on which may be posted a summary of the rules or regulations governing the use of the courts and spaces for making court reservations. Special equipment used on the playfield and athletic field is mentioned in later chapters.

A number of essential items for the playground building are a desk, chairs, cabinets for supplies, a bookcase and a locker for keeping the director's clothing. A plan of a supply cabinet for a playground building is shown on page 58. If the building has a club room, chairs, tables, a cupboard and a piano are desirable. Naturally in the more elaborate

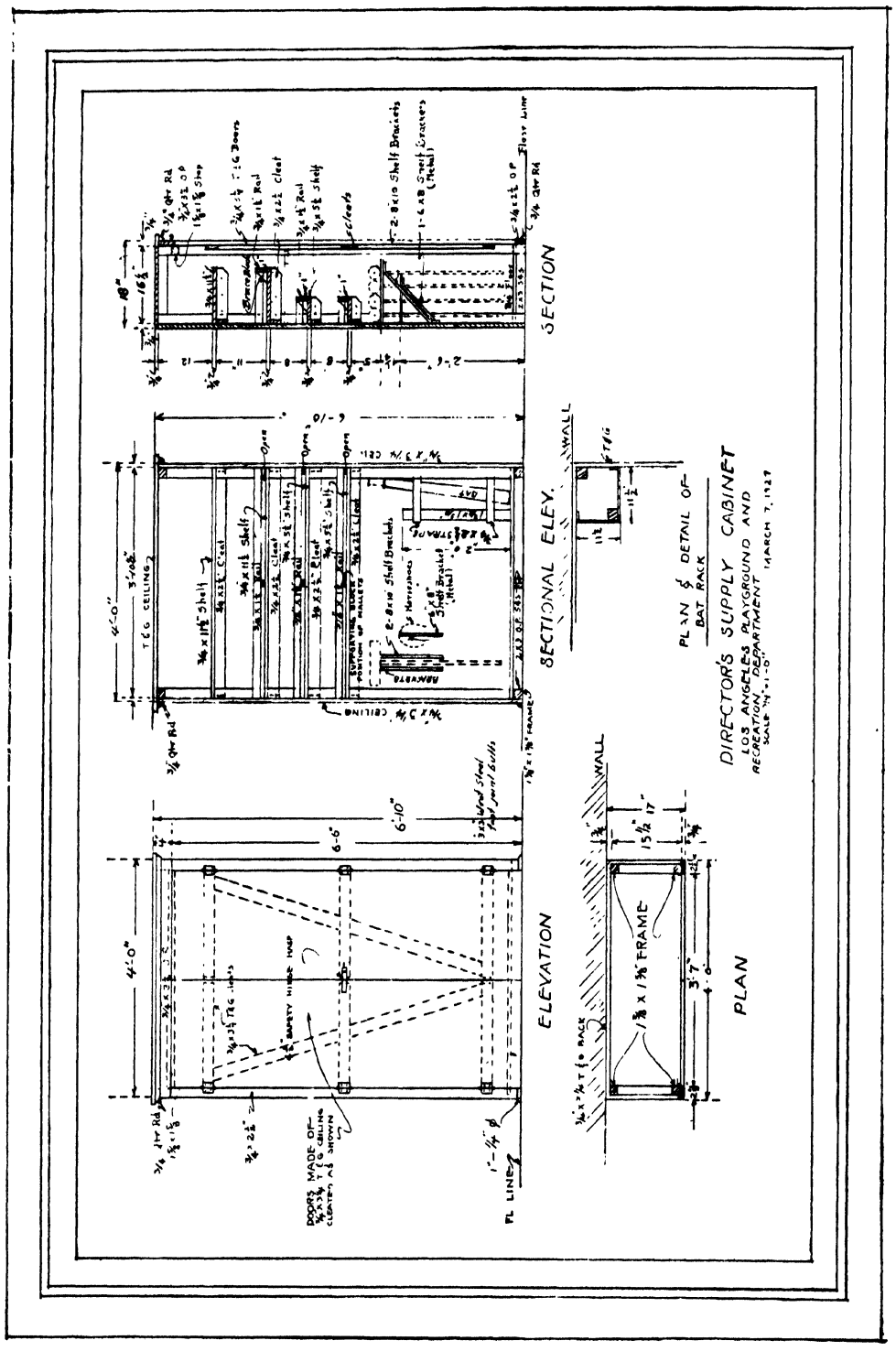


PLATE NO. 22

PLAN OF DIRECTOR'S SUPPLY CABINET

The Los Angeles Playground and Recreation Department has found this cabinet very useful. It saves the director's time, keeps the supplies in place, increases their length of service and conserves space in the playground building.

buildings affording a variety of facilities the equipment needs are greater and more varied. Lockers and benches for the locker room, lighting and stage equipment and seats for the auditorium, range, sink, heater, dishes and utensils for the kitchen, work benches and storage cabinets for the crafts room—these are a few of the items of equipment which are required in a recreation building.

SUPPLIES

The selection of supplies is not a responsibility of the recreation planner, but the importance of supplies to the successful operation of an area justifies a brief consideration of them here. Apparatus appeals strongly to the younger children and also attracts the older ones, but organized games and play activities are the greatest factors in maintaining playground attendance. Furthermore, the satisfactory use of the various game courts and fields depends largely upon the availability of game materials. Likewise, the indoor facilities are likely to be used to advantage only as suitable supplies are provided.

Perhaps the most important type of game supplies are such items as softball bats and balls, volleyballs, horseshoes, handballs, paddle tennis sets and rubber play balls. Other items are building blocks, bean bags and boards, jackstones and balls, tools for sand modeling and quiet games such as checkers, lotto and anagrams. On a playfield, baseballs, bats, soccer balls, footballs, and possibly lawn bowls and a set of field hockey equipment are needed. If the area has a track, additional items will have to be provided.

For the varied arts and crafts program materials of many kinds and a minimum of suitable tools are required. Nature, music and dramatic activities also involve the use of certain materials. A party kit will be needed if the recreation building is used for social recreation. Every play area should have a library for the use of the workers, consisting of materials issued by the department, books containing rules for games, directions for all types of activities, a first aid manual and suggestions for successful playground operation. Other necessities are cleaning materials, office supplies, whiting or lime for marking courts, report forms and a kit for repairing game materials. A first aid kit is absolutely essential. Tools and maintenance equipment for the use of the caretaker vary with the size and type of area and the system used for maintaining grounds, but some tools are required on every play area. A detailed list of the many supplies and materials used on the playground will be found in "Playgrounds —Their Administration and Operation." *

* Playgrounds—Their Administration and Operation. A. S. Barnes and Co. 1936.

CHAPTER IV

AREAS FOR GAMES AND SPORTS

Since the greater portion of most play areas is devoted to organized games and sports, a knowledge of the spaces and facilities required for them is essential. In this chapter are given dimensions for a number of the commonly used game courts and sports fields, with simple directions for laying them out and brief descriptions of the necessary equipment. More detailed information concerning many of these areas will be found in the publications listed in the bibliography at the end of the book. It is recommended that playground or recreation officials consult copies of Spalding's Athletic Library publications which contain official playing rules as well as dimensions for the various game areas.

The Turf Surface

Turf is the ideal surface for most games and sports. Therefore in constructing playgrounds and playfields as large a percentage of the total area as possible and practicable should be in turf. The playing areas on most athletic fields have a turf surface. In general, at least six inches of top soil are required in order to secure a permanent lawn, but frequently it is possible to have only three or four inches because of the cost of the top soil which usually must be brought to the area. In order to make sure that surplus water will be carried off and to prevent the ground from becoming soggy, it is sometimes necessary to install a system of subdrainage. On the other hand, care must be taken to retain sufficient moisture in the soil to prevent the turf from burning out. In sections of the country where there are long, hot seasons with little rainfall it is necessary to install sprinkler systems.

Other important factors which need to be considered in securing a good turf surface are the provision of humus and fertilizers, grading, preparation of seed bed, seeding and rolling. An application of lime is sometimes necessary. Valuable information as to the best seed mixtures and soil treatment for a particular locality may be secured from the State Agricultural Experiment Station or from leading seed companies. The two methods of developing lawn areas are seeding and vegetative planting. The second method consists of planting runners or stolons, either broadcast or in rows. After the turf has been established care must be taken in watering and cut-

ting the grass, in applying needed fertilizers and in protecting the turf from pests and diseases. Rest periods must be provided if the area receives intensive use.

Differing climatic and soil conditions necessitate the use of varying types of grasses in different parts of the country. The United States Department of Agriculture has issued a bulletin * which contains valuable information as to the turf grasses which have proved satisfactory. The brief comments which follow are based upon statements in this bulletin.

As a guide in the selection of suitable grasses, the United States has been divided into three regions to which various types of grasses are adapted. In Region One are the northern states comprising approximately two thirds of the country and extending from the Atlantic to the Pacific. Region Two consists of the southwestern states and the entire southern tier except for the areas bordering directly on the Gulf of Mexico and the Atlantic Ocean which comprise Region Three.

Kentucky bluegrass has no superior for general use in Region One except in New York and New England and along the Pacific Coast where bent grasses are most likely to succeed. More satisfactory results are usually secured, however, when a mixture of grasses is sown. The specific mixture recommended for most of Region One is the following: Kentucky bluegrass 7 parts, redtop 2 parts, white clover 1 part by weight. In the Eastern part of the region the following mixture has given good results: Kentucky bluegrass 10 parts, Chewings fescue 5 parts, redtop 2 parts, colonial bent 1 part, white clover 1 part by weight. In this region early fall sowing is decidedly preferable to spring sowing.

The grass best suited to Region Two is Bermuda although at the higher altitudes in the Piedmont or under partially shaded conditions, Kentucky bluegrass does very well.

Most of the lawns in Region Three are started with a single grass rather than with a mixture. Carpet grass is suitable for moist areas, Bermuda grass for drier areas. Centipede grass, rapidly becoming one of the outstanding grasses in the region, and St. Augustine grass, unequalled as a shade grass, are started vegetatively.

Preparing Game Courts

Courts for most games in which the play is primarily lengthwise of the court should be laid out with the long axis north and south. It is very

* United States Department of Agriculture. Planting and Care of Lawns. Farmers' Bulletin No. 1677. 1935.

desirable that the boundary lines of all courts be marked plainly since this facilitates accurate play and makes easier the enforcement of rules. Various materials are used for marking, but whiting is widely recommended as most satisfactory for clay areas. Lime is often used, especially on athletic fields, although in the opinion of some it is harmful to turf and to the soil and leaves a ridge if applied too thickly. This is a handicap in the case of tennis and other games requiring an accurate bounce. Cold water calcimine is also used, but it is more expensive than whiting. In mixing whiting with water before applying it, care should be taken that it is thin enough to flow freely and not to clog the marker. Various types of marking machines are procurable, although it is possible to construct one. In one city a tank with faucet attached was mounted on a lawn mower frame and gave satisfactory results. A sprinkling can with spout flattened may be used for marking small areas. The use of a regular chalk line stretched tight and secured at each end with spikes facilitates accurate marking.



PLATE NO. 23

PADDLE TENNIS COURT, NASHVILLE, TENNESSEE

It is apparent that this court can also be used for basketball and volley ball. The court is not marked off for doubles play.

In the case of cement or bituminous surfaces, lines are painted on although they are sometimes laid in the court during its construction. If the same area is to be used for more than one activity, different colors may be used. On bituminous surfaces shellac should be applied before painting the lines. The Portland Cement Association suggests that a high quality paint made with an oil or varnish base is satisfactory for use on concrete surfaces. It suggests that on a surface less than 6 months old a zinc sulphate wash consisting of 3 pounds of crystals per gallon of water be applied to the concrete surface to be painted. At least 48 hours should be allowed for this treatment to dry, and any crystals appearing on the surface should be brushed off before the lines are painted.

In sections of the country where there is no frost, permanent courts for games like volley ball with a clay or natural surface may be marked off by sinking 2 by 4's on edge flush with the ground. To facilitate the marking of courts, short sections of pipe of small diameter are often inserted in

the ground at the corners or at points where lines intersect, the top of the pipe being just below the ground level. Such pipes may also be used for holding corner flags during periods of play.

It is often necessary to use the same area for different games, and when one of these games, such as volley ball or paddle tennis, requires uprights or standards, removable posts should be used. One method is to sink in the ground in concrete an iron pipe about 3 feet long, threaded at one end and provided with a cap, so that the top of the cap is flush with the ground level. A piece of ¾-inch pipe or rod about 10 inches long, placed through the pipe near the bottom before the concrete is poured, prevents the larger pipe from turning and also provides a bottom for the goal pipe to rest upon. When the standard is needed the cap is removed and a smaller pipe of the proper length is dropped into the pipe set in the ground. Instead of a cap, a heavy iron mushroom-shaped stopper several inches across the top may be used.

Since courts are frequently used for more than one type of game, or for persons of different ages, eye bolts or screw eyes may well be inserted or attached to the standards at different heights. They permit the net to be raised or lowered according to the type of game or the age of the group. Before erecting permanent standards consideration should be given to the possibility of multiple use of the court or field in order that they may be set the necessary distance apart to permit such use. In case wooden posts are used for uprights, corners should be well rounded to reduce likelihood of injury to players. A diagram of a combination football and soccer goal is shown on page 164.

In selecting a location for game courts and fields, care must be taken that there are no obstructions which will interfere with the play. Sometimes baseball fields are laid out with the foul lines so close to overhanging trees that the fielders are unable to get under fly balls landing in foul, or even fair, territory. This condition is often overlooked when young trees are set out. Ample space should be allowed to ensure safe and satisfactory play.

GAME AREAS

The games described on the following pages include the ones most commonly played on public play areas by both children and adults.* Official or standard rules governing the size and equipment of the playing field or court have been adopted for most of these games. It should be kept in mind, that these rules are frequently modified to meet local condi-

* A number of statements and designs prepared by Albert D. Taylor and several quotations from Spalding's publications have been used in this chapter.

tions. If, however, areas are likely to be used for city-wide or inter-city competition, they should be laid out according to the accepted standards. Furthermore, the popularity of a game with players and spectators alike is likely to be enhanced when it is played on a well constructed and maintained court or field.

ARCHERY

This activity is not suitable for the children's playground but may have a place in the large neighborhood playfield. An unobstructed space about 150 yards long is required if all the standard distances are to be used.

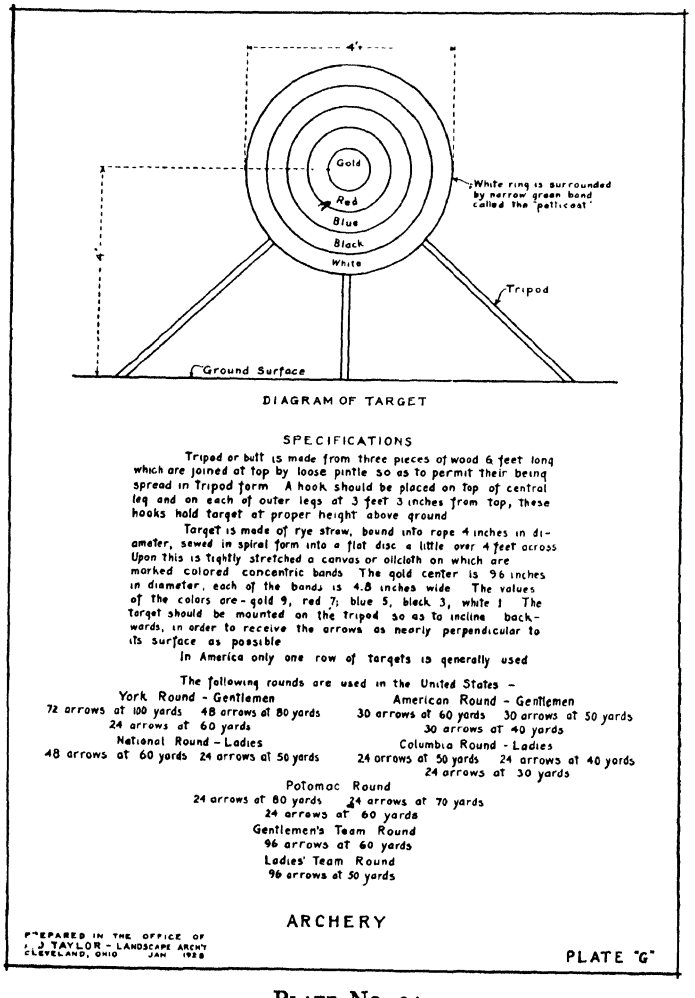


PLATE NO. 24

The width of the space depends upon the number of targets, the distances used, and the nature and use of the bordering area. The common distances are 30, 40, 50, 60, 70, 80 and 100 yards. Frequently targets are set up in

pairs, one at either end of the court. Contestants shoot at one target, then walk across the court and shoot back at the other. If targets are set five yards farther apart than the required distances, archers may shoot from a line five yards in front of them. For a diagram of a target and specifications for making it see Plate No. 24.

Targets, which are four feet in diameter, are set up so the center is four feet above the ground. They are generally supported by an iron stand or a butt constructed with a turf surface. One worker suggests that four bales of straw, one on top of the other, make a good background on which to tack a painted target.

The archery court should be comparatively level and without obstructions. The ground for 25 feet in front of and 50 feet behind the target must be prepared with care so as to be free from hard substances which would hurt the arrows. Bunkers are sometimes erected in back of the targets to stop stray arrows. Unless it is naturally isolated, the field should be fenced in and signs posted to prevent people from coming within the danger zone. The archery court should be sheltered from the wind if possible, and so arranged that it does not blow across the court.

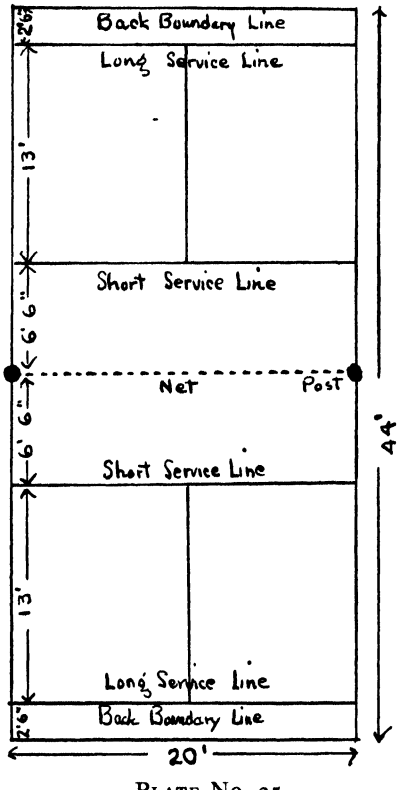


PLATE NO. 25
DIAGRAM OF BADMINTON DOUBLES COURT

BADMINTON

This game has attained considerable popularity and badminton courts have been provided on many public play areas. Any level space of sufficient size may be used without special preparation because only volley shots are played. A doubles court is usually used, its dimensions being 20 by 44 feet. In addition to the boundary lines, a long service line is marked off 2½ feet inside and parallel to each end or back boundary line. Short service lines are also marked across the court 13 feet from the long service lines and 6½ feet from the center of the court. The space between the service lines is bisected as indicated in the diagram.

A cord net 24 feet long and 2½ feet wide is stretched across the center

of the court. The top of the net is 5 feet at the center and 5 feet 1 inch at the posts, which are set not more than 2 feet outside the boundary lines. Either permanent or removable posts may be used. If the surface is suitable the same court and posts may be used for paddle tennis.

A singles court is sometimes used. It differs from the doubles court only in its width, which is 17 feet, and in the fact that the long service line is omitted, the back boundary line being used instead.

BASEBALL

Baseball can be played on a level field 300 feet square although a much larger area is required if the regulation distance of 60 feet between home plate and backstop is provided. A turf area is desirable, although not essential, especially on diamonds where important games are played. A turf infield is beautiful and makes for fast play, but on intensively used areas it is difficult to maintain. The turf is generally removed from certain sections of the diamond in order to permit faster and more accurate infield play. (See Plate 27, page 68.) All lines shown solid on the plan in Plate 26, page 67, should be marked on the ground with whiting or similar material, and foul lines should extend to boundaries of the field. No other play activities should be carried on between the foul lines within less than 275 feet of home plate while adults are using the diamond. If two or more baseball fields are laid out with overlapping outfields, there should be at least 550 feet between the home plates.

The dimensions of the diamond are 90 feet on a side, which represents the distance between the bases, making a total distance around the bases of 360 feet. The dimensions across the diamond are 127 feet 3⅜ inches. The distance from the point of home plate to the pitcher's plate is 60 feet 6 inches. The batsman's box is 4 feet by 6 feet, the pitcher's plate 6 inches by 24 inches, the base bags 15 inches square, and home plate 12 inches square with the corners filled in where it faces the pitcher, where it measures 17 inches across. The pitcher's plate should be about 15 inches above the level of home plate and the ground should slope from the pitcher's plate to the base lines. The coacher's box, players' line and bench are as indicated in the diagram.

For official games the distance from home plate to the bleachers or backstop should be not less than 60 feet, although this distance is considerably reduced on many public play areas. Seating facilities, unless protected by a wire screen, should never be less than 60 feet from home plate. (For a detailed plan of a baseball grandstand, see page 178). A backstop 36 or 40 feet wide and 18 feet high with two wings, will usually be

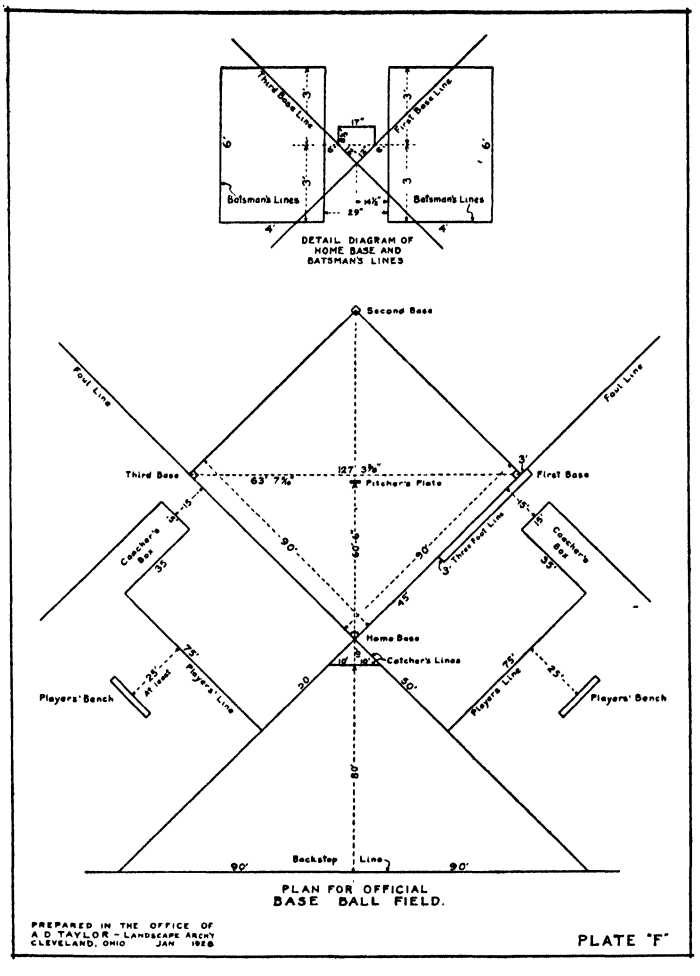


PLATE No. 26

PLAN FOR AN OFFICIAL BASEBALL FIELD

Since this drawing was made the distance from home base to the backstop line has been reduced from 90 feet as indicated in this plan to 60 feet and the length of the backstop line has been reduced accordingly.

satisfactory. The use of galvanized woven mesh wire supported by three-inch galvanized iron or copper-bearing steel pipe uprights set securely in concrete footings assures long service. Number 6 gauge wire with a 2-inch chain link mesh is recommended for the section directly behind home plate, although a lighter wire such as number 9 may be used in the other sections. Sometimes boards are used for the backstop for a distance of 4 or 5 feet above the ground.

For auxiliary diamonds or where space is limited, as is usually the case on city play areas, it is advisable to erect a hooded backstop. It

usually stands 12 or 16 feet in back of home plate, and has an overhang extending over home plate. Such a backstop varies from 15 to 20 feet in height and from 12 to 20 feet in width, with wings from 6 to 10 feet in width set at angles of about 30 degrees. The overhanging hood is supported by cables fastened to the uprights or by projecting arms set at an angle and extending over home plate. There is a great variety in the sizes, shapes, materials and construction of these backstops in use in different cities. Galvanized iron pipe and heavy mesh wire are generally used for such a backstop, although some people believe that 2-inch boards

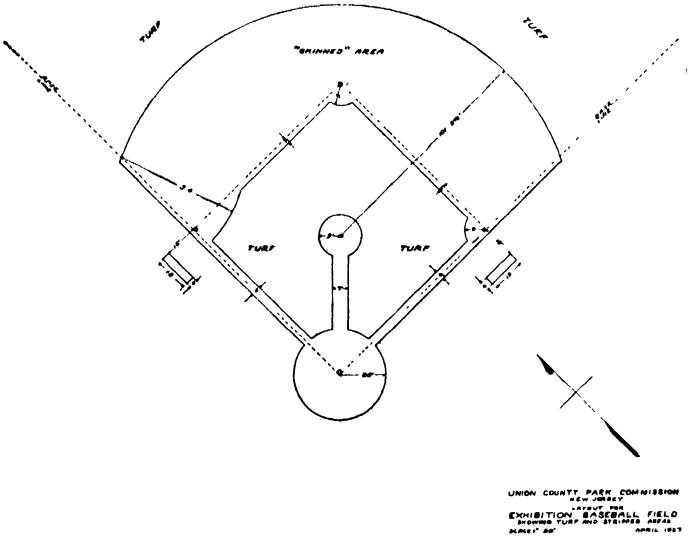


PLATE NO. 27

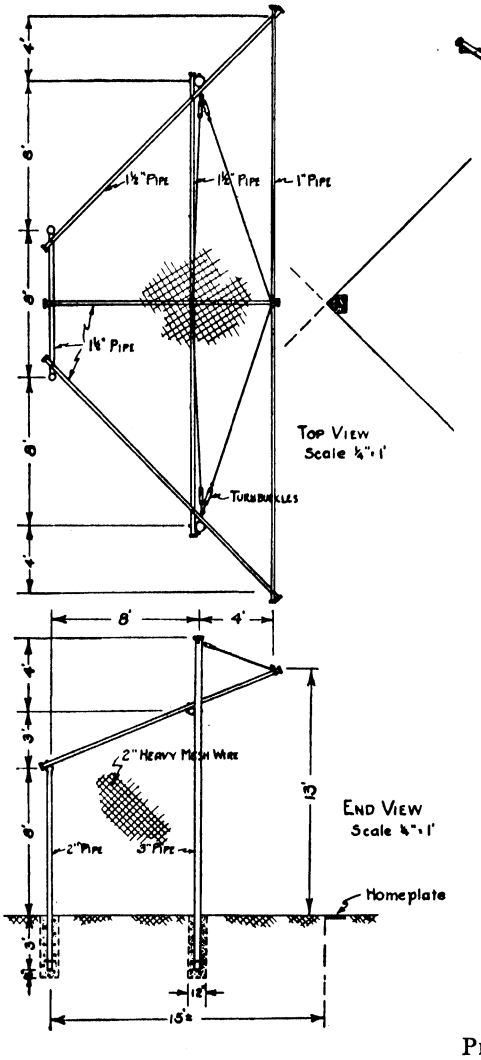
LAYOUT FOR EXHIBITION BASEBALL FIELD, UNION COUNTY PARK COMMISSION, NEW JERSEY

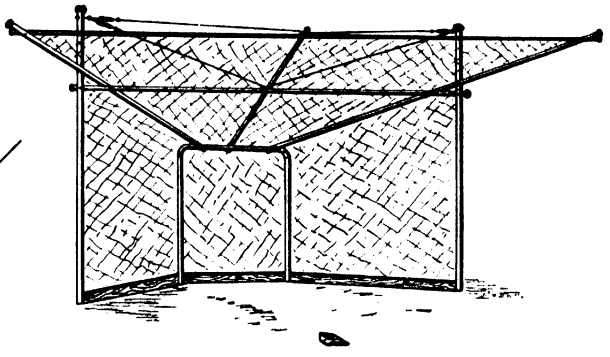
This plate indicates the skinned area on a baseball field. When the diamond is skinned in this way, it presents a very neat appearance and the bare spots so often noted on baseball fields are avoided. According to this plan the home plate is in the Southwest.

at the back are not as hard on the balls as is the wire. The overhang backstop limits somewhat the play of the catcher, but saves space, makes for greater safety and also speeds up the game by intercepting foul fly balls. Care must be taken in erecting this type of backstop that it is set up securely. In some cities barbed wire is stretched across the top or hood to prevent boys from climbing on it. Plates 28 and 29 show the construction details of a simple, easily constructed and highly satisfactory backstop designed for use in the Union County, New Jersey, park system.

The orientation of the baseball diamond is an important factor. Its

relation to other features in the area, especially exits, entrances and grand stands, must be taken into account, but the chief consideration on public play areas is to have the diamond so arranged that the players will





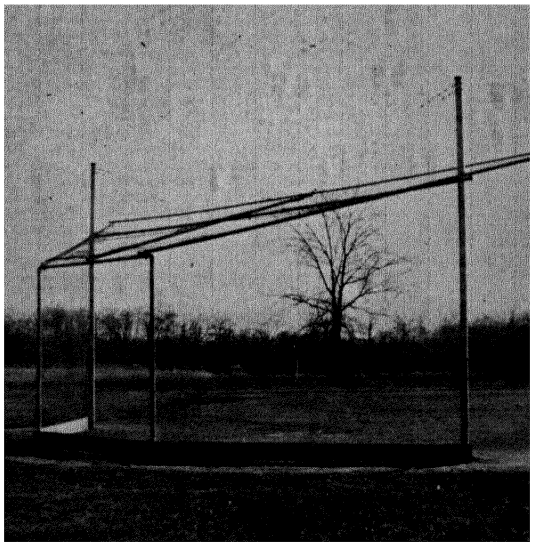


PLATE No. 28

BASEBALL BACKSTOP AND BATTING CAGE

This backstop and cage, designed by J. Badgley of the Union County, New Jersey, Park Commission staff, has proved highly satisfactory. The use of bolts instead of pipe fittings has reduced maintenance and simplified replacement of parts. The construction cost is approximately $150.00.

be bothered by the sun as little as possible. Naturally the sun cannot be kept out of the eyes of all players, but the protection of the batter and catcher is most important. Satisfactory results are generally secured when the home plate is located in the southwest, although some authorities favor

placing it in the northwest corner. Either arrangement makes it possible for spectators to watch games without facing the sun. Many authorities believe that the home plate should be due north and the pitcher's plate due south, whereas another claims that for twilight league games the home plate should be south southwest. The location of home plate in the east should be avoided. The time of day when most games are to be played

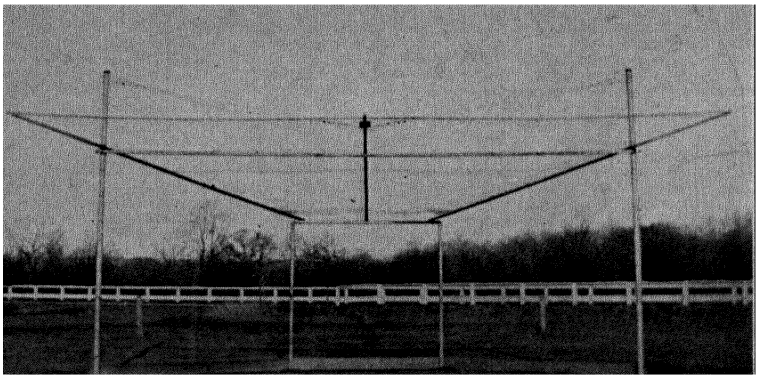


PLATE NO. 29

FRONT VIEW OF BACKSTOP AND BATTING CAGE, UNION COUNTY, NEW JERSEY

and the extent of the baseball season are factors to be considered in arranging a diamond on a particular field.

The official dimensions of diamonds for boys under 16 years of age are 82 feet between bases and 52 feet from home plate to the pitcher's plate. Younger boys often use a 75-foot diamond with a pitching distance of 45 feet. A batting range of between 200 and 250 feet should be allowed.

BASKETBALL

This has not proved a very popular game out of doors in some sections of the country, but in many cities it is exceedingly popular. It may be played on a dirt or specially prepared surface. Asphalt or oil macadam courts have been constructed in many playgrounds for basketball, handball, volley ball and other games. A space 50 feet by 75 feet will serve for the game on a children's playground, although a larger area is better if adults are to use the courts. The actual playing space for men varies from a minimum of 35 by 60 feet to a maximum of 50 by 94 feet. A court 50 by 90 feet is recommended as "ideal" for men of college age. The court is marked with center circle, free throw lines and end lines as indi-

cated in Plate 30. It is sometimes advisable to have the area used for a basketball court at least partially enclosed by a low fence. There should be no obstruction within 3 feet of the boundary lines.

The backboards, which are 4 by 6 feet, are usually made of perforated sheet steel on a wooden frame, secured to a 3-inch galvanized iron pipe firmly set in the ground. They are located on each end of the court, their centers lying in perpendiculars erected at points in the court two feet from

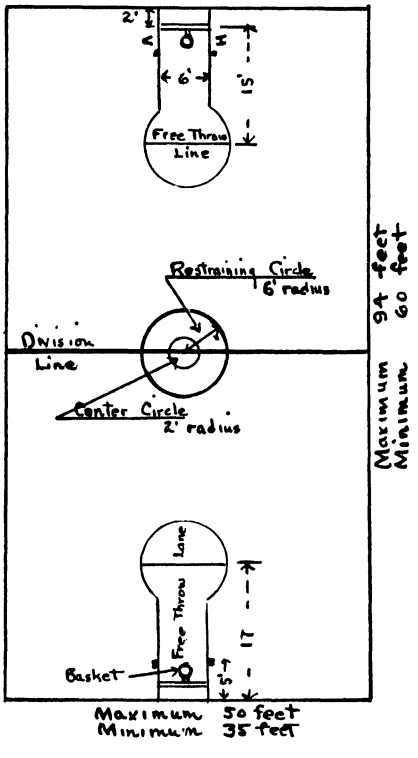


PLATE NO. 30

DIAGRAM OF MEN'S BASKETBALL COURT

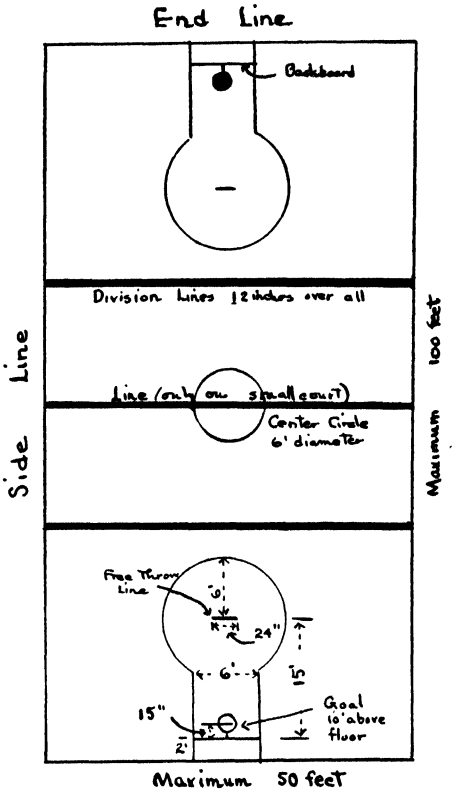


PLATE NO. 31

DIAGRAM OF GIRLS' BASKETBALL COURT

the mid-points of the end lines. The lower edges are 9 feet above the ground. The baskets are nets of leather or chain suspended from black metal rings 18 inches in diameter and lying in a horizontal plane 10 feet above the ground. The rings are equidistant from the vertical edges of the board, and the inside edge of the ring is 6 inches from the face of the board. A more satisfactory game and greater safety result when the uprights are set back of the end lines in which case the boards are supported by project-

ing arms. This installation is much more expensive and is seldom found on outdoor play areas.

The National Rules Committee of the National Recreation Association recommends the following court dimensions for boys of different ages:

Boys 15–17, 48 by 75 feet
Boys 12–14, 40 by 60 feet
Boys 9–11, 40 by 60 feet with baskets 8 feet high

Basketball for women and girls may be played on a court varying from 25 by 50 feet using two divisions, to 50 feet by 100 feet using three divisions. The official size of the three-division court is 45 by 90 feet for college players and 35 by 70 feet for high school girls. Plate No. 31, page 71, illustrates the layout of the court.

Boccie

This game, which is an adaptation of bowling, is played extensively by people of Italian ancestry. It may be played on any level area but a space about 18 feet by 62 feet with a clay and sand surface is suggested. It is desirable to provide a low wooden barrier, especially at the ends, although this is not necessary. Eight wooden balls weighted with lead are used and a smaller one known as "Pallino."

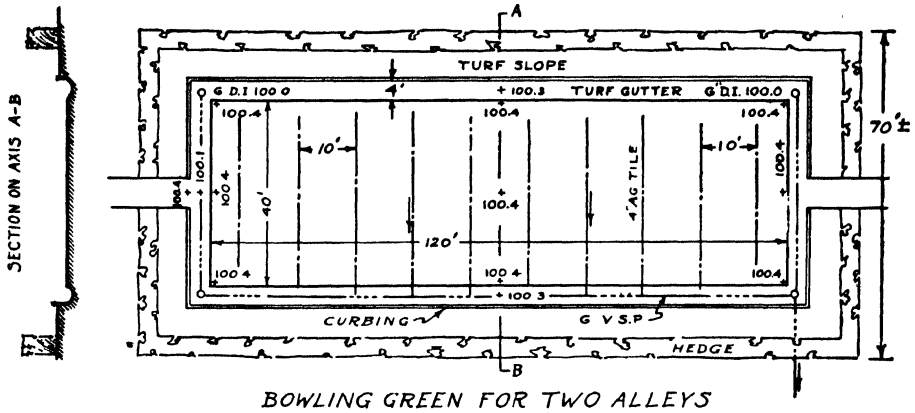
Bowling or Lawn Bowls

Bowling requires a perfectly level lawn area, the construction and maintenance of which involve considerable expense. The bowling green is frequently made square with dimensions of about 120 feet by 120 feet in order that the direction of the rinks may be changed before the turf becomes badly worn. Each alley or rink is about 110 feet long by 14 feet wide. A low gutter is built around the green to stop the balls, and the surrounding area is sloped toward the gutter. Details of bowling green construction are given in Plate 32. In common practise the gutter is only 6 inches wide and it is constructed of sod, laid with the turf down, except for the top layer. Bowling is a game which appeals strongly to men of varying ages, many of whom are not likely to engage in other forms of outdoor recreation. The bowling green enables a small area to serve a large number of people, but its use should be restricted to this single game.

Box Hockey

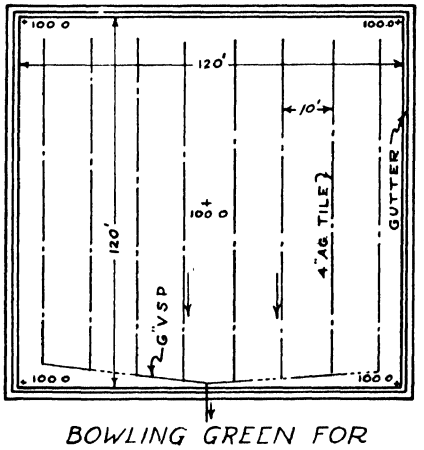
This strenuous game which requires little space appeals most strongly to older boys and young men. It requires a frame constructed of 2 by 12 inch

BOWLING GREENS



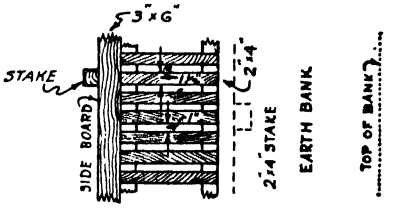
BOWLING GREEN FOR TWO ALLEYS

FIG. 1



BOWLING GREEN FOR PUBLIC RECREATION AREAS

FIG. 2.



PLAN OF GUTTER

FIG. 2A

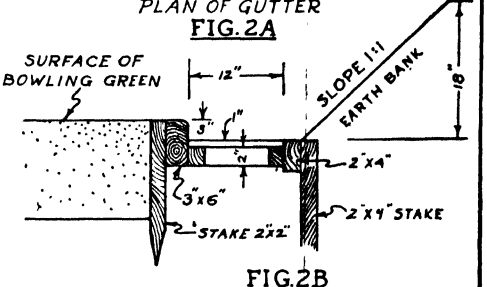


FIG. 2B

SECTION OF GUTTER

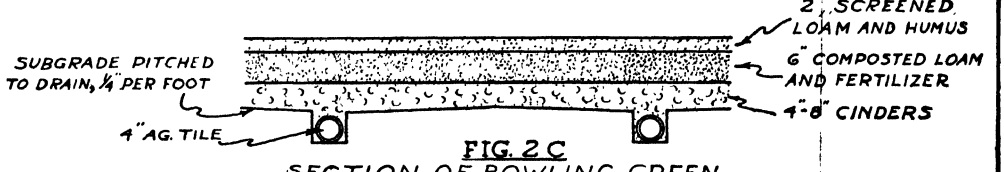


FIG. 2C

SECTION OF BOWLING GREEN

DETAILS OF BOWLING GREEN CONSTRUCTION

PREPARED IN THE OFFICE OF

ALBERT D. TAYLOR

LANDSCAPE. ARCHITECT & TOWN PLANNER

CLEVELAND, O. DEC. 6, 1924.

PLATE "E"

planks, the dimensions of which are indicated in Plate 33. The frame may be strengthened by blocks as illustrated, or angle irons may be used. The four holes in the end and center boards should be 3½ inches wide and 4½ inches high. They are cut in the center of the end boards and in the middle board they are 2 feet apart. The other necessary equipment for this game consists of two hockey sticks and an old baseball.

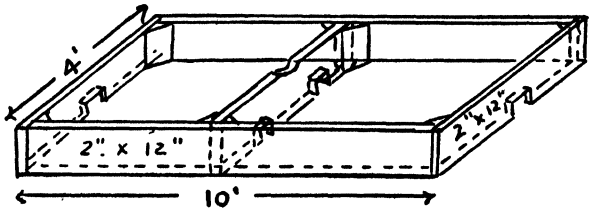


PLATE NO. 33

DIAGRAM OF BOX HOCKEY

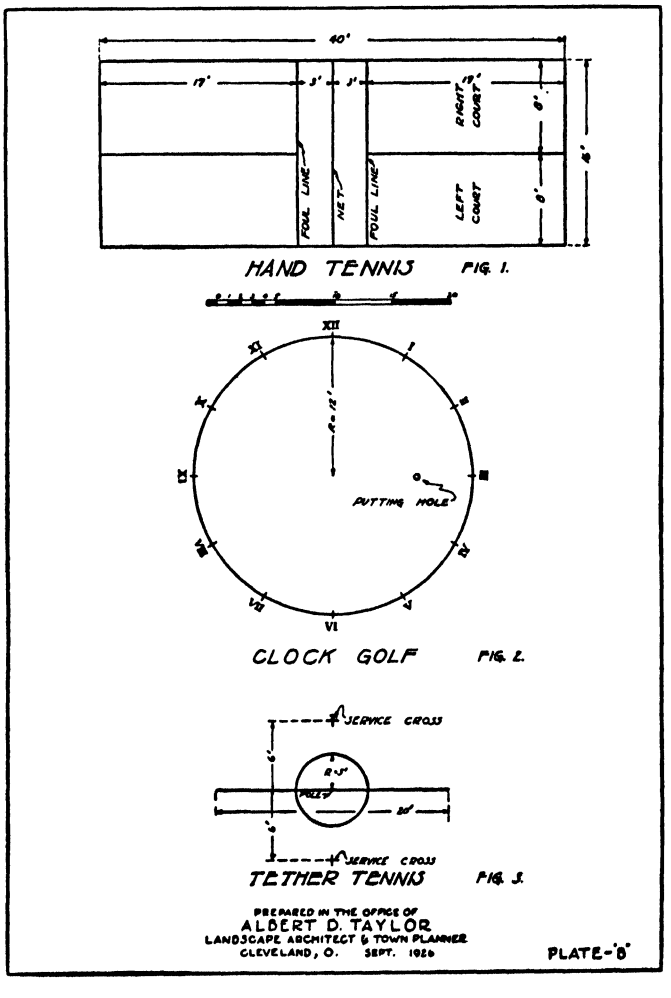


PLATE NO. 34

DIAGRAM OF CLOCK GOLF, HAND TENNIS AND TETHER TENNIS

Clock Golf

This game can be played on a comparatively level space 20 to 30 feet in diameter, although a larger area is preferable. A circle marked on the grass or dirt is divided into 12 equal parts, and the points are numbered from 1 to 12. The numbering is done by pressing a metal plate into the ground at or near the points on the circle. A putting hole, 4 inches in diameter and 4 inches deep, is made at any spot between the center of the circle and its circumference. The distances from each point to the hole will therefore differ in length. The hole may be changed from time to time. The only equipment needed is the putter and golf balls. See Plate 34, page 74.

Cricket

No specific dimensions have been laid down for a cricket field, but it requires, for safety, a field clear of obstructions and approximately 140 yards square. Two wickets are set up in the middle of the field 66 feet apart. The wicket consists of three upright pieces of wood 27 inches high, on the top of which are placed two short pieces of wood set in grooves in the top of the uprights so as not to project more than ½ inch above them. These uprights form a wicket 8 inches wide. Lines are marked at each wicket and at right angles to the line of play, which are known respectively as "popping creases" and "bowling creases." (See Plate 35.) The batsmen stand between these creases when striking at the ball.

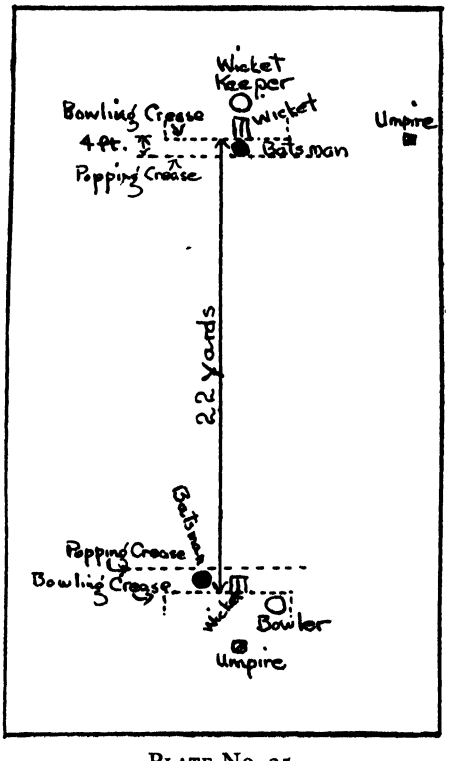


Plate No. 35
DIAGRAM OF CRICKET PITCH

The pitch proper should be a perfectly level area, extending about 40 feet in width, so as to permit the wickets to be moved from side to side, thus permitting the grass to recover from the hard use.

Croquet

Croquet is played on a level lawn. There is considerable variation in the size of the courts used for this game, but the normal dimensions of the

court are 30 by 60 feet measured on the boundary line. However, the game may be played on a space 25 feet by 50 feet. Thirty inches inside the boundary line is the playing line; this may be either a marked or an imaginary line. Each stake is set just outside the playing line, halfway between the end corners. The first arch is placed 8 feet from the boundary line; the second arch, 7 feet from the first. The side arches are placed on a line across

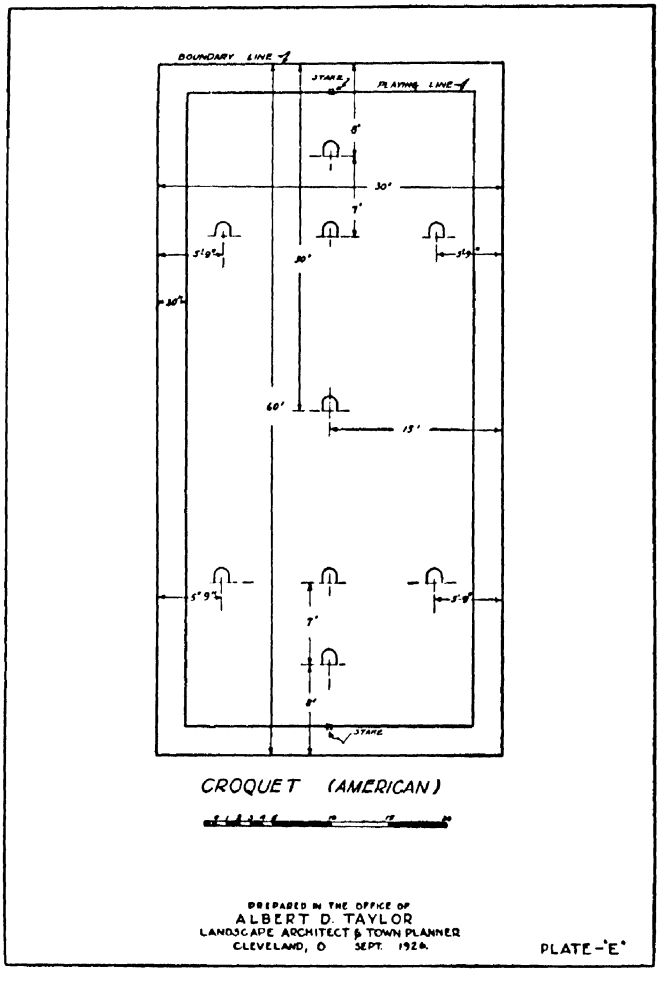


PLATE No. 36

the court with the second arch, and 5 feet 9 inches in from the boundary line. The center arch may be either single or double. If double, the arches should be placed at right angles to the other arches and 18 inches apart. If the court is clearly marked on the turf, the boundaries may be easily seen from any point in the court. The court is sometimes built in the form of a sunken panel, its sides rising 5 or 6 inches as nearly perpendicular as the turf

can be held, and from this point gently sloping away from the court for at least 4 or 5 feet. For a diagram of a court see Plate 36.

Deck Tennis

Although originated for use on shipboard, this game is played on many playgrounds. The dimensions of a single court are 12 by 40 feet, and of a doubles court 18 by 40 feet. Lines should be made marking the court boundary. Two other lines are required connecting the side lines 3 feet from and parallel to the net which is stretched across the center of the court. In the doubles court lines are also drawn from the back line to the 3-foot line, bisecting the playing area on each side of the net. The court is the same as for hand tennis (see Plate 34, page 74) except that in deck tennis the doubles court is 18 feet instead of 16 feet in width. The net is 1½ feet in width supported by posts extending 5 feet above ground, the top of the net being 4 feet 9 inches high at the center. Soft rubber rings about 7 inches in diameter are used for this game.

Field Ball

The rules for field ball, which is played widely by women and girls, call for a field 60 yards by 100 yards. Goals similar to soccer goals (see Plate 47, page 88) are erected at the center of each goal line. The field is marked off by lines 5 yards apart and parallel to the goal line, and the center of the field is indicated by a suitable mark. Scoring lines which are semicircles are marked off at each end of the field, having a radius of 15 yards from the center of each goal. A penalty free throw mark is made opposite each goal and 12 yards from its center. Because the requirements of the two games are similar as to space and equipment, the same fields are often used for both soccer and field ball.

Field Hockey

Field hockey may be played on any level, open and well-drained field seeded with grasses which will form a tough sod. For official play the field should be from 90 to 100 yards long and from 50 to 60 yards wide. A field 85 yards long and 45 yards wide is recommended for younger players. The field should be divided into four equal parts by lines marked parallel to the goal lines. Where the field is less than 100 yards in length, the 25-yard lines should be 25 yards from the goal lines, making the spaces between the former and center line less than 25 yards in width. For experienced players the 25-yard lines should not be marked more than 7 yards from the

side lines. At each side of the field, 5 yards inside the boundary line and parallel to the long axis of the field, a line called the 5-yard line is marked off. The goals are in the center of each goal line. A goal consists of two posts, 4 yards apart, and 7 feet high (inside measurements), connected at the top with a horizontal bar. Four to six feet back of the goal, other posts

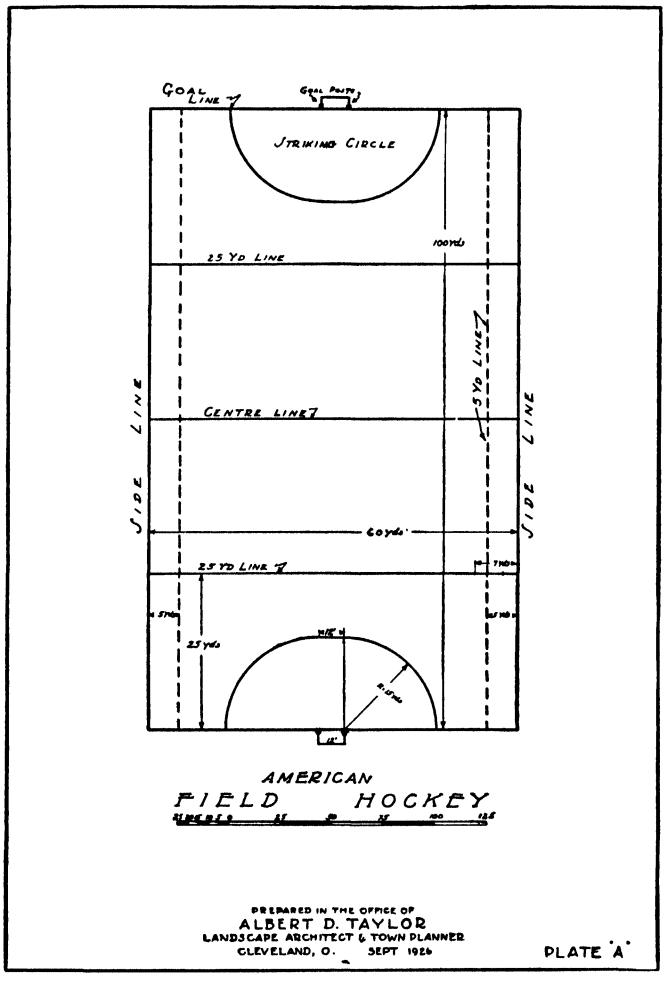


PLATE NO. 37

and a cross bar are erected and joined to this goal, nets being fastened to the goal post, cross bar and the ground so as to enclose the entire space.

About the goal is a nearly semicircular area formed by two quarter-circles and a common tangent 12 feet long. The quarter-circles are drawn with a 15-yard radius, the base of each goal upright being used as a center; they are started at the boundary line, and described in front of the goal line. The two quarter-circles are then connected by a line 12 feet long, which is

tangent to both arcs. For diagram of field hockey field, see Plate No. 37, page 78.

It is important that the field hockey field be rolled frequently as soft turf is likely to cause injuries to players.

FOOTBALL

A level, well-drained turf field is required for football. By erecting combination football and soccer goal posts (see Plate 93, page 164) the same field may be used for soccer or speedball. Because football is played in the fall months when the sun sets in the southwest, and because much of the play is lengthwise of the field, it is advisable to have the long axis of the

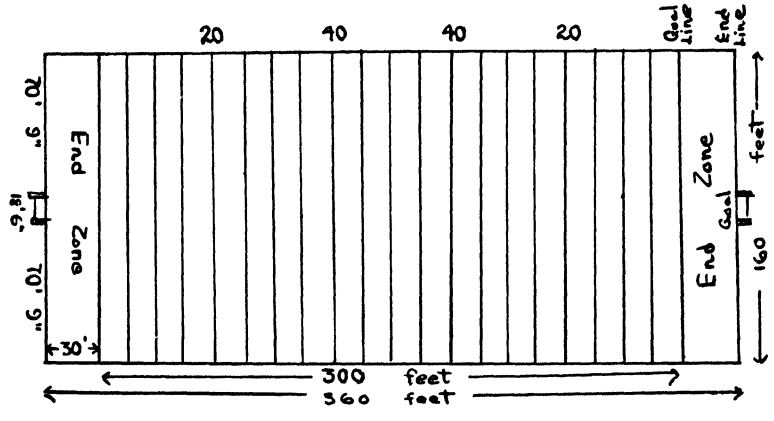


PLATE No. 38

DIAGRAM OF FOOTBALL FIELD

field extend northwest and southeast. There should be considerable space extending beyond the field of play as established in the official football rules, which are as follows:

"The game shall be played upon a rectangular field, 360 feet in length and 160 feet in width. The lines at the ends of the field shall be termed end lines. Those at the sides shall be termed side lines. The goal lines shall be established in the field 10 yards from and parallel to the end lines. The space bounded by the goal lines and the side lines shall be termed the field of play. The spaces bounded by the goal lines, the end lines and the side lines shall be termed the end zones. The field of play shall be marked at intervals of 5 yards with lines parallel to the goal lines and each of these lines shall be intersected at right angles by short lines 10 yards in from the side lines. All lines shall be marked—preferably in white. The goal posts shall be placed in the middle of each end line, shall exceed 20 feet in height

and be placed 18 feet 6 inches apart, with a horizontal crossbar, the top of which shall be 10 feet from the ground." (See Plate 38.)

GOLF

This game is not played on the areas discussed in this handbook because of the large space required for it. However, miniature golf courses may be laid out in a corner of the playfield. The holes need not be more than 10 to 25 yards long in order to provide practice in the short approach shot and in putting.

GOLF CROQUET

The course of golf croquet, as in golf proper, depends on the shape of the ground used. The course, as in croquet, is marked by wickets or arches, and also by numbered flags. The distance between the wickets will vary. A spot or object, e.g., a tree, near the center of the lawn, is chosen; all wickets face this center, and all shots are made through the wickets toward the center. The wickets should be placed in sequence so that the one to be shot at is in view of the wicket just left, e.g., No. 2 must be seen from No. 1, and No. 3 from No. 2, and so on. Usually 8 wickets are employed, but, as in golf proper, you may have less and go over the course twice for a game. (A. D. Taylor.)

HAND BALL

The American game of one-wall hand ball is exceedingly popular on public play areas throughout the country. The standard court is 20 feet in width by 34 feet in length and the wall is 16 feet in height. In addition to the boundary markings, there is a line across the court known as the short line which is 15 feet from and parallel to the wall. Nine feet back of the short line a service marking is made, extending 4 inches into the court from each side line. On a championship court, the side lines are extended at least 3 feet beyond the "long line" which marks the back of the court. All lines should be 1½ inches wide. For a diagram of a one-wall hand ball court, see Plate No. 39.

Most courts on outdoor play areas have a concrete surface which should be smooth so as to give an accurate bounce. Bituminous materials are also used. Some courts have wooden walls, although the use of concrete walls is becoming increasingly common. When wooden walls are used they should be braced thoroughly and the facial boards applied so as to minimize the possibility of warping. Concrete walls, which need to be heavily rein-

forced with steel bars, are from 8 to 12 inches in thickness and usually are supported on a concrete base about 4 feet below the ground. The wall may be given one or more coats of gray cement wall paint. As a rule there is a wire extension approximately 4 feet high on top of the wall. In the case of a concrete wall, pipe sleeves are set in the top of the wall, in which posts supporting the wire fence can be inserted.

Because of the expense of constructing a hand ball wall, courts are generally laid on either side of it, thus utilizing both faces of the wall. The court surface should extend 10 feet beyond the long line or 44 feet from the

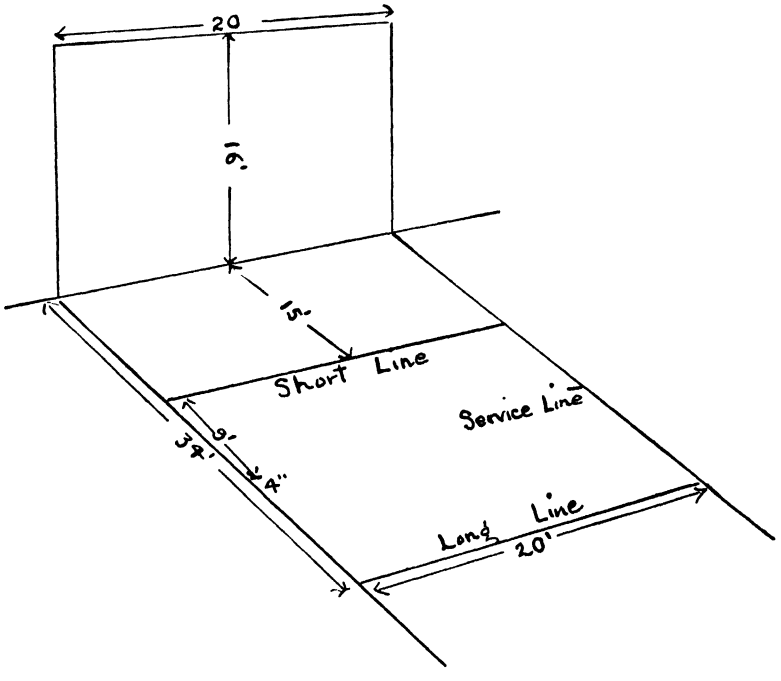


PLATE NO. 39

DIAGRAM OF ONE-WALL HAND BALL COURT

wall and 4 or 5 feet beyond each of the side lines. In case two or more courts are laid side by side, there should be 6 feet between the adjoining courts. If the surface is concrete, expansion joints may be laid between the courts. The slope of the surface should be away from the wall.

In some cities, a three-wall court is preferred. This kind of court makes possible a different type of game. The length of the side walls varies as well as their construction. Sometimes they are of uniform height throughout; in other cases they are triangular in shape, tapering down from the top of the front wall to the surface of the court.

HAND TENNIS

This game, which resembles tennis except that the ball is hit with the hand instead of a racquet, requires a court 16 by 40 feet. The net, 2 feet in depth and hung with its top 2 feet 6 inches from the ground, divides the court latitudinally into equal parts. Foul lines are drawn parallel to the net, one on each side, at a distance of 3 feet from it. Each playing court is then divided longitudinally into two equal parts; this line does not extend through the area between the foul lines and the net. (See Plate No. 34, page 74.) This game can be played on any level surface which permits of an accurate bounce.

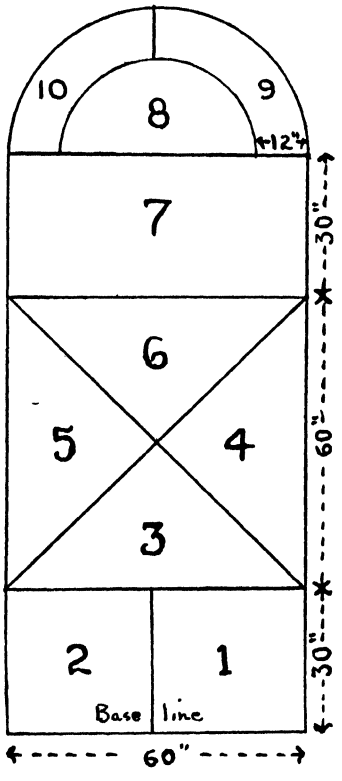


PLATE NO. 40
DIAGRAM OF HOPSCOTCH COURT

HOPSCOTCH

There are many variations in the court used for this game, but Plate 40 illustrates the official court as adopted by the National Rules Committee on Athletics and Games. The playing of this popular game is encouraged if one or more courts are marked off in a suitable location on the playground.

HORSESHOES

A level space 10 by 50 feet is required for this game. The stakes of iron, 1 inch in diameter and 3 to 4 feet in length, are driven into the ground 40 feet apart. They should be inclined 2 inches toward the opposite stake with 10 inches remaining above the ground. Stake holders which keep the stakes in place may be purchased, but an improvised holder may be made of wood or metal and sunk securely in place.

The pitcher's box, which is 6 feet square and extends 3 feet on either side, to the rear and front of the stakes, should be outlined by wooden joists 2 by 6 or 8 inches, set on edge. These should not extend more than 1 inch above the level of the ground. A strip of band iron $\frac{1}{8}$ inch by 2 inches, screwed on top of the joists, will prevent them from splintering. The pitcher's box is filled with a stiff clay 6 inches deep, thoroughly rammed while moderately wet. Excellent results have been reported when equal parts of old crankcase oil and water have been worked into the clay. The surface of the clay should not be allowed to wear down to more than 1 inch

below the top of the box. When several courts are constructed side by side, there should be a distance of 10 feet between adjoining stakes. For a diagram of a horseshoe pitching court, see Plate No. 41.

The pitching distance for women in contests and tournaments is 30 feet. On the children's playground it may be advisable to have one or more courts

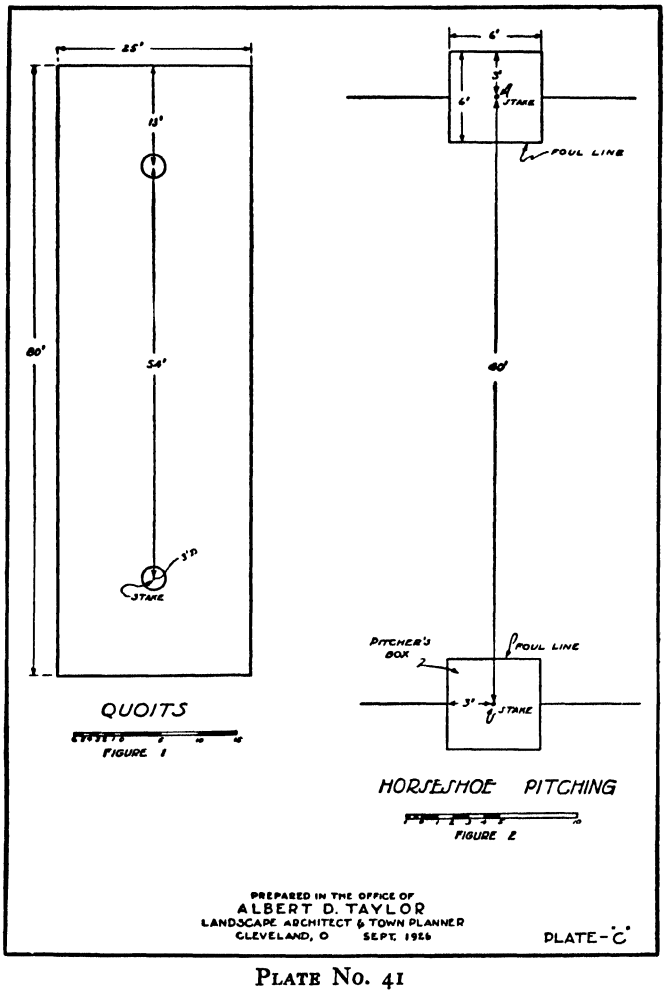


PLATE NO. 41

DIAGRAM OF HORSESHOE AND QUOITS COURTS

with the stakes 20 or 25 feet apart for the use of the younger girls and boys. Old axles may be used for stakes. A scoreboard is sometimes erected, especially if the court or courts are to be used for league play.

LACROSSE

This game, which is played in many colleges but on few public recreation areas, requires a large level field, preferably in turf. For an official game, goals should be 110 yards apart and there should be at least 20 yards

of clear playing space behind the goals. This requires a field 150 yards long. The width should be at least 70 and not more than 85 yards. The game is often played, however, on a much smaller area.

The goals consist of two poles 6 feet apart and 6 feet high joined by a rigid cross bar. Attached to the poles is a cone-shaped net which is fastened to a stake in the ground at a point 7 feet back of the center of the goal. The net which is of mesh cord is held close to the ground with tent pegs and staples so a ball thrown into the goal will be caught in the net.

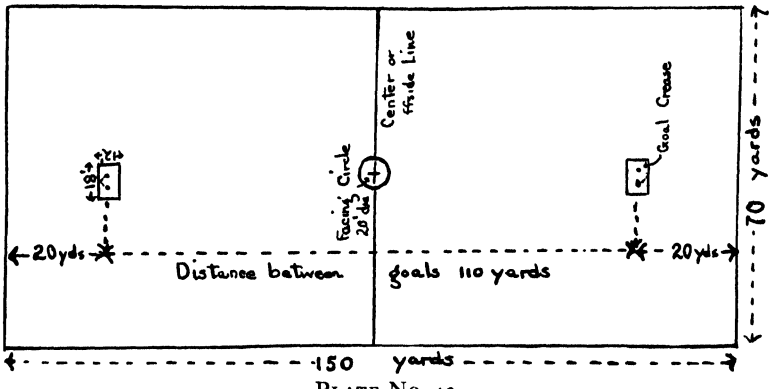


PLATE NO. 42
DIAGRAM OF LACROSSE FIELD

Boundaries of the field are marked as well as a circle with a radius of 10 feet in the center of the field. A rectangle 12 by 18 feet, known as the goal crease, is also marked off on the field around each goal and extending 6 feet in each direction from the goal posts. For a diagram of a field, see Plate 42.

PADDLE TENNIS

This popular playground game may be played on any kind of smooth surface—turf, wood, dirt, asphalt or concrete. The court in common use for several years is similar to a regular tennis court, except that all the dimensions are halved, making the playing area 18 feet by 39 feet. The height at the top of the net is 2 feet 6 inches at the center of the court and not more than 2 feet 9 inches at the posts.

There is a growing tendency, especially for adult play, to use a court measuring 20 by 44 feet, and these dimensions have been approved for official play by the American Paddle Tennis Association. This larger court makes possible a more satisfactory game and it is suggested that where space permits courts of this size be installed on public play areas. Its outside dimensions are the same as for the badminton court. When the larger court is used, the singles court is 16 feet wide and the service line is 12 feet

from the net, the top of which is 2 feet 10 inches high at the center, and not over 3 feet 1 inch at the posts.

Paddle tennis is sometimes played on a court which is also used for badminton, hand tennis, deck tennis and volley ball, the same net posts serving for the various games. See Plate 23, page 62, for an illustration of a paddle tennis court and Plate 43 for a diagram of an official court.

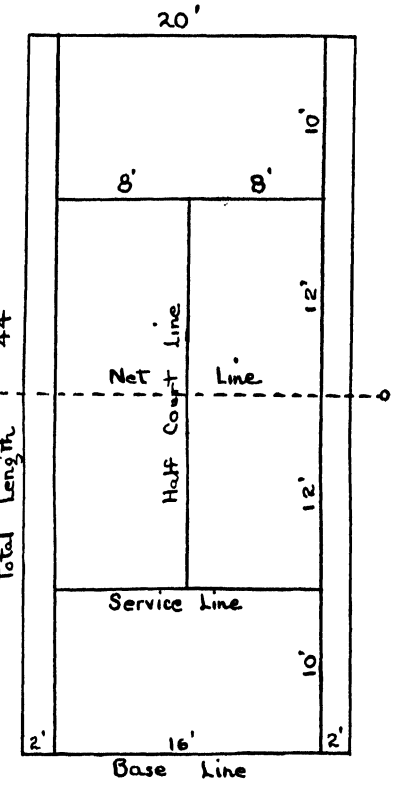


PLATE NO. 43
DIAGRAM OF PADDLE TENNIS COURT

QUOITS

A quoits rink should measure 80 feet by 25 feet; these measurements leave ample room outside of the actual pitching distance. Two circles 3 feet in diameter and 54 feet apart are excavated to a depth of about 12 inches. These circles are refilled with a stiff clay, thoroughly rammed while moderately wet. In the center of each circle a steel pin or mott, 40 inches long and 1 inch in diameter, is driven into the ground until the head is flush with the clay. The player, in throwing, stands on a line through the mott perpendicular to the line between motts and not more than 4 feet 6 inches from the mott. (A. D. Taylor.)

Pins should be set at shorter distances if children are to use the courts. A stake 18 inches in length will generally prove satisfactory for ordinary use. Quoits courts, as horseshoe courts, should be placed where there is little likelihood of anyone running across them. (See Plate 41, page 83.)

ROQUE

Roque, a game somewhat similar to croquet, is never played on a turf court, but on a surface prepared very much like a clay tennis court. The court is 60 feet long by 30 feet wide, each corner cut off by a diagonal line 6 feet long, running at a 45-degree angle with the side and end lines of the court. The court is surrounded by a raised concrete or wooden border not

smaller than 4 inches laid flat; the inner edge of the border should be beveled to prevent balls from jumping off the ground. The surface of the court should be made as smooth and flat as possible and should be nearly level; i.e., the slope should not be more than 2 inches in the width of the court. The court should be sprinkled with fine sand to hold the balls.

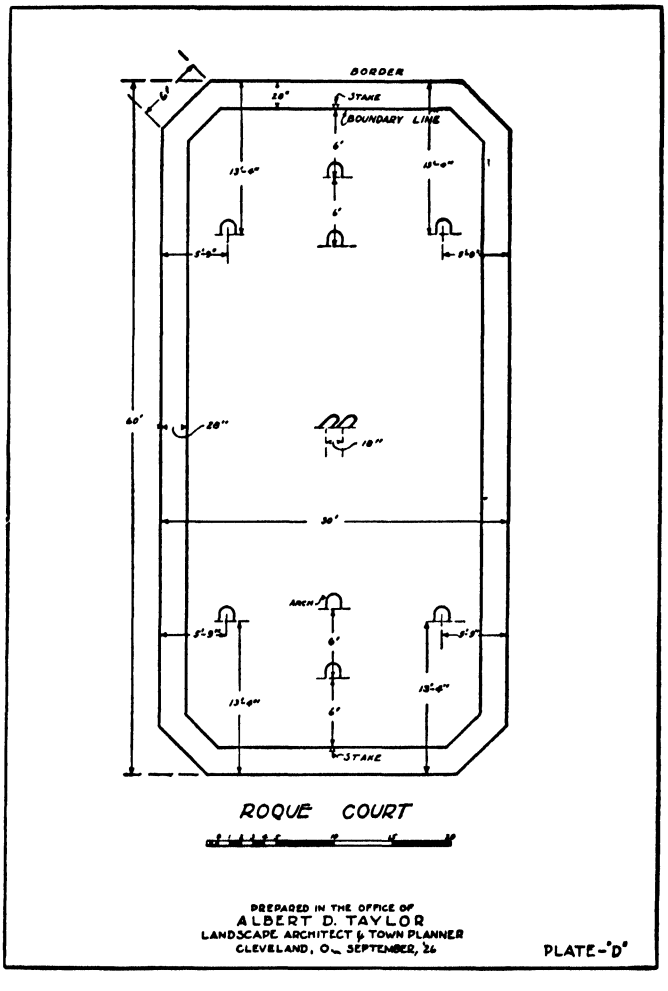


PLATE No. 44

A boundary line is marked 28 inches inside the border. The stakes, which are 1 inch in diameter, are located in the center of the width of the field, just clearing the boundary line; they extend 1½ inches out of the ground. The first wicket is located 6 feet from the stake; the second, 6 feet from the first on a line extending through the center of the field. The center of the side arches is 5 feet 9 inches from the border and 13 feet 4 inches

from the end of the field. The double wicket in the center of the court is set parallel to the end lines and measures 18 inches in length and 3⅜ inches between the wires. The other arches should measure 3½ inches between wires. The arches are made of steel and should not be less than seven-sixteenths of an inch in diameter. They are driven into 4-inch by 6-inch by 8-inch blocks of hardwood. The blocks, in turn, are buried beneath the ground so that they are covered for about 1½ inches. The arches stand 8 inches high. (A. D. Taylor.)

It has been suggested that if the arches are placed in concrete they will last longer than when wooden blocks are used. This game is especially popular with the older men.

SHUFFLEBOARD

Shuffleboard is played on a court 52 feet in length and six feet in width, with a concrete or terazzo finish. It is highly important that the area beneath the court be well drained, that the court be properly reinforced and that a level, smooth surface be secured. The court is marked off according to the official diagram illustrated in Plate 45. Lines are not more than

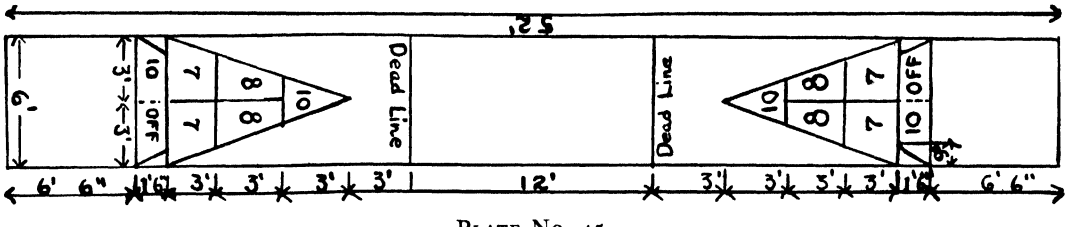


PLATE NO. 45

DIAGRAM OF SHUFFLEBOARD COURT

1½ inches or not less than ¾ inch in width, and all dimensions are measured to the line centers. The equipment needed for this game consists of eight wooden disks, four red and four black, 1 inch thick and 6 inches in diameter and cues not exceeding 6 feet 3 inches in length.

This game, which has long been popular on shipboard, has been widely introduced on public play areas, especially in the resort cities, where batteries of courts are laid out. Because the older men are often the most enthusiastic adherents of this game, it is customary to erect benches at the ends of the courts. In case a number of courts are constructed, alleys should be provided between adjoining courts. If necessary, drains may be installed in the alleys between the courts.

Soccer

Soccer is played on a level field, preferably turf although this is not as essential as in the case of football. The following statement, taken from the Laws of the Game, is reprinted with the permission of the American Sports Publishing Company:

"The dimensions of the play field shall be: maximum length, 130 yards; minimum length, 100 yards; maximum breadth, 100 yards; minimum

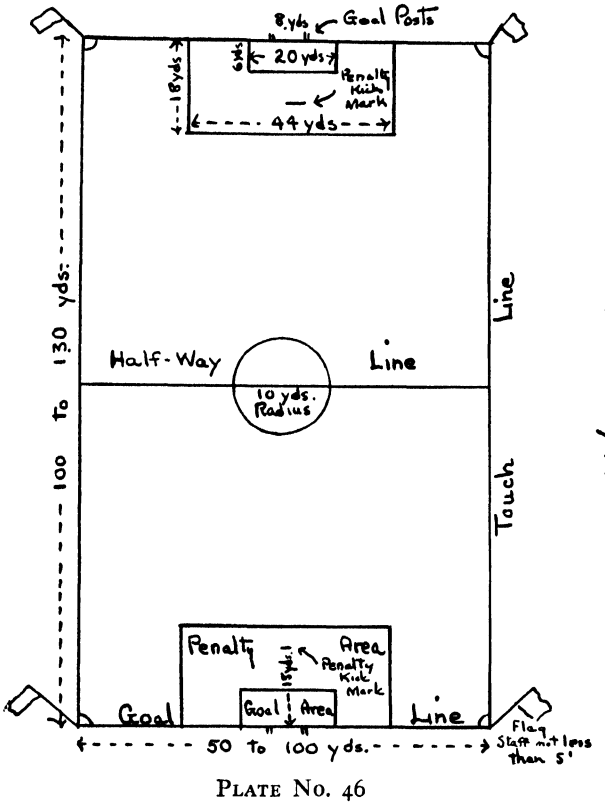


Plate No. 46

DIAGRAM OF MEN'S SOCCER FIELD

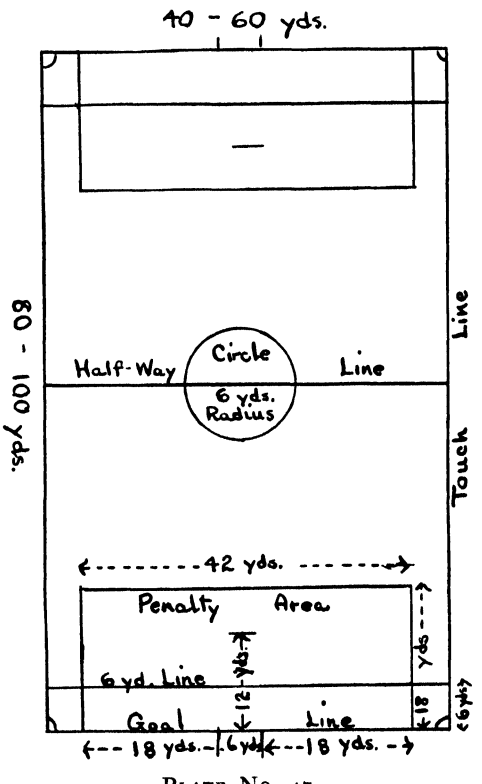


Plate No. 47

DIAGRAM OF WOMEN'S SOCCER FIELD

breadth, 50 yards. The field of play shall be marked by boundary lines. The lines at each end are the goal lines, and the lines at the sides are the touch lines. The touch lines shall be drawn at right angles with the goal lines. A flag with a staff not less than 5 feet high shall be placed at each corner. A halfway line shall be marked out across the field of play. The center of the field of play shall be indicated by a suitable mark, and a circle with a 10-yard radius shall be made around it.

"The goals shall be upright posts fixed on the goal lines, equidistant from the corner flagstaffs, 8 yards apart, with a bar across them 8 feet from the ground. The maximum width of the goal posts and the maximum depth of the crossbar shall be 5 inches. Lines shall be marked 6 yards from each goal post at right angles to the goal lines for a distance of 6 yards, and these shall be connected with each other by a line parallel to the goal lines; the space within these lines shall be the goal area. Lines shall be marked 18 yards from each goal post at right angles to the goal line for a distance of 18 yards, and these shall be connected with each other by a line parallel to the goal lines; the space within these lines shall be the penalty area. A suitable mark shall be made opposite the center of each goal, 15 yards from the goal line; this shall be the penalty kick mark."

If it is necessary to play soccer on a short field, viz., 80 yards in length, it is advisable to use as much width as possible. For example, a field 60 by 80 yards is much more satisfactory than a field only 40 or 50 yards wide.

The official soccer field for women differs in a few respects from that used for the men's game. The dimensions are smaller, the length being from 80 to 100 yards and the width from 40 to 60 yards. The center circle has a radius of only 6 yards, the goal posts are 6 yards apart and the penalty kick mark, which is 12 inches long, is 12 yards from the goal line. Because the goal is 2 yards narrower than that used for men, the penalty area is 42 yards instead of 44 yards as in the men's field. For a diagram of the soccer field for women, see Plate No. 47, page 88. The soccer field and goals are of the correct dimensions for the game of field ball which is widely played by women and girls.

SOFTBALL

This game, a modified form of baseball which has become exceedingly popular, requires a fairly level field, preferably turf. Adults need an area at least 250 feet square if a 12-inch ball is used, while children can play satisfactorily on a much smaller area. If space is limited, use of a 14-inch ball is recommended. The diamond is laid out much the same as in baseball, except that the bases are 60 feet apart and the distance from the back edge of the pitcher's plate (6 by 12 inches) to the center of home plate (12 inches square) is 40 feet. The official pitching distance for girls is 35 feet. Boxes for the batter, catcher and coacher are marked off as indicated in the diagram (Plate 48, page 90). A 3-foot line is drawn from a point half way between home plate and first base to a point 10 feet beyond first base, as shown in the diagram. Home plate is of rubber or other suitable

material, 12 inches square, although the side corners are sometimes extended as indicated. The other three bases are 15 inches square. For adult play there should be no obstructions in fair territory within a batting radius of 200 feet from home plate.

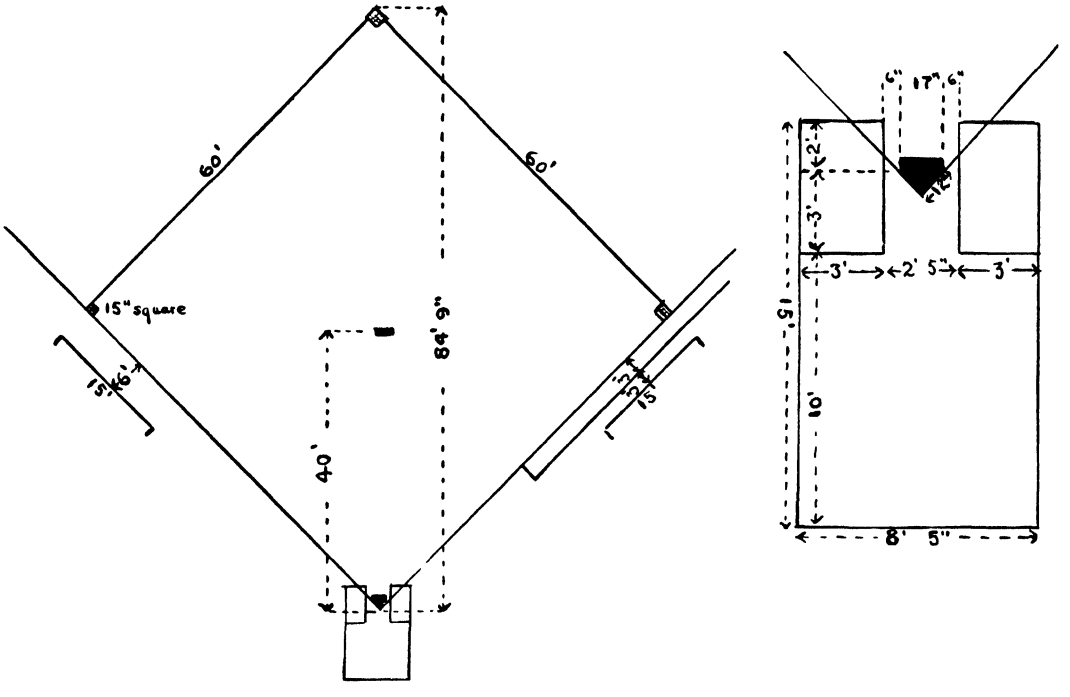


PLATE NO. 48

DIAGRAM OF SOFTBALL DIAMOND

The diagram at the left indicates the layout of a softball diamond. The one at the right, drawn at a larger scale, gives detailed dimensions for the home plate, batter's box and catcher's box.

A backstop is generally provided and if the space is limited, use of a hooded backstop is recommended. Such a backstop is illustrated in Plate 49.

A 45-foot diamond is preferable to a 60-foot diamond for play by young children; likewise a pitching distance of 35 feet.

SPEEDBALL

A regulation soccer ball is used for this game which is played on a field with the same outside dimensions as a regulation football field—a rectangle 160 feet by 360 feet. For informal use even by adults a field 160 by 240 feet is preferable. Regulation football goals are used, erected on the center of the end lines. Ten yards inside each of the end lines, and parallel to them,

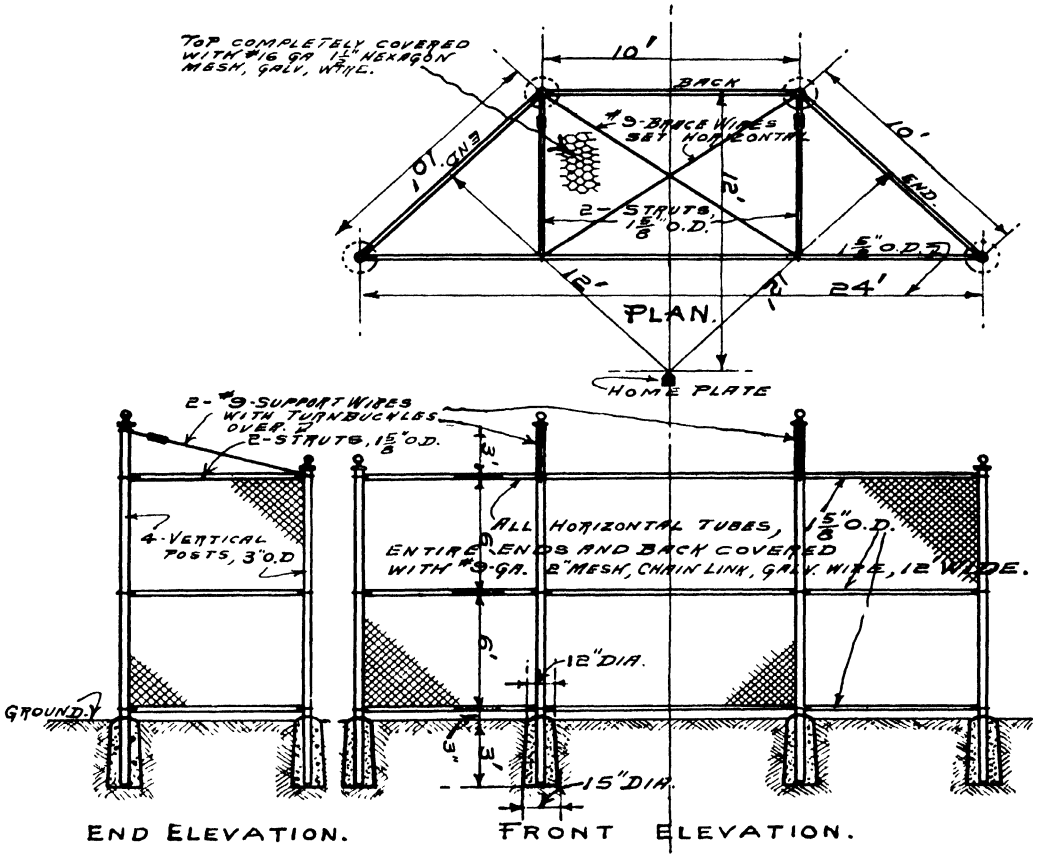


PLATE NO. 49

CONSTRUCTION DETAILS, SOFTBALL BACKSTOP, CINCINNATI, OHIO

This plan shows the ground plan, elevations and important construction details for the backstop designed and used by the Public Recreation Commission in Cincinnati.

goal lines are marked off. Across the center of the field, also parallel to the end lines, is the middle line. Ten yards on each side of this line and parallel to it is marked a restraining line. There is a penalty area in front of each goal line, indicated by a line 10 yards in front of it, and a penalty mark is placed on the center of this line.

The area recommended for women's use is 60 yards by 100 yards, but for high school girls a field 40 yards by 80 yards is more satisfactory. The end zone for women is 6 yards wide and the penalty mark 12 yards from the goal. On a municipal playfield or high school athletic field, a football field may be used for two games of speedball by laying out two crosswise fields 40 yards in width and erecting goal posts 10 yards or more in back of each side line.

TENNIS

Tennis is played on a variety of surfaces—turf, clay, dirt, water-bound macadam, concrete, wood, bituminous and many special patented surfaces. The space required for one doubles court is approximately 60 by 120 feet. The following rules for laying out a singles tennis court are from the Official Playing Rules, and are reprinted with the permission of the American Sports Publishing Company:

"The court shall be a rectangle 78 feet long and 27 feet wide. It shall be divided across the middle by a net suspended from a cord or metal cable of a maximum diameter of one-third of an inch, the ends of which shall be attached to, or pass over, the tops of two posts, 3 feet 6 inches high, which shall stand 3 feet outside the court on each side. The height of the net shall be 3 feet at the center, where it shall be held down taut by a strap not more than 2 inches wide. There shall be a band covering the cord or metal cable and the top of the net for not less than 2 inches nor more than 2½ inches in depth on each side. The lines bounding the ends and sides of the court shall respectively be called the base lines and the side lines. On each side of the net, at a distance of 21 feet from it and parallel with it, shall be drawn the service lines. The space on each side of the net between the service line and the side lines shall be divided into two equal parts, called the service courts, by the center service line, which must be 2 inches in width, drawn halfway between and parallel with the side lines. Each base line shall be bisected by an imaginary continuation of the center service line to a line 4 inches in length and 2 inches in width called the center mark, drawn inside the court and at right angles to, and in contact with such base line. All other lines shall be not less than 1 inch nor more than 2 inches in width, and all measurements shall be made to the outside of the lines. In the case

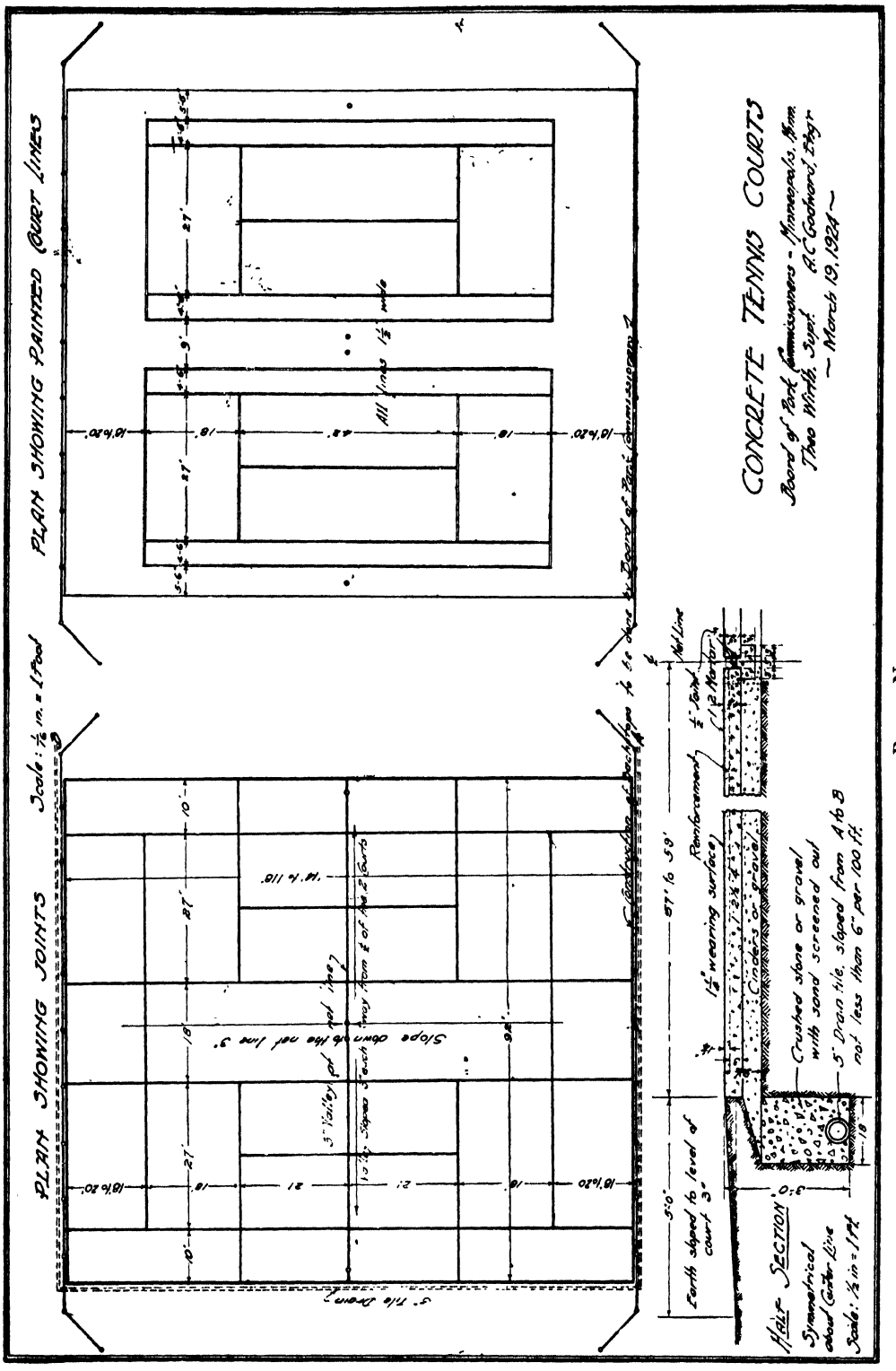


PLATE No. 50

TENNIS COURT CONSTRUCTION, MINNEAPOLIS

These plans of two concrete courts indicate a slope of 3 inches from the backstop to the net. For backstop construction details, see page 95.

of the International Lawn Tennis Championship (Davis Cup) or other official championships of the International Federation, there shall be a space behind each base line of not less than 21 feet, and at the sides of not less than 12 feet.

"For the doubles game, the court shall be 36 feet in width, i.e., 4½ feet wider on each side than the court for the singles game." The same lines are required as for the singles game but in addition there are two lines 4½ feet outside the side lines and parallel to them. The base lines are also extended to meet these lines forming the outside boundary of the doubles court. In other respects the court is similar to the singles court. Practically all public tennis courts are laid out for the doubles game because they accommodate twice as many players. For a diagram of two doubles courts see Plate 50, page 93.

Because the construction and maintenance costs of many types of courts are high, and because a well-constructed and well-maintained court is necessary for satisfactory play, it is recommended that people planning to build tennis courts study carefully the available literature on the subject or employ firms which have specialized in constructing them. Among the many problems to be considered, five of the most important are location, drainage, orientation, grading and surfacing.

An approximately level area is required. Low, swampy places or areas in which the drainage is poor or which are likely to receive surface water during heavy rains should be avoided. Areas bordered by tall or wide-spreading trees, especially on the western border, should be avoided because shadows cast across the courts are very annoying to players. Courts should not be built on filled land until it has had time to settle thoroughly. It is important that there be adequate subdrainage so courts will dry quickly after a rain and surface drains should be provided outside the courts to carry off excess surface water. The long axis of the courts should run north and south in order that the late afternoon sun will not be in the eyes of players. If a number of courts are to be built on a given area it is cheaper to construct them and less fencing is required if they are placed side by side rather than end to end. Furthermore, it is much easier to maintain clay, dirt or turf courts if laid out in this manner.

Regardless of the particular way in which tennis court surfaces are graded, a uniform grade and freedom from irregularities are essential. For a single court many authorities prefer the gable roof type with the slope from the center long axis toward either side. This type enables excess water to drain quickly to the sides and requires little difference in level throughout the court surface. Others recommend a single plane surface with a

pitch from one end of the court to the other, especially when courts are constructed in batteries. Disadvantages of this type are that in case of a clay or dirt court there is a greater tendency for the court to become rutted by excess water, due to the long run off, and also the difference in elevation at the base lines makes a slight difference in the service and play on the two

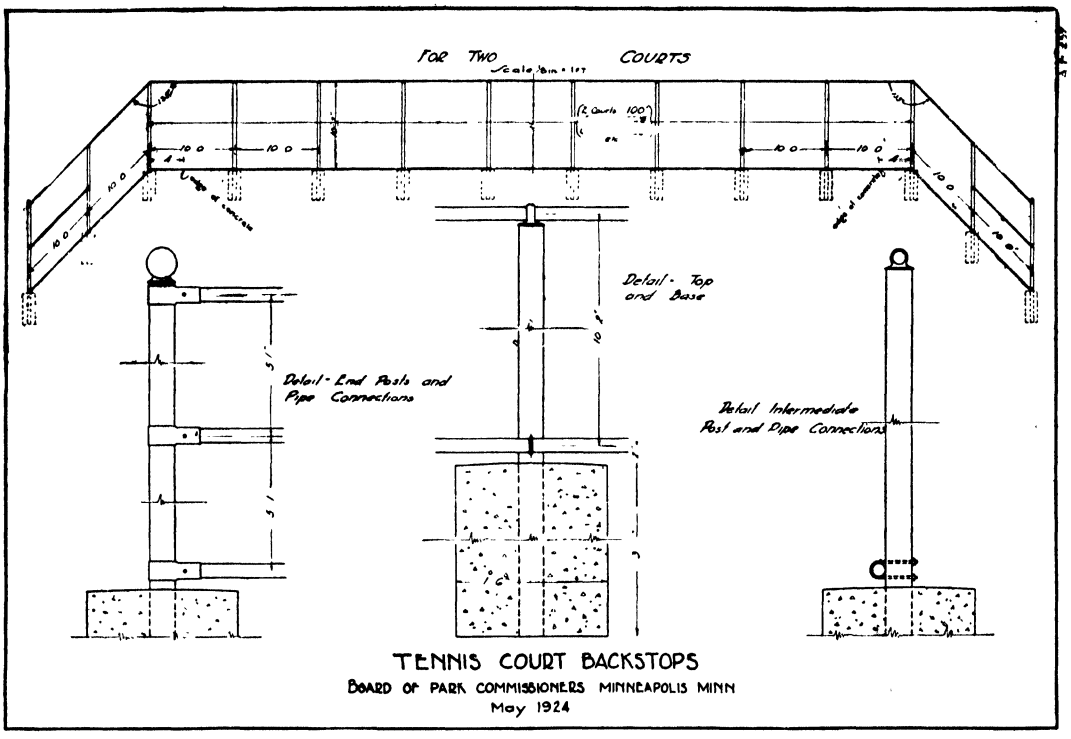


PLATE NO. 51

PLAN OF CONSTRUCTION OF TENNIS COURT BACKSTOPS, MINNEAPOLIS

The following are the specifications for the above backstops with top and bottom rail. End posts: To be standard weight galvanized tubing three inches in diameter, 13½ feet long, fitted with a neat ball top ornament. Line posts: To be of standard weight galvanized tubing two and one-half inches in diameter, 13 feet long, fitted with malleable tops to carry top rail. Top rail, bottom rail and end post braces to be standard weight galvanized tubing one and five-eighths inches in diameter. Truss rod braces used at each end of the fence, to be of three-eighths inch mild steel. Fence fabric to be Armco, Cyclone or equivalent, No. 11 gauge, one and three-fourths inch mesh. Bidder shall specify wire fabric contemplated, when submitting prices. Fence fittings and fabrics to be galvanized.

sides of the net. Perhaps the most common method of grading courts constructed in batteries is to have each side of the court a single plane surface sloping either away from or toward the net. In case the slope is toward the net, excess water may be carried off by a drain or valley directly under it. This type of slope facilitates the use of courts as ice skating rinks. The

amount of pitch varies somewhat with the type of surface, but in general, regardless of the direction of the slope, it is approximately 1 inch for every 20 feet.

There is a wide divergence of opinion as to the most satisfactory tennis court surface and no single standard type has been officially adopted for tournament play. As previously pointed out, many different kinds of courts are found on public play areas. Probably the most widely used and most popular is the clay court, but the maintenance cost is high and the playing season relatively short. Because of this, during the last few years there has been an increasing tendency to install hard-surface, all-year courts of concrete or a bituminous material. There is much to be said in favor of constructing at least part of the courts on public play areas of this type. Among its advantages are that it can be used the year round, maintenance costs are negligible, no special type of shoes is required by players, it can be used shortly after a rain and it cannot be harmed by improper use as a clay court can. Furthermore, during periods when it is not needed for tennis, the court may serve as a roller skating rink, for outdoor dances, for skating in the winter, or it can be permanently marked off for other games. An excellent analysis of the relative merits of various tennis court surfaces and valuable suggestions concerning their construction are available from the U. S. Lawn Tennis Association. (See Bibliography, page 234.)

Tennis may be played on an area 50 by 110 feet, but it is recommended that if possible 60 by 120 feet be allowed for a single court. At least 8 feet and preferably 12 feet should be provided between courts in a battery. Increasingly cities are lighting their tennis courts in order to lengthen periods of play. Projectors set on high poles erected several feet outside the net posts have proved most satisfactory. Clay and other types of courts requiring careful supervision are usually entirely enclosed by a 10- or 12-foot fence of chain link galvanized wire supported by galvanized steel posts. Sometimes, especially in the case of concrete or bituminous courts where continuous control is not essential, backstops only are erected at the ends of the courts. (See Plate 51, page 95.) At two courts recently constructed in Elizabeth, New Jersey, cedar poles were used for the backstops. According to reports, they are not only less expensive but have a much more pleasing appearance than the steel posts ordinarily used.

Posts to hold the nets should be set in the ground securely, although removable posts which are set in pipes sunk in the ground are sometimes used when it is desired that the court serve for other activities. A number of cities are now using a special chain link net which is giving satisfactory service. It is less suited, however, for use on clay or other types of courts

which must be rolled frequently than on those requiring no maintenance. If the court enclosure is to be used for ice skating, it is desirable to surround it by a low curb at the fence line.

Tether Ball

This game, also called tether tennis, may be played on any smooth piece of ground free from obstructions. An upright wooden pole is required, the top of which should be 10 feet above the ground, but a 2- or 3-inch pipe may be substituted for the pole. The pole is 7½ inches in circumference at the ground and may taper toward the top. A 2-inch black band is painted on the pole 6 feet above the ground. A circle 6 feet in diameter is drawn on the ground with the pole as the center and another line 20 feet long bi-

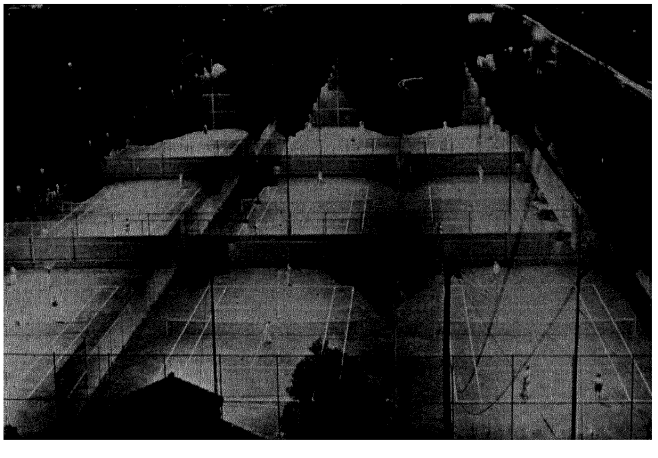


Plate No. 52

CONCRETE TENNIS COURTS, BEVERLY HILLS, CALIFORNIA

Lights increase the usefulness of these nine courts, constructed on the roof of a water reservoir.

secting this circle. Six feet from the pole, at right angles to and on each side of the 20-foot line, are two crosses marked distinctly on the ground. A tennis ball is suspended from the top of the pole by a piece of strong fish-line; the cord allows the ball to hang 7½ feet, i.e., 2½ feet from the ground. The game is played by two persons using tennis racquets or paddles. If a paddle is used the diameter of the circle may be reduced. For diagram of court, see Plate 34, page 74.

Touch Football

This game is played on a field all measurements and lines of which correspond to those of the regulation football field. The same goal is also used.

For a description and diagram, see page 79. Where a regulation size field is not available a smaller area may be used.

Volley Ball

Volley ball may be played on any level surface large enough for a court, the official dimensions of which are 60 feet long and 30 feet wide. The size may be varied to accommodate larger or smaller groups. Frequently the same area may be used for both volley ball and basketball. If this is done volley ball standards must be erected outside the basketball court or removable standards be used. The boundary of the court is marked off, and there should be no obstructions for at least 5 feet around the entire court. A center line is also marked off across the court beneath and parallel to the net. To mark the service area a line 6 inches long is drawn outside the end line and parallel to and 10 feet from the right side line. All lines are 2 inches in width.

The net is 3 feet wide over all and at least 32 feet long. It is tightly stretched by the four corners to two uprights which are erected outside the court at the center line. The top of the net is level and measures 8 feet from the ground.

It is recommended that for children the size of the court be reduced to 25 by 30 feet and that the net be lowered. A height of 7 feet is suggested for children 12 to 14 and of 6 feet for the 9- to 11-year-olds. The regulation court, 30 by 60 feet, is recommended for women, with the top of the net from 7 to 7½ feet from the ground. By inserting eye bolts at the different heights on the standards, the net may be raised or lowered to accommodate the group using the court. The volley ball court is often used for paddle tennis, newcomb and other games.

Track and Field Events

A discussion of the areas required for various track and field events will be found in Chapter VII.

Space Requirements for Games and Sports

The following table of the principal games and sports engaged in by children, young people and adults gives the dimensions of the play areas and the estimated amount of space required. Where official rules and dimensions have been adopted for the games listed, the latter are used in the table, but in the case of some of the activities the space requirements are

Name	*Dimensions of Play Areas (In Feet)*	*Use Dimensions (In Feet)*	*Space Required (Sq. Ft.)*	*Number of Players*
Archery	Various, 90–300 in length	50 (min.) × 450 (max.)		
Badminton	17 × 44 (single)	25 × 60	1,500	2
	20 × 44 (double)	30 × 60	1,800	4
Baseball	90′ diamond	300 × 300 (min.)	90,000	18
		350 × 350 (average)	122,500	
Basketball (men)	35 × 60 (min.)	60 × 100 (average)	6,000	10
	50 × 94 (max.)			
Basketball (women)	45 × 90	55 × 100	5,500	12–18
Boccie	18 × 62	30 × 80	2,400	2–4
* Bowling Green	14 × 110 (1 alley)	120 × 120	14,400	32–64
Box Hockey	4 × 10	16 × 20	320	2
Clock Golf	Circle 20′ to 24′ in diameter	30′ Circle	706	Any number (2 to 8)
Cricket	Wickets 66′ apart	420 × 420	176,400	22
Croquet	30 × 60	30 × 60	1,800	Any number (2 to 8)
Deck Tennis	12 × 40 (single)	20 × 50	1,000	2
	18 × 40 (double)	26 × 50	1,300	4
Field Ball	180 × 300	210 × 340	71,400	22
Field Hockey	150 × 270 (min.)	200 × 350 (average)	70,000	22
	180 × 300 (max.)			
Football	160 × 360	180 × 420	75,600	22
Hand Ball	20 × 34	30 × 45	1,350	2 or 4
Hand Tennis	16 × 40	25 × 60	1,500	2 or 4
Horseshoes (men)	Stakes 40′ apart	12 × 50	600	2 or 4
Horseshoes (women)	Stakes 30′ apart	12 × 40	480	2 or 4
Lacrosse	210 × 450 (min.)	260 × 500 (average)	130,000	24
Paddle Tennis	16 × 44 (single)	28 × 60	1,680	2
	20 × 44 (double)	32 × 60	1,920	4
Polo	600 × 960 (max.)	600 × 960	576,000	8
Quoits	Stakes 54′ apart	25 × 80	2,000	2 or 4
Roque	30 × 60	30 × 60	1,800	4
Shuffleboard	6 × 52	10 × 64	640	2 or 4
Soccer (men)	150 × 300 (min.)	240 × 360 (average)	86,400	22
	300 × 390 (max.)			
Soccer (women)	120 × 240 (min.)	200 × 320 (average)	64,000	22
	180 × 300 (max.)			
Softball	60′ diamond	250 × 250 (min.)	62,500	20
Speedball (men)	160 × 240 (min.)	180 × 300	54,000	22
	160 × 360 (max.)	180 × 420	75,600	
Speedball (women)	180 × 300	200 × 340	68,000	22
Table Tennis	5 × 9	12 × 20	240	2 or 4
Tennis	27 × 78 (single)	50 × 120	6,000	2
	36 × 78 (double)	60 × 120	7,200	2 or 4
Tether Tennis	Circle 6′ in diameter	20 × 20	400	2
Touch Football	160 × 300	175 × 330	57,750	22
Volley Ball	30 × 60	50 × 80	4,000	12–16

* Most bowling greens in public recreation areas are 120′ × 120′, which provide 8 alleys. The amount of space required for a single alley would be 20′ × 120′.

merely approximate. Greater or less space may be provided, depending upon local conditions. Some games, like tennis, require a great deal of free space around the court while others, like croquet or roque, require very little if any space beyond the borders of the playing court. The figures given here relate primarily to adults; estimated space requirements for a number of games when played by children are given later in the chapter. The *use* dimensions in the table (page 99) do not provide space for the

Name	*Dimensions of Play Areas (In Feet*	*Use Dimensions (In Feet)*	*Space Required (Sq. Ft.)*	*Number of Players*
Baseball	75 to 82′ diamond	250 × 250	62,500	18
Basketball	40 × 60	50 × 75	3,750	10–12
Field Hockey	120 × 200	150 × 250	37,500	22
Hopscotch	2 × 12½	8 × 20	160	2–10
Horseshoes	Stakes 25′ apart	15 × 40	600	2 or 4
Paddle Tennis	18 × 39	30 × 60	1,800	2 or 4
Soccer	100 × 200	125 × 240	30,000	22
Softball	45′ diamond	150 × 150 (min.)	22,500	20
Speedball	120 × 240	140 × 275	38,500	22
Team Dodge Ball				
(boys)	Circle 40′ diameter	60 × 60	3,600	20
(girls)	Circle 35′ diameter	50 × 50	2,500	20
Touch Football	120 × 240	140 × 280	39,200	22
Volley Ball	25 × 50	40 × 70	2,800	12–16

seating of spectators. It should be kept in mind that in the case of several of the games listed, when they are played informally, variations are often made not only in the size of the court but in the number of players.

Requirements for Game Spaces on Children's Playgrounds

Sometimes game courts and fields for children's use are laid out with the same dimensions as are recommended for adult groups. Few games, however, can be played with satisfaction by children if they are required to use courts of a size suitable for adult play. Distances are too great, scores are too few, and a high degree of skill is impossible in most games unless modifications are made to suit the ages of the players. A number of suggestions as to such changes have been made in this chapter. If fields or courts are also to be used by adults, they should be laid out and equipped if possible so they can be accommodated to the needs of each

group, but if the area is primarily for children, their interests and requirements should receive the preference.

In the table on page 100 are listed the approximate space requirements for a number of games and sports when played by children. The space required for a number of these games, such as soccer, is variable and smaller areas may be used if necessary. Sometimes a larger number of children than indicated in the table take part in the games. Tennis, tether ball and a number of other activities have standard space requirements, regardless of the ages of the persons playing, and such games and sports are omitted from this table. In addition to the games listed, there are numerous others which are popular with playground children but most of them do not require definitely marked courts or spaces of standard dimensions.

CHAPTER V

THE CHILDREN'S PLAYGROUND

As stated in Chapter I, the children's playground is an outdoor area which provides an opportunity for boys and girls, primarily between the ages of 6 and 15, to engage in a variety of fundamental and enjoyable play activities. Sometimes a special section is provided for the use of children of pre-school age, and on many playgrounds some of the facilities are used evenings and at other special times by young people and adults. The essential features cannot be provided on less than three acres and in most neighborhoods a larger area is required. Whenever possible, an attempt should be made to acquire five acres in order that a baseball field may be included in the layout. The site should be comparatively level although uneven land can be used by grading it into different levels. Playgrounds should be distributed throughout the city so no child is obliged to walk more than ½ mile in order to reach one. This distance should be reduced to ¼ mile in densely populated neighborhoods or where there are unusual traffic hazards. As previously mentioned, the playground is often adjacent to or upon an elementary school site or is established as a part of a neighborhood playfield.

Essential Playground Functions

In designing a playground, an attempt should be made to provide most effectually for the needs of the neighborhood in which it is located and to utilize fully the opportunities which the site affords for a useful and interesting development. Standardization in design is not only impracticable but undesirable. All too frequently the playground is merely an area in which the ground space has been allotted to certain types of apparatus and game courts in a stereotyped arrangement. Greater imagination and resourcefulness need to be applied to the planning of the playground in order that it may provide a suitable setting for satisfying and spontaneous play activity.

Because planning to be effective must be on a functional basis, an understanding of the functions which the playground is intended to serve is essential before considering problems of detail. Similarly, the requirements

for the performance of these functions need to be recognized. Among others, the playground should afford opportunities to engage in:

1. A variety of physical activities which are essential to sound bodily growth and the development of physical skills on the part of the individual boy and girl. Such activities are apparatus play, games, stunts and individual activities. These require a careful selection of apparatus, space for

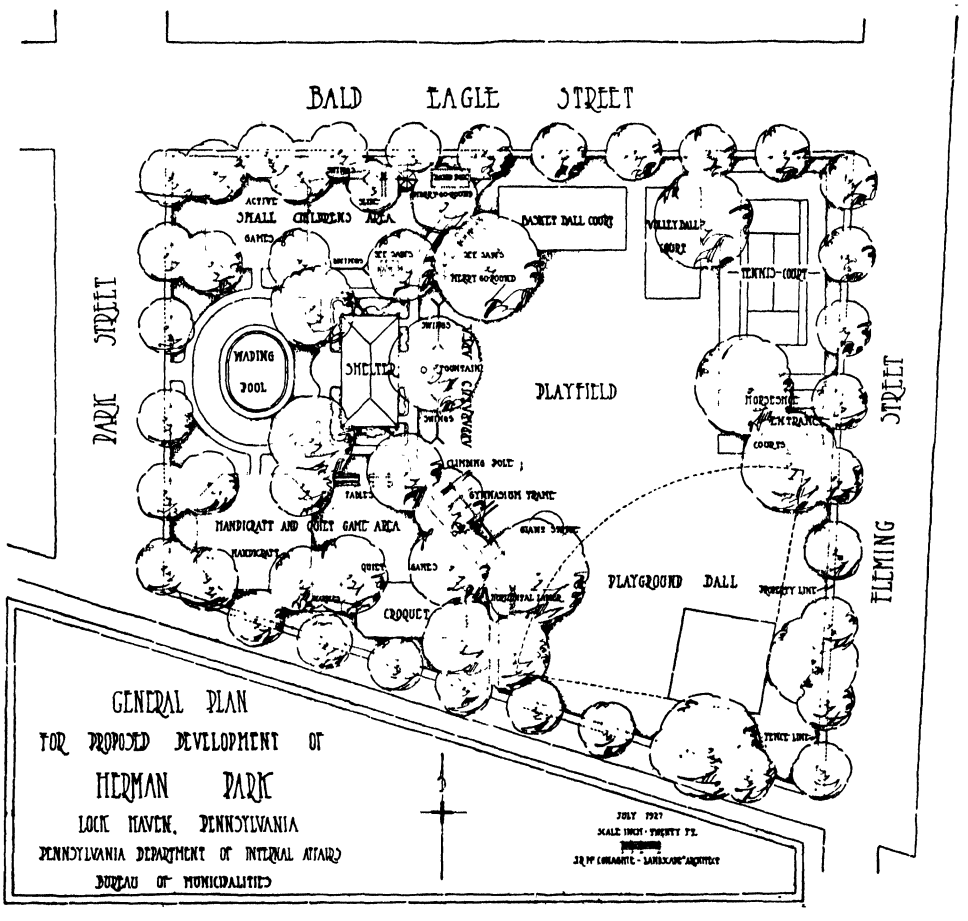


PLATE NO. 53

GENERAL PLAN OF HERMAN PARK, LOCK HAVEN, PENNSYLVANIA

This plan, prepared by J. R. McConaghie, illustrates some of the principles in playground planning suggested in this chapter. Note, for example, the small children's section, the apparatus area, the handcraft and quiet game area, and the playfield, the use of which it is assumed will be divided between the older boys, older girls and younger children. The shelter is centrally located and near the wading pool, apparatus area and small children's section. Adequate shade is provided. A more suitable location might be found for the horseshoe courts than along the entrance path. The area of this playground is approximately 2.4 acres. Obviously it is not large enough to provide adequate space for the highly organized team games.

informal games and activities, special courts for such games and sports as handball, tennis and horseshoes, and spaces for running and jumping events.

2. The team games and sports which, of the various types of physical education activities, educational and medical authorities agree "afford the best type of exercise both in respect to physiological effects, and to the possibility of a constructive contribution to the formation of social qualities in a democracy." Essential to these activities which serve to develop team play and cooperative effort are areas and equipment for baseball, softball, volley ball, basketball, soccer, touch football and many other team games.

3. Non-physical activities such as arts and crafts, dramatics, nature and music which are among the most popular playground activities. These cannot be carried on satisfactorily unless special places and facilities are provided for them either out of doors or in the playground building. Among them are tables and benches, an informal stage or theater, a nature museum and a quiet corner for storytelling.

4. The informal, individual types of activity which the child enjoys, such as play in the sand box, the wading pool, the swing and sections of the playground not designated for any specific purpose but available for free play.

5. The study of nature and enjoyment of beauty, as made possible by trees, vines, shrubs, flowers, well designed structures and facilities. Benches at suitable locations contribute to this function of the playground.

In order that the playground may serve the purposes indicated, certain additional requirements must be met. Some sort of building is needed to provide comfort facilities and shelter in case of sudden storms. Paths must be constructed to facilitate circulation from one part of the playground to another. Safety zones must be provided around apparatus and adjoining game courts in order to minimize the liklihood of accidents. Fences are generally needed to enclose the playground and to set off sections used for special activities. Only when these various requirements are recognized and provided for can a well designed, effective playground be secured.

General Principles in Playground Planning

Each playground presents a peculiar and individual problem in design, and the effectiveness of the solution depends upon the ability of the designer to plan the area intelligently so it will give the maximum of playground service and at the same time present the most attractive appearance at a reasonable construction and maintenance cost. Existing trees,

the size and shape of the area, natural slope of the ground, type of neighborhood, location of neighboring features including homes of children to be served, amount of money available, amount and type of leadership to be provided and the specific features to be incorporated, are among the factors which influence the design. Informality in design is greatly to be desired on the playground and much is to be said in favor of having "slopes with trees, hiding places, banks and ditches."

Gilbert Clegg, Playground Engineer of Milwaukee, Wisconsin, has suggested the angles from which a playground designer approaches his problem.* "He aims (1) to get the maximum use from the land available; (2) to produce an attractive playground viewed from within and without; (3) to simplify the problems of supervision and leadership; (4) to prevent accidents by careful segregation of activities; (5) to keep operating costs low and (6) to keep original construction costs low." He has also listed four sure tests as to whether a designer has done a good job:

1. Are the boys and girls who use the playground satisfied? Do they play the games where indicated on the plan, or do they try to overcome some shortcomings by a rearrangement of their own?
2. Is the play leader enthusiastic and convinced that he has a real playground or is he always suggesting important changes?
3. Are the taxpayers satisfied with the return on the investment, and
4. Do the neighbors look upon the playground as a nuisance or a benefit? Would they like to see the site return to its former use or are they proud of the playground?

The wide diversity in methods of playground design is indicated by the playground plans which are reproduced in this chapter. The brief comments which accompany these plans are intended to point out some of the features which are of special significance and interest. The pages which follow contain suggestions for applying the general principles which have been mentioned in the preceding paragraphs.

Divisions of the Playground

Because of the widely divergent ages, interests and activities of children using the playground, it is desirable that sections be set aside for special uses. Before suggesting a number of definite divisions for the playground, however, it should be emphasized that the list which follows is not one which should be adhered to rigidly. In some cases, one or more of the divisions may be omitted entirely; in others, two or more may be com-

* Gilbert Clegg. "Playground Planning and Layout." *Recreation,* June, 1935.

bined and it is possible that additional features may need to be added. Nevertheless, in planning a playground it is helpful to have in mind the desirability of providing the following divisions:

1. A small area for children of pre-school age
2. Apparatus area for the older children
3. Area for free play and low organized games
4. Older girls' area
5. Older boys' area
6. Shaded area for handcraft and quiet activities
7. Shelter house and wading pool
8. Landscape area

Some of the more important considerations in planning these various divisions, such as their function, size, location, equipment, surfacing and relationship to one another, will be discussed in the following pages.

The Area for Pre-School Children

This area is needed on all playgrounds which are attended by many children of pre-school age. It is especially important in congested city neighborhoods where there are not attractive back yards where very young children can play. Many of the children who use this part of the playground are accompanied by their mothers. A space 100 feet square is usually ample for this section and a smaller space may suffice if the number of children to be served is limited. It should be located near the main entrance so children can reach it quickly and without passing or crossing areas used by the older children. It is very desirable that it be close to the playground shelter, not far from the wading pool and far enough from the areas used for ball games that there be no danger of balls being batted into it.

There is no other division of the playground which it is more desirable to enclose than the small children's area. A low fence or thick hedge prevents the children from wandering into other parts of the playground and provides a degree of isolation for the mothers who bring their small children to the area. (The use of benches to set off this part of a playground is illustrated by Plate 10, page 31.) Turf is the ideal surfacing and it is usually possible to maintain it in this section except under the apparatus and other equipment. Shade is important and trees should be planted if a suitable shaded area is not already available. A cement walk is not only appreciated by the mothers who bring baby carriages to the playground but is used by the little children for velocipedes and scooters. If the ap-

paratus is placed along one or more sides of the area and the center left free from obstructions, the latter can be used for circle and singing games and free play activities. Special provisions for children of pre-school age are provided in the plans shown in Plate 53, page 103, Plate 69, page 128, Plate 72, page 133 and Plate 75, page 139.

The most important types of equipment usually provided for the small children's playground are hammock and chair swings suspended from



PLATE NO. 54

MARGINAL PLAYGROUND, CENTRAL PARK, NEW YORK CITY

In order to provide play facilities for the young children living in the built-up sections of New York City surrounding this large park, a number of these small playgrounds have been constructed near entrances to the park. Under normal conditions such play areas might better be provided elsewhere but this plan offers a suggestion to other large cities where conditions are similar.

frames 7 or 8 feet high, a small slide, sand box or pile, play houses, junior junglegym, low teeters and building platform with blocks. A box for the blocks is also needed. Kindergarten tables with built-on seats are useful for simple handcraft activities, and benches for the mothers should be provided. Unless the sand box is sheltered by trees, a pergola or open shelter should be constructed. A small shallow wading pool is sometimes placed in this section; a low drinking fountain, bird bath, and feeding station are other suggested features.

THE APPARATUS AREA

There are few if any public playgrounds which do not have some apparatus, although much less of it is considered essential now than a dec-

ade ago. It was a common practice to segregate the boys and girls on the playgrounds developed during the early part of the century and to provide separate apparatus areas for the two sexes. Today, however, the opinion is almost unanimous that only one set of apparatus needs to be provided for the use of the boys and girls above 6 years of age. Most types of apparatus appeal primarily to children under 12, and as a rule there is no reason why both sexes cannot use the same facilities. There are a few kinds, such as the horizontal bar and traveling rings, which appeal more strongly to older boys, and others, such as the balance beam, which are used chiefly by the girls. It is suggested, therefore, that in planning the apparatus area the swings, slide and horizontal ladder, which are popular with both boys and girls be placed near the center, and that types which appeal more strongly to boys or to girls be placed at either side or end of the area. In this way a natural division is secured although both sexes may use the apparatus. The pieces used primarily by boys should be placed where they will be most accessible from the parts of the playground most likely to be used by the boys. Only those types which are for use by both sexes should be erected in the apparatus area. A space of 7500 square feet should be sufficient on most playgrounds.

On many playgrounds the apparatus is scattered widely or is placed along the edges with the result that there is little space for the important games and organized activities. This type of arrangement is not satisfactory. Ample space for safe use should be left free around the apparatus, but it is advisable to have it concentrated in one area so as to require as little room as possible. Since the apparatus attracts children to the playground and is used by a great many children, it may well be placed near a path leading from the playground entrance. If placed near the shelter house it is readily accessible and easily supervised. It should not be necessary to cross game courts to reach it, nor should it be erected alongside an area used for ball games or free play activities because of the danger that children at play will run into the apparatus. A good location is between a fence and a path, as in the New York City Playground (see Plate 62, page 120). The revolving and swinging apparatus such as giant stride, swings and traveling rings is generally erected along the fence where there will be little danger of children running into it, or safety railings are provided around it. Other apparatus such as slides and bars may occupy the space more removed from the fence. If the lines of motion of the various pieces of apparatus and of the children using it are parallel, the likelihood of accidents is reduced. Furthermore, apparatus erected in line is likely to have a more pleasing appearance than if it is set at various angles.

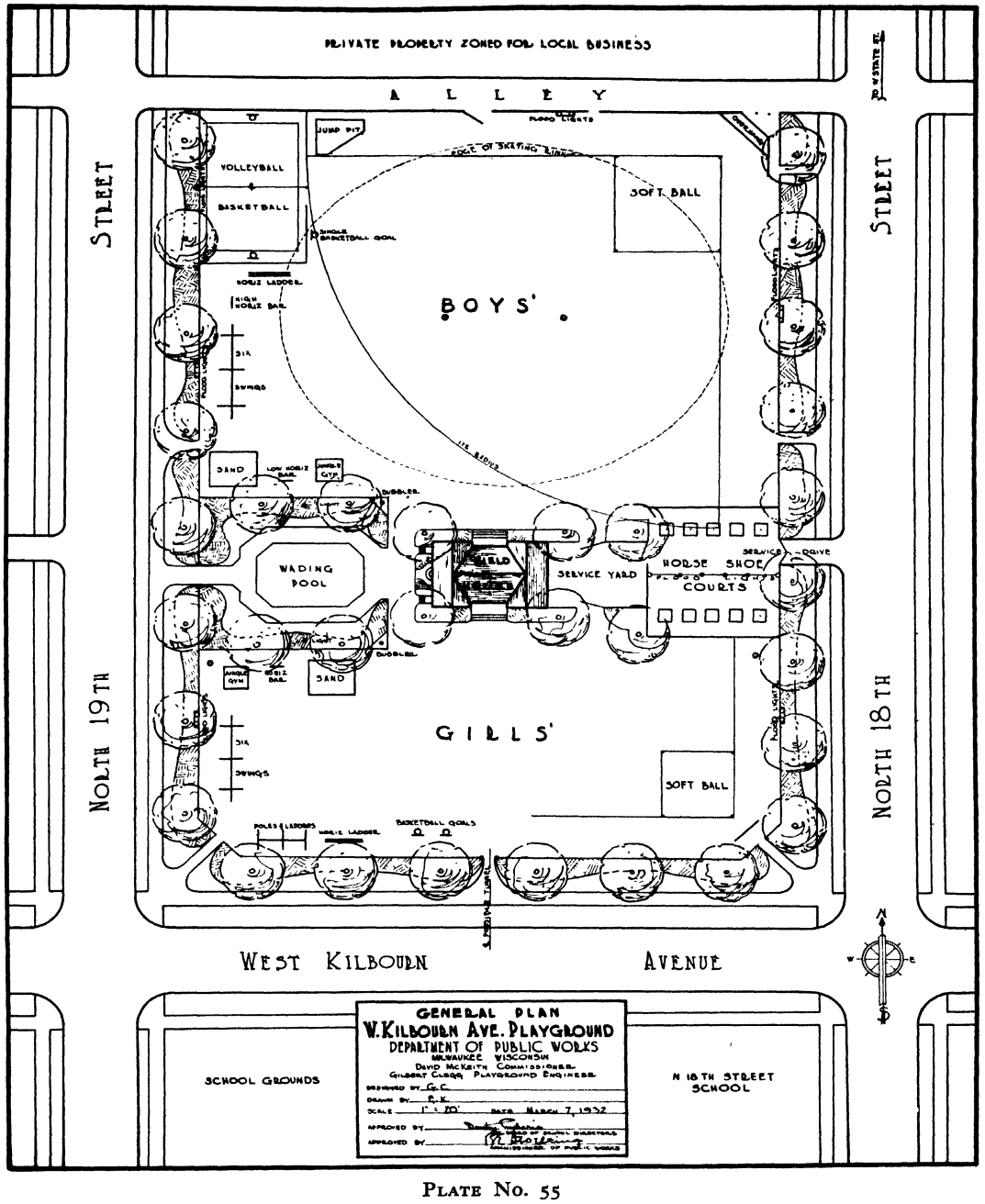


PLATE NO. 55

GENERAL PLAN, W. KILBOURN AVENUE PLAYGROUND, MILWAUKEE, WISCONSIN

This playground of 2⅜ acres is in a rooming house district and across the street from a public school. In Milwaukee separate apparatus and game areas are provided for the boys and the girls. Consequently more apparatus is required than on playgrounds in most other cities. Of special interest in this plan are the fence around the volley ball court, the skating rink, the flood lights, the large sand boxes, the basketball goals in both the boys' and girls' sections, the border plantings and the lighted horseshoe courts. The site does not provide space for highly organized games—in fact the areas indicated for softball are not adequate. The features of this plan are well arranged but it is evident that a larger area is needed.

Because it is practically impossible to maintain turf in the apparatus area, it is commonly surfaced with torpedo sand or gravel, loam, tanbark or limestone screenings. The ground should be kept free from stones and other obstructions and depressions formed under apparatus such as the swings should be filled in promptly. Soft landing places filled with shavings, tanbark, sand or sawdust should be provided under such apparatus



PLATE No. 56

AN INTERESTING CORNER OF A WEST NEWTON PLAYGROUND

The photograph shows how the planning of the playground may be influenced by the nature of the terrain and the location of trees. The equipment for quiet games is placed wisely under the trees; nearby is the open space for group activities; bordering this is a shaded apparatus area (not shown in the picture) and the level space at the far end of the playground is used for the ball diamond. Note the bulletin board, the box for storing playground supplies, the building platform, the sliding covers for the sand boxes and the tables and benches for quiet play. The difficulty of maintaining grass under the apparatus and benches and around the intensively used and shaded areas is illustrated by this photograph.

as the horizontal bar and ladder and at the foot of the slide. The surface should be raked and leveled frequently. In some cities where the apparatus is grouped closely, the entire area is covered with tanbark about three inches thick, forming a surface that is easily maintained, safe and attractive. On most playgrounds, however, no special surfacing is provided under such apparatus as see-saws, giant stride, junglegym and traveling rings.

The following are the types of apparatus most commonly found on the children's playground: swings, slides, horizontal ladder, giant stride, junglegym and other climbing devices, horizontal bar, see-saws, gymnasium frame with climbing poles, ropes and ladders, flying rings, traveling rings, merry-go-round, balance beam and others. The selection of playground apparatus was discussed in Chapter II.

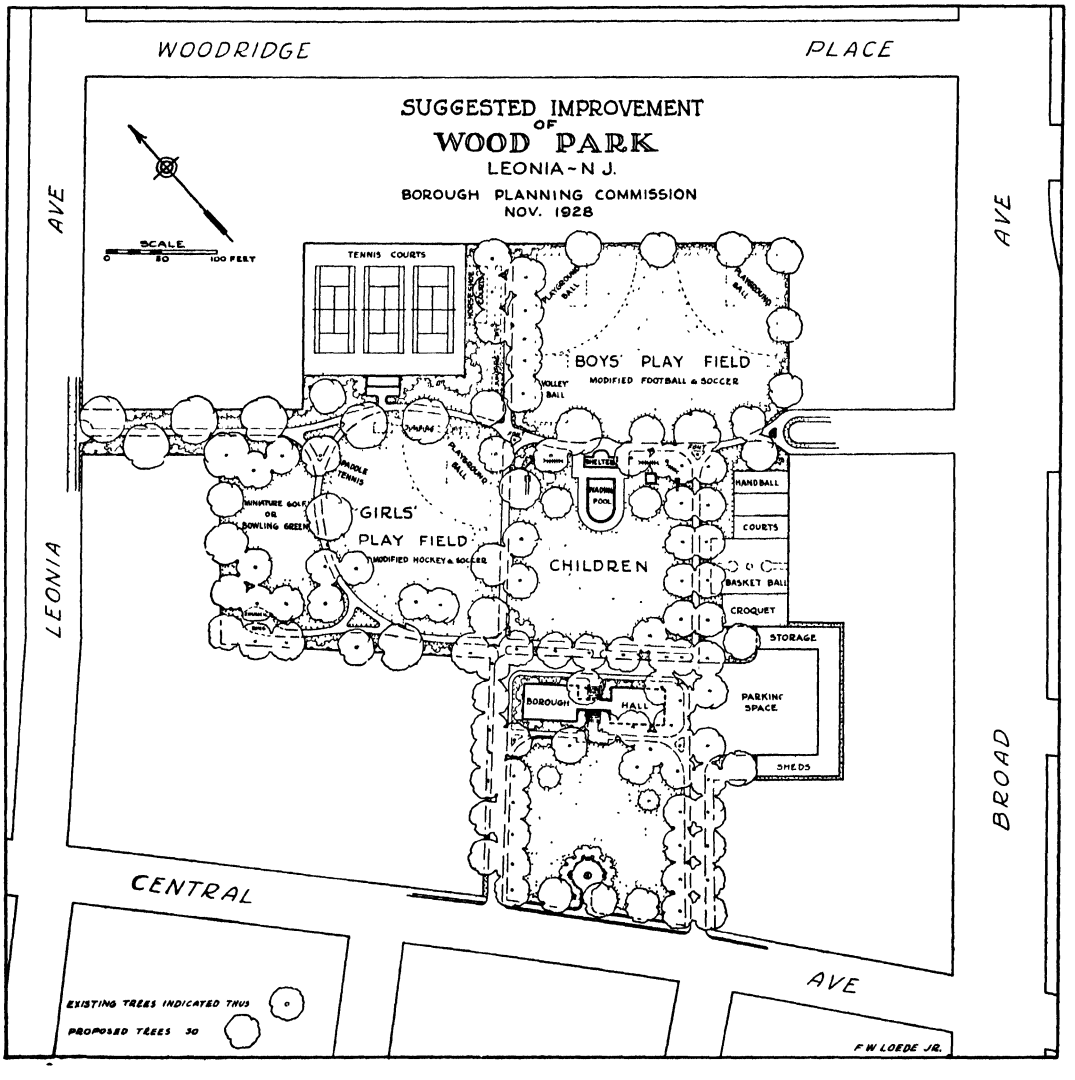


PLATE NO. 57

GENERAL PLAN, WOOD PARK, LEONIA, N. J.

This park is located within a large block near the center of a small suburban community and its playground area is approximately 3¾ acres. The plan provides for a variety of facilities and game areas distributed in an informal but effective arrangement. The design was influenced in part by the location of the entrances and of the many fine trees which were growing on the property.

Areas for Free Play and Low Organized Games

It is very desirable to have a section of the playground in which the children from 6 to 12 can enjoy their informal play activities, running and low organized games. Most of these activities require a level space, although some of them may be played on a slope or among trees. Since it is used by the same age group, this section should be near the apparatus area but not immediately adjoining it unless they are separated by a fence, hedge or walk. It is well to have it near the wading pool, and since some of the activities will be carried on with the help of the leader, there is an advantage in having it near the shelter house. Sometimes no special area of this sort is provided but a part of the older boys' or girls' field is used instead. Turf is the best kind of surfacing, but if the playground is intensively used some other surface is required. If no special section of the playground is provided for handcraft and quiet games, marble rings and hopscotch courts may be laid out along the edges or in the corners of this division. No special size or shape is required, but a space at least 100 feet square is suggested for this area.

In several congested cities where other opportunities for roller skating are not available, cement skating rinks have been constructed on the playgrounds. Although it is not a common playground feature and its construction cost is high, the roller skating rink affords a chance for vigorous free play activity the year round. Its location requires careful planning and it should be readily accessible from the other areas used for play by the 6–12 year old children. The playground shown in Plate 62, page 120, has such a rink.

Area for Older Girls

Most experienced playground workers agree that boys and girls 11 years of age and older should be separated on the playground for most competitive games and athletic activities. It is therefore recommended that a special area be set aside for the exclusive use of the older girls. As in the case of the boys' area, it should be devoted largely to facilities for organized games and sports, such as softball, paddle tennis, volley ball, badminton, croquet, basketball, field hockey, shuffleboard, tennis, horseshoes and soccer. Provision may also be made for a number of track and field sports, although it is not customary to provide a special running track for girls. Sometimes such features as a platform or specially surfaced area for folk dancing, a simple stage or one or two pieces of apparatus such as the balance beam may be located in the older girls' section, preferably in

a corner or along one side. The space required for the older girls' area is less than for the boys' area because boys "hit farther and run wilder," but at least 150 by 250 feet should be provided, largely in a level, unobstructed area.

Whenever possible, turf should be used for most of the older girls' play area. It is the only satisfactory surfacing for a field hockey field and there is less likelihood of injury in case of a fall when turf is used for the other games and sports. Sometimes the space used for volley ball, basketball, paddle tennis and other court games is surfaced with asphalt, clay or loam

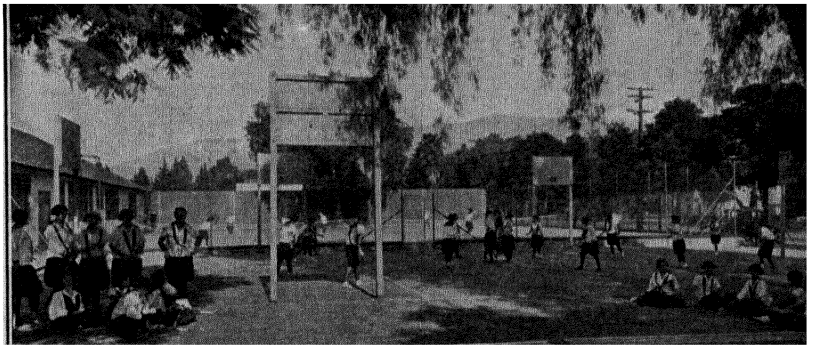


PLATE No. 58

THE GIRLS' PLAY AREA ON ONE OF PASADENA'S PLAYGROUNDS

Among the features which make this corner an attractive play area are the shade, the well marked courts, the benches and the border fences.

in order that it may be less slippery, may give a more accurate bounce or be used sooner after a rain than if the courts were of turf.

Since many of the older girls' activities require considerable space and less continuous supervision than the younger children's activities, the precise location of this section with respect to the center of control is of less importance than in the case of some of the other areas. It is very desirable that this section be bounded by a hedge on one or more sides, especially if it borders a street, in order to give it a degree of privacy. Since girls are likely to be less noisy than boys, and since they make more use of the quiet game and craft area, on many playgrounds there is an advantage in having the older girls' section adjoining this area.

AREA FOR OLDER BOYS

Most older boys come to the playground to take part in team games, individual sports or athletic events. Consequently this area should be

given over largely to the fields and courts required for such activities, which require more space than any other playground features. If possible, the area should be at least 250 by 300 feet in order to permit the playing of baseball, soccer, speedball and touch football. An area of this size makes it possible for two such games (except baseball) to be carried on simultaneously. Other games and sports of interest to boys from 11 to 15 are softball, volley ball, basketball, horseshoes, paddle tennis, handball, running and jumping. Provision may well be made for many or all of these activities. In some sections of the country basketball is not a popular outdoor game but frequently one goal is set up and boys improvise games to play around it. It is not necessary to have a regular running track, but a straightaway about 15 or 20 feet wide and 100 yards long is desirable. If the space is large enough to permit the playing of baseball, a backstop, usually of the overhanging type, will be required. Care must be taken that other activities are not carried on at the same time as baseball within the range of batted balls. The maximum batting radius for 14-year-old boys may be estimated at not less than 225 feet.

It is well to have the permanent equipment and spaces such as basketball goals, handball courts, jumping pits and horseshoe pitching lanes along one side or end of the older boys' area in order that most of the space may be left free for major games and for such activities as kite-flying contests. Sometimes one or two pieces of apparatus such as rings or a horizontal bar are erected in this section, because under a skillful leader interest in apparatus stunts may be aroused among the older boys. A box hockey set and a pitching frame are also popular features.

The older boys' play area is generally located in the section of the playground having the largest amount of unobstructed level space. Consequently it is an important factor in determining the design of the entire area. Where there is a choice of locations, it may be placed farther from the main entrance than the other divisions, since the older boys can walk farther and many of their activities require less continuous supervision than do those of the young children. As much of the area as possible should be in turf, but a special surface of asphalt or cement is generally used on the handball courts. An asphalt, loam or clay surface is preferable on the volley ball, paddle tennis and basketball courts where it is difficult to maintain turf. The straightaway may be of turf but it is more satisfactory if constructed of cinders and loam. Sand is perhaps best for the jumping pits, although sawdust or shavings are sometimes used.

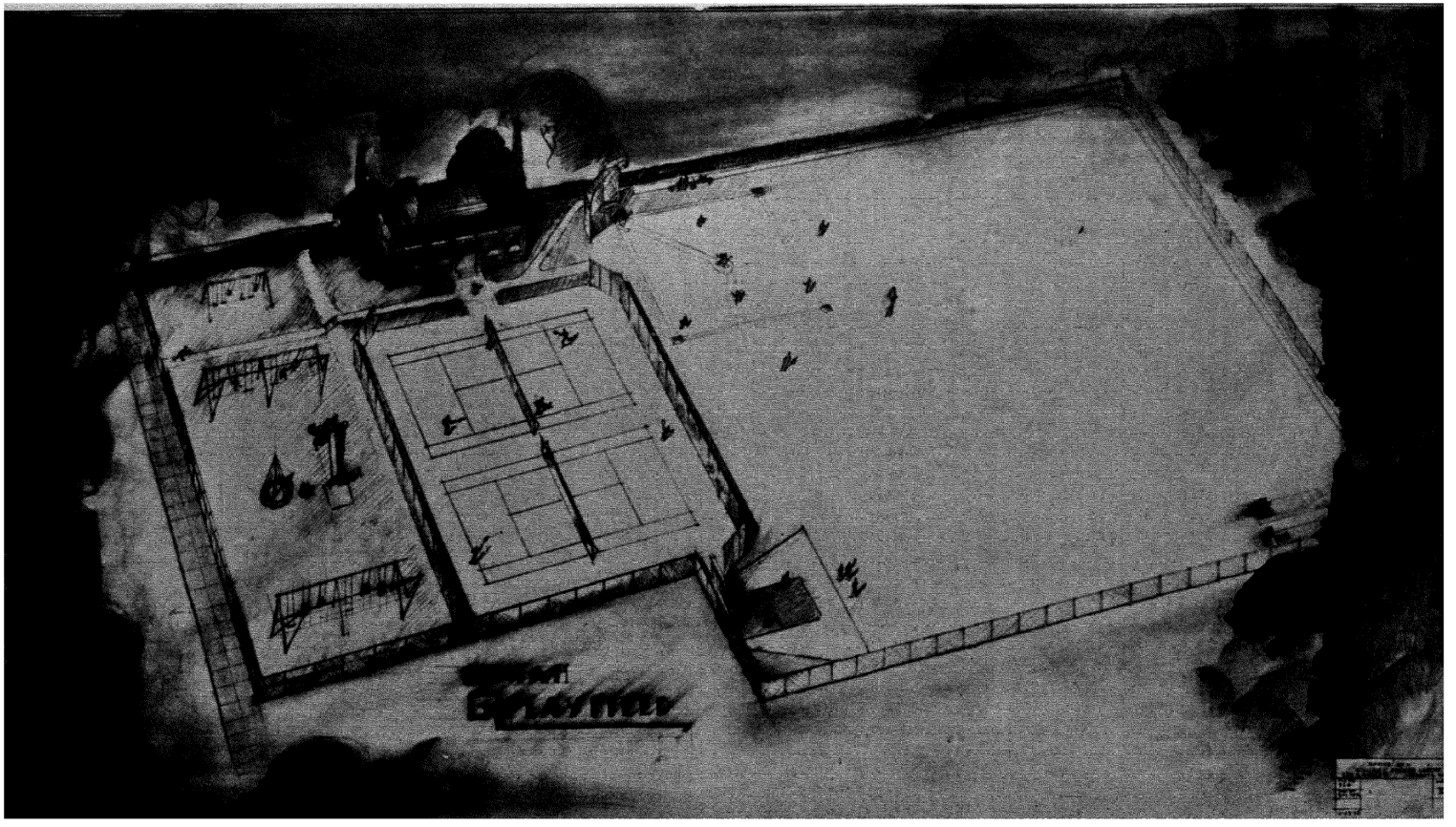


PLATE NO. 59

SKETCH OF KENAH PLAYFIELD, ELIZABETH, N. J.

A site of only 1⅔ acres is much too small to afford opportunities for all the activities desirable on a playground. Nevertheless this sketch shows how it is possible by careful planning to provide many facilities on such an area. The maximum use is made of this three-level playground without any crowding of the well selected features. The handball court is ingeniously placed in a protected corner. More than two-thirds of this small playground is open, unencumbered space that is available for a variety of play activities.



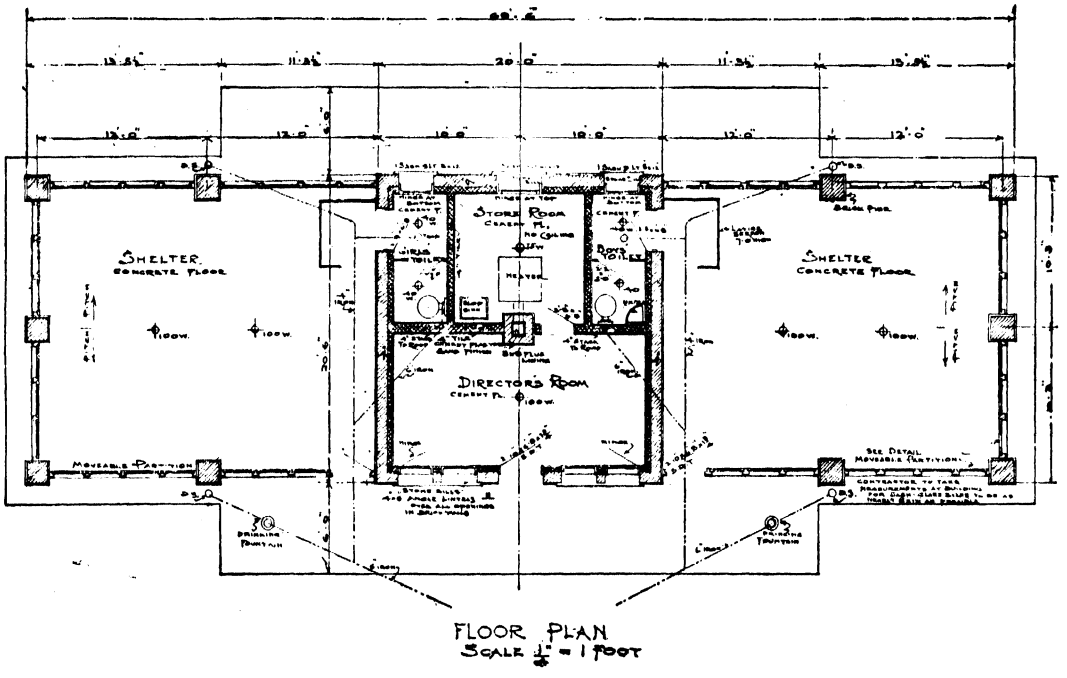


PLATE NO. 60

PLAYGROUND SHELTER BUILDING, EVANSTON, ILLINOIS

The type of building shown in the above photograph and floor plan has been adopted for its playgrounds by the Evanston Bureau of Recreation. It has a central office and comfort station and two wings which provide rooms for recreation activities. Some buildings are built without the wings. The wall panels used in the wings may be removed to form open shelters during the summer months. The building is heated by steam on the low pressure gravity system. The construction cost in 1926 of the building with wings was $8,000 and of the central structure alone $4,040.

Joint Use of Game Areas

It is generally agreed that whenever space permits, separate playfields should be provided for the older girls. Otherwise there is a tendency for the older boys to monopolize the large game areas. Nevertheless, if there is not sufficient space to permit the setting aside of two distinct areas, it is preferable to have one large open field which will be available for a variety of team games and sports rather than to make two separate small areas. The use of the field may be divided fairly between the older boys and girls according to a definite schedule. It is better to share the use of a single area large enough for soccer or touch football and for two games of softball, than to have it divided in half with the result that neither the boys nor girls have a satisfactory field. Likewise if there is not sufficient space for paddle tennis, volley ball and other courts for both sexes, it is advisable to provide a variety of courts which will be jointly used by boys and girls.

No mention has been made in this chapter of the location of tennis courts although one or more courts should ordinarily be provided. As a rule, particular courts are not set aside exclusively for the use of either boys or girls, but the playground program provides for their use by the two groups either continuously or on a scheduled basis. Because the tennis courts require little supervision they may be placed at a level place considerably removed from the center of control. Another reason for doing so is that they are often used by adults and it is wise to keep them out of the areas serving the children. Locating the courts along a border fence reduces construction costs and usually makes the courts more directly accessible. Since the tennis courts should be available for use during much longer hours than the playground is likely to be open under supervision, separate entrances to the courts are often provided.

Shaded Area for Handcraft and Quiet Games

Apparatus play and organized games and sports do not comprise the entire playground program. The most varied and interesting programs are those which include such activities as arts and crafts, nature, music, drama, folk dancing, storytelling and a variety of quiet games. One reason why these enriching activities are not found on more playgrounds is that frequently no suitable space or facilities are provided for them. Every playground should have an area set aside, apart from the sections used for strenuous activities, in which these other types of play may be engaged in without interference. The development of such an area is likely not only to

enrich the program but to enhance the attractiveness and usefulness of the playground.

Features suitable for this section of the playground include tables and benches used for arts and crafts activities and for special projects such as making posters or preparing the playground newspaper. They are also

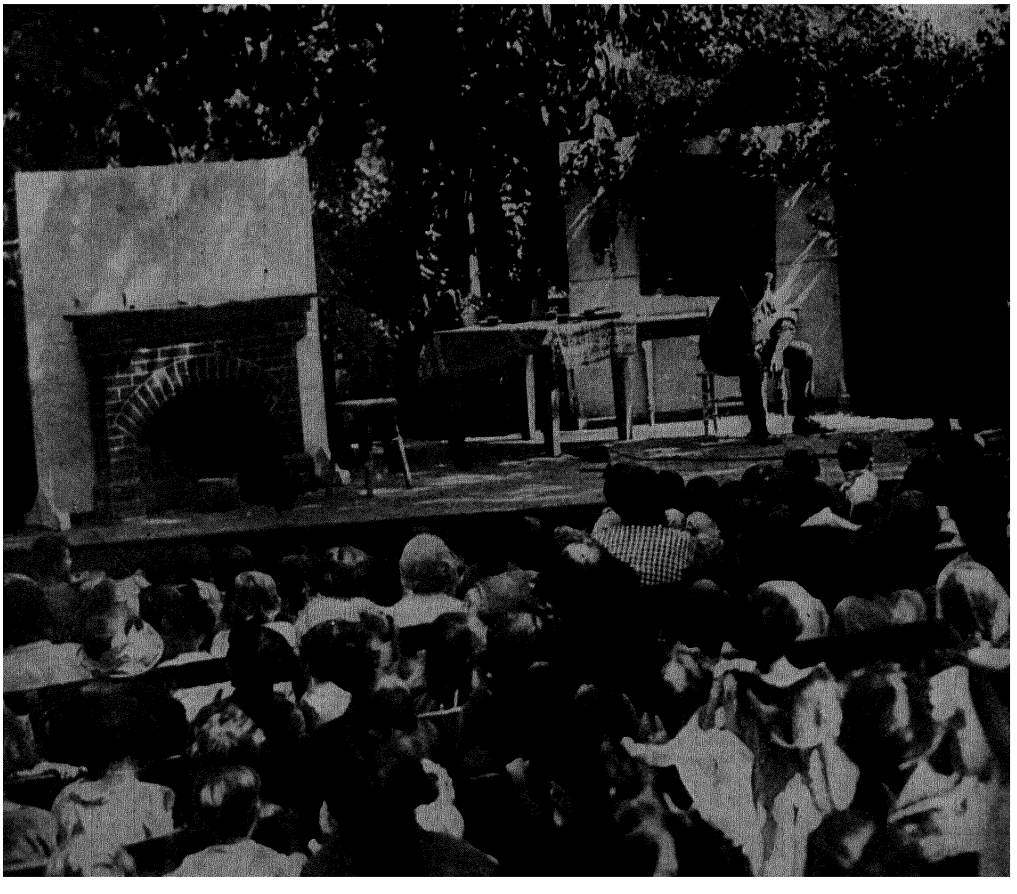


PLATE NO. 61

PLAYGROUND THEATER, OAKLAND, CALIFORNIA

This illustrates a simple type of playground stage which can be used not only for dramatics but for folk dancing and other activities. The trees form a natural background of great beauty.

used for the various quiet games such as chess, checkers, caroms or parchesi which are popular during hot periods or when only a few children are present. A ping pong table is likely to be in continuous use, and bean bag boards, jackstones, ring toss and darts are useful for both informal and tournament play. In this section one or more courts for such games as mar-

bles, hopscotch or croquet may be marked out. The outdoor stage, platform or special area for folk dancing, council ring and storytelling corner are features which may well be included. If the playground building contains suitable rooms or facilities, some of the items suggested for the outdoor area will not be needed. Nevertheless, it is desirable that activities be carried on out of doors whenever possible. Seldom will an area less than 50 by 100 feet be adequate for this section.

No specific suggestions are offered as to the amount of space, shape, location or general arrangement of this section. It is very desirable, however, that at least a portion be shaded, and if there is no part of the playground which has suitable shade trees they should be planted. Because some of the activities require a reasonably quiet location free from disturbance, it is well to have this area distant from the apparatus, wading pool and other sections used by large numbers of children. Furthermore, since many of the activities are engaged in by small groups, it is not serious if they are carried on at some distance from the shelter house. Conditions on the particular area are likely to suggest a suitable location for this division. As previously suggested, some of the features of this area are sometimes provided by the playground building.

It is well to have at least a part of this section in turf, especially that used for lawn games and informal activities. It is seldom possible to maintain turf under dense shade or under the tables and benches, so in such parts of the area a special surface such as clay or gravel is more satisfactory. The playground plans illustrated on pages 103 and 128 contain a handcraft and quiet game area.

The Shelter House and Wading Pool

Because of its importance the building merits a separate place among the divisions of the playground, and because the wading pool is often constructed adjoining the building and this arrangement has considerable merit, the pool is included in this particular section. Among the reasons for having the building and wading pool close together are that the latter needs careful supervision, young children using it need ready access to the toilet facilities in the building and construction costs are likely to be reduced by having the concrete work done and water supply equipment installed as a single unit. Since wading pool construction was discussed in Chapter III, the following statements relate primarily to the playground shelter building.

No single plan or series of shelter house plans can be devised which will exactly meet the needs of every playground. There are several es-

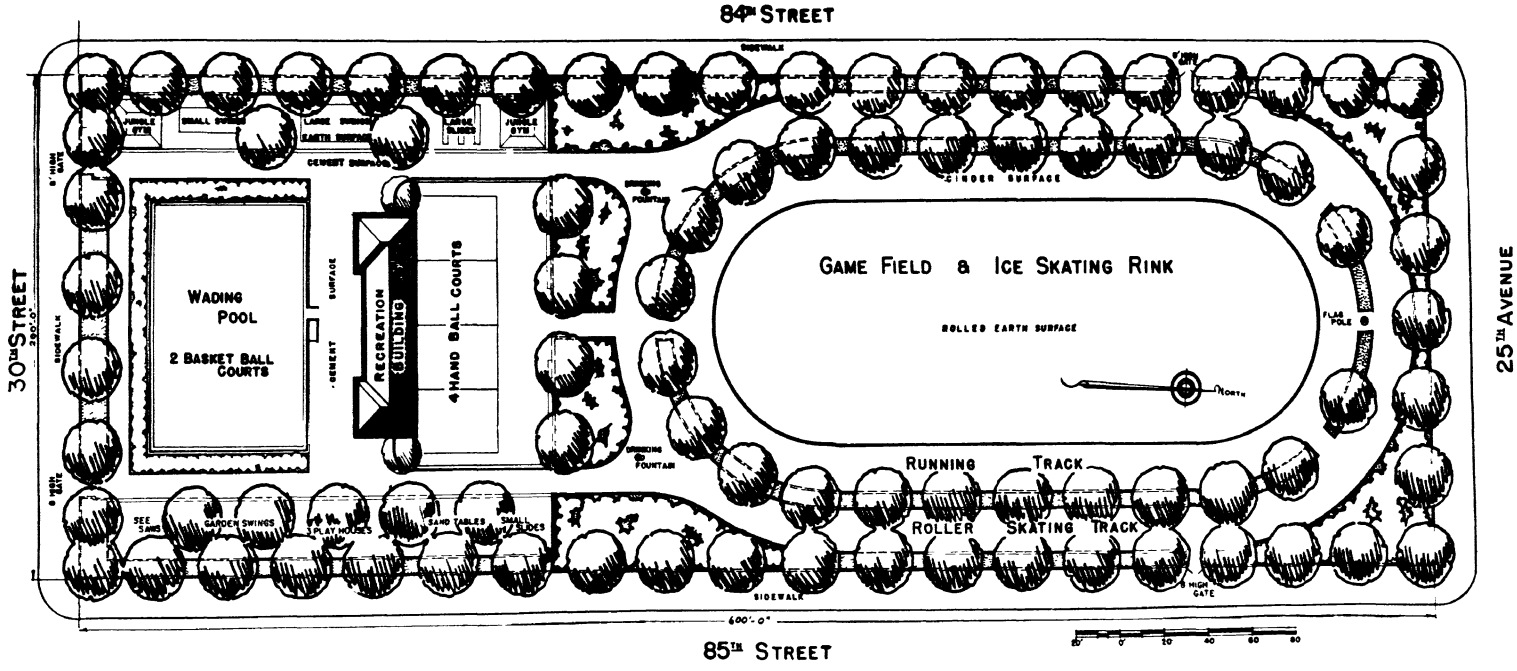


PLATE No. 62

PLOT PLAN, JACKSON HEIGHTS PLAYGROUND, QUEENS, NEW YORK CITY

In the design of this city-block playground are combined the effective use of the space for play activities and the intelligent provision of planting areas. The apparatus for older and younger children is segregated in two well defined areas between which are the wading pool and the playground building which provides a wall for the handball courts. The cement roller skating track is an unusual feature which is greatly appreciated by city children. The central area used for games is separated from the surrounding cinder running track by a low curb which permits the field to be used for ice skating. An 8-foot chain link fence encloses the entire playground and all plantings are protected by a similar fence 3½ feet high. This area of 2¾ acres is under the city Park Department.

sential requirements, however, of every such building. The needed facilities are separate toilet rooms for boys and girls, a director's office, storage space (the office and storage room may be combined) and a covered area either inside or outside the building where persons may find shelter in case of rain. Additional facilities which may be advisable are shower and locker rooms, kitchen, club room or social hall. Factors influencing the

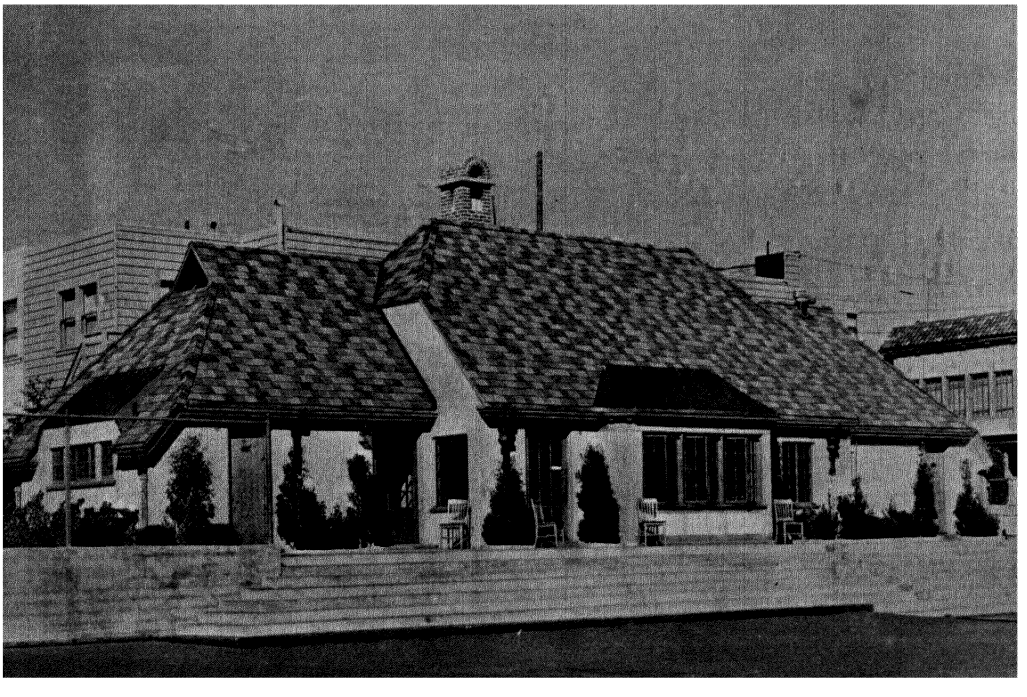


PLATE No. 63

FIELD HOUSE, CABRILLO PLAYGROUND, SAN FRANCISCO, CALIFORNIA

This new building is situated along the rear property line of the playground and due to its elevation it commands a view of the entire area. Even though the playground is small, opportunities for effective landscaping have not been neglected. The cost of the building was $12,000 and the architect was William G. Merchant, A.I.A. A floor plan is shown in Plate 64.

decision as to what facilities are needed at a given area include the size of the playground, the facilities and game courts provided, the ages of the children to be served, the length of the playground season, leadership, climate and other factors. Conditions on the individual play area also determine the space requirements of the individual rooms and their arrangement in the building. There are a number of principles, however, which it is well to follow in the planning of shelter buildings.

Toilet Rooms. The provision for boys' and girls' toilets is fairly standardized, and the number of facilities needed in the two rooms depends largely upon the size of the groups to be served on the playground. A girls' room providing three toilets should be adequate for almost any playground, and two would prove sufficient in small community playgrounds. Two toilets and two urinals are likely to prove adequate for the boys' section. Lavatories are needed in each of the rooms. The needs of very young children should be considered especially in the room for girls. Outside entrances are generally considered advisable, and the entrances to the rooms for boys and girls should be as widely separated as possible. On the other hand, it is well to have the rooms adjoining in order to reduce plumbing costs to a minimum.

Office. The office should be sufficiently large to provide a desk, two chairs, a large cabinet for supplies, a filing cabinet, a locker for clothing, and other miscellaneous equipment. A couch for the use of persons who are injured or become ill is a desirable feature. It is important that the office overlook the playground or at least the section of the playground which is in greatest need of constant supervision. Direct access between the office and club room, if provided, is advisable.

Storage Room. The space required depends upon the kinds and amount of materials and equipment which are to be stored in the building. If there is much movable playground apparatus which must be stored in the building, the room should be of ample proportions to take care of it. If, however, most of the apparatus is stored at some central warehouse, a relatively small room will serve to care for tools, supplies and miscellaneous equipment. In such cases, it may be advisable to combine the office and storeroom, possibly separating the two by a low partition or railing. A plan of a cabinet for supplies used in the playground buildings in Los Angeles is given in Plate 22, page 58.

Porch. Every playground building should provide some form of shelter, either an outside covered porch or a room within the building. In either case the area should be sufficiently large to take care of a considerable group in case of sudden showers. The porch will often be used by small groups for quiet games and activities especially during the hot periods. On the playgrounds used primarily in the summer there is an advantage in having the porch on the shady side of the building. Entrances to the toilet rooms should not be directly from the porch, since this arrangement is likely to cause interruption of play activities.

Club Room. The size of the club room, a common feature in shelter buildings, depends upon the kinds of activity which are to be carried on in

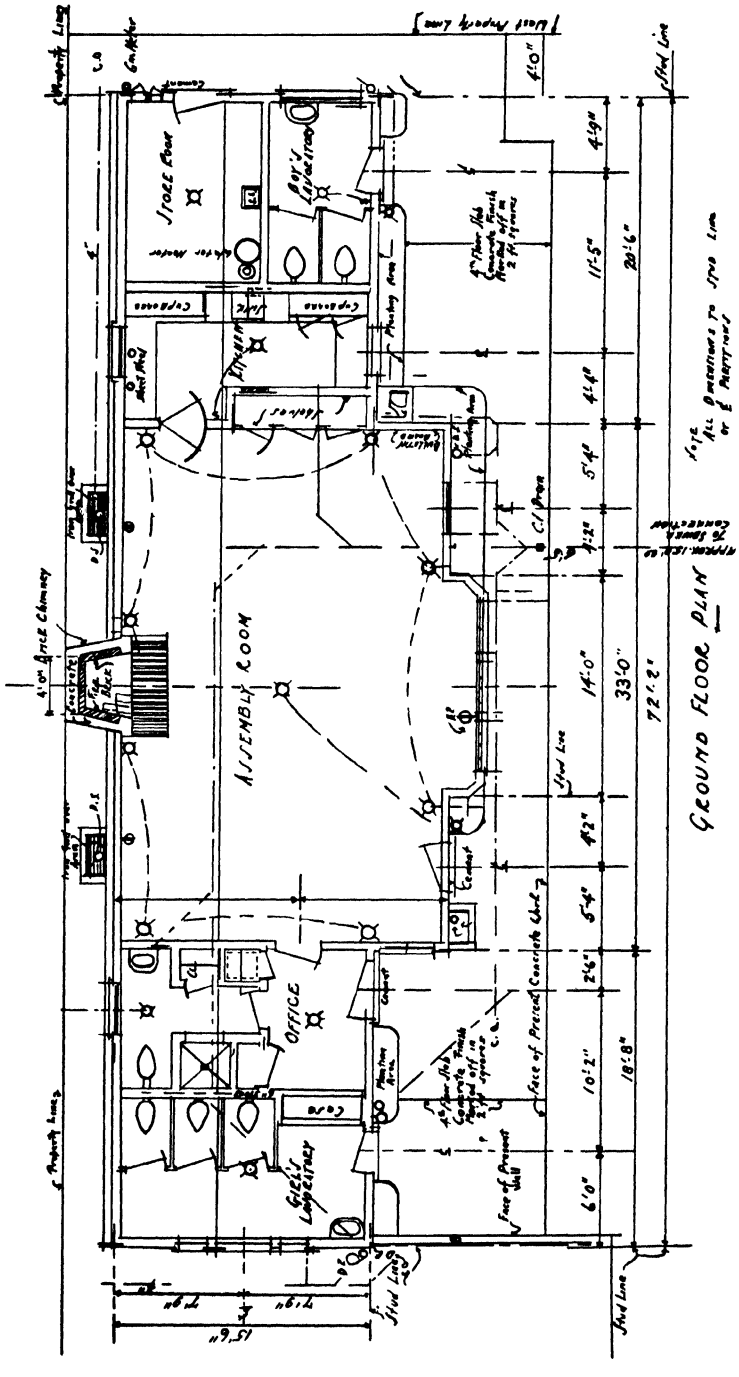


PLATE No. 64

FLOOR PLAN OF FIELD HOUSE, CABRILLO PLAYGROUND, SAN FRANCISCO, CALIFORNIA

This is the type of playground building which has proved most satisfactory to the San Francisco Recreation Commission. It is compact, well arranged and amply provided with shelves and storage space. The kitchen, a feature often omitted in such buildings, contributes to the usefulness of the assembly hall for social gatherings. Adjoining the office are a private shower and sanitary facilities for the director. For a photograph of this building, see Plate 63.

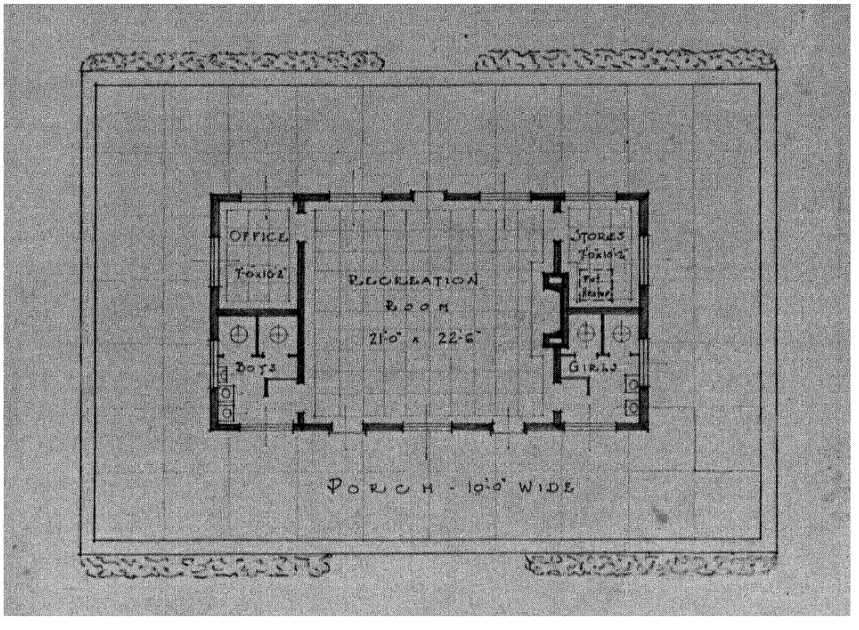
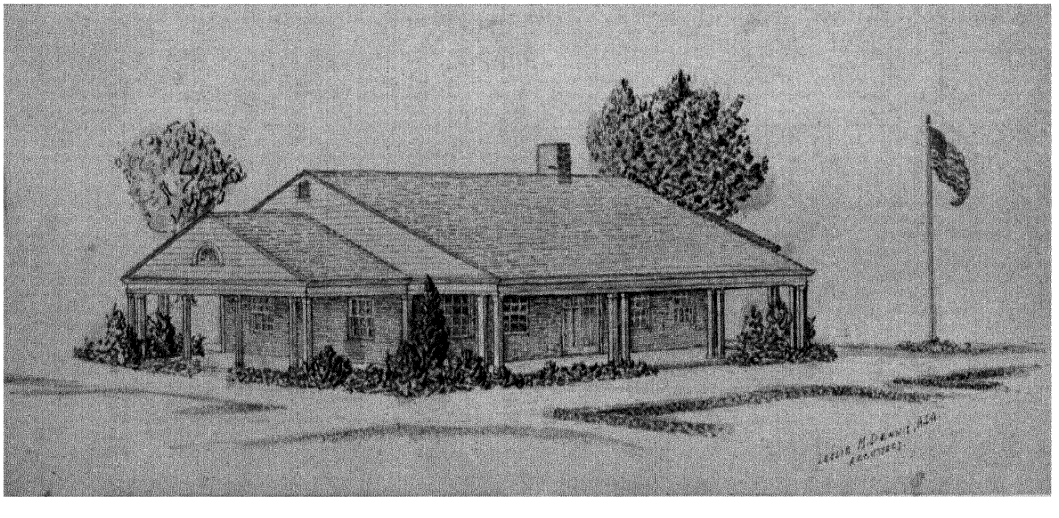


PLATE No. 65

FLOOR PLAN OF CLUB HOUSE, BROPHY FIELD, ELIZABETH, N. J.

This plan indicates an effective arrangement of the facilities provided in this building which serves a small neighborhood playground. The building was erected with porches as shown in the sketch which appears below rather than as indicated in the floor plan. Many group activities can be carried on in the recreation room to which the fireplace adds an air of sociability. The cost of materials used in the building which was built with W.P.A. labor was $4,227. The architect was Leslie M. Dennis, A.I.A.



CLUB HOUSE, BROPHY FIELD, ELIZABETH, N. J.

it. If it is likely to be needed for several activities or for fairly large groups, it is necessary to provide a room of considerable proportions. Since most activities, especially on summer playgrounds, are preferably conducted out of doors, the club room serves chiefly for small groups who are taking part in such activities as orchestra or play rehearsals, the preparation of a playground newspaper, special handcraft projects or for club meetings. It is also used for various activities on rainy days and may also house the Nature exhibit. A room approximately 20 feet square will accommodate most of the activities which a club room is intended to serve. Frequently a smaller room will suffice. A fireplace adds to the attractiveness, comfort and atmosphere of the club room.

Other Features. Shower and locker rooms are likely to be needed if the playground provides major sports areas, such as baseball diamonds, where teams engage in strenuous sports. If the club room is to serve organizations and be available for year-round use, a kitchenette would be very useful. Except in the southern states, some type of heater and heating system is needed if the building is to be used the year-round. On some playgrounds the building is designed as a community center with an auditorium and stage suitable for dramatics, entertainments and social gatherings. The Cabrillo building shown on page 121 affords a center for many activities because of its assembly room and kitchen, as well as the regular playground building features. A combination shelter and outdoor theater is described in Chapter III. A section of the playground shelter is sometimes devoted to a reading room and library.

Except in a few very large cities, it is not considered necessary to provide a shelter house on school playgrounds because the school building may be used for this purpose. Toilets, showers and other school rooms used in connection with the play program should be easily accessible from the playground and so arranged that children using them are unable to enter other parts of the building. Unless there is plenty of shade on the playground, it is often well to have an open shelter for quiet games and handcraft activities. An example of such a shelter is shown on page 55.

The location of the building needs special consideration because it is generally the center of supervision and control; its location and architecture affect the general design and appearance of the playground, and the arrangement of the other divisions depends to a considerable extent upon it. The type of architecture should be appropriate to the general neighborhood and the building site attractively landscaped. As a general rule it is suggested that the building be centrally located where it is readily accessible from the various divisions. When it is placed near the main

entrance and the space around and in front of it is used for plantings of various kinds, an attractive approach to the playground is provided. As suggested earlier in the chapter it should be, as a rule, near the small children's playground and the apparatus area in order that the play leader, when called into the building, will not be required to leave the younger

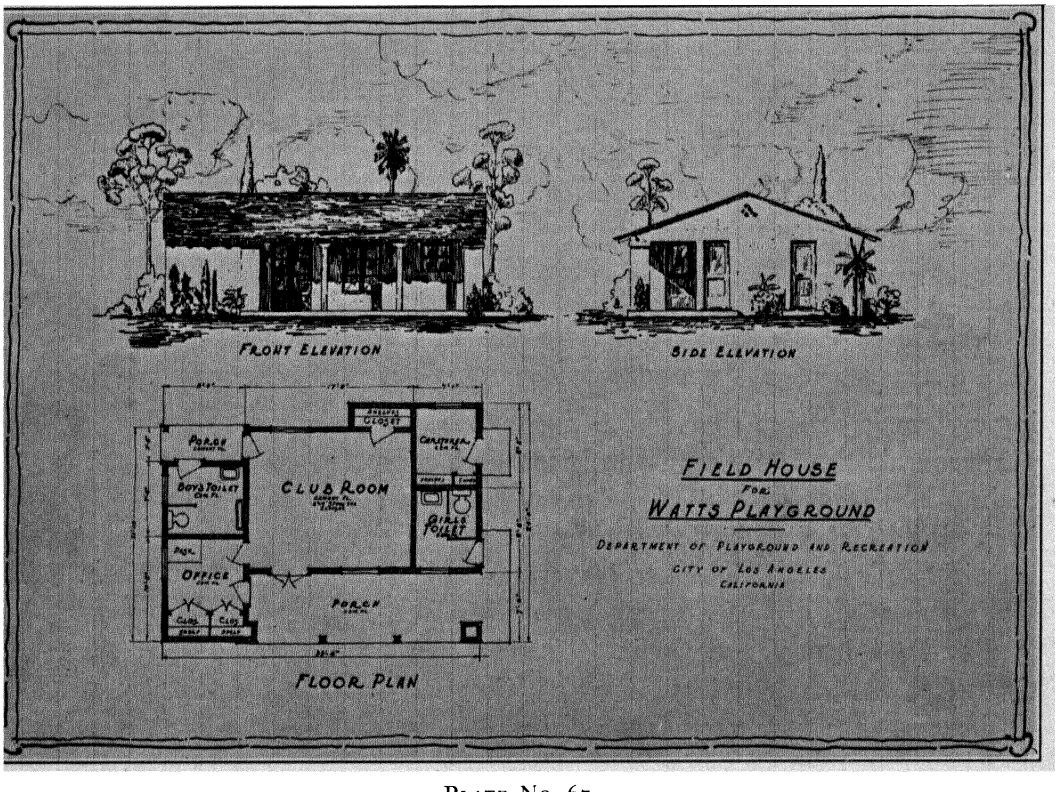


PLATE NO. 67

WATTS PLAYGROUND BUILDING, LOS ANGELES, CALIFORNIA

The architectural design of this playground building is appropriate to its location and the various rooms are well arranged. It is obvious that the need for closet space was not overlooked in planning this building. Designed by the Playground and Recreation Department, its cost in 1928 was $2,670.

children for more than a few minutes. Furthermore, he may be able to look out upon these sections from the building. The flagpole is frequently placed near the entrance to the building.

Photographs and floor plans of playground buildings will be found on pages 9, 23, 53, 116, 121, 123, 124, 126, 127, 130, 134 and 190.

LANDSCAPE AREA

If the playground can be developed in a more or less naturalistic manner, no special area of this type may be needed but it should be in-

cluded on all playgrounds with a formal layout. It is especially needed on playgrounds which are largely surfaced with materials such as concrete, asphalt or limestone screenings. Where space is very limited it can perhaps be combined with the section used for crafts and quiet activities. The most common locations for landscape areas are between the fence and the sidewalk, when the playground borders a street, in front of or surround-

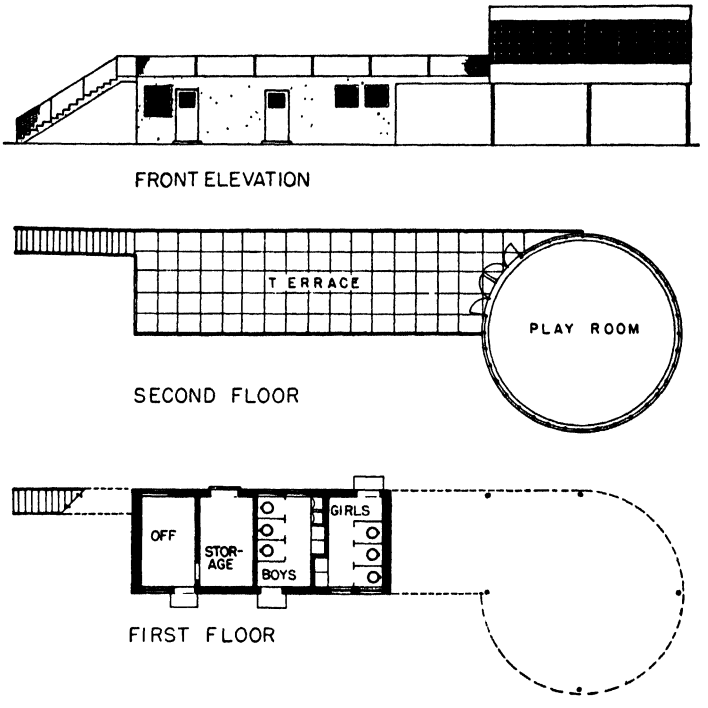


PLATE No. 68

PLANS FOR A PLAYGROUND SHELTER

This unique building was designed by Carl Fricke for the National Recreation Association. Unusual features are the use of the roof of the shelter as a play terrace and the elevated circular glass-enclosed playroom. This design is especially suited to small intensively used playgrounds as it increases the amount of available play space.

ing the shelter house, near the main entrance or in a corner set aside for children's gardens. The location, development and space requirements of this area vary widely, but the importance of introducing natural beauty into at least a part of the playground cannot be urged too strongly. A more detailed discussion of the possibilities of the landscape development of playgrounds appears in Chapter VIII.

TOTAL SPACE REQUIREMENTS

As previously mentioned, no definite minimum space requirements can be prescribed for the various divisions of the children's playground. Never-

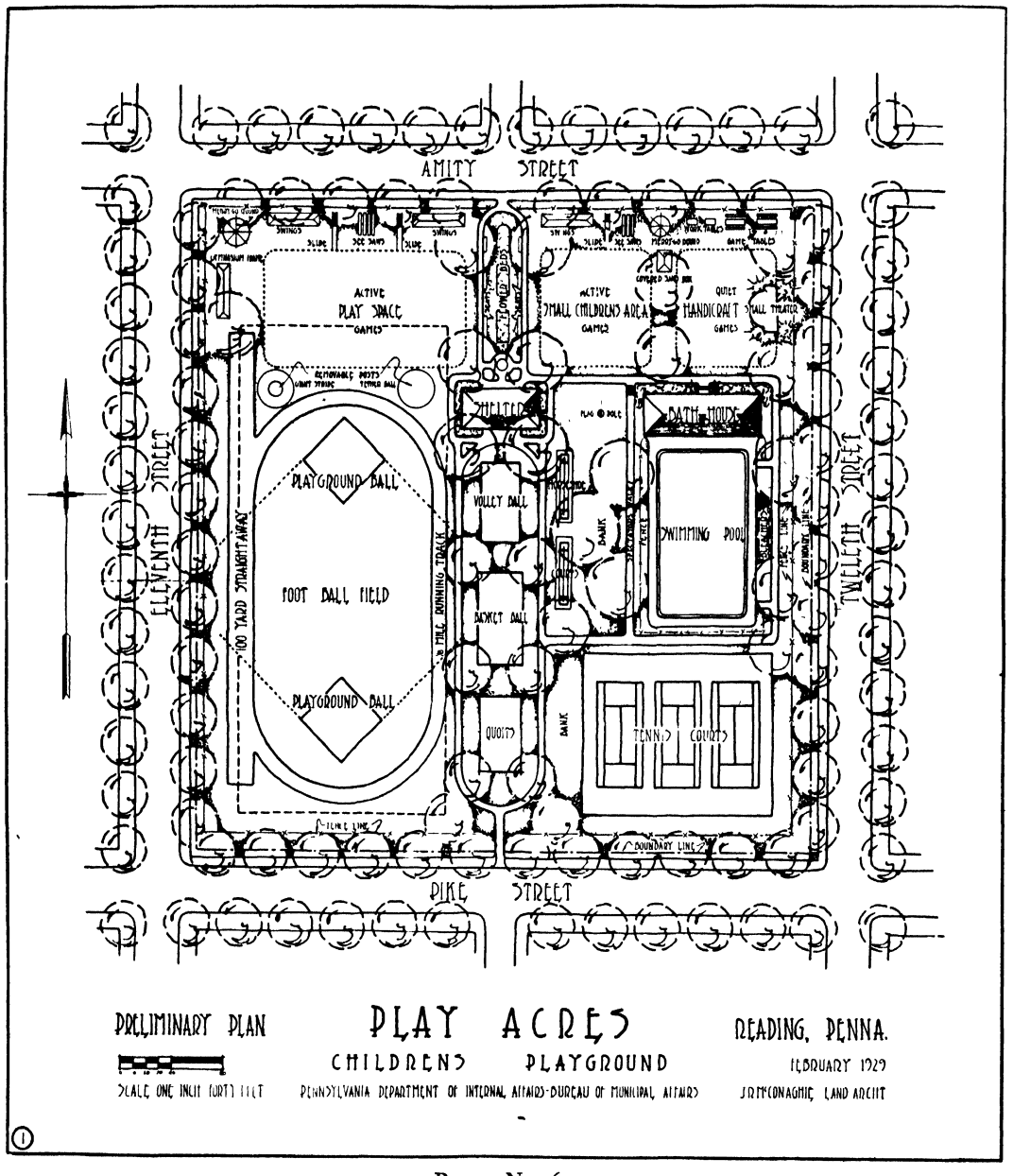


PLATE NO. 69

GENERAL PLAN, PLAY ACRES, READING, PA.

In addition to the usual playground features, a swimming pool is provided in the plan of this 5-acre playground. Apparently the uneven topography of the area was a factor in the design. One corner is devoted to a small theater, crafts, quiet games and small children's activities. Apparatus for the older children is concentrated at one end of the playing field. Flower beds afford an attractive approach to the centrally located shelter. A running track is seldom included on a playground of this nature.

theless, suggestions have been offered as to the amount of space which may reasonably be set aside for them and they are summarized as follows:

Name of Division	Suggested Space (in square feet)
Area for Children of Pre-school Age	10,000
Apparatus Area	7,500
Open Space for Games, etc.	10,000
Older Girls' Area	37,500
Older Boys' Area	75,000
Shaded Area for Crafts, etc.	7,500
Shelter House and Wading Pool	7,500
Landscape Area	10,000
Total	165,000 (3.79 acres)

It is found that if the spaces suggested for the various divisions are provided, the playground will have an area of aproximately 3.8 acres. This compares with an area of 3.5 acres which has been determined as a desirable minimum size for a playground intended to serve a neighborhood with 600 children from 5 to 15 years.* It is apparent that 3½ or 4 acres is the smallest site which will adequately provide for the varied play needs and interests of children in most urban neighborhoods. If opportunity for playing regulation baseball is desired, a 5-acre site should be acquired.

Use of Playgrounds by Adults

As stated early in the chapter, some of the facilities in children's playgrounds are frequently used evenings, Saturdays, Sundays and at other special times by young people and adults. It is well to give consideration to such use when preparing the plans for a playground. Since adults are generally most interested in organized games and sports, it is advisable to plan these special areas so they will be suitable for adult use. As suggested in the preceding chapter, volley ball posts, for example, should be set far enough apart so as to permit a full size court to be laid out, and eye bolts be provided so that the net may be suspended at the proper heights for both children and older folks.

Special care must be given to baseball and softball diamonds, which are frequently placed in a corner. There are comparatively few children's playgrounds which are large enough or laid out in such a way as to make safe the playing of baseball by adults, even though boys up to 14 or 15 years

* Space Requirements for the Children's Playground. National Recreation Association. 1934.

of age may be permitted to play the game. It is not safe for other activities to be carried on within a batting radius of 300 feet when adults are playing, and although the danger of injury from a batted softball is less, it is desirable to keep a space of 250 feet within a batting radius of home plate. Unless there is sufficient space to permit the playing of these games by adults, the use of diamonds should be restricted to children.



PLATE NO. 70

PLAYGROUND SHELTER, WOOD PARK, LEONIA, NEW JERSEY

The pleasing appearance of this building is due in part to its design and in part to the stonework in its construction. The stone was salvaged from old farm outbuildings which formerly stood on the site. On the open porch are a drinking fountain, bulletin boards, tables and benches for crafts and quiet games and a piano which is used for folk dancing.

Often tennis courts are reserved for the use of adults after 5 P.M. and on week ends. In some neighborhoods it may be desirable for such facilities as handball, horseshoe, croquet or badminton courts to be made available for adult play during the evening hours, thereby encouraging families to come to the playground together. Special evening events for adults such as community sings, dramatic events, home talent shows or demonstrations of playground activities are more satisfactory if a suitable location is afforded for them apart from the areas used for active or informal play.

SURFACING

As pointed out in Chapter I, the development and maintenance of a satisfactory playing surface on the children's playground is a difficult problem, particularly if funds are scarce and if—as should generally be the case—the area is to be used the year round. Because of the complexity of this problem, a committee of recreation executives was appointed to study it and to recommend the most satisfactory methods and materials. No ideal solution has been found by the committee, which is still working on the problem, but valuable information has been assembled and issued in a publication, "Surfacing Playground Areas," * which merits careful study. A few comments as to materials and methods that have been found useful in surfacing sections of the children's playground are given in the following pages. It should be kept in mind, however, that the surfacing of an individual playground depends upon a number of variable factors, and that the best type can often be determined only after a careful study of local needs, soil conditions, available materials and other local factors, and after experimentation with different methods and materials.

Although grass is the most satisfactory surface for most parts of the playground, it is rarely possible to maintain it on a small, intensively used play area. This is especially true of the school playground which is used the year round, because turf can be ruined if it is used early in the spring. Furthermore, grass cannot be used to advantage soon after a rain because it is slippery and children's feet become wet. Especially prepared surfaces are therefore used on the playgrounds of many cities. Even though it is often necessary to use such surfacing, it is agreed that wherever possible turf should be used for the large open play area and especially for the little children's section. Playgrounds which receive intensive use only during the summer months should be largely in turf.

If the soil is firm but fairly porous, as in the case of a sandy loam, no special surfacing may be needed, although applications of calcium chloride help to prevent dust. In case funds are not available for a thorough surfacing job, the existing surface may be improved merely by adding a top dressing. Perhaps the best top dressing for a clay or heavy loam soil is torpedo sand or gravel which may be obtained from building contractors. One cubic yard will cover 150 square yards of surface. Additional material may have to be added from time to time, depending upon the amount of wear the surface receives. This treatment has been found highly satisfactory on

* Surfacing Playground Areas. National Recreation Association. 1932.

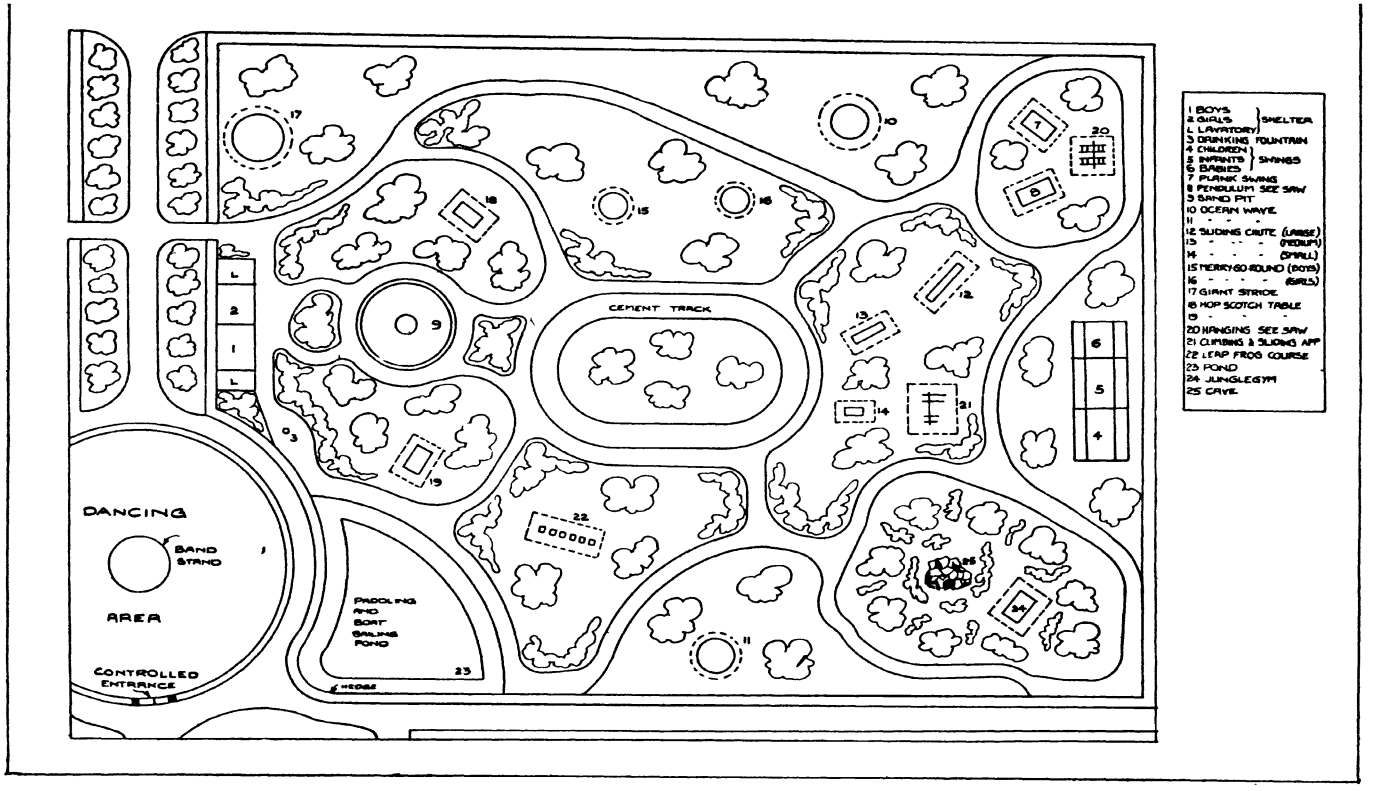


PLATE NO. 71

A CHILDREN'S PLAYGROUND FOR AN ENGLISH CITY

This layout, designed by Commander B. T. Coote of the Miners' Welfare Committee for the Durham District, England, illustrates a type of playground being constructed in Great Britain. It differs in many respects from the type of playground recommended for use in America and has a number of unique features. "The following points may be of interest when examining the illustration:—(1) The layout is designed to produce the effect of mystery and beauty. (2) Apparatus has to be sought, and thus its discovery constitutes something in the nature of a personal reward for the child. (3) The 'Hide and Seek' island is an entirely new feature. (4) Paths, grass, trees and flowers, all help to cultivate tidiness—the elder children being encouraged from the start to keep the playground as beautiful as they find it."

It will be noted that the apparatus is distributed over the entire area. Supervision is likely to be quite a problem although the playground should be attractive to the children. It is apparent that on children's playgrounds in Great Britain the emphasis is upon apparatus and free

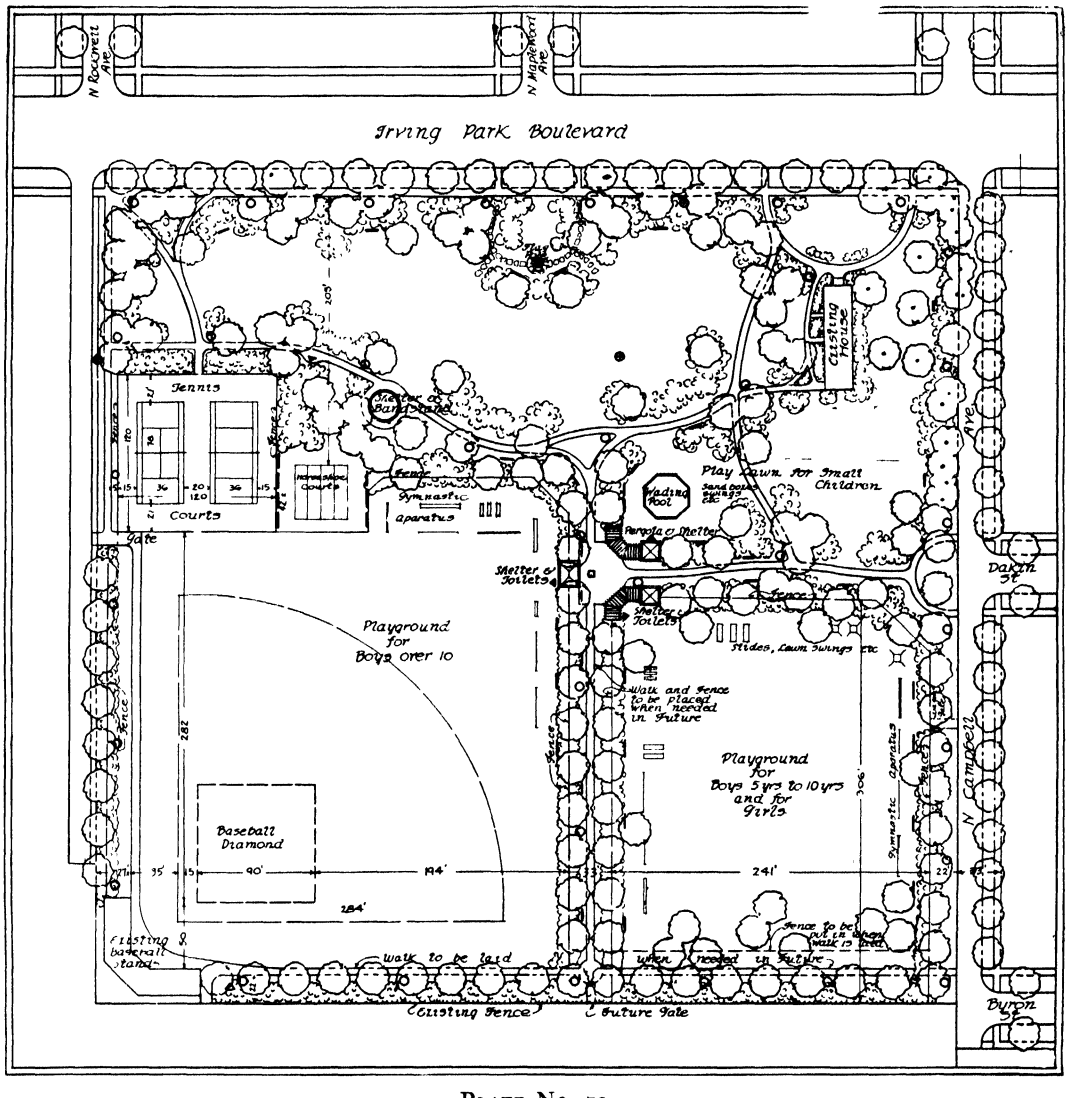


PLATE NO. 72

PLAN OF PAUL REVERE PARK, RIVER PARK DISTRICT, CHICAGO, ILLINOIS
(Design by Jacob L. Crane, Jr.)

The size of this area, approximately 9.25 acres, made it possible for a section of this playground to be designed as a neighborhood park. It is well adapted for evening use as a play center for young people and adults and the presence of the park should help to make the area a real neighborhood center. The boys' section contains a full size baseball diamond with grandstand but is not large enough for football, except in modified form. The boundaries of the various divisions as well as of the playground itself are surrounded by plantings some of which are outside the fence.

The three part division used in the design of this playground is not considered essential in most communities and the amount of apparatus suggested in this plan is greater than is usually needed. On the whole, the general arrangement of facilities and areas is excellent. There would be an advantage, however, in the area for young boys and for girls, in grouping the apparatus so the space along one or two sides could be used for such games as volley ball and softball. As a rule, toilets are provided in one centrally located building rather than in the various sections.

general playground areas in many cities, although in most sections of the country it is not suitable for use throughout the entire year.

Most natural surfaces are fairly satisfactory for general play activities during the summer months—or can be made so at little expense—but they cannot stand up under intensive use throughout the year and are not suitable for play during wet weather or during periods when the frost is coming out of the ground. Therefore the major surfacing problem is to find an inexpensive but satisfactory all-year, all-use playing surface. The Surfac-

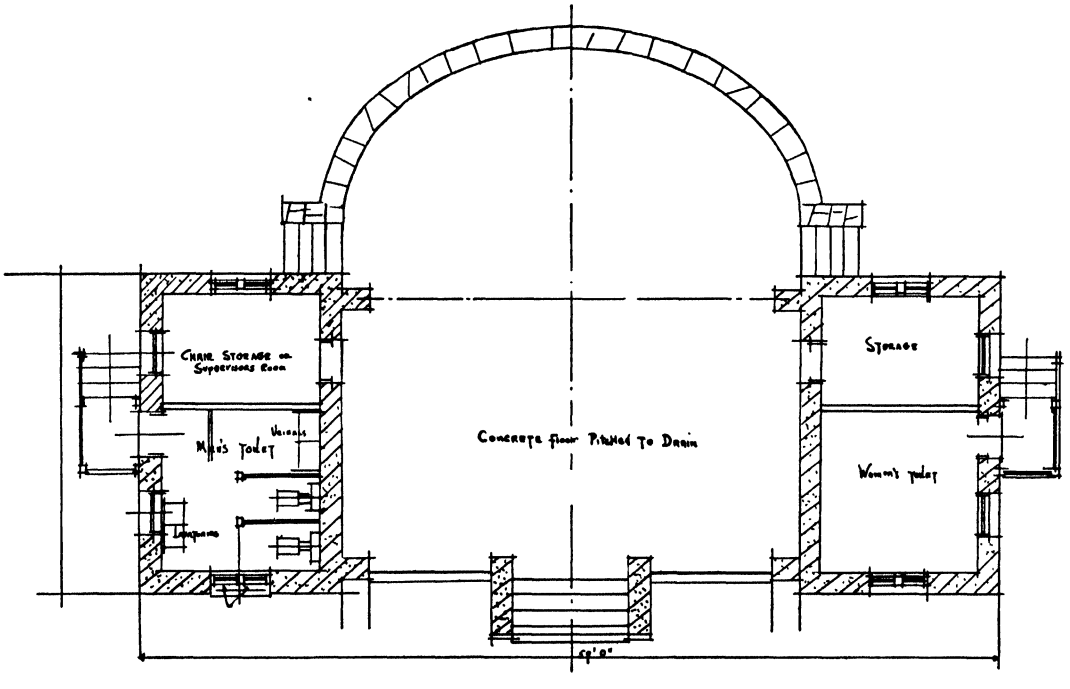


PLATE NO. 73

FLOOR PLAN OF SHELTER AND STAGE, HILLSIDE PARK, FORT WORTH, TEXAS

Several cities have constructed buildings which serve both as a playground shelter and as an outdoor theater. This plan was prepared by Hare and Hare and the cost of the building was $6,513 in about 1928.

ing Committee agreed that it is important on all playgrounds used intensively throughout the year, especially in connection with schools, that a part of the area be surfaced with materials, probably of a bituminous nature, which permit of play under all weather conditions.

Much experimentation has been carried on during the last few years in an attempt to solve this problem. Difficulties encountered apart from the factor of expense are that surfaces have been too abrasive, too hard on the children's feet due to a lack of resiliency, too slippery, too hot or soft in sum-

mer, or that they soil the children's clothing. Many believe that the most satisfactory surface of this type yet developed is cork asphalt, which has been used in a number of cities. For example, a new 2-acre playground in New York City, surfaced with cork asphalt in 1932, has been in continuous use for six years and is in excellent condition. Although it has required no repairs or maintenance during this period, it shows no signs of wear, does not pick up, bleed or peel. It has proved a highly satisfactory, resilient yet firm surface for a variety of play activities. The only apparent criticism of this surface is that the construction costs are somewhat higher than for certain other bituminous surfaces.

Because most communities cannot afford to spend the money required to lay a surface of this type, recreation workers are watching with interest the experiments which are being made in soil stabilization. This process involves the treatment of existing soils with some form of binding material —cement or asphalt—to form a firm surface. The cost is only a fraction of that involved when the area is excavated and crushed stone or other materials hauled in to form a base. It is believed that a highly satisfactory playing surface can be secured by the application on a stabilized base of a thin coat of some resilient material such as cork asphalt. Reports indicate that a surface of this type can be constructed at a cost of a little more than $1.00 per square yard, which is considerably less than the cost of laying many other less suitable bituminous surfaces.

There is a great variety of these materials, among the more common types being rock asphalt, cut back tar, hot mix asphalt, asphaltic oil with sawdust, stone chips or spruce shavings, pre-mixed asphalt laid cold and many patented or trade marked products. Opinions differ widely as to the relative merits of these various materials. They all have certain advantages over a natural soil surface. For example, they require practically no maintenance; permanent court lines may be marked on them easily; they can be used imediately after a rain and throughout the year, and they serve for games requiring an accurate bounce as well as for general play activities.

Many other kinds of materials are used for surfacing playgrounds. Limestone screenings have proved quite satisfactory on year-round playgrounds in several cities. They have good binding qualities, are porous and are effective on areas lighted for night play. Care must be taken however to use enough fine materials to form a firm surface, and unless adequately treated with calcium chloride the playground becomes dusty and has a strong glare in the sunlight. Loam makes a resilient playing surface which requires the application of calcium chloride or some other dust binder, but it is not satisfactory for year-round use. Concrete is widely used

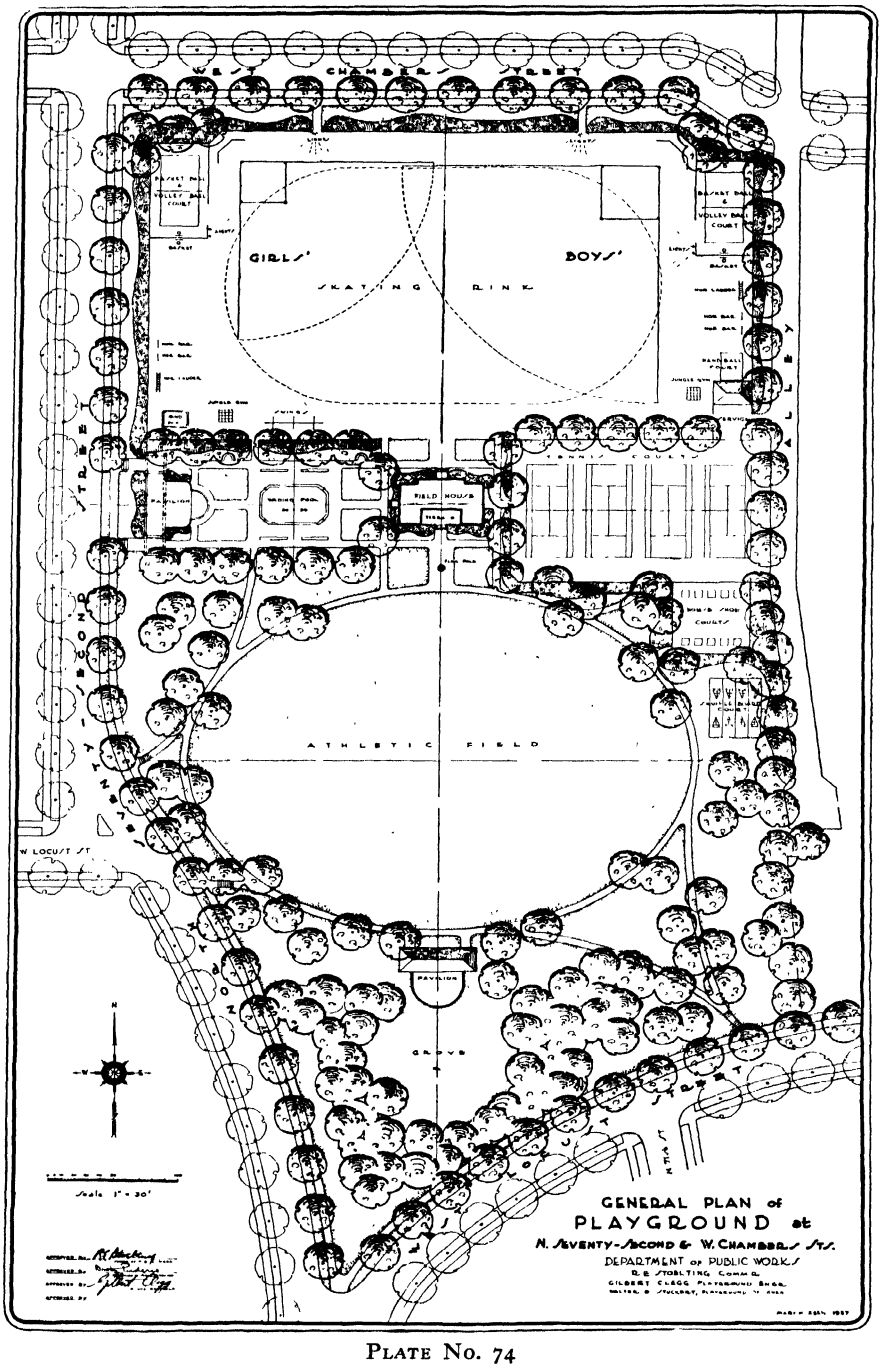


PLATE NO. 74

GENERAL PLAN OF 72ND STREET PLAYGROUND, MILWAUKEE, WIS.

The size of this playground, approximately 9 acres, enables part of it to be developed as a neighborhood park. A large open area is used by both boys and girls although separate apparatus and game courts are provided for them at the ends of the area. The wading pool has a park-like setting beween a pavilion and the centrally located field house. The athletic field and special game courts afford play opportunities for the young people and adults in the neighborhood. The small

for special courts such as handball, shuffleboard and tennis, but it is not recommended for general play areas. Certain types of clay, which varies greatly in consistency, make a firm, even surface for court games. Clay which has a sand content of 30 per cent is satisfactory for general play activities during many months of the year. Most types of crushed stone and slag and cinders make a loose surface which is so sharp and abrasive as to be dangerous and unsatisfactory. The use of such materials for surfacing playgrounds should be avoided.

A dusty playground is not only harmful to the health of the children using it but it is a cause of annoyance to neighboring property owners. Therefore, if the surface is likely to become dusty in dry weather, it should be treated regularly with some form of dust binder. Calcium chloride is most commonly used for this purpose although some authorities have reported successful results from oil products designed especially for such use. If funds are not available for the purchase of such materials, the playground should be sprinkled with water when conditions require. As suggested in Chapter I, the installation of water pipes and outlets at various parts of the playground makes such sprinkling possible.

CHAPTER VI

THE NEIGHBORHOOD PLAYFIELD

The neighborhood playfield is the type of area which affords opportunities for young people and adults to engage in a variety of recreation activities. Although children's playgrounds are sometimes used by these older groups, they are rarely large enough to permit the playing of highly organized games by young people and adults. Consequently larger areas are needed, especially if opportunity to take part in a varied program of activities is to be granted to a large section of the population. The playfield requires several times as much space as the playground, but since adults will walk farther and the drawing radius of the playfield is greater, fewer areas of the playfield type are needed. Usually a section of the playfield is set aside as a playground for the children of the immediate neighborhood. In the larger playfields a section is sometimes set aside as a landscape park, in which case the area is called a playfield-park.

Divisions of the Neighborhood Playfield

There is no definite pattern for designing a playfield, but like every other area, it should be planned in such a way as to utilize the natural features of the site for the maximum recreation use of the people it is intended to serve. It is helpful, however, in considering the most effective development of a playfield to keep in mind certain rather important functions or features. They may be grouped under the following suggested divisions or sections of the playfield: (1) children's playground, (2) playfield for older boys and men, (3) playfield for older girls and women, (4) area for building and swimming pool, (5) park or landscape area or areas.

If a site is to provide the five sections suggested, a minimum of 10 acres will be required. By reducing the amount of landscape area and combining some of the facilities for men and women, it may be possible to have a playfield on a smaller site, but not without eliminating or limiting desirable facilities. A site of 20 acres is preferable to one of 10 acres because it makes possible a more interesting and varied development, serves a greater range of uses and makes it possible to set aside a section as a park.

The problem of designing a neighborhood playfield is more complex than in the case of a playground because of the larger area and the need for

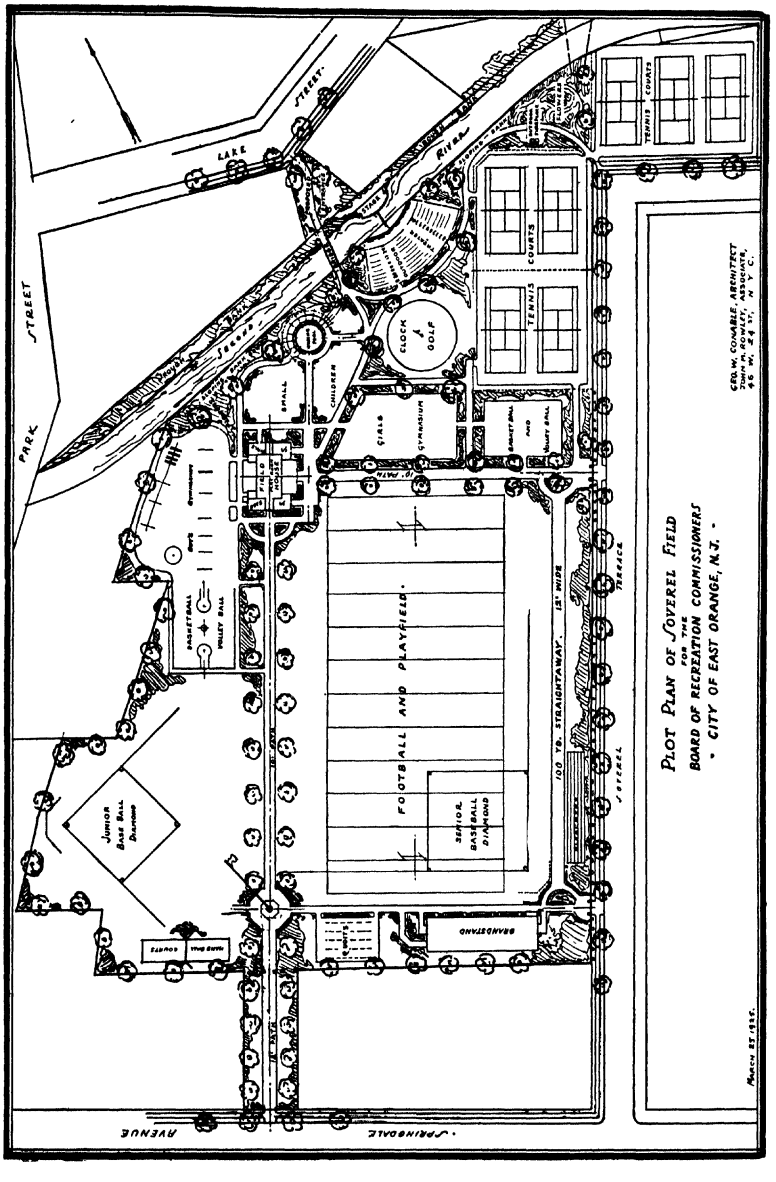


PLATE No. 75

PLOT PLAN OF SOVEREL FIELD, EAST ORANGE, N. J.

This plan illustrates the variety of recreation facilities that can be included in an area of 6.5 acres. This field provides, in addition to a children's playground and athletic field, a field house, seven tennis courts, outdoor theater and areas for a number of minor sports. Special features include an outdoor theater, clock golf course and outdoor fireplace. Plantings are provided around the entire field and between the various play areas. The centrally located field house is accessible from all parts of the field by a well planned arrangement of paths.

This neighborhood playfield is designed to serve the recreation needs of all ages but it is obviously too small. For example, there is space for only one major game or activity. In fact the baseball field has such a short left field that many balls are likely to be batted across the main path leading to the field house. It would seem desirable to erect a fence along this walk. For an illustration of the stand on this field and a plan of the space under it, see pages 176 and 177.

providing a greater variety of facilities for a wider range of ages and interests. A careful study of the entire problem is essential before attempting to locate any of the features. A few of the primary considerations that should be sought in preparing a plan are: accessibility for the children's playground, a degree of isolation for the section for older girls and women, utilization of the largest level spaces for major games and sports, ease of access and circulation between the various divisions, facility of operating control from one center and economy in maintenance. Full advantage should also be taken of natural features such as woodland, slopes and water areas. Special factors which influence the planning and equipment of the different sections of the playfield are discussed in the following pages.

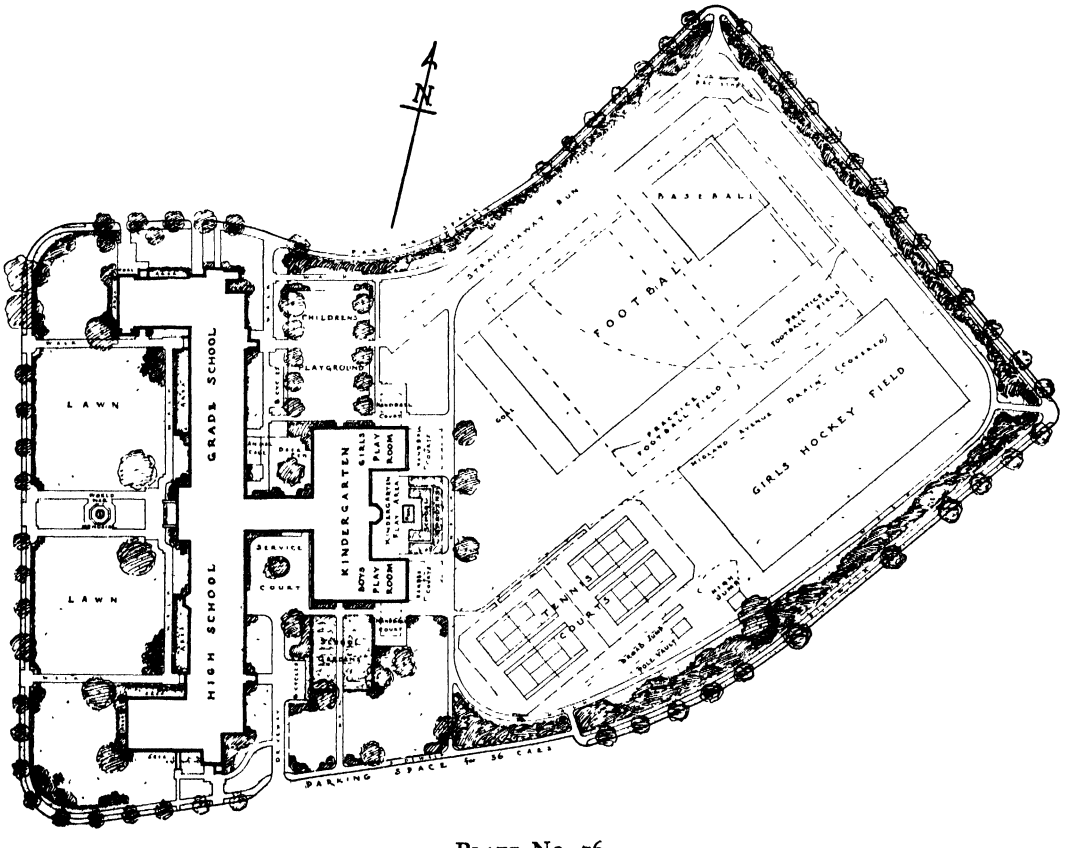


PLATE NO. 76

GENERAL PLAN, BRONXVILLE SCHOOL, BRONXVILLE, N. Y.

This combined high and grammar school site has many of the characteristics of a neighborhood playfield. Nearly two-thirds of the 12 acres is devoted to recreational use. Ingenious use has been made of the available space and special features such as the zoo, kindergarten playground and school gardens have been introduced. Better orientation of the tennis courts and football field might have been obtained by reversing the axis of these areas. It is doubtful if this field is large enough to adequately serve the needs of a school of this type.

Section for Children's Playground

This area is intended for the children under 15 years of age living in the neighborhood adjacent to the playfield and for those who may be brought there by their parents who come to the playfield to engage in activities. The layout of this section corresponds in general to that suggested for the children's playground in the previous chapter. Less space is needed for this section than is recommended for the separate children's playground because in the playfield the areas for football, baseball, soccer and similar sports are provided in the divisions set aside for adults. Separate courts for volley ball, basketball, softball and similar games are, however, frequently laid out in the children's playground section so they will always be assured of an opportunity to engage in these activities. They should be of a size most suitable for children. On many playfields, no special building is provided for the children but they use the facilities in the field house or recreation building. Sometimes, however, an open shelter is erected for them. If the playfield building is not close to the section used as a children's playground, a separate shelter building should be provided. It is generally desirable to have the children's playground separated from the other sections by a hedge or fence, and it should be placed where it is most directly accessible from the homes of a majority of the children in the neighborhood.

Playfield for Men and Boys

The space allotted to men and older boys is, as a rule, larger than that given to any other section, unless a large park area is included. Most of this section should be comparatively level since it is laid out for such activities as baseball, soccer, football, softball, tennis,* horseshoe pitching, lawn bowling and volley ball. A very small area, however, is often set aside for some pieces of gymnastic apparatus. This section should be large enough and laid out in such a way as to permit at least two major games to be played at the same time. The number and kinds of facilities will depend somewhat upon the land available and the sports popular in the particular city. If the neighborhood has a large foreign-born group, facilities may well be provided for the games with which the group is familiar—for example, boccie would be popular in an Italian neighborhood. An effort should also be made to offer a variety of facilities in order that the area may serve the largest possible number of people. Young men enjoy the more active sports, but it is desirable that the playfield serve older men as well. Accord-

* As a rule, only one set of tennis courts is provided for the use of both sexes. This may also be true of some other game areas. These features should be located where they are easily accessible from the men's and women's sections.

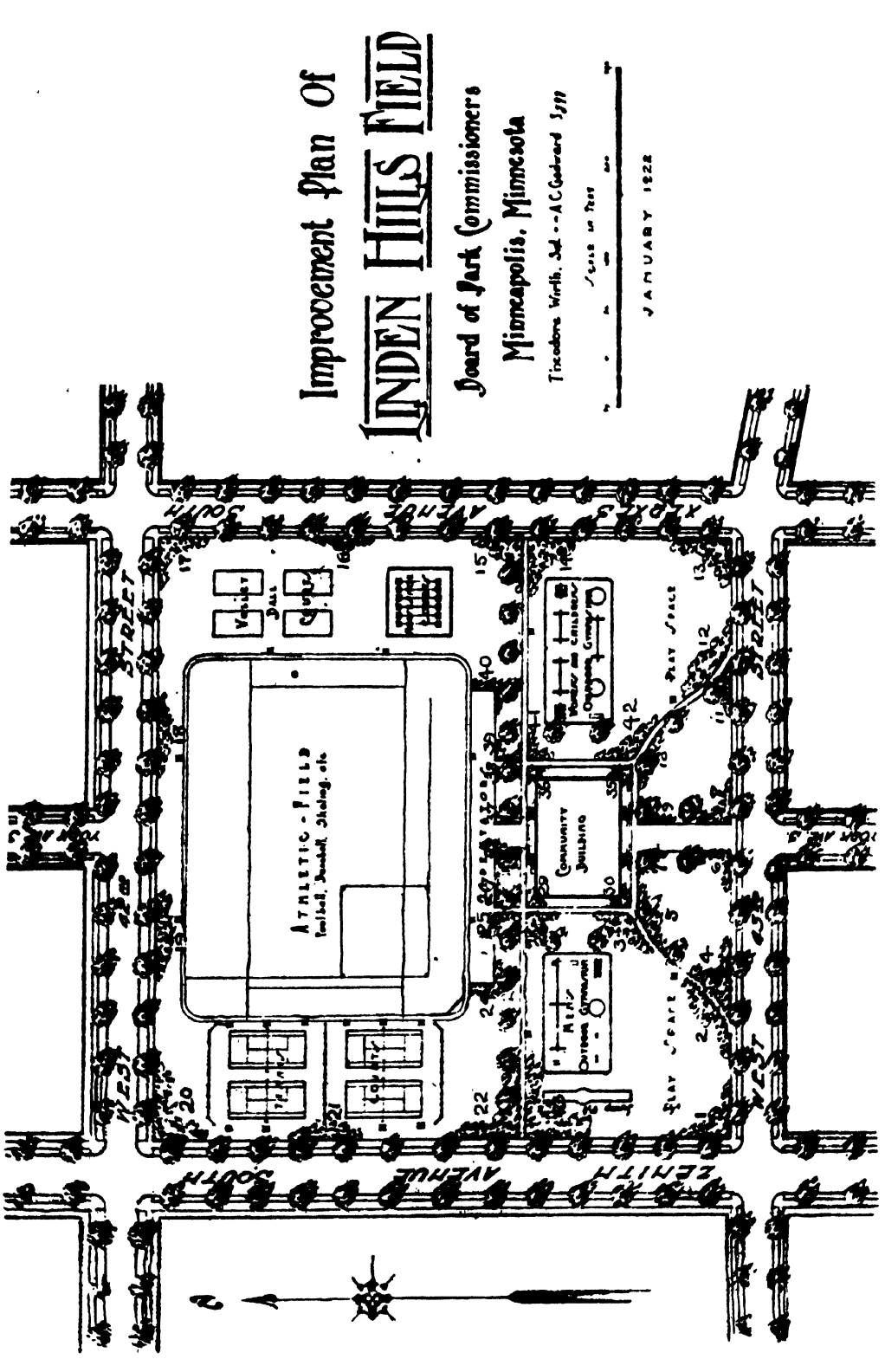


PLATE No. 77
IMPROVEMENT PLAN OF LINDEN HILLS FIELD, MINNEAPOLIS

ingly it is necessary to provide areas for the less active games such as horseshoes, bowling, roque, shuffleboard and clock golf. A golf driving net or cage will attract many men to the field.

In order to reduce the space required for baseball, overhanging backstops are generally used on the playfield, except in the case of the exhibition diamond. Care must be taken not to have other game areas in the range of batted balls, unless they are to be used only when baseball is not being played. If the size and shape of the area permit, sports fields should be arranged so as to permit overlapping use from one season to another. If possible, the football field should be laid out so it does not include the infield of the baseball area. Local conditions and needs will determine whether or not a running track should be provided. Since a track is expensive to construct and is wasteful of space, it is frequently omitted from this type of area. Provision is usually made, however, for a 120-yard straightaway and for jumping and other field events. As a rule, if the playfield is located adjacent to a high school or if a community has only one playfield a running track is provided. In such cases the area containing the track may be completely enclosed, in which case it becomes essentially an athletic field. Detailed information on running tracks and facilities for field events will be found in Chapter VII, The Athletic Field.

A section of movable bleachers or a grandstand is usually erected for the accommodation of people watching football or baseball games and track meets. If a permanent grandstand is erected, it should be on the west side of the field, if possible, so spectators will not have to face the afternoon sun. Because a larger level open space is needed for the men's section than for the other parts of the playfield, its location is often determined by the topography of the area. It does not require as much supervision as some of the other sections and men can walk farther than children to engage in their activities. Consequently it can be at a considerable distance from the main entrance. At least four acres should be available and an area twice as large is preferable.

The Linden Hills Field, plan of which is shown on the opposite page, is typical of the many neighborhood playfields of about ten acres in the Minneapolis Park System. One of the principles followed in the design of these areas is to surround them with a wide border plantation. The effectiveness of this border is often enhanced both as a screen and as an adornment by depressing the major playing area or areas and raising the elevation of the borders. This enables the playing areas to be more readily adapted to winter sports. The field house is readily accessible from all divisions of the field. Note the many game facilities provided and the small park-like areas. On the Minneapolis playfields, two separate areas are set aside for the playground apparatus, one to serve the girls and women and the other the boys and men.

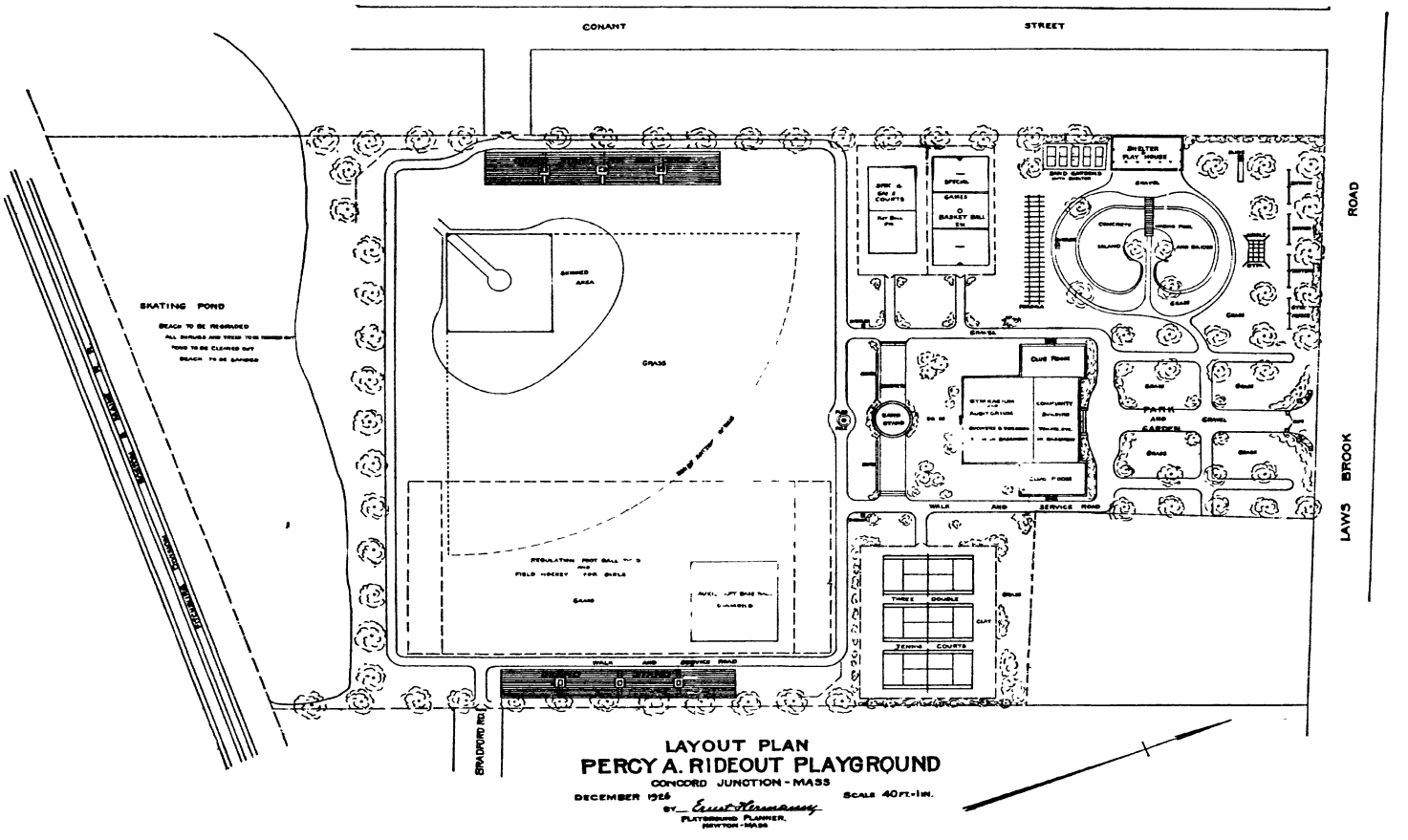
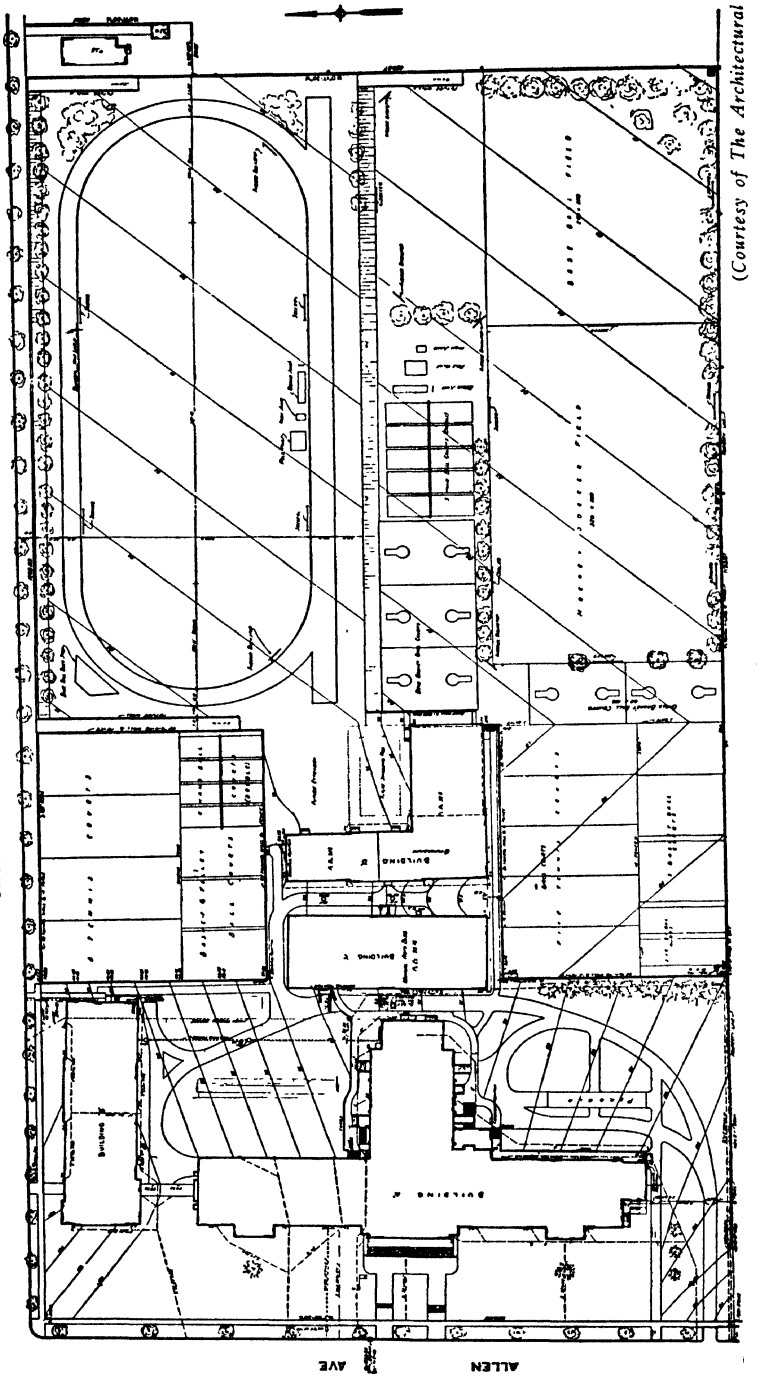


PLATE NO. 78

LAYOUT PLAN, PERCY A. RIDEOUT PLAYGROUND, CONCORD JUNCTION, MASSACHUSETTS

This neighborhood playfield plan includes a number of interesting features, among them the attractive wading pool with its island and bridge, the bandstand with adjoining concrete area, the skating pond, the community building and the park and garden. It will be noted that the children's playground has one apparatus area and a section devoted to game courts. The girls and women are given the use of a part of the athletic field, but the northeast corner lot is to be acquired and developed as a girls' playground. This area of approximately nine acres provides a wide range of recreation opportunities.



(*Courtesy of The Architectural Record*)

PLATE No. 79

GENERAL PLAN, JUNIOR HIGH SCHOOL PLAYFIELD, PASADENA, CALIFORNIA

The school play areas in Pasadena are outstanding for their intensive development, affording opportunities for large numbers to engage in active play. Approximately 12 acres of the school site shown here are devoted to the playfield. Few areas of this size have 9 tennis courts, 18 handball courts, 5 basketball courts, 8 volley ball courts, a quarter-mile track, hockey and baseball fields and facilities for field events. Under such conditions, it is practicable to assign certain facilities to the girls and others for boys' use.

Playfield for Women and Girls

Many playfields do not provide a special section for this group, but with the growing interest in sports on the part of women and girls it is increasingly important that additional facilities be provided for them. Women and older girls are more likely to use the playfield if a definite area is set aside for their exclusive use. Many of the games which are played by women and girls require considerable open, level space. Therefore a large part of the section devoted to their use will be in open turf area and in courts for such games as field hockey, soccer, softball, basketball, field ball and volley ball. Women and girls also enjoy some of the less highly organized games which require less space, such as horseshoes, badminton, paddle tennis, croquet and tether ball. If there is local interest in track and field events, a straightaway and jumping pits may be provided or arrangements may be made for the women and girls to use the facilities provided in the men's section. A platform for dancing is sometimes included in this division and an archery range may be installed if adequate, suitable space is available. Occasionally a few tennis courts are set aside exclusively for the use of women and girls.

The minimum space which will adequately serve for this division is 300 feet by 400 feet and a larger area is likely to be needed. It is often desirable to have it separated from the men's area by a walk with border plantings, and if it lies along a street, a fence should be erected along the street side and either a dense hedge or ivy planted for future protection and beauty. Benches should be provided generously in this section.

Area for Building and Swimming Pool

The space set aside for the playfield building will naturally depend largely upon the size of the structure, but in any case it will be a small percentage of the entire area. Because the building is the central architectural feature and also because it is the center of administrative control, its location and architectural treatment are of primary importance. It should fit into the general design of the area and be placed where it will be readily accessible from all parts of the playfield, and yet where it will interfere as little as possible with the effective use of the area. A suitable site is often near one side of the field bordering a street, and set back from 20 to 40 feet from it. Other things being equal, the building should ordinarily be placed along the side on which most of the people approach the playfield.

Although playfield buildings differ in details they ordinarily provide the following: comfort facilities, showers, dressing and locker rooms for

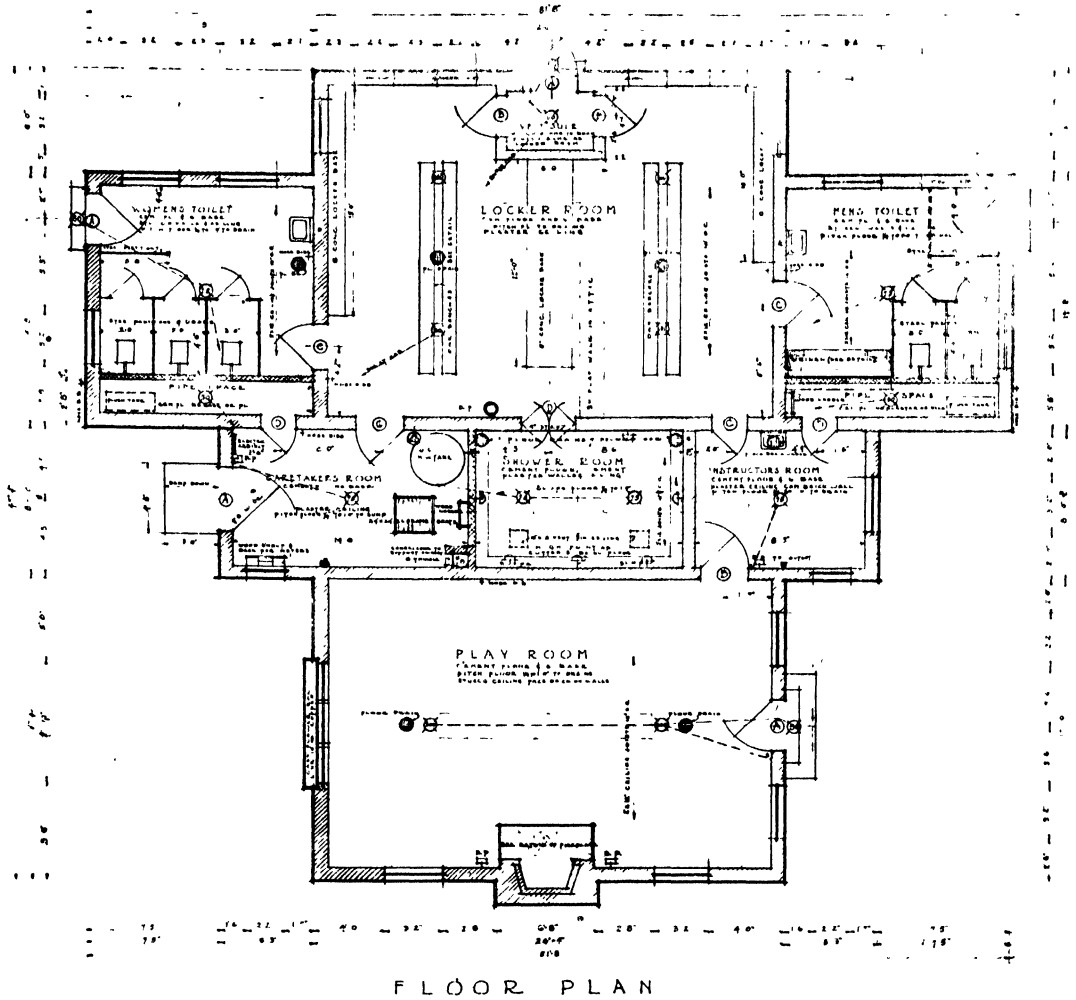


PLATE No. 80

FLOOR PLAN OF FIELD HOUSE, SEATTLE, WASHINGTON

The chief function of this building is to provide shower, locker and toilet facilities for the persons using the field, although there is a small playroom with fireplace for indoor activities. An unusual feature of the plan is that only one shower room and locker room are provided. Consequently the use of these facilities must be divided between the two sexes. In most playfield buildings, the provision of separate facilities for each is desirable. The rooms are well arranged for supervision and use and the two pipe spaces facilitate the making of plumbing repairs.

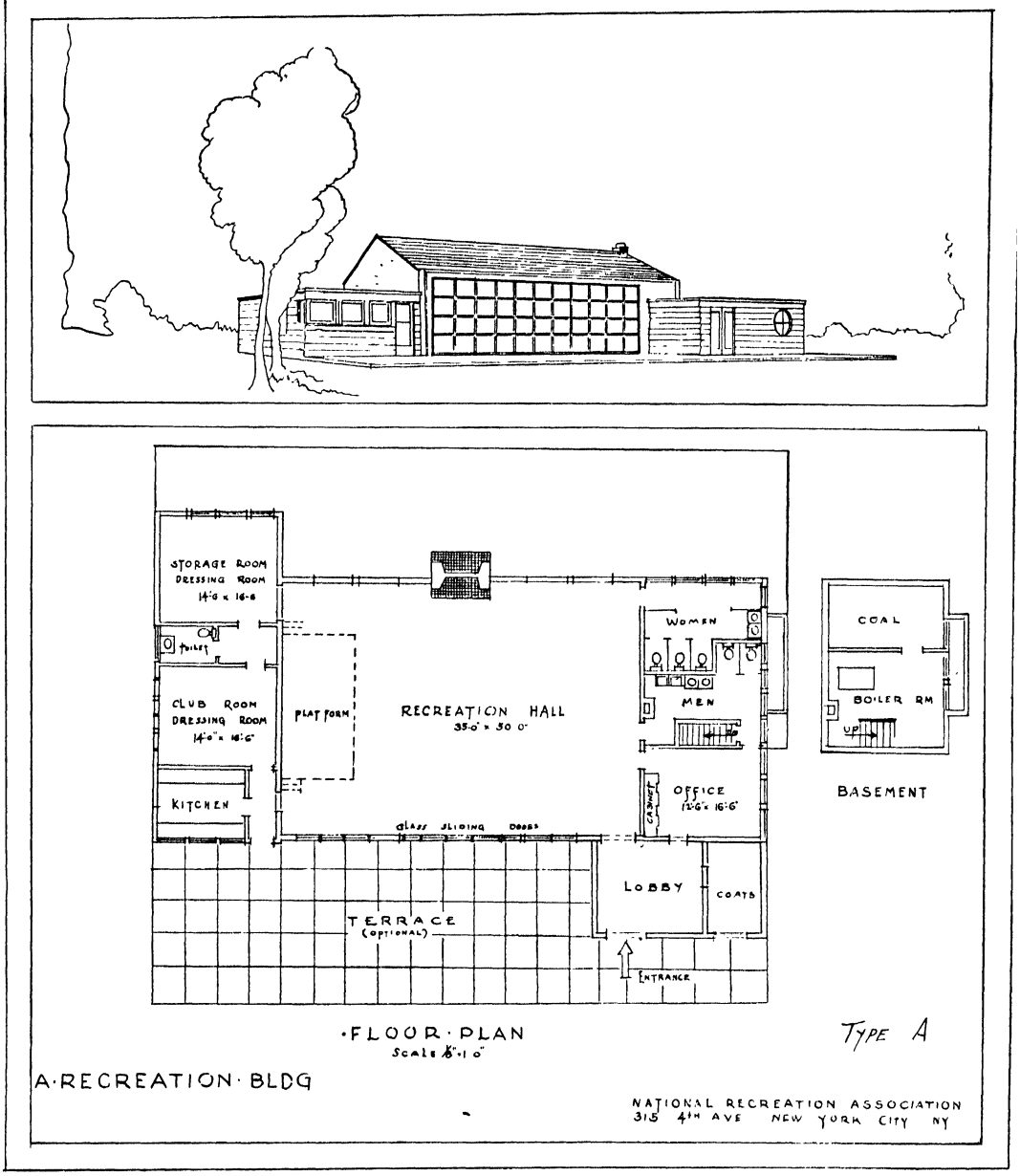


PLATE NO. 81

A RECREATION BUILDING

On many public play areas there is need for a simple building which can be used by small neighborhood groups for a variety of recreational activities. The building shown here was designed for the National Recreation Association by Carl Fricke to serve such a need. In addition to the recreation hall which is the central feature, there are two small rooms which may be used for club activities. If the building was intended to serve a playfield, locker, shower and additional toilet facilities, directly accessible from the field, might be provided in the basement.

both sexes, checking rooms, storage room for equipment and supplies, room for caretaker, office for director and a large room providing shelter and suitable for small group activities. This may be used as a warming room in winter if the field is used for winter sports. A fireplace not only helps to make such a room attractive and homelike but serves as a center for many enjoyable group activities. If located in a part of the country where the building must be heated in winter, a heating plant and fuel storage space are needed.

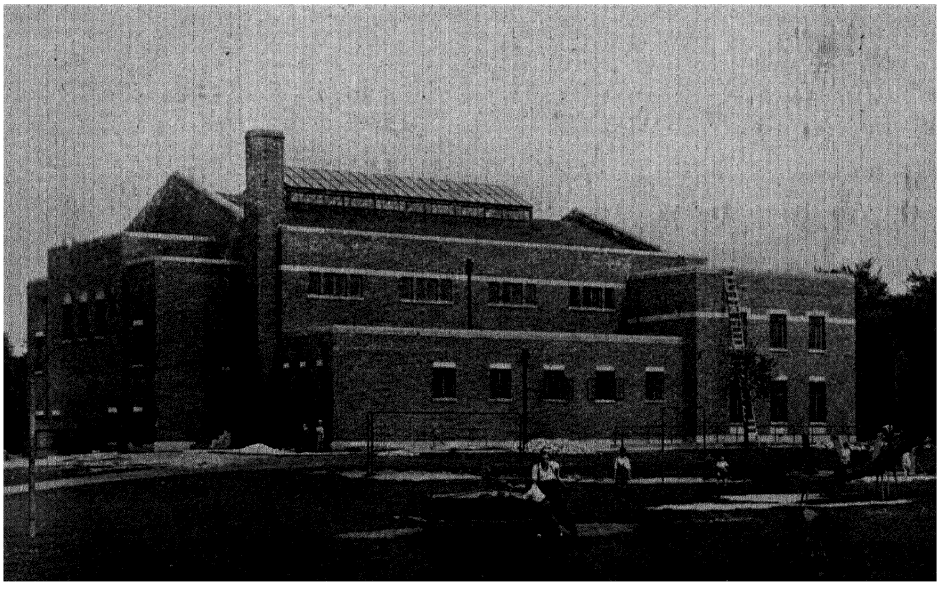


PLATE No. 82

FIELD HOUSE, BOLTWOOD PARK, EVANSTON, ILLINOIS

This photograph of the field house, taken from the adjoining playground, shows the sections housing the men's facilities, the clubrooms and upper part of gymnasium. This multiple-use building, designed by Maher and McGrew, is in a 19-acre park developed primarily for active recreation and is operated by the Bureau of Recreation. The cost of the Boltwood Field House which was erected in 1928 and 1929 was approximately $110,000.

Some playfield buildings include, in addition, a fully equipped gymnasium and an auditorium equipped with a stage which can be used for dramatics, concerts, entertainments and community meetings. More frequently these two features are combined in a single room which serves as an auditorium and gymnasium. A moving picture booth and machine are sometimes installed. It is necessary to protect the lights and windows with wire screens and guards if the room is to be used for athletic games. Sharp corners and breakable decorative features must be eliminated. A kitchen,

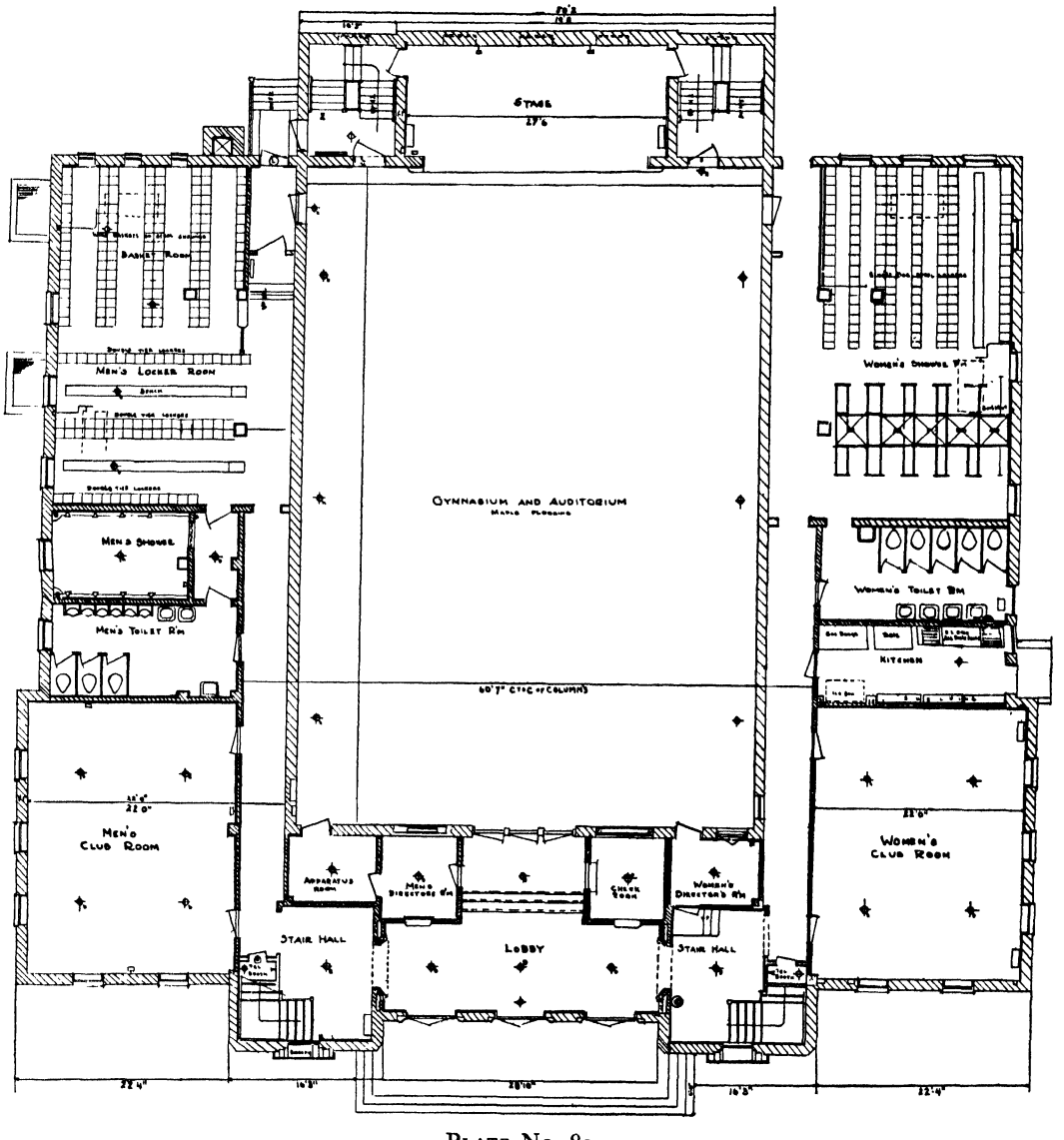


PLATE No. 83

FIRST FLOOR PLAN, BOLTWOOD PARK FIELD HOUSE, EVANSTON, ILLINOIS

One of the chief advantages of this plan is that all of the major facilities are on one floor and are grouped around the combined gymnasium and auditorium. This arrangement facilitates administration and use. An unusual number of rooms and facilities are provided. Directors' rooms, kitchen, check room, apparatus room and other features are well placed and the location of the doors and corridors makes circulation easy. The space devoted to halls and corridors might be reduced to advantage. On the other hand more space should be provided for the gymnasium-auditorium which is too small for many of the activities for which it is intended.

Much of the basement is unexcavated. Under the stage, however, are men's and women's dressing rooms. Under the men's section are the boiler and coal rooms, and large skating rooms for boys and girls, each with a toilet. These basement rooms which can be reached by an outdoor stairs are also used for crafts, rough-house activities and other purposes. A large storage room completes the basement facilities.

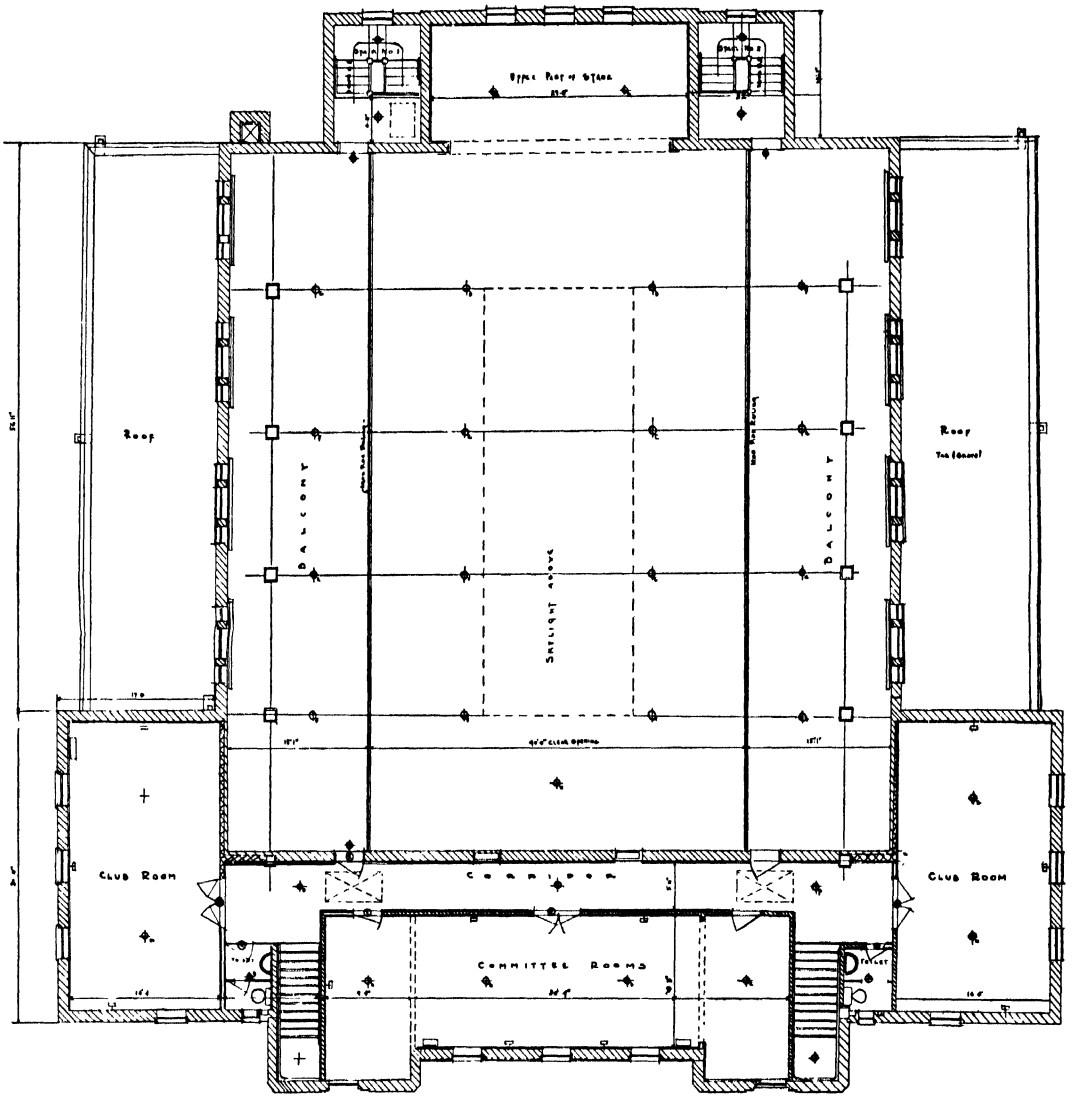


PLATE NO. 84

SECOND FLOOR PLAN, BOLTWOOD PARK FIELD HOUSE, EVANSTON, ILLINOIS

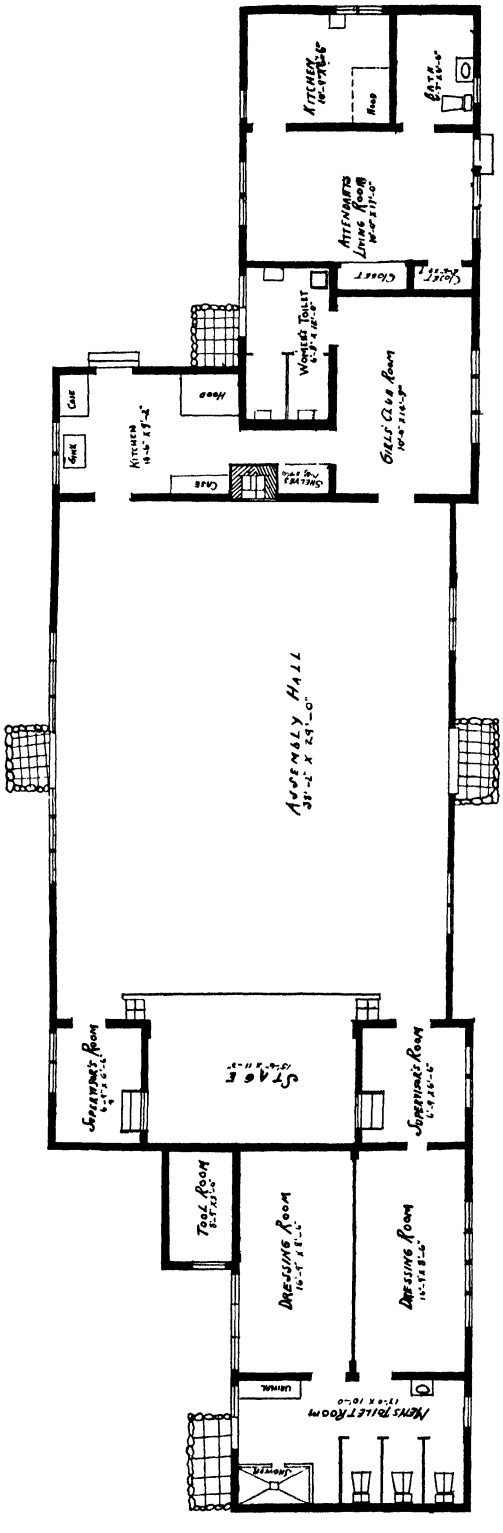
Balconies for spectators occupy the space above the locker and shower rooms, and extend along both sides of the gymnasium beginning at 9½ feet above the floor. They are accessible by stairs at the front and rear of the building. It is reported that only persons sitting on the first two rows of seats have a satisfatcory view of the gymnasium floor which indicates that either fewer rows of seats should have been provided or the balcony should have had a steeper pitch. Use of the building by community groups is encouraged by the provision of two clubrooms 16 by 30 feet and of a large committee room which may be divided by folding partitions to make three meeting rooms. Even so, there is insufficient space to accommodate all of the groups desiring to use the center.

social rooms, club rooms and rooms especially equipped for craft activities are other facilities found in many playfield buildings. Occasionally an indoor swimming pool is included.

The selection, size and arrangement of facilities in a playfield building are of primary importance. As a rule, the largest room, whether the social room, assembly hall or gymnasium, is the central feature and the smaller units are related to it. Locker, shower and dressing rooms, which serve persons using the outdoor play areas as well as the building, are frequently located in the basement and direct access to them from the outside should be provided as well as from within the building. In the more elaborate buildings it may be advisable to provide for persons using the field separate toilet rooms which have outside entrances only and no access to other parts of the building. It should never be necessary for persons using the building to pass through a room other than a lobby or hallway in order to reach comfort facilities. Dressing and locker rooms for the two sexes should be well separated. The kitchen requires a location convenient to the main assembly room and to an outside entrance. The various units in the building should be so arranged as to facilitate normal circulation and simplify supervision by staff workers. The importance of providing ample cupboard and storage space throughout this type of building is seldom fully recognized.

Whenever a high school site serves as a playfield, the school building, if modern, may provide all the essential features of the field house. This is equally true in the case of modern grade schools. If a school building is to be used as a field house, special consideration must be given to the location and arrangement of the facilities They must be directly accessible from the field; they should comprise one or more units which can be shut off from the rest of the building; equipment is needed for heating these facilities during periods when other parts of the building are not in use. Careful planning is required in order to secure an arrangement that is economical and satisfactory to both school and community groups.

A swimming pool is frequently a major playfield feature, and it may be advisable to locate it in the division set aside for the building. In the event that this is done, the dressing and locker facilities serving persons using the pool are usually provided in the playfield building. A few major considerations in the construction of a swimming pool are given on pages 44 to 49, and valuable information on the subject is to be found in the publications listed in the bibliography, page 236. Needless to say, if a swimming pool is included in the playfield layout it must be fenced off and access to it restricted to bathers. Frequently seating facilities are provided for spectators.



FLOOR PLAN

PLATE No. 85

FLOOR PLAN, SOUTH SIDE CLUBHOUSE, SACRAMENTO, CALIFORNIA

This plan illustrates the multiple use of a small and inexpensive structure. Three groups can use this building at the same time without interfering with each other. Among the features provided are assembly hall 28 x 36 feet, with stage and fireplace, two supervisors' rooms, girls' clubroom, kitchen, dressing rooms which can be made into a clubroom, tool room, showers, toilets and living quarters for the attendant. There are few recreation buildings erected at a cost of less than $10,000 which provide such a variety of effectively arranged facilities. The cost of constructing such a building would be greater in a part of the country having severe winters, since it would be necessary to provide a heating plant and more expensive weather-proof construction.

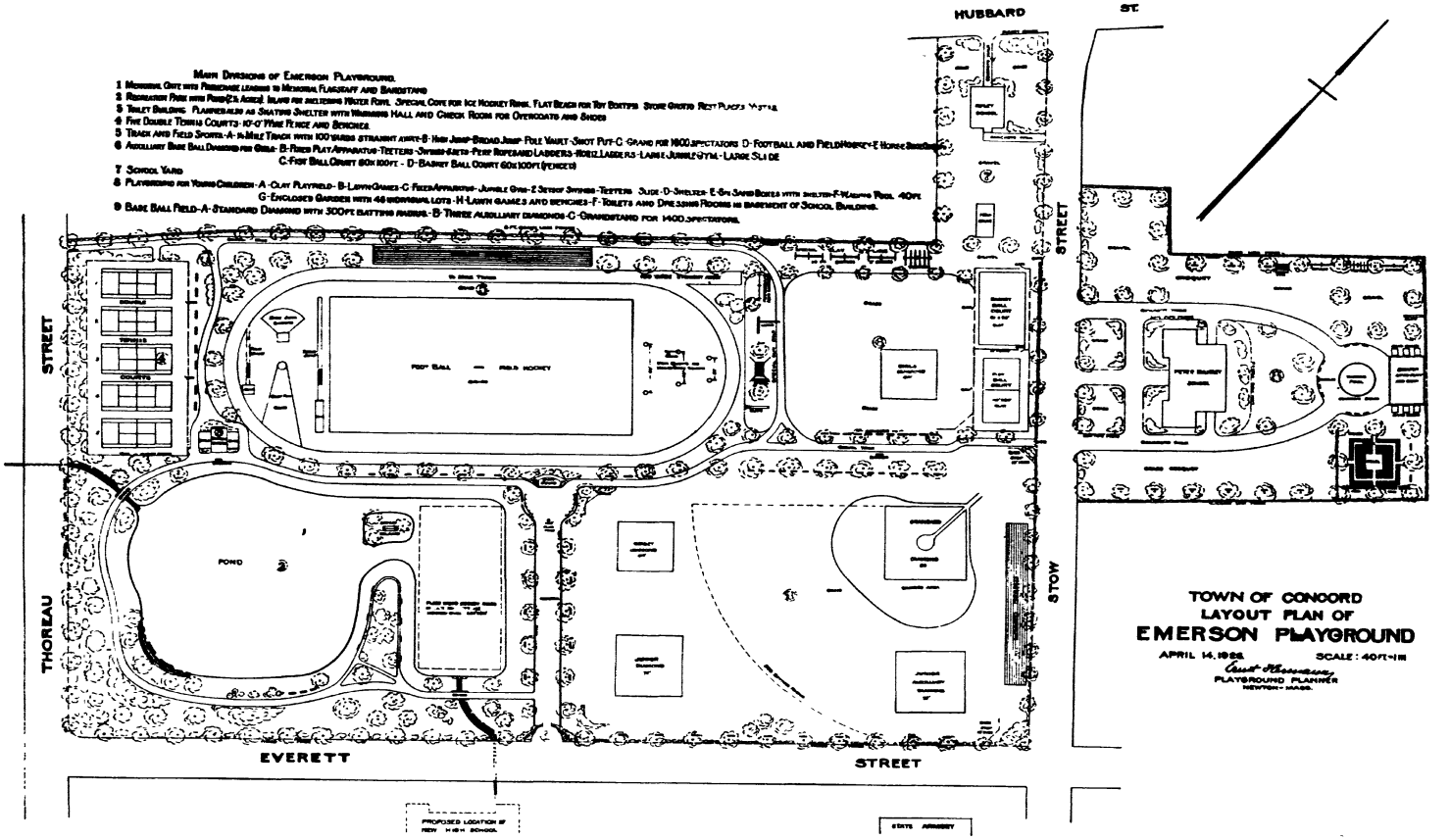


PLATE NO. 86

LAYOUT PLAN OF EMERSON PLAYGROUND, CONCORD, MASSACHUSETTS

This area of approximately 18 acres is designed to provide for a wide range of activities. The main divisions and facilities whch are listed on the plan are well arranged and can be reached easily by a system of paths. The section for children serves as both a school and community playground. Another is developed as a fully equipped athletic field, although the baseball field is located elsewhere. Toilets and dressing rooms are provided in the nearby school, although a small building at the opposite end of the field, between the athletic field and pond, serves as a skating shelter and comfort station. A feature of unusual interest is the 2½ acre pond with swan island, special cove for a hockey rink and beach for toy boats.

Photographs and floor plans of playfield buildings appear on pages 50, 147, 149, 150, 151, 153, 156, 157, and 158.

Park or Landscape Areas

If the playfield is 10 acres or less in area, the landscape area will probably be limited to a narrow border of grass, trees and shrubs along the sides

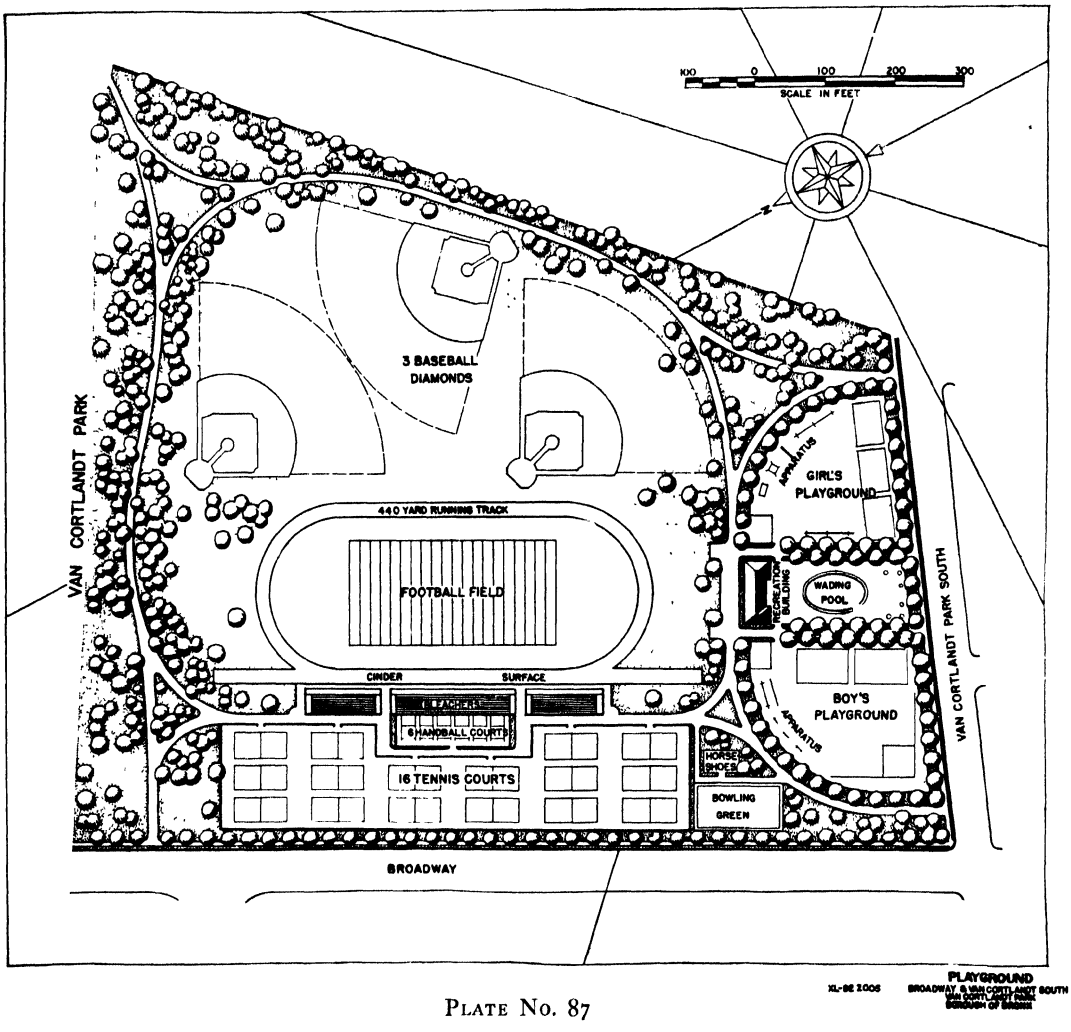


PLATE NO. 87

GENERAL PLAN OF PLAYFIELD, VAN CORTLANDT PARK, NEW YORK

This plan shows the proposed development of a playfield comprising 24 acres in a large city park. Of special note are the good design, the children's playground unit and the many courts for individual games. Although not indicated in the plan, the playfield is fenced on three sides and the section containing the running track and football field is fully enclosed. In addition to the sports fields, a large percentage of the playfield is in lawn and other planted areas. The field designated for baseball can also be used for football, soccer and other seasonal sports. No special section has been set aside for the older girls' and women's team games. A suitable location for such activities could be obtained by eliminating the baseball diamond nearest the girls' playground.

of the field bounded by streets, and a small parklike space in front of the building. The walks may be bordered with shrubs or trees, especially if they divide the various sections of the field. A small pool, fountain or flagpole is sometimes placed in front of the entrance to the field house and the surrounding area made into a small park where benches may be placed. One or more large evergreens, placed where they are seen from the street and

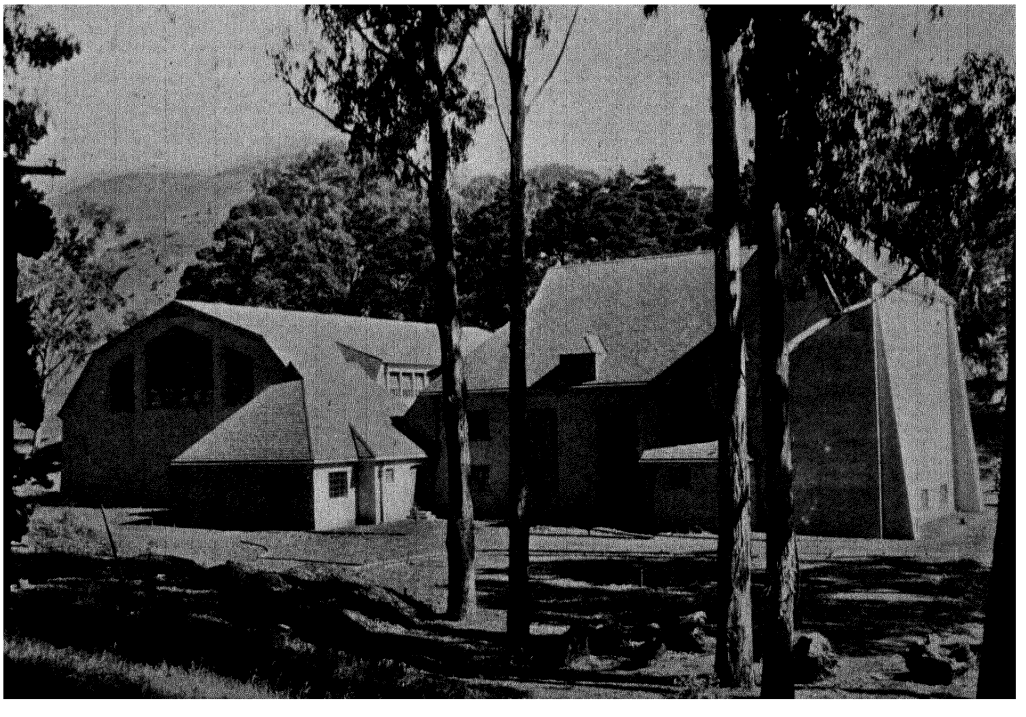


PLATE NO. 88

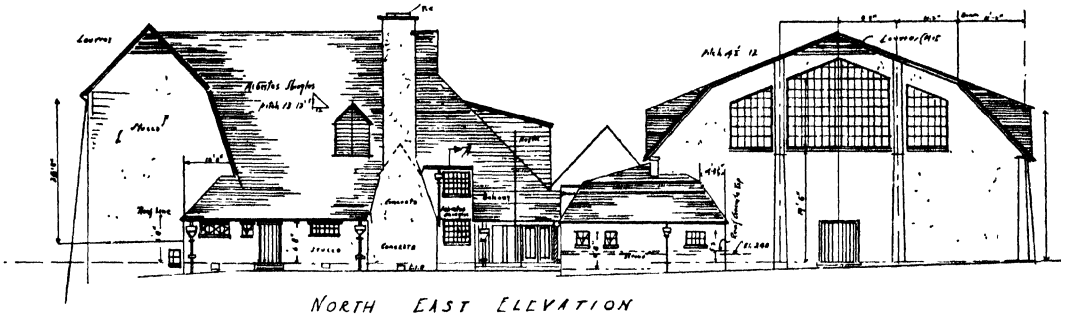
FIELD HOUSE, GLEN PARK, SAN FRANCISCO, CALIFORNIA

Completed late in 1937 at a cost of $120,000 this building is an example of functional planning rather than of conventional design. The structure comprises two distinct units, one a gymnasium with bleachers, locker and shower rooms, and the other an auditorium with stage, balcony and dressing rooms. It is situated on a ten and one-half acre playfield serving both children and adults. William G. Merchant, Architect, A.I.A., designed the building for the San Francisco Recreation Commission. For the first floor plan and elevations of the building see Plates 89 and 90.

where they can serve as the center for an outdoor community Christmas celebration, may well be planted on every playfield. As much of the field as practicable should be in turf, and trees should be planted in parts of the children's playground and in other suitable locations.

In playfields of more than 10 acres an area may well be set aside as a neighborhood park. If the field has a wooded area, it would naturally be

used for this purpose. Even though much of the area should be level, it is well, in selecting sites for playfields, to secure properties that combine open fields with wooded or uneven terrain. It is true that the primary purposes of the landscape park and playfield differ widely, but most people prefer to play and enjoy their recreation amid beautiful surroundings where they can rest after vigorous exercise. Furthermore, many people gain rest as well as enjoyment in watching others at active play. The park area should be supplied with benches, tables, drinking fountain and perhaps a bandstand. The



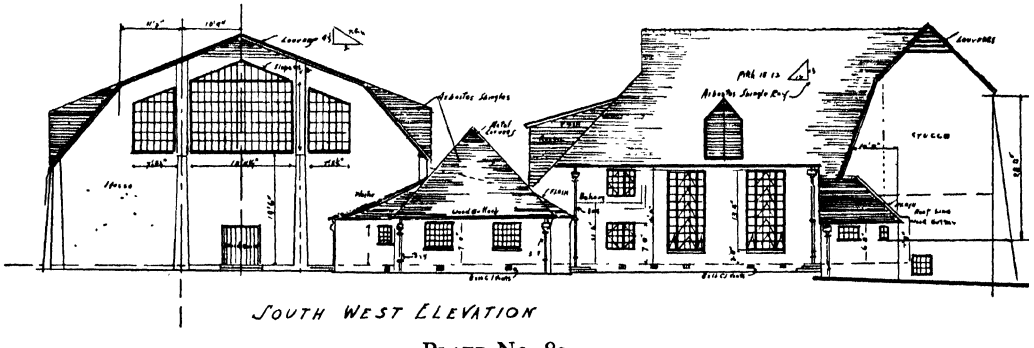


PLATE No. 89

NORTHEAST AND SOUTHWEST ELEVATIONS, GLEN PARK FIELD HOUSE

For a photograph of the building taken from the south see Plate 88. A floor plan is shown in Plate 90.

little children's playground, a small pool for sailing miniature boats, and possibly a few quiet game courts such as roque or croquet may well be placed in the park.

When there is a slope distant from noisy streets and active play areas, the possibility of developing an outdoor theater should be considered. This may be combined with a council ring or camp fire area where outdoor programs of various types may be held. In large playfields, picnic facilities such as fireplaces or ovens, benches and tables are sometimes provided, although they should be kept in a restricted area and it is desirable that they

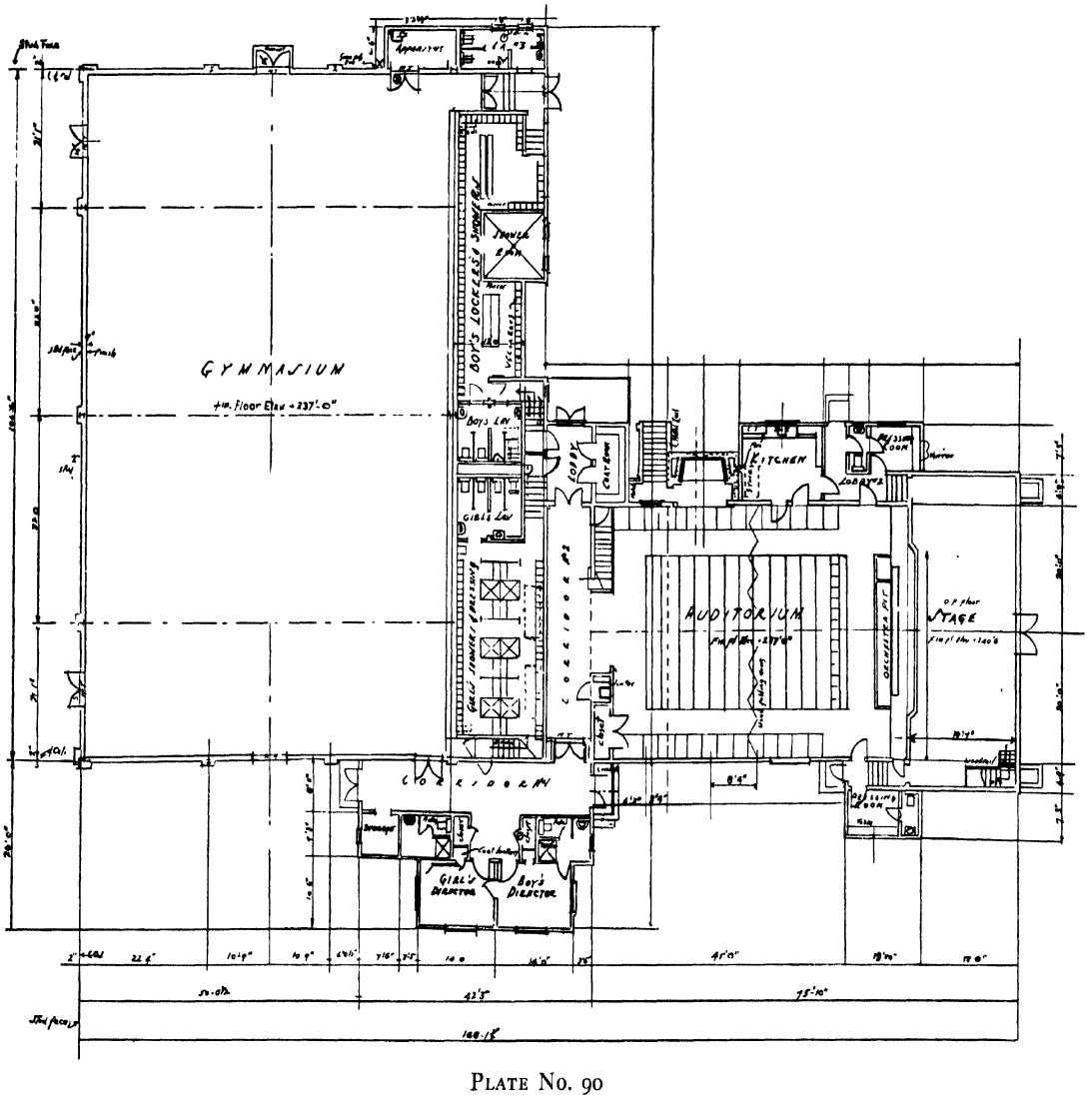


PLATE NO. 90

FIRST FLOOR PLAN, GLEN PARK FIELD HOUSE, SAN FRANCISCO

As the accompanying plan indicates, the major section of the building consists of a gymnasium 65′ x 104′. Near each end of the gymnasium is an entry with stairs leading to the locker, dressing and shower rooms, which are on a level 5′ below the gymnasium floor. Above these rooms are permanent bleacher seats, which extend along one side of the gymnasium.

The auditorium, with large stage, orchestra pit and dressing rooms, has a balcony at the rear and seats 300. Features of this section of the building are the large fireplace and kitchen and the folding doors which enable the auditorium to be divided for small group activities.

Offices for the directors are so placed as to command a view of the playfield and of the corridors leading to the indoor facilities. The locker and shower rooms are reached easily from the playfield. All facilities except the gymnasium bleachers, the balcony, projection booth and boiler room are shown on this first floor plan.

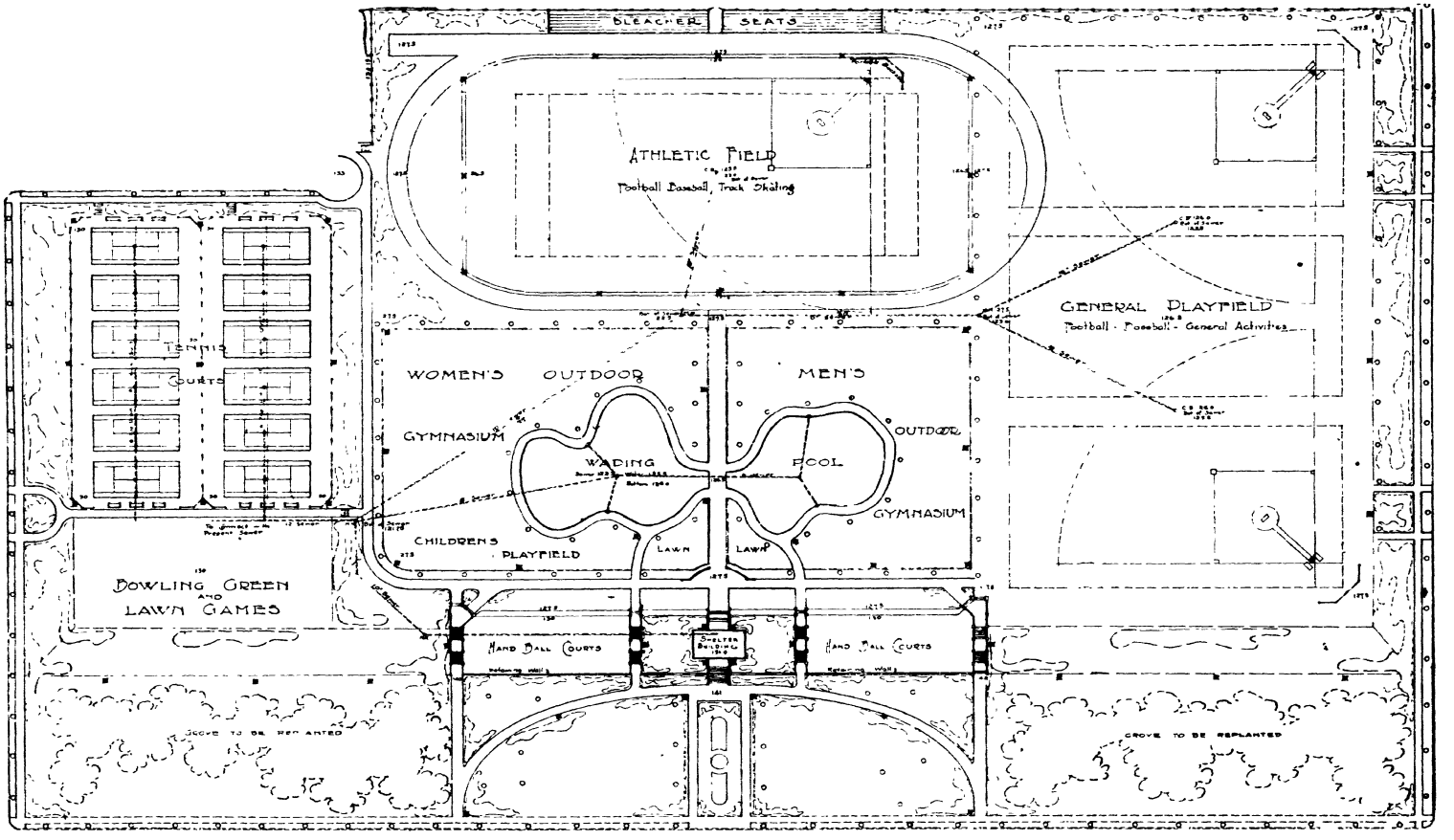


PLATE NO. 91

GENERAL PLAN OF NICOLLETT FIELD, MINNEAPOLIS, MINNESOTA

This field of 21.3 acres provides facilities for large numbers of people to engage in tennis, bowling, handball, football, track and field, baseball and other games and sports. Except for the bleacher seats on the east side of the field, these facilities are well located from the standpoint of orientation as well as economy of space. It is not clear what advantage is gained by having such a large, irregular shaped wading pool. The entire field is surrounded by a park or border planting. An area of this type might well be developed by every city as a community sports center.

be at a distance from the sections devoted primarily to rest and relaxation. The provision of picnic facilities in playfields is likely to add materially to the problems of sanitation and maintenance. In some playfields a portion of the landscape section may be devoted to children's gardens.

Comparatively few communities have made effective use of water in planning their play areas. Ponds and streams contribute much to their appearance and interest as well as to their usefulness throughout the year. Among the recreational opportunities which they sometimes afford are boating, fishing, ice skating, model boat sailing, wading and swimming. They may provide a sanctuary for waterfowl or a reflecting basin for the outdoor theater. If one or more islands are constructed and made accessible by bridges, they will be a source of delight to the young—and to many older folks as well. It is suggested that whenever possible without too much expense, some kind of water area be provided in each neighborhood playfield. Examples of the use of water in the design of such areas are shown in Plate No. 75, page 139; Plate No. 78, page 144, and Plate No. 86, page 154.

For a discussion of the engineer's problem in the construction of a modern 10-acre playfield see page 223 of the Appendix. This describes in considerable detail the procedure followed in constructing a number of playfields in Minneapolis.

CHAPTER VII

THE ATHLETIC FIELD

The athletic field, as considered here, is an area intended for the exclusive use of young people and adults for organized games and sports, including track and field events. Sometimes part of a neighborhood playfield or of a large park is developed as an athletic field. In most cases, however, a separate site is acquired for this type of area or it is located on a high school site. As a rule, the athletic field will draw people from a longer distance than the neighborhood playfield and fewer areas of this type need be provided. The effective radius of the athletic field is considered to be from a mile to a mile and a half. In selecting a site for an athletic field an attempt should be made to acquire a large, comparatively level, well-drained area in a location that is free from strong wind currents and that is easily accessible by transportation lines from the district or city which it is to serve.

Among the outstanding characteristics of this type of area are: large open space for running track and major sports, smaller spaces for minor games, bleachers, grandstand or stadium, field house—unless lockers, showers and toilets are provided in the grandstand or in a school building—parking space for automobiles and a high fence or wall around the entire area. The field should be made attractive even though planting be limited to a row of trees around the field or between the major divisions.

The minimum area on which an athletic field can be laid out is 5 acres; 10 to 20 acres are much more satisfactory. If a 5-acre site is used it is possible to have only one major sports field and the area within the running track must be used for baseball, football, soccer and similar sports. Needless to say, a 5-acre tract will not be large enough unless it is approximately level and of the proper shape to permit the laying out of facilities for these games and sports. It is highly desirable that more than one major game area be provided so the field can be used for two or more activities carried on at the same time. Furthermore, on all high school athletic fields and at most municipal fields a separate section suitable for activities of women and older girls should be provided for their exclusive use. Unfortunately their needs are often largely, if not completely, overlooked.

Planning the Athletic Field

The planning of an athletic field involves the same general procedures as are involved in arranging any other play area. Special factors which influence athletic field design, however, are the large and standardized space requirements of most of the essential features, the necessity of accommodating many spectators, the importance of proper orientation and the need for providing for the overlapping use of the areas for different seasonal activities. Because of these factors it is seldom possible to get a completely satisfactory or economical layout on sites which are of inadequate size, uneven topography and irregular shape. On many athletic fields a very limited program is possible and conditions of play are far from ideal primarily because the site is too small or is unsuited for the purpose intended.

Usually most of the area is devoted to the sports fields and the major feature is the running track enclosure. In a majority of fields the space inside the running track is used for football and for field events. This is a satisfactory arrangement because the two sports, football and track, are engaged in most intensively during different seasons, the equipment used for one sport does not interfere with that required for the other and the same seating facilities serve well for both. If the end radius of the track is 105 feet or more, the runways and pits for the broad jump and pole vault can be laid out between one side of the track curb and the football field, in which case the football field may well be shifted toward the opposite side of the oval. At least 10 feet should be kept clear, however, between the side line of the football field and the curb.

The baseball diamond is sometimes placed within the track oval. This arrangement is necessary if space is limited, but it has a number of disadvantages. Among them are the fact that the track curb is likely to interfere with the play of the catcher and an outfielder; if the diamond is "skinned" it is difficult and expensive to replace the turf for football; seating facilities most suitable for track and football are not located to advantage for watching baseball games, and when the baseball diamond is in use either for games or practice the entire track cannot be used safely. This is a serious handicap because baseball and track are popular during the same season. If possible, therefore, a baseball field should be provided outside and at a distance from the track enclosure.

As much of the area as possible should be in turf and free from permanent obstructions in order that with the changing seasons playing fields can be marked off for different games such as baseball, soccer, speed ball,

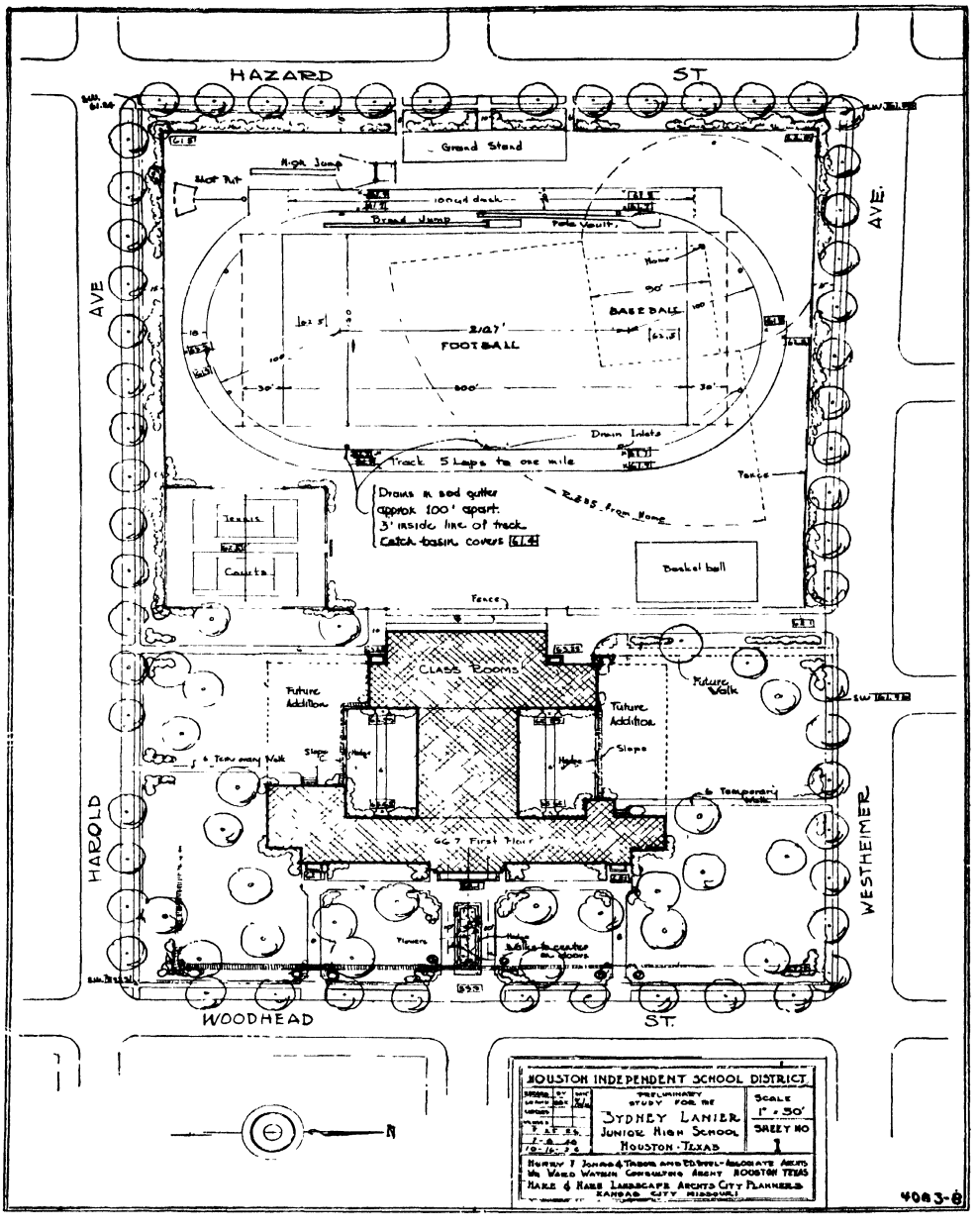


PLATE NO. 92

PLAN FOR DEVELOPMENT OF JUNIOR HIGH SCHOOL, HOUSTON, TEXAS

Five acres of this site of approximately 8.6 acres are given over to the athletic field. All of the essential features with the exception of the parking space are provided. The school building serves the purpose of a field house. The areas for the various games and sports are well arranged, although the limited space does not permit an ideal layout. The baseball diamond especially is crowded, for the catcher is obliged to stand close to the track and two outfielders must play across it. Likewise the broad jump and pole vault pits are too close to the football field and track, respectively. Such conditions are certain to result from the use of a track less than ¼ mile in length. If the diamond were shifted toward the south, bleachers could be erected along the third base line; furthermore the grandstand could be used to better advantage than at present.

lacrosse, field hockey and football. Most of the field games are best played on a turf surface, consequently the only procedure necessary to change over from one sport to another is to mark off the new lines and erect the necessary goals. In preparing the athletic field plan careful thought should be given to the location of the various game fields during the different seasons in order that the space may always be used to the best advantage and the fields arranged and oriented for most satisfactory play. If possible, practise or secondary football fields should be located so they do not overlap areas which have been "skinned" for baseball. The increasing emphasis which the schools are laying upon an "athletics for all" policy and the growing interest in games and sports make it imperative that school and

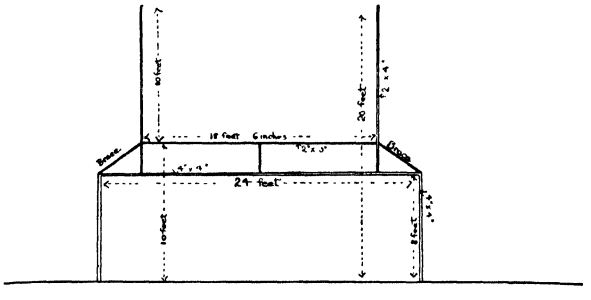


PLATE NO. 93

DIAGRAM OF COMBINATION SOCCER AND FOOTBALL GOAL POST

(Designed by F. S. Mathewson, Director of Recreation, Union County Park Commission, New Jersey).

community athletic fields be developed in such a way as to afford opportunity for many to take part and not merely for a favored few.

On some fields combination goals have been erected which serve for more than one type of game. In Union County, for example, a combination soccer and football goal post is in use. (See Plate 93.) Single goals of different types are sometimes erected in corners of the athletic field for practise periods, for informal play or for use when the main field has been marked off for a game and it is undesirable to have it used for practise.

In addition to the major game areas, courts for tennis, volley ball, hand ball, softball, horseshoes and other minor games are sometimes included in the athletic field layout.

RUNNING TRACKS

The running track is an essential feature of practically every athletic field. Among the most important considerations in track construction are temperature, rainfall and soil bed, and although these vary in different sec-

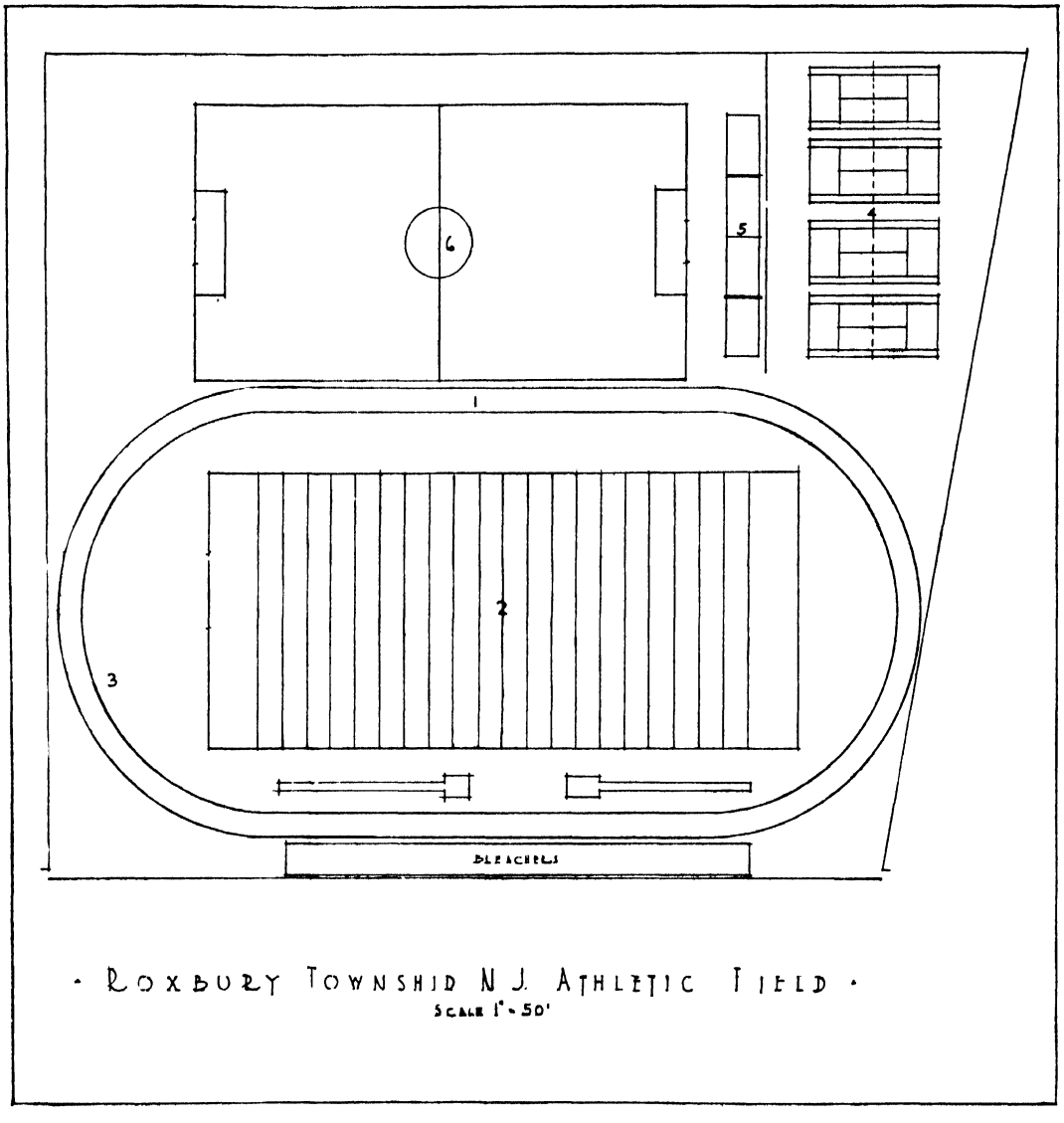


PLATE NO. 94

PLAN OF ROXBURY TOWNSHIP, NEW JERSEY, HIGH SCHOOL ATHLETIC FIELD

The 450 children attending this small township school are fortunate in having the use of this fine 6-acre athletic field which provides the following facilities, as indicated on the plan: (1) One quarter-mile running track, (2) football field with bleachers seating 3,000, (3) baseball backstop, (4) four tennis courts, (5) four handball courts, (6) soccer field. Adjoining the field but not shown in the plan is an additional 2½-acre area developed as a playground for children. The entire field is enclosed by a fence and is used for a variety of intra-mural, inter-school and community athletic activities.

tions, the following suggestions should be helpful. Many of them are taken from the replies to a questionnaire sent to more than fifty university track coaches and compiled by H. F. Schulte of the University of Nebraska.*

"It appears to be generally accepted that a well constructed running track should be put down in three layers or strata: (1) A coarse layer, consisting of coarse rubble, stone or clinkers. This should be leveled and heavily rolled. (2) A middle layer of straight-run cinders of rather coarse grade, but without heavy clinkers. This must be well rolled. (3) The top-dressing, a finely screened cinder mixed with clay, black loam or coal ashes."

For the rough fill crushed stone is generally preferred, although some believe that coarse cinders serve the purpose better. The depth may vary from 3 to 10 inches, depending upon local conditions. The fill should be leveled and well rolled before the middle stratum is laid. This middle layer should be made of medium-sized to relatively fine cinders, the depth varying from 5 to 12 inches. This should be leveled and well rolled before the top-dressing is added.

Each track coach has his own particular depth, screen or proportion for the top-dressing. The depth usually varies from 3 to 4 inches, however, and although the specifications of materials used on different tracks vary widely, front or head-end cinders seem to have the preference. These cinders are run through a screen variously recommended at from ¼ to ½ inch mesh, with the preference nearer ¼ inch. The screened cinders are thoroughly mixed with a binder, clay and black loam seeming to rank about even as the best for this. The selection of a binder should depend upon local conditions of weather, as well as peculiarities of soil. Too much soil robs the surface of resiliency; too little allows it to pack or roll. Experimentation alone can solve the problem for any particular locality. The mixture recommended ranged from three to five parts of cinders to one of clay or loam, with a four-to-one proportion having the preponderance of votes. Diagrams showing the construction details of five tracks are found on pages 169 and 173.

A ¼-mile track is strongly recommended for general use. Sometimes space limitations make it impossible to have a track of this length; seldom is it desirable to build a larger one. The track is measured 12 inches from the inner edge. If it is intended to use the track for official meets, it is suggested that the park or city engineer check the measurements and have his figures certified. This applies not only to the perimeter of the track but

* See Official Track and Field Guide, N.C.A.A., published by the American Sports Publishing Company.

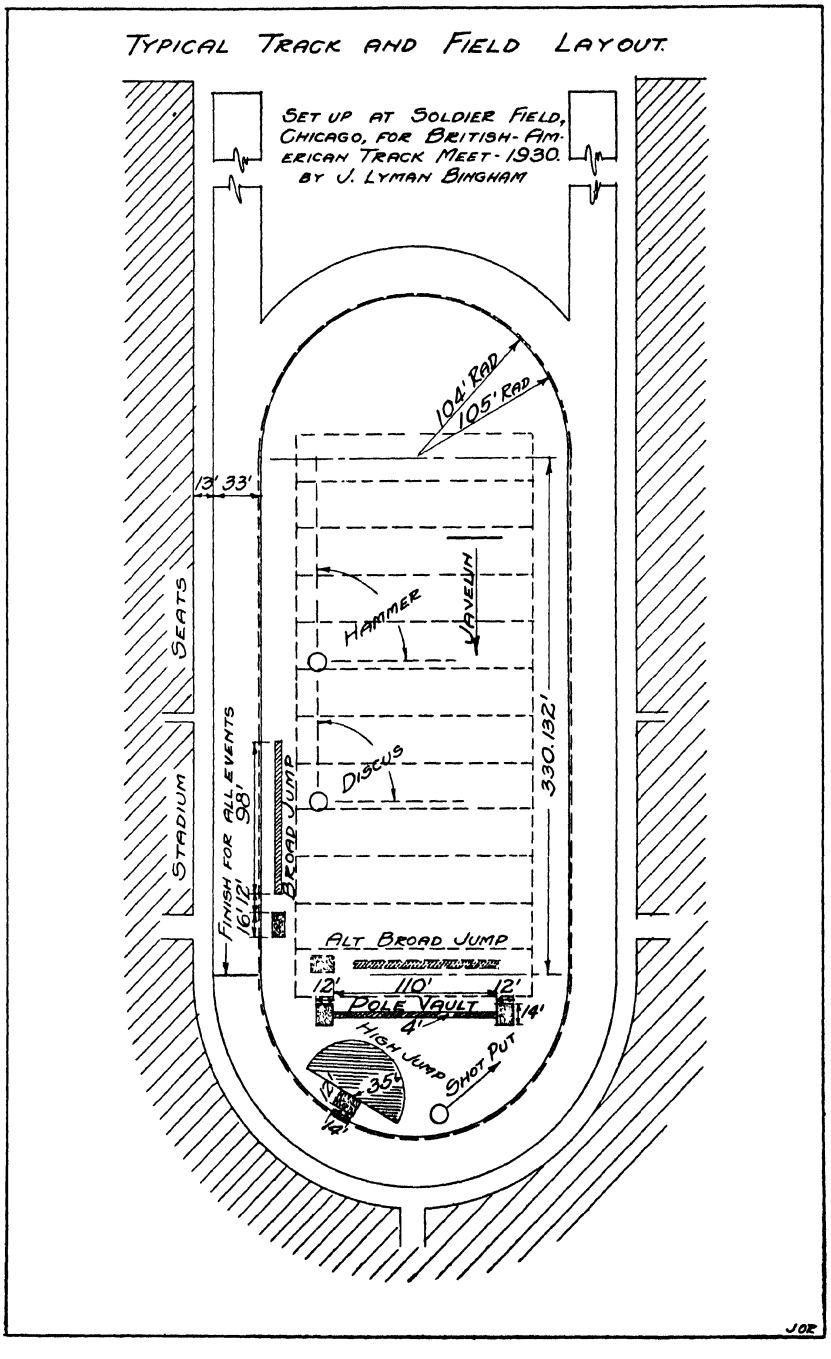


PLATE NO. 95

TRACK AND FIELD LAYOUT, SOLDIER FIELD, CHICAGO

This diagram illustrates the layout of Soldier Field for an international track and field meet. It suggests a suitable arrangement for and gives the dimensions of the facilities required for the various events. Soldier Field is one of the properties of the Chicago Park District.

also the distances between the posts that are erected just off either side of the track for the start and finish of the various running events. If the track is to be used for important meets, a 220-yard straightaway should be at least 20 and preferably more feet in width, and the turns and backstretch at least 15 feet. The track should be level throughout and few consider it necessary or advisable to bank it at the curves.

The radius recommended for the curve of a ¼-mile track is from 95 feet to 125 feet with a true semicircle for the curve. Many of the best tracks have a radius of about 105 feet. A radius of less than 95 feet makes the turns too sharp. If a baseball diamond is to be laid out within the track, an oval with a radius of 125 feet is preferable because it permits a larger unobstructed space for baseball than if the radius is smaller. It also allows more space for field events between the football field and the track curb. On the other hand the longer straightaway on the tracks with a short end radius is advantageous to runners.

The following table gives dimensions for a number of running tracks of different sizes:

Length of Track in Miles	*End Radius (Measurement Line)*	*Length of One Side*	*End Radius (Curb Line)*	*Dimensions of Enclosure Inside Curb*
¼	105.042′	330′	104.042′	208.084′ × 538.084′
¼	107′	323.85′	106′	212′ × 535.85′
¼	125′	267.3′	124′	248′ × 515.3′
⅕	90′	245.25′	89′	178′ × 423.25′
⅙	70.028′	220′	69.028′	138.056′ × 358.056′

A concrete curb is generally recommended, 4 inches wide and set deep enough to be below the frost line. To conform to regulations the height of the curb above the track should be 2 or 3 inches and its edge should be rounded. Another type of curb is a wooden strip creosoted and held in place by 2-inch by 4-inch stakes (also creosoted) 3 feet or 4 feet long and placed at intervals of about 15 feet. If these stakes have cleats across the bottom and are put in when the track is laid, the wooden curb should last for many years. Sometimes a curb of steel is used. If a baseball diamond is to be laid out within the oval, or if an adjoining baseball field overlaps a portion of the track, it is well to reduce the height of the curb to less than 1 inch in order to minimize the possibility of accidents caused by fielders tripping over the curb. If the section in which the track is built is likely to

be used for a variety of special activities such as police field days, military demonstrations or rodeos, it may be inadvisable to have a permanent curb. In Soldier Field, Chicago, for example, a removable curb consisting of interlocking jointed pipes which can be dismounted in sections has proved very satisfactory. Sometimes a section of the curb in back of home plate is removable so the play of the catcher will not be interfered with.

Catch basins to take care of surface drainage from the ground bordering the track should be provided along the inner edge of the oval and the outer edge of the outside curb. Various methods are used in providing sub-

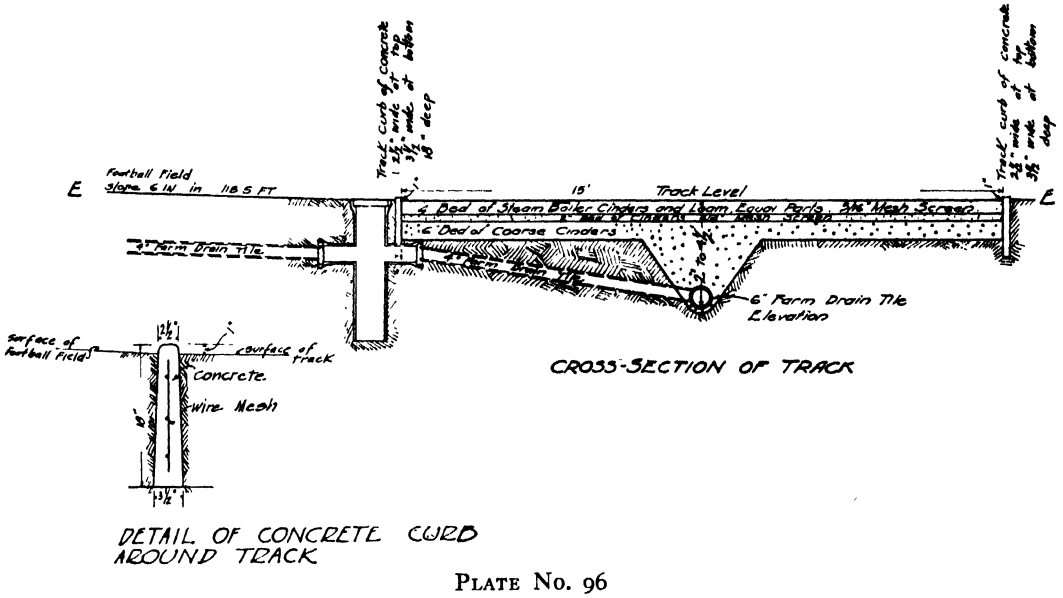


PLATE NO. 96

CROSS SECTION OF RUNNING TRACK, HIGH SCHOOL ATHLETIC FIELD, WAUKEGAN, ILLINOIS

(Design by Jacob L. Crane, Jr.)

For plans of this field see pages 183, 184 and 185.

drainage, depending somewhat upon soil and climatic conditions and the track surface. Plate 96, above, illustrates the use of a longitudinal drain, which should empty every 50 or 100 yards into a storm sewer. Water mains for sprinkling the track should be provided at intervals around the oval, and if a stadium is built water outlets may be installed along the front edge of the stand. If the so-called street washer boxes with lids are used, placed flush with the ground, they can be locked and no one will trip over them.

Facilities are usually provided for seating the people who come to witness games and meets, but if they are not ample it may be advisable to place concrete blocks in the ground at intervals of about 20 feet around the entire track so posts may be erected in them and the track roped off. Wooden posts, creosoted at the bottom, are sometimes used for this purpose. This

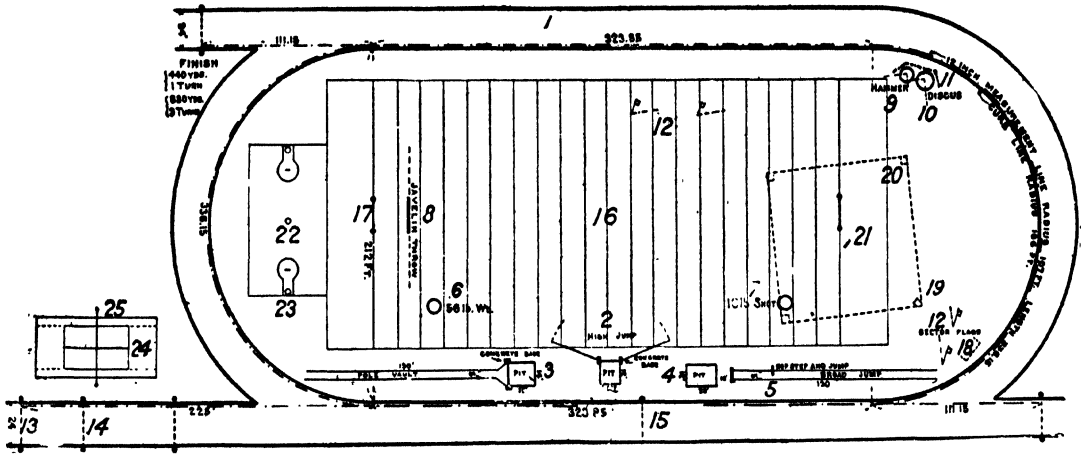


PLATE NO. 97

CONSTRUCTION OF RUNNING TRACK AND LAYOUT OF OVAL

1. Track (¼ mile).
2. Running high jump.
3. Pole vault. Standard vaulting poles, take-off board.
4. Running broad jump. Take-off board.
5. Running hop, step and jump.
6. Fifty-six pound weight throw for distance. Official 56-pound brass shell filled weight, iron circle.
7. Sixteen-pound shot put. Official 16-pound brass shell filled shot, iron circle, stop board.
8. Javelin throw. Official javelins, toe board.
9. Sixteen-pound hammer throw. Official 16-pound brass shell filled hammer, iron circle, sector flags.
10. Discus throw. Official Olympic discus, iron circle, sector flags.
11. Protective cage, hammer and discus throws.
12. Metal sector flags for hammer throw and discus.
13. Start 220, 440, 880 yards run; 220 yards hurdle race. Sets (three or four) of ten combination official hurdles.
14. Start 120 yards hurdle race. Use same sets of hurdles as for 220 yards hurdle race, adjusting to correct height.
15. Finish 100 yards run, 120 yards hurdle race, 880 yards run, 1-mile run, 5-mile run. Finish posts.
16. Football field. Use tennis marker for making whitewash lines.
17. Football goal posts.
18. Movable baseball backstop.
19. Home plate (rubber).
20. First base. Base bags, use tennis marker for making foul lines, etc.
21. Pitcher's plate (rubber).
22. Basketball court.
23. Goal and backstop. Goal nets, use tennis marker for boundary lines.
24. Single and double tennis court. Marker for lines of court.
25. Net and posts. Single and double nets, adjustable posts.

sort of protection for the track is especially needed when the area within the oval is used for football.

A suggested location for the various field events is found in Plate 97, above. This diagram showing the detailed construction of a running track and the layout of the oval was designed by Frederick W. Rubien, who has made the following comments concerning it: *

* Since this plan was prepared, the goal posts for football have been moved from the goal line to the end lines. It is not customary for a basketball court or tennis court to be constructed in the locations suggested in this diagram.

"The infield, from curb to curb, is 212 feet wide, about 30 feet wider than the track in the famous Harvard Stadium. The turns are not as sharp as in the latter and the tangents are about 108 yards long. The entire track, which is spirit level throughout except for the slight banking on the turns, is 24 feet wide, permitting 6 lanes for the sprints and 5 regulation-width hurdles. It has a 220-yard straightaway, the 440 yards is run with one turn and the 880 yards with two turns. The main seating accommodations are along the 220-yard straightaway. The jumping pits are located directly opposite the stand and about 15 feet inside of the curb, affording the greatest number of spectators an excellent view. This arrangement is preferable to having all of these events crowded at one end of the infield. The locations of the weight events are distributed about the infield and do not interfere with each other or place the officials or spectators in jeopardy from miscalculated throws.

"Accessories necessary for running a field meet include: platform (movable) for judges at finish, gong to attach to finish post to announce beginning of last lap, red worsted for finish line, stakes and cord to make lanes for sprints, whistle for officials, pistol for starter, megaphone for announcer, steel tapes for measuring, rake for jumping pits. Timers provide their own stop watches. It is also advisable to have a bench, with smooth board in front securely nailed, to serve as a desk for reporters." A stepladder for measuring height of cross bar in the pole vault, and lond-handled "reachers" for putting up the cross bar are also needed. Sign boards with large numbers and letters to indicate the progress of field events are greatly appreciated by the spectators.

Areas for Field Events

The jumping and vaulting pits and runways should be placed outside the space used for football, if possible. A common location for the pole vault and broad jump is alongside the straightaway, with the runways parallel to the track curb. They should be far enough from the track that the bar cannot be knocked off onto the track. The high jump may be located on the semicircular area at the end of the track—preferably the end near the finishing line for track events. The field events usually take place on the football field or near the ends of the oval.

All runways should be level throughout and the take-off board should be in the same horizontal level as the base of the standards. The runways, which are clay on a cinder base, should be so placed that the contestants will not be required to run into the sun. Loose sand, sawdust on a cinder base or shavings are used for the landing pits. A number of important de-

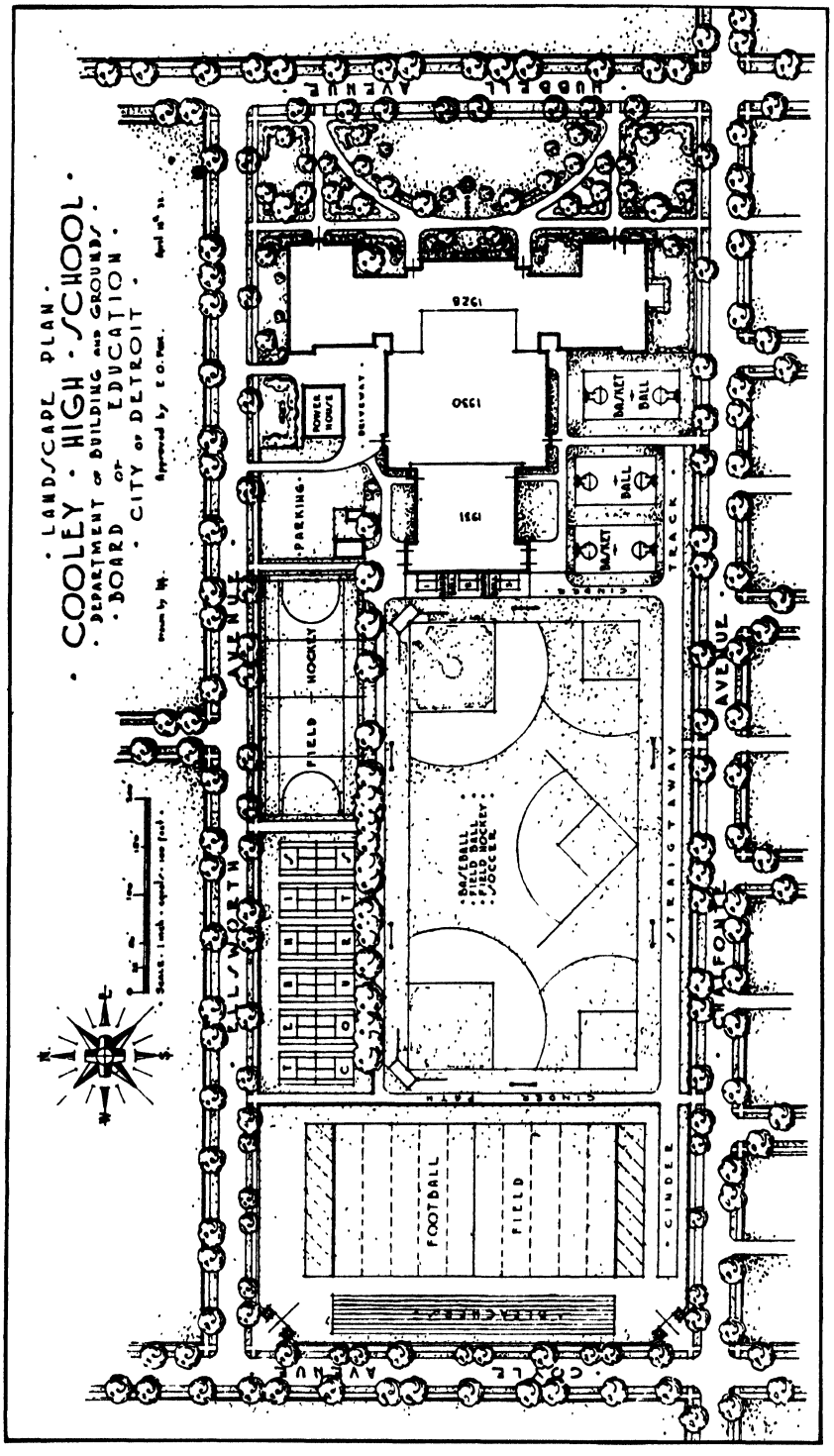


PLATE No. 98

LANDSCAPE PLAN, COOLEY HIGH SCHOOL, DETROIT, MICHIGAN

Two-thirds of this 13½-acre site is used for active recreation. The use of a straightaway rather than an oval track makes possible a much more intensive and varied use of the field. A special section is set aside for the girls and presumably they can also use the football field for soccer, softball, archery and other activities during the spring months. The two additions which have been made to the original school building point to the need for taking into account the possibility of future additions when planning a school play area and also to the danger that increases in school enrollment may result in the reduction of needed play spaces.

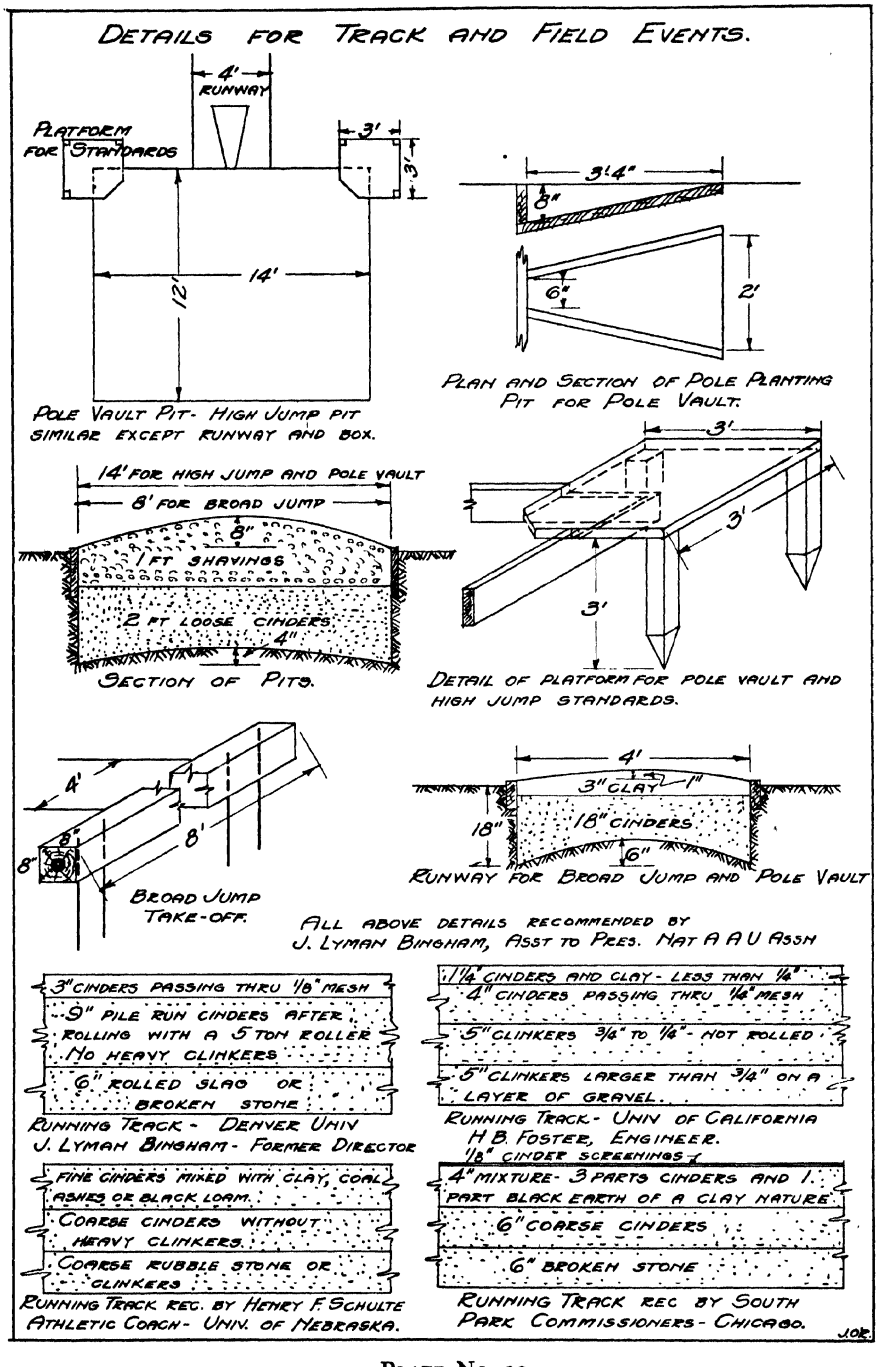
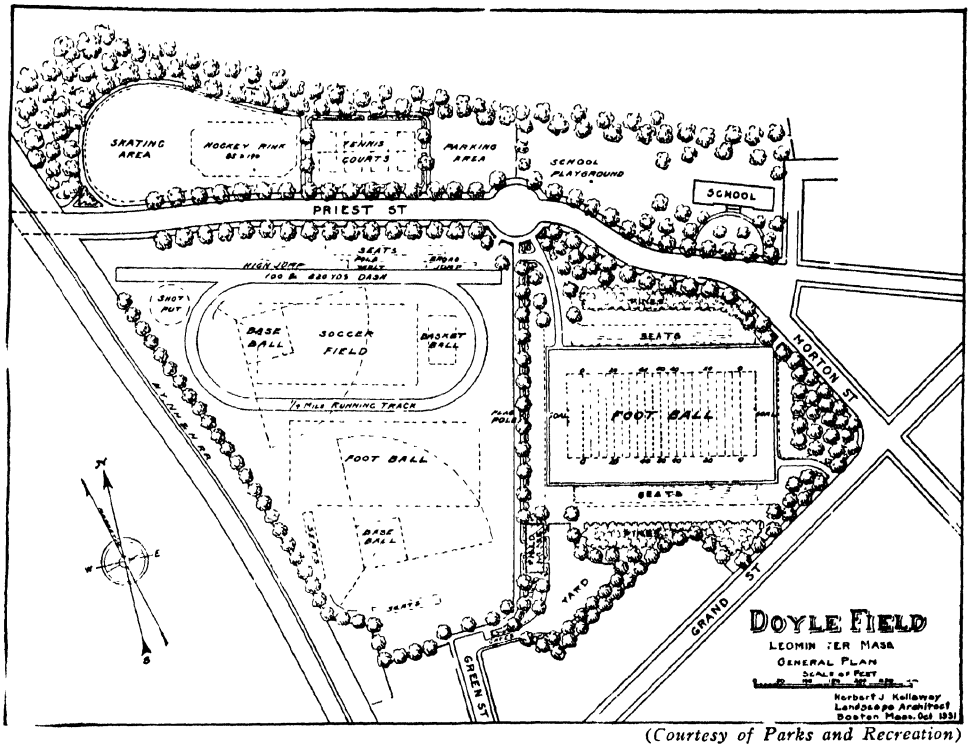


PLATE NO. 99

CONSTRUCTION DETAILS FOR TRACK AND FIELD EVENTS

This diagram, reproduced through the courtesy of the Chicago Park District, gives valuable directions for constructing essential facilities for field events and also the running track specifications recommended by four authorities.

feet wide and it is usually about 15 feet long. It should be at an elevation of not less than the take-off, which is a joist 8 inches wide and at least 4 feet long, set firmly in and on the same level as the ground. (Plate 99 suggests a landing pit 8 feet wide and a take-off board 8 feet in length.) For adult use the take-off board is set at a distance of about 10 or 12 feet from the



(Courtesy of Parks and Recreation)

PLATE NO. 101

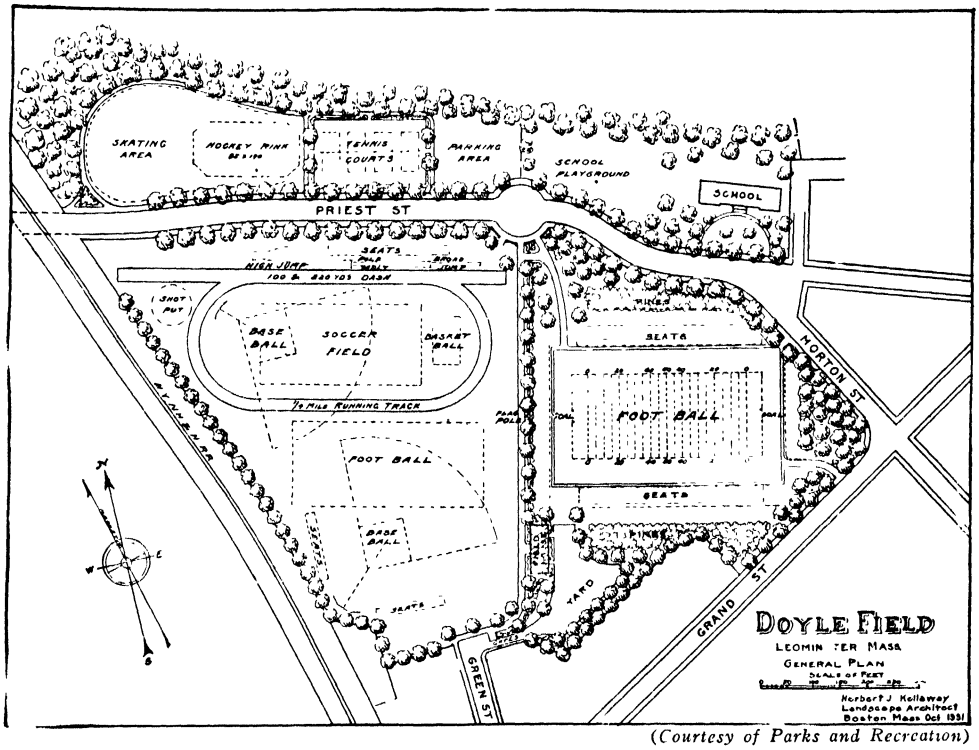
PLAN OF DOYLE FIELD, LEOMINSTER, MASSACHUSETTS

Features of this 20-acre athletic field are the unusual amount of space devoted to plantings and the special football area. The field is developed almost exclusively for highly organized athletic activities for men and boys with no special provision for women and girls. The community use of the field would doubtless be greatly enlarged by the provision for such informal activities as shuffleboard, bowling, horseshoes or badminton. It might be possible to utilize the skating area as a girls' playfield and the football field for field hockey, archery and other girls' and women's activities.

near edge of the landing pit, but if the children are to use it the distance should be reduced by one-half.

In community playgrounds and playfields where participation in field events is not on a highly organized competitive basis, it is not necessary to provide regulation facilities for these events. However, if a field is to be used for meets, it is desirable that they conform in every respect to the

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official regulations and requirements which are to be found in Spalding Library publications.

Seating Facilities

The seating of spectators at the athletic field is an important problem because large numbers of people come to watch events. If conditions and finances permit, it is very desirable that the grandstand be built of reenforced concrete, or, if temporary bleachers are used, sufficient space should be allowed in the plan to build a permanent stand later. If wooden stands are used, supports should rest on concrete or masonry piers; only slow-growing wood should be used, and it should be painted or creosoted. Frequently the section of the grandstand underneath the seats is equipped with

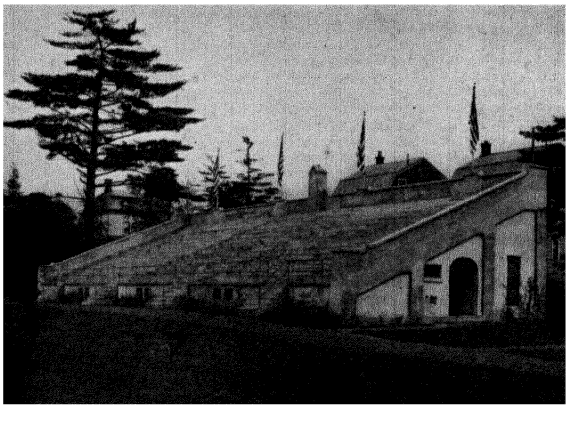


Plate No. 102

GRANDSTAND, SOVEREL FIELD, EAST ORANGE, NEW JERSEY

For a plan of the space under this stand, see page 177.

dressing rooms, showers, lockers, toilets, equipment storage rooms and other facilities (see Plate 103, page 177). Movable or knock-down bleachers, several makes of which are available, are widely used for supplementing the permanent seats at various athletic games and meets. One or more blocks of these bleachers may well be included in the equipment of every athletic field. If seats are to be reserved, the various sections should be clearly marked to facilitate the seating of spectators.

The same grandstand serves admirably for watching football games and track meets if it is placed outside the track and along the straightaway. Sometimes permanent stands are erected on both side of the football field, but ordinarily temporary bleachers only are erected on the side of the field opposite the stand used for watching track and field events. The starts

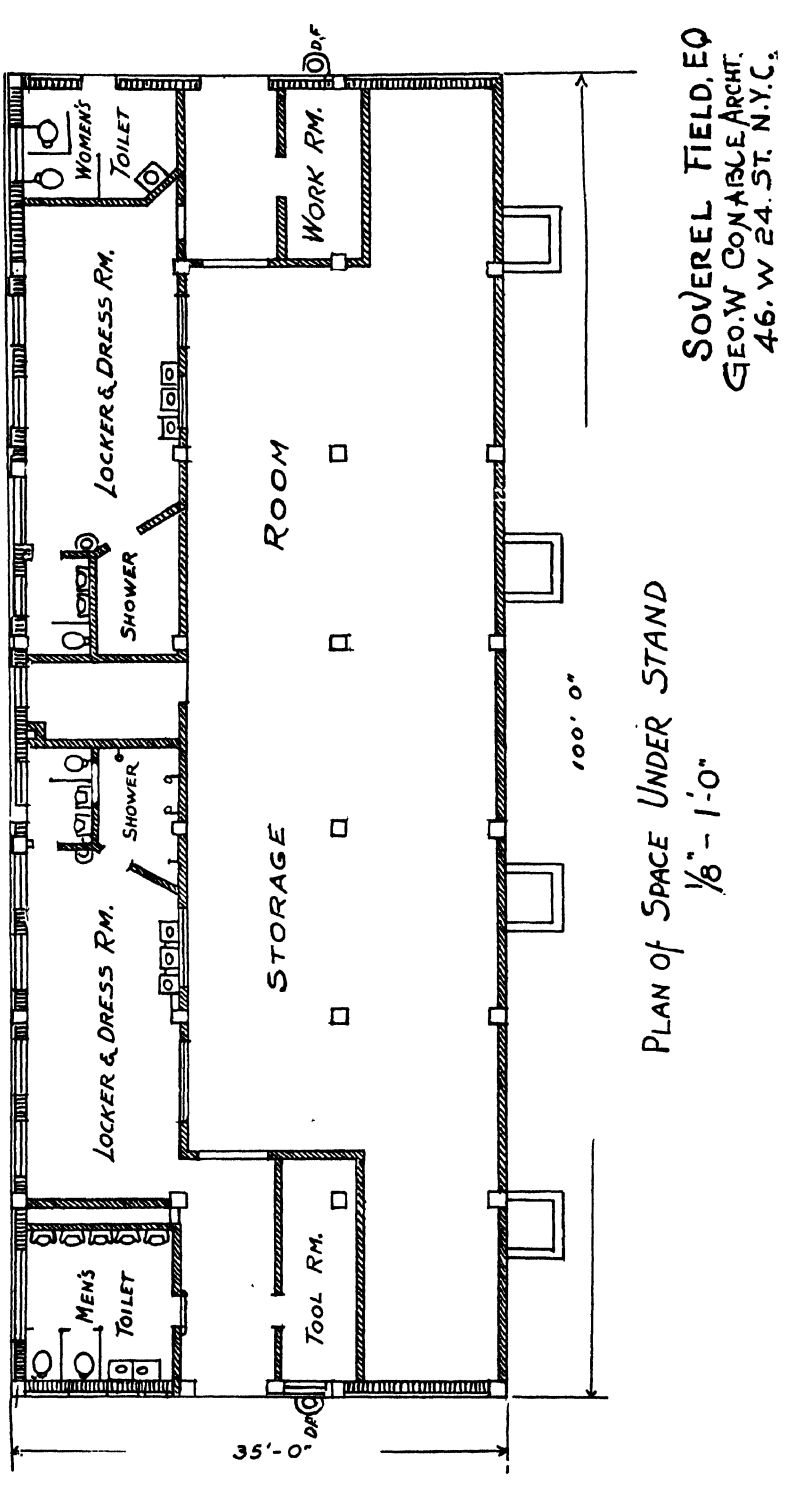


PLATE No. 103

PLAN OF SPACE UNDER STAND, SOVEREL FIELD, EAST ORANGE, NEW JERSEY

This shows how the space under the grandstand may be used for dressing rooms, lockers, toilets and storage. A heater might be installed to advantage in the space between the two shower rooms. For a plan of Soverel Field see page 139. An illustration of this grandstand is shown on page 176.

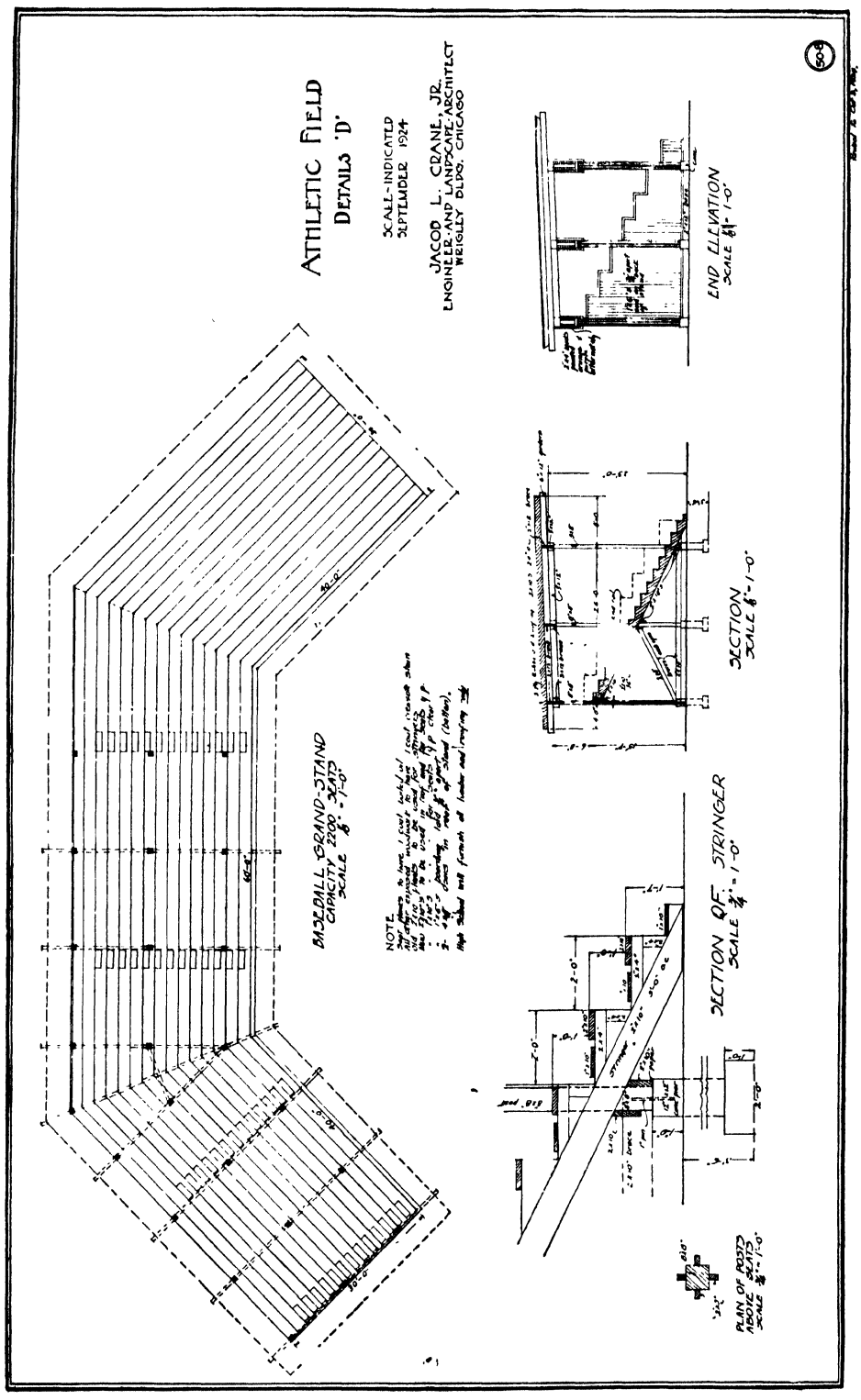


PLATE NO. 104

CONSTRUCTION DETAILS FOR BASEBALL GRANDSTAND, WAUKEGAN ATHLETIC FIELD, WAUKEGAN, ILLINOIS

For a general plan of the field, see page 183.

and finishes of most track events on a ¼-mile track will take place and many of the field events will be carried on in front of the permanent stand. Other things being equal, it should be placed on the west side of the track so that the afternoon sun will not shine in the eyes of the spectators. Since the stand is near the middle of the field, it is well placed to view football as well as track. If movable stands are used, they may be set slightly on the bias during track meets so as to permit all the spectators to see the contestants coming down the home stretch.

When the baseball field is entirely separate from the track area, a grandstand is generally built back of home plate and extending along the two sides of the diamond. The stand should be at least 60 and preferably 90 feet distant from home plate, and the section immediately back of home plate should be protected by a woven wire netting. For a plan of a baseball grandstand, see page 178.

If an area is used for football, baseball and track (as in the plan shown in Plate 92, page 163) a grandstand is usually erected along one side of the field as described in the previous paragraph. This is not well placed for viewing baseball, but movable or knockdown bleachers are generally used to supplement the grandstand. In the case of a stadium or major athletic center, the playing field is sometimes entirely surrounded by spectators' seats.

The Field House

Unless the various locker, shower, toilet and storage facilities needed for athletic teams are provided in the grandstand or in an adjacent school building, a special field house will be needed. If the field is part of a high school plant, ample locker or checking rooms must be provided for the rapid handling of the groups using the field, and gang showers centrally controlled by the director will also be needed. Separate facilities will also be necessary for the girls. It is desirable to set aside locker, shower and toilet rooms for the exclusive use of visiting athletic teams. One or more offices for the director will be needed in the field house, and storage space must be provided not only for the athletic equipment but also for the tools, supplies and equipment used by the maintenance staff. In a large athletic center, separate toilet facilities for spectators must be provided.

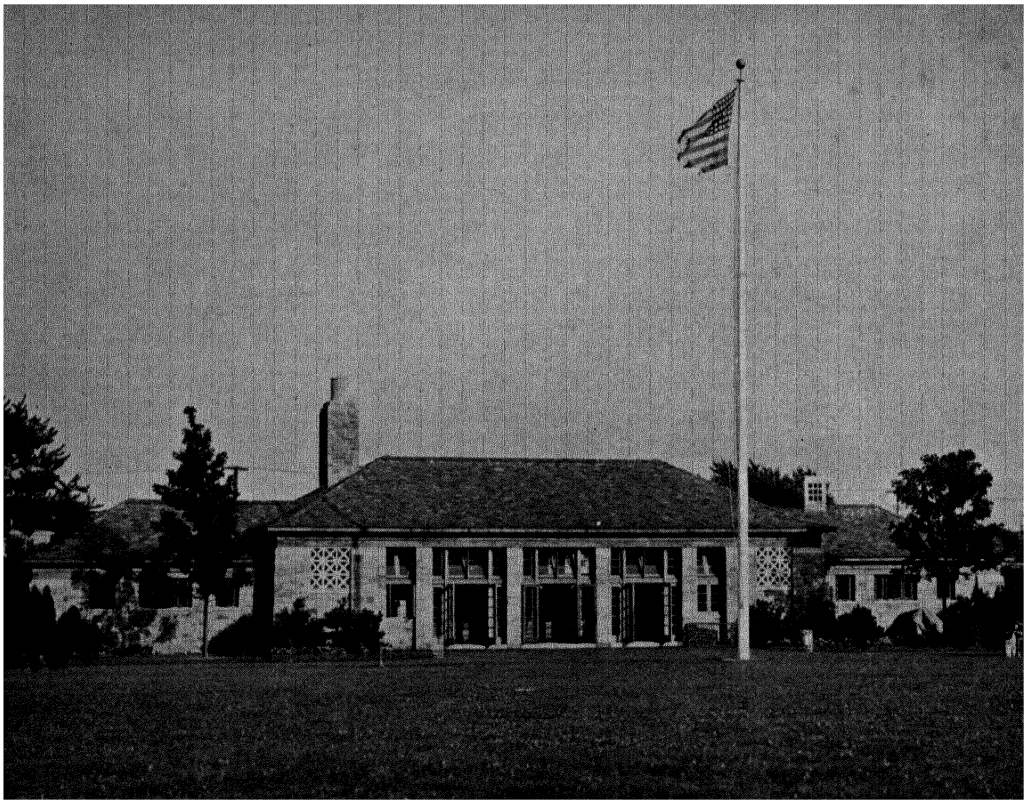


PLATE NO. 105

FIELD HOUSE, ALLEY POND PARK, QUEENS, NEW YORK CITY

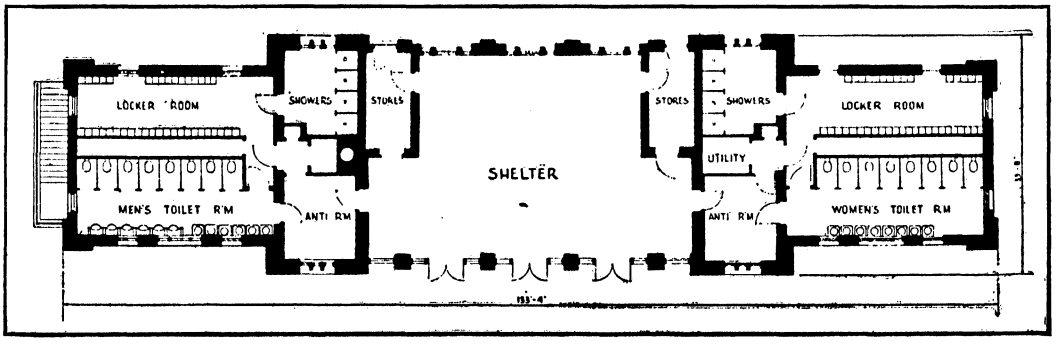


PLATE NO. 106

FLOOR PLAN OF FIELD HOUSE, ALLEY POND PARK

This excellent example of park architecture is apparently intended to serve a double purpose. One is to provide shelter and comfort facilities for park visitors and the other is to afford locker and shower facilities for the people using the baseball diamonds, tennis courts and other active recreation areas. There is a basement under the end of the building containing the men's facilities.

Parking Space

Because athletic events attract large crowds, a considerable proportion of which come to the field by automobile, the parking of cars has become a serious problem, and it is generally necessary to set aside a section of the athletic field site for them. A well drained and graded area with a gravel, macadam or asphalt surface may be used for this purpose. Advantages of an asphalt surface are that it is not dusty, requires no maintenance and lines may be painted on it, thereby facilitating the parking of cars. In some sections it may be possible to use a turf covered field if the area is infrequently used. The parking space should be conveniently near the entrance to the grandstand. In the case of a field with seating accommodations for large numbers of people, several well distributed parking spaces may be required.

The Fence

Since practically every athletic field is used for events at which an admission fee is charged, a high fence is a necessity. If the use of barbed wire at the top is forbidden, a woven wire fence with cut wire at the top may be used. If the field is small, a brick, stone, concrete or wooden wall or fence will possibly be erected. The gates should be so placed that the people will reach the grandstands without crossing the track or play areas. They should also be sufficient in number to prevent excessive crowding and resulting delays and, if necessary, be clearly marked to indicate the sections of the stand to which they afford access.

Lighting

The lighting of athletic fields for evening use greatly extends the period of their usefulness by making it possible to schedule events during the evening when more people can attain them. It permits their use for a variety of events such as festivals, pageants, concerts and civic celebrations. It also affords opportunities for more working boys and men to take part in major games and sports. If lights are installed, the entire area made accessible to players and spectators should be illuminated.

Turf

The discussion of the preparation of turf areas in Chapter IV is applicable to athletic fields. It should be realized that each individual field presents a special problem in drainage and surfacing. Due to widely divergent soil, water and climatic conditions, it is impossible to prescribe a

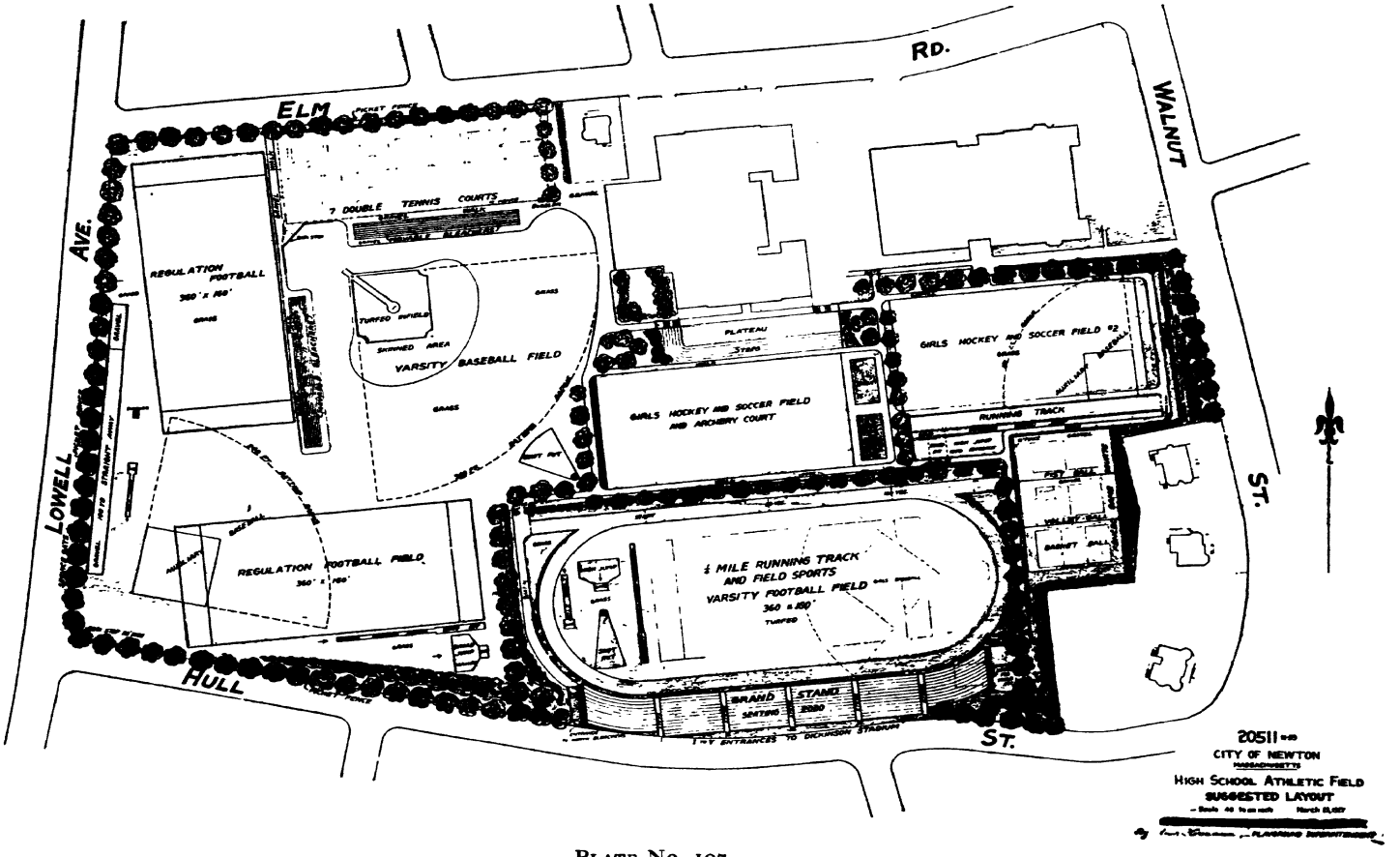


PLATE NO. 107

SUGGESTED LAYOUT FOR A HIGH SCHOOL ATHLETIC FIELD, NEWTON, MASSACHUSETTS

This plan shows how an irregular tract of approximately 22 acres may be effectively developed so as to provide facilities for a large number of players. The track and football field and the girls' section are developed as units surrounded by tree-bordered walks. A separate varsity baseball field is provided. The number and variety of facilities and areas for girls are of special interest. The varsity football field would be more satisfactory if its long axis were northwest and southeast but its location was determined by the desire to use an existing steep slope for the grand stand. Few schools have such a complete and well-arranged athletic field.

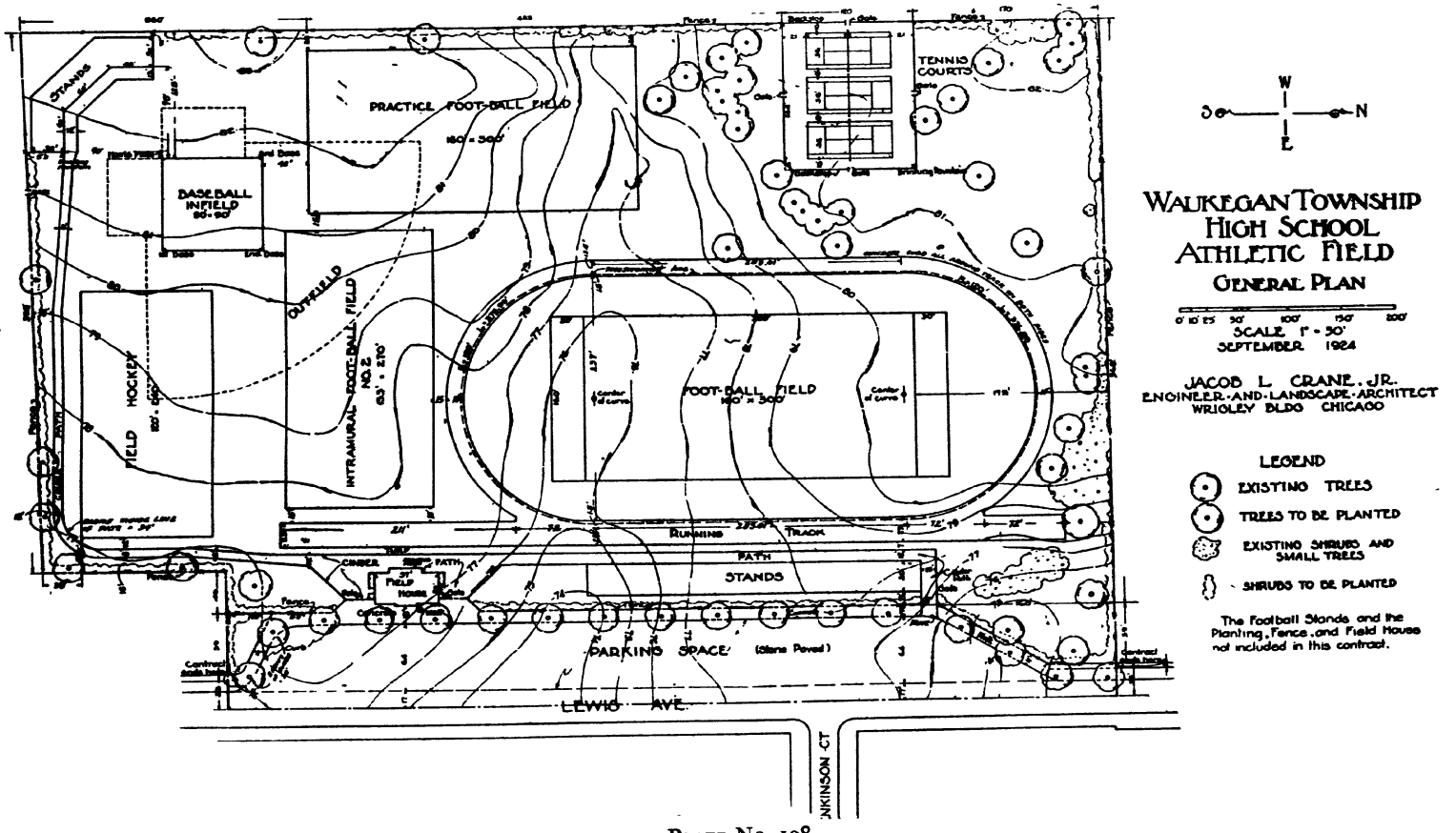


PLATE NO. 108

GENERAL PLAN OF HIGH SCHOOL ATHLETIC FIELD, WAUKEGAN, ILLINOIS

This plan illustrates the effective layout of a tract of approximately 14 acres as a high school athletic field. It is interesting to note that the baseball field is placed in the southwest corner of the area, apart from the football field and track. Where space permits and funds are available for constructing two grandstands this is a desirable arrangement. Note the field house, stone paved parking space and landscaping. Like many other athletic field plans, relatively little space is allotted for girls' use. For details of the construction of the Waukegan track which has an end radius of 120 feet, see page 169. Other plans of this field are shown on pages 178, 184 and 185.

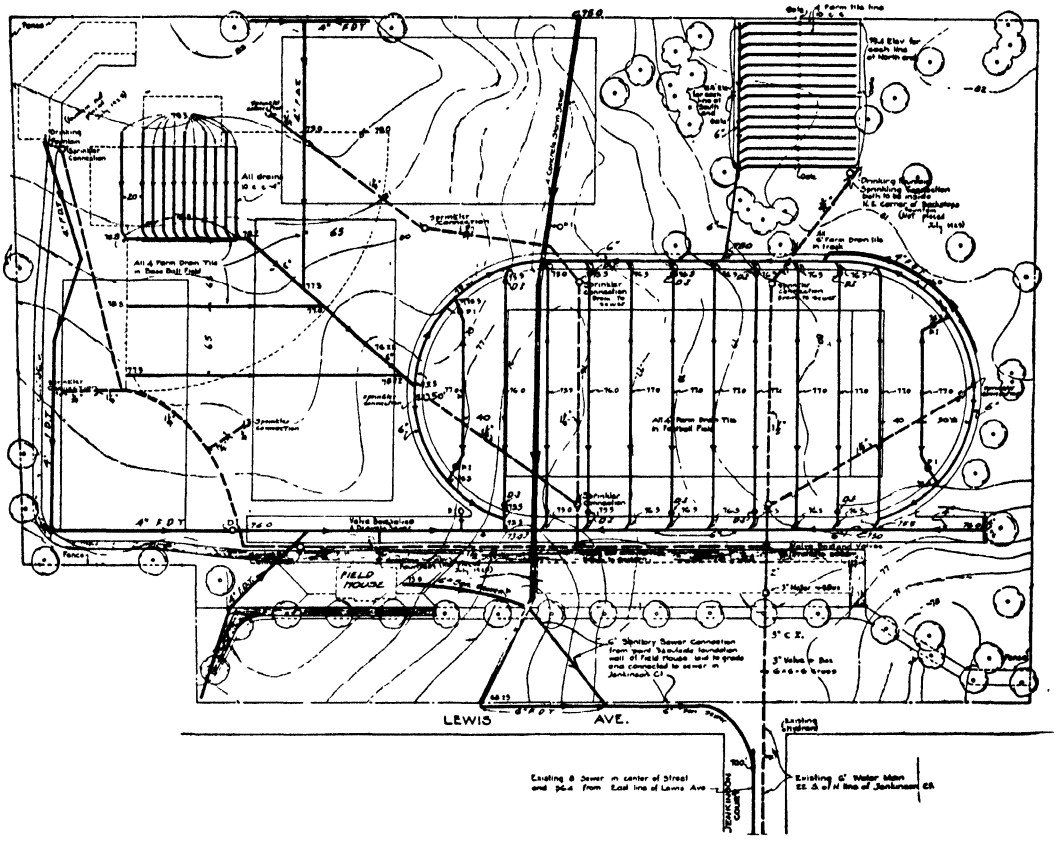


PLATE NO. 109

WATER AND SEWER PLAN, WAUKEGAN ATHLETIC FIELD

This plan illustrates the method used to carry water from and supply water to this athletic field. Because of the natural heavy clay soil, more tile drains were used than would be necessary in a lighter or more easily drained soil. All drain line elevations are given to the flow of the pipes.

Key: — = drain lines; O-DI = drain inlet; —— = water lines; O = sprinkler connection; x = drinking fountain.

specific formula or method which will be applicable to all areas. Knowledge can be obtained by experimentation, personal experience, observation, and by consultation with experienced seed men and landscape architects or gardeners. This applies not only to the development but also to the maintenance of turf areas.

LANDSCAPE TREATMENT

Because of the nature of its use the athletic field requires an open level area, and there is usually little space which may suitably be used for plantings. However, a row of trees may border the field, and trees or shrubs

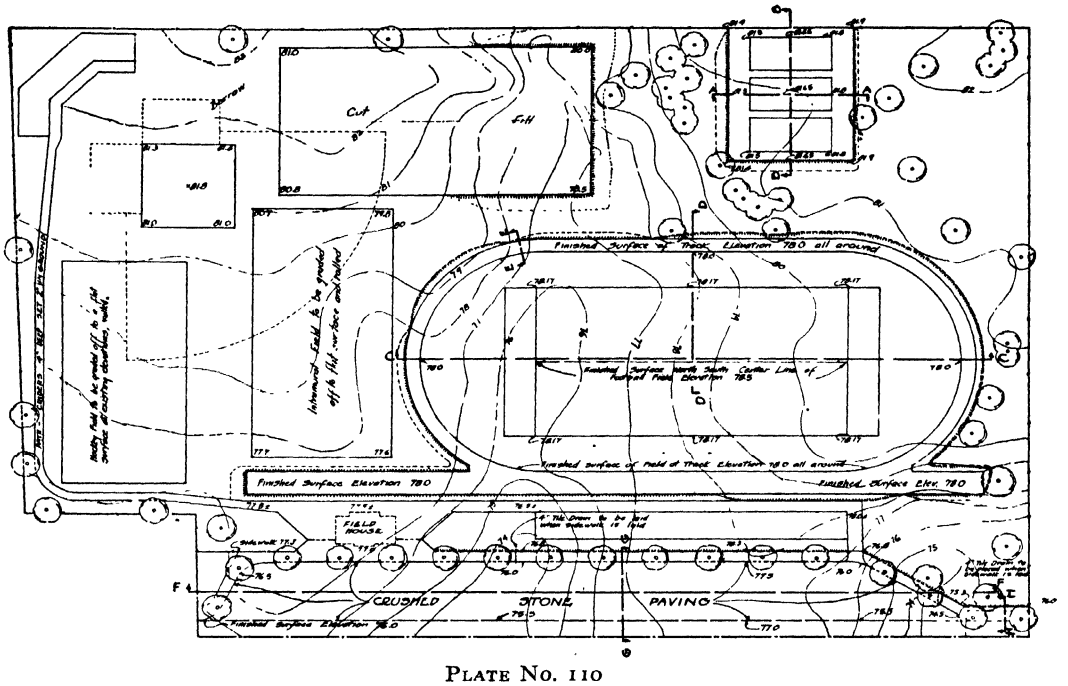


PLATE NO. 110

GRADING PLAN, WAUKEGAN ATHLETIC FIELD

This plan indicates the slope and grades of the various parts of the field. The broken contour lines show the elevations before grading was done and the figures on the various features of the plan show the finished grades. Note, for example, that the running track has the same elevation throughout, the football field has a slope of 4″ from the long center axis to each side line, and that the tennis courts have one plane surface with a slope of 6″ from one back stop to the other.

may be planted along some of the walks, near the entrances and in the corners. If the grandstand is low, it may be well to plant a row of trees behind it, since they will provide shade during the afternoon if the stand is on the west side of the field. The development and maintenance of a good turf upon most of the field do more than anything else to give it a pleasing appearance.

CHAPTER VIII

LANDSCAPE DESIGN AND DEVELOPMENT

Many years ago Charles Mulford Robinson, the distinguished landscape architect, wrote: "The propriety of bringing into the playgrounds that beauty which landscape gardening commands, even in the most restricted area and under the most unfavorable conditions, seems to me overwhelmingly convincing. The very constituents of a gardening composition—tree and grass and bush and flower—are delightful to a child, even apart from the picture they may make. There is the appeal of life to life." *

Every child needs to be exposed to beauty. The difficult art of living is simplified materially when pursued in surroundings that radiate beauty, for beauty is essential to life and happiness. The child who is to find personal satisfaction in play will discover the maximum satisfaction not in the drab and ugly but in an environment where skillful design has been applied in the creation of an aesthetic composition. The play area, designed for growth-giving activities, is no exception to this rule.

The creation of beauty in play areas is one of the functions of landscape architecture which is concerned with the improvement of land for human use and enjoyment. It strives to combine the maximum of beauty with the maximum of utility. It is especially desirable that the beauty introduced into the play area emphasize its primary function. In any discussion of beauty, one should not lose sight of the fact that play in itself is beautiful.

Unfortunately, most cities have not realized the necessity for the landscape development of their play areas. The typical city playground is far from attractive, especially when not in use. Authorities have failed to realize that through proper playground design it is possible to strike a happy medium between over-organization and disorganization in the playtime of children. A business man who was impressed by the lack of attractiveness of the playgrounds in many cities, stated, "I like the children's playground to be almost a place of mystery, where children can play hide and seek, Red Indians and cave-dwellers; the flat ground with only swings, see-saws and slides does not seem sufficient in itself." Lorado Taft made a

* Charles M. Robinson. "Landscape Gardening for Playgrounds." National Recreation Association. 1908.

happy suggestion when he expressed the wish "that every small park and playground might have its fit sculptural adornment—a kindly genius of the spot, as it were." Too many playgrounds have waited long and vainly for their "genius"!

Because of the advantages of the landscape development of play areas, there is no justification for failing to include provision for it. Children



PLATE NO. 111

A CORNER OF STEVENSON PLAYGROUND, OAK PARK, ILLINOIS

Spontaneous, imaginative play is encouraged by this ingenious combination of water, rock, sand and plantings.

naturally love beauty and nature and play has a much greater influence and appeal if it is carried on amid attractive surroundings. Experience has shown that children will often walk farther in order to reach a park playground than other types of playgrounds—in fact they will walk past a small barren area in order to enjoy one where they can play in a more pleasant environment. The relationship between well conceived landscape design

and attendance is illustrated by the experience in a city where the attendance at a large playground doubled in three years time after the playground had been made attractive through plantings, although there was no increase in population in the district. There is no question as to the importance of landscape design in making a play area a community asset rather than an undesirable neighborhood feature. Furthermore the effect of the area upon property values in the vicinity is likely to depend to a considerable extent upon the degree to which beauty has been introduced in the plan and to which it has been maintained effectively.

DESIGN

It is obvious that the question of design can only be touched upon briefly in this volume. Nevertheless it is suggested that persons who are responsible for the development of play areas should become familiar with the best material that has been written on this subject. The discussion in this chapter will concern primarily two types of play areas; the children's playground and the neighborhood playfield. It is apparent that the landscape development of the athletic field is decidedly limited. The problem of the landscape design of play areas is an exacting one. The question of use is the first consideration but the combining of beauty with use is the objective. Too much emphasis cannot be placed upon the importance of good design which involves the fulfilling of the utilitarian objective with esthetic consideration. In the play area, design must be cognizant of the arrangement of spaces as well as objects and these various areas and objects must be interrelated into one harmonious composition. All of the features of the play area—buildings, trees, shrubs, walks, apparatus, courts, etc.—become definite elements of the design. The arrangement of these elements so that their relation one to the other produces the maximum of use and beauty is the function of design.

Technically, design as applied to play areas falls into two distinct styles; formal and informal. A formal design is sometimes referred to as "geometric" because the arrangement defines a geometric pattern balanced about a major axis. The lines separating the various areas are dominating factors in the design, and create the effect of severity and restraint. Informal design is the reverse of the formal and is characterized by greater freedom in arrangement and use of materials. The line, so pronounced in the formal style, is subordinated to the mass. Design, either formal or informal, depends upon certain forms of order in composition such as balance, repetition and rhythm.

Because of the regular shape and compact character of many of the essential units in a playground or playfield, the design usually adheres to the formal style. In some instances it is possible to combine the informal with the formal especially on larger areas where there are existing natural features such as wooded areas, a stream or body of water or an uneven, rolling topography.

The subject of buildings, walks, fences, apparatus, play areas, pools and accessories, and their design and relation to each other, from the standpoint of utility, has been discussed in previous chapters of this book. It is the purpose of this chapter to consider them from an aesthetic angle; their relation to each other in order to create the most pleasing composition without losing any of their utilitarian value.

Applying the Design

The first step in the designing of a play area is to determine the location of the major features; the center of interest, the actual allocation of the building, the playing fields and the pattern of walks. Every successful composition has a center of interest whether it be a painting on canvas, a symphonic poem or a children's playground. In the case of the play area, this center of interest is usually the principal building. In the formal design of the small area this building should be so located as to become a part of the main axis of the design. It need not necessarily terminate the axis but it should be a part of it. In this way it becomes the focal point or center of interest and as it is usually the center of activity, such a location has a decided functional advantage.

The walk approach to the building actually becomes the principal axis of the design. The width, construction and embellishment of the walk further emphasize this function. In the playground, the pattern of walks is determined by the arrangement of the various sections or divisions of the play area. Those walks which are reduced to a minimum in surface area and are therefore subordinate to the principal approach, become the minor axes of the design.

The next step is to superimpose upon this skeleton plan the various elements that transform the playground into a pleasing and harmonious composition. The most valuable contribution will be the introduction of plant materials, and where planting space in the average play area is decidedly limited, this becomes a problem of major significance. Planting helps to emphasize the third dimension, height, through the addition of vertical lines and upright masses. The type of plant material and its arrangement will determine the value of the composition. Plant materials correspond

to the frame about a picture, they serve to divide one area from another, to screen unsightly objects, to act as a transition between sections having intensive and slight use, to tie buildings and structures to the ground, thus creating the effect of growth, and to supply color, form and fragrance. They also may be functional in themselves and where areas are of sufficient size to permit gardens, their functional value is preeminent. The alpine garden,

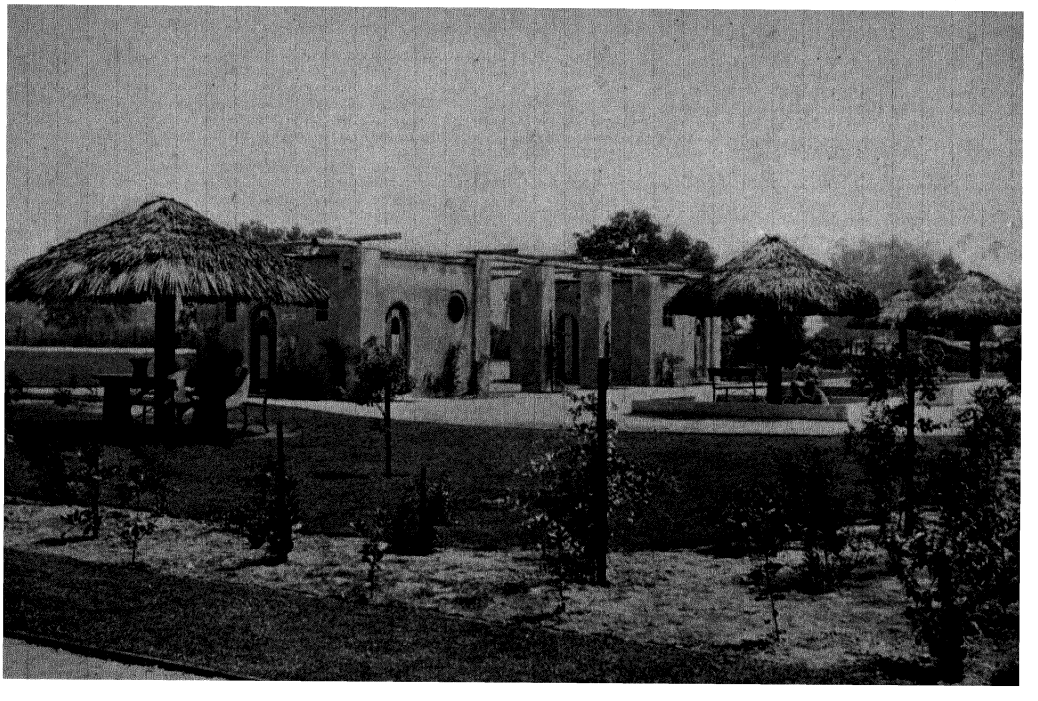


PLATE NO. 112

SHELTER HOUSE AND CORNER OF BESSE PLAYGROUND, PASADENA, CALIFORNIA

This playground is an example of excellent landscape work. Three-quarters of this 3-acre playground is covered with beautiful turf and the borders are attractively planted with shrubs. There are several live oak trees on the ground. The playground building is of interesting and appropriate design. Among the unusual features of this playground are the palm leaf shelters over the benches, tables and sand boxes.

the tiny bird sanctuary, the perennial and shrubbery border and the special garden for the cultivation of herbs, roses or aquatics can be successfully introduced in a carefully prepared plan.

Architectural accessories such as benches, pools, pergolas, statuary, bird baths and sundials not only add interest to the composition but may serve as termini of the various minor axes of the design. A wading pool can be just as utilitarian when it serves the dual purpose of a feature of the design and a place for children to play. When not in use, by proper plant-

ing and arrangement, the wading pool becomes the reflecting pool and can be a thing of real beauty. In areas of one or more levels, steps, walls and balustrades materially add to the charm of the composition. Mr. Robinson suggests: "The well-equipped playground for little children has a wading pool. Why should it not be made the charming adjunct to the playground that it is in almost any other landscape? A pergola at one side or end, making a shady place where mothers can sit and watch their children, incidentally makes a pleasant picture. A jet of water rising in the middle of the basin as a fountain adds much to the fun of the pool, and another element to its aesthetic charm. Or we may forego formalism and thought of Italian gardens and give to the pool, behind its screen of shrubs and bushes, such seclusion as the naiads might have coveted in the fastnesses of enchanted woods."

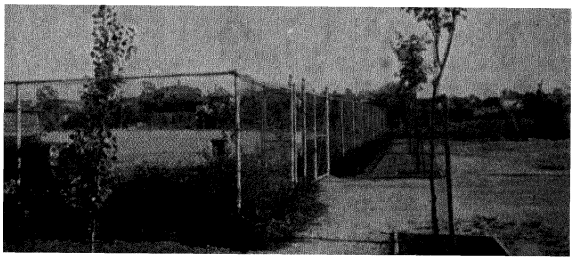


PLATE NO. 113

HAWTHORNE PLAYGROUND, WEST NEWTON, MASSACHUSETTS

The trees and shrubs planted along the division borders of this intensively used playground require very little space, but when fully grown will transform the otherwise barren area.

SUGGESTIONS FOR PLANTING DESIGN

A comprehensive consideration of planting design is not possible in this volume but the following suggestions are presented:

1. Simplicity should be the keynote of the planting design. Reserve and restraint in the type and use of material rarely fail to produce the harmonious atmosphere necessary to a pleasing composition.
2. The time element must be considered. Plants, unlike architectural structures, change year after year. Their growth characteristics should be carefully analyzed before selection.
3. Mass planting is more effective than spotty individual specimens. An occasional specimen can be introduced for accent or to give variety to a skyline.
4. Form and texture are plant characteristics that should be considered. A fine textured shrub should not be planted beside a heavy, coarse textured variety. There should be a transitional planting between.
5. Color in flower, foliage, stem and fruit must be carefully considered. In the case of flowering shrubs, the time of bloom is espe-

cially essential and planting can be arranged to produce a continuous bloom throughout the year. The fall coloration of foliage adds much to the beauty of a planting. Many shrubs such as Evonymus alatus, sumacs, Japanese barberries, dogwoods and viburnums have brilliant fall colors. Highly colored horticultural varieties and variegated foliage should be used judiciously. A variety of green tones and grays such as that of the Russian olive can be grouped effectively. The winter color of twigs and fruit especially when viewed against the snow relieves an otherwise monotonous seasonal landscape. The red and yellow stemmed dogwood, the olive green of the willow, the brilliant orange fruit of the fire-thorne and the crimson berries of the American holly are typical examples.

6. The use of exotic materials should be avoided. Native nursery-grown plants are more easily blended into a composition. Being indigenous, they present less of a cultural problem. Nature and the landscape architect do not compete one with the other; they merely unite in a happy partnership.
7. Turf should be an important part of the planting design and wherever turf is impractical because of shade, a ground cover should be substituted. All areas in which turf can support play without deterioration should be designed as such. A strip of grass along a border or walk or separating one area from another has real esthetic value.
8. A carefully prepared planting plan of the area should be included in the program of development. The plan should indicate the location of all plant material, the distance apart and size of the material at the time of planting. It should also list the material under the scientific as well as the common name.

The Use of Plants on the Play Area

In many communities where the playgrounds are small and receive intensive use, making difficult the maintenance of grass and shrubs, the boundary fences, especially when bordering streets, are set back 6 to 15 feet from the sidewalk line and the area outside the fence is planted with shrubs, grass, trees and vines. The illustration of one of the Newton playgrounds (see Plate 113, page 191) indicates that it is possible to maintain grass and shrubs along the division fences on an intensively used playground. It is not advisable to plant shrubs along the borders of areas used for ball games because they are very likely to be ruined by children while retrieving balls thrown or batted into the shrubbery area.

If the game courts such as volley ball courts are bordered on one or more sides by a strip of turf the effect is pleasing to the eye and the court is also set apart as a distinct unit. Benches may be placed on the grass border. The effectiveness of this sort of planting is apparent from the illustration of the playground in Sarasota, Florida (Plate 3, page 11). A low dense hedge may serve as an effective border for volley ball, horseshoe or other game courts. It should be kept in mind, however, that definite provision must be made in the budget for properly maintaining all such landscape features.

It was pointed out in a previous chapter that trees may well be planted along the borders of the playground and also between the various use divisions. This suggestion, as well as many of the others given in this chapter, applies equally to the neighborhood playfield. Trees are a decided asset in the small children's play area, and the trees may also be planted to advantage in the sections for the older children's apparatus, quiet games and handcraft activities. They are essential in connection with such special features as the outdoor theater and they contribute to the setting of the playground building, council ring and outdoor fireplace. Trees should not be planted too near the fields used for football and baseball, as they are likely to interfere with the play, nor along the western boundary of tennis and other game courts because in the late afternoon they cast shadows which are annoying to the players. Furthermore they are likely to prevent the rapid drying of the courts after a rain.

Because of varying soil, climatic and other conditions and of different sizes and types of areas, it is not possible to suggest specific types of trees for use on public play areas. Sources of advice on selecting them are mentioned elsewhere in this chapter. The relationship of the trees to and their effect upon the play activities are a factor to be considered. For example, in an apparatus area or small children's section, varieties which are large, wide-spreading, not too dense and preferably vase-shaped serve the purpose best. On the other hand, along borders or between divisions of the area, compact, upright varieties are preferable, especially if space is limited and shade is not desired.

It is difficult to secure and maintain turf on slopes, especially where children are likely to run upon them. A solution of the problem of maintaining slopes at a low cost and at the same time of securing an attractive appearance, may be the planting of the slope with some form of ground cover, vines or low shrubs. It is easier to restrain children from running over such plantings than over a turf area. Another possibility which might enlist the children's cooperation is the development of an alpine garden. A small

herb garden for the culture of culinary and medicinal herbs has tremendous educational value.

The planting of flowers on the playground is not always practicable but on some playgrounds, particularly those open the year round and in neighborhoods where there are few home gardens, they may prove of great interest and value. Flower beds should not border or encroach upon areas



PLATE NO. 114

WADING POOL IN HOBOKEN PARK PLAYGROUND, HUDSON COUNTY, NEW JERSEY

The nearby city streets and apartment houses are entirely shut off by the heavy plantations around this wading pool. This illustrates how a small amount of playground space well planted and maintained can create a park-like effect on a heavily attended city playground. The designer of this area was Charles N. Lowrie of New York.

used for active play. Hardy, colorful varieties should preferably be used, planted in beds near or bordering the entrance, in window boxes on the playground shelter or in some other suitable location. Where practicable, beds should be so designed as to produce a continuous bloom throughout the season, starting with the earliest spring flowering bulbs and finishing with the late flowering varieties. It is well to avoid the use of bedding plants.

Care of the flowers may be made an interesting part of the playground nature program. In more than one instance the cooperation of the children has been successfully enlisted in the planting and caring for flowers at intensively used playgrounds in underprivileged neighborhoods.

Planting Trees, Shrubs and Vines

The following are a few suggestions relative to the selection, planting and care of trees, shrubs and vines:

1. Select varieties that are suitable for the given location, climate and soil conditions.
2. Plant at the proper season.
3. Provide sufficient fertile topsoil to ensure satisfactory growth.
4. Protect by proper guards or fencing.
5. Water, prune, cultivate and fertilize properly and adequately.
6. Enlist the children (and adults) to take an interest in and help care for the plantings.

Valuable data may be secured on request from the leading nursery companies in the vicinity or from such sources as the U. S. Department of Agriculture, the Extension Department of State Universities or the American Tree Association, Washington, D. C.

Carrying Out the Planting Plan

If the plan has been accurately prepared to scale, there will be very little difficulty in laying it out on the grounds. Most layout trouble is caused by inaccuracies in the plan or by incorrect measurements in the original survey, either of which can cause no end of trouble and may be serious enough to necessitate revision of the entire plan. Staking out is an important operation in the small playground where every square foot of land is utilized. It is usually necessary to use a transit, especially where the design is along formal lines. The transit can also be used to establish the correct levels for grading. Stakes should be large enough to be easily seen and handled. A board 2 inches wide, 1 inch thick and 12 to 18 inches long cut diagonally will produce two satisfactory stakes. It does not pay to economize in the number of stakes for a well-staked layout saves time and labor in the long run. In working out long flowing curves an ordinary garden hose can be used to advantage. The hose conforms to the curve and it can be used as a guide in edging.

Preparing the Ground for Planting

After the beds are properly staked, the ground should be prepared for planting. Too much emphasis cannot be placed upon this particular operation for thorough preparation of the soil has more to do with successful results than any other factor. The physical condition of the soil is often overlooked. Most plants do not like "wet feet" and perfect drainage becomes a requisite. Hard lumpy soil prevents proper aeration of the roots and is not conducive to plant growth. All the fertilizer in the world cannot correct the retarded growth of a plant trying to grow in a soil of poor physical condition. Large areas should be deeply plowed and harrowed; smaller areas may be spaded by hand. Where well-rotted manure is available this should be spread over the ground and either spaded or plowed under.

All plants require food and it is usually necessary to make up food deficiency in the soil by the addition of fertilizer, especially if the plant has grown a long time in one place. It should be remembered that healthy, vigorous growing plants are less subject to disease and insect attacks and it is therefore advisable to fertilize for active growth. There are no definite rules that can be laid down for fertilization. Conditions of soil, climate, and individual plant requirements vary in different sections of the country. Valuable data as to local conditions and requirements, however, can be obtained from the Agricultural Experiment Stations.

Time of Planting

Planting may take place either in the spring or fall. Most authorities agree that fall planting is by far the more satisfactory. In the spring the season is short while in the fall climatic conditions may extend it even into winter. After the first hard frost, the plant material becomes dormant and is ready for transplanting. The soil is usually in a better physical condition in the fall than in the spring and more easily worked. Fall planting is a good rule but like all rules there are exceptions. Certain shrubs such as azaleas, mountain laurel, rhododendrons, magnolias, flowering dogwoods and a few others should be planted in the spring.

Planting Methods

As soon as the plant materials arrive from the nursery they should be "heeled in." This simply means arranging them close together in a previously prepared trench and covering all of the roots and a portion of the stems with earth so that there will be no danger of drying out. Exposing roots to sun and wind is the principal cause of losses in transplanting and

everything possible should be done to avoid this. "Heeling in" insures protection for the material until the time of actual planting when it can be taken out as needed.

It will be well to observe the following rules in planting:

1. Make the holes large enough to admit the roots without crowding. This sometimes means digging the holes 18 to 24 inches in diameter and fully as deep for the average shrub. A hole 3 to 4 feet in diameter may be required in planting a tree.



PLATE NO. 115

THE FIREPLACE, COLUMBIAN FIELD, EAST ORANGE, NEW JERSEY

A corner of the neighborhood playground affords an attractive setting for this useful facility.

2. Remove all injured roots by a sharp cut for disease is apt to occur to roots that are crushed or torn.
3. Place plenty of good soil in the hole before planting. If well-rotted manure is available, it should be mixed with the soil.
4. In setting the plant, set deeply at first, then as the soil is added pull the plant up to just below the point where it was grown in the nursery. This method sifts the soil between the fibrous roots, giving them a better contact with the soil, and simplifies packing.
5. Pack the soil firmly. This is important. All air pockets should be filled about the roots. In the case of large shrubs or trees, the soil is often "puddled." The hole is filled with water and by tamping

with a stick the soil around the roots, the air is expelled. When the water settles, more soil is added.

6. Plants should be watered thoroughly after planting and never be allowed to dry completely.
7. As a rule, little pruning is necessary in fall planting. The following spring, however, they should be cut back somewhat, depending on the type of plant and the extent of winter killing.
8. Large shrubs and trees should be guyed three ways immediately after planting. Special care should be taken to see that the guy wires do not come in direct contact with the bark. An old piece of rubber hose can be used here to advantage.
9. A depression should be left about the base of each plant in the shape of a shallow saucer to retain the natural rainfall.
10. The placing of a mulch of manure, leaves or straw about the plant prevents drying out and assists in retaining sufficient moisture.

Balled and Burlapped Material. All conifers and many shrubs that transplant with difficulty should be balled and burlapped at the nursery. In planting such material, the burlap may be left around the ball when the plant is placed in the hole, loosened about the top and rolled around the sides, exposing the earth of the ball. If too much burlap is used, a portion should be cut away. If the ball about the plant should by any chance be dry on arrival at the area, thorough soaking before planting is desirable. Great care should be taken in planting balled and burlapped material. The holes should be of sufficient size to give plenty of space for soil about the ball after insertion. Plants should never be lifted by the stock as the weight of the ball often tears the roots. Gentle handling lessens the danger of breaking the ball.

General Suggestions

Although planting is perhaps the most important feature in creating beauty in play areas, it is by no means the only one. Beauty will result from such features as concrete work neatly done, well-planned structures, a good surface and well-planned and maintained paths. Evidence of this may be seen in a number of the illustrations in this volume such as the Minot wading pool, Plate 12, page 41, the East Orange field house, Plate 16, page 50, the concrete work and the play shelter on the Newton playground (see Frontispiece) and the shelter house and other facilities on the Pasadena playground (see Plate 112, page 190). The building of a cobblestone or concrete gutter along the top of a slope which otherwise would be

eroded by rains may not create beauty, but it may make possible the planting of the slope. The contribution which water areas make to the appearance of recreation properties has been mentioned in a preceding chapter. There is a need for more experimentation in the design of structures, equipment, apparatus and other features with a view to avoiding standardization and to making play areas more unique, interesting and attractive. Conspicuous examples of such planning are the Chinese Playground building (Plate 2, page 9) and the rockery illustrated in Plate 111, page 187. The

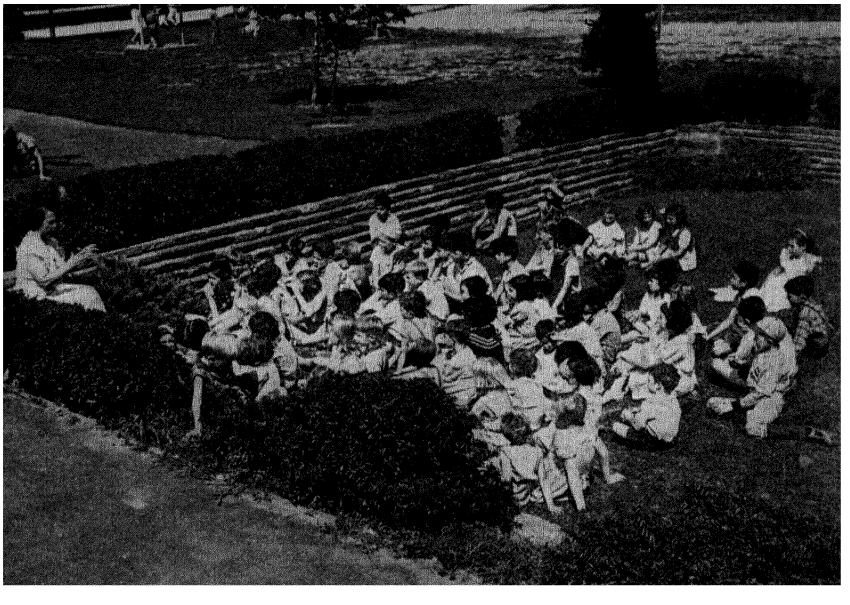


PLATE No. 116

STORYTELLING CORNER

Even the baseball players take time out for the story hour. This picture illustrates the advantage of having a pleasant, quiet corner for this type of activity. A border of fine shade trees would contribute to the comfort of the children and the beauty of the area.

necessity of constant care in maintaining beautiful playgrounds is obvious, and yet this exceedingly important factor is frequently overlooked.

Karl B. Lohmann has pointed out the possibilities which sculpture on the playground affords for bringing joy, instruction and inspiration into the lives of children. "There are many ways in which plastic figures and groups may help to make the playground ever so much more important than it has been. Some figures and groups may be introduced as part of existing features of the play area and some as part of the new untried fea-

tures in the playground. If we but look to the sources of animal, bird and legendary lore, to historical figures and gardens, we shall readily find all sorts of interesting new ideas that present themselves. There may be dogs, bears, fish, rabbits, elephants and cats in molded form. There may be a pond or pool with a central subject of dolphins. There may be bird refuges. There may be storks, cranes or swans of bronze, old black crows, weather vanes and lanterns with some of these ideas interwoven. Eagles worked into the base of a flag staff might serve as an element of interest as well as a symbolic patriotic fantasy. There may be representation from legendary lore, gnomes, fairies, elves, witches and giants. Perhaps characters from Milne's 'Winnie the Pooh' or from Graham's 'Golden Age' or from Lewis Carroll's 'Alice in Wonderland,' or characters from history and romance, such as figures of George Washington, Daniel Boone, Joan of Arc, Paul Revere, Don Quixote and so on." Unfortunately the examples of such use of sculpture on the playgrounds are exceedingly few.

Nature Study on the Playground

The subject of the landscape development of playgrounds should not be dismissed without some consideration of the possibilities for nature study provided by the trees, shrubs and vines and other playground features. By instructing the children as to the names and characteristics of the various specimens, and by conducting games and identification contests concerning them, the interest of the children will be aroused. A sense of responsibility for the protection of the plantings is likely to result. It is suggested that each tree, shrub or vine be identified by means of a marker. Arbor Day ceremonials, the planting of memorial trees and the organization of nature clubs are means of helping in the playground beautification program. Greater values are likely to result if plantings are primarily of native local trees and shrubs than if many foreign or unusual varieties are introduced. On some playgrounds interest in nature study and the care of plants is fostered through children's gardens. It may be very desirable to set aside an area for gardens, if adequate space and leadership are available. A bird bath can be not only a thing of beauty but a means of developing many youthful bird lovers.

Joseph Lee has said that a child of 6 to 11 or 12 years should be in the country, especially in summer, and that if the child cannot be brought to the country, the country should be brought to him. Because there are so many children (and adults, too) who never see the country, an effort should be made to bring something of the country to them through the play areas.

CHAPTER IX

PREPARATION OF PLAY AREAS FOR WINTER USE

Communities in the northern part of the United States have an opportunity to enjoy a variety of snow and ice sports and the following suggestions are offered as to ways in which play areas may be used for such activities. The demand for winter sports facilities is rapidly increasing, and playgrounds and playfields are being used more and more as year-round play centers.

Ice Skating Rinks

If the play area contains a lake, pond, lagoon or sluggish stream, it affords a place for skating, ice hockey and other ice sports. In some cities streams are dammed during the winter months, thereby creating considerable water areas which serve for skating. It is usually possible to have more days of satisfactory skating where natural water areas are used and proper maintenance methods are followed than when artificial rinks must be constructed. It has been suggested that water areas to be used for skating should be at least 3 feet deep, as more shallow water is easily heated by the sun, causing the ice to melt. If there is likelihood that crowds will collect on the ice, skating should not be permitted until it is 4 inches thick.

The chief problem in the case of natural areas is that of maintaining a satisfactory ice surface. Various methods are used for this, but the most common is to scrape the ice each day and if large cracks have formed to fill them either with warm water or with a mixture of snow and water. Horse-drawn or motor equipment is used for cleaning away the snow; a detailed description of the method and equipment used in Newton, Massachusetts, is given later in the chapter. It is desirable that a portion of the shore or bank bordering the area used for skating be only slightly above the water level so the snow can be pushed entirely off the ice. If large quantities of snow are piled along the edges of the ice, its weight is likely to cause the ice to sink and water to come up and lie on the border of the rink. In case of a heavy snowfall, the cost of removal is too great, so it is customary to flood the area with a fire hose and, after the slush has frozen, to plane it with a scraper. In case there is no fire plug nearby, a pump may be used to take water from the lake or stream.

Since comparatively few playgrounds or playfields have water areas which can be used for skating, rinks are usually constructed either by flooding or spraying parts of the area. Most suitable for this purpose are level areas such as batteries of tennis courts, depressed lawn areas or playgrounds with a slope toward the center. Large swimming and wading pools, especially the oval type with shallow water around the edges, are sometimes partially filled with water and used for skating. If there are manholes or other drainage outlets on the area to be used for skating, they should be sealed carefully to prevent the water from seeping away. In Minneapolis, they are covered by several layers of newspapers on top of which is laid about 5 inches of clay. Obviously areas with a comparatively impervious surface, such as concrete, clay or asphalt, can be used more easily for rinks than those with a porous soil. V. K. Brown has reported that in Chicago it has been impossible to build a satisfactory ice surface on some of the land where quantities of cinders have been used in the underground fill. He suggests that in constructing areas which are to be used for skating in the winter, the use of cinders for fill should probably be avoided because they give off a certain amount of heat which melts the ice even in cold weather.

Experience has shown that spraying is the most satisfactory method of building an ice surface, especially where the cold is not extreme and where there are intermittent periods of thawing. Where the temperature is consistently 10 degrees above or colder, flooding may prove satisfactory. However, the application of a large amount of water heats the ground and the water tends to run off rather than freeze. Furthermore, the gradual seeping away of the water under the ice, when formed, causes it to sag and crack. Consequently spraying has replaced flooding as the common method of building and maintaining ice surfaces.

The Bank. If the area on which the rink is to be constructed is a battery of tennis courts with a surrounding curb, is depressed or has a concave surface, no special bank is required. Otherwise a bank at least 1 foot high must be built around the rink. This may be of earth or clay, formed by plowing a deep furrow with the earth banked on the inside, tamped and packed firmly. Outside the furrow is a shallow ditch which serves to catch the water which may seep through the bank. A bank is sometimes constructed of 2 by 12-inch planks laid on edge and set slightly into the ground. They are laid end to end around the rink and are held firmly in place by stakes which are driven into the ground at each intersection. Dirt should be tamped thoroughly around the bottom of the planks. If no previous preparation has been made snow banks may be used, but they are not very

satisfactory as they must be entirely frozen through before any attempt can be made to build the surface of the rink.

The Sprinkling and Freezing Process. After the bank has been made, the rink is ready for sprinkling and freezing. This process requires a great deal of time and must not be hurried. People often forget that water put on a bank or a rink is much warmer than the ground or the ice formed by a previous sprinkling. Satisfactory results cannot be secured unless the temperature is several degrees below freezing; many authorities believe that when it is 10 to 15 degrees above zero, conditions are most favorable. It is necessary to freeze the bank thoroughly, especially at the base, before starting work on the rink proper.



PLATE NO. 117

BUILDING AN ICE SKATING RINK

This photograph shows a power sprayer in use in Glencoe, Illinois. A description of this sprayer is given below.

In order to build up a solid surface, the water must be applied in thin film-like layers. Opinions differ as to the best equipment for sprinkling. Some recommend the use of a 2-inch mill hose, rubber inside and out, with regular hose couplings. Others use hose as small as ¾-inch. Various special attachments have been devised to facilitate spraying or to assure a fine spray. For example, a hose coupling is flattened to provide a nozzle, or a special wrought iron nozzle with an opening 1/16 inch wide and 8 inches long is attached to the hose connection. A sprinkling device consisting of three hose outlets fastened to two boards 10 feet long is dragged over the ice in one city. Highly successful results at temperatures as high as 28 degrees have been reported with a power tree sprayer using an 8 nozzle fog gun

with ½-inch hose. (See Plate 117.) This equipment has also proved useful in top dressing a rink during ice carnivals or skating races.

In any case, water should first be applied at the end of the rink farthest from the base of water supply. A successful method is for one man to hold the nozzle and apply the water, moving back and forth across the rink as quickly as possible in order to prevent water from freezing solid before the adjoining area is sprinkled, while another man keeps the hose in a suitable position behind the man doing the sprinkling and prevents it from freezing on the ice. This process should be repeated until the ice is at least 3 inches in thickness, when the rink may be put in use. Better results are secured by using warm water, but this is often impracticable. It is important that there be a fire near or within reach of the spraying equipment in extremely cold weather, especially if a nozzle with a small or narrow opening is used, because the opening is likely to freeze shut and the hose to be damaged. It is well to have the hose connection through a building with a valve on the inside. If the rink is too large to flood in this way, a special line of pipe may be laid along the edge of the rink below freezing line, with two or three flooding valves coming to the surface in boxes about 4 feet square, the shut-off cock being in the ground. This should be well protected by manure to prevent freezing.

In instances where no running water is available, as is true in some rural districts, a system of sprinkling has been devised which consists of mounting on a sled a barrel to which a perforated pipe is attached. One community uses a 1-inch pipe about 3 feet long in which have been drilled ¼-inch holes approximately 4 inches apart. The barrel is filled with water and the sled is drawn back and forth over the rink.

The Shelter House. A shelter building where skaters can change and check their shoes and warm themselves is essential to their comfort and convenience. The playground or playfield building, if convenient to the rink and if its facilities are suitable, can be used as a skating shelter. Many buildings are definitely designed to serve this purpose. Otherwise a temporary or knockdown type of building may be erected of sufficient size to accommodate the number of skaters to be served by the rink, but not so large as to serve as a loafing center. Desirable features of the building are toilets, washbowl, drinking fountain, checking facilities, benches and some type of heater. A stove burning either hard or soft coal is commonly used in temporary shelters. The water connections and equipment for flooding or spraying the rink and the switch for controlling the lights for the rink should be housed in the shelter building. A refreshment counter affords service to many skaters and may prove a source of revenue. If a temporary

shelter is constructed, it should be close to the rink. If the playground or playfield building is used, it may be necessary to lay a special flooring either to protect the floors or, in case they are of concrete, to prevent dulling of skates. Likewise it is often desirable or necessary to provide wooden runways from the shelter to the rink so skaters will not have to walk across gravel, concrete or even grass areas.

Care of the Rink. Intensive use wears down the ice, which, consequently, must be scraped before the rink is again sprinkled and a new surface built up. The rink is usually scraped and sprinkled at night after it is closed. Thus the water has an opportunity to freeze solid during the



PLATE NO. 118

TENNIS COURTS USED FOR SKATING, ORANGE, NEW JERSEY

coldest hours before it is again subjected to use. Sometimes the scraping and sprinkling is done in the early morning, especially if the temperature is lower than 10 degrees above zero.

Snow should be removed as soon as possible after a snowfall. If the fall is light the snow can be shoveled back to the sides. If there is as much as 8 inches or more, and shoveling is too much of a job, the area can be flooded and allowed to freeze again. When frozen solid the surface should be scraped or planed.

A type of scraper frequently used consists of sheet iron about 4 feet long and 3 feet wide made like a dustpan on runners, the edge being about 18 inches high at the back. A very simple plane, home-made and hand-op-

erated, is very successfully used in one city on a small skating area. It consists of a discarded blade from a local printer's paper cutting machine mounted on the back of a sled so that the blade strikes the ice sloping as in the case of a hand plane, the blade being set slightly lower than the runners of the sled.

Lighting the Rink. Because skating is possible during the season when the days are shortest, it is more important that lighting equipment be installed at ice skating rinks than at almost any other type of outdoor facility. A large percentage of the attendance is likely to be recorded during periods when the rink is lighted. Lights also make it possible to clean and sprinkle the rink at night when conditions for doing so are often most satisfactory. Flood lights with projectors mounted on high poles erected outside the rink are widely used. A much lower intensity of light is required for ice skating than for most other types of recreation activities.

Music adds greatly to the enjoyment of skating and in some cities bands are provided on certain evenings at the large skating areas. If there is a bandstand near the area it can, of course, be used by the musicians. Sometimes the porch of the field house serves this purpose. In one city where winter sports are very popular, a movable bandstand large enough to hold 8 musicians was built on skids so it could be moved from one skating center to another. Where the use of musicians is not possible, a radio or phonograph with outside loud speaker attachment may prove satisfactory.

Preparation and Care of Skating Ice

Some valuable suggestions for preparing and maintaining ice skating places have been prepared by Ernst Hermann, Superintendent of Playgrounds, Newton, Massachusetts:

"In almost every climate where the weather gets cold enough to freeze the surface of ponds, lakes or rivers, the ice surface is soon spoiled by a cycle of snowfalls, rains or thaws. This is particularly true in New England. Nature, therefore, gives us normally only from 10 to 15 days of skating during the winter. This is too short a time to pay for the money expended in setting up hockey rinks and other devices for various kinds of skating. If it is possible by economical methods to quadruple the normal number of days of skating or even do better than that, the money spent will bring tremendous returns in health, skill, judgment and social welfare.

"The laying down of a thin ice sheet on playgrounds, meadows or other surfaces is always the most expensive and most unsatisfactory method of furnishing skating. A natural pond, not too far away from the center of

population or within an easy riding distance, would be very much more effective than any artificial layout. If no natural ponds are available it is better to plan artificial ponds in parks and on the larger playgrounds. This not only enhances the landscape design but materially increases the year-round effectiveness for outdoor recreation.

"There are a number of methods for providing good skating surfaces. The best methods in our experience are those by which we can retain the natural 'blue' or 'black' ice. If snow or slush can be prevented from forming on top of the 'blue' ice, harder ice and consequently more days of skating and safer skating result. The method of spraying over an old surface simply adds a layer of snow ice. This easily gets soft during the warm part of the day, and even when the temperature rises to 35 or 40 degrees.

"The City of Newton, Massachusetts, has developed over a period of years a set of tools to make the care and maintenance of ice reasonable in cost and effective in providing skating as many days as possible. We have had an average of 55 days a season for several years. If the spraying method is used, the surface of the ice should be scraped or brushed as soon as skating ceases in the evening and spraying done during the night. This means night work and at least time and a half wages for each man. It is also annoying to the neighborhood if the pond is surrounded by houses. Even though there may be a good lighting system for ordinary outdoor skating, it cannot show up the poor spots which need particular care. In Newton we cease skating at 10 o'clock sharp and all the lights are turned off. Within a few minutes after the pond is cleared of skaters no automobile parking is allowed on the streets surrounding the pond. The neighbors look upon skating as a very interesting neighborhood affair and everybody is satisfied that it is a splendid form of recreation for the city, which is liberal in providing, increasingly, funds to light skating ponds and hockey rinks intensively.

"We do not believe in spraying but in planing the ice. For some years we did all our planing with horse power, but this was a slow method and unsatisfactory. We have gradually done away with horse power except in banking the snow on the shore of the ponds. The accompanying picture (Plate 119) shows the tools which the City of Newton is now using. With this outfit we plane and brush and clean thoroughly about 20 acres of ice every day.

"Number 1 is a Worthington Tractor with ordinary cushioned wheels drawing a steel planer with a knife 5 inches wide and 30 inches long, ground to a razor edge. This knife is adjustable and can plane off 1/32 of an inch to ¼ of an inch or more as desired, in one planing. The knife is

held slightly lower on one side so that each planing cut overlaps the preceding cut. This planer leaves a 30-inch strip of fine chips. After an area of 2 acres has been planed, either the hand scrapers shown in No. 5 or the brush in front of a Fordson tractor shown in No. 3 piles the chips into rows or brings it against the shore, or another Worthington tractor, shown in No. 2, with a scraper in front pushes it to the shore. When close to the



PLATE NO. 119

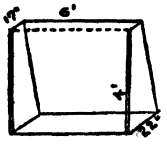
ICE CLEANING EQUIPMENT USED IN NEWTON, MASSACHUSETTS

shore the horse with a scoop or the snow-leveler moves it high up on the shore.

"These methods are used, of course, only with a fairly hard surface. The scrapers and pushers and levelers are used with snowfalls up to 5 or 6 inches. If there is a heavy snowfall the Fordson tractor with the V-shaped plow lays the snow into rows and then the rows are gradually removed to the shore. If a snowfall is as much as 8 inches or more, the expense involved in removing it does not warrant its removal. In this case if nature does not provide a thorough soaking of the snow field over the ice, the street hydrants and fire hose are used to soak the whole snow field. As soon as this is frozen the planers are set to work, usually cutting at least ¼ inch at each planing. This heavy planing is continued daily until we are back to the 'blue' ice."

Ice Hockey

The most popular of all ice games is hockey, and a section of many municipal skating areas is set aside for it. Sometimes the ice hockey rink is at one side of the area but it is often set up in the center and the surrounding ice area is used for general skating. The following dimensions for an ice hockey rink and the diagram used in Plate 120 are taken from the Ice Hockey Rules of the National Collegiate Athletic Association, which govern most of the amateur play in this country:



The rink or playing surface is a clear field of ice at least 160 feet by 60 feet and not greater than 250 by 110 feet. A rink 190 by 85 feet with rounded corners is recommended. The side and end boards enclosing the rink should be 3 feet or more in height. The goal cage should be placed at each end of the rink at least 12 feet from the end boards and equidistant from the side boards. The cage uprights, preferably of metal, should be 4 feet high and 6 feet apart, as shown in Plate 120, the top connected by a taut rope. The other dimensions given for the cage are approximate. The two zone lines, which should be marked in or on the ice and extended on the side boards, are respectively one-third the distance between the goal lines, or in case one-third the distance between the goal lines is more than 60 feet, each zone line should be 60 feet from the nearest goal line. A rink 75 by 150 feet in size is recommended for children of grammar school age.

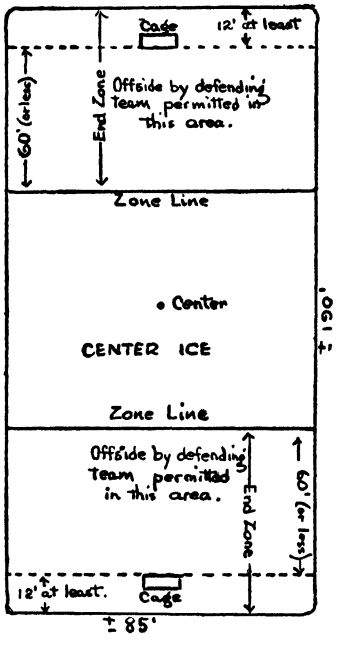


PLATE NO. 120

DIAGRAM OF ICE HOCKEY RINK

Although not essential for informal play, it is advisable to surround the rink by a wooden barrier or wall which defines the boundaries, speeds up the game and also protects other skaters in the vicinity. Sometimes a frozen snow bank or some other type of boundary is used. An inexpensive, practical and easily moved rink can be made in sections, each consisting of two boards fastened together at right angles, one of them lying flat on the ice and the other set on edge, serving as the wall. One-inch by 6-inch planks may be used. If the long axis of the rink is northwest and southeast the sun is kept out of the players' eyes as much as possible. Frequently the end

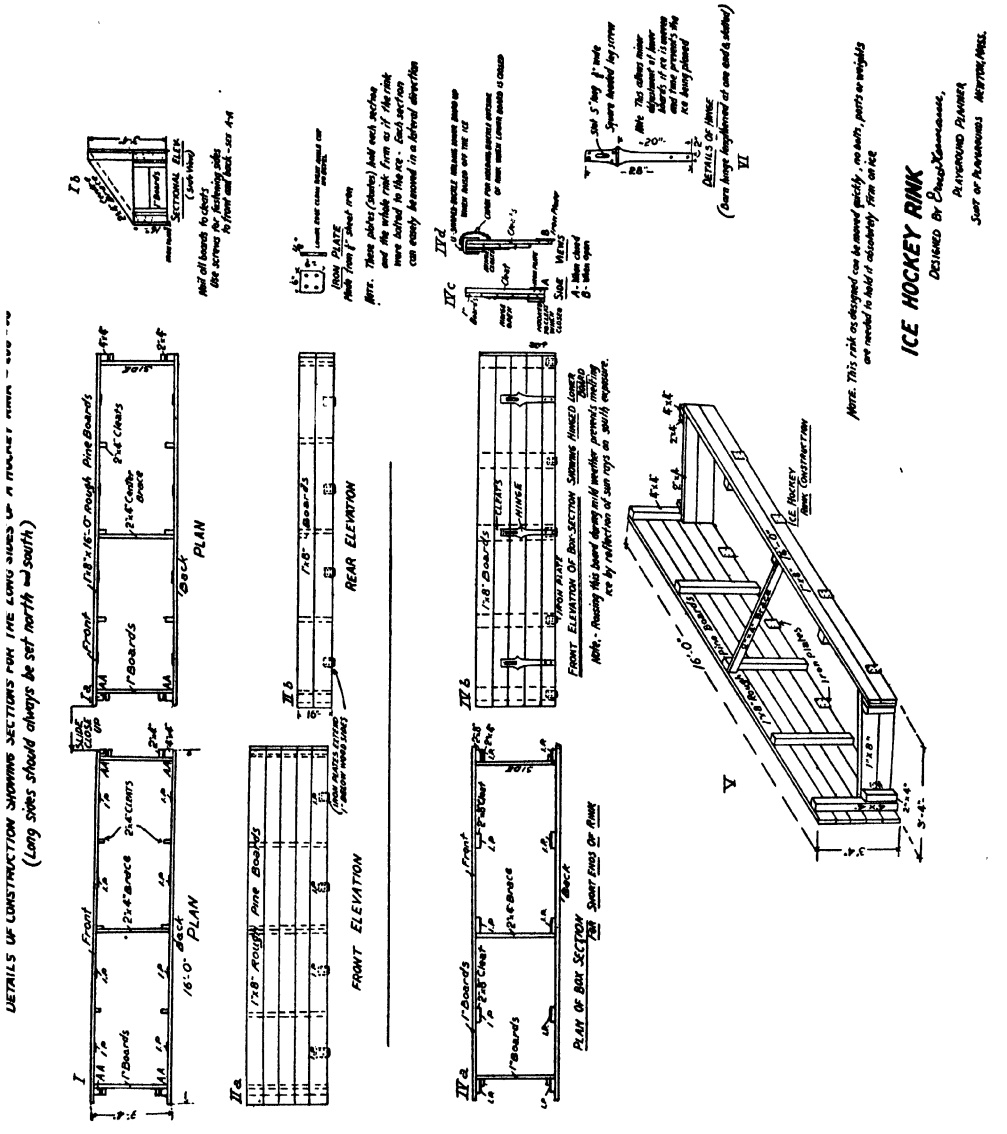


PLATE No. 121

HOCKEY RINK—DETAILS OF CONSTRUCTION

sections of the rink are arranged so the bottom can be lifted up when the rink is not in use, thus preventing somewhat the melting of the ice and also making it possible to scrape it. Hockey rink enclosures are built in sections which are bolted together and braced. Sometimes bolts are driven into the ice to keep the wall in place. Consequently it is difficult to move the rink, although this must be done from time to time if the condition of the ice requires it.

After a great deal of experimentation Mr. Hermann of Newton, Massachusetts, has designed a hockey rink which has several outstanding features. Not a bolt either perpendicular into the ice or laterally in forming the wall is used in setting up the rink; the sections are interlocking and have 8 plates underneath which hold the sections and the wall firmly. This construction permits the moving of the hockey rink, 208 feet by 100 feet, within an hour to a new location. The ends are easily removed for planing and this allows planing close to the edges of the rinks. The bottom board on the end section is hinged so it can be raised during mild weather. A plan of this rink is shown on page 210 and a corner of the rink may be seen in the photograph on page 208.

Speed Skating Tracks

Most ice skating rinks are not used for competitive skating events, but in cities having a highly organized winter sports program one or more skating tracks are generally laid out on the ice. Flags are set in the ice at intervals to serve as a curb or to mark the lanes and the distance is measured on a line 24 inches outside the curb. For start and finish lines for skating meets in Chicago, two heavy parallel saw cuts are made in the ice an inch apart and an inch or more deep. They are filled with red lead, thinned with water to a liquid consistency.

The Amateur Skating Union has standardized for competition in speed skating the eight lap track with a fifty-eight foot radius at either end and a straightaway of one hundred and forty-one feet, six inches, and the six lap track with a straightaway of two hundred and four feet, four and a half inches, and turns of seventy-three feet radius.

In Newburgh, New York, competitive skating has been encouraged by the construction of a track one-sixth of a mile in length, 40 feet wide and with a curb 14 inches in height and extending 16 to 22 inches below the ground. The track is lighted by porcelain enamel angle reflectors each with a 300 watt inside frosted bulb. The reflectors are mounted on 18 standards set inside the curb at 50 foot intervals and 24 feet high.

The ice is maintained on the track by the use of 110 feet of 1 inch hose, with four connections from each of which about 200 feet of track can be covered. Each night ice chippings are scraped from the rink with a Myers



PLATE NO. 122
LIGHTED ICE SKATING TRACK, NEWBURGH, NEW YORK

snow shovel attached to a truck, which also makes quick work of snow. Rain and water caused by thawing of the ice are easily drained from the surface of the track by side outlets. The accompanying illustration shows the track lighted for night use.

OTHER ICE ACTIVITIES

Among the many other games and sports which require comparatively small ice areas and which are popular on many municipal rinks are curling, ice shinny, broomball and ice shuffleboard. For a diagram of a curling rink, see Plate 123. A smooth tough surface for curling, shuffleboard and fancy or figure skating is obtained by planing and sweeping the ice to be used as a court and then applying warmed water in a fine spray. If the pond or rink is bordered by a slope suitable for coasting, skiing or

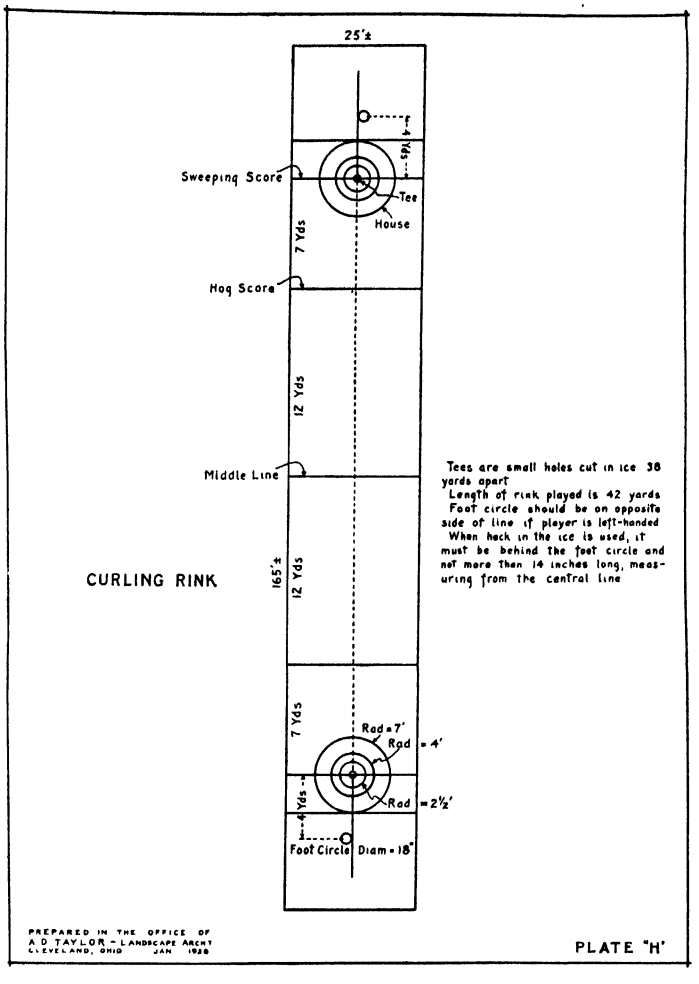


PLATE NO. 123

DIAGRAM OF CURLING RINK

tobogganing, a section of the ice may be roped off to serve as an outrun from the slope.

COASTING

Most playgrounds and many playfields are so nearly level that they do not have slopes suitable for coasting, although many parks have hills which are used for this activity. Where there are no other facilities for coasting in the neighborhood, inexpensive sled slides may be erected in the playground for use during the winter months. Few expenditures are more easily justified by the returns in healthful exercise and fun. Slides should be set up facing north or northeast in a location where the maximum safe



PLATE NO. 124

KNOCKDOWN SLED SLIDE, MILWAUKEE, WISCONSIN

This type of slide is used for winter play on the public playgrounds conducted by the Recreation and Adult Education Department of the Milwaukee Public Schools.

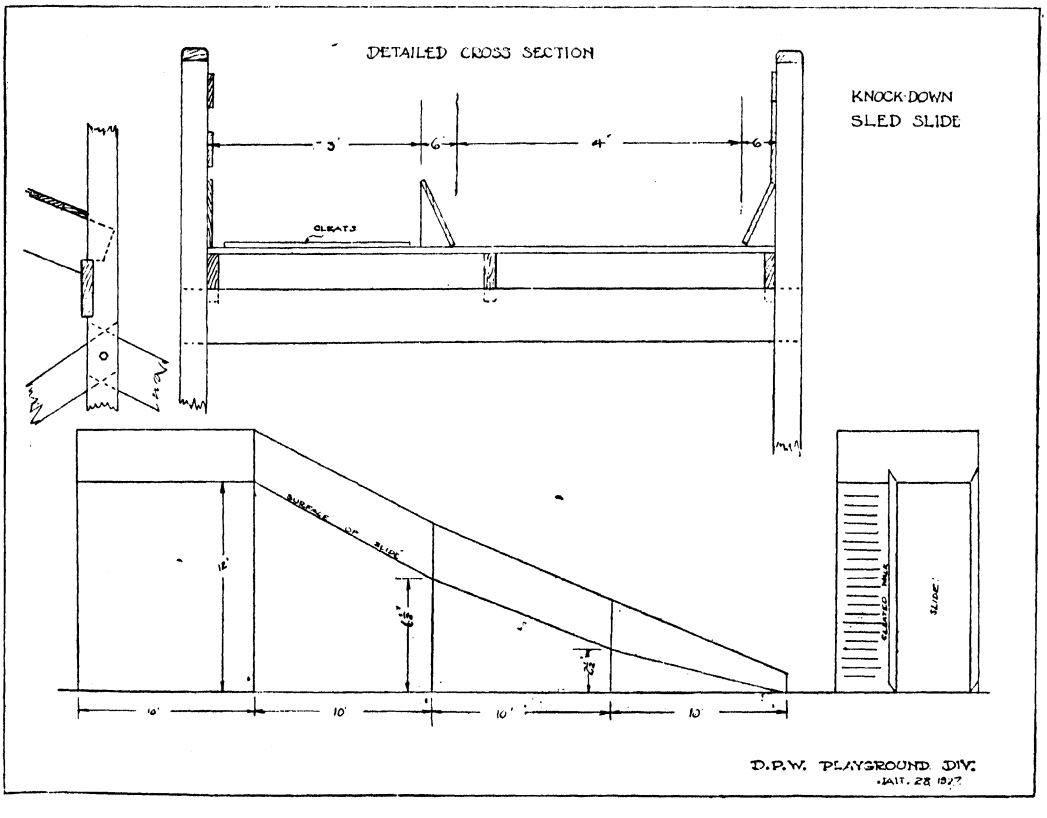


PLATE NO. 125

DESIGN OF KNOCKDOWN SLED SLIDE

This plan gives construction details for the slide illustrated in Plate 124.

outrun will be secured. Plate 124, page 214, shows a sled slide of this type used on the playgrounds of Milwaukeee and construction details for the slide are shown in Plate 125.

On more than one playground the roof of the shelter house is used as the platform or starting place for a slide used only in winter or throughout the entire year. For example, the playground building in Newport (see Plate 7, page 23) can be used in this way. Frequently chutes are constructed using a grandstand or bleachers as a foundation, in which case the sides of the trough are usually not more than 1 foot high. In Oak Park, Illinois, a double slide has been constructed, with one trough for toboggans and the other for sleds. The top of the bleachers, 28 feet high, is used as the starting point of the slide and the bottom rests on the ground at a point 150 feet away, although the chute extends along the ground for an additional 100 feet. The uprights used in the construction were 4 inches by 4 inches and the total cost was $750. The slide is stored during the summer. Plate 126 illustrates a similar adaptation of a grandstand in Milwaukee, Wisconsin.

The Toboggan Slide

Tobogganing is one of the most thrilling of winter sports. Because it requires considerable space and a fairly steep slope, it is a more suitable activity for the playfield than the playground, although low slides are sometimes constructed for children. In a number of cities where the temperature remains freezing for long periods, toboggan slides are constructed



Plate No. 126

SLED AND TOBOGGAN SLIDES, WASHINGTON PARK, MILWAUKEE, WISCONSIN

This shows how a grandstand may be used to provide winter sport at small expense.

on natural slopes by building troughs with sides of snow which has been sprinkled and frozen. The snow is packed firmly against the sides of a wooden form after a foundation has been built either of a heavy slush or by tamping snow on the slope. Where climatic conditions permit, a safe, satisfactory slide can be constructed in this way at little expense. Where winter temperatures vary, however, it is customary to construct a wooden trough extending the entire length of the slide and a considerable distance along the outrun. This type of slide is more expensive to construct and is built in sections so it can be removed and stored at the end of the season.



PLATE No. 127

TOBOGGAN SLIDE, PORTLAND, MAINE

A natural slope utilized for tobogganing. Children and adults should not be permitted to walk as close to the slide as some were when this photograph was taken.

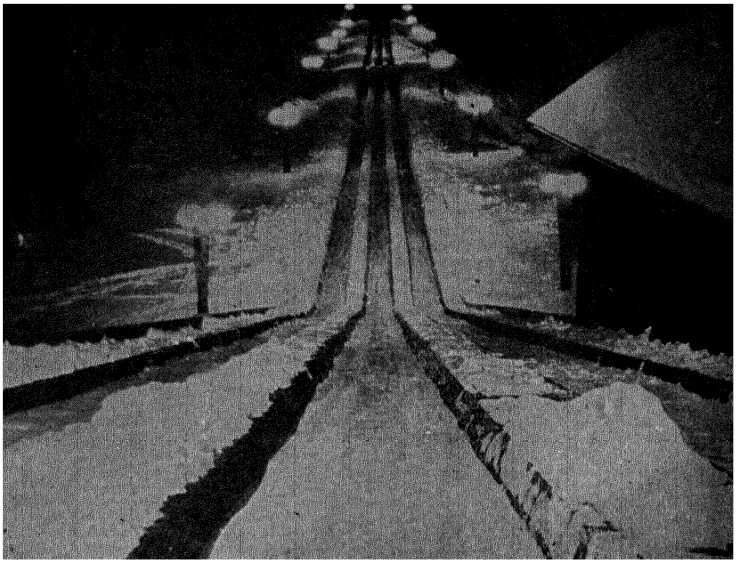
A new type of slide which has recently been developed in this country is the earthen slide. In constructing such a slide a trough about a foot below the ground level and some thirty inches wide is excavated down a natural slope. The dirt removed from the trough is mounded on either side throughout its length and both trough and mounds are then sodded. Among the advantages of this type of slide are that its construction is simple, involving primarily labor costs, maintenance is a minor problem, and it does not disfigure the natural appearance of the slope. Wooden slides, on the other hand, are fairly expensive to build, are usually set up and taken down each season and they detract from the appearance of the play area. It will not be surprising, therefore, if the earthen slide gains wide popularity among park and recreation authorities in America.

In any case there are a few primary considerations in selecting a site for a toboggan slide. A natural hillside is essential which should have a reasonably steep grade and a fairly even slope in order to avoid the necessity of building trestles. Orientation is also important because the sun's ray's affect the ice in the slide. A hill facing north or northeast is most satisfactory. If the slope is wooded, the slide is protected from the sun and the direction is of less importance. Trees also add to the interest of

the slide and give a sense of greater speed. It is advisable that a view along the entire length of the slide be obtainable from the starting platform.

A number of important factors in constructing a wooden toboggan slide are:

(1) Make the trough of proper width; if too wide the toboggan may lurch from side to side and possibly jump the track. Twenty inches at the



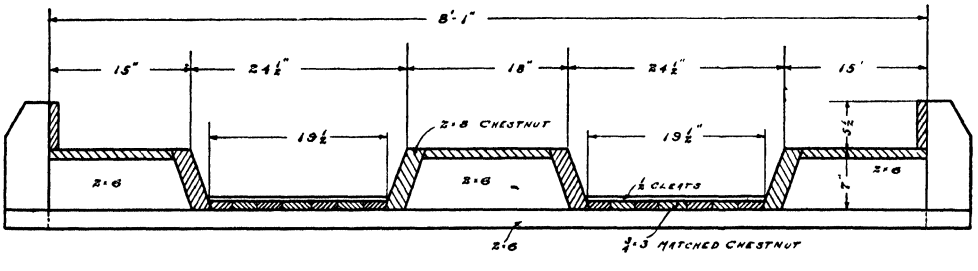
TOBOGGAN SLIDE AT NIGHT, CITY FARM, MANCHESTER, NEW HAMPSHIRE

This photograph of a steep, fast slide illustrates the lighting of winter sports facilities for night use. Ordinarily it is recommended that not more than two chutes be provided. People are forbidden to walk inside the line of posts supporting the lights. The cost of erecting this slide was $1,540.

bottom of trough is ample. (2) Make the outrun level, thereby preventing the toboggan from upsetting. It is a good plan to build banks of snow the same width as the trough or, preferably, to continue the trough on the outrun where the sides may be lower. (3) Use good wood in the construction of the toboggan slide and have the grain running down the slope, thus avoiding danger of slivers. (4) Make sides of trough high enough so that the toboggan will not jump the track. (5) Have trestle work strong and solid, thereby avoiding vibration. (6) Have crossbars near enough to-

gether to avoid vibration and strain on the bottom boards. Four cross-bars to each section are generally satisfactory. (7) Each year paint all woodwork in the slide thoroughly with creosote, which preserves the wood and serves as a disinfectant. (8) Build entire slide straight. Curves in a toboggan slide give a chance for the toboggan to go over the sides. (9) After leaving the wooden slide there should be a runway clear of trees, poles, fences and other obstacles. (10) The approach to the top of the slide should be a gradual slope, cleated runway or wide stairs parallel to but at a safe distance from the slide and leading to the back of the starting platform. (11) The platform should be protected by a wall or railing and be of ample size to take care of crowds during periods of greatest use. Seats placed along one side of the platform will be appreciated. (12) If the slide is fast or has a steep slope at the start, it is well to have a hinged tilting frame on the starting platform at the top of the slide to facilitate safe operation. (13) To prepare the chute for use, a mixture of snow and water in the form of slush is spread evenly in a 1-inch layer on the bottom of the trough and allowed to freeze. Sometimes the chute is filled with snow which is beaten down firmly until a layer about 2 inches thick is formed in the bottom. If the temperature is favorable this should be sprinkled until it is frozen throughout. (14) Keep the ice in the chute from becoming worn. If holes form in the ice, they may be patched with snow sprinkled until it forms a slush and beaten smoothly into the holes. (15) If the slide is too icy—therefore too speedy—mix equal parts of sawdust and sand and spread to slow speed.

The Manchester, New Hampshire, Park and Playground Commission



SECTION THRU TOBOGGAN CHUTE SLIDES.
CLAREMONT, N. H.
SCALE 1½"=1'

PLATE NO. 129

CROSS SECTION OF CHUTES, TOBOGGAN SLIDE, CLAREMONT, NEW HAMPSHIRE

(Drawn by R. G. Blanc, Chairman of Claremont Playground Commission)

For photographs of this slide, see page 219.

has constructed two very fast slides which have proved satisfactory. One has two and the other, which is shown on page 217, has three parallel chutes. The slides are built of planed spruce boards in sections 10 feet long, each length being in the shape of a trough; the inside width of each chute is 19½ inches at the bottom and 30 inches at the top, the side planks being 12 inches wide and set at an angle of 22½ degrees.* Four 4-inch by 4-inch crossbars are used to hold together the boards of each section. Each crossbar extends 4 inches beyond the bottom boards and to it are nailed brackets, cut from the same timbers, to hold the sides in place. The upper crossbar is exactly at the end of the boards; the lower crossbar is 4 inches from the end. This allows each trough to lap 4 inches into the section next below it. The end crossbars are so placed as to butt tightly against each other. The other two crossbars are evenly spaced. All edges and corners are planed off to prevent splinters. The troughs are thoroughly nailed together, but no nailing is done in putting the lengths together; they are simply placed in position on the ground, beginning at the lower end and fitting in each section, leveling under the crossbars as the ground may require.

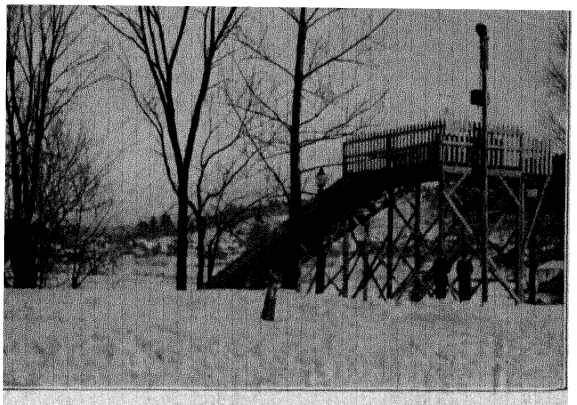


PLATE NO. 130

STARTING PLATFORM, TOBOGGAN SLIDE, CLAREMONT, NEW HAMPSHIRE

(Note the flood light and the fence around the platform.)



START OF TOBOGGAN SLIDE, CLAREMONT, NEW HAMPSHIRE

(Note the stairway and tilting boards.)

Claremont, New Hampshire, has an excellent toboggan slide, very similar to the ones in Manchester, (see Plates 130 and 131). This slide, which cost only $525, is built in sections and can be stored away each

* The construction of the trough is quite similar to that of the Claremont slide (see Plate 129), although the dimensions differ slightly.

year. There are two runways, and the trestle extends for approximately 100 feet down the hill. The course, under favorable conditions, leads into a meadow for more than a mile with no obstructions. The elevation of the starting platform is 15 feet from the ground and its dimensions are 10 feet by 15 feet. It is equipped with approved tilting boards. The measurements of the chute are indicated in Plate No. 129, page 218. The Claremont slide is a type highly recommended, especially for smaller communities.

THE SKI JUMP

Skiing has attained widespread popularity in the last few years and wherever possible opportunity for skiing should be provided in public recreation areas. Natural slopes should be used for skiing and low jumps may be constructed for the use of children and beginners. Ski jumps for experts will rarely be provided on the playground, playfield or athletic field; they are usually erected in the larger parks.

A few suggestions follow for the construction of ski jumps for amateurs. Among the important factors to be considered are orientation and

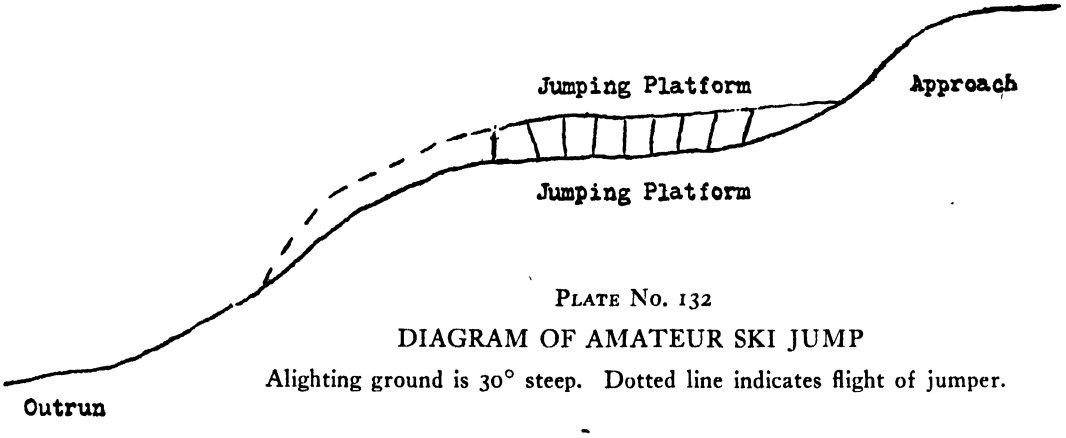


PLATE NO. 132

DIAGRAM OF AMATEUR SKI JUMP

Alighting ground is 30° steep. Dotted line indicates flight of jumper.

the proper dimensions and degree of slope of the jump. Hills to be used for ski jumps should face in a northerly direction because the direct rays of the sun make it impossible to keep snow in a satisfactory condition. The four parts of the ski jumping course are the approach, the take-off, the landing slope and the outrun. The approach should be steep enough to attain the necessary speed for making the jump; if the natural slope is not sufficient a trestle may be required, but this adds considerably to the cost. A slope of 25 degrees is usually satisfactory for the approach with a gradual leveling off near the takeoff which should be level or with a very

slight grade. It can be made of piles of boughs secured in place or of planks covered with snow and should be located just back from and above the edge of the steep slope. The landing slope should be 30 degrees steep; jumpers should never land on level ground. The landing slope becomes less steep near the foot of the hill and gradually merges into a safe level outrun where the jumper can swing or stop.

Fred H. Harris, organizer of the Dartmouth College Outing Club has prepared the accompanying diagram. He suggests that if jumps of 50 feet are to be made, the takeoff should be made from 3 to 4 feet high, the alighting ground be about 100 feet long and that the snow should be packed moderately compact.

APPENDIX A

THE ENGINEER'S PROBLEM IN THE CONSTRUCTION OF A MODERN TEN-ACRE PLAYFIELD*

The Minneapolis Park Board has just finished the construction of seven modern playgrounds, four of which are 10-acre fields. When building a playground, 10 acres are necessary to accommodate comfortably the various play spaces and equipment and still have enough room for planting trees, shrubs and flowers thus giving the playground a parklike appearance and not the semblance of a worn-out, empty lot.

The improvement of a 10-acre field costs between $75,000 and $100,000 depending upon the amount of grading, drainage, etc., necessary. The entire cost of a playfield is paid for by the neighborhood in which it is located, the assessments ranging from $70 for a 50-foot lot adjacent to the park, to $10 for the lots which are located about ½ mile from the playground. Although, according to the Elwell Law, assessments may be spread over a period of 5, 10, 15 or 20 years, in most cases the 10-year period is adopted.

A topographical survey including plan is first made of the grounds which are to be acquired. The adjacent land is shown on this plan so that it can be used for the acquisition of the property. This plan is also used by our superintendent in designing the improvement of the field.

In discussing the construction of the field, I will take up the various kinds of work in the order that they are carried out.

1. GRADING

The grading of the field is the first operation. The land in its original state is rough and sometimes low. If the original ground has a surface of loam, this is stripped off—usually by elevating grader—and placed in a stockpile. The subgrading is then usually done with a steam or gas shovel and teams or light trucks. The finished grade is nearly a level plain, the ground sloping gently from the building to a bank near the street.

*A paper presented to the members of THE AMERICAN INSTITUTE OF PARK EXECUTIVES and THE AMERICAN PARK SOCIETY at Philadelphia, Pa., September 28, 1927, by A. E. Berthe, Civil Engineer, Board of Park Commissioners, Minneapolis, Minnesota.

The athletic field, which is used as a skating rink in the winter, is a sunken plain from 2 feet to 3 feet below the surrounding levels. A catch basin is placed in the center of this field. The slope of the ground when finished has about a 0.5 per cent grade, which is ample for drainage. The sunken field is about 350 feet square to accommodate baseball, football, and skating.

Upon the subgrade a 6-inch layer of clay is placed, over which is laid a 6-inch layer of loam, thus making a foot of surfacing for the lawn, which in our climate is sufficient to keep the grass from drying or burning out. The shrubbery plantings are provided with an additional foot of loam, while each tree is provided with at least 1 cubic yard of loam. The level areas, excepting the spaces for the tennis courts, wading pool, walks, and building, are seeded and rolled. If there are banks along the streets they are given about a 5 to 1 slope and sodded.The cost of grading is usually about 40 cents per cubic yard, or a total of $30,000 to $40,000.

2. Drainage

Drainage is the next item. The tennis courts, wading pool, building, sunken field and other low places are usually drained into a nearby sewer. If the sewer is for sanitary purposes only, then the surface water is drained into a nearby lake or a storm sewer. The pipe is never smaller than 10 inches in diameter and is of vitrified clay. We use no small pipe because of the danger of filling with dirt and the impossibility of cleaning. Manholes are constructed along the lines not more than 300 feet apart, in order to permit cleaning. The catch basins and manholes are constructed of cement brick with a heavy cast iron top. The pipe, including the laying, costs about $1.25 a lineal foot, and the manholes or basins $50 each. The total cost of drainage is usually abot $1,000.

3. Water Supply

The water supply is brought into the park from a city main in a nearby street, and a 1½-inch line run into the building where a meter is installed. This line supplies the buildings, drinking fountains and sprinkling taps. Three-quarter-inch pipe is used for the sprinkling lines. This pipe is placed only a foot under ground and is drained each fall. The sunken field is flooded in the winter from fire hydrants in the vicinity. The cost of the water installation is about $1,200.

4. Shelter Building

A building measuring about 50 by 80 feet, of Colonial or Spanish design, is next constructed. These buildings usually have basements used for the heating plant and storage. The main floor has a room about 50 feet by 30 feet, which is used for shelter purposes in summer and as a warming room in winter. Off of each end of this room are the men's and women's lavatories. A check-room and office are provided just off one side of the main room. The buildings are heated by hot water or steam. These buildings cost from $12,000 to $16,000.

5. Cement Walks, Steps and Curb

The cement walks and steps are then laid upon a subgrade of sand. No cement work is ever put on fills that have not finished settling. If the filling is of clay, a sand cushion of at least one inch is provided. The walks are given a pitch outward of ¼ inch per foot for drainage. The base is 2½ inches thick while the surface is 1 inch thick, making a total of 3½ inches. Expansion joints are placed every 40 feet. Batch mixers are used to mix the concrete.

The base is a 1–2–4 mix, the coarse aggregate being crushed, washed gravel ranging in size from ¼ inch to 1½ inch.

The surface is a mortar mixture of 1 part clean sand, 1 part granite screenings, and 1 part cement. This surface is colored; ¼ pound of black and 2 pounds of red mortar color being used with each sack of cement.

The steps are of similar construction. This curb, however, is constructed in one course—2½ parts of sand to 1 part of cement. The cost of this cement work is about $7,000.

6. Cement Wading Pool

The wading pools are either square or round, measuring about 60 feet in diameter. The floor is constructed the same as the walk except that it is 4½ inches thick and is reenforced with a welded square-mesh, cold-drawn, steel-wire fabric made of No. 10 wire on 6-inch centers. The curb surrounding the pool is 7 inches by 30 inches and reenforced with four ½-inch rods. The top of the curb is 18 inches above the floor, while the floor has a pitch of 1 foot towards the emptying pipe in the center. This makes the water 18 inches deep at the center when 6 inches deep at the curb. The same pipe is used for filling and emptying and is operated by a valve in a manhole outside the pool. The floor is sealed either with tar or asphalt. The pool complete costs about $2,000.

7. Concrete Tennis Courts

All of our new tennis courts are now constructed of concrete. We have at present 65 concrete courts throughout the city. A 10-acre playfield usually contains four such courts. The size of concrete per court is 118 feet by 50 feet, with a pitch of 4 inches toward the net-line, where a small gutter is constructed which leads the water into a catch basin. Construction joints are placed on some of the playing lines. The slabs are continuous from the net-line to the backstop and are from 12 to 18 feet wide.

The base is a 1–2½–4 mix and is 3 inches thick. The coarse aggregate is crushed, washed gravel ¼ inch to 1¾ inch. The surface is the same mix as that of the walk and is 1¼ inches thick. The same reenforcing is used in the base as in the wading pool floor. The color is somewhat darker than that of the walk, ½ pound of black being used per sack of cement instead of ¼ pound.

The backstops are 2½-inch pipe set into concrete, 10 feet apart. The wire fabric is 12 feet wide, No. 11 gauge and hot galvanized after weaving.

The playing lines are painted about once every 2 years.

Four concrete courts cost approximately $6,000.

8. Playground Equipment

The playground equipment is of pipe construction, set into concrete. There are several good companies making this equipment and the one quoting us the best price is awarded the order for the equipment, which includes installation.

The women's and children's apparatus consists of:

2 sets Swings
2 sets Teeters
2 Sand boxes
1 set Flying rings
1 16-foot Slide

The men's and boys' apparatus consists of:

1 Gymnasium frame
1 Vaulting horse
1 Vaulting buck
1 Turning pole
1 Parallel bars
1 High jump
1 set Flying rings
1 Horizontal ladder

1 Baseball backstop
2 Volley ball courts
1 Horseshoe court

This equipment installed costs about $5,000.

9. Lighting Equipment

In lighting out playgrounds we have as yet endeavored only to provide sufficient light for discrimination of objects. Where there are walks and foliage, 12-foot upright standards equipped with 150-watt lamps spaced about 150 feet apart are used. The play spaces and apparatus are lighted with 30-foot pendant-type standards having a 500-watt lamp. This illumination is sufficient for ordinary activities such as skating, football practice, gymnastics, etc. No overhead wires are permitted in the parks. The telephone and power lines are in lead sheathed cables placed about 2 feet underground.

There are about 8 lights of each kind at a total cost of approximately $3,000.

10. Plantings

The planting of the park is one of the most important items. Upon this depends to a large degree the beautification of the field. About 50 deciduous trees, mostly elms, are planted along the streets and in the park. Approximately 4,000 square yards of shrubbery and flowers are also set out, while a few evergreens are scattered about the park. The banks are sodded while the level areas are seeded and rolled.

The cost of this planting is in the neighborhood of $5,000.

11. Engineering and Contingencies

A 4 per cent charge against the above costs is added for overhead. This charge pays for preliminary and final surveys and plans, instrument work during construction, office work required for payment of bills, issuing financial statements, compiling cost data, etc.

This cost is about $3,000.

In conclusion allow me to add that these plans and estimates are not always carried out to the letter, but often beneficial changes are made during the construction period. The main object is to secure the best construction at the most reasonable price. However, great care is taken not to exceed any estimate, as it is almost impossible, under our Elwell Law, to go back to the people for additional funds with which to carry the work to completion.

APPENDIX B

BIBLIOGRAPHY

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National Collegiate A.A. Track and Field Guide
Official Athletic Rules (A.A.U.)
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