Commonwealth of Kentucky

EDUCATIONAL BULLETIN

SCHOOL SITES

Published by

DEPARTMENT OF EDUCATION

BOSWELL B. HODGKIN
Superintendent of Public Instruction

ISSUED MONTHLY

Entered as second-class matter March 21, 1933, at the post office at Frankfort, Kentucky, under the Act of August 24, 1912.

Vol. XVIII March, 1950 No. 1

FOREWORD

There is presented in this number of the Bulletin a statement of need, the reason for the need and the apparent trend in extending the use of the school plant. Such extended use will involve more space. The increase of the space need applies particularly to the school plot. Guides are stated and many items of suggestions are listed for the use and aid of individuals and boards of education in planning activities of the school plant and especially the recreational part of the school program. In doing such planning, it should be kept in mind that recreation is any activity which will provide refreshment and relaxation from the usual routine of work. Reading, conversation, listening to music, creating things with the hands, or watching a play are often as much recreation as playing one of the many kinds of ball games. The habits and disposition of the individual have much to do with the determination of the recreational activity with which that person could profit most.

This was prepared by the personnel of the State Department of Education who administer the program of buildings and grounds. I recommend that it be published and distributed for the use of school administrators interested in providing more useful educational and recreational programs for their schools.

March, 1950

BOSWELL B. HODGKINS
Superintendent of Public Instruction

INCREASING THE USE OF THE SCHOOL PLANT

Community life is gradually changing today from what it was a few years ago. We have become more community conscious in that we have found that by joining with our neighbors and neighborhood with neighborhood we can provide many things which were impossible if we worked as individual units.

More and more communities are organizing councils such as youth groups, recreation committees, adult education activities, forums, and many other similar projects. The purpose of these is to provide a richer and more worthwhile environment in which to live.

The typical public school has not done as much as could, and probably should, be done in an attempt to serve the needs of all the people of the community which the school represents.

Regardless of the past, the school of the future should become, and in many instances is now becoming, a more potent factor in community welfare.

The great need for such a service is shown by the growth of commercial amusement business to fill the hours of leisure. There are many people who have not developed in themselves a satisfying means of occupying their nonworking hours and who must pay to be entertained. In this fact lies a challenge to every public school of our state.

One of the greatest threats to society in our democratic way of life is the difficulty which the masses have in understanding the intricate problems which they must face as citizens. Our public schools should assist in this matter by supplying opportunities for continuous learning by adults. No other institution is in such a position to do this as effectively. New scientific developments are constantly causing our citizens concern in their work of earning a living, both in their manufacturing and farm operations. There are many more people who need to readjust themselves vocationally than is generally known. The schools of the community should be in a position to help in such situations.

In addition to adult education and recreational needs, there is a need in most communities to provide for the school children worthwhile activities when school is not in session, as well as beyond those now offered while the school is in session. Usually there are in rural communities few satisfactory places for play and recreation except at the school. When school closes in most communities there are often periods when children and youth are left to shift for themselves.

Education does not stop when the school closes. It continues in all activities. That which the school has striven to build by its regular program may be quickly torn down outside of school by less desirable gathering places and the street corners. The school cannot ignore its responsibility to provide a program of worthwhile opportunities for work and play at all times.

During the past few years rural communities have been providing more opportunities for recreation. There are many outstanding examples of schools in such areas that are doing much for community life. Home economics equipment is used by housewives for canning purposes. Quick freeze equipment is provided at the school and used by all. Shops are available for the repair of farm machinery. Libraries are open and available. The school grounds, auditorium and gymnasium are centers for all kinds of community activities—sports, plays, music, forums, lectures, dances, picnics and many other activities.

Because school plants can be made available for more extended use is not sufficient reason for such use. Any community which may suddenly decide to keep schools open after school hours and during the regular vacation period would probably find little use made of them. Before such action is taken, a carefully planned program should be decided upon. It may require a considerable period of time to develop the desired use and the needed participation of the community. Such facilities are not an end in themselves. They are the means through which important needs may be met in providing desirable educational and recreational activities for both the youth and adults of the community.

The increased costs of providing the personnel, space and equipment for such extended use of the school plant has caused many boards of education to hesitate to make such use a part of the regular activities of the district. Since the desirable regular school program today requires more space in the building and on the school plot, boards of education are being urged to increase the school plot acreage, both for new and for enlargement of old grounds, where at all possible. When the space has been provided, the communities may by fees charged for the extra service and by cooperation of city councils and fiscal courts provide funds to pay the extra expense of operation.

In most instances it seems it is not a matter of deciding on who shall provide for the community needs, but of deciding that they shall be made possible and put into operation. In a large majority of the cases the school is the agency that is in the best position to develop a desirable program of recreation coordinated with the program of

education. The needs are very great. Life can be made richer for both adults and the children through a well planned and well organized program centered in the schools. It is realized that it costs money and effort to make full use of the school plant. To provide, maintain and operate these plants for school purposes alone involves large investments. But, the purpose for which they are designed is to educate children, the most valuable product of any community. Such schools deserve and must have our sincere efforts. They should have the most consideration in money and time of all citizens of the community, if the other business enterprises are to succeed.

The present trend indicates that the empty playground and the vacant school building for any considerable period of time will soon become rather rare for many communities.

SCHOOL SITES

Trends

A site for the school building should be considered as important to the educational program as are class rooms and other instructional areas. Much of the physical education, recreation, and other activities in connection with this phase of educational program, are carried on out of the school building. The facilities of the school are often used by adults of the community for educational and recreational purposes.

Trends in the development of school grounds may be listed as follows. (1) more acreage per school; (2) greater utilization of the site; and (3) school and community use of the property.

1. *More acreage per school.* It was not until about 1940 that larger sites were considered necessary. About 1940 to 1945 the recommendation for an elementary school was one acre per class room and a minimum of ten acres for a high school. Recently, the recommended size has been increased to a minimum of 20 acres for an elementary school of several teachers and as much as 50 or more acres for high school use. There are several districts in the state where elementary schools are located on ten acres and one place where an elementary school is on a 40-acre plot.

During the last few years, boards of education have seen fit to increase the size of sites for the new high schools which they are either erecting or are planning for the near future. It became necessary to increase the size of the site in order to provide ample space for the activities contemplated for the school programs. In these districts the activities on the site are planned in the same manner as are the activities in the building. Many new county high schools

are being located on at least 25 acres and there are at least two high schools being located on plots of 50 or more acres.

Some boards of education have found it advantageous to purchase larger tracts than will be needed for the school site because the owner of the property was not interested in reducing his acreage but would sell the total of his holdings when they were around 100 to 150 acres. These boards plan to sell that part which will not be needed for their school program when it is developed, by dividing it into good-sized lots for individuals who desire to live in the neighborhood of the school. They are of the opinion that the extra land in each instance can be sold so that the plot on which the school is located will be secured at a very low cost to the board.

2. *Greater utilization of the site.* There are many reasons why school plots must be larger. Athletic and recreational activities have made it necessary to have more roadways and parking spaces. There is need for hard surface areas such as courts for both approaching the building and for use of student activities. Small children in the kindergarten and first grade should be segregated from the other pupils in a quiet area so that they may play without too much disturbance. Space should be so allotted that programs for both boys and girls can be carried on at the same time.

3. *School and community use of the property.* In many schools the outdoor and physical education programs will extend beyond the school period for such a length of time as will require flood lighted areas for football and baseball grounds. A few years ago swimming pools on school grounds would have been considered a luxury, but today they are coming into use at a rapid rate. Not so long ago a permanent concrete bleacher would have been considered a luxury, but in today's planning the portion beneath the seats is being utilized for dormitory space, band practice, and for shower and locker facilities.

Some districts in the state are making plans for increasing their recreation and physical education activities. They have provided facilities in these instances for all-season indoor and outdoor recreation which can be used by the school district. Such activities include larger sport court areas, gymnasium activities, interscholastic competition, instructional use, swimming, pageantry, festivals, exhibitions, and concerts. On some of the larger tracts, space is being reserved for future development of community pageants, camping and any other facilities that may be planned in the future for educational and recreational purposes.

Factors in Site Selection

1. What activities will take place on the site?
2. How much space will be required for these activities?
3. Will the site be used by Community activities?
4. How much of the total area will be occupied by the building, including planning, landscaping, etc.?
5. How much area should be set aside for future expansion?
6. Will children be transported to the school?
7. Is the soil suitable for educational purposes?
8. Is the drainage adequate?
9. Is the site free from encumbrances?
10. Does the location fit into the regional highway planning and community street planning?

Characteristics of a Good Site

A site plan represents a combination or fusion, so to speak, of many factors. The layout should be the result of a thorough study of the potentialities of the site for a desired program to be carried on and in keeping with local financial ability. The site should be so located as to get the best of sun, breeze, topography, and pleasing views, if it is to afford the most effective and economical use of the land. If this is to be done in the most effective manner, the individual making the plan should prepare a general development study. This study should indicate the location of the building units, play fields, outdoor gymnasiums and other active places, natural study areas, athletic fields, apparatus areas, trees and shrub grouping, fencing parking areas, drives and walks.

All building and site development plans should be kept in the preliminary stage until a complete unification of the building and site has been achieved to the satisfaction of the owner and approval agencies.

In making these plans, the planner should not overlook the necessity for relating outdoor and indoor facilities. Drives and walks must integrate the approaching streets with the building entrances, service and unloading points, parking areas, and play field areas. Parking should be provided adjacent to the wing of the building that houses the auditorium, meeting rooms, arts and crafts room, and other facilities that are to be used by the community.

Outdoor paved multiple-use court areas for tennis, basketball, volley-ball, and general play should be situated near the building and parking areas.

When detailed construction drawings have been prepared there should be coordination of such items as grading, drainage, water extension, utilities, etc.

No school plant can conduct a good educational program under crowded and unsuited conditions. Poorly designed properties result in limited use, unsightliness and expensive maintenance. Where boards of education have a good site and have as their ideal the operation of a desirable school and community program on that site, costly mistakes can be avoided and fine community facilities can be assured if boards of education employ a site planner to work with their architect so as to best translate the educational program into plans by which the most effective use of the site may be made for indoor and outdoor school facilities.

The minimum areas which are likely to be required for any desirable minimum educational program are spaces for structures, parking, drives, walks, and certain open spaces. All of these should be carefully planned and related in order to achieve their highest function.

Site Planning

Because the activity areas of school sites are so often not planned in advance of the planning of the building, many situations not conducive to their best use are created that are impossible of correction. In such cases the planning of the use of the grounds must await completion of the building. This lack of advance planning may mean that opportunity for the best development is lost. A good site plan is fundamental to a good final result and no matter how fine the building, how green the lawn, or how handsome the plantings, there can be no fine result based on an ill-conceived or handicapped layout.

Frequently, the building project is not completed at the beginning but is gradually completed over a period of years. A good site plan under these circumstances can never be foreseen with entire surety. The site plan, therefore, should provide a reasonable degree of flexibility. A very good means of giving flexibility under such circumstances is to plan the various spaces, such as facilities for service, athletics, and the different phases of education as compactly as is deemed functionally good and leave adequate open territory between these planned spaces. In this way, opportunity for expansion will be provided.

In many instances, sloping and otherwise irregular sites must be used. Under such conditions, it is important that the building to be erected on such plot be so designed that full advantage may be taken of such a complex site. When such conditions prevail, this

must be done so that the construction will take place in stages as the need arises. It is very important that in moving of earth from one place to another it be done in such a manner that it will be placed in a more or less permanent position for future plans at its first movement. A case study of such a situation may often reveal the possibility of moving of earth with fine results at minimum expense. This sort of problem is one which may require the services of an experienced landscape architect.

Under such circumstances, consideration may well be given to the elimination of outside steps wherever possible. Steps tend to retard movement and in many cases may be readily replaced by ramps. It should be kept in mind, however, that a ramp may be very dangerous if it is so located that it becomes slick for any considerable time during freezing weather.

Where steps must be used they may be designed on a different plan from those used within the building. Since those used within the buildings are rather steep, for the high riser and narrow tread are used in order to conserve costly building space, no such restrictions should limit the steps that must be used in different places on the site. These steps may be built with more risers and longer treads. We have noticed some risers of six inches and a tread of 12 to 15 inches. This seems to be a good relationship for this outside problem.

Where there are differences in elevation to be overcome use of retaining walls in place of steep banks should be considered. Walls involve heavy initial expense. But steep banks have their serious drawbacks. They are not usable for any school purpose and they may occupy much space and are areas that are very costly to maintain. Much thought should be given to the use of a retaining wall because in many cases a properly designed retaining wall may be the economical solution when the result secured by such a retaining wall is considered over a long period of time.

Factors in Site Planning

Factors in site planning that must be considered in every school development are location, size and shape, physical characteristics, relation of the building to the site, and utility installation.

Location

The site should be centrally located for the student population, and be accessible to the children without their having to cross hazardous highways or railways. It should not be isolated by physical barriers, such as industrial belts, streams and impediments to travel.

The environment of every school should provide to the greatest possible degree (a) safety and healthful conditions for the children

and teacher while on the school grounds; (b) freedom from disturbing noises, such as those produced by trucks, automobiles, railway and airplane traffic; and (c) surroundings pleasant to the eye that will tend to create a feeling of pride rather than disrespect, and a feeling of happiness and contentment rather than one of unrest. The school building is the child's home for a very large portion of his life.

Community use of the school building will be important. When possible, schools should be located convenient to availabe living quarters for the teaching, administrative and custodial staff.

In school districts where it is anticipated that there will be a growth of population, sites should be so located as to avoid undue overlapping of areas to be served by each school. In attempting to determine the geographic boundary, the following listed factors should be considered:

The type of schools and the grade range in each;

The probable residential development as it may affect the number of children;

Whether or not children will be transported;

Hazards which affect accessibility of the school.

Size and Shape

The site must be adequate to provide space for areas and facilities needed for the present program and for possible future enlargement. It should be designed as a center for recreation of all age groups, after school hours and during the summer. Activities in physical education, recreation and organized games are essential to the complete educational program. Through these activities, as a part of the educational program, the children may develop into good citizens and thereby contribute to the economic and social life of their respective communities.

Activity Areas

Activity areas which require constant supervision should be located near a central point of control. Those areas having close relationship, or areas which are used by the same age groups, should be placed close one to the other. Facilities for spectators should be close to the parking areas.

Kindergarten

A separate kindergarten area adjacent to and directly accessible from the kindergarten room.

Develop this area to include unpaved level open space, partially shaded if possible, for playing informal group games as "drop the handkerchief"; paved space sufficiently large for playing informal group games immediately following inclem-

ent weather and for using tricycles, wagons, and other wheeled toys; space for outdoor equipment such as a jungle gym, slides, swings, low horizontal bars, etc.; and space for a sandbox.

Lower Elementary

A separate area for the lower elementary-school grades (I and II), accessible from classrooms used by these grades but far enough removed to avoid disturbing classroom activities if play periods are scheduled at different times for different class groups.

Provide unpadded level open space for playing informal games; paved space for playing informal games immediately following inclement weather, for laying out hopscotch courts and shuffleboard courts, and for playing with wheeled toys; and space for playground equipment, such as a jungle gym, slides, swings, low horizontal bars, sandboxes, etc.

Upper Elementary

A separate play area for the upper elementary-school grades (III to VI), accessible from classrooms used by these grades and the gymnasium but far enough removed to avoid disturbing classroom activities when the playground is in use.

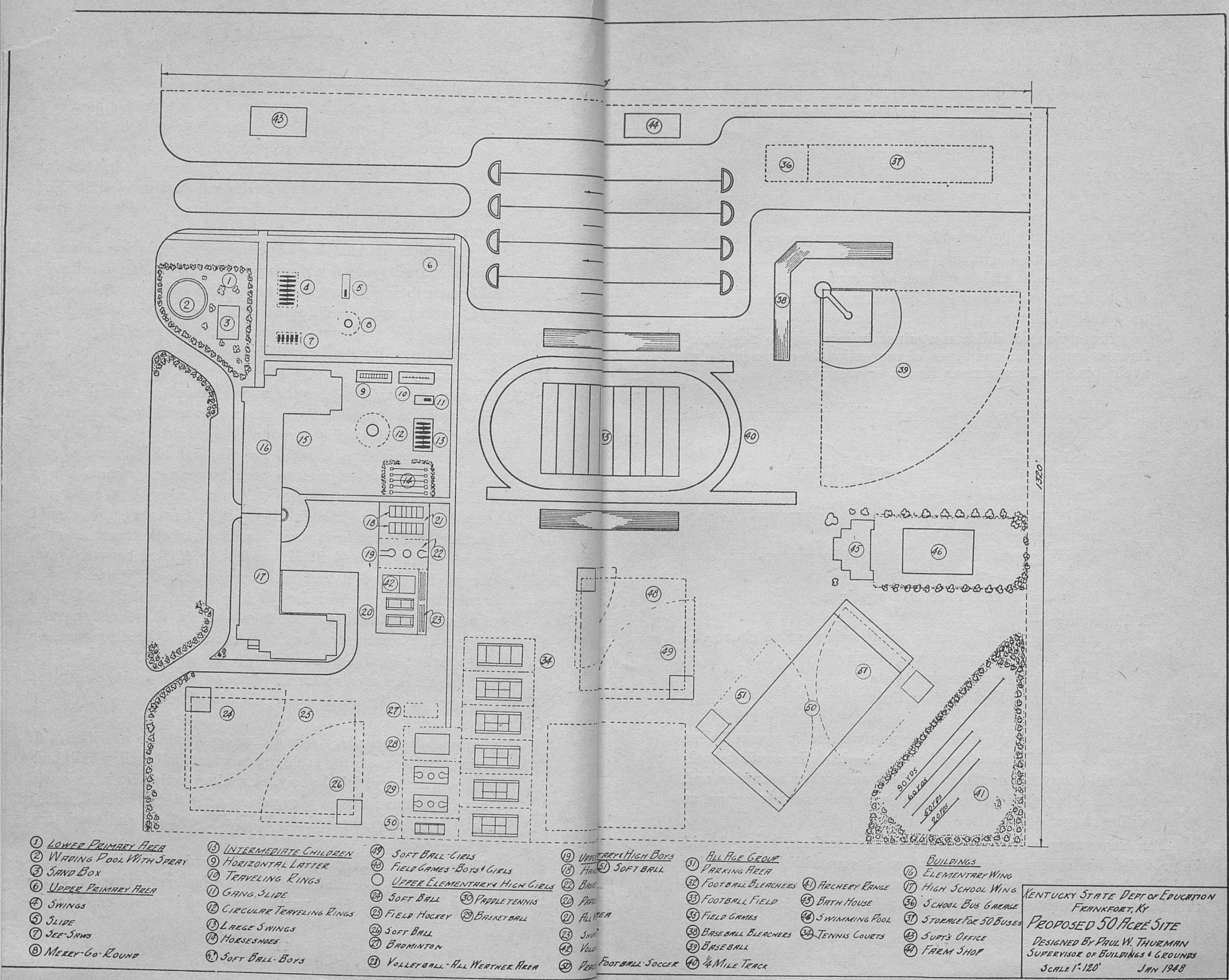
Provide sufficient area to permit separate groups of boys and girls to engage in informal games as well as organized games and sports. The development of this play area should include provisions for a paved outdoor basketball court, paved tennis courts, a baseball diamond with 45 feet between bases for pupil use and 60 feet between bases for adult use, a large unobstructed play area for playing touch football and other similar games, and space for a grass-surfaced croquet court. Where site conditions permit, a tree-shaded area for outdoor instruction, class picnics, etc.

Locate this area as far from the building as site conditions will permit. An outdoor oven is desirable.

Girl's Area

Girls of the secondary school division should be provided with considerable areas for such games as softball, volley ball, badminton, archery, field hockey. A similar section for boys should have facilities for such play period activities as softball, volley ball, badminton, basketball, baseball, football, and track and field events.

Sizes of activity areas should be determined in view of physical-education, recreation, and outdoor-instruction aspects of the program planned for a particular school in question. The Na-


(1) LOWER PRIMARY AREA
(2) WADING POOL WITH SPRAY
(3) SAND BOX
(6) UPPER PRIMARY AREA
(4) SWINGS
(5) SLIDE
(7) SEE-SAWS
(8) MERRY-GO-ROUND
(13) INTERMEDIATE CHILDREN
(9) HORIZONTAL LATTER
(10) TRAVELING RINGS
(11) GANG SLIDE
(12) CIRCULAR TRAVELING RINGS
(13) LARGE SWINGS
(14) HORSESHOES
SOFT BALL-BOYS
(49) SOFT BALL-GIRLS
(48) FIELD GAMES-BOYS & GIRLS
UPPER ELEMENTARY & HIGH GIRLS
(24) SOFT BALL
(30) PADDLE TENNIS
(25) FIELD HOCKEY
(29) BASKETBALL
(26) SOFT BALL
(27) BADMINTON
(28) VOLLEYBALL-ALL WEATHER AREA
(51) SOFT BALL
FOOTBALL-SOCCER
ALL AGE GROUP
(31) PARKING AREA
(32) FOOTBALL BLEACHERS
(33) FOOTBALL FIELD
(35) FIELD GAMES
(38) BASEBALL BLEACHERS
(39) BASEBALL
(40) 1/4 MILE TRACK
(41) ARCHERY RANGE
(45) BATH HOUSE
(46) SWIMMING POOL
(34) TENNIS COURTS
BUILDINGS
(16) ELEMENTARY WING
(17) HIGH SCHOOL WING
(36) SCHOOL BUS GARAGE
(37) STORAGE FOR 50 BUSES
(43) SUPT'S OFFICE
(44) FARM SHOP
KENTUCKY STATE DEPT OF EDUCATION
FRANKFORT, KY
PROPOSED 50 ACRE SITE
DESIGNED BY PAUL W. THURMAN
SUPERVISOR OF BUILDINGS & GROUNDS
SCALE 1"=120'
JAN 1948
1320'
90 YDS
60 YDS
50 YDS
20 YDS

tional Recreational Association indicates that the minimum average unit areas which will adequately serve the recreational needs and interests of varying numbers of children vary from 500 sq. ft. per child for a child population of two hundred, to 227 sq. ft. per child for a child population of twelve hundred.

Location

Location of activity areas and recreational equipment within areas should be in terms of the following requirements:

Isolation of activity areas for different age groups (Kindergarten, Grades I-II, Grades III-VI).

Protection of children using activity areas against injury due to hazardous traffic conditions on surrounding streets and on school driveways.

Protection of children against injury due to the interference among various types of recreational equipment; e.g., avoid placing swings near fences or walkways.

Surfaces

Playground surfaces should be specified in accordance with the following requirements:

1. Unpaved areas—
   - Minimum possibility of injuries to pupils
   - Minimum damage to clothing
   - Minimum tracking of dirt from the playground from activities areas into the building
   - Minimum transmission of dust from playground areas to the building interior
   - Minimum maintenance and repair
2. Paved areas—
   - Minimum abrasive action as regards wear on shoes, etc.
   - Minimum maintenance and repair
   - Economical construction costs
   - Minimum reflection of sunlight

Use

Ample use of play areas. Frequently there is not sufficient space to provide areas for boys and girls. In small schools one field may be used for football and other activities and scheduled so as to serve a combined age and sex group at different periods.

For elementary schools of four or more teachers, there should be provided a minimum site of five acres, plus an additional acre for each hundred pupils of predicted ultimate maximum enrollment. On this basis, an elementary school of 200 pupils would have a site of

at least seven acres. For junior and senior high schools there should be provided a minimum site of ten acres, plus an additional acre for each hundred pupils of predicted ultimate maximum enrollment. On this basis a school of 500 pupils would have a site of at least 15 acres.

If a combined elementary and high school is being planned, the acreage should be determined separately and added for the combined school.

The site should have sufficient frontage to permit a proper design, adequate walks and driveways. It is desirable to have elementary play areas close to the building. A site that is very deep and narrow will not provide a good arrangement for the areas needed. Generally a site of 3 to 5 ratio of width to length will permit a satisfactory arrangement. This does not mean, however, that excellent arrangements will not be obtained for a specially designed building for irregularly shaped sites.

The problem of its site size will vary in accordance with the needs of the different school organizations. The figures cited herein should be taken as minimums in rural territory where more space is available. It must be recognized that each type of situation will have its own specific needs which must be studied before sites should be chosen.

In the older cities and the mountain territory in which the problem of obtaining suitable acreage is acute, it will be necessary to study land use and the probable development of the community in determining the space that can be made available. It is urged that these territories acquire sites at least of the minimum size where it is at all possible to do so. Location of school sites adjacent to existing parking and recreational areas may make it easier to provide the required acreage. Each case should be studied by developing the actual site layout to include areas for unorganized play for various age groups, organized games with play fields conforming to strict specifications and with enough fields for each sport to meet the needs of boys and girls. These needs should be determined for the maximum number of groups to be accommodated, for practice fields, parking for pupils and staff, visitors and spectators at games, drives, walks, the building of future additions, plus 30% additional usable area for unforeseen needs of the future.

Physical Characteristics

The shape of the site, the variations of the surface, the natural features, such as trees, streams and rocks, should be such that they lend themselves to effective use.

The surface of the land should be so utilized as to permit location of the buildings on a relatively high place, to reserve level areas for play field development, or to situate walks and drives along the natural contours. If designing is done in conformity to the topography, the result is more pleasing to see and less costly to develop. Every possible existing tree, stream and rock area should be reserved in order to afford educational gains to be derived from a beautiful, natural setting.

1. *Contour.* The ideal contour for a site is a slightly convex surface with the high point where the building is located. This affords excellent natural drainage from the building and good drainage for the recreational area. In practice, however a perfect contour is not usually found. In most instances, some draining will be necessary for each site. Play areas should be developed so that they have slightly convex surfaces in order to provide adequate drainage. On sites where the areas slope in one direction, even though the slope is graduated, the volume of water which gathers at the foot of the slope may become so great that heavy erosion will result unless the whole area is kept in grass. In order to avoid heavy maintenance cost and to keep the area in usable condition, it will be necessary to grade a slightly convex contour by cutting the high side and filling the low side. The cut and the fill usually should be balanced to avoid unnecessary movement of earth.

On some sites, it will be necessary to develop a series of fills based on the above principles. This may frequently be done at different levels.

Another principle that may be followed is that of shaping the contours in such manner that if one drain becomes clogged, the water will flow to another level and not flood the building. In order that the building be planned in relation to the final contours rather than the existing ones, it is essential that development of the site be planned before or at least during the state of the preliminary planning of the building.

2. *Subsoil Conditions.* It is desirable that the subsoil conditions of a site be such as will provide good drainage and good sewage disposal. A porous, sandy loam is ideal for these requirements.

3. *Topsoil Conditions.* Except for the hard surface courts, walks and drives, and parking space, it is desirable that most of the surface of the site beyond the building be either in grass, shrubbery or other landscaping. A good topsoil is required to support such vegetation and at the same time permit surface drainage without erosion. Any

contract for excavations and foundations should require that all topsoil removed be piled until it can be reused on the finished surface.

4. *Elevation.* It is frequently found that a site which is very desirable otherwise, fails to qualify as being desirable for a site because of the relation of its elevation to the adjacent land. The site elevation should be high enough above nearby streams to avoid floods. It should not lie at the foot of hills where surface water from severe rainstorms will wash across it. The elevation of the site should be above the surrounding water table in order to permit proper subsoil drainage and adequate sewage disposal in cases where there is no municipal sewage disposal.

Relation of Building to Site

The site should be such as will permit the location of the building far enough away from the road or street to avoid traffic noises and lessen the hazards resulting from children who may run out from the building into traffic. It is desirable that the site be such as will permit the placing of the building so as not to require an undue amount of landscaping and excessive maintenance cost.

The site should be such and the building should be so placed as to make it possible to reach the building with delivery trucks and transportation vehicles without encircling the building or crossing the paths leading from the building to play areas. It is very desirable that the site should be easily accessible to the street or road and from the sidewalk and to permit placement of buildings so as to avoid excessive amount of walks and roadways. It is important to locate the building on the site in such a way as will permit the maximum utilization of the entire area suitable for outdoor recreational activities. It should be remembered that the site as well as the building should have high functional value in the administration of the complete educational program.

Utility Installations

Insofar as is possible, the school site should be so located as to permit the most direct connection with water, sewer, communication and utilities. Our modern program of physical education and recreation require spacious sites for building outdoor facilities for nature study, agricultural education activities, arts, crafts, dramatics, court games, amphitheaters, as well as play fields for games and major sports. For that reason it is important that they be so located as to make it not too difficult and expensive for the installation of lines for water, sewage, and communication.

While most schools or school systems may have a need for similar programs and facilities, no two site plans will be identical in

spite of the fact that both may offer the same or a very similar educational program. Each project will need to be planned in accordance with its native factors of location, size, physical characteristics and enrollment.

Playground Equipment

1. *Selection.* The best playground equipment is a collection of various kinds of balls and ample space for children to use them. If playground apparatus is to be purchased it should be selected carefully by people familiar with its use and its desirability for the children. Merry-go-rounds, ocean waves and giant strides are of questionable value, because they provide but little physical exercise, may have a harmful effect on the children, and are often dangerous. Rings, horizontal bars, and horizontal ladders afford good exercise for *large* children. Slides, sand boxes, platforms for building blocks and wading pools are desirable for small children. Swings and teeters do not afford much exercise; but, if properly maintained and supervised, provide a means of entertaining small children. Some schools have made effective use of large drain tile as crawling tubes for small children. They afford much fun and good exercise, but are hard on clothing if not placed a little above the ground and kept clean. Only equipment of sturdy construction should be selected. If built on the grounds, play apparatus should be erected under the direction of competent persons familiar with the wear and tear to which it will be subjected. All joints and moving parts should be provided with safety guards to prevent pinching and shearing action.

2. *Location.* The location of apparatus is important from the standpoint of supervision, safety and economical use of space. If revolving or swinging apparatus is used, it should be placed either along a fence where there will be little danger of children running into it, or safety railings should be provided. Ample space for safe use should be provided around apparatus. It is a good plan to locate permanent equipment and spaces such as basketball goals, jumping pits and horseshoe pitching lanes along one side of the older boys' play area.

3. *Covering of apparatus areas.* It is practically impossible to maintain turf on the apparatus area. For that reason it is usually advisable to surface this area with sand. Soft landing places filled with shavings or sawdust should be provided for horizontal bars, horizontal ladders, slides and jumping pits. These areas should be kept free from loose stones and other obstructions.

Safety in Playground Equipment

Frequently it is found that most of the equipment of the school

grounds is in need of repair. The custodian and those in charge of playgrounds should make frequent inspection of all school ground equipment.

1. *Swings.* The upright pipes of swings should be firmly set. Because of the fact that children will take hold of pipes and twirl around them, these pipes should be inspected for rough spots and any that are discovered should be filed down or removed.

Where possible, it will be well to cover swing seats with rubber. A child struck by a rubber-covered seat is likely to receive a less severe cut than he would if the seat were not so covered. At each end of most seats a hole is drilled into which a rod or bolt is inserted to hold the iron to which the chair is attached. Careful inspection should be made to determine whether the wood has broken from this hole toward the end of the board so the bolt can come loose. If the swing seat is of wood with no covering, it should be examined for rough edges or slivers which might injure pupils. S-hooks which fasten the swing to the chair should be bent when installed so that the children can not unhook the swing seat.

The chain should be examined link by link and those showing signs of wear should be replaced. This examination should include the top as well as the bottom. Reversing worn chains is of doubtful practice.

The clevis at the top to which the chain is fastened by the S-hook is an important part for inspection. Even though these S-hooks may be satisfactory for use when they are not closed, it is safer practice to have them closed so that they can't possibly come out. In case a bolt is used to fasten the floor flanges to the top pipe, it should be securely fastened by placing a lock washer under the nut. If a stove bolt is used, the square end of the bolt and the square hole in the flange should match. Grease should be put on the bolt in which the clevis swings. In many of the new swings will be found a ball-bearing assembly. These bearings need but little oil. If the floor flanges have been loose, they may have slipped far enough in one direction to cause the swing seat to be too near the upright posts. This should be examined and corrected.

When traveling rings are used in place of seats on a chain, care should be taken that these rings are smooth so that they will cause no finger injuries. Much worn hand rings should be replaced as needed.

Holes worn in the ground under the apparatus should be filled at periodic intervals for safety as well as for shoe conservation.

2. *Slides.* Another piece of equipment which must be inspected closely is the slide. The handrails which children clasp in going to the

top should be smooth, as well as the rails on the side of the chute. Missing or broken steps should be replaced immediately. Children will use in their climbing on these slides any supporting stays between the steps. For that reason, all of these should be checked for strain. Any slides that have chutes with wooden sides should be inspected immediately for protruding bolts and nails. The top of the side rails should be sanded and painted if they are wood. It will be well to fasten a cap of steel or rubber on them. If more than one piece of steel is used in the slide, the place where these lap must be kept smooth. Where the slide and bottom of the chute are one piece of steel, it requires least maintenance and provides greatest safety. Welded sides are very satisfactory. At the bottom of the slide the holes worn by constant use should be kept filled, since this constant scuffing will push out the gravel.

3. *Seesaws.* The seesaw or teeter-totter is a piece of equipment that requires constant care. It must be carefully watched for rough places and splinters. Because the places for grasping the equipment by the hand may come loose, it is often necessary to use new bolts to tighten them. The bottoms of the boards become worn and should be replaced before the board breaks. A rubber seat pad is a good feature for a teeter-totter. If the board is permanently fastened to the upright, there is less chance of its being taken away by vandals. Some paint and an occasional sandpapering will take care of outdoor sand boxes. Balancing boards or rails require little attention.

4. *Sliding and Climbing Bars.* Climbing and sliding bar combinations require inspection for loose spots and rough areas. Projecting bolts must be found at once and either removed or ground down so as to make a smooth surface. Welded installations require fewer problems. Uneven soil at the bottom of these should be eliminated by hard-surfacing the areas on which the various pieces of this kind of apparatus are to be erected.

5. *Miscellaneous Equipment.* Other pieces of apparatus to be gone over carefully include giant strides, horizontal bars, parallel bars, merry-go-rounds, jumping stairs, and vaulting horses, etc. The directions and cautions given above for the care of the apparatus listed apply to the miscellaneous equipment listed here.

It is suggested here that equipment known as "A Flying Dutchman", which is a bar resting on a post, is a very dangerous piece of equipment and it is doubtful whether it should be used on the school ground because children are likely to become dizzy if they are on it too long and there is danger of its striking a slow reflex child as he at-

tempts to step into the path of the swing or to climb off when the bar is in rotation.

A periodic inspection and recommendations for repair and replacement are the answers to providing safe playground equipment on school property.

Landscaping

1. *Desirability of landscaping.* The effort expended in designing a pleasing building is largely nullified unless a similar effort is expended upon a usable and attractive setting. Appropriately landscaped school grounds promote general cultural development of the school child. It tends to create a pride in the school on the part of the child and the community.

The cost of development of school grounds should be included in the capital outlay budget. Plans for beautification of school grounds should be developed simultaneously with plans for the building. The building should be located on the side in harmony with the landscaping design.

2. *Driveways.* Driveways should follow the most direct routes consistent with grades and harmonious relationship with adjacent surroundings. Their construction should provide drainage, force traffic to keep within specified lines, and be economical in construction and maintenance.

A single, two-lane drive leading directly to the main point of discharge and connecting with or ending in a parking area is usually the best solution for general passenger drives. In schools providing pupil transportation, careful consideration should be given to a convenient and safe bus loading area on the site. U-shaped driveways to the front of the building should be avoided where possible. No driveway should be permitted to encircle the building.

On-site parking areas are very desirable. Such parking areas should not be provided at the expense of needed recreational space.

It is desirable to group those portions of the building requiring service as near as practical to the side street in order to minimize the loss of campus space to service driveways. Insofar as practicable service drives should be kept separate from general passenger drives. Dense planting of shrubbery should be used as screens and to segregate effectively the service and delivery areas from the play and other areas.

3. *Walks.* Drives should never serve the dual purpose of drives and walks. Walks should follow direct and natural lines. They should be located far enough from the building to allow ample space for foundation planting. At all changes in direction, all angles should be suffi-

ciently filled out to prevent cutting across or stepping on the grass. Experience has shown that people will not single-file on a narrow walk, but will walk in groups and damage adjacent lawn areas. The minimum width of walks should be five or six feet.

4. *Planting.* Plantings are usually located around the main approach or front. They furnish a proper setting for the building. The basic consideration is to provide a well kept lawn with appropriately located clumps of trees and shrubbery to furnish a setting or frame for the building.

School grounds should be planted in trees, shrubs and flowers and by seeding or sodding lawns. A planting plan should be prepared for the school grounds before any planting is done. A comprehensive plan will permit the work to be done progressively over a period of years. When all the planting cannot be done at once, the shade or larger trees should be planted first.

The classes of plants generally used on school grounds are: shade trees, smaller ornamental trees, evergreens, deciduous flowering shrubs, vines and ground covers. Plants should be grouped with respect to height, color, and plant culture requirements.

In general, the school ground planting scheme will consist of foundation planting to tie the building to the ground, intersection planting of hardy shrubs at corners and curves, at drives and walks, tall trees to frame the building and trees planted in groves for shade. A great variety of flowering plants and shrubs should be grown on the school grounds. Rural school grounds should be planned in an informal manner with plants which are indigenous to the locality. In this way schools will harmonize with the adjacent landscape of the surrounding countryside. Urban schools may have a more formal plan made up of the broader assortment of horticultural variety.

Site planning should retain and protect as many of the existing natural trees as it is possible to absorb effectively in the total plan. Trees may be planted along the roads and borders of the site and in any other place where shade is desired.

Shrubs, especially the flowering variety, are very desirable on school grounds. If the plan involves foundation planting around the base of the building, care should be exercised to locate such shrubbery with due recognition of growing habits. Tall growing shrubs should not be placed under windows, because neglect of pruning may result in poor classroom lighting. Trees should not be located close enough to the school building to obstruct light from the classrooms.

Perennial vines are desirable on fence rows and blank walls and to hide unattractive objects. Grass suitable for the soil and climate

should be grown on all areas not to be used for agricultural plots or parts of playground where it would be undesirable.

Shade trees are desirable around the borders of play areas. Shrubbery should be planted so as to make the space attractive and at the same time not interfere with children's play. A well kept lawn is fundamental to any landscaping scheme, but the lawns should receive consideration secondary to the function of the play areas.

Tree and shrubbery culture is a highly developed science. Local school officials should avail themselves of competent advice from federal, state and local agricultural and horticultural authorities before undertaking extensive programs for tree and shrubbery planting.

Care of School Buildings and Grounds

A favorable attitude toward public school properties will come from pupil and community participation and responsibility. Any activitiy that tends to increase good relations between school, pupils and community is of the highest importance. When the children and community recognize that the school is their school and the buildings and grounds are their buildings and grounds, they are not so likely to engage in acts of vandalism. It is the responsibility of the principal, teachers and custodian of buildings and school property to mold the opinion and to shape a favorable attitude toward care of property on the part of pupils and the community.

There are listed below four principles which should aid in securing the cooperation of pupils and the community in proper care and protection of the school buildings and grounds.

1. Favorable attitudes of pupils toward public property may be inculcated by giving them a share in the care of the school plant.

2. The attitude of the community is an important factor in developing respect for public property.

3. Adequate supervision is a prerequisite to the development of a proper respect toward school property. Unguarded property soon becomes the prey of the latent spirit of vandalism in boys and young men. Unsupervised school yards eventually fall into disrepair and create disrespect for school property.

4. There is a place for direct and positive instruction as a means of teaching respect for public property. While such subjects as social studies and science lend themselves to the development of desirable attitudes, instruction that influences behavior must also be the responsibility of every teacher and supervisor. Since pupil attitudes and behavior are influenced by the incidental aspects of teaching and the ideals that control the school, it is important that problems involved in the care and beautification of school buildings be fully considered.

DUNNE PRESS
PRINTERS TO THE COMMONWEALTH OF KENTUCKY
LOUISVILLE, KENTUCKY