

EDUCATIONAL SPECIFICATIONS
FOR PHYSICAL EDUCATION FACILITIES IN THE
CLARK COUNTY SCHOOL DISTRICT
LAS VEGAS, NEVADA

by
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CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS

Educational leaders, for many years, have delegated to architects the responsibility of developing facilities to accommodate District Physical Education Programs; due to the architects' frequent lack of knowledge concerning physical education theory and principle of practice, the program often has to compromise with the physical barriers of an inflexible facility.

I. THE PROBLEM

Statement of the problem. The purpose of this project is to develop educational specifications for a physical education plant and its equipment and furniture for the Clark County School District.

Delimitation of the problem. The project will be delimited in the following ways: (1) the project will confine itself to the Clark County School District's physical education philosophy; (2) the project will be developed for an educational institution constructed to house a capacity of 2,500 students in grade levels ten through twelve; (3) the project will limit itself to a modern flexible schedule program; and (4) the project will attempt to take broad

recommendations, by noted experts, regarding educational specifications for physical education plants and apply the proven recommendations to specifically facilitate the building program in the Clark County School District.

Importance of the project. The past five years has been an era of rapid change. Recent sociological and technology developments such as increased productivity, reduced working hours, greater leisure, new methods of communication, population growth, and new materials and processes have created and are still creating new ways to make a living. These changing conditions strike at the very heart of culture and are reflected in stress on the public schools. Therefore, it is imperative that through intelligent planning, change and its bearing on education, and education's bearing on change, be studied and understood.

Physical education plays an integral part in developing an individual's physical, mental, social, and emotional capabilities through a systematic and selective instructional program. Therefore, the physical plant must be designed and constructed so that all aspects of the program can be geared to changing educational methods, free from restrictions imposed by unyielding physical barriers. This requires that the facility design stems from a knowledge of how students learn, as well as what, and in what manner, they will be

taught. It is essential that architects realize that physical education plants have but one major purpose--the facilitation of the proposed physical education program.¹ This project is intended to serve as a guide for the Board of School Trustees, School Administration, and architects in carrying out their planning responsibilities while developing a physical education plant.

Basic assumptions. In order to clarify the problem and its importance it is necessary to make the following assumptions: (1) the school population will be similar to that of the present high schools now in operation; that is, pupils will have a range of backgrounds, interests, and physical skills; (2) the Clark County School District has the responsibility of providing a physical education plant to house a program that affords each individual the opportunity to develop to his maximum; and (3) most of the facilities utilized in the regular physical education program will be used jointly for intramural, extramural, and interscholastic activities.

¹James D. MacConnell, Planning for School Buildings (Englewood Cliffs: Prentice-Hall Inc., 1957), p. 348.

II. DEFINITION OF TERMS

Educational specifications. The term educational specifications is interpreted as a written document which serves as a concise and comprehensive guide to the architect in developing sketches, preliminary plans, detailed layouts, working drawings, and architectural specifications for a physical education plant.²

Physical education plant. The gymnasium is the primary work area of physical education facilities. Therefore, the term physical education plant is interpreted as the gymnasium and its components, stadia, baseball parks, track and field, outside swimming pool, and the various outside play areas.

Educational program. The program of physical education should provide experiences which will assist each boy and girl to develop and maintain maximum physical efficiency, to develop useful skills, to acquire socially acceptable manners of conduct, and to enjoy wholesome recreation.

²Interview with Dr. Marvin B. Wampler, Ed. D., Director, School Facilities Department, Clark County School District, December 18, 1964.

III. THE ROLE OF EDUCATIONAL SPECIFICATIONS IN THE TOTAL PHYSICAL EDUCATION PROGRAM

It is the feeling of this writer that educational specifications for the physical education plant will be that part of the total educational specifications that provides the architect with professional guidance concerning developments in the field of physical education programs, physical needs, and new innovations.

One writer states:

Perhaps the weakest link between planning and building is interpreting the needs of those using the completed facilities. This problem of interpreting demands a fresh approach to school planning - a formulation of systematic procedure for designing facilities for schools. To accomplish a functional and economical school design, facts are needed concerning the school program during the initial planning stage. The procedure is, in essence, a fact finding process - a cooperative task of educators and lay people to analyze, describe, and interpret the program so that it can become the base for the architects decisions for the development of the building design.³

The educational specifications play an important role in the total physical education program. The two most important aspects relevant to educational specifications are: (1) specifications, if not well planned, will hinder the end results of a physical education program for many years to come; but, on the other hand, (2) a well planned set of

³ MacConnell, op. cit., p. 145.

specifications will facilitate the outcome of a physical education program for many years in the future.

Philosophy. Educational specifications should not be a particularly individualized program of planning. The architect must realize the importance of making use of the guide lines given within the concepts of educational specifications.

It is of paramount importance that the physical education program of a new high school reflects present high level performance, but also should be of such scope as to promote impressive strides into the future. The physical education plant must be designed in a fashion that allows traditional programming to take place, although the design should be flexible enough to accommodate and reflect a more imaginative and meaningful curriculum organization and development within its framework.

No person or group of persons can predict with certainty the exact nature of the secondary school physical education program. There are, however, certain discernible forces at work in reshaping present physical education programs; these major discernible trends are team teaching, variable grouping of students, flexible scheduling, and an amplified use of communication media.⁴

⁴Interview with Dr. Howard Sagehorn, Ed. D., Education Consultant, Stanford University, June 12, 1964.

Team teaching is an arrangement whereby two or more teachers, with or without teacher aides, cooperatively plan, instruct and evaluate one or more class groups in an appropriate instructional space and given length of time so as to take advantage of the special competencies of the team members.⁵

Variable grouping is developed to fit specific kinds of learning situations. The range includes large groups (100-250), medium groups (25-60), small groups (12-15), and individual study (1). Variable grouping is based on the premise that not every phase of every activity can be taught best in uniform classroom groups--and not all students learn all things best in such groups.⁶

Flexible scheduling, based on multiples of smaller modules of time, is being developed to cope with the problems of equivalency of subject, diversity in learning outcomes, individual differences among pupils, and the need for greater continuity in the study of some subjects.⁷

Communication media includes all teaching aids such as films, filmstrips, slides, records, tapes, television and models. In promoting better communication, these materials enhance learning, help bridge gaps in ability

⁵David W. Beggs, Team Teaching (Indianapolis: Unified College Press, Inc., 1964), p. 16.

⁶Lloyd Trump, "A New Approach to the Secondary School," Coordinated School and Community Planning (Stanford, California: Educational Facilities Laboratories, Inc., 1959), pp. 60-62.

⁷Ibid.

differences, aid retention, and provide experiences which sometimes cannot otherwise be obtained.⁸

Objectives. The objectives of educational specifications are to provide a physical education plant that has the following features:

1. The total physical education plant must be flexible. It must be possible to rearrange space to facilitate both the refinement of present programs and the development of future programs.
2. There must be spaces of varying size to house small, medium, and large groups of students.
3. Spaces must be provided with moveable partitions which will allow instantaneous change to varying sizes throughout the school day or week.
4. Space must be provided for teachers to work together, to prepare lessons, construct instructional materials, counsel students, and discuss formally or informally instructional problems.
5. There must be precise control of environment to insure the physical conditions most conducive to learning.
6. There must be light control and electrical

⁸James Bradfield, Orville Nordberg, and William Odell, Secondary School Teaching (New York: Macmillan Company, 1962), p. 125.

facilities for the effective use of a wide variety of audio-visual equipment and other instructional materials and equipment.⁹

⁹Educational Specifications Committee, School Facilities Department (Clark County School District, Las Vegas, Nevada, 1963).

CHAPTER II

PERTINENT LITERATURE

The educational and architectural literature housed in the Stanford University library and the Clark County School District's professional library were the major sources of literary material. Certain individuals involved in education and architecture were consulted. Interviews with consultants from Stanford University Planning Laboratory and Planning Specialists in the Clark County School District were also used. The education index, 1940-1965, was consulted to locate related literature. The general card catalog was used to locate data contained in books related to educational specifications and physical education philosophy and program.

Much has been written that relates indirectly to the development of educational specifications for the development of physical education facilities. There are many opinions and viewpoints concerning the best method of providing architects with the type of information and data they need to develop physical education facilities to meet the needs of today's programs and those of the future.

In this chapter, a collection of viewpoints and materials will be discussed that are related mainly to the development of educational specifications for physical

education facilities for present and future programs in the field of physical education. The chapter will be presented in two parts: Part 1, pertinent literature found in periodicals, books, and architectural pamphlets; Part 2, summary.

PART 1

PERTINENT LITERATURE FOUND IN PERIODICALS, BOOKS, AND ARCHITECTURAL PAMPHLETS

The number of books dealing with educational specifications is very limited and even moreso when dealing with specifications to develop physical education facilities.

The Guide for Planning School Plants is a book most frequently referred to today in the field of school building planning. This book is of particular value in the area of determining objectives of educational specifications for a particular program. The book indicates educational specifications may define the existing educational program, point out desired future programs, and recommend first steps in reaching long term goals. "These specifications may well be an expression of the hopes and desires of a community for the future education of its youth."¹

¹Guide for Planning School Plants (East Lansing, Michigan: National Council on Schoolhouse Construction, 1958).

One frequently overlooked purpose of educational specifications is that of guiding the Board of Education and school staff in the evaluation of the architect's tentative solutions to specific educational problems. All too frequently, a school district accepts first attempts of architects or, under the duress of time, slight modifications of previous buildings are accepted. Superior educational specifications, properly used as a measuring device, eliminates such problems. The planners who develop the educational specifications should understand that the document is to be submitted to the Board of Education for consideration and acceptance as written or with modifications.²

The statement of characteristics of educational specifications which follow may serve as a guide for developing complete specifications, modified to local situations.³

1. Educational specifications should be written. They should be written in understandable language. A table of contents, an index, topical headings, and cross references will be helpful to the reader.

2. They should be complete in the sense that they provide the architect with all information about the educational program he will need to solve the architectural problem. Provisions should be made, nevertheless, for oral interpretation and examination.

3. They should provide the architect with background information which will enable him to gain a sound understanding

² John H. Hedrick, Ralph D. McLeary, Wilfred F. Clapp, and Walter F. Bogner, From School Program to School Plant (New York: Henry Holt and Company, 1956), p. 84.

³ Ibid.

of the activities to be carried on in the building as a whole, on the site, and in each part of the plant.

4. They should include statements about the nature and problems of the community and the schools' role in the community.

5. They should describe the purpose and objectives of the school.

6. They should give the underlying point of view with respect to methods of teaching.

7. They should challenge the architect to be creative. They are more likely to do this if they are restricted to a statement of needs, without prescribing how these needs are to be met.

8. They should include a list of all kinds of rooms and spaces to be provided in the building and on the site.

9. They should indicate rooms or spaces which in the future might require adaption to new needs.

10. They should describe the qualities desired in each facility and space. The architect can implement the functional needs of a school program if mention is made of any special requirements as to heating, ventilation, electrical outlets, lighting, or plumbing; the types and amounts of tackboard and chalkboard; the types of seating and other equipment; the types of storage space and the quantities and the sizes of material to be stored; or the work-counters,

construction areas or other special activity areas needed.

11. They should state any preferences or requirements with respect to the locations of different facilities or groups of facilities.

McClurkin contributed many valuable ideas in the areas of school plant planning and relationships with the architect, the most important aspects being a comprehensive outline of Educational Specifications and guidelines to follow when engaged in the development of Educational Specifications. School Building Planning is the latest book published with a wealth of up to date material; therefore, it is an excellent reference.⁴

MacConnell's book is an excellent guideline for Educational Specifications for specific areas in a secondary school. The book Planning for School Buildings describes the following areas:

1. School planning problems and their solutions
2. Skilled and lay personnel involved in the planning
3. Timing of the planning
4. Organizational patterns of programming
5. Economies in school building

⁴W. D. McClurkin, School Building Planning (New York: The Macmillan Company, 1964).

Dr. MacConnell, because of his knowledge and experience in school facilities planning, was an author most frequently referred to.⁵

Brubaker states:

. . . the design of educational facilities is ultimately a reflection of educational techniques. Team teaching, a trend toward smaller schools, individual study, and new teaching aids are all having an effect upon facility design. The trend is toward flexible and uncommitted use of space and away from departmentalization.⁶

His article considers some of the design changes in education in relation to new construction techniques and the effect of new facility designs on the instructional program.

Harriman⁷ and Folley⁸ present reference material that is useful in the areas of school building flexibility and utilization in relationship to the planned educational program. Both authors feel the most important contribution to the field of school plant planning lies in the area of

⁵James D. MacConnell, Planning for School Buildings (Englewood Cliffs: Prentice-Hall Inc., 1957).

⁶Charles W. Brubaker, "Effect of Changing Educational Techniques on Design Facilities," School Building Research (Washington, D.C.: Building Research Institute, Inc., 1963), p. 27.

⁷Alonzo J. Harriman, "Definition of School Facilities Needs and Utilization," School Building Research (Washington, D.C.: Building Research Institute, Inc., 1963), pp. 181-183.

⁸Milo D. Folley, "School Facilities Design, Equipment, and Services," School Building Research (Washington, D. C.: Building Research Institute, Inc., 1963) pp. 184-187.

developing procedures toward a better liaison system between industry and educators. They feel this important step would do a great deal to expedite the wide gap that now exists.

Beyon's research on flexibility in new schools should be of particular interest to anyone in the business of planning school buildings for the present and future. His philosophy is that the school plant design and construction can be effected through careful planning of the building so that internally it is easily adaptable to changing educational conditions. He feels the following factors are important in planning for flexibility:⁹

1. Purpose for which the space is to be used
2. Lightweight moveable partitions
3. Internal arrangement and room equipment

Donner makes reference to eight categories to guide professional planning in school buildings. These criteria are:¹⁰

1. A concept of the job the building has to do
2. The building structure

⁹John Beyon, Designs for Education (Stanford, California: School Planning Laboratory, School of Education, Stanford University, 1963).

¹⁰Arvin N. Donner, "Education Programs for Buildings for Education Programs," National Council on Schoolhouse Construction (Houston, Texas: National Schoolhouse Construction, 1964), p. 8.

3. The physical environment
4. The emotional and aesthetic effect
5. The structural materials
6. The architectural refinement
7. The feeling of space
8. Land appropriateness

The visible signs of education's response to new innovations and trends are the architectural flairs unknown or impossible a decade ago. These schools may have imposing outward shells, but they are chiefly remarkable for their utility in meeting the pressing educational needs of the 1960's.¹¹

The writings by many different authors in Elementary School Buildings should be of particular interest to anyone interested in developing educational specifications for any type of school building. The authors expanded on every topic involved in the guidelines for setting up educational specifications. It was stated that "planning is a tool for translating 'We need a new school' into blueprints and specifications. It should be a process of people working together as a team--communicating ideas, resolving differences, making decisions. The school that results will be no better than the planning that produces it."¹²

¹¹Robert D. Ferguson, What's New in Education, (Board of Trade Journal: September, 1964).

¹²The Elementary School Buildings, "Design for Learning," (Washington 6, D. C.: Educational Press Association, 1959), p. 12.

MacConnell and Faulk say that:

The school planner shapes the building to fit the educational program as we now know it, but he must keep a wary eye to the future--for education is in a state of transition. The planner must be constantly vigilant that his buildings can accommodate the changes promised for the future.¹³

Some literature in school planning reveals a sustained interest in the relationship of the initial cost of school buildings to subsequent maintenance costs. It is the general viewpoint of Aaron,¹⁴ Barrow,¹⁵ Boles,¹⁶ Cocking,¹⁷

¹³Harold Fulk and James MacConnell, "Architecture for Education," The American Behavioral Scientist (Wilmette, Illinois: Encyclopedia Britannica Press, Vol. VI, November, 1962), p. 73.

¹⁴Norman J. Aaron, "Building Design and its Relation to Maintenance and the Standardization of Various Functional Units in the School," Proceedings: Association of School Business Officials of the United States and Canada, Forty-first Convention (Chicago, Illinois, 1955), pp. 120-121.

¹⁵J. M. Barriw, "Add a Building Contractor to the Planning Team," Nation's Schools, LX, No. 3 (September, 1957), p. 73.

¹⁶Harold W. Boles, "The Right Architect Can Save You Money," American School Board Journal, CXXXVII, No. 1 (July, 1958), p. 27.

¹⁷Walter D. Cocking, "Real Economy in School Building," School Executive, LXXVI, No. 11 (July, 1957), p. 7.

Gammage,¹⁸ Gibson,¹⁹ Hacker,²⁰ Harriman,²¹ and Hiss²² that good school planning on the educational specifications level will generally mean a lower maintenance cost over the long run.

In reviewing several guidelines for school planning from different states, it was found that the guidelines varied greatly. The most helpful guides were from Ohio,²³ New York,²⁴ and California.²⁵

¹⁸ Marshall O. Gammage, "Do Our Schools Cost Too Much?" Texas Outlook, XLII, No. 5 (May, 1958), p. 27.

¹⁹ Charles D. Gibson, "School Buildings: Wuality Level and Cost," Architctural Record, CXVI, No. 5 (November, 1954), p. 182.

²⁰ Ralph E. Hacker, "Six Views on Postwar Design," Nation's Schools, XXX, No. 4 (October, 1942), pp. 9, 30.

²¹ Alonzo J. Harriman, "How to Cut Costs Without Cutting Corners," School Executive, LXXVI, No. 11 (July, 1957), p. 61.

²² "Sarasota Success Story," Time, LXXVII, No. 26 (December 29, 1958), p. 35.

²³ Guidelines for School Building Planning (Columbus, Ohio: The Ohio Department of Education, April, 1964).

²⁴ Manual of School Planning (New York: Board of Education, 1960).

²⁵ A Guide for Planning Senior High Schools (Los Angeles City Schools, 1962).

PART 2

SUMMARY

A review of the literature shows that there is a need for more research and writing in the field of educational specifications. Most of the present pertinent books and articles adequately expressed the views of good planning up to the time they were published.

All writers seemed to agree that the main objective of educational specifications is to allow a District to exert a systematic approach to the art of planning present and future building facilities. It was also believed that there is a definite need for sound planning, and that the need will increase as the years go by because of the predicted population increase in school age children. Every district can benefit from intelligent pre-planning for future facilities.

Possibly the most difficult task of developing educational specifications is getting the various groups of people to consider what they are doing, why they are doing it, and what is to happen to students as a result of the program. Trends do not always tell what will happen, but rather what might happen. An analysis of trends is important. It helps anticipate future needs as closely as possible.

This writer feels that once educational specifications are prepared and compiled, the written document becomes a description of the educational program. It starts with a definition and stimulates thinking about what is wanted and why. By nature it should be idealistic. In practice, it puts forth evaluative criteria to be used continuously as new facilities are needed.

CHAPTER III

ORGANIZATION AND ADMINISTRATION

This chapter is concerned with the essentials that are involved in the development of educational specifications. The chapter will outline a systematic approach, starting with the kind of personnel involved and proceeding through the necessary procedures for planning a physical education building reflecting the philosophy of the Clark County School District.

I. PERSONNEL INVOLVED IN THE DEVELOPMENT OF EDUCATIONAL SPECIFICATIONS

There are many people involved in the organization and administration of educational specifications. Each individual should have some definite responsibility and should have an essential role in the development of specifications. The educational team consists of the governing board of the school system, the superintendent of schools, the professional education staff, the non-certificated or classified staff, the educational consultant, and the financial, legal, and insurance advisors.

Governing Board of School Trustees. The governing board of school trustees is the basic group of individuals

that has the primary responsibility to accept the final outcome of the educational specifications. The board is a group of people elected by the voters to represent the community and govern the School District. The school trustees are endowed with legislative, executive, and judicial powers, although the board should not possess uncontrolled or authoritarian power. The board of education must function within the framework set down by state law and county law.

It is the responsibility of the board to see that planning takes place in a manner that is consistent with District policy, needs, and resources.

The board assigns the responsibility of facility planning to the superintendent. The board then becomes a part of the educational specifications committee to the point that they depend on the committee to establish, in written form, specifications acceptable to them.

District Superintendent. The superintendent coordinates the efforts of the educational team and works in every way possible to give the educational team the proper guidance in relation to the school district's policies and procedures.

Some of the specific activities of the superintendent in facility planning are as follows. "He should:

1. Guide the board's policy making.
2. Help to develop an educational program to meet the needs of the community.
3. Supervise research on the present buildings and educational program, considering future educational needs.
4. Coordinate staff study of the educational program.
5. Translate planning into a constructive program of education.
6. Advise the board in securing a competent architect to coordinate the planning, engineering, and construction.
7. Recommend the employment of educational specialists to help aid the architect and board of education in determining educational and building needs.
8. Help the board interpret the building program to the community.
9. Develop a program to use the buildings and facilities to their maximum capacities.¹

Professional education staff. The professional staff is usually composed of teachers considered by the district administrative staff to be experienced in their particular field. Experience in the Clark County School District has shown that effective planning has been done by teachers and other members of the professional staff. These individuals are more aware of the school's practical needs than are committees more remote from the educational environment or educational consultants from other districts.

¹ MacConnell, op. cit., p. 79.

The professional staff is guided by the school planner so that knowledge concerning the needs of the students, teachers, and program can best be accommodated.

Educational consultant. The educational consultant plays a vital role in the development of educational specifications. He is an individual that can guide the specifications committee in relation to new concepts taking shape throughout the country. The consultant brings to the district a wide span of knowledge concerning all aspects of educational specifications.

The primary function of the consultant is to guide and coordinate the contributions of the individuals and committees involved in planning.²

Consultants are usually hired on a part time basis from a state college, university, private practice, county school systems, state school systems, or an architect's staff.

Financial, legal, and insurance advisors. The district should make use of financial, legal, and insurance advisors that are available through their own personnel, state or county officials, or from experts throughout the country.

²Darwin W. Womack, "Role and Training of an Educational Consultant," National Council of School House Construction (October, 1964), pp. 59-62.

The financial advisor will analyze the cost of the building program. It is his primary responsibility to inform the school board and planning committee of the amount and sources of all available revenue.

The legal advisor will inform the board of any legal complications as the building is being planned and constructed.

The insurance advisor will assist the governing board and planning committee in planning for adequate coverage and insurance economies for the new facility.

School planning coordinator. The coordinator of the educational planning efforts of the school district's Educational Specifications Committee is usually the member who is considered to be the liaison between the architect and the planning committee. District personnel or committee members noticing any specifications that are not being met by the architect should work through the Planning Coordinator to have alterations made.

II. ORGANIZATIONAL PROCEDURES

Educational specifications have no set patterns to follow. The organizational procedures which follow have been used by this writer, under the adept guidance of Dr. James MacConnell, Stanford University Planning Laboratory, and many other school districts throughout the United States.

The school district's desires will usually dictate the organization of the educational specifications to be developed.

Educational considerations. A well rounded program of physical education should provide experience which will assist each boy and girl to develop and maintain maximum physical efficiency, to develop useful skills, to acquire socially acceptable manners of conduct, and to enjoy wholesome recreation.

Educational outcome. The physical education department of the Clark County School District endeavors to provide a broad instructional program which will enable each boy and girl to acquire an education aimed at developing desirable physical and social growth. Specifically, physical education seeks to develop the following attributes in every student:³

1. Habits and skills in:

Health

Posture

Recreation activities, including:

Aquatics

Combatives

Games of low organization

Gymnastics

Individual sports

Dual sports

Outdoor activities

Team sports

Rhythmics

³ Charles A. Bucher, Foundations of Physical Education (St. Louis: C. V. Mosby Company, 1960), pp. 115-133.

2. Knowledge and understanding about:

- Conditioning
- Fundamental techniques
- Health facts
- History of sports
- Physical fitness
- Physiological principles
- Rules
- Strategy

3. Physical fitness, including:

- Agility
- Balance
- Endurance
- Flexibility
- Organic vigor
- Power
- Speed
- Strength
- Coordination

4. Ideals, attitudes, and appreciations concerning:

- Fair play
- Honesty
- Interest
- Self-control
- Sportsmanship
- Courage
- Cooperation

The goals of physical education represent only potential contributions which must be sought and achieved through various planned activities, methods, and procedures. Teacher competency; administrative organization; and provision of facilities, equipment, and supplies are the three primary factors which determine the effectiveness of any physical education program.

Discernible trends. Planning for a secondary physical

education facilities should take cognizance of recent developments and trends throughout the country which point to:⁴

1. Increasing concern for development of complete programs of physical education at the secondary level
2. An increasing variety of physical education activity offerings
3. The growing participation in intramural and extramural programs
4. The increasing emphasis on education for participation in those activities possessing high carry-over recreational value, such as golf, handball, softball, and rhythmic
5. The tremendous emphasis on physical conditioning activities for all students in the form of calisthenics, running, weight training, and body mechanics
6. The added emphasis being placed on co-educational participation in both physical education classes and intramurals
7. The expansion of physical education programs into the area of outdoor education, including such activities as fly casting, firearm safety, campcraft, and boating.

⁴ Hollis F. Fait and Mary Helen Vannier, Teaching Physical Education in Secondary Schools (Philadelphia and London: W. B. Saunders Company, 1964), pp. 148-151.

8. The introduction of more flexible schedules, variable size grouping, the team approach to teaching, and increased use of teaching machines and audio-visual aids

9. More multi-use of facilities instead of separate facilities--by the boys' and girls' departments and by the community.

Schedule. The Clark County School District requires that each secondary student receive one hour of physical education instruction daily. The physical education program attempts to offer students the broadest possible opportunity to become familiar with a wide variety of activities and to develop intense interest and better than average proficiency in a few selected activities. The program of instruction therefore moves from elementary through intermediate to advanced levels of instruction in most activities. The instructional program also consists of a survey type presentation of many activities for all students in the sophomore year to a more intensive presentation of the smaller number of activities selected by juniors and seniors for proficiency.⁵ Every student, boy and girl, will be in a physical education class each day, five days per week.

Enrollment. Each physical education class will consist

⁵Interview with Mr. Glen Mackie, Physical Education Chairman, Clark County School District, 1965

of twenty-five boys and girls in special groups and/or forty to sixty in regular boys' and girls' classes.⁶

In the Clark County School District all high schools are scheduled on a five period or a six period day. Therefore, the peak period load of 250 students in any one physical education class period should not be exceeded. The peak period load is determined by dividing the number of periods into the total number of students in the boys' or girls' department (1,250 students divided by 5 periods will equal the 250 student peak load).

Activities. In general, the instructional activities will range from the individual student to large groups of students. The total physical education program consists of the following:

1. Daily physical education for boys and girls
2. Recreational programs (free activity) during school breaks
3. Intermural activities (voluntary participation)
4. Extramural activities; informal inter-school activities
5. Interscholastic athletics (for boys only)

The activities of the physical education program are based on principles of educational philosophy, physiology, anatomy, psychology, and sociology. The activities range from small muscle activities to large muscle activities. The program for girls includes:⁷

1. Team sports--basketball, volleyball, touch football, field hockey, softball, speedaway, and soccer
2. Individual sports--bowling, trampoline, tennis, golf, archery, tumbling, track and field, recreational games, and horseshoes
3. Rhythms--folk dance, square dance, modern dance, and ballroom dance
4. Aquatics--swimming, water safety, life saving, diving, and water ballet
5. Conditioning activities--exercise, adapted-remedial activities, running, body mechanics, and drill team
6. Classroom activities--health, first aid, outdoor education, and audio-visual

The program for boys includes:⁸

1. Team sports--football, basketball, baseball,

⁷Clark County School District, Physical Education Handbook, September, 1963, p. 19.

⁸Ibid.

soccer, volleyball, softball, and water polo

2. Individual sports--wrestling, gymnastics, boxing, badminton, tennis, golf, handball, bowling, horseshoes, recreational games, and track and field

3. Rhythms--ballroom dance, folk dance, and square dance

4. Aquatics--swimming, water safety, life saving, diving, and water polo

5. Conditioning activities--exercise, adapted-remedial activities, running, body mechanics, and weight training

6. Classroom activities--health, first aid, outdoor education, and audio-visual

There will also be some activities engaged in co-educationally. These may include archery, badminton, volleyball, horseshoes, dancing, tennis, aquatics, and recreational games.

In addition to the physical education instructional classes, a program of inter-scholastic athletics will be carried on in football, basketball, swimming and diving, water polo, baseball, track and field, wrestling, golf, tennis, and gymnastics. Most of these sports include participation by varsity, junior varsity, and sophomore teams.

Procedures. In all phases of the physical education program, except when classroom activities are scheduled, students are required to change from street clothes to a uniform suitable for the scheduled activities. These uniforms, whether furnished by the students or by the school district, will be stored in the department. Therefore, storage space for uniforms and regular street clothes must be provided.

Each student is expected to shower at the conclusion of any physical education activity. Towels are furnished by the school and dispensed to each student daily.

The interscholastic athletic program is generally an after-school activity. The participants in this program can utilize the same showers and toilet facilities provided for the physical education classes during the school day. The storage of athletic uniforms during on and off seasons, training needs, and additional coaching staff will require added space.

III. ORIENTATIONS AND RELATIONSHIPS

For efficient utilization, the gymnasium and auxiliary spaces should be located in relation to one another to facilitate traffic flow and minimize interference to participating groups. Relationships of the following areas are desirable in the physical education department:

1. Indoor areas:
 - a. Gymnasium with folding bleachers for 3,000 spectators
 - b. Main gymnasium storage
 - c. Auxiliary gymnasium; should be divisible
 - d. Exercise and apparatus storage
 - e. Dance and recreation studio (combined with gymnasium lobby as a student activities center)
 - f. Divisible classroom
2. Service facilities for the boys' area:
 - a. Locker and dressing area (capacity of 250 students at peak period load)
 - b. Shower and toweling areas
 - c. Towel and swim suit storage (damp area)
 - d. Toilets
 - e. Storage--seasonal and non-seasonal
 - f. Department office, dressing and shower area
 - g. Training room
 - h. Team room
 - i. Community and visiting team room
3. Service facilities for the girls' area:
 - a. Locker and dressing area (capacity of 250 students at peak period load)
 - b. Towel and swim suit storage (damp area)
 - c. Showers and toweling areas. Some private shower stalls must be considered in this area.
 - d. Toilets

- e. Storage--seasonal and non-seasonal
- f. Department office, dressing and shower area
- 4. Public area:
 - a. Hardtop paved areas
 - b. Outdoor basketball courts
 - c. Tennis courts with bang boards all on one side
 - d. Handball courts
 - e. Volleyball courts
 - f. Turf area
 - g. Multiple teaching stations
 - h. Storage for outdoor equipment
- 5. Special areas:
 - a. Football field
 - b. Track and field
 - c. Baseball field
 - d. Golf area
 - e. Archery area
 - f. Horseshoe courts
 - g. Storage for outdoor equipment
- 6. Aquatics area:
 - a. Swimming pool
 - b. Storage for pool equipment

The gymnasium and service units should be closer to the general academic area than to the outdoor activity areas. Hardtop courts should be nearer to the gymnasium-service

units than to the playing fields. The hardtop areas should be located so that foot traffic to other activity areas does not have to cross them.

Outdoor courts and fields should be so oriented that the late afternoon sun will not hinder participation in game activities. This requires a north-south orientation of field and courts. The softball and baseball diamonds should have home plate to the north and second base to the south.

The service units, locker, shower, dressing, and toilet rooms should be accessible from the gymnasium, swimming pools, outdoor courts and fields, and directly from the general classroom area.

Since the building facilities are to be used for team activities and for recreational purposes after regular school hours, it is essential that provisions be made to block off, as needed, the main gymnasium area, locker room, toilet rooms, shower rooms, and storage areas, so that facilities can be used with a minimum of supervision and difficulty.

The physical education offices should be so situated that instructors can supervise as much of the shower room, locker room, gymnasium, swimming pool, and outdoor courts and fields as possible. It is highly desirable to have the office located so that visual supervision can take place if the instructor is needed in the office at any time.

Provision should also be made for private teacher-pupil conferences and for receiving visitors.

The equipment issue area should be near to the office to permit easy supervision. Storage areas should also be provided adjacent to both gymnasium floors and outdoor field and court areas.

Shower and possibly toilet facilities in both boys' and girls' departments should be arranged so as to allow their use for all activities in the respective departments, including swimming. Shower and locker rooms should be arranged to provide for the distribution and collection of towels within the toweling area.

The auxiliary area should be accessible from the main gymnasium floor and the outside play area. It is suggested that the auxiliary gymnasium be accessible to the adjoining classroom by an operable wall.

The public entrance to the main gymnasium area should open on to the activity court. As mentioned previously, the enlarged gymnasium lobby or student center may also be used as additional space allocated to the physical education area.

General area relationships. See the following schematic diagram, Figure 1.

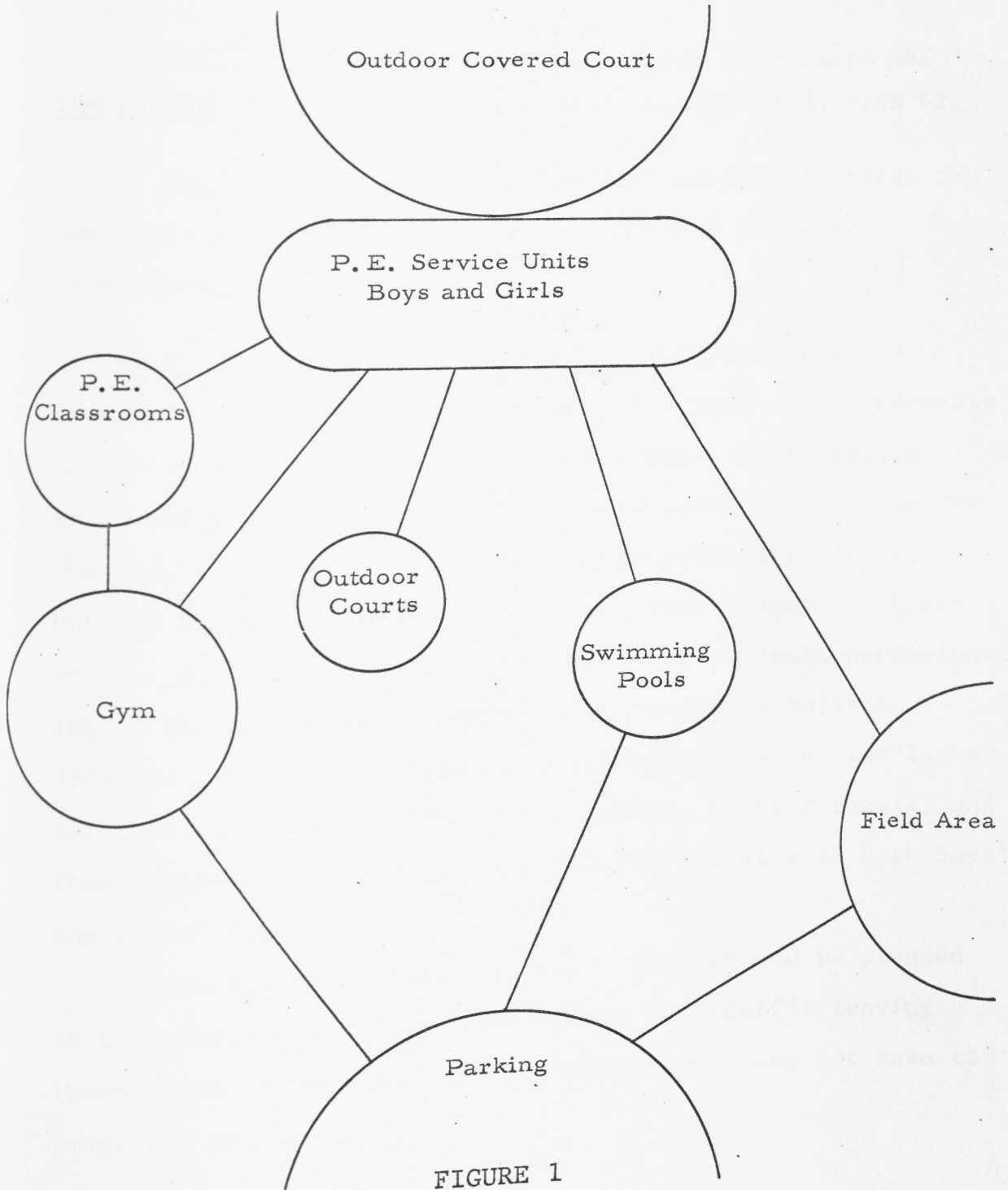


FIGURE 1

Specific area relationships. See the schematic diagram, Figure 2.

Specific area relationships of the facilities for the public. See the schematic diagram, Figure 3, page 42.

Space requirements. Table I, page 43, indicates the desirable space allocation of the Physical Education Department.

Traffic flow. Movements to the departments may originate from any area on campus. Movement may be directly to the classrooms or to the locker rooms. Foot traffic would enter the locker room facility where clothing must be changed; then movements may be to the gymnasia, fields, outdoor courts, swimming pool or physical education classrooms. A similar pattern is followed by students participating in the intramural, extramural, and interscholastic programs. After participation, students re-enter the locker room, obtain towels, shower, dry, dress, deposit towels, and then depart. The same traffic pattern prevails in both boys' and girls' departments.

The entryway to the service units should be planned so that traffic entering these units and traffic leaving these units for the various activity areas does not have to cross the gymnasium floor.

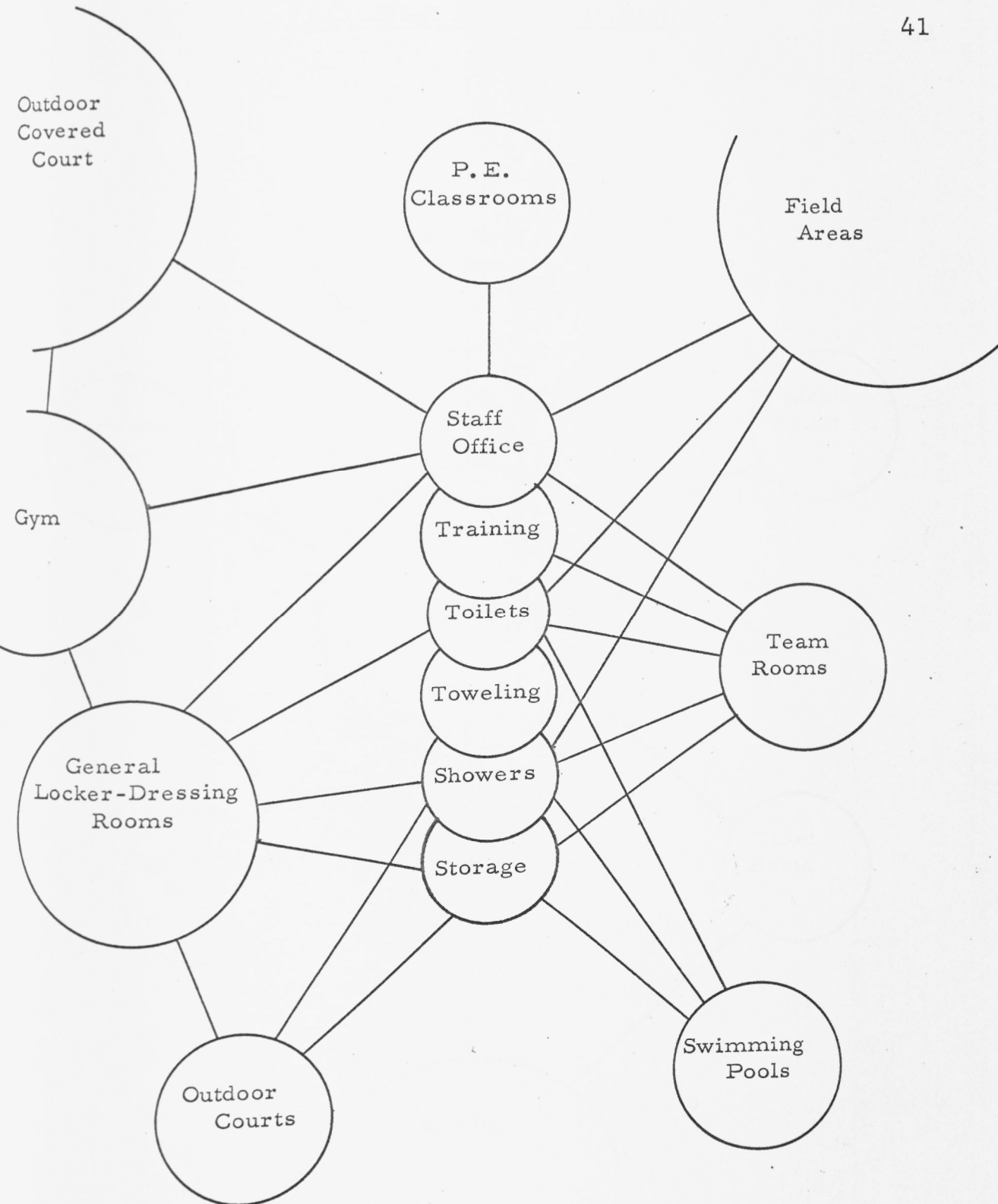


FIGURE 2

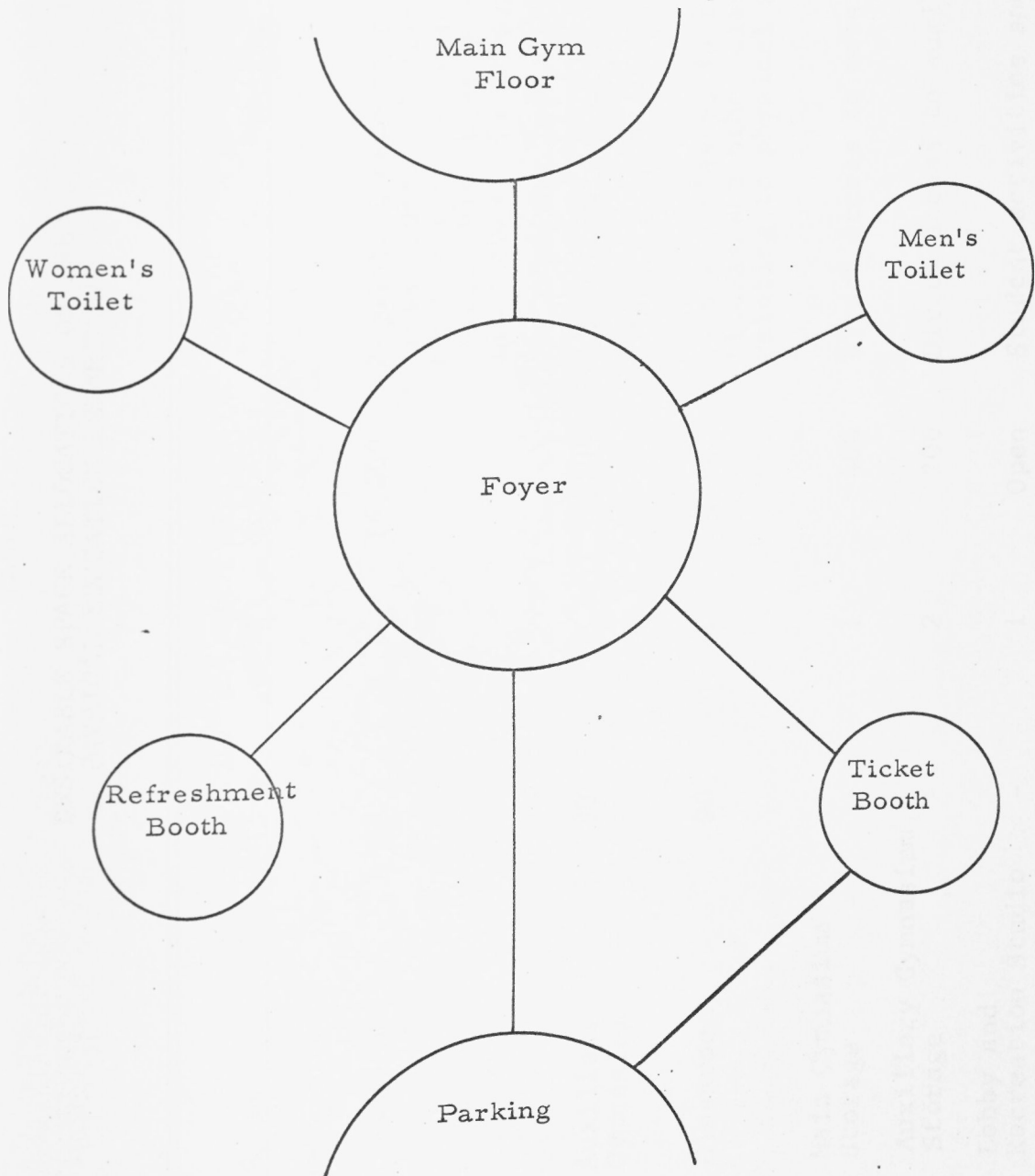


FIGURE 3

TABLE I
DESIRABLE SPACE ALLOCATIONS OF THE
PHYSICAL EDUCATION DEPARTMENT

Space	Unit Capacity	No. of Units	Total Net Area	Remarks
<u>Indoor unit</u>				
Gymnasium	3,000	1	16,000	Regulation main court with six cross courts. Divisible barrier between the six cross courts. Folding bleachers to seat 3,000 spectators. Clear ceiling height 22'
Auxiliary Gymnasium	90	2	2,000	For body mechanics, tumbling, and apparatus activities for boys and girls. Should be divisible
Classroom	90	1	1,400	Used for classes in first aid, fitness, and other class situations relating to physical education
Main Gymnasium Storage	-	1	400	Direct access to main gymnasium
Auxiliary Gymnasium Storage	-	2	200	Direct access to auxiliary gymnasium
Lobby and Recreation Studio	-	1	Open	Student activities and lunch area

TABLE I (Continued)

Space	Unit Capacity	No. of Units	Total Net Area	Remarks
<u>Boys' Service Area</u>				
Locker and Dressing Room	250	1	3,600	Direct access to Shower/Toweling room, toilets, team training rooms and equipment issue. Relate directly to main campus circulation, thence to gymnasiums, fields, and pool through shower area. Separate wet and dry foot traffic. Visual supervision from office.
Shower/Toweling	115	1	900	Direct access to pool and Locker/Dressing room.
Toilets	5			
Urinals	8	1	--	Direct access to Locker/Dressing room
Seasonal Equipment Issue and Storage	1	1	200	Access from Locker/Dressing room and shower area.
Non-seasonal Equipment Storage	1	1	600	Access from Locker/Dressing room and shower area.
Towel and Swimsuit Storage and Issue	1	1	150	Direct access to toweling area.

TABLE I (Continued)

Space	Unit Capacity	No. of Units	Total Net Area	Remarks
Team Room	200	1	2,500	Access from Locker/Dressing and Shower/Toweling rooms. Adjacent to training room.
Training Room	6	1	200	Direct access from Locker/Dressing room and adjacent to team room
Visiting Team and Community Room	50	1	900	Access from boys' and girls' Locker/Shower and toilet facilities.
Department Offices Showers/Toilets and Dressing Area	6	1	900	Visual supervisor of Locker/Shower rooms
<u>Girls' Service Unit</u>				
Locker/Dressing Room	250	1	3,500	Same as in Boys' Service Area
Shower/Toweling	115	1	1,000	Four private showers, direct access to pool and Locker/Dressing room.
Toilets	9	1	--	Direct access to Locker/Dressing and Shower/Toweling areas.

TABLE I (Continued)

Space	Unit Capacity	No. of Units	Total Net Area	Remarks
Seasonal Equipment Issue and Storage	1	1	100	Direct access to Locker/Dressing room and Shower area
Non-seasonal Equipment Storage	1	1	200	Direct access from Locker/Dressing area.
Department Offices Showers/Toilets and Dressing Area	5	1	600	Visual supervision of Locker/Shower areas.
Total Square Footage			35,350	

The shower-locker-area relationships should be such as to keep pedestrian cross traffic between locker and shower areas to a minimum.

Equipment storage areas should be so placed that traffic to and from them causes a minimum of interference with classes being conducted in the area.

IV. FURNITURE AND EQUIPMENT

In addition to the equipment required for the various activities previously listed, the following furniture and equipment, by area, should be supplied:

1. Main gymnasium:

- a. Indoor seating must be provided in the gymnasium to accommodate 3,000 people. This seating should be of the collapsible bleacher type so that floor space will not be continuously occupied by it. It is suggested that the auxiliary gym might open on to the main gym in order to accommodate some of the bleacher seating. The gym floor itself can be utilized for a stage area during student assemblies or similar programs. Following the stage-in-the-round concept, the audience would be seated on both sides of the gym floor. If necessary, a portable, raised platform could be placed at one end of the gym area.
- b. Electric scoreboard clock located over the center of the gym floor
- c. Scoring table with electronic controls
- d. Fourteen swing-up basketball goals--power driven (6 to each side--1 to each end). The two end baskets of the main playing court should swing up to one side so as not to hinder the opening and closing of the movable wall

- e. Additional basketball goals flush against available wall space
 - f. Recessed wall and floor fixtures for gymnastic equipment, volleyball and badminton standards
 - g. Recessed drinking fountain and cuspidor at each end of gym
 - h. Enclosed chalkboard and tackboard at each end of gym
 - i. Public Address System--located in center ceiling of gym
2. Auxiliary gym:
- a. 4 feet by 6 feet magnetic chalkboard and tackboard at each end of auxiliary gym
 - b. 4 full length unbreakable mirrors in one-half of auxiliary gym
 - c. 4 swing-up basketball goals
 - d. Recessed wall and floor fixtures for gymnastic equipment, volleyball and badminton standards
 - e. Standard gymnastic equipment including mats, horse, rings, parallel bars, trampoline, pulley weights, ropes, hand weights, horizontal bar, twisting belts, etc.
 - f. Equipment for adaptive program
 - g. Wrestling mats
 - h. Folding bleachers for 250
 - i. Drinking fountain and cuspidor at each end of auxiliary gym
3. Multi-use foyer:
- a. Enclosed chalkboard and tackboard
 - b. Enclosed full length mirrors along one wall

- c. Counter and equipment needed for student canteen
- d. Recessed trophy display case desirable
- 4. Classroom:
 - a. 90 tablet arm chairs
 - b. 2 teachers' desks and chairs
 - c. Chalk and tackboards
 - d. Pull-down projection screen
 - e. Darkening curtains
 - f. Storage cabinets
- 5. Locker-Dressing room--Alternate #1:
 - a. One 10" x 12" x 20" locker per student (1250 each for boys and girls)
 - b. One 12" x 12" x 60" locker for every six individual lockers (250 each for boys and girls)
- 6. Locker-Dressing room--Alternate #2:
 - a. One 10" x 12" x 36" locker per student (1250 each for boys and girls)
 - b. Built-in combination lock on each locker
 - c. Benches fastened to floor
 - d. Over-head, angled mirrors for boys
 - e. Full-length mirror at end of each locker row for girls
 - f. Enclosed chalkboard and tackboard (8' each)
 - g. Electric hair dryers (for girls)
 - h. Waste containers
 - i. Recessed Toledo scales

7. Team room:

- a. 200 18" x 18" x 36" lockers
- b. Built-in combination lock on each locker
- c. Benches fastened to floor
- d. Chalkboard (10")
- e. Angled overhead mirrors

8. Boys' Training room:

- a. 2 tables 4' x 6' x 32" high
- b. Portable training cabinet table style on wheels, with drawers, shelves, and metal containers
- c. One cabinet with locked doors, 6' high, 8' wide, with adjustable shelves 18" deep
- d. Hydrotherapy tanks--permanent
 - One full leg length
 - One lower leg length
 - One bent arm size
- e. Refrigerator with large freezing compartment for ice and ice storage for athletic injury treatment
- f. Two 2' adjustable infrared lamps
- g. Hand wash basin or sink
- h. Chalkboard and tackboard (4' x 4')

9. Community and visiting team room:

- a. 50 12" x 12" x 48" lockers
- b. Benches fastened to floors
- c. Mirrors

10. Girls' Departmental Office:

- a. 6 desks and chairs (5 teachers, 1 teacher aid)
- b. Separate space for departmental chairman
- c. 4 2-drawer filing cabinets
- d. Bookcases, lock cabinets and shelving
- e. 1 4-drawer file cabinet for departmental chairman
- f. Chalkboard and tackboard (4' x 4')
- g. Outside table and telephone
- h. Medicine cabinet
- i. Waste container

Dressing-shower room:

- a. 10 12" x 12" x 60" lockers
- b. Stall shower and toweling area
- c. Toilet
- d. Lavatory
- e. Mirror (full length)
- f. Soap dispenser
- g. Waste container
- h. Wall bench
- i. Sanitary napkin dispenser

11. Boys' Departmental Office:

- a. 8 desks and chairs for teachers, coaches, and teacher aid
- b. Separate space for departmental chairman
- c. 6 2-drawer cabinets

- d. 1 4-drawer filing cabinet for departmental chairman
- e. Bookcases and shelving
- f. Locked cabinet
- g. Chalkboard and tackboard (4' x 4')
- h. Outside telephone and table
- i. Medicine cabinet
- j. Waste container

Dressing-shower room:

- a. 18 18" x 18" x 60" lockers
- b. 2 shower heads and toweling area
- c. Toilet
- d. Lavatory
- e. Mirror
- f. Soap dispenser
- g. Waste container
- h. Wall bench

12. Custodial room:

- a. Sink with hot and cold water
- b. Bench area
- c. Rack for brooms and mops
- d. Locker for personal items

13. Other areas:

- a. Large enclosed mirror (6' x 12') in multi-use foyer (for use in dancing classes)
- b. Enclosed chalkboard and tackboard in main

gymnasium, multi-use foyer, and at each end of main gym and auxiliary gym

- c. Liquid soap dispensing systems (central supply) in shower rooms (one soap outlet per 2 shower heads)
- d. Sanitary napkin dispensers in girls' lavatory area
- e. Drinking fountains next to entries

14. Storage: The storage requirements for the physical education department are numerous and varied. The following separate storage areas should be provided:

- a. Outdoor equipment storage should be immediately accessible to the football and track areas and adequate to house 100 hurdles, 10 to 12 pairs of starting blocks, jumping standards, vaulting poles, football charging sleds, football blocking dummies, lining equipment, lime, baseball and softball bases, 7' and 8' steel rings, shots for shot-putting, shot-put foul boards, rakes, pitch forks, down and chain markers, and other heavy equipment.
- b. Another such storage area should be adjacent to the girls' field area and adequate to house such items as archery targets, softball bases, etc.
- c. Targets and outside maintenance materials could share the same facilities.
- d. Auxiliary gym storage should be immediately accessible to both the auxiliary and main gymnasiums and should have large double doors and a flush threshold. This space will accommodate tumbling and wrestling mats, boxing equipment, gymnastic apparatus (including trampolines), piano, projectors, record storage cabinet, portable volleyball and badminton standards.
- e. Off season storage in both girls' and boys'

and 1,000 swimsuits. This room is also used for lost and found clothing.

V. UTILITIES

Adequate recessed shower heads, recessed toilets, urinals, and lavatories should be furnished to accommodate a maximum class size of approximately 250 students. One shower head is recommended for every three to four students of the maximum enrollment. Water closets are recommended at one to forty-five for girls and one to one hundred for boys. Urinals are recommended for the boys at a ratio of one to thirty. Lavatories are recommended for boys and girls at a ratio of one to sixty. Drinking fountains are recommended for boys and girls at a ratio of one to seventy-five. If at all possible, the drinking fountains should be recessed. The girls' shower facilities should include four to six individual shower stalls in addition to the gang showers. Exposed plumbing in the shower rooms should be kept to a minimum. There should be a temperature control and master water cut-off valve for the showers.⁹

Electrical outlets should be provided for hair dryers in the women's dressing room area and for heating lamps and

⁹ International Conference of Buildings Officials, Uniform Building Code, (Pasadena, California, Vol. I, 1964),

a whirlpool bath in the boys' training room area. Hot and cold water outlets and drainage facilities are also needed for the whirlpool bath.

An outside phone should be installed in both the boys' and girls' departmental offices.

Adequate restroom facilities for spectators should be provided within the gymnasium, preferably off the multi-use foyer.

Warm air should be forced through the team lockers, thereby eliminating the necessity for a separate equipment drying room.

The main gym area should be supplied with sufficient artificial light to permit night basketball. Special consideration should be given to servicing the lighting fixtures in high ceiling rooms. The public address loud speakers should be located in the middle of the gym ceiling.

No floodlights for night football are anticipated in the immediate future.

Adequate ventilation to evacuate steam vapor is necessary in the shower and the adjacent areas. It is recommended that the shower and drying rooms, and perhaps the locker rooms, be heated with radiant heat in the floors, since students will undress in these areas, and in order to permit quick drying of the floors.

at each end of the main gym and the auxiliary gym, in the locker rooms, and in the multi-use foyer. They should be in separate recesses and accessible when bleachers are open. Drinking fountains should not be located in toilet rooms. Drinking fountains should also be provided in appropriate locations and all outdoor activity areas.

Electrical outlets should be provided for football, track (start of 100 and 220 yard dashes), swimming pools, and baseball fields, as well as for girls' outdoor activity area for use in conjunction with drill teams and outdoor activities.

It would be desirable to have an intercommunication system connecting offices, locker areas, gymnasium, classroom, and auxiliary spaces.

Adequate electrical outlets should be provided for the main gymnasium, auxiliary gym, classroom, and in the multi-use foyer to permit use of public address systems, record player, electric scoreboard, and projectors.

A public address intercom system should connect all units with the departmental office.

VI. VISUAL, THERMAL AND ACOUSTICAL CONSIDERATIONS

To facilitate student control within the locker rooms and shower areas, acoustical treatment is desirable but not absolutely essential. The same would be true for all other

VII. SPECIAL REQUIREMENTS

All projecting surfaces from walls should be avoided. Where they cannot be avoided, they should be elevated to a point where they do not create a hazard to participants in games.

The wall tile and ceiling surfaces should be treated to resist deterioration caused by moisture. There should be a single row of windows high up on each wall; otherwise there should be no windows.

The main gym floor should be as resilient as possible to protect the legs of participants from the shock of extremely hard surfaces. The main gym floor should be lined for basketball, volleyball, and badminton. The floor area in the shower, drying, and locker rooms should have a safe, non-skid surface. All doors of the gymnasium should be of sufficient size to accommodate crowds and bulky apparatus. The floor of the auxiliary gym should be of rubber asphalt tile lined for basketball, volleyball, and badminton. Ceiling height should be 26'.

The ceiling height in the multi-use foyer should be 26'. There should be provided two ticket booths, equipment appropriate to student canteen activities, and equipment needed for use of the area as a dance studio. Restrooms should be easily accessible from the foyer.

Some means of suspending the rings, ropes, and other gymnastic equipment at about the 24' level in the main gym and the auxiliary gym must be provided since basketball rules require that there be no obstruction below 24". Cupped eyes at the 10' to 15' height should be provided along the walls, to which decorations may be attached.

Provisions must be made so that commercial delivery trucks can conveniently deliver towels and other athletic equipment to the service units and the courts and fields.

Except where double doors are indicated all doors should be of a minimum width of 5'.

Grooming mirrors should be placed so as not to conflict with normal traffic flow in and out of the locker areas.

For ease of cleaning, shower and locker room floors should curve up where they join the walls and in the corners.

Lockers should be set on a 4" to 6" raised, coved, concrete base. A water hose outlet should be provided in the locker-shower room area for flush cleaning. Passageway between rows of lockers should be 8-1/2' to 9' in width.

The office area should be located to provide a good view of the locker room and shower area for supplementary supervision. Elevated offices are desired by the teaching staff; however, this design concept is expressly prohibited by state regulations for state-aided schools.

The classroom should be provided with darkening curtains for projection purposes, and with a permanent pull-down projection screen.

VIII. OUTDOOR AREAS

The following areas are recommended to meet the needs of physical education, athletics, and community recreation activities.

Hard-surfaced multi-purpose area. The all-weather areas should be laid out with dimensions of 100' x 200' each. Due to the nature of the surface of this area, it can be used at all times except in bad weather. It provides for many court activities, such as basketball, volleyball, badminton, tennis, and shuffleboard, which can be played on small areas and which require comparatively hard, smooth playing surfaces. When separate areas are used for these activities, approximately one acre should be allotted. All hard surfaced outdoor areas should be given slickness and slope for quick drainage.

Football field. The recommended dimensions are 190' x 420'. Since most of the play is lengthwise of the field, it is desirable to have the long axis extend northwest and southeast, forming an angle of 54 degrees from north, to avoid glare from the sun. The football field should be

Bleachers. If spectator bleachers are to be provided on one side of the field only, they should be located on the west side. Extra care should be taken to construct bleachers at an angle sharp enough to provide clear sight lines for every seat. Construction of a 50' rifle range underneath the bleachers is desirable. Space under the bleachers might also be utilized for light bag punching facilities (40 light bag attachments on horizontal platforms 6' 4" in height in an enclosed, well ventilated and lighted room).

Running track. A one-fourth mile running track is recommended. General practice is to locate the track around the football field. The width of the straightaway and running curve should be 34' (9 lanes of 42" plus 1' on each side). The inside curve of the track is 110' with a true semi-circle for the curve. The straightaway should be the west side and should be extended to a minimum straightaway, distance 700'.¹⁰ The space required for laying out the oval of a one-fourth mile track is approximately 260' x 590' with additional space required for the extended straightaway.

Jumping pits. Separate pits with runways should be provided for high jump, broad jump, pole vault, and

¹⁰

Louis E. Means, Physical Education Activities, Sports, and Games (Dubuque, Iowa: Wm. C. Brown Company, 1952).

hop-step-jump. One set of these pits should be located inside the running track in the semi-circular area near one end of the field or between a side of the football field and the track. A second set of these pits should be located in field areas close by.

All runways should be of rubberized macadam. Table II furnishes dimensions for jumping pits.

Weight throwing events (shot put, discus). These events are usually located on the football field or in the semi-circular area near one end of the field. Approximate dimensions of the shot put are 100' x 100'. A cone shaped area is necessary for the discus. A rectangle area of approximately 125' x 200' will be needed to develop this cone.

Field game area. An area with dimensions of approximately 200' x 400' should be laid out in order to provide for maximum participation in such large space games as fieldball, field hockey, touch football, soccer, speedball, softball, etc. This area may also be used as a practice field or for football. Fields, backstops, and goals for various games should be laid out in such a way as to permit overlapping use of the area during different seasons.

Baseball field. An area with dimensions of 350' x 350' is recommended for laying out a regulation baseball

TABLE II
 DIMENSIONS OF JUMPING PITS [†]

Type	Width	Length	Length of Runway to takeoff Board
Long jump pit	10'	22'	125'
Pole vault pit	16'	12'	100'
Hop, step, and jump	10'	22'	125'
High jump	16'	10'	50'

[†]National Collegiate Athletic Bureau, 1965 Official Rule Book (New York: 1965).

field. This area allows for a minimum distance of 60' from home plate to the bleachers or backstop. Best results are secured when the home plate is located in the northeast portion of the field, although some authorities favor the northwest portion. East or southeast corners should be avoided. The baseball field may overlap other playing areas. However, it is desirable to avoid overlapping the skinned area of the infield with any other play area. Care should be taken to keep the running track out of range of batted balls.

Horseshoe courts. A battery of 10 courts is recommended. A space approximately 60' x 80' will be necessary. Courts should be so located as to eliminate any cross traffic.

Apparatus area. A space approximately 25' x 100' should be set apart for such equipment as chinning bars, vaulting bars, parallel bars, horizontal ladders, climbing ropes, etc. This space should be located near one side or end of the playground and in such a way as to eliminate cross traffic through the area.

Archery range. An archery range which would provide for a maximum shooting distance of fifty yards will require an unobstructed area approximately 90' x 225'. This will

provide sufficient space for one of six targets. A naturally isolated location is desirable.

Golf. A practice green or turf area of approximately 100' x 100' is recommended for short approach shots and putting. Although the regulation game cannot be played, such games as clock golf, croquet golf, and miniature golf may be enjoyed. At times an isolated section of the larger area may be used for longer shots.

General purpose area. A turf area of approximately 100' x 200' should be set aside for games of low organization, informal activities, and free play.

Tennis. Approximately 27,000 square feet should be set aside to accommodate ten tennis courts. The courts should measure 36' x 78' and have adequate clearance. Tennis courts should be enclosed with woven wire fencing 10' to 12' high. Part of this fencing should be a practice bang board of lumber or concrete.¹¹ The tennis courts should be oriented north and south, with the bang boards located on the west side of the courts.

Playing fields. All playing fields should be enclosed with woven wire fencing 8' high.

Swimming pool. Swimming ranks as one of the most popular forms of recreation. It also holds a high place in the physical education program. Few, if any, recreation or physical education facilities have had a more striking growth in recent years than the swimming pool. The services of a competent, experienced planner are desirable to assure proper planning of this highly technical and expensive facility.

Swimming, with its variety of related activities, has long been recognized by educational leaders for its contribution to physical development, enjoyment, health, recreation, social growth, and self-reliance.

The greatest single motivation for swimming is the fun or enjoyment factor, as indicated by the 50 to 60 million people who enjoy the more than 60,000 pools and public beaches in this country.¹² The ability to swim is a basic safety requirement; furthermore, knowing how to swim opens the door to many other aquatic activities such as boating, sailing, canoeing, fishing, water skiing, and skin diving.

An increased emphasis on basic swimming instruction to as many students as possible is the ultimate goal in the Clark County School District. Therefore, it is only

¹² The Kiplinger Washington Letter (Washington, D.C.: The Kiplinger Washington Editors 1964) p. 4

reasonable that districts take notice of the discernible trends which are indicating an increase in pool construction --institutional and domestic. Construction of indoor and outdoor pools will continue in order to help accommodate people taking advantage of both outdoor sunbathing and indoor swimming.

The following activities are usually included in the physical education swimming program:

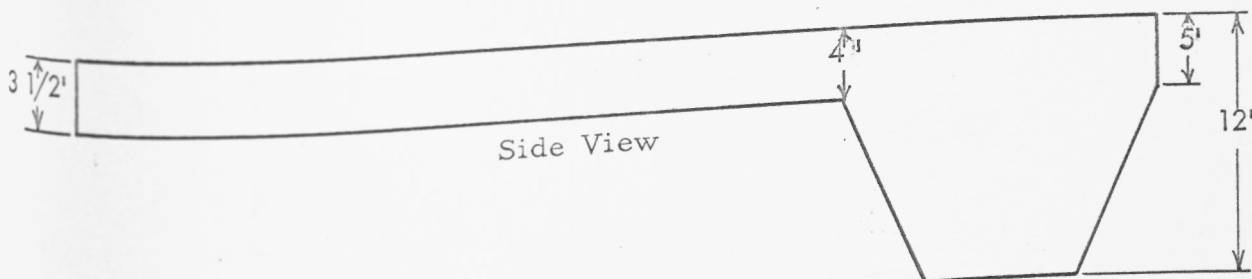
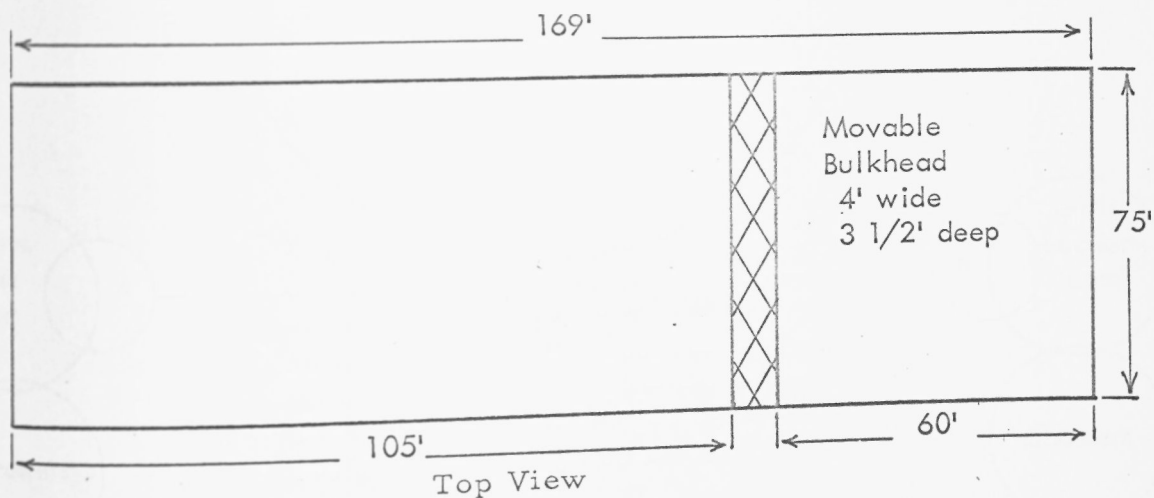
1. Instruction in aquatic activity
2. Diving
3. Water safety and survival swimming
4. Recreational swimming
5. Rehabilitation and special exercise
6. Synchronized swimming
7. Demonstrations, shows, and pageantry
8. Competitive swimming
9. Water polo

The design should be as follows:

1. Olympic design: The ideal length is 50 yards, as this meets the American and world long course standard. The ideal width is 75 feet. These dimensions allow the 50 yard length to be used for long course and the 75 feet for short course competition. See Figure 4.

2. Alternate design #1: Same as above, except the length would be 25 meters.

OLYMPIC DESIGN [†]



[†]David Armbruster, Swimming and Diving (St. Louis: C. V. Mosby Company, 1963), pp. 312-316.

FIGURE 4

3. Alternate design #2: An indoor-outdoor pool 75' x 42' and another outdoor pool of the same size.

4. Pool depth: The one meter board requires a minimum depth of 10 feet, the three meter board a minimum depth of 12 feet. The shallow end of the pool should be 3-1/2 feet--sloping to a depth not to exceed 4-1/2 feet, except in the diving area.

5. The end walls of the pool should be parallel and vertical and so constructed that the swimmer can stand close to the wall to insure safety. In competition, swimmers should be able to push off from the wall with their hands or feet when making turns. The wall should extend a minimum of 3' 6" below the surface of the water at the shallow end, thus providing sufficient depth for both take-offs and turns.

6. The following general points should always be considered:

- a. Boys' P.E. office view and accessibility to locker room, exercise room, and pool area
- b. Girls' P.E. office view and accessibility to locker room, exercise room, and pool area
- c. Permanently covered 25 yard pool with sliding doors and permanent starting blocks
- d. Outdoor 25 yard pool with continuous depth of 12 feet, detachable starting blocks
- e. Filter room below deck level--sand and gravel (Multi-Cell)--chlorine in separate room below deck
- f. Underwater viewing windows - 4' x 2'

- g. The addition of sliding doors between the indoor and outdoor facilities would transform the entire area into a completely open atmosphere when the weather allows. This type of facility would allow for year round instruction and would be invaluable as a night instructional area in summer and winter.
- h. The addition of the second 25 yard pool with a continuous depth of 12 feet would allow for the following:
 - 1. More and better located teaching stations than the present facilities
 - 2. A better competitive situation with a total of 12 regulation short course lanes. This would allow for better administration of practices and swimming meets (inter-scholastic, AAU, and championship).
 - 3. The 75' 1" x 42' exhibition, water polo, and diving pool would allow for better spectator observation than present facilities in the district.
 - 4. A more useful summer recreational and instructional facility

7. Construction materials: The surface of the pool basin, coping, and decks should have two qualities. It should be of material which may be easily cleaned and which is as nearly non-slip as possible. As a rule, however, the better traction a surface affords, the more difficult it is to keep clean. Tile, glazed for easy cleaning, is the best surfacing for the pool basin and, for the decks, unglazed, non-slip tile is recommended. To prevent slipping on the turns in competitive swimming, each end wall should be surfaced with abrasive-type tile for a distance of three feet below the overflow gutters.

8. Decks: Experience has shown that wide decks contribute to the safety, comfort, and enjoyment of the bathers. They not only afford easy circulation of traffic around the pool but are useful for swimming and life saving drills, and for accommodating large groups participating in pageants and other special events. The larger the pool, the wider the deck should be. A minimum of 15 feet at the sides and shallow end, and of 20 feet at the deep end is recommended. Cement decks should be brush finished so as not to be slippery when wet. They should also be sloped slightly toward the drains, preferably away from the end of the pool. Coloring the deck reduces the sun glare.

9. Unpaved areas, such as turf or sand, should be separated from the pool deck by a fence, and bathers should be required to pass through a shower before re-entering the pool. Pool decks should be 9" to 12" above water surface.

10. Coping: All pools, except those featuring the deck-level gutter, should have coping or curb above deck level around the perimeter of the pool basin. It serves to prevent water splashed onto the deck from returning to the pool. Construction materials possessing good non-slip qualities are recommended. A color which is in contrast with the color of the deck is also recommended.

11. Overflow gutters: Board of Health regulations require that public pools have gutters. The gutter serves

as an overflow, carrying off scum, debris, and discharges from nose and mouth. It also serves as a hand-hold for bathers and to trap waves, thus acting to maintain a smooth water surface. The most desirable gutter design for competitive pools is a deep recessed wall gutter, commonly referred to as the Olympic gutter. The design of this gutter is such that ripples or waves strike the inside angle of the gutter and are deflected down into the trough, thus creating a smooth water surface. In this type gutter, drains should be provided with shut-off valves, so that during competition the pool water may be maintained at a constant level at the gutter lip, thereby assuring a smooth water surface. See Figure 6.

12. Markings: Pool markings serve to indicate water depths and pool distances. Other markings include lane numbers and guide lines, turn indicators, and race-course finish lines. Preferably, all markings in the pool basin should be in black, and those on the coping or deck should be in a contrasting color.

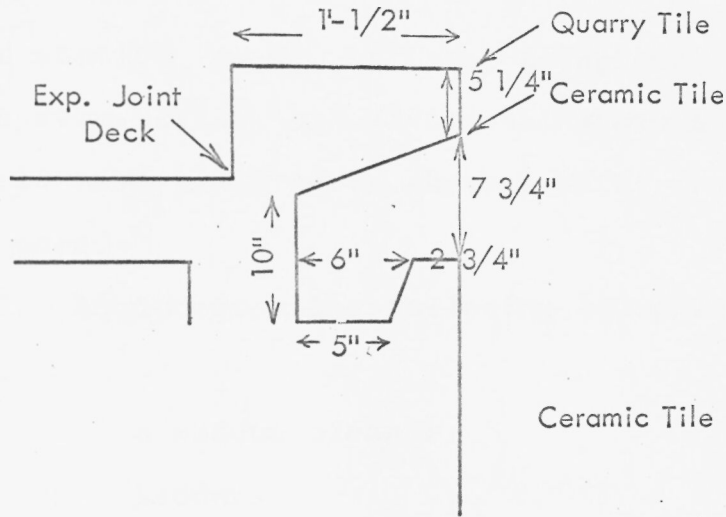
13. Administrative control: Provision should be made for storage space sufficient to store the items of equipment and supplies used around the pool. Recessed spaces for such items as a canoe, surfboards, surface-line buoys, and extra diving boards are suggested.

14. A work room, preferably raised above the pool-

It should include the

OVERFLOW GUTTERS

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[†]Armbruster, Ibid.

FIGURE 6

first-aid station, desks, shelves, telephone, public-address system outlet, and additional storage space. This room should have glass walls above a three inch dado, facing the pool area.

15. Equipment: The following equipment should be provided:

- a. a vacuum cleaner
- b. ladders
- c. starting blocks
- d. surface-line buoys
- e. a water-testing kit
- f. a pool brush

Equipment items which should be built-in are:

- a. cuspidors
- b. a drinking fountain
- c. permanent ladders
- d. surface-line buoy holders (eyelet)
- e. life-line holders
- f. hot- and cold-water hose bibbs
- g. public address outlets
- h. telephone jack

All of these built-in items should be recessed in the walls of the pool basin or pool room, or in the decks. Built-in items should be located away from heavy-traffic paths.

16. Provision should be made for wiring for underwater

pool lighting (15' apart and serviceable without requiring pool drainage) and appropriate electrical outlets for the use of spotlights for special events.

17. Diving board platforms should be for two one-meter and one three-meter boards. Platforms should be at least 10 feet apart. In the case of the three-meter boards, platforms should be of the cantilever type to give deck clearance. One-meter platforms that allow the boards to swing back during races, swim shows, and other exhibitions are recommended. Moveable platforms to enable placement at either end or side of diving pool area are desirable.

18. Spectator accommodation indoors: The spectator area should be completely separated from the pool deck and should be constructed of non-corrosive, non-absorbent materials. Seats should be arranged in banks along the side of the pool and should provide sight lines for all seats to all parts of the pool. The spectator area should be parallel to the diving platform. The first row of seats should be three to five feet above the deck.

19. Spectator accommodations outdoors: For formal use, an area outside the pool fence may be set aside for spectators. Temporary or permanent stands may also be provided. Another method is to provide a concrete stand in the pool area, to which spectators may be admitted. This is particularly desirable for accommodating spectators during

water shows or swimming meets. It may also be used as a sun-bathing deck for swimmers.

20. In traffic control, the guiding principle is that of separation of wet and dry traffic. The admission of swimmers to the pool deck should be restricted to a route from the locker room to the toilet, suit room, and shower. Outsiders should go through the work room or office to the pool.

21. Relationship with other buildings: If the swimming pool is constructed indoors as part of the physical education plant, it should be so designed that it will be possible to open and operate the swimming pool facilities and locker and shower rooms without opening the remainder of the building. Toilets should be located between the locker room and shower. Consideration should also be given to suit rooms located between the shower and pool, and possible shower tunnels leading to the pool deck.

22. A lobby, checkroom, and toilets for use of spectators attending events in the pool should also be provided.

23. Fencing: All outdoor pools should be completely enclosed by a single fence eight feet high or a double fence six feet high with landscaping in between. This affords control and safety of operation.

24. Parking: The requirements for parking space

depend upon the availability of street parking, the capacity of the pool, and the pool location in relationship to its clientele. Parking areas should be paved. Where this is not done, they should be located far enough away to avoid dust blowing into the pool.

25. Public address systems: A public address system is a valuable asset to any outdoor pool operation. The speakers should be the "all weather" horn type. The amplifier and microphone should be located in the pool office.

26. Filtrations: A system of sand-gravel filters is recommended. Water purification agents should be either chlorine or bromine (bromine recommended). Pumps should be below water level. An underwater observation window should be provided in the filter room.

CHAPTER IV

SUMMARY

It has been the purpose of this study to outline specifically those problems related to organization and administration and the development of educational specifications for a physical education plant. There has been an unavoidable overlapping of materials, in some instances, because of the complex problem in developing educational specifications.

The writer has pointed out the personnel involved in developing a systematic approach to planning physical education facilities to meet the demands of today and tomorrow. Also, the organizational procedures of physical education specifications have been defined in relationship to the Clark County School District's philosophy and objectives.

It has been pointed out that educational specifications is a written program describing the curriculum and the special needs of the district involved in developing these specifications. A special point was made to indicate that this written program should not be the thinking of any one person or special interest group, but a joint effort by the team which represents all areas concerned with describing

and implementing the physical education program of the school, coordinated through a single source.

In view of the trends, innovations, and premises impending upon the physical education programs in our schools today, it is important that individuals and specialists in the physical education field help develop specifications to guide the architects' design concepts in providing specific and multi-functional use spaces consistent with the educational program in the Clark County School District.

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