PHYSICAL EDUCATION FACILITIES GUIDELINES

FOR NEW CONSTRUCTION AND MAJOR RENOVATIONS

MARYLAND STATE DEPARTMENT OF EDUCATION

Preparing World-Class Students

June 2011

State Board of Education

Mr. James H. DeGraffenreidt, Jr., President

S. James Gates, Jr.
Charlene M. Dukes
Mary Kay Finan
Madhu Sidhu
Sayed M. Naved
Guffrie M. Smith, Jr
Donna Hill Staton, Esq.
Ivan C.A. Walks, M. D.
Kate Walsh
Luisa Montero-Diaz
Gayon M. Sampson, Student Member

Nancy S. Grasmick
State Superintendent of Schools
Secretary-Treasurer of the Board

The Honorable Martin O'Malley
Governor

Maryland State Department of Education

www.marylandpublicschools.org

Stephen Brooks
Deputy State Superintendent
Finance

Mary Cary
Assistant State Superintendent
Instruction

Robert Crawford
Director
Business Services

Judy Jenkins
Director
Curriculum

Barbara J. Bice
Chief
School Facilities Branch

Michael Mason
Specialist
Physical Education

Table of Contents

Table of Contents, cont.

Page

Acknowledgements

Guidelines Advisory Committee

J. Kurt Buckler
Assistant Administrator, Engineering
Baltimore County Public Schools

Lawrence Fryer
Chief Operating Officer
Prince George's County Public Schools

Betsy Gallun
Health, Physical Education and Dance Coordinator
Prince George's County Public Schools

Kimberly Howe
Supervisor of Capital Planning
St. Mary's County Public Schools

Ken Lurz
Program Manager
Maryland Department of General Services

Ginny Popiolek
Health and Physical Education Supervisor for Elementary and Middle Schools
Harford County Public Schools

Andrew Roper
Supervisor of Health, Physical Education and Athletics
St. Mary's County Public Schools

Brett Stark
Curriculum Specialist for Secondary Health and Physical Education
Frederick County Public Schools

Sue Strobel (retired)
Coordinator of Health and Physical Education
Cecil County Public Schools

Kathleen Wack
Curriculum Specialist for Elementary Physical Education and Health
Frederick County Public Schools

Amy Wiley
Physical Education and Dance Supervisor
Prince George's County Public Schools

Sally Nazelrod
Coordinator for Health, Physical Education, and Dance
Baltimore County Public Schools

We also thank:

Maryland Public Schools Supervisors and Coordinators of Physical Education, for their input and suggestions in the development of the guide and Trina Narivanchik, Administrative Specialist, School Facilities, Maryland State Department of Education

Foreword

The Maryland State Department of Education recognizes the importance of physical activity and physical education. Physical education can serve as a vehicle for helping students develop the knowledge, attitudes, motor skills, behavioral skills, and confidence needed to adopt, maintain and make informed decisions about leading a physically active lifestyle. Regular physical activity improves functional status and limits disability during the middle and later adult years. Physical activity contributes to quality of life, psychological health, and the ability to meet physical work demands. It is the vision of the Maryland State Department of Education that providing school facilities which encourage increased physical activity will enable our society to address the growing concern of childhood and adult obesity and lead to a healthier adult population.

These voluntary facilities guidelines are intended for school planners, principals, teachers, parents, architects, board members, and other members of school planning committees responsible for the planning and construction of school facilities and fields. The guidelines may be applied to new construction and major renovation projects.

The guidelines address national and State physical education program content standards. It refers to practices which have been recommended by national associations such as the National Association of Sport and Physical Education (NASPE), the association that developed the National Standards for Physical Education.

We believe that physical education is a key component of a coordinated school health program that results in healthier children more ready to learn, healthier adults, and healthier communities. We are pleased to present these voluntary design guidelines to assist you in planning and designing school facilities for physical education programs.

Sincerely,

Nancy S. Grasmick
State Superintendent of Schools

1.0 Introduction

The physical education program has the potential to significantly impact the cognitive, affective, and psychomotor development of today's youth in unique ways. It contributes to the overall goals of education. The physical education program teaches not only physical skills, but skills that carry over into every aspect of a child's life: goal setting, building self-esteem, increased alertness after physical activity, cooperation, tolerance for people with differences, and socialization. Additionally, physical education makes a unique contribution to the education of the student: it is the only subject area in the school devoted to the study of human movement, the acquisition of physical skill, and the promotion of fitness. It promotes the development of the whole individual.

Physical education instruction also makes students aware of the obesity epidemic and the role they can play in developing a healthy lifestyle. Recent data from the National Center for Health Statistics shows that more than 66 million Americans are obese – that's 32 percent of U.S. adults age 20 or older. And the news is equally troubling for younger people, too. Obesity in children and teens has tripled since 1980, and more than 12.5 million young people between the ages of 2 and 19 are considered overweight. The following statistics from the Center for Disease Control's School Health Index present more compelling evidence of the need for physical education.

- Poor eating habits and physical inactivity together account for at least 300,000 deaths among U.S. adults. Only tobacco use contributes to more deaths.
- Disease, cancer, stroke, diabetes, high blood pressure, and osteoporosis are linked to physical inactivity.
- The most recent National Health and Nutrition Examination Survey data (2003-2006) showed that for children aged 6-11 years and 12-19 years, the prevalence of being overweight was 17.0% and 17.6% respectively.
- Nearly half of 12-21 year olds do not engage in vigorous physical activity on a regular basis.
- Overweight children are at risk for heart disease and diabetes and at risk to become overweight adults, according to the Centers for Disease Control.

In order to address the nation's obesity epidemic, The U.S. Child Nutrition and Women, Infants and Children (WIC) Reauthorization Act of 2004, Section 204 Wellness Policies, required that all school districts in the United States implement a Local Wellness Policy by July 1, 2006 to increase student's healthy eating and physical activity. Districts around the State of Maryland are designing and implementing wellness plans that will incorporate new programs, practices, and interventions with a common goal of helping students to be healthy and physically active so they are ready to learn. Key activities included developing nutrition education standards and school-based physical activities that promote student wellness.

In our age of computers and technology, the emphasis is on sedentary pursuits rather than active ones. While old style physical education programs focused on learning specific sports, present day physical education emphasizes helping students to discover which physical activities they can enjoy and use in a lifelong personal fitness program and encourages students to become lifelong movers.

Today's physical education program is significantly more individualized, concept centered, and technology based than the traditional physical education program. The infrastructure, use of space, and equipment/supply demands are very different. These guidelines for facilities, equipment, and supplies have been developed to meet these new situations.

The Maryland State Department of Education (MSDE) distributes facilities guidelines as recommendations, not required standards. The guidelines do not differentiate new construction requirements from major renovation requirements. It is not always possible to meet the guidelines in a renovated facility. MSDE encourages local school systems to apply these guidelines to renovation projects to the maximum extent feasible. All major construction projects require State review and approval. MSDE staff work closely with school system planners and architects to promote the implementation of the guidelines and develop appropriate designs.

Typically, guidelines are available in hard copy for distribution and electronically on the MSDE website. Print copies of guidelines are distributed free of charge to Maryland school systems and are available to private individuals and other States at a small charge.

2.0 Maryland Physical Education Programs

The Maryland State Board of Education requires a program of physical education in public schools, Code of Maryland Regulations (COMAR) 13A.04.13.01. In grades K-8, each local school system shall provide an instructional program in physical education each year for all students. In grades 9-12, each local school system shall offer a physical education program which enables students to meet the graduation requirements and to select physical education electives. One-half credit of physical education is required for graduation.

Physical education in Maryland strives to develop physically educated students as defined by the National Association for Sport and Physical Education (NASPE).

A Physically Educated Person:

HAS learned skills necessary to perform a variety of physical activities;
IS physically fit;
DOES participate regularly in physical activity;
KNOWS the implications of and the benefits from involvement in physical activities; and
VALUES physical activity and its contribution to a healthy lifestyle.

The Maryland Physical Education Content Standards (see Appendix A) were designed to be consistent with the National Standards for Physical Education developed by the NASPE (see Appendix B). All districts in the State align their curriculum with the State physical education curriculum.

The Maryland Physical Education Content Standards expand upon the NASPE standards and require students to use skills and knowledge in active, in-depth learning experiences that focus on problem solving, decision making, and investigating authentic movement problems. Because of this, the Maryland Physical Education Content Standards look different from the NASPE standards, but they include the basic knowledge and skills advocated by both National and Maryland state experts. This curriculum is a comprehensive, sequential program of instruction that promotes lifelong physical activity, follows prescribed State guidelines for content and safety, and makes connections to other content areas.

2.1 Physical Education Content Standards

The Maryland Physical Education Content Standards reflect scientific principles of Exercise Physiology, Biomechanics, Social-Psychology, and Motor Learning essential to the development of a physically educated person. These principles are consistent with those in other academic areas, facilitating cross-curricular connections among physical education and science, mathematics, language arts, social studies, art, music, and health.

For example, the scientific principles of exercise physiology emphasized in Standard 4, such as those that regulate muscular, skeletal, and nervous system functions and responses to physical activity, can be linked directly to content standards in the life sciences.

Students can use the biomechanical principles in Standard 2 to examine the generation and application of forces consistent with those in the physical sciences, while analyses of physiological and biomechanical principles and applications can be described mathematically, enhancing students' understanding of the relevance and relationships between these bodies of knowledge. Teachers are encouraged to design tasks that focus on the application of these principles to students' life events in active, enjoyable settings. This contributes to understanding and retention of concepts.

The social/psychological principles explained in Standard 6 contribute to students' understandings of themselves and others through the development of positive intra-personal and social skills within a diverse community of learners.

The motor learning principles in Standard 3 explain the processes involved in learning physical skills. This knowledge enhances students' understandings of themselves as growing, learning individuals, reinforcing the importance of education and schooling in their lives.

Standards 1 and 5, Skillfulness and Physical Activity, emphasize applications of the scientific principles and concepts in the previous four standards within concept-rich movement tasks and activities. Through these two standards, students develop a rich and meaningful understanding of movement-related concepts and are encouraged to design and adapt scientifically sound physical activity and skill improvement plans.

School districts that consider physical education programs as an integral part of the child's education have high expectations for student learning outcomes and accompany these high expectations with adequate program support for facilities and

equipment. School districts should develop facility recommendations that will allow flexible grouping, individual choice, and practice. They should determine the technology and supply recommendations that best support student achievement of the Maryland Physical Education Content Standards.

National Association of Sport and Physical Education Recommendations:

1. Boards of Education, through their school budget process, will:
   a) fund the purchase and maintenance of appropriate and sufficient physical education supplies and equipment;
   b) fund equitable physical education facilities and maintenance of these facilities for each school; and
   c) develop standards and procedures for purchasing equipment.

2. Physical education teachers, physical education program administrators, and school administrators will jointly:
   a) develop standards for appropriate supplies and equipment; and
   b) provide input to plans for new physical education facilities.

3. School and community facilities and programs will be designed and implemented to support and complement one another in serving children's needs.

2.2 Elementary Physical Education Programs

Physical education in grades prekindergarten-3 emphasizes the development of gross and fine motor skills, manipulative skills, creative movement, rhythms, gymnastics, and game skills. In the later elementary years, grades 3-5, fundamental and manipulative skills are refined along with dance and game skills. Inclusion of individual, partner, and team activities and fitness skills are introduced in these years as well. Emphasis is also placed on helping students develop positive self-worth, social skills, and safety awareness. Students are encouraged to work together to achieve common goals by participating in cooperative activities at this age level.

"Appropriate Practices for Elementary Physical Education," published in 2000 by NASPE, states there are major premises that guide thinking about planning for and evaluating elementary physical education programs. These are:

- The ultimate purpose of any physical education program is to guide children into being physically active for a lifetime.
- Children should engage in physical activity appropriately designed for their developmental levels.
- Recess and physical education are important but different parts of the school day.
- Physical activity and physical education are not the same. (Physical activity is the subject matter of physical education while physical education is an instructional program taught by teachers certified in physical education)

2.3 Secondary Physical Education Programs

Middle school students experience significant growth physically, emotionally, socially, and intellectually. The physical education program should facilitate and support this growth period. Middle school students have been exposed to a variety of movement experiences as elementary students. The middle school physical education experience should complement, reinforce, and extend those movement experiences beyond the elementary school experiences.

Middle school students participate in a daily program of physical education that emphasizes team building, accountability, and positive interaction with the diverse population that surrounds them. Activities challenge students to cooperate and compete with teamwork, decision making, leadership and communication. Students participate in activities designed to develop individual psychomotor skills, physical fitness, and an understanding of the fundamentals of team play. The importance of physical fitness is stressed and students learn the basic concepts of strength, endurance, and flexibility.

Individual and partner activities receive increased attention as students begin to set lifetime goals for maintaining or improving their skills and fitness. A positive and safe learning environment is paramount for the middle school learner. Exposure to a variety of movement experiences is critical within the umbrella of course goals and objectives. The middle school

student is constantly on the move and needs movement experiences that provide a transition to sport, recreational, and lifetime activities.

High school physical education programs have a unique and important role in physically educating students because they build upon skills that were a taught in previous grade levels. In addition, they teach transfer of learning from one skill to another in all aspects of physical activity. Students are mature enough to take responsibility for designing, measuring, and evaluating their own fitness and skill development.

Physical education draws from the fields of biology, physiology, anatomy, sociology, and psychology to complement its own body of knowledge. Physical education also serves to reinforce skills learned in other disciplines such as math and language arts. Physical education instruction at the high school level emphasizes developing interests for leisure time pursuits, gaining appreciation for the importance of physical fitness, and learning the skills necessary for successful participation in order to maintain an acceptable level of physical fitness.

2.4 Adapted Physical Education Programs

The most significant federal legislation to impact physical education has been the Individuals with Disabilities Education Act (IDEA). This law was originally enacted in 1975 as the Education of All Handicapped Children Act of 1975, P.L. 94-142. This legislation identified physical education as a curriculum area that was to be provided for all children with disabilities if it is provided to nondisabled students.

Special Education, Specially Designed Instruction, and Physical Education are also referenced and defined in COMAR 13A.05.01 “Provision of a Free Appropriate Public Education (FAPE).” The implications for physical education are that **all** children are required by law to have an appropriate physical education program. In addition, these services should be provided in such a manner that promotes maximum interaction between children with disabilities and their non-disabled peers. These codes, along with federal legislation, ensure the rights of children to have an appropriate physical education program with peers.

Modifications and adaptations for students with disabilities in the instructional program may be necessary depending on the students needs. In order to meet the needs of many children with disabilities, school systems must consider indoor and outdoor facility accommodations for these students. Additional information on federal and State accessibility requirements is included in **Appendix C**.

2.5 The Future of Physical Education: Connecting Physical Activity to Wellness Policies

Maryland has followed the federal guidance established for wellness policies as set forth by Child Nutrition and WIC Reauthorization Act of 2004: §204, Local Wellness Policy. School systems have wellness policy activities found in local Wellness Policies that are consistent with the coordinated school health model. Coordinated school health is an eight-component model that addresses health education, physical education, nutrition, school environment, mental health, community/family involvement, health services, and staff wellness. Coordinated school health should be organized at the school and local school system level to address the health and fitness of students, teachers, and staff. The Wellness Policies initiatives should not end when the school day is over. School systems are encouraged to use the school facilities to improve the health and wellness of all individuals during and outside the school day.

3.0 School Design and Planning Considerations

3.1 Smart Growth

The State of Maryland adopted a Planning Act in 1992 that directs growth into existing population centers and away from rural resource areas. The Smart Growth and Neighborhood Conservation Act adopted in 1997 furthered the process by locating most State spending for capital projects in population centers. In August 2008, the Maryland Department of Planning published "Smart Growth, Community Planning and Public School Construction," the 27th in their series of models and guidelines concerned with managing Maryland's growth. These guidelines promote a community centered approach to school planning, location, and construction with an emphasis on the close integration of local government and school system master plans.

Smart Growth promotes the development of sustainable schools within planned growth and priority funding areas across the State. Under Smart Growth principles, schools should be located in developed neighborhoods where existing or planned infrastructure, such as water, sewer, and transportation facilities, is available. Public schools are seen to support public health initiatives and active community environments by providing centralized facilities for social and recreational services. Walk-able schools are thought to contribute to fitness goals and reduce school bus transportation costs. Walking trails can be developed on school sites to encourage physical activity. Exercise stations infused with the walking trails can also be used to improve the fitness levels of citizens.

Shared use of school facilities is a key principle of Smart Growth. Physical education facilities are frequently planned and built to be used by formal and informal local recreation programs, as well as by the board of education. Outdoor playing fields are scheduled for youth sports leagues. Basketball courts are used by neighborhood teens on evenings and weekends. Tennis courts are filled with adult players after school hours. Many school systems have formal arrangements on the selection of sites to serve both school and park system needs. Many city and county government agencies contribute funds to the school system's capital budget to pay for larger gymnasiums, additional storage, offices, or community activity rooms in new school buildings. These partnerships with the local recreation programs can be used to assist with the development of a variety of after-school physical activity opportunities for students and adults to be used to improve the health and wellness of the citizens of Maryland.

3.2 Public School Construction Funding

School construction projects in Maryland are funded by the State and local governments through capital bond and operations funds. The Public School Construction Program (PSCP) was established in 1971 as an independent agency to ensure that all public school buildings in Maryland meet minimum design and performance standards in support of the educational programs they house. The mission of the PSCP is to achieve equity among school facilities across the State. Since the founding of the program, the State has provided over $4.8 billion in Capital Improvement Program (CIP) funding to assist local school systems with the construction of public school facilities as well as approximately $1 billion through other construction funding programs.

To administer the PSCP, the Board of Public Works created the Interagency Committee on School Construction (IAC.) The IAC is composed of the State Superintendent of Schools (chairperson,) the Secretary of the Department of General Services, the Secretary of the Maryland Department of Planning, and two members of the public – one appointed by the Speaker of the Maryland House of Delegates and one appointed by the President of the Maryland Senate.

When the PSCP started, the State paid for architectural and engineering (A/E) fees and for moveable furniture and equipment in addition to the construction costs of the project. The State contribution was about 95-99% of the total project cost. Land acquisition was never eligible for State funding. In the mid-1970s, the responsibility for A/E fees was shifted to the localities. In the mid-1980s, the cost of moveable furniture and equipment was similarly shifted. Starting in the mid-1980s, a shared State-local cost formula was implemented to determine the State's participation in eligible school construction costs. The formula took into consideration the relative wealth of a jurisdiction. The current formula takes into account local wealth, the number of children in the Free and Reduced Price Meal Program, status of the jurisdiction as a distressed county, enrollment growth above the State average, and local debt. It was most recently revised in 2010. The State share of eligible construction costs ranges from 50% to 96% in FY13 through FY15. The formula will next be revised in 2013 for projects submitted in the FY16 CIP.

Generally the amount of State funding is based on gross square foot (GSF) area per student formulas for the various types of schools – elementary, middle, high, and special centers and on the estimated construction cost per square foot for schools in a given year. The area per student ranges from 104 GSF per student for the largest elementary schools to 170 GSF for the smallest high schools. These space allowances are sufficient for basic school facilities, but

may not be large enough to cover some of the special subject classrooms and laboratories and support spaces for itinerant staff and small, unique programs. In FY12 the estimated budget cost for new school construction and related site development is $224 per GSF.

Local school boards and local county/city government are responsible for the remainder of the construction project costs. The school board may build a larger building than funded by the State at local expense. The construction contract is between the local board of education and the contractor. Costs borne by the local board and county/city government include site acquisition, design, testing, permits, furniture, equipment, off site work, and the cost of area in excess of the State approved limit.

For example: A new elementary school approved for 600 students will be eligible for State funding for 64,800 GSF. (600 students x 108 GSF per student) It is up to the school board to determine how many classrooms, offices, and support spaces they will construct and how large they will be. It is not unusual for a school board to determine they need to build a 70,000 GSF building to meet their educational and programmatic needs. In this case the additional 5,200 GSF of construction to bring it up to the board's area requirement is 100% locally funded. On the other hand, an existing elementary school approved for 600 students that is only 60,000 GSF would be eligible for a State funded addition of 4,800 GSF to bring it up to the State gross area allowance of 64,800 GSF.

3.3 General Design Guidelines for Physical Education

Many of the recommendations included in this guide are modified from the National Association for Sport and Physical Education, 2001 position paper, "Guidelines for Facilities, Equipment and Instructional Materials in Elementary School Physical Education."

a) Dedicated indoor and outdoor facilities for the physical education instructional program are recommended. While spaces may serve multiple purposes, the physical education space must be available for the entire instructional day.

b) There should be an indoor and an outdoor instructional area available for each physical education class that meets during one instructional period.

c) All indoor and outdoor physical education program, playgrounds, and activity areas shall meet Federal Americans with Disability Act Accessibility Guidelines and meet all State and local accessibility codes. (see Appendix C)

d) Enough separate teaching stations should be available for teachers to be able to conduct classes without interference from other PE classes or other school activities.

e) Indoor facilities shall have mechanical heating, ventilation, humidity, and air conditioning systems to ensure healthy indoor environmental quality.

f) Indoor facilities shall meet MSDE telecommunication distribution system standards for voice, video, and data wiring and outlets.

g) Indoor facilities shall be well lit and equipped with ample electrical power outlets.

h) The environment will provide appropriate acoustics to permit children to safely participate in all phases of instruction. Children should be able to fully participate in physical education activities and simultaneously hear their peers and teacher at all times. The American National Standards Institute (ANSI) S12.60-2002 provides specific standards on acoustical performance criteria, design requirements and guidelines for schools that address background noise levels, reverberation, and noise isolation. The recommended A-weighted background noise level in gymnasiums is 40 db. Acoustical treatment on the walls and ceilings is recommended. The recommended noise isolation between a gymnasium and an adjacent space is a 60 sound transmission coefficient rating (STC). To achieve a STC rating of 60, a concrete masonry partition will be sufficiently wide and dense and may include air space, sound blankets, or additional furred gypsum board finishes.

i) According to the Federal *Title IX* guidelines, school systems must provide comparable facilities and equipment to members of each sex. Separate locker rooms, toilet and shower facilities must be provided, but the facilities provided for one sex must be comparable to those provided to the other. Similarly, equipment provided for one sex must be comparable and of equal quality to those provided for the other.

j) The indoor physical education facility should have easy access to outdoor instructional areas in order to permit quick movement during the class period from one to the other.

k) The flooring of the gymnasium must be kept clean and dry. It should be cleaned on a daily basis and sanitized on a regular basis. Convenient access to maintenance equipment and supplies shall be provided.

l) Safe flooring surfaces include hardwood or tile with adequate cushioning or a synthetic

composition that has a resilient surface. Floor markings facilitate a variety of activities, but the number of different markings (e.g., lines, circles, shapes) should be limited. Temporary taped markings for specific purposes should be removed when no longer needed.

m) The outdoor areas will include field space and hard surfaced areas that allow accessibility and safe participation for all children.

n) Where play equipment is provided, there shall be two separate playground equipment areas, one for grades prek-2 and another for grades 3-5. Consider providing a third playground area for younger pre-school children, ages 2-5, when space and funding permit. Safety guidelines for the equipment shall be developed and posted in the school and outside on the play areas. The Maryland State Department of Education, Division of Early Childhood Development has produced the document entitled, "Playground and Water Safety Guidelines". The publication is available at **www.marylandpublicschools.org.** This document provides a framework for medically and scientifically based safety education for childcare providers responsible for the safety of children and youth. This document may also be an additional resource for local school systems needing additional information on playground and water safety. Playground equipment and installations shall comply with U.S. Consumer Product Safety Commission standards.

o) Natural outdoor play areas and projects that conserve or enhance the natural environment should also be available to facilitate and encourage creative and exploratory physical activity. Student exploration, creativity, and imaginative play can be fostered when space for developmental playgrounds is provided and the natural landscape features like hills and valleys are retained. Projects that conserve or enhance the natural environment add value to the community and help stimulate and lend reality to learning. The Maryland State Department of Education supports creative use of school facilities through the development of bicycle and walking paths, wetland restoration, fitness courses, and other projects that help students learn about ecological and educational principles in the schoolyard that they can apply to their own communities and backyards.

p) Outdoor play areas may include apparatus areas, play courts, covered play space, and age-specific play areas with appropriate ground cover.

q) Access to water and shade should be available for students outdoors. Schools should provide water fountains located on the outside of the building near physical education courts and playing fields.

r) Outdoor areas shall be free from safety hazards such as glass and debris. Easy access for field maintenance and trash collection vehicles shall be provided.

s) Outdoor areas shall be located away from occupied classrooms to minimize noise and distractions.

t) Outdoor areas shall be have clearly defined physical boundaries to reduce conflicts and ensure safety.

u) Outdoor areas shall be no closer than 100 yards from parking lots or streets or be separated by barriers that prevent vehicles from entering the area.

v) Outdoor areas shall be close enough to the school building to permit convenient access to equipment.

w) Outdoor areas shall provide shelter in case of inclement weather.

x) Schools are encouraged to develop specialized facilities for a wide variety of activities such as swimming, outdoor fitness courses, climbing walls, and paddle tennis.

y) Schools should provide separate indoor and outdoor storage space for equipment that will be used during the instructional day and if space is available for intramural or after-school physical activity programs or interscholastic programs.

z) Schools may provide separate locker rooms for physical education students, intramural and interscholastic programs, and for community recreation programs.

4.0 Elementary School Facilities Design Guidelines

4.1 Gymnasium/Instructional Space (Elementary)

Purpose/Activities
Elementary physical education instruction including games, dance, gymnastics, fitness and assessment through lecture, demonstration, and use of instructional technology and equipment

Users
1 teacher, typically 20-30 students in whole class, small group, and individual activities

Area, Height, Volume, Configuration
Provide sufficient space for children to move freely and safely.

110-150 net square feet (nsf) per child

2,200-4,500 nsf per space recommended depending on class size

3,500 nsf (50' x 70') is recommended for one class only.

7,000 nsf (70' x 100') is recommended where schools will schedule two physical education classes in the same space simultaneously.

Large, high ceilinged, rectangular open space is recommended. Floor to ceiling height should be 20' minimum, free of obstacles and lights, with a preferred 24' of clear space height.

Relationships to other spaces
Adjacent to physical education teacher office and indoor storage

Convenient to rest rooms, exits to outdoor facilities, and outdoor equipment storage

Separated from academic classrooms to minimize noise

Space should be free of distractions, pass-through traffic patterns, and potential safety hazards such as protruding structures.

Multiple classes should be separated with curtains or partitions.

Acoustics
Limit background noise to 40 dB. Treat walls and ceilings for excess reverberation. Provide STC rating of 60 for walls and ceiling assemblies between adjacent spaces. See ANSI S12.60-2002.

Display
Provide bulletin boards for class notices and instructional materials, white board or projection screen and television/DVD/VCR.

In Room Storage
Boundaries of the instructional space should be clearly defined to exclude the areas in which tables or other equipment is stored.

There should be a minimum safety zone of 10 feet between stored items and the instructional area.

Finishes
Floor surface should be hardwood, adequate cushioning, or a synthetic composition product with appropriate markings.

Gymnasium walls should have a smooth or flat surface from the floor up to 10 to 15 feet of height so that walls can be used for a variety of instructional purposes (e.g., using the wall to throw toward or to strike toward).

Upper walls and ceiling should have acoustic absorption material to reduce sound and reverberation.

Mechanical & Plumbing
Provide mechanical heating, cooling, ventilation, filtration, and humidity control to ensure healthy indoor environmental quality.

Drinking water should be readily available.

Drinking fountains should be recessed for safety.

Electrical, Lighting & Telecommunications
Should be uniformly lit and free from shadows

Provide a minimum of 30 foot candles lights, covered with protective grids. Illumination should be sufficient to facilitate the instructional program (e.g., ball handling activities: striking with the body; striking w/paddles; volleyball).

Daylighting should be provided as long as designers include overhangs or other devices to prevent glare. Avoid windows that generate glare.

Provide an ample number of electrical power outlets for routine maintenance, instructional equipment, general convenience, and computers. Provide both floor and wall outlets.

Provide minimum per MSDE standards: 1 data, 1 voice, and 1 video outlet. One set per teacher recommended.

If room will be used for public assemblies, provide an assistive listening device for people with hearing disabilities.

4.2 Teacher Office (Elementary)

Purpose/Activities
Office space for teacher planning, consultation, dressing, and storage

Users
Teachers, coaches

Area, Height, Volume, Configuration
120 nsf per full time teacher

Relationships to other spaces
Adjacent to gymnasium and locker rooms

Acoustics
Standard office

Display
Provide bulletin and display boards for teacher's use.

Storage
Filing cabinets, book cases, wardrobe units, First Aid supplies

Finishes
Standard office flooring, wall, and ceiling

Mechanical & Plumbing
Provide mechanical heating, ventilating, humidity, and air conditioning systems to ensure healthy indoor environmental quality.

Private toilet and shower room desirable if space permits. Toilet/shower rooms for occupants of individual offices must be accessible or adaptable for use by persons with disabilities.

Electrical, Lighting & Telecommunications
Standard office lighting and power

1 data outlet minimum per occupant plus additional data outlets for networked devices as required

1 voice outlet minimum

4.3 Indoor Storage (Elementary)

Purpose/Activities
Distribution, collection, and storage of physical education equipment

Users
Teachers, coaches, recreation program personnel, students

Area, Height, Volume, Configuration
400 to 600 nsf

Clear height of 12'-15'

8' high double doors to allow for movement and storage of large equipment

Provide adequate space with reasonable ease of access to needed equipment.

Provide labeled high racks, shelving, and hanging devices to maximize use of space and manage inventory.

All physical education equipment should be marked for purposes of keeping an updated inventory and to guard against loss or theft.

Relationships to other spaces
Adjacent to gymnasium

Convenient to teacher office, locker rooms, and access to outdoors

Isolate physically from outdoor storage rooms to minimize routes for pests to enter building.

Provide separate lockable area for equipment used by classroom teachers and/or for recess.

Provide separate secure storage areas for use by recreation and athletic programs.

Acoustics
Locate storage rooms to serve as buffers around noisy spaces.

Display
Provide small bulletin or notice board for announcements and record keeping.

Finishes
Standard storage room floor and wall, open ceiling acceptable

Mechanical, Plumbing, Electrical, Lighting & Telecommunications
Standard storage room utilities and lighting

Floor drain and access to hose bib for cleaning room desirable

Provide minimum 1 data outlet and 1 voice outlet in all storage rooms greater than or equal to 100 nsf to accommodate record keeping and future uses.

4.4 Outdoor Storage (Elementary)

Purpose/Activities
Distribution, collection, and storage of outdoor physical education equipment

Users
Teachers, students, coaches, recreation program personnel

Area, Height, Volume, Configuration
400 to 600 nsf, room or separate building

Clear height of 12'-15'

8' high double doors to allow for movement and storage of large equipment

Provide adequate space with reasonable ease of access to needed equipment.

Provide labeled high racks, shelving, and hanging devices to maximize use of space and manage inventory.

All physical education equipment should be marked for purposes of keeping an updated inventory and to guard against loss or theft.

When feasible, design canopies or overhangs to provide shelter in case of inclement weather.

Relationships to other spaces
Locate away from occupied classrooms.

Locate close enough to school building to permit convenient access to equipment.

Provide separate lockable area for equipment used by classroom teachers and/or for recess.

Provide separate secure storage areas for use by recreation and athletic programs.

Acoustics
Locate storage rooms to serve as buffers around noisy spaces.

Display
Provide small bulletin or notice board for announcements and record keeping.

Finishes
Standard storage room flooring and wall surfaces, open ceiling acceptable

Mechanical, Plumbing, Electrical, Lighting & Telecommunications
Standard storage room utilities and lighting

Floor drain and access to hose bib for cleaning room desirable

Provide minimum 1 data outlet and 1 voice outlet in all storage rooms greater than or equal to 100 nsf to accommodate record keeping and future uses.

Provide separate restroom facilities for recreational program groups using outdoor facilities.

4.5 Outdoor Hard Surface Area (Elementary)

Purpose/Activities
Physical education and fitness instruction, practice, games, and drills

Users
1 teacher, typically 20-30 students

Area, Height, Volume, Configuration
Provide sufficient space for children to move freely and safely.

110-150 nsf per child

2,200-4,500 nsf per space recommended

Provide a level area, sloped to drain, approximately 50' x 80' typical.

Surface may be asphalt or a synthetic product designed for outdoor physical education instruction.

Relationships to other spaces
Isolate from the general playground to ensure physical education instruction may be conducted without recess interruptions.

Accessibility
Provide accessible or adaptable equipment such as benches with backs and arms or adjustable height basketball nets.

Provide accessible routes from the school building into and around the hard surface area.

Display
Mark all-weather outdoor surfaces with circles, lines, courts, etc. to permit participation in a wide variety of activities that are appropriate for students with varied ability levels.

Mechanical & Plumbing
Provide access to drinking water.

Electrical, Lighting & Telecommunications
Provide access to electrical power.

Provide security and task lighting as appropriate.

Public Address Systems
Within range for emergency announcements

4.6 Outdoor Playing Fields (Elementary)

Purpose/Activities
Physical education and fitness instruction, practice, games, and drills

Users
Teachers, students, coaches, recreation program personnel

Area, Height, Volume, Configuration
Level, well-drained, turfed and regularly maintained (approximately 150' x 300' per class)

If permanent structures such as backstops, volleyball standards, benches, and goals are present they should be inspected and maintained regularly.

Provide area for students to gather as a class.

Provide access to shade if possible.

Relationships to other spaces
Location shall allow for instruction without recess interruption.

Locate away from occupied classrooms.

Accessibility
Provide accessible route from school building to and around edge of fields.

Display
Provide notice boards protected from the weather for posting announcements and rules.

Storage
Provide lockable storage containers as required.

Mechanical & Plumbing
Provide access to drinking water.

Electrical & Lighting
Security and task lighting and power as required

Telecommunications & Public Address Systems
Emergency communications as required

4.7 Elementary Equipment Guidelines

The National Standards for Physical Education Content Standard Number 1 defines a physically educated person as demonstrating competency in motor skills and movement patterns needed to perform a variety of physical activities (see Moving into the Future: National Standards for Physical Education, 2004). To successfully address this standard, sufficient and developmentally appropriate equipment is essential for all students.

The following equipment list provides a foundation for an elementary physical education curriculum based on the National Standards for Physical Education. Skill themes (i.e., throwing, catching, kicking, striking, bouncing, jumping/landing, skipping, etc.) and movement concepts (i.e., spatial, effort, and relationship awareness) establish the base for educational game, dance, and gymnastic experiences. The size, texture, weight, and/or color of equipment should be varied to accommodate children's level of motor development and physical growth. Colors can also be used for organizational and instructional purposes.

Students' safety is one of the foremost considerations in planning and conducting any physical education program. A major responsibility of every teacher is to create a safe environment for learning for their students. By its very nature, physical education involves students participating in physical activity that involves various degrees of inherent risks. It is imperative that the equipment used is safe and in good condition. The equipment needs for physical education vary by grade level and should minimally include general shared, educational games, dance, gymnastics, and fitness assessment items.

The purpose of the equipment lists below is to provide local school systems with recommendations for equipment based on program needs, safety, and connections to the State curriculum. Quantities listed will vary depending on local staffing decisions.

4.7.1 Elementary Physical Education Equipment (Recommended)

General Shared Equipment	Quantity for One Class
Chalk or White Board	1 per teacher
Bags to Carry Balls	6
Rolling Ball Racks	3
Ball Inflator	1
Ball Repair Kit	1
Bulletin Board	1-2
Clipboards	10-15, enough for ½ of class
First Aid Kit	1
Measuring Tape 100', 50'	1
Crates or Baskets for Storage	5
Field Marker (for chalking lines)	1
Gymnastic Mat Storage/Movers	1
Walkie-Talkie for Communication	1 per teacher
Computers	6 PCs per class or mobile lab with laptops for all
Multiple Computer Jacks/Data Outlets	6
Mobile Technology Cart (could include resources such as computers, TV/Video Projector, CD/Tape Player, and Smart Board)	1 per teacher

4.7.2 Educational Games
Skill Themes: Bouncing, Striking, Kicking, Catching, Throwing

Equipment Items	Equipment Size/ Description	Quantity for One Class
Playground Balls	5”, 6”, 8-1/2”	20-30
Balls for Striking w/body	8”, 9”	15-18 of each
Beach Balls	24”, 45”	18, 25
Foam Balls	7” or 8”	20-30
Foam Soccer Balls		20-30
Foam Footballs		20-30
Fleece or Yarn Balls	3” (washable)	20-30
Balloons	11”	36-72
Squish Balls	3”	17-18
Foam Balls – Bounce-able	4¾”	30
Bean Bags	4”, 5”	30
Flying Disks	11”	30
Deck Rings	7” diameter	17-18
Rag Balls	9”	17-18
Plastic Bottle Bats	11½” handles	17-18
Soft-Bat	24”, 27”, 29”	5 each
Lollipop Paddles	8” & 10” diameter w/12” handles	17-18 of each
Scoops		30
Youth Tennis Racquets	21” & 24”	30 of each
Foam Blade Hockey Sticks		30
w/Styrofoam Pucks	40”, 45” sticks	30 of each
Portable Gym Standards	150 lb. minimum	8 (4 pairs)
Nets for Standards		4
Cones or Jug Markers	12”, 18”, 24”	26, 14, 14
Pinnies, Sashes, or Vests	3 or more colors	30
Scooter Boards w/Handles		30
Spotmarkers	12”, rubber w/wo numbers and letters	20-30
Basketballs	junior size	30
Adjustable Basketball Goals	7’-10’	4-6
Soccer Balls	Sizes 4 & 5	17-18
Lacrosse Sticks and Balls	Soft headed sticks and hollow rubber balls	20-30
Parachute	20’ diameter	1
Bowling Sets		6
Over and Under Hurdles		6
Volleyball Trainer Balls	Lightweight volleyballs	17-18

4.7.3 Educational Dance
Skill Themes: Locomotor & Non-locomotor Skills

Equipment Items	Equipment Size/Description	Quantity for One Class
Plastic Hoops	30" and/or 36" diameter	20-30
Styrofoam Hoops Holders	(2 per hoop)	30
Rhythmic Equipment		
-drum w/mallet		1
-lummi sticks	12" L & ¾" diameter	30
Stretchy Material Bands	36" L & 6" W	30
Nylon Juggling Scarves	54" x 54" Multi-colored, 3 per set	30 sets
Tinikling Sticks/Boards and Jump Bands		15 pairs
CD/Tape Player		1 per teacher
Cordless Microphone		1 per teacher
Sound System		1

4.7.4 Educational Gymnastics
Skill Themes: Rolling, Jumping/Landing, Balance, Transfer of Weight, Hanging/Swinging

Equipment Items	Size/Description	Quantity for One Class
Foam Vaulting Trapezoid	3-4 sections	1
Styrofoam Shapes	Circles, triangles, ovals, wedges, etc.	8
Mats	(4' x 6') or (5' x 10')	
	2" thick, 100ILD foam	12-15 mats (1-2 students per mat)
Landing Mats	4"-8" thick or as required by CPSC guidelines	Minimum of 1
Incline Mats	36"W x 72"L	1-2
Balance Beams/Benches	12' L, 12" W	1 or more
Balance Boards	9" W x 29 ½" L	12-13
Jumping Boxes (Foam Shapes of Varying Heights)	12"-24"	4-6
Trestles	5', 6', & 7'	2 of each
Sliding Boards to Connect to Trestles	12" L, 10-12" W	2
Connecting Ladder		1
Hanging Climbing Ropes		1-2
Jump Ropes (plastic segments for beginners; speed rope for experienced jumpers)	7', 8', 9' & 16' lengths	15 of each
Stretch Jump ropes		12-15
Wands		12-15

4.7.5 Physical Fitness and Assessment

Equipment Items	Quantity for One Class
Sit and reach box for measuring flexibility	1-2
Stopwatches	4-6
Modified Chin Up Bar & Standards	3
Fitness Assessment Software Package	1 per school
Pedometers	20-30
Pulse (Insta-pulse) Bars	6 Bars
Floor Tape Multiple colors	6 Rolls

4.8 Space Recommendations for Elementary Physical Education Programs

	Recommended Minimum Area	
Indoor Spaces	One Class	Two Classes
Gymnasium	1 @ 3,500 nsf	1 @ 7,000 nsf
Teacher office	1 @ 120 nsf	1 @ 240 nsf
Indoor equipment storage room	1 @ 400 nsf	1 @ 400 nsf
Outdoor equipment storage room	1 @ 400 nsf	1 @ 400 nsf
Restrooms & Custodial	400 nsf	400 nsf
Net Programmed Area	**4,820 nsf**	**8,440 nsf**
Efficiency Factor-assume net:gross=75%	6,427 gsf	11,253 gsf
Round to	**6,500 gsf**	**11,000 gsf**

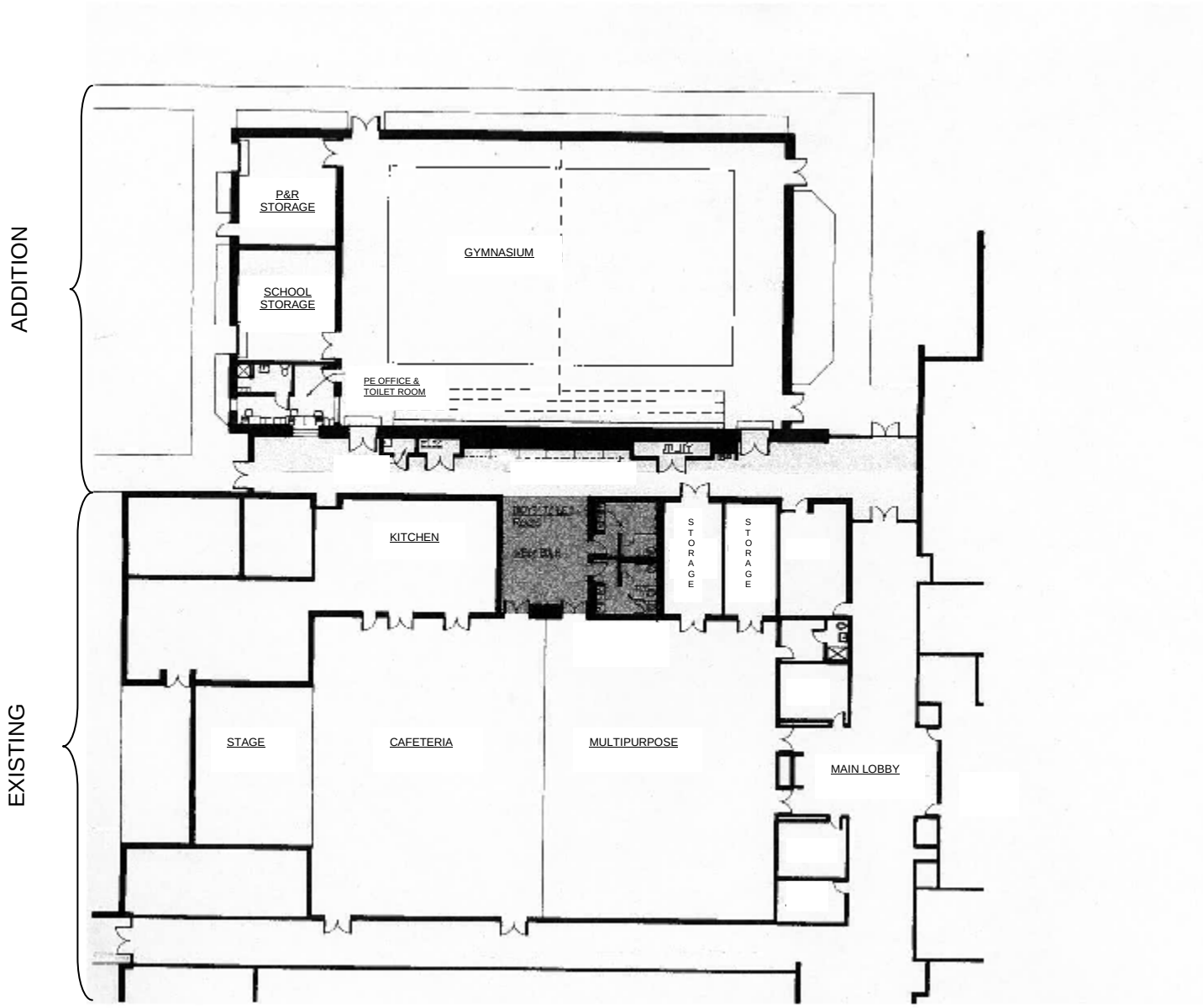
Outdoor Spaces (Recommended Minimum Area)

One (1) hard surface play area, approximately 50’ x 80’= 4,000 sf

One (1) turf playing field, approximately 150’ x 300’= 50 yds x 100 yds, 1.03 acre

4.9 TYPICAL FLOOR PLAN – Elementary Gymnasium Addition

Gymnasium Addition to Prospect Mill Elementary School (Harford County, Maryland), Marshall Craft Associates, Inc., Architects, 3/2007



5.0 Secondary School Facilities Design Guidelines

5.1 Main Gymnasium (Secondary)

Purpose/Activities
Secondary physical education instruction including games, dance, gymnastics, fitness and assessment through lecture, demonstration, and use of instructional technology and equipment and sports such as basketball, volleyball, wrestling, gymnastics, badminton, and indoor soccer

Users
1-2 teachers, typically 25-35 students per teacher, whole class, small group, and individual activities

Area, Height, Volume, Configuration
Middle School – 6,800 sq feet minimum
High School – 10,000 sq feet minimum

Should be at least the size of two basketball courts and should be able to be divided into two private teaching stations large enough to handle two classes of typically 25-35 students.

The ceiling should have a minimum height of 24' of clear space, free of obstacles and lights.

Relationships to other spaces
Should have easy access to outdoor instructional areas in order to facilitate quick transitions from indoor to outdoor facilities

Direct access to locker rooms, teacher office, storage

Acoustics
Limit background noise to 40 dB. Treat walls and ceilings for excess reverberation. Provide STC rating of 60 for walls and ceiling assemblies between adjacent spaces. See ANSI S12.60-2002.

Accessibility
Provide access for persons with disabilities to all program elements.

Display
Provide bulletin boards for class notices and instructional materials, white board or projection screen and television/DVD/VCR.

In Room Storage
Boundaries of the instructional space should be clearly defined to exclude the areas in which tables or other equipment is stored.

There should be a minimum safety zone of 10 feet between stored items and the instructional area.

Storage
Provide indoor and outdoor storage rooms. See elementary school facilities.

Finishes
Floor surface should be hardwood.

Gymnasium walls should have a smooth or flat surface from the floor up to 10 to 15 feet of height.

Mechanical & Plumbing
The gymnasium should provide mechanical heating, ventilating, humidity, and air conditioning systems to ensure healthy indoor environmental quality.

Electrical, Lighting & Telecommunications
Lights should be covered with protective grids.

Illumination should be sufficient to facilitate the instructional program (e.g., ball handling activities: striking with the body; striking w/paddles; volleyball).

Should be uniformly lit and free from shadows

Provide an ample number of electrical power outlets for routine maintenance, instructional equipment, general convenience, and computers. Provide both floor and wall outlets.

Provide minimum per MSDE standards: 1 data, 1 voice, and 1 video outlet. One set per teacher recommended.

If room will be used for public assemblies, provide an assistive listening device for people with hearing disabilities.

5.2 Auxiliary Gymnasium (Secondary)

Purpose/Activities
Secondary physical education instruction including games, dance, gymnastics, fitness and assessment through lecture, demonstration, and use of instructional technology and equipment and sports

Users
1 teacher, typically 25-35 students, whole class, small group, and individual activities

Should be built to accommodate a class of 25-35 students

Area, Height, Volume, Configuration
Middle School – 3,200 sq feet
High School – 6,000 sq feet

The ceiling should have a minimum height of 20' of clear space free of obstacles and lights and a preferred height of 24' of clear space.

Relationships to other spaces
Should have easy access to outdoor instructional areas in order to facilitate quick transitions from indoor to outdoor facilities

Acoustics
Limit background noise to 40 dB. Treat walls and ceilings for excess reverberation. Provide STC rating of 60 for walls and ceiling assemblies between adjacent spaces. See ANSI S12.60-2002.

Accessibility
Provide access for persons with disabilities to all program elements.

Display
Provide bulletin boards for class notices and instructional materials, white board or projection screen and television/DVD/VCR.

Finishes
Floor surface should be hardwood, adequate cushioning, or a synthetic composition product with appropriate markings.

Gymnasium walls should have a smooth or flat surface from the floor up to 10 to 15 feet of height.

Storage
Provide indoor and outdoor storage rooms. See elementary school facilities.

Mechanical & Plumbing
Should provide mechanical heating, ventilating, humidity, and air conditioning systems to ensure healthy indoor environmental quality

Electrical, Lighting & Telecommunications
Lights should be covered with protective grids.

Illumination should be sufficient to facilitate the instructional program (e.g., ball handling activities: striking with the body; striking w/paddles; volleyball).

Should be uniformly lit and free from shadows

Power and telecommunications, same as
Main Gymnasium (Secondary)

5.3 Specialized Smaller Designated Space (Secondary)

Purpose/Activities
Secondary physical education instruction through lecture, demonstration, and use of specialized equipment for programs such as strength training, fitness/aerobics, adventure education (climbing walls), and dance

Users
Should be built to accommodate a class of 25-35 students

Area, Height, Volume, Configuration
As needed for programmed activities

Relationships to other spaces
Convenient to other physical education instructional and support spaces.

Acoustics
Limit background noise to 40 dB. Treat walls and ceilings for excess reverberation. Provide STC rating of 60 for walls and ceiling assemblies between adjacent spaces. See ANSI S12.60-2002.

Accessibility
Provide access for persons with disabilities to all program elements.

Display
Provide bulletin boards for class notices and instructional materials, white board or projection screen and television/DVD/VCR.

Finishes
Flooring, wall, and ceiling surfaces to support specific activity

Storage
As needed to support programmed activities

Mechanical & Plumbing
Should provide mechanical heating, ventilating, humidity, and air conditioning systems to ensure healthy indoor environmental quality

Electrical, Lighting & Telecommunications
Lights should be covered with protective grids.
Illumination should be sufficient to facilitate the instructional program (e.g., ball handling activities: striking with the body; striking w/paddles; volleyball).

Should be uniformly lit and free from shadows

Power as needed to support specialized equipment.

Telecommunications minimum, same as gymnasium

5.4 Teacher Office (Secondary)

Purpose/Activities
Office space for teacher planning, consultation, dressing, and storage

Users
Teachers, coaches

Area, Height, Volume, Configuration
120 nsf per full time teacher

Relationships to other spaces
Adjacent to gymnasium and locker rooms

Acoustics
Standard office

Display
Provide bulletin and display boards for teacher's use.

Storage
Filing cabinets, book cases, wardrobe units, First Aid supplies

Finishes
Standard office flooring, wall, and ceiling

Mechanical & Plumbing
Provide mechanical heating, ventilating, humidity, and air conditioning systems to ensure healthy indoor environmental quality.

Private toilet and shower room desirable if space permits. Toilet/shower rooms for occupants of individual offices must be accessible or adaptable for use by persons with disabilities.

Electrical, Lighting & Telecommunications
Standard office lighting and power

1 data outlet minimum per occupant plus additional data outlets for networked devices as required

1 voice outlet minimum

5.5 Indoor Storage (Secondary)

Purpose/Activities
Distribution, collection, and storage of physical education equipment

Users
Teachers, coaches, recreation program personnel, students

Area, Height, Volume, Configuration
400 to 600 nsf

Clear height of 12'-15'

8' high double doors to allow for movement and storage of large equipment

Provide adequate space with reasonable ease of access to needed equipment.

Provide labeled high racks, shelving, and hanging devices to maximize use of space and manage inventory.

All physical education equipment should be marked for purposes of keeping an updated inventory and to guard against loss or theft.

Relationships to other spaces
Adjacent to gymnasium

Convenient to teacher office, locker rooms, and access to outdoors

Isolate physically from outdoor storage rooms to minimize routes for pests to enter building.

Provide separate lockable area for equipment used by classroom teachers and/or for recess.

Provide separate secure storage areas for use by recreation and athletic programs.

Acoustics
Locate storage rooms to serve as buffers around noisy spaces.

Display
Provide small bulletin or notice board for announcements and record keeping.

Finishes
Standard storage room floor and wall, open ceiling acceptable

Mechanical, Plumbing, Electrical, Lighting & Telecommunications
Standard storage room utilities and lighting

Floor drain and access to hose bib for cleaning room desirable

Provide minimum 1 data outlet and 1 voice outlet in all storage rooms greater than or equal to 100 nsf to accommodate record keeping and future uses.

5.6 Outdoor Storage (Secondary)

Purpose/Activities
Distribution, collection, and storage of outdoor physical education equipment

Users
Teachers, students, coaches, recreation program personnel

Area, Height, Volume, Configuration
400 to 600 nsf, room or separate building

Clear height of 12'-15'

8' high double doors to allow for movement and storage of large equipment

Provide adequate space with reasonable ease of access to needed equipment.

Provide labeled high racks, shelving, and hanging devices to maximize use of space and manage inventory.

All physical education equipment should be marked for purposes of keeping an updated inventory and to guard against loss or theft.

When feasible, design canopies or overhangs to provide shelter in case of inclement weather.

Relationships to other spaces
Locate away from occupied classrooms.

Locate close enough to school building to permit convenient access to equipment.

Provide separate lockable area for equipment used by classroom teachers and/or for recess.

Provide separate secure storage areas for use by recreation and athletic programs.

Acoustics
Locate storage rooms to serve as buffers around noisy spaces.

Display
Provide small bulletin or notice board for announcements and record keeping.

Finishes
Standard storage room flooring and wall surfaces, open ceiling acceptable

Mechanical, Plumbing, Electrical, Lighting & Telecommunications
Standard storage room utilities and lighting

Floor drain and access to hose bib for cleaning room desirable

Provide minimum 1 data outlet and 1 voice outlet in all storage rooms greater than or equal to 100 nsf to accommodate record keeping and future uses.

Provide separate restroom facilities for recreational program groups using outdoor facilities.

5.7 Classroom (Secondary)

Purpose/Activities
Secondary physical education instruction through lecture, demonstration and use of instructional technology in subjects such as health education, fitness, wellness, and nutrition

Users
Should be able to accommodate typically 25-35 students

Area, Height, Volume, Configuration
Middle School – 800 sq feet
High School – 900 sq feet

Relationships to other spaces
Convenient to other physical education facilities

Acoustics
Limit maximum background noise level to 35 dB., maximum reverberation time to 0.6 seconds, and minimum STC rating of 45 to adjacent spaces. See ANSI S12.60-2002.

Accessibility
Provide access for persons with disabilities to all program elements.

Display
Standard classroom – marker/chalk/white boards, LCD projector

Finishes
Standard classroom – acoustical ceiling, painted walls, hard surface flooring

Storage
Standard casework, teacher storage closet, bookcases

Mechanical & Plumbing
The classroom should provide mechanical heating, ventilating, humidity, and air conditioning systems to ensure healthy indoor environmental quality.

Electrical, Lighting & Telecommunications
Should have internet access, a computer, and screen which can be used with an LCD projector.

Minimum 5 data, 1 voice, and 2 video outlets per MSDE standards

5.8 Locker Rooms (Secondary)

Purpose/Activities
Storage of personal items for each student enrolled in physical education

Users
Locker room space should also be provided for sports teams and visiting teams.

Area, Height, Volume, Configuration
Locker room design provides for student supervision and safety.

Locker rooms should provide restroom facilities, individual showers, sinks, and paper towels for student use as needed.

Relationships to other spaces
Locker rooms should have access to the outside in case of emergencies.

Convenient to equipment storage rooms

Adjacent to the physical education teacher's office to allow students convenient access to their teacher for supervision, consultation and/or assistance

Acoustics
See ANSI S12.60-2002.

Accessibility
5%, but not less than one of all fixed and built-in seats, table, work surfaces and storage units, including lockers, must be accessible to persons with disabilities, per ADA.

Display
Bulletin boards, marker boards, electronic display

Finishes
Durable, easily maintained, anti-slip flooring in wet areas

Storage
Towels, equipment, uniforms, etc.

Mechanical & Plumbing
Provide an accessible shower, locker and changing area, per ADA.

Provide towel washing and drying facilities as needed.

Electrical, Lighting & Telecommunications
Protected for wet areas, toilet, shower

Sufficient power for custodial services

Control humidity.

5.9 Bleachers (Secondary)

Purpose/Activities
Gymnasiums may be built with bleachers for seating during classes, assemblies, sports events, before- and after-school programs, and weekend recreational activities.

Users
Children and adults (One large Maryland school system provides seating for 80% of the school capacity.)

Area, Height, Volume, Configuration
Bleachers should meet specifications determined by the individual district and the manufacturer of the bleachers. The International Building Code includes provisions regulating guardrails, openings, and regular safety inspections.

It is of utmost importance that the gymnasium be free from potential safety hazards such as protruding structures.

Boundaries of the gymnasium should be clearly defined to exclude the area in which bleachers or other equipment is stored.

Relationships to other spaces
Should be a space between open bleachers and the instructional area

Accessibility
Bleacher design must include seating for persons with disabilities, per ADA.

5.10 Outdoor Hard Surface Area (Secondary)

Purpose/Activities
Physical education and fitness instruction, practice, games, and drills

Users
1 teacher, typically 25-35 students

Area, Height, Volume, Configuration
Provide sufficient space for students to move freely and safely.

110-150 nsf per child

2,200-4,500 nsf per space recommended

Provide a level area, sloped to drain, approximately 50' x 80' typical.

Surface may be asphalt or a synthetic product designed for outdoor physical education instruction.

Relationships to other spaces
Isolate from the general play areas to ensure physical education instruction may be conducted without interruptions by other classes.

Accessibility
Provide accessible or adaptable equipment such as benches with backs and arms or adjustable height basketball nets.

Provide accessible routes from the school building into and around the hard surface area.

Display
Mark all-weather outdoor surfaces with circles, lines, courts, etc. to permit participation in a wide variety of activities that are appropriate for students with varied ability levels.

Mechanical & Plumbing
Provide access to drinking water.

Electrical, Lighting & Telecommunications
Provide access to electrical power.

Provide security and task lighting as appropriate.

Public Address Systems
Within range for emergency announcements

5.11 Outdoor Playing Fields (Secondary)

Purpose/Activities
Physical education and fitness instruction, practice, games, and drills

Users
Teachers, students, coaches, recreation personnel

Area, Height, Volume, Configuration
150' x 300' per class

If permanent structures such as backstops, volleyball standards, benches, and goals are present they should be inspected and maintained regularly.

Provide area for students to gather as a class.

Provide access to shade if possible.

Relationships to other spaces
Location shall allow for instruction without interruption and away from occupied classrooms.

Accessibility
Provide accessible route from school building to and around edge of fields.

Display
Provide notice boards protected from the weather for posting announcements and rules.

Storage
Provide lockable storage containers as required.

Mechanical & Plumbing
Provide access to drinking water.

Electrical & Lighting
Security and task lighting and power as required

Telecommunications & Public Address Systems
Emergency communications as required

5.12 Secondary Pools

This document does not address pools or specific guidelines for pools. However, pools are an eligible expense under the PSCP. If a district desires to add a pool under new construction or renovations, it should seek the services of knowledgeable design consultants for pools and pool construction. Acoustics, accessibility, safety, and mechanical considerations are key design elements.

5.13 Secondary Indoor & Outdoor Spaces for Sports

Courts and fields to be used for interscholastic sports must comply with the design standards of the individual sport's governing body. Stadia may be designed to support interscholastic sports.

The website for the National Federation of State High School Associations (NHFS) (www.nfhs.org) includes court and field diagrams for the following sports: basketball, football, soccer, track and field/cross country, baseball, field hockey, softball, and volleyball (see Appendix H). The Maryland Public Secondary Schools Athletic Association is a member of NFHS.

For tennis, see the United States Tennis Association (www.usta.com) and for golf, see the United States Golf Association (www.usga.org).

See specific sports associations for archery, lacrosse, wrestling, gymnastics, water polo, swimming, and diving.

5.13.1 Synthetic Surfaces

There is a trend toward the use of synthetic, all-weather, track and field surfaces in new high schools. Similarly, synthetic turf is frequently specified for the main football or soccer field in a new stadium complex. The cost of the synthetic surface fields is sometimes shared with local parks and recreation departments, local semi-professional leagues, or sports clubs. Exterior lighting for night games and recreation programs is desirable.

Synthetic surfaces have an advantage over natural grass fields in that they can be used throughout the year and under most weather conditions. They are sometimes criticized for increasing injuries and increasing temperatures of the playing surface. The estimated cost for converting high school fields ranges from $700,000 to $1.2 million.

5.14 Secondary Equipment Guidelines

Sufficient regulation equipment should be available for secondary physical education programs to teach a variety of movement forms, including at least one from each of the following:

1. Team Sports (basketball, football, soccer, softball, volleyball, team handball, lacrosse, and field/floor hockey)

   Equipment such as: basketballs, footballs, soccer balls, softballs, volleyballs, volleyball trainers, team handballs

2. Outdoor/Adventure Education (adventure/ initiatives, backpacking, orienteering, geocaching)

   Equipment such as: compasses, global positioning system (GPS) units, various sports equipment for adventure/cooperative initiatives

3. Dance (jazz, folk, aerobic, modern, creative, line, western, square)

   Equipment such as: variable speed record/tape/CD player with remote and a collection of music for folk, creative, and rhythmical dance

4. Individual and Dual Activities (gymnastics, archery, badminton, self defense, golf, tennis, wrestling, track and field)

   Equipment such as: racket/club/bow, etc. for every student, a ball for every two students, golf clubs, hurdles, high jump standards, discus, shot put, and sufficient pieces of large equipment for various activities in gymnastics

5. Fitness Education

   Equipment such as: heart rate monitors, pedometers, bioelectrical impedance machines, sit and reach boxes, fitness data collection software, treadmills, ellipticals, stationary bikes, rowers, strength training equipment/dumbells, step-aerobic boxes, and jump ropes

6. Recreational Activities (bowling, bocce, frisbee golf)

   Equipment such as: bowling sets, bocce sets, frisbees

To allow for maximum learning opportunities, enough equipment for one class should be provided so that students spend virtually no time waiting for turns or standing in lines. All equipment should be maintained and in good condition. All equipment should be inspected regularly and repaired or replaced as needed.

General Shared Equipment

- Chalk or white board
- Bags To Carry Balls
- Rolling Ball Carriers
- Ball Inflator
- Bulletin Board
- Clipboards
- First Aid Kit
- Measuring Tape 100', 50'
- Crates or Baskets for Storage
- Field Marker (for chalking lines)
- Portable Gym Standards
- Nets for Standards
- Cones
- Pinnies, Sashes, or Vests
- Scooter Boards w/Handles
- Spotmarkers
- Stopwatches
- Computers (6 per class)
- Multiple Computer Jacks/Data Outlets
- Walkie-Talkie for Communication
- Gymnastic Mat Storage/Movers
- Mobile Technology Cart (could include resources such as computers, TV/Video Projector, CD/Tape Player, and Smart Board)

5.15 Space Recommendations for Secondary Physical Education Programs

This document does not specify all the many areas required to support full secondary physical education, interscholastic sports, and community recreation programs likely to be offered in Maryland middle and high schools. Local school systems must evaluate staffing, enrollments, sports programs, and community life and support in developing the educational specifications for the gymnasium and ancillary facilities. Connecting the physical education facilities to improving the health and wellness of all students should be a primary focus of the physical education program. Consideration should be given to linking the space and equipment needs of the facilities to the State curriculum for physical education and any elective courses that are offered in the schools.

A comparison of space requirements for five recently planned Maryland public high schools is included as **Appendix E**. The schools range in size from 1,000 to 2,000 students. The area provided for physical education, interscholastic athletes, and public recreation range from 26,000 to 38,000 net square feet and from 16 to 29 net square feet per student. The outdoor facilities required at these five schools are listed as **Appendix F**. Outdoor facilities are heavily dependent on space available and degree of support for athletic programs. Some critical site planning guidelines for outdoor facilities are shown in **Appendix G**.

Appendix A

Maryland Physical Education Content Standards

Standards	Content
1.0 Skillfulness	Students will demonstrate an ability to enhance their performance of a variety of physical skills by developing fundamental movement skills, creating original skill combinations, combining skills effectively in skill themes, and applying skills to a variety of recreational and daily life experiences.
2.0 Biomechanical Principles	Students will demonstrate an ability to use the principles of biomechanics to generate and control force to improve their movement effectiveness and safety.
3.0 Motor Learning Principles	Students will demonstrate an ability to use motor skill principles to learn and develop proficiency through frequent practice opportunities in which skills are repeatedly performed correctly in a variety of situations.
4.0 Exercise Physiology	Students will demonstrate an ability to use scientific principles to design and participate in a regular, moderate to vigorous physical activity program that contributes to personal health and enhances cognitive and physical performance on a variety of academic, recreational, and life tasks.
5.0 Physical Activity	Students will demonstrate an ability to use the principles of exercise physiology, social psychology, and biomechanics to design and adhere to a regular, personalized, purposeful program of physical activity consistent with their health, performance, and fitness goals in order to gain health and cognitive/academic benefits.
6.0 Social Psychological Principles	The student will demonstrate an ability to use the skills essential for developing self-efficacy, fostering a sense of community, and working effectively with others in physical activity settings.

Source: **http://www.mdk12.org/instruction/curriculum/physical_education/index.html**

Appendix B

National Standards for Physical Education

Source: National Association of Sport and Physical Education 2004, An Association of the American Alliance for Health, Physical Education, Recreation and Dance.

Physical activity is critical to the development and maintenance of good health. The goal of physical education is to develop physically educated individuals who have the knowledge, skills, and confidence to enjoy a lifetime of healthful physical activity.

A physically educated person:

Standard 1: Demonstrates competency in motor skills and movement patterns needed to perform a variety of physical activities.

Standard 2: Demonstrates understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities.

Standard 3: Participates regularly in physical activity.

Standard 4: Achieves and maintains a health-enhancing level of physical fitness.

Standard 5: Exhibits responsible personal and social behavior that respects self and others in physical activity settings.

Standard 6: Values physical activity for health, enjoyment, challenge, self-expression, and/or social interaction.

Appendix C

Adapted Physical Education and Accessibility

Federal Requirements

Individuals with Disabilities Education Act

The Individuals with Disabilities Education Act (IDEA) (formerly called P.L. 94-142 or the Education for all Handicapped Children Act of 1975) requires public schools to make available to all eligible children with disabilities a free appropriate public education in the least restrictive environment appropriate to their individual needs. IDEA specifically identifies the curriculum content area of physical education for individuals with disabilities.

IDEA requires public school systems to develop appropriate Individualized Education Programs (IEP's) for each child. The specific special education and related services outlined in each IEP reflect the individualized needs of each student.

IDEA also mandates that particular procedures be followed in the development of the IEP. Each student's IEP must be developed by a team of knowledgeable persons and must be at least reviewed annually. The team includes the child's teacher; the parents, subject to certain limited exceptions; the child, if determined appropriate; an agency representative who is qualified to provide or supervise the provision of special education; and other individuals at the parents' or agency's discretion.

If parents disagree with the proposed IEP, they can request a due process hearing and a review from the State educational agency if applicable in that state. They also can appeal the State agency's decision to State or Federal court.

Americans with Disabilities Act

The ADA prohibits discrimination on the bases of disability in employment, State and Local government services, transportation, public accommodations, commercial facilities, and telecommunications. The ADA's coverage is not tied to the presence of Federal funding.

In September 2008, Congress passed, and President Bush signed into law, amendments to the Americans with Disabilities Act (ADA) that are intended to clarify and reiterate who is covered by the law's civil rights protections. "The ADA Amendments Act of 2008" revises the definition of disability to more broadly encompass impairments that substantially limit a major life activity. The amended language also states that mitigating measures, including assistive devices, auxiliary aids, accommodations, medical therapies and supplies (other than eyeglasses and contact lenses) have no bearing in determining whether a disability qualifies under the law. Changes also clarify coverage of impairments that are episodic or in remission that substantially limit a major life activity when active, such as epilepsy or post traumatic stress disorder. The amendments took effect January 1, 2009.

The ADA applies to facilities in the private sector (places of public accommodation and commercial facilities) and to state and local government facilities. Standards issued by the Department of Justice (DOJ) apply to all ADA facilities except transportation facilities, which are subject to standards maintained by the Department of Transportation (DOT). DOJ has recently adopted new ADA standards. Further information on this update is available at www.ada.gov. DOT has adopted new ADA standards which apply to bus stops, rail stations, airports, and other transportation facilities.

State and Local Government Facilities (except transportation facilities) including public schools must follow DOJ's ADA Standards or Uniform Federal Accessibility Standards (UFAS). DOJ's Title II Regulation (28 CFR Part 36) allows use of the original ADA Accessibility Guidelines (ADAAG) (with some exceptions) or UFAS.

School Construction starting after March 15, 2012 must comply with the DOJ updated ADA Standards for Accessible Design (2010 Standards).

Technical Assistance

Technical assistance on the ADA standards is available from the U.S. Architectural & Transportation Barriers Compliance Board:
1331 F Street, NW, Suite 1000
Washington, DC 20004-1111
Phone: 800-872-2253 (voice) or 800-993-2822 (TTY), weekdays 10-5:30 EST (Wed. 10-2)
Email: ta@access-board.gov
Fax: 202-272-0081

State Requirements

Similarly, in Maryland, the Annotated Code of Maryland and the Code of Maryland Regulations (COMAR) specifically require instruction in physical education for students with disabilities.

The Maryland Accessibility Code includes the DOJ ADAAG standards described above and adds two provisions relating to van accessible parking and toilet stalls. The design of Maryland public school facilities are required to comply with the International Building Code and the Maryland Accessibility Code (COMAR 05.02.02).

The Maryland Codes Administration is expected to adopt the 2010 Standards before March 2012.

In April 2009, MSDE published a new guide for adapted physical education. The 'Guide for Serving Students with Disabilities in Physical Education' can be accessed on the MSDE website under the adapted physical education section.www.marylandpublicschools.org/MSDE/divisions/instruction/physical_education.htm

Appendix D

Sample Checklist for Facilities and Equipment

Modified from "Opportunity to Learn," a position statement of the National Association of Sport and Physical Education, 2004.

Facilities	Yes	No
Sufficient indoor and outdoor facilities are provided to accommodate the number of class sections scheduled during any one period, Suggested facilities include: hard surface outdoor area, turfed area, gymnasiums, locker rooms, classrooms, access to a computer lab, storage rooms, and teacher's offices.		
Additional facilities are provided to enhance that enhance the physical education program such as an aerobic/dance room, tumbling/gymnastic room, swimming pool, ropes course, fitness room/center, weight/strength room, and a computer lab.		
Physical education is taught in a dedicated facility, one that is not shared with other regular activities/classes.		
Indoor and outdoor facilities are marked with appropriate lines displaying lanes, circles, and courts.		
The indoor space for physical activity at each teaching station is large enough to accommodate all students in the class and allow all of them to move safely at the same time. The recommended space is 110-150 square feet per child.		
The outdoor field space is large enough to accommodate all students in the class and allow them to move safely at the same time. The recommended space is 300'x 150' per class.		
Indoor and outdoor facilities are free of hazards so students may participate safely in physical education, Teaching stations are inspected each period before activity begins to ensure safety of space and equipment.		
Drinking fountains are readily accessible for re-hydration during and after physical education.		
Adequate storage room is reasonably close to the relevant facility and ventilated for proper and safe reserve of supplies and equipment.		
Locker room design provides for student supervision and safety. Each student enrolled in physical education has his/her own locker for storage of personal items. Locker rooms provide restroom facilities, individual showers, sinks, and paper towels for student use as needed.		
Office space is provided for the PE teacher so that students may have convenient access to their teachers for assistance as needed and allows the teacher a professional work area for instructional planning.		

Equipment and Materials	Yes	No
Funds for the purchase and maintenance of physical education equipment and supplies are provided on a yearly basis. The budget is developed jointly by the department chair, the physical education staff, and the school administration.		
Ample equipment and supplies are provided so that each child can participate fully in instructional activities.		
All equipment is maintained and in good repair. The annual budget provides for the repair and maintenance of all equipment in a timely manner. All equipment is regularly inspected and repaired or replaced.		
The physical education budget includes the purchase of technology hardware to support communication and data storage and retrieval.		
The physical education budget includes the purchase of technology software for teachers to support record-keeping, assessment, data storage, and communications and for student use to support research and projects related to physical education.		
The annual budget provides for the purchase of CD's, DVD's, videotapes and software for teaching, assessment, and data collection in the physical education setting.		
Computer applications are available to help teachers develop daily lesson plans, monitor student records, average student grades, manage inventory, monitor the budget, develop instructional materials, prepare reports and communications and develop materials for program advocacy.		
A variety of software and hardware is available to students to provide enrichment to the curriculum, promote cross-curricular applications and learning, and assist in goal setting, self-assessment, reflection, and projects.		
The budget includes the purchase and provision of textbooks to support content and to serve as references.		

Appendix E

Comparison of Physical Education Space Requirements in Five Recent Maryland Public High Schools

	Allegany County Public Schools (1,000 students)	Carroll County Public Schools (1,200 students)	Frederick County Public Schools (1,500 students)	Harford County Public Schools (1,700 students)	Montgomery County Public Schools (2,000 students)
Indoor Spaces					
Main gym	15,000	15,000	12,000	14,400	10,000
Activity room/second gym	5,000	2,800	5,400	--	6,000
Fitness/Weight room w/storage	1,600	2,000	1,760	2,500	2,125
Aerobics	--	--	--	600	--
Wrestling w/storage	1,600	--	1,760	--	2,460
Health classroom	750	--	800	--	2@ 900
Dance w/ storage	--	--	--	--	1,946
Concession	200	150	--	200	--
Activity storage areas	50	200	--	--	--
Indoor track (bid alternate in one school)	--	--	--	--	--
Dressing (locker) rooms	4@750	4@700	2@1,700	2@2,500	2@1,650
Showers (drying) room	--	2@200	2@450	200	2@150
Towel room	--	--	--	--	2@50
Lavatories	--	4@125	2@150	--	2@200
Laundry	150	120	150	100	150
Team rooms	--	2@300	2@600	2@600	4@500
Team rooms	--	2@200	--	--	2@1,000
Football equip/uniform drying room	--	--	250	--	500
Training room	2@200	200	200	200	300
Team/uniform storage	200	2@200	2@150	--	--
Interior storage (main)	200	300	400	--	1,500
Interior storage (aux)	200	200	200	--	2@100
PE storage	--	--	--	750	--
Athletics storage	--	--	400	600	--
Outside storage	100	--	600	--	500
Bulk storage	--	--	--	--	400
Staff/coach locker rooms	4@150	2@150	4@200	--	2@115
Staff planning/office	--	5@60	--	2@200	1@200
Staff planning/office	--	--	--		2@600
Athletic Director office	100	150	150	250	200
Athletic Director office	--	--	--	--	150
Total Net Square Feet (NSF)	29,150	26,820	30,970	26,400	37,961
NSF Per Student	29	23	21	16	19

Appendix F

Outdoor Facilities in Five Recent Maryland Public High Schools

The educational specifications for the five new high schools referenced in Appendix E included the following outdoor facilities. No one school has all these elements.

Ancillary Buildings
Stadium storage shed
Field House
Toilet rooms with 4 water closets each
20' long press box (2-story okay)
One or two ticket booths
Concession stand
Outdoor shed
Baseball and softball storage shed
Tennis storage shed

Fields and Courts
Varsity baseball & softball fields with bleachers for 50 spectators
3 fields
Field hockey field
Soccer field
Basketball courts
4 paved play areas
6-8 tennis courts enclosed by 10' fences
Tennis rebound wall (60LF) (10’ high)
Horseshoe pits
Shuffle board court
Sand volleyball court
400 meter track (all weather, 8 lanes)
Stadium field
Stadium seating for 3,000-4,000 spectators

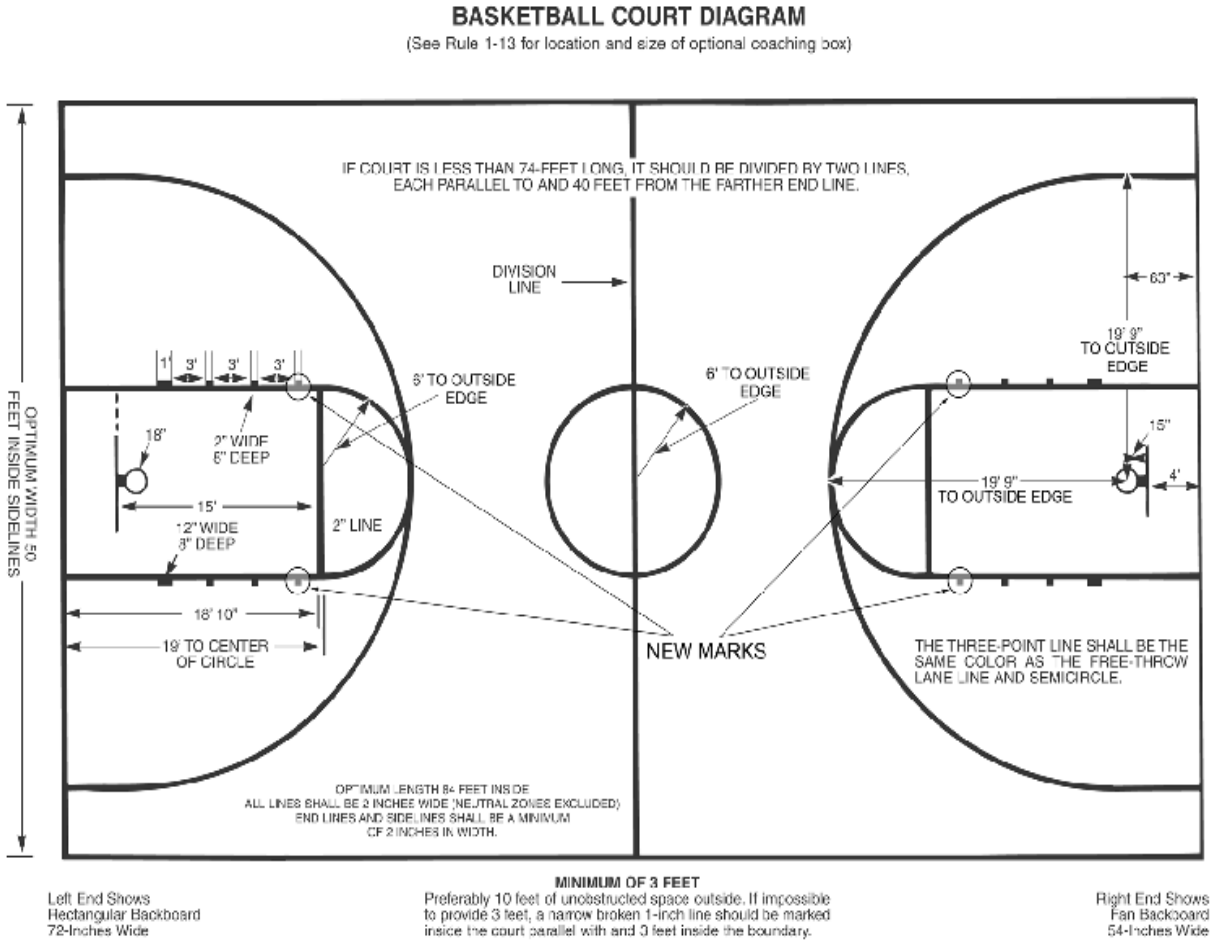
Appendix G

Sports Guidelines

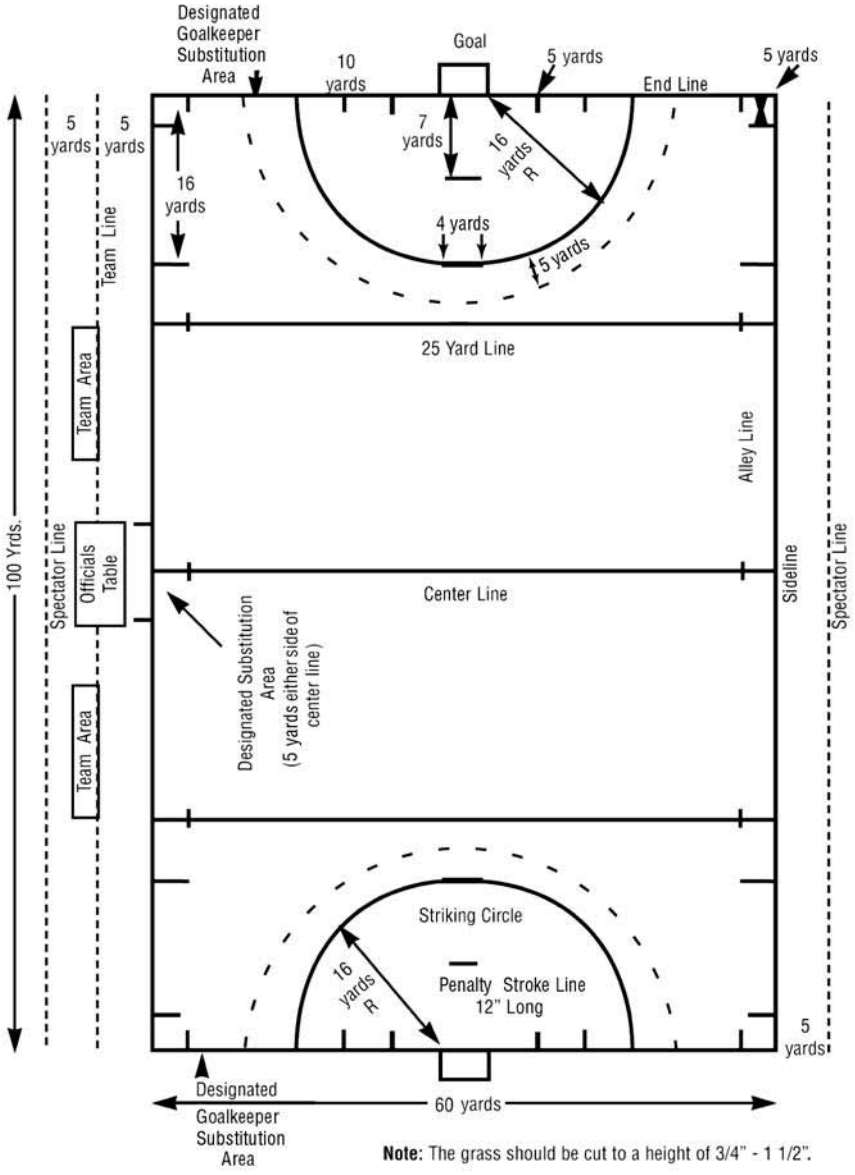
Sport	Dimensions	Safety Zone	Orientation
Archery	targets 15' on center line 100 yd shooting line max	6' behind shooting line 90' behind targets 30' sides	archer facing North ± 45º
Basketball Typical HS	50' x 84' 70' x 104' overall with safety zone	10' min unobstructed space around all sides	
Field Hockey	300' x 180'	10' all sides	long axis NW-SE
Lacrosse	330' x 180' max	15' all sides	long axis NW-SE
Soccer NASL	105 m x 68 m (114.8 yds x 74.3 yds) to inside of lines	10’ all sides	long axis NW-SE
Softball Fast Pitch	home plate to centerfield 225’ min backstop 30’radius to home plate 60’ x 60’ square infield	30’ from base or foul line	No standard E-NE recommended for NCAA
Tennis	single court 36' x 78' 60' x 120' overall with safety zone Hard surface or porous courts	60' x 120' overall 21' buffer at baseline 12'min sideline to next court or fence	Long axis true N-S
Track	400m running track & field events straightaway 133 m 110 m back of startline to finish 36.5 radius to trackside of inner curb proportions: radius semicircles not less than 32m or more than 42 m Surface-natural materials of all weather systems	--	Provide alt directions for run, jump, throw to reconcile wind and approach into setting sun
Volleyball	60’ x 30’ or 18 m x 9 m Overall playable area should be at least 23’ (7m) high	There should be a minimum clearance of 6’ around all sides	

Appendix H – Diagrams

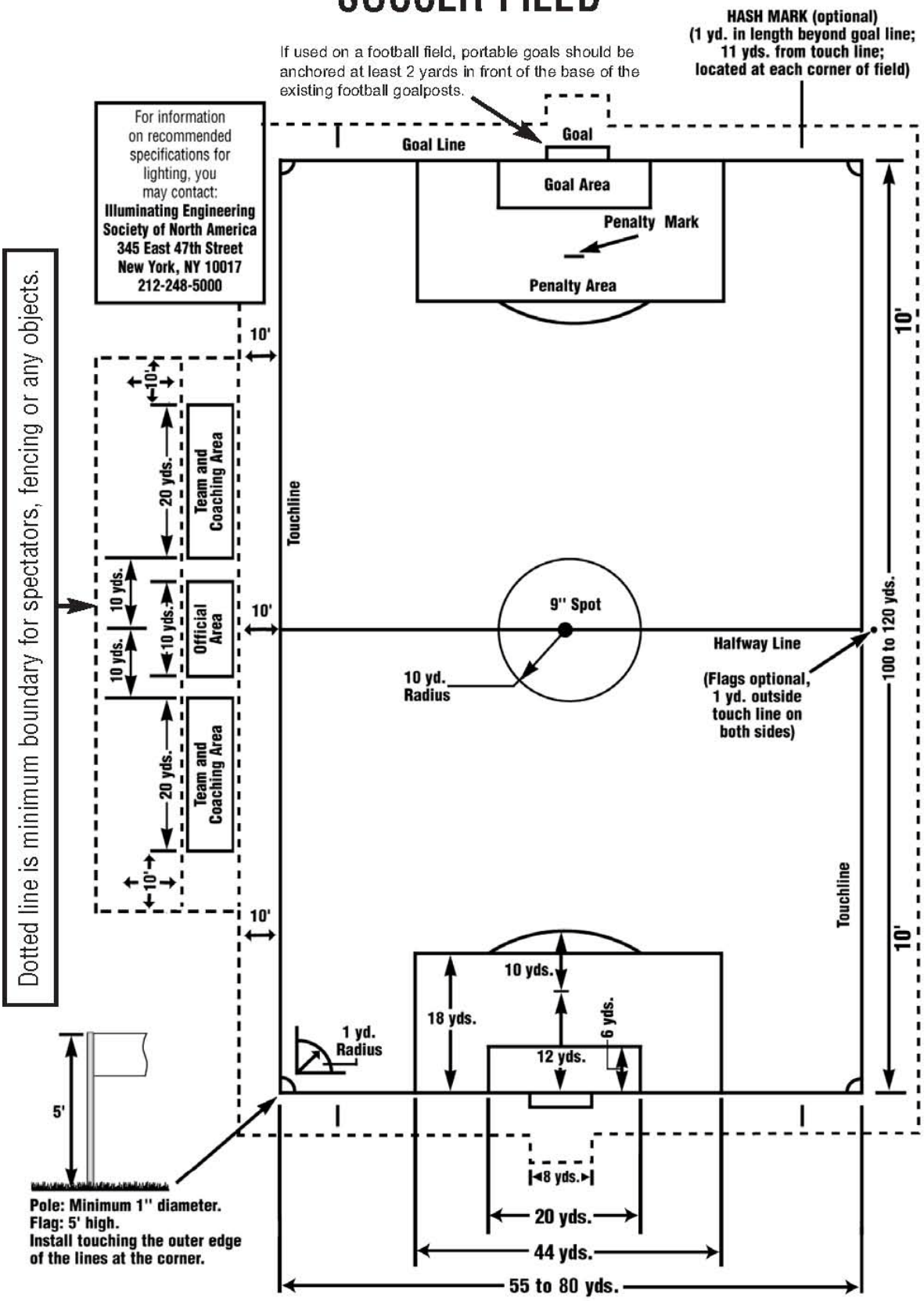
Source for all diagrams: National Federation of State High School Associations, www.nhfs.org.

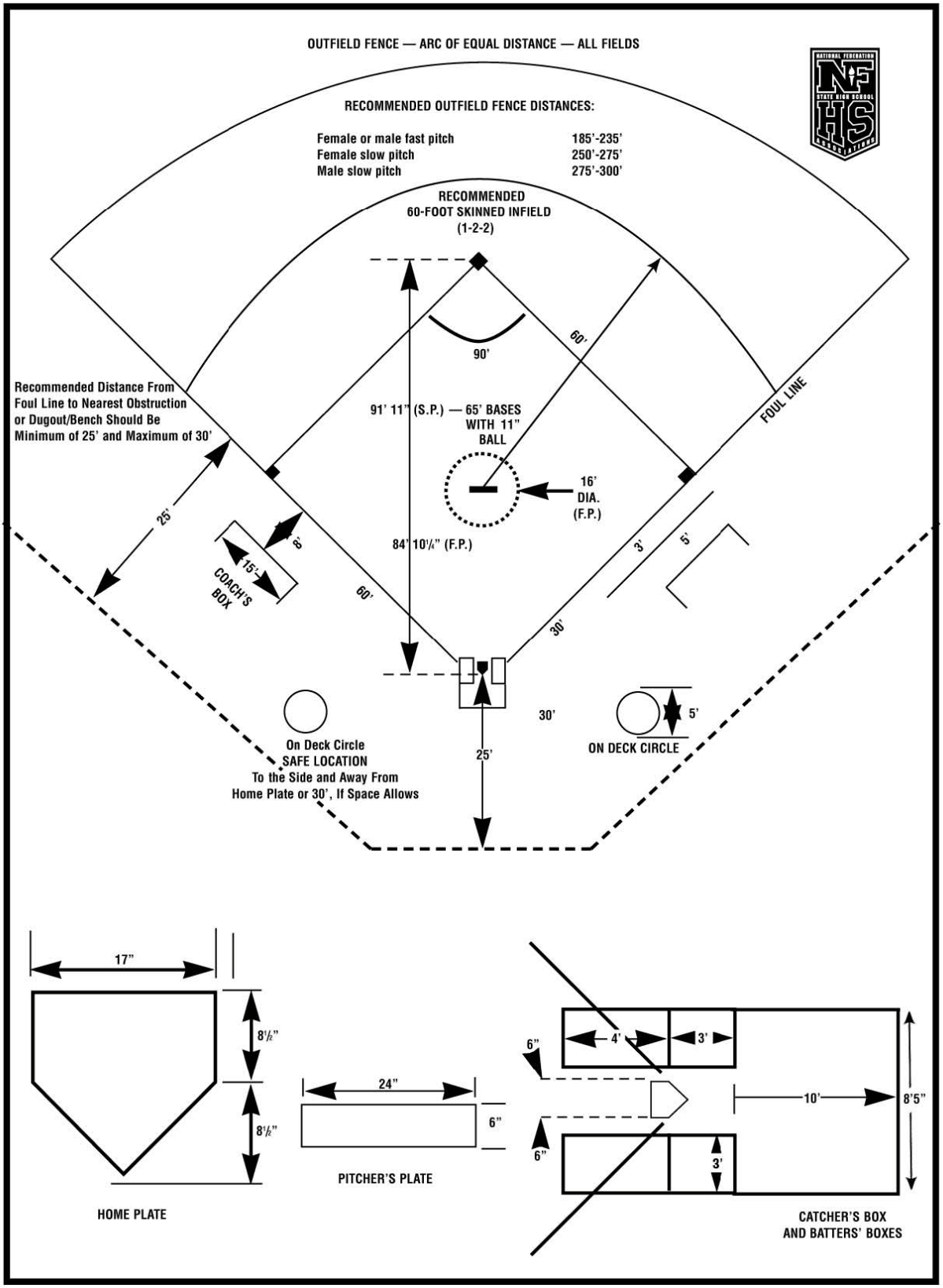


Field Hockey



SOCCER FIELD





SOFTBALL FIELD

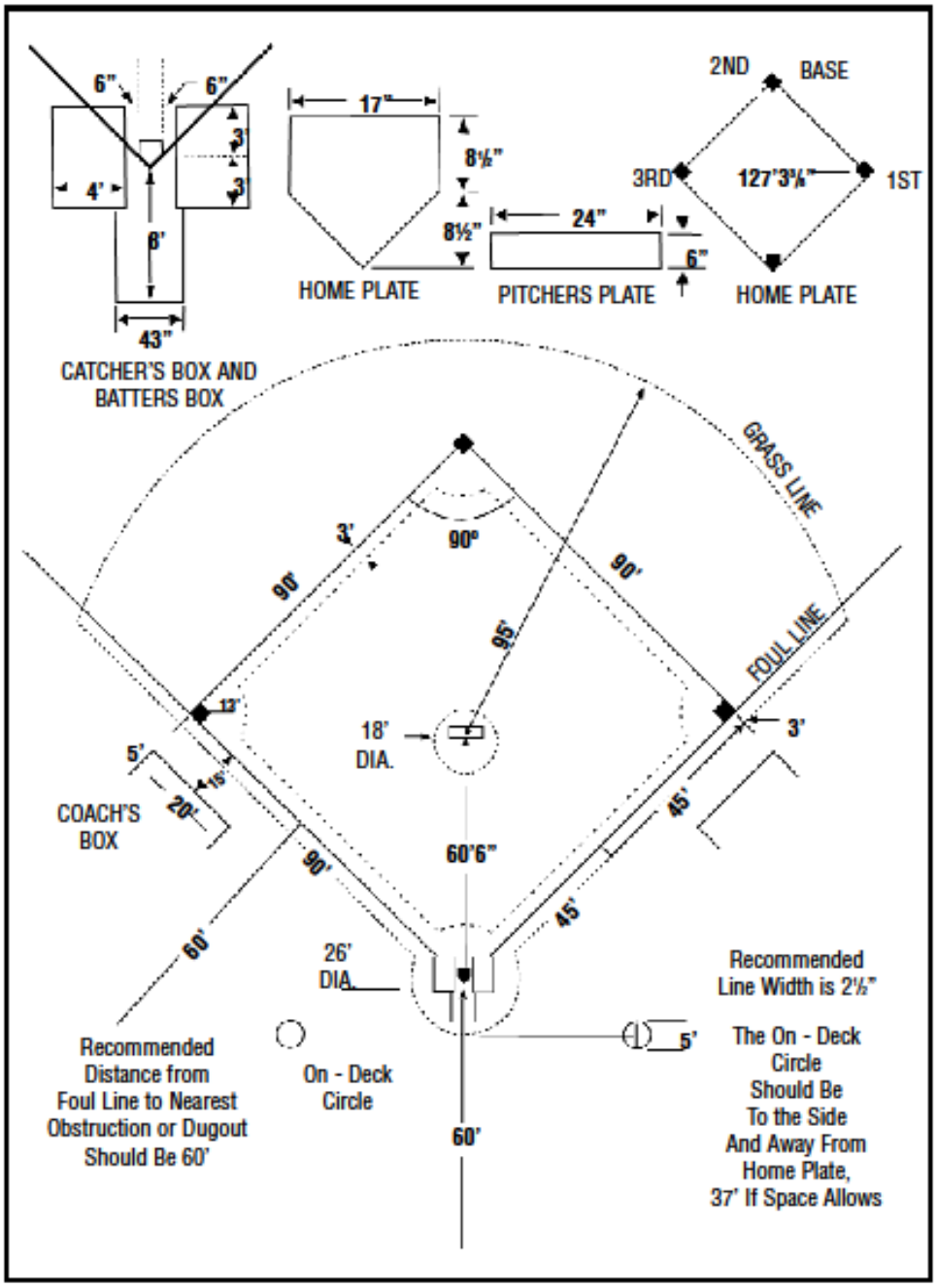
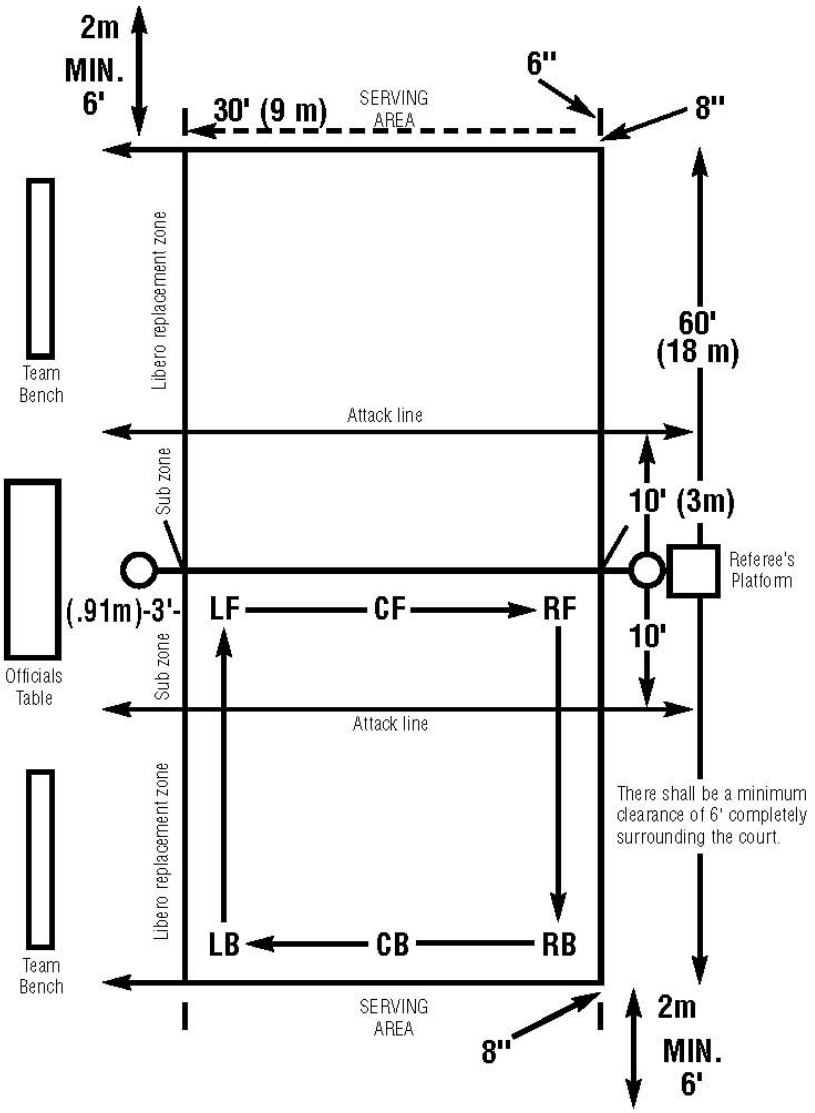
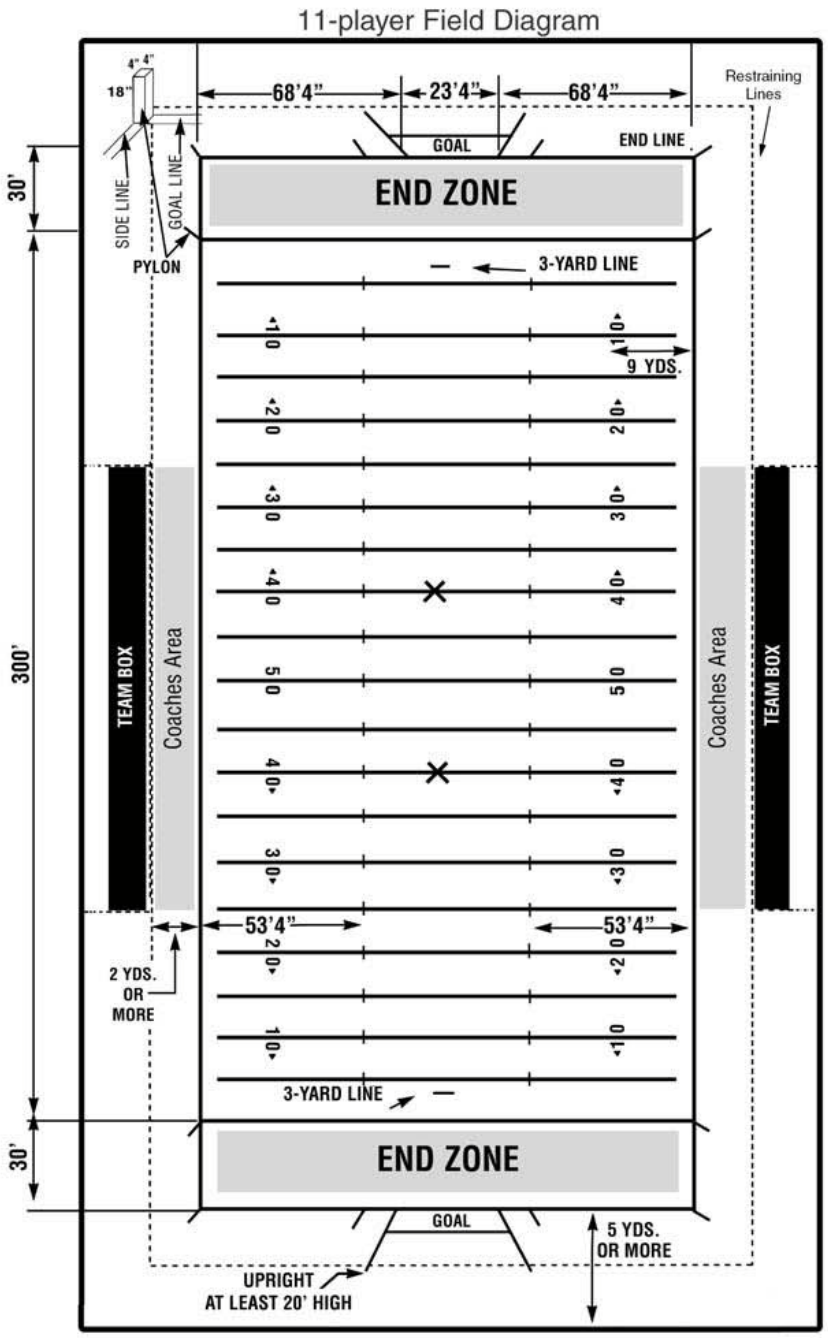


Diagram 2
OFFICIAL MEASUREMENTS . . . for laying out baseball field

Volleyball Court



Note: All lines on the court are 2 inches wide. For the center line, a solid or shadow-bordered 2-inch wide line is permissible. The border or outlines for the shadowed center line shall be at least ¼-inch wide and shall be within the 2-inch width. It is recommended that the court should be clear of obstructions and the overhead playable area should be at least 23 feet (7 meters) high.

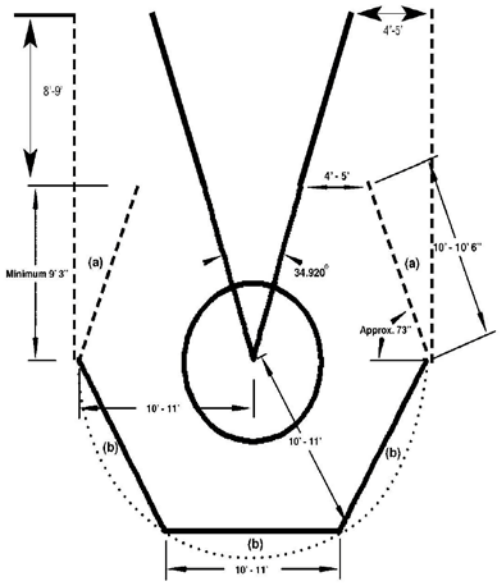


Football Field

NFHS Track and Field Rules

Discus Cage Guidelines

For both portable or permanent installation, it is recommended that the discus cage be constructed of heavy nylon netting or other material that will absorb the energy of the discus to prevent bounce-back. There must be a rear to the cage as well as sides that extend forward at least to the front of the ring and preferably several feet beyond the front of the ring. The ends of the cage (wing/gate pole) should be placed near enough to the sector lines to maintain a 4 to 5 feet relationship in distance from the lines.



SUGGESTED SPECIFICATIONS:

Height:10 feet to 14 feet Front Opening: 20 feet to 24 feet Distance from Corner Post to Sector Line: 4 feet to 5 feet Distance from Center of Circle to Fencing: 10 feet to 11 feet Fencing: Energy-Absorbing Material
(a) 10 feet to 10 feet, 6 inches
(b) 10 feet to 11 feet

NOTES:

1. The ends of the cage (wing/gate pole) should be placed within 4 to 5 feet of the sector lines.
2. The above diagram of a discus throwing cage is designed to provide limited protection for competitors, officials and spectators in the immediate throwing area. Due to the nature of the event, it does not ensure the safety of the aforementioned personnel.
3. It is recommended that all throwing areas be corded off with rope, fence or flags placed well outside the sector lines to minimize the risk of injury for spectators and athletes.

NFHS Track and Field Rules

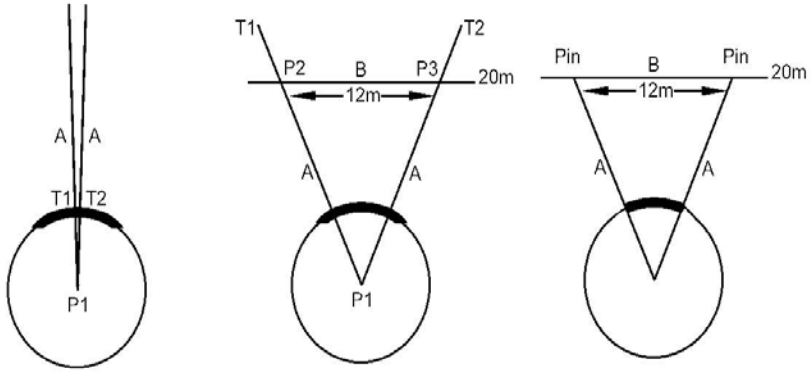
34.92-Degree Throwing Sector Set-up

The 34.92 degree throwing sector is an isosceles triangle having two equal sides, with the base of the triangle always being .6 of the length of either side. The sector may be prepared by using three tapes and three people or one tape, two people and stakes to clearly designate measurements.

3-3 System: Example Shot Put

1 Measure out from center of the circle with two tapes. (Diagram A)
2 Pull two tapes tight and then separate them by 12 meters at the 20 meter mark on each tape. (Diagram B)
3 One person holds the two tapes which will locate the sector lines in the center of the circle. (Diagram B)
4 Second person pulls tight on one of the sector line tapes and holds the zero mark of the cross measuring tape at the 20-meter mark. (Diagram B)
5 Third person pulls tight on the other sector line tape and holds the 12-meter mark of the cross measuring tape at the 20-meter mark. (Diagram B)
6 Sector lines are centered on the stopboard and permanent pins or stakes are placed at the ends of sector lines. (Sector lines can be extended if longer throws are anticipated.) (Diagram C)

Diagram A Diagram B Diagram C



A=Sector line B=Cross measurement P=Person T=Tape

Sectors for the discus and hammer are set up in a similar manner, keeping the ratio of cross measurement length to sector line length at 0.6. For example, one might use sector lines of 60 meters and a cross measurement of 36 meters for the discus and 70 meters and 42 meters for the cross measurement for the hammer.

NFHS Track and Field Rules

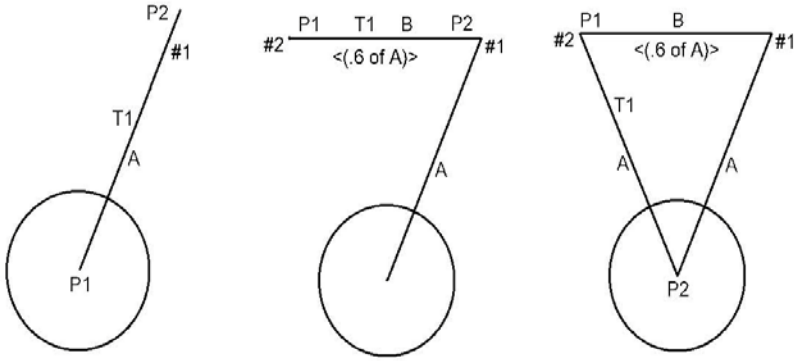
1-2 System: Example Shot Put

1 From the center of the 7-foot shot put circle, measure one of the outer boundary lines (sector lines) to a point 20 meters out and make a mark, #1. (Diagram D, mark #1)
2 Measure 12 meters (.6 of the length of the 20-meter boundary line) from mark #1 toward the second outer boundary line and make a second mark, #2. (Diagram E, mark #2)
3 From the center of the shot put circle, measure 20 meters for the opposite boundary line and align the 20-meter measurement with mark #2 with this measurement. (Diagram F)

1-2 System: Example Discus

1 From the center of the 8'2½" discus circle, measure one of the outer boundary lines (sector lines) to a point 60 meters out and make a mark, #1. (Diagram D, mark #1)
2 Measure 36 meters (.6 of the length of the 60-meter boundary line) from mark #1 toward the second outer boundary line and make a second mark, #2. (Diagram E, mark #2)
3 From the center of the discus circle, measure 60 meters for the opposite boundary line and align the 20 meter measurement with mark #2 with this measurement. (Diagram F)

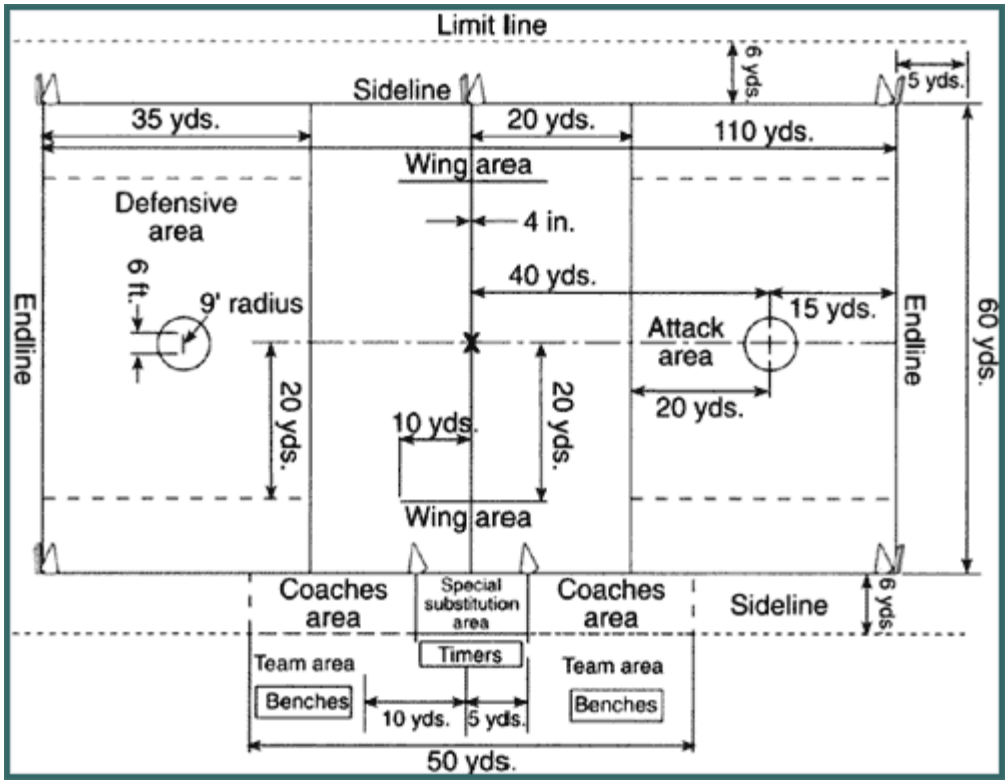
Diagram D Diagram E Diagram F



A=Sector line B=Cross measurement P=Person T=Tape

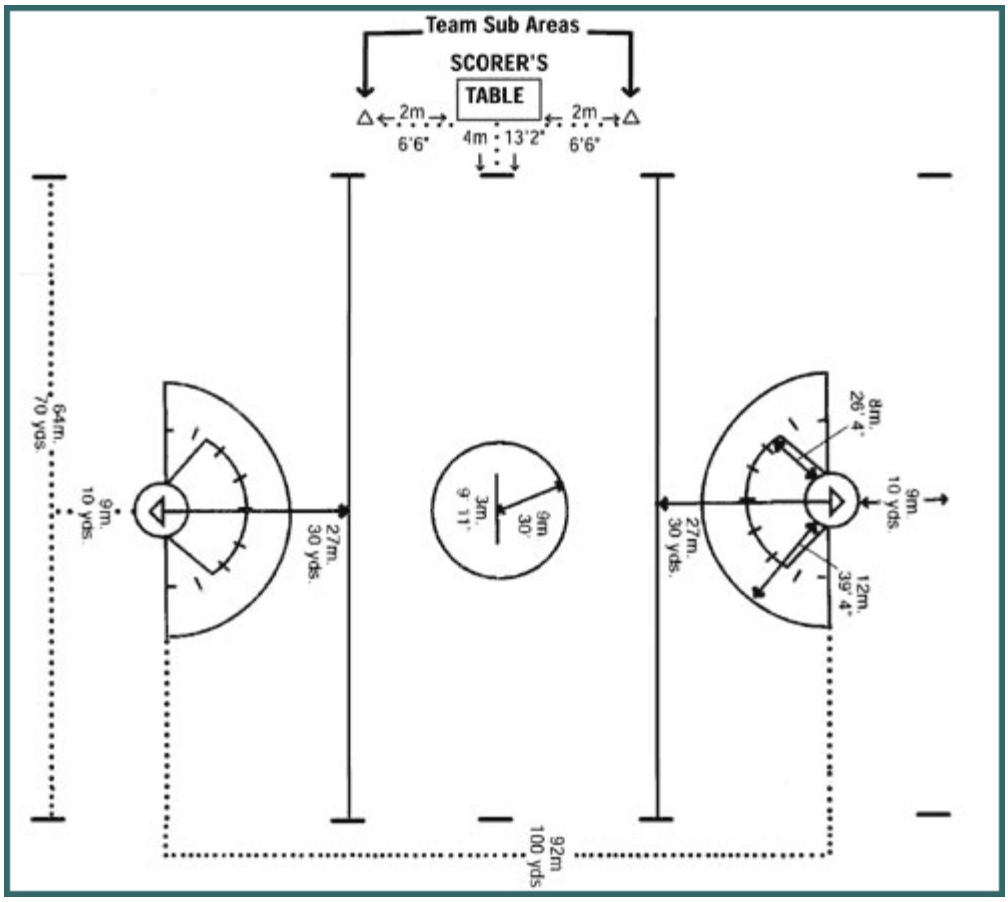
NOTE: The javelin sector is set out in a similar manner, except the sector angle is 28.96 degrees, which is the angle between the two equal sides of an isosceles triangle having the unequal side 0.5 times the length of the equal sides and is mathematically expressed as 2arcsin(0.25).

Boys Lacrosse



Source: US Lacrosse

Girls Lacrosse



Source: US Lacrosse

References

American National Standards Institute (ANSI) S12.60. (2002) *American National Standard Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools.* Melville, NY

Gallahue, D. & Cleland, F. (2000) *Developmental Physical Education for Today's Children*. Human Kinetics.

Graham, G., Holt-Hale, S. & Parker, M. (2000) *Children Moving,* 5th ed. Mayfield Publishing Co.

National Association for Sport and Physical Education, Council on Physical Education for Children. (2000) *Appropriate Practices for Elementary School Physical Education*. AAHPERD Publications: Reston, VA.

Maryland Accessibility Code (COMAR 05.02.02) <http://mdcodes.umbc.edu/>

National Association for Sport and Physical Education. (1995) *Moving into the Future, National Standards for Physical Education: A Guide to Content and Assessment.* Mosby-Year Book, Inc.: St Louis, MO

National Association for Sport and Physical Education. (2004) *National Standards for Physical Education,* 2nd ed. Reston, VA. Author

National Association for Sport and Physical Education, Council on Physical Education for Children. (2000) *Opportunities to Learn Standards for Quality Elementary Physical Education.* AAHPERD Publications: Reston, VA.

Nichols, B. (1994) *Moving & Learning: The Elementary School Physical Education Experience*, 3rd ed. Mosby-Year Book Inc.

Pangrazi, Robert, A. (1998) *Dynamic Physical Education for Elementary School Children*. Allyn & Bacon.

Public Schools of North Carolina, State Board of Education, Department of Public Instruction. (1998) *The School Site Planner: Land for Learning*. Raleigh, N.C. Author

Sawyer, T. (Ed.) (1999) *Facility Planning for Physical Activity & Sport: Guidelines for Development,* 9th ed. Kendall-Hunt.

United States Access Board. "Recreation Facilities ADDAG Amendments," "Play Areas: ADDAG Amendments," "Accessibility Guidelines for Outdoor Developed Areas," "Accessible Trails: Installation and Serviceability," "Swimming Pools". < http://www.access-board.gov/pubs.htm>

United States Consumer Product Safety Commission. *Guidelines for Retrofitting Bleachers*. Publication No. 330-000011. Washington, D.C. Author

United States Department of Justice. *Americans with Disabilities Act Standards for Accessible Design*, Title III regulations (28 CFR Part 36, revised July 1, 1994) Appendix A. <http://www.usdoj.gov/crt/ada/stdspdf.htm>