

II. School Facilities

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RECOMMENDED GUIDELINES  
FOR  
SITES, FACILITIES, and EQUIPMENT

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RECOMMENDED GUIDELINES  
FOR  
SITES, FACILITIES, and EQUIPMENT

1.0 Sites. A school site for a modern educational program should provide for functional requirements such as space for outdoor education, playground, parking, loading, drives and walks.

1.1 The site should be large enough to accommodate the number of pupils who attend the school.

1.1(1) The minimum site for an elementary school should be ten (10) acres plus an additional acre for each 100 pupils with due consideration given to the predicted ultimate maximum enrollment.

1.1(2) Junior high schools should be provided with a minimum site of fifteen (15) acres plus an additional acre for each 100 students in excess of 400 pupils with consideration given to maximum projected enrollment.

1.1(3) Senior high schools should be provided with a minimum site of thirty (30) acres plus an additional acre for each 100 pupils in excess of 500 with consideration given to maximum projected enrollment.

1.2 Factors to be considered in the selection of sites.

1.2(1) Availability	1.2(9) Orientation
1.2(2) Location	1.2(10) Expandability
1.2(3) Accessibility	1.2(11) Cost of Development
1.2(4) Shape	1.2(12) Utilities
1.2(5) Topography	1.2(13) Maintenance
1.2(6) Cost	1.2(14) Political Implication
1.2(7) Soil Condition	1.2(15) Safety Factors
1.2(8) Sub-Surface Conditions	1.2(16) Landscaping
	1.2(17) Sonic Distractions

1.3 Site Development

1.3(1) Playgrounds should be well-drained with an all-weather play area.

1.3(2) Driveways should be located away from play areas and have an all-weather surface.

- 1.3(3) Sidewalks should be properly located and be of sufficient width to accommodate the traffic load at peak times.
- 1.3(4) The sidewalk area immediately adjacent to the entry way should be of sufficient size to accommodate a number of students engaged in the process of cleaning shoes, removing boots, etc.
- 1.3(5) Trees, plants, shrubs, grasses, etc., used in landscaping should complement the curricular offerings of the school by being the same kind as cited in the adopted science curriculum.
- 1.3(6) Play areas should be well-equipped to serve the special needs of the age groups that will use the playground.
- 1.3(7) The school bus loading and unloading areas should be located within the limits of the school site.
- 1.3(8) Parking areas should have an all-weather surface. (One acre will accommodate approximately 125 cars.)

## 2.0 PLANNING NEW OR REMODELED FACILITIES

### 2.1 Compliance with the Code of Iowa

- 2.1(1) State Department of Public Instruction, Chapter 297 - Section 297.7 Erection or Repair of Schoolhouse. The provisions of sections 23.2 and 23.18 shall be applicable to the construction or repair of school buildings. Before erecting any school building at a cost of more than five thousand dollars, the board of directors shall consult with the building consultant in the Department of Public Instruction as to the most approved plan for such building.
- 2.1(2) State Fire Marshal  

All changes or alterations to be made in any school or college building, whether new or existing, shall conform with the applicable provisions of these rules and before any construction of new or additional installation is undertaken, drawings and specifications thereof made to scale shall be submitted to the state fire marshal, in duplicate, for his approval. 29.1(5) page 1, Fire Safety Regulations for Schools and Colleges, 1971.
- 2.1(3) Handicapped Persons  

Code of Iowa, Chapter 104A, Section 104A.6 conforming standards. In addition to complying with the standards and specifications set forth in sections 104A.3 and 104A.4, the authority responsible for the construction

of any building or facility covered by section 104A.2 shall insofar as feasible in the opinion of the contracting authority conform with the standards and specifications approved by American Standards Association, Inc. on October 31, 1961, known as "American Standard Specifications for Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped, A 117.1 - 1961."

## 2.2 Architect

- 2.2(1) All architects employed by a school district shall comply with Chapter 118 - Code of Iowa.
- 2.2(2) Because additions to or new school buildings are not excepted in Chapter 118, Section 118.18, an architect must be employed for all construction.

## 2.3 Educational Specifications

- 2.3(1) Before any building is planned, the scope and sequence of the curriculum must be defined, put down in writing, and adopted by the school board for the particular group of students to be housed in the new or remodeled structure.
- 2.3(2) After the curriculum has been defined, educational specifications need to be prepared, approved, and adopted by the school board.
- 2.3(3) Copies of the curriculum guide and educational specifications should be given to the architect prior to any preliminary drawings or sketches.
- 2.3(4) This procedure allows the architect to use his creative ability to design the kind of spaces needed to house the educational programs and activities as set forth in the educational specifications and curriculum guides.

## 3.0 PHYSICAL ENVIRONMENT OF THE BUILDING

- 3.1 It is now possible to completely control the internal environment of a school building, and the students' "home away from home" should be made as pleasant and comfortable as finances will allow. Studies now prove the environment within the building has a direct relationship to student efficiency, and every effort should be made to provide an ideal physical environment for students.

## 4.0 OPEN SPACE BUILDINGS

### 4.1 Definition

- 4.1(1) Generally, open space has come to describe school buildings lacking interior partitions in which the visual and acoustical separation between teaching stations and classroom areas is limited or eliminated. Space becomes increasingly open as the size of the areas increases and the use of partitions decreases.

### 4.2 Area

- 4.2(1) Open space cannot be used as a device to house more children in the same space as in a traditional building.
- 4.2(2) Open space works better if the square footage per student exceeds 30 feet per student.
- 4.2(3) Open space requires acoustical treatment of the floor and ceiling.

### 4.3 Why open space?

- 4.3(1) Meets the individual student's needs through more sensitive grouping and individualized instructions.
- 4.3(2) Provides a better opportunity for independent study.
- 4.3(3) Makes better use of teachers' time and talents through cooperative organization.
- 4.3(4) Increases the opportunities for differentiated staffing.
- 4.3(5) Allows for immediate, short range, and long range changes in the organization and use of space.

### 4.4 Special Rooms

- 4.4(1) Areas of the curriculum that create excessive sound or noise and movement require their own special spaces.
- 4.4(2) Examples of special rooms:

Gymnasium and Auxillary Spaces

Shops

Business Machines

Lunch Rooms

Music

Science

Multi-Purpose Rooms

(Note: Each building will be as different as each program is different due to the peculiarity of each school district and its beliefs concerning the educational process.)

## 5.0 OFFICE SPACE OR AREAS

### 5.1 Central Administration

- 5.1(1) The chief administrator and all other professional members of the administrative staff should have private offices.
- 5.1(2) Other necessary spaces
  - a. a reception or waiting area.
  - b. offices for secretaries, business managers, etc.
  - c. a machine and storage room.
  - d. a school board meeting room.
  - e. restroom facilities.
- 5.1(3) A fire resistant safe or vault should be included.

### 5.2 Building Principal's Office

- 5.2(1) The chief administrator and professional assistants of any one building should have a private office.
- 5.2(2) Other necessary spaces.
  - a. a waiting area.
  - b. a place or office for a secretary and/or receptionist.
  - c. a machine and storage room.
  - d. a conference room.
  - e. a teachers' workroom with restroom facilities.
- 5.2(3) A fire-proof vault or safe.

### 5.3 Teachers' Offices

- 5.3(1) Should have some degree of acoustic control.
- 5.3(2) Should be easily accessible to students.
- 5.3(3) Should be large enough to accommodate a desk, a file, a bookshelf and a space to seat two or three students comfortably.

- 6.0 HEALTH. Health facilities should be provided in each building.
- 6.1 A minimum health facility should include: a small waiting room which will seat at least four persons, an examining room sufficient in length to allow for the use of an eye chart, a private office for the nurse, and a divided area for cots.
  - 6.2 The waiting room should contain a minimum of 80 square feet and the examination room a minimum of 100 square feet.
  - 6.3 Each health facility should have available a toilet and lavatory.
  - 6.4 Each health facility should have available at least two semi-private beds or cots to accommodate students.
  - 6.5 A lockable closet or cabinet should be provided for storage of medical supplies.
- 7.0 REGULAR CLASSROOM. A regular classroom is a space provided for a general education activity which ordinarily does not require special equipment.
- 7.1 Elementary. An elementary classroom should be planned to serve a wide variety of activities.
    - 7.1(1) Classrooms for young children (N.S., K-3) should be located on the ground floor.
    - 7.1(2) Elementary classrooms should contain a minimum of 900 square feet with a minimum width of twenty-eight (28) feet.
    - 7.1(3) Each classroom should have: (1) at least two (2) electrical duplex outlets; (2) at least sixteen (16) lineal feet each of chalkboard and tackboard space; (3) movable furniture; (4) shelving for reference materials; and (5) light control to facilitate the use of visual aids.
    - 7.1(4) There should be provided in each classroom: (1) a work counter and sink; (2) book shelving for a room library; (3) some type (other than tackboard) of display area; (4) a teacher's closet; (5) movable furniture; (6) adjustable shades for proper light control; (7) a project table with chairs; and (8) a filing cabinet, and a teacher's desk and chair.
  - 7.2 Secondary. A regular or interchangeable classroom is one that may be used every period of the day for various subject fields.
    - 7.2(1) A high school classroom should contain a minimum of 750 square feet.



- 7.2(2) Each classroom should have: (1) at least one (1) electrical outlet on each wall; (2) at least sixteen (16) lineal feet each of chalkboard and tackboard space; (3) movable furniture; (4) shelving for reference materials; and (5) light control to facilitate the use of visual aids.

## 8.0 EARLY CHILDHOOD CENTER

- 8.1 This facility should be a component of the elementary school but should be a completely self-contained unit.
- 8.2 The center should be located on the ground floor with its own entrances and driveway.
- 8.3 An adequate lobby or entrance area should be provided to include a "waiting room" area and a wrap storage area.
- 8.4 The learning area should have a minimum of 1,200 square feet of floor space.
- 8.5 A restroom area should be immediately adjacent to the learning area with hand washing facilities located outside the restroom for easy supervision.
- The restroom area should be well-ventilated, be semi-open and have "easy to clean" walls and floor.
- 8.6 The design of the facility should place emphasis on use by the very young, and every object should be child-oriented and child-sized.
- 8.7 All furniture should be easily movable to allow different arrangements as necessitated by the various activities.
- 8.8 A semi-enclosed play area should be located immediately adjacent to the learning area. Supervision of both areas should be possible from any part of each area.
- 8.9 The floor area next to the semi-enclosed play area and the "do it yourself" area should have a hard, cleanable surface while the other areas of the learning center should be carpeted.
- 8.10 The environment of the room should provide a homelike setting for the young child through the expression of space, color, texture and light.
- 8.11 An outside area with grass, trees, shrubs and flowers needs to be provided to create opportunities for nature study and to develop an appreciation for the out-of-doors.

9.0 KINDERGARTEN. The kindergarten classroom should be designed to permit a variety of emotional, social and intellectual experiences.

9.1 A kindergarten classroom should contain at least 1,200 square feet of floor space with a minimum width of 28 feet.

9.2 Kindergarten rooms should be located on the first floor and have a separate entrance. A separate play area should be provided.

9.3 Wrap storage should be provided in the classroom.

9.4 Each kindergarten classroom should provide toilet facilities.

9.5 Each kindergarten classroom should have: (1) at least sixteen (16) lineal feet each of chalkboard and tackboard space; (2) storage space for instructional supplies; (3) storage space for play equipment; (4) at least one (1) electrical outlet; (5) movable furniture (tables and chairs are suggested); (6) teacher's closet; (7) a file cabinet; and (8) teacher's desk and chair.

#### 10.0 ELEMENTARY ART

10.1 The art room should be located on the ground floor with convenient access to related areas of the curriculum.

10.2 The total area of the room, including storage spaces, should be at least 40 square feet per student based on the largest group to use the room at one particular time.

10.3 Storage space should be provided in accordance with the needs of the program.

10.4 Tables and counters should have mar-resistant surfaces.

10.5 Sinks and floor drains should be equipped with clay trapping devices.

10.6 Satisfactory floor coverings are close-grained hardwood maple, light-colored rubber asphalt, vinyl asbestos, or vinyl tile.

#### 11.0 ELEMENTARY MUSIC

11.1 Combination vocal and instrumental

11.1(1) Sound reverberations should be controlled by the use of an acoustic tile ceiling and a carpeted floor.

11.1(2) The size of the room should be 20 square feet per student based on the largest group to use the room at one particular time with a minimum of 1,200 square feet.

- 11.1(3) Storage facilities should include spaces for instruments, files for music, uniforms and robes if any, and "props" for music programs.
- 11.1(4) Sound-proof practice rooms should be provided in sufficient numbers to satisfy the needs of the program.
- 11.1(5) Risers are not recommended for a dual-purpose elementary music room.
- 11.1(6) The room should be located away from the academic area.

#### 11.2 Vocal Room

- 11.2(1) Sound reverberations should be controlled by acoustic tiled ceilings and a carpeted floor.
- 11.2(2) The size of the room should be 20 square feet per student based on the largest group to use the room at one particular time.
- 11.2(3) Storage should be provided for music, textbooks, and "props" for programs.
- 11.2(4) Furniture should be easily movable.

#### 11.3 Elementary Instrumental

- 11.3(1) The room should be located away from the academic area.
- 11.3(2) Sound-proof practice rooms should be of sufficient size and number to satisfy the needs of the program.
- 11.3(3) The size of the room should be at least 25 square feet for each student based on the largest group to use the room at one particular time.
- 11.3(4) If risers are used, they should be portable.
- 11.3(5) Storage facilities should be provided for music, instruments, and uniforms if any.
- 11.3(6) Room should be air-conditioned if a summer program is offered.

#### 12.0 ELEMENTARY MULTI-PURPOSE ROOM

- 12.1 Multi-purpose rooms should have a minimum floor size of 50 x 70 feet. The minimum ceiling height should be 16 feet.
- 12.2 The room should be located on the ground floor level and should be readily accessible to the public.

- 12.3 The wall area should be free of all obstructions such as pilasters, ducts, radiators, pipes, and sharp corners.
- 12.4 A portable stage should be available for use within the multi-purpose room. If a permanent stage is desired, it should be located at one end of the room.
- 12.5 Storage rooms for physical education equipment should be adjacent to the playing floor.
- 12.6 If the room is also used as a dining area for the lunch program -
  - a. portable tables need to be stored in an adjacent store room.
  - b. wall-hung tables should be stored in "in the wall" pockets located on the side walls of the room.
- 12.7 Shower and dressing facilities for both sexes should be located adjacent to the playing floor and should be large enough to accommodate approximately 1/2 of the largest elementary physical education class. There should be 1 shower head for every 3 students and 12 square feet of floor space for each shower head. If possible, locker rooms should allow 15 square feet per student.

### 13.0 ELEMENTARY MEDIA CENTER

13.1 The media center should be centrally located away from any noisy areas.

#### 12.2 Size.

Entrance Area	200-300 square feet
Reading Room	Greater of 1,600 square feet or 10% of pupils at 40 square feet per pupil.
Student Conference Office	At 240 square feet. 120-200 square feet.
Work Area	
General Processing	200-300 square feet.
Media Production	200-400 square feet.
Stack Area	250-350 square feet.
Professional Library	900 square feet.

13.3 The media center should be staffed at all times and the students should be able to come and go as needed.

13.4 The media center should be carpeted and present a pleasing environment for students.

## 14.0 ELEMENTARY SPECIAL EDUCATION

### 14.1 Educable

- 14.1(1) Rooms for the educables should provide  $1\frac{1}{2}$  times the square footage of a regular classroom.
- 14.1(2) Rooms for the educables should have their own restrooms.
- 14.1(3) Educable rooms should be located within the elementary school on the ground floor.
- 14.1(4) There should be provision for arts and crafts and phases of homemaking.
- 14.1(5) Ample enclosed storage space should be provided.

### 14.2 Trainable Rooms

- 14.2(1) The room should be a semi-isolated, self-contained classroom close to an exit in a regular elementary building with toilet facilities adjacent and connected with the classroom.
- 14.2(2) Special Facilities.
  - a. a kitchenette area.
  - b. a dining area.
  - c. provision for arts and crafts.
- 14.2(3) Ample enclosed storage space should be provided.

### 14.3 Emotionally Disturbed

- 14.3(1) A classroom of regular size should be provided, largely self-contained, on the ground floor and as isolated from the other classrooms as possible.
- 14.3(2) A fountain and toilets should be provided adjacent to the classrooms.
- 14.3(3) An alcove or offset from the classroom should provide rest facilities, such as a cot, with some degree of isolation.

## 15.0 HOMEMAKING

- 15.1 A homemaking department should be located on the first floor with an outside entrance to facilitate the delivery of materials.

- 15.2 An all-purpose homemaking facility should contain at least 1,600 square feet. However, in a multi-room department, each individual room should contain at least 900 square feet.
- 15.3 Each homemaking department should have at least 200 cubic feet of cabinet-wall storage.
- 15.4 Unit kitchens should be equipped with modern day appliances and at least 12 feet of counter space. A refrigerator and freezer may serve several kitchen units.
- 15.5 A clothing area should be provided. This area should include tables for cutting purposes, sewing machines, storage space, at least one three-way mirror, ironing boards, irons, and a dressing booth or screen to permit the fitting of clothing.
- 15.6 Each homemaking department should have a living room area, carpeted and furnished in accordance with modern day modes and design.
- 15.7 Space should be allotted within the department for independent study and group discussion.

#### 16.0 SCIENCE FACILITIES

- 16.1 Multi-purpose classroom and laboratory, physics, chemistry, biology, general science.
  - 16.1(1) Are best located with a southern or eastern exposure.
  - 16.1(2) Should contain at least 1,200 square feet of floor space exclusive of storage and other areas.
  - 16.1(3) Should have perimeter science tables with gas, electricity, water, and a student seating section to accommodate the largest class.
  - 16.1(4) Should provide cubicle or drawer space for students who are responsible for their own equipment or projects.
  - 16.1(5) Should have an instructor's demonstration desk.
- 16.2 Biology
  - 16.2(1) Should have floors, tables, and counters that are resistant to water and readily cleaned.
  - 16.2(2) Should be located on the east or south side of the building.
  - 16.2(3) Should contain at least 1,200 square feet of floor space.

16.2(4) Auxillary Spaces

- a. an office for the instructor.
- b. preparation room
- c. ample storage spaces.
- d. animal room - at least 100 square feet.
- e. plant room - at least 100 square feet.
- f. microscope storage.

16.2(5) Special equipment

- a. aquarium tanks.
- b. animal pens.
- c. utility sinks with garbage disposal.
- d. refrigerator.
- e. special heat and humidity controls for plant and animal rooms.
- f. two-place science tables for students.
- g. an instructors demonstration desk.

16.3 Chemistry

- 16.3(1) Should contain 1,200 square feet of floor space.
- 16.3(2) Should have perimeter 4-student science tables with a center seating section for students.
- 16.3(3) Should have a lockable space for each student enrolled.
- 16.3(4) Should have a special storage area for chemicals that is dark, ventilated, and can be locked.
- 16.3(5) Should have an emergency wall shower and eye-wash basin.
- 16.3(6) Should have a fumehood and a room exhaust fan
- 16.3(7) Should have a lockable storage space for equipment.
- 16.3(8) Should include an instructor's demonstration desk.
- 16.3(9) Should have an acid-resisting floor.

#### 16.4 Physics

- 16.4(1) Should contain 1,200 square feet of floor space.
- 16.4(2) Should have perimeter 4 student science tables with a center seating section for students.
- 16.4(3) Should have a lockable storage area for equipment and some lockable storage space for students.
- 16.4(4) Should have an instructor's science demonstration desk.

#### 16.5 The Multi-Discipline Science Laboratory

- 16.5(1) Should be one large science laboratory with a number of student stations.
- 16.5(2) Should have at least two or more small group rooms adjacent science laboratory.
- 16.5(3) Should have adequate storage rooms or storage cabinets for each discipline for students and equipment.
- 16.5(4) Should teach all science lectures in large groups; small group sessions are held in the science laboratory complex.
- 16.5(5) Should be open at all times for student use under the supervision of a laboratory student.
- 16.5(6) Should have an office for each science instructor within the laboratory complex.
- 16.5(7) Should be an all-purpose facility; not designed for one special science area.

### 17.0 SHOP FACILITIES

#### 17.1 Industrial Arts

- 17.1(1) Should contain at least 2,000 square feet and be rectangular in shape, ratio 1:1½ or 1:2.
- 17.1(2) Should be located away from the academic area and should have immediate access to the outside.
- 17.1(3) Should have separate areas for each part of the curriculum.



17.1(4) Special consideration should be given to:

- a. electrical needs.
- b. ventilating needs.
- c. dust collecting systems.
- d. special lighting needs.
- e. special plumbing needs.

17.1(5) Auxillary spaces needed:

- a. storage for materials.
- b. finishing room.
- c. project storage room.
- d. instructor's office.
- e. student planning room.

17.1(6) Should have an emergency wall shower, a hand sink, a drinking fountain, and a "change clothes" locker room.

17.1(7) Should have a floor space of 3,000 square feet if woods, metals, small engines, electricity, electronics, building trades, and other subject areas are offered.

## 17.2 Vocational Agriculture

17.2(1) Should contain at least 2,000 square feet and should be rectangular with a ratio of 1:1½ or 1:2.

17.2(2) Should be located away from the academic area and have immediate access to the outside.

17.2(3) Should have an overhead door sized to permit the entrance of large equipment.

17.2(4) Should have work areas within the shop for farm carpentry, metals, machinery repair, painting and welding.

17.2(5) Should have a concrete apron immediately outside the overhead door.

17.2(6) Should have an all-weather drive leading to the shop area.

- 17.2(7) Should have a classroom adjacent to the shop area.
- 17.2(8) Should provide an office space for the instructor.
- 17.2(9) Should provide a "clean-up" station for students.
- 17.2(10) Should provide an "on the wall" emergency shower.
- 17.2(11) Should provide adequate storage area for materials, projects under construction, and hand tools.

### 17.3 Trade and/or Industrial Shops

- 17.3(1) The size of the shop will be determined by the program to be offered and the number of work stations required.
- 17.3(2) The special equipment needed will be determined by the curriculum.

### 17.4 Drafting Room

- 17.4(1) The drafting room should be located in the shop area complex.
- 17.4(2) The room should provide at least 50 square feet per student station.
- 17.4(3) The room should be equipped with regular drafting tables.
- 17.4(4) Specialized storage spaces need to be provided for paper and drawing equipment.
- 17.4(5) Special consideration needs to be given to the illumination of the room to permit adequate light on the working surface without glare or shadows.
- 17.4(6) Ample tackboard should be provided for display purposes.
- 17.4(7) A hand washing sink with adjacent counter tops should be provided within the drafting room.

## 18.0 MUSIC FACILITIES

### 18.1 Instrumental Music

- 18.1(1) Should provide at least 20 square feet of floor space for each student in the largest group exclusive of all other kinds of storage spaces.
- 18.1(2) Should have direct access to the outside.

- 18.1(3) Should give special consideration to the acoustic quality of the room.
- 18.1(4) Should have a ceiling height from 12' to 14'.
- 18.1(5) Should have a room dimension ratio of 3 to 2.
- 18.1(6) Should give preference to portable risers over any type of permanent installation.
- 18.1(7) Other spaces needed:
  - a. instrument storage
    - (1) should be "built-in" with varying compartment sizes.
    - (2) should be located near the entrance to the band room and should incorporate the idea of "walking through" to pick up or store equipment.
  - b. uniform storage
    - (1) should have direct access to the band room.
    - (2) should be ventilated.
    - (3) should have "close fitting" doors to help protect against moth and dust damage.
    - (4) should have special compartments to store uniform caps or hats.
  - c. practice rooms
    - (1) should be located near the entrance to the band room.
    - (2) should be sound-proof.
    - (3) should be of varying size to accommodate one student up to a small ensemble.
    - (4) should be large enough to accommodate a piano.
    - (5) may also double as dressing rooms if properly designed.
  - d. director's office
    - (1) should be adjacent to the band room.
    - (2) should be soundproof.
    - (3) should be large enough to accommodate the necessary furniture plus an area for conferences with students and parents.
  - e. music library and repair room
    - (1) should have access from the band room and the director's office.

- (2) should be large enough to house the necessary files plus an area devoted to the repair of instruments.

f. recording room

- (1) should be located at the front and middle of the band room.
- (2) should have a window "looking into" the band room.

18.2 Vocal Music

18.2(1) At least 16 square feet of floor space for each student in the largest group should be provided. This is exclusive of all other needed space.

18.2(2) Special consideration should be given to the acoustical quality of the room.

18.2(3) Ceiling height should be from 12 feet to 14 feet.

18.2(4) The shape of the room should have a ratio of 3 to 2.

18.2(5) Other spaces needed

a. an office for the director.

b. a storage area for choir robes.

c. practice rooms.

(1) should be soundproof.

(2) should be located near the entrance to the vocal room.

(3) should be large enough to accommodate a piano plus one student and/or a small group. The number of practice rooms will vary according to the needs of the program.

d. an adequate storage room for stage "prop" materials.

18.3 All-purpose music room

18.3(1) This type of music room should include the essential features of band room and a vocal music room.

18.3(2) The size of the room should be based on 20 square feet per student in the largest instrumental group.

## 19.0 ART FACILITIES

- 19.1(1) Should be located on the first or ground floor with convenient access to related areas of the curriculum.
- 19.1(2) Should have an outside entrance.
- 19.1(3) Should be located on the north side of the building with ample north window light.
- 19.1(4) Should have at least 1,200 square feet of floor space.
- 19.1(5) Should have table tops, counters, and a floor that are durable and yet easily cleanable.
- 19.1(6) Other spaces and essential equipment
  - a. ample storage spaces with special shelving to accommodate the various kinds of art materials.
  - b. a "clean-up" sink with drain-boards with a special "mud" trap.
  - c. an emergency wall shower unit.
  - d. display cases or special wall areas to exhibit the work of the students. These kinds of spaces do not necessarily have to be located within the art room.
  - e. special electrical needs to service a kiln and/or other equipment.
  - f. should give special consideration to the location of special work areas in order to establish logical traffic patterns.
  - g. should provide some lockable storage areas to protect student projects and/or valuable art pieces.

## 20.0 PHYSICAL EDUCATION AND TEAM SPORTS FACILITIES

### 20.1 Gymnasium

- 20.1(1) The gymnasium should
  - a. be located away from the academic area.
  - b. provide space for a regulation basketball court (84' x 50') with at least six feet between the end of the court and the end wall and at least five feet of floor space between the edge of the court and first row of spectator seats.
  - c. provide space for spectator seating in terms of the needs of the community. There should be adequate seating to at least accommodate the enrollment of the building.

- d. have its own entrance, lobby with ticket office and adequate restrooms to accommodate the maximum number of spectators.
- e. possess the characteristic of being able to be "sealed off" from the other areas of the building by the use of permanent or portable gates.
- f. have suitable floor plates and anchors for gym equipment. They should be installed when the floor is being laid and should be anchored in the concrete base. Floor plates should resist an upward minimum pull of 5,000 pounds.
- g. have a folding partition or curtain to divide the gym into two teaching stations if needed.
- h. have its own custodial service closet.
- i. have end walls that are easy to keep clean.
- j. have "on the same level" adjacent storage room that will accommodate all of the physical education equipment with doorways of ample height and width.
- k. have folding rollaway spectator bleachers.
- l. have a thermostatically-controlled mechanical forced air ventilation system. If the gym is to be divided into sections by folding partitions, each area should have its own thermostat.
- m. be acoustically treated.
- n. have no windows. If windows are installed, care must be taken to be able to control the natural light.
- o. the kind and type of floor that will best serve the needs of the school programs and the community.
- p. a sound system, electrical scoreboards, an adequate fire alarm system that can be heard over the noise of the crowd and an adequate lighting system with protective devices if necessary.
- q. stage (see recommendations in the Auditorium Section).

## 20.2 Locker rooms

- 20.2(1) Should provide 14 to 15 square feet per student of the largest group with a 10 to 20 percent growth factor.
- 20.2(2) Should provide an adequate number of "street clothes" sloped top lockers.

- 20.2(3) Should provide ventilated lockers on the perimeter of the room for each enrolled student.
- 20.2(4) Should have lockers that are installed on a concrete base with no legs.
- 20.2(5) Should have benches as needed and securely fastened.
- 20.2(6) Should have separate "in" and "out" doors to facilitate the movement of traffic. Doors should be located away from the shower area with appropriate sight-screening blinds.
- 20.2(7) Floors
  - a. should be "non-slip" and easy to clean.
  - b. the most serviceable surface is the seamless floor.
  - c. should have floor drains located as needed with the floor sloped to permit adequate drainage.
- 20.2(8) Should have walls constructed of low maintenance, easily cleanable material.
- 20.2(9) Should have recessed lighting fixtures with hinged, shatter-proof, heat resistant diffusers.
- 20.2(10) Should have a ventilating system to provide adequate air exchanges introducing fresh air as well as controlling the humidity.
- 20.2(11) Should have direct access to the outside.
- 20.2(12) Should have shelves for books located near the entrance door.
- 20.2(13) Should have its own set of restroom facilities.
- 20.2(14) Shower rooms
  - a. should provide shower heads at a ratio of 1 to 5 students with reference to the largest group. Nine square feet of floor space should be allowed for each head. Shower rooms for girls should have some private showers.
  - b. should have floor drains that are able to accept the water when all showers are fully open without "pooling" the water. Perimeter drains are not recommended.
  - c. should have a four inch bullnosed curb at the entrance.

- d. should have showers that are controlled from without the shower room by a master control valve with automatic temperature controls. The master control valve should be placed where it can be easily supervised by the instructor.
- e. should have a liquid or powdered soap system dispensed by "in the wall" fixtures.
- f. should have recessed water and vapor proof light fixtures.
- g. should have an ample exhaust and ventilating system.

20.2(15) Body-drying room

- a. should be located immediately adjacent to the entrance to the shower room.
- b. should be at least one-half the size of the shower room.
- c. should have a floor drain.
- d. should have a row of pegs for towels or underclothing.

20.2(16) Towel room

- a. should have direct opening into the body-drying room.
- b. should have a "dirty-towel" return opening.
- c. should have adequate shelving for towel storage.

20.2(17) Laundry room

- a. should be located near the locker room area with its own entrance.
- b. should have commercial-type equipment.
- c. should be of adequate size to accommodate "dirty towel" carts, a table for folding, the laundry equipment, and "clean towel" carts.
- d. should have its own exhaust and ventilating system.

20.2(18) Office

- a. an office for each physical education teacher should be provided.



- b. offices should be located immediately adjacent to the locker room with large glass areas to permit supervision from within.
- c. the office should have a "drop-in" lock box for valuables accessible from the locker room.

20.2(19) Storage rooms.

- a. should provide storage for all of the physical education equipment.
- b. should be adequately ventilated.
- c. should have specially designed storage spaces to accommodate the various pieces of equipment.

20.2(20) Team sport locker room

- a. additional special consideration
  - (1) street clothes lockers for each member of the squad.
  - (2) adequate area for squad meetings.
  - (3) a blackboard and bulletin board area.
  - (4) should have an adjacent trainees' room with table and whirlpool.
  - (5) should have an adjacent equipment drying room with its own ventilating, heating, and humidity control systems.
  - (6) if shower areas are contiguous to the visiting team room, the room should be divided by a non-rust type gate.
  - (7) should have an adequate well ventilated adjacent storage room for off-season equipment.

20.2(21) Visiting team locker room

- a. should have wall pegs for clothing
- b. should have an adequate number of benches secured to the floor.
- c. should have a chalkboard and training table.
- d. should have a direct access to the outside.
- e. should share shower area of the team sport locker room.

20.3 Swimming pools

- 20.3(1) Should be 75 feet, one inch in length and at least 4 seven foot lanes wide. If more length is desired, the

75 feet one inch should be the width. It is important that one dimension be the official pool length.

- 20.3(2) the depth of the pool should be
  - a. 30 to 40 inches for beginning swimming and water safety.
  - b. 42 to 50 inches for water safety and advanced swimming.
  - c. at least 10 feet for a one-meter board.
  - d. at least 12 feet for a three-meter board.
  - e. at least 14 feet, 3 inches for a 10-meter board.
  - f. the ceiling height should be at least 16 feet for a one-meter board and at least 23 feet for a 3-meter board.
- 20.3(3) The shower room should be located so the swimmer must pass through it on the way to and from the pool.
- 20.3(4) The deck space around the pool should be sloped away from the pool, have its own drains, and should be of a size equal to the pool.
- 20.3(5) Air temperature should be between 78 and 83 degrees Fahrenheit with the water temperature between 76 and 82 degrees Fahrenheit.
- 20.3(6) Special consideration needs to be given to the acoustic environment of the pool and to the lighting fixtures. It is extremely important that the floor of the pool be illuminated.
- 20.3(7) Wash down hose bibs should be located in the pool area for washing and hosing the pool deck.
- 20.3(8) A lift and/or ramp should be provided to accommodate the physically handicapped.
- 20.3(9) Spectator space should be separated from the plunge area or pool floor. If spectator seats must be on the deck area, there should be an 8" curbing around the bleachers and a floor drain.
- 20.3(10) There should be capacious gutters on all four sides of the pool.
- 20.3(11) Provision should be made for a public address system with the necessary jacks for record players and tape machines.

- 20.3(12) There should be an elevated wall-mounted platform overlooking the pool to facilitate picture-taking for the improvement of instruction and/or the news media.

#### 20.4 Wrestling Room

- 20.4(1) The room must be large enough to accommodate the number and size of mats necessary to accommodate the participants.
- 20.4(2) The room should be large enough so that wrestlers and/or spectators do not have to walk directly over the mat to enter the room and to accommodate the seating of participants around the edge of the wrestling area.
- 20.4(3) All walls should be smooth and be padded to a height of at least five feet.
- 20.4(4) A wood floor is preferred over a cement floor. When floor is cement, sheets of plywood placed on one inch strips of wood should be used to cover the floor and the mats placed on top of the plywood. The cement floor is apt to cause bruises and has a tendency to destroy the resiliency of the mat sooner than a wooden floor.
- 20.4(5) The room should be well ventilated with manual control of the heating system.
- 20.4(6) The door should be large enough to conveniently move a mat in and out of the room.
- 20.4(7) Auxillary spaces
- a. an office for the instructor.
  - b. a weight training room adjacent to the wrestling room.
  - c. an equipment and uniform storage space.
- 20.4(8) The room should be conveniently located near the locker area to facilitate the use of the room for physical education when not used for wrestling.
- 20.4(9) A blackboard and bulletin board (without a sharp-edged chalk tray) should be located on one wall.

20.5 Areas for physical education

	Official Dimensions (in feet)	Recommended Dimensions (in feet)	Space Required (in sq. ft.)
Hard Surface Multiple Purpose Area (the following sports may be played in this area) . . . . .		100 x 120	12,000
Badminton . . . . .	20 x 44		
Basketball . . . . .	50 x 84		
Deck Tennis . . . . .	18 x 40		
Hand ball . . . . .	20 x 34		
Paddle Tennis . . . . .	20 x 44		
Shuffleboard . . . . .	6 x 52		
Volleyball . . . . .	30 x 60		
Tennis . . . . .	36 x 78		
Track (1/4 mile and Field Area:) . . . . .	208 x 538	260 x 590	153,400
Football and other large area games . . . . .	160 x 360		
Field Games Area (may be used for:) . . . . .	----	200 x 400	80,000
Fieldball . . . . .	180 x 300		
Field Hockey . . . . .	180 x 300		
Six-man Football . . . . .	120 x 300		
Soccer . . . . .	225 x 360		
Softball . . . . .	275 x 275		
Speedball . . . . .	160 x 360		
Touch Football . . . . .	160 x 360		
Baseball . . . . .	310 x 310	350 x 350	122,000
Horseshoes . . . . .	10 x 50	60 x 80 (5 courts)	4,800
Apparatus . . . . .	----	25 x 80	2,500
Archery (minimum of 3 targets) . . . . .	50 x 175	90 x 225	20,250
Golf . . . . .	----	100 x 100	10,000
General Purpose Area . . . . .	----	100 x 200	20,000
Tennis (six courts) . . . . .	36 x 78	45 x 100	27,000
<hr/>			
TOTAL AREA . . . . .			451,950 (Approx. 10 Acres)

20.6 "Mud" Patio

- 20.6(1) Should be adjacent to the locker entrances and be hard surfaced.
- 20.6(2) Should provide benches and scrapers to facilitate the cleaning of shoes before entering the locker room.
- 20.6(3) Should provide a hose bib and a drain with a mud trap.

## 21.0 AUDITORIUM

- 21.1(1) The size of the auditorium should depend on the number of students enrolled, the program of the school, and community use.
- 21.1(2) The auditorium should be located on the ground floor, have general access from all parts of the building, and be readily accessible to the general public.
- 21.1(3) The auditorium should have a lobby area including a ticket office, check rooms, a phone booth, and adequate restroom facilities.
- 21.1(4) Auditorium seating should be upholstered, staggered to accommodate sight lines and should have a minimum of 32 inches from back to back of seats.
- 21.1(5) If the auditorium is used for large group instruction,
  - a. it should be divisible.
  - b. it should have folding tablet arms attached to the seats to accommodate the largest group.
  - c. each area should have a teacher console with controls for lighting, sound, heating and ventilation.
  - d. it should have provisions for audiovisual equipment with appropriate screens when the auditorium is not divided as well as when it is divided.
- 21.1(6) The heating and ventilating equipment should be noiseless and be able to accommodate sudden changes in temperature and ventilation needs.
- 21.1(7) The auditorium should have an open flat space directly in front of the stage to accommodate a band or orchestra.
- 21.1(8) The auditorium must be acoustically designed and, if divisible, each area must be isolated sonically from the other areas.
- 21.1(9) The floor of the auditorium should be sloped and the aisles should have a non-slip covering.
- 21.1(10) Stage
  - a. The stage should have a minimum depth of 25 feet and proscenium of at least 30 feet. The height of the proscenium will be determined by the sight lines within the auditorium.

- b. The apron of the stage should have adequate space in front of the curtain to accommodate small groups, and should have stairways at each side to the floor of the auditorium.
- c. The floor of the stage should be of soft wood to accommodate the fastening of scenery to the floor.
- d. Stage lighting should be flexible and expandable. Plug-in type overhead battens are a means of varying an arrangement of lights. Floor pockets should be provided for portable lighting, and provision should be made for dimmer control of all stage lights. The controls for lighting should be located where the operator has visual contact with the production. Catwalks and ladders are necessary safety items in the rearranging of lights and scenery.
- e. All curtains, cycloramas, and other stage equipment shall be flame-resistant. (Fire safety regulations for schools and colleges, State Fire Marshal, Department of Public Safety).
- f. Dressing rooms should be provided off-stage with ample room between the stage proper and dressing room.
- g. An ample storage and stage scenery construction room should be adjacent to the back or side stage. Special doors should be provided to accommodate flats and other large pieces of equipment.
- h. The back of the stage should have immediate access to the outside. Large doors should be installed to allow large items to be readily moved in and out of the stage.

22.0 SECONDARY MEDIA CENTER

22.1(1) The media center should be within the academic complex with its own direct access to the outside.

22.1(2) Space needs.

<u>Area</u>	<u>Number of Square Feet</u>
Entrance and Circulation Control	300-600
Reading Room	4,800 or 20% of pupils at 40 sq. ft. (whichever greater)
Student Conference	3 rooms at 300
Media Classroom	600-750
Professional Stations	Each at 120-200

<u>Area</u>	<u>Number of Square Feet</u>
Work Area	
General Processing and Storage	250-400
Media Production & Equipment	300-600
Dark Room	100-200
TV, Radio and Remote Access	1,200-1,600
Stack Area	500-600
Professional Library	400
Computer Laboratory	600-900

- 22.1(3) Lighting should be designed to provide the proper illumination for the particular task.
- 22.1(4) The control of light should permit the use of audio-visual equipment by the use of dimmers, down lights, and drapes.
- 22.1(5) The media center should be acoustically designed.
- 22.1(6) Provision should be made to maintain the security of the collection.
- 22.1(7) Electrical outlets should be provided and located as needed.

### 23.0 GUIDANCE FACILITIES

- 23.1(1) Offices for guidance personnel should be located in proximity to the media center. If located in the administrative area, the guidance offices should have their own entrance and waiting room.
- 23.1(2) Each office should be isolated as to both sound and sight.
- 23.1(3) A waiting room and/or a "browsing" area should be located immediately adjacent to the guidance office.
- 23.1(4) When there is a need for secretarial service, the secretary's office should be located to control the flow of traffic in and out of the guidance offices.
- 23.1(5) Each guidance office should have its own telephone.
- 23.1(6) A conference and testing room should be included in the guidance area.
- 23.1(7) Special consideration needs to be given to the safe keeping and privacy of student records.
- 23.1(8) Special consideration needs to be given to the heating and ventilating system as required by closed-in office space.

## 24.0 STUDENT CENTER

- 24.1(1) A student center may be a facility in itself, be incorporated with the dining room, or be in conjunction with the lobby or entrance to the building.
- 24.1(2) The center should be located in an open space area to allow casual supervision by teachers and administrative personnel.
- 24.1(3) The area should be furnished with four-place tables and chairs, some lounge-type furniture, and some carrels for independent study.
- 24.1(4) The student center should be attractively decorated as it will be the "living room" of the school.
- 24.1(5) The center should provide proper outlets for vending machines and the necessary refuse containers.
- 24.1(6) The student center should be carpeted and it should have an acoustically-treated ceiling.

## 25.0 LEARNING LABORATORIES

- 25.1(1) Learning laboratories may be used to support learning activities in the areas of reading, language development, speech, business education, mathematics, social studies, and dramatics.
- 25.1(2) The size of the laboratory will be dependent on the necessary number of student stations and the sophistication of the equipment.
- 25.1(3) There should be convenient access for the students to the booths or tables.
- 25.1(4) The teacher should have good visual control of the entire room, compartments, and other spaces within the room.
- 25.1(5) Learning booths should be constructed to allow students to view audiovisual projections at the front of the room and with dividers to break the line of sight to each side when seated.
- 25.1(6) Excellent thermal control is necessary within the laboratory as excess heat is generated by a number of sources.
- 25.1(7) The lighting system should not cause interference in the sound system.
- 25.1(8) Special storage should be provided for tapes, records, student books, cards, and spare parts.



## 26.0 BUSINESS EDUCATION FACILITIES

### 26.1 Typing

- 26.1(1) The room should have a minimum of 1,000 square feet to accommodate 24 student stations.
- 26.1(2) The room should have an acoustic tile ceiling and the floor should be carpeted to aid in the control of sound.
- 26.1(3) Electrical outlets should be provided at each student station.
- 26.1(4) There should be chalkboard, bulletin board and storage space provided.
- 26.1(5) There should be an auxillary typing area next to the typing room with its own door to the hallway to allow students to practice during their unscheduled time. Visual control is a necessity between the two rooms.

### 26.2 Business Machines

- 26.2(1) The room should be at least 300 square feet to accommodate the necessary counters and tables for the machines.
- 26.2(2) Electrical outlets should be provided at each machine station.
- 26.2(3) The room should have an acoustic tile ceiling and the floor should be carpeted to aid in the control of sound.
- 26.2(4) Storage space should be provided.

### 26.3 Clerical and Secretarial

- 26.3(1) The room should have a minimum of 1,000 square feet to accommodate 24 student stations.
- 26.3(2) There should be an electrical outlet at every student station.
- 26.3(3) The room should have an acoustic tile ceiling, and the floor should be carpeted to aid in the control of sound.
- 26.3(4) If wireless dictation equipment is to be used, the aerial should be concealed in the wall or ceiling.
- 26.3(5) Storage, chalkboard and bulletin board space should be provided.

### 26.4 Distributive Education

- 26.4(1) The room should be at least one and one-half times the size of a regular classroom to accommodate display and show cases.

- 26.4(2) There should be one display case in a wall visible from the adjacent hallway.
- 26.4(3) The room should include an office for the coordinator to allow private conferences with students, parents, and local merchants.
- 26.4(4) Bulletin board, chalkboard and storage space should be provided.

#### 26.5 Bookkeeping and Accounting

- 26.5(1) The room should have a minimum of 1,000 square feet and be equipped with furniture designed for bookkeeping.
- 26.5(2) Provision should be made for electrical outlets to accommodate the necessary business machines.
- 26.5(3) The room should have an acoustic tile ceiling and the floor should be carpeted to aid in the control of sound.
- 26.5(4) Chalkboard, bulletin board and storage space should be provided.

#### 26.6 Data Processing

- 26.6(1) It is extremely necessary to provide space for anticipated expansion as well as adequate space to house the necessary machines and equipment.
- 26.6(2) The data processing room must have its own temperature and humidity control system functioning 24 hours per day.
- 26.6(3) A stock storage room should be located adjacent to the data processing room.
- 26.6(4) A storage room should be provided.
- 26.6(5) Doorways to the data processing room should be sized to accommodate the moving in and out of new and used equipment.
- 26.6(6) Sufficient electrical power should be provided for present and future use.
- 26.6(7) A high level of lighting is a necessity.
- 26.6(8) The room should have an acoustic ceiling and the floor should be carpeted to aid in the control of sound.
- 26.6(9) Provisions should be made for the distribution of control cables that do not necessitate the cables lying exposed on the floor.
- 26.6(10) A fire-resistant, vault-like structure should be provided to store valued information recorded on tapes.

27.0 NECESSARY FACILITIES FOR LARGE GROUP, SMALL GROUP, AND INDIVIDUAL INSTRUCTION

27.1 Large Group Instructional Spaces

- 27.1(1) The room or auditorium should be large enough to accommodate the largest academic group.
- 27.1(2) An auditorium should be divisible if the total seating area is three times the number in the largest academic class.
- 27.1(3) Folding tablet arms should be provided in the section that is to be used for instructional purposes. The tablet arms should be on alternate seats.
- 27.1(4) An environmental control station should be available in each teaching station within the auditorium to allow the instructor to have full control of the ventilation, temperature, lighting, sound, audiovisual equipment, folding or sliding partitions and electrified roll-down screens.
- 27.1(5) Regular auditorium seats should be provided.
- 27.1(6) Aisles should be carpeted.

27.2 Small Group Instructional Spaces

- 27.2(1) The number of small group discussion rooms is dependent on the type of schedule, the number of courses using the large-small group method of instruction, and the required number of small group meetings per week.
- 27.2(2) The small group rooms should vary in size and shape as warranted by the curricular program.
- 27.2(3) The furnishings within the small group room should be conducive to informal group discussions.
- 27.2(4) Small group rooms should have conditioned air ventilating systems and variable control of light intensity.
- 27.2(5) Small group rooms should have acoustic ceilings, a floor that is carpeted, and an attractive and pleasant decor.
- 27.2(6) Small group areas do not need to be completely enclosed. Some divided areas in open-space rooms with acoustical control can be functional.

27.3 Individualized Study

27.3(1) The most preferred space for individualized study is a one-student station that provides a suitable studying or writing area, a book storage area, a lockable personal file, a viewing screen, a storage compartment for wraps, a chair, and the necessary electric and electronic outlets and/or plug-ins. Sightscreens should be provided to block the line of vision from three sides when the student is in a seated position.

27.3(2) Other

- a. study carrels with electric and electronic outlets or plug-ins and self-contained screen.
- b. study carrels that are non-electrical.
- c. tables with sight-barrier devices.

27.4 Other Facilities Needed to Accommodate Large and Small Group Instruction

27.4(1) A well-planned Media Center with sufficient updated materials.

27.4(2) A commons area.

27.4(3) An independent study area.

27.4(4) Individual offices for teachers that are easily accessible to students.

27.4(5) The necessary special laboratories.

27.4(6) The necessary enclosed spaces to house the activities that produce distracting sounds that cannot be acoustically controlled.

27.4(7) Other necessary auxiliary spaces.

28.0 FOOD SERVICE FACILITIES

28.1 Kitchens

28.1(1) The size of the kitchen should allow from 2 to 2.5 square feet of space per meal served. The kitchen should be rectangular in shape but the length should not exceed twice the width.

28.1(2) The kitchen should have at least one exterior wall to make it possible to have windows and be convenient to receiving area.

- 28.1(3) The kitchen floor should be slip-resistant, durable, and easy to clean. Drains should be located away from work and serving areas. Separate drains with appropriate curbs should be provided for steam kettles and vegetable peelers.
- 28.1(4) The walls of the kitchen should be light in color, resistant to moisture, easy to wash and keep in good repair.
- 28.1(5) The ceiling should be suspended and be of fire-resistant acoustical material.
- 28.1(6) Doors should be of sufficient width to allow the movement of equipment and portable carts in and out of the kitchen. There should be at least one door with a width of 42 inches.
- 28.1(8) Services
  - a. Special consideration is warranted in the areas of electrical power, lighting and outlets. Placement of equipment is paramount in determining the location of needed outlets and drains.
  - b. Special consideration is warranted in the area of ventilation. Exhaust hoods must be located where needed and be of sufficient capacity to serve the needs of the kitchen. Ventilation systems that produce an "inward" movement of air from the surrounding areas will do much to prevent the cooking odors of the kitchen from permeating the rest of the building.
  - c. In the area of plumbing, special consideration needs to be given to proper water pressure and temperature, proper location of drains, greasetraps with convenient "clean outs" and an adequate supply of water with conveniently located sinks.
  - d. All pipes and conduits should be located "within" the walls and floor whenever possible.

## 28.2 Dining Area

- 28.2(1) The dining area should be adjacent to the serving area and dirty dish returns.
- 28.2(2) The dining area space should be at least 10-12 square feet of floor area for each person seated at one time.
- 28.2(3) The floor should be of slip-resistant materials, durable, and easily cleanable.
- 28.2(4) Each dining area should have at least one drinking fountain.

- 28.2(5) Doors permitting one-way traffic should be at least 36 inches wide and at least 60 inches wide for two-way traffic.
- 28.2(6) If windows are provided, they should be screened and shaded.
- 28.2(7) At least 15 foot-candles of light "on the table" should be provided.
- 28.2(8) Walls should be light in color, easy to clean and attractive.
- 28.2(9) The ceiling should aid in the control of sound and be light in color.
- 28.2(10) The heating and ventilating system should maintain the area at adequate body comfort level and should remove all cooking odors.

### 28.3 Storage Areas

#### 28.3(1) Dry Storage

- a. The dry storage area should be located adjacent to the kitchen and be convenient to the receiving area.
- b. Under normal conditions, one-half ( $\frac{1}{2}$ ) square foot of floor space per meal served daily should determine the size of the area. This is based on a two-week supply of staples. If staples are purchased in quantity, additional space will be required.
- c. The door into the area should be at least 40 inches wide.
- d. The temperature should be between 40 degrees Fahrenheit and 70 degrees Fahrenheit and the room should have adequate ventilation.
- e. Adjustable slat or mesh shelving should be provided with aisles that are at least 30 inches wide.
- f. The lighting system should provide adequate illumination at all shelf levels.

#### 28.3(2) Cold Storage

- a. Built-in units, refrigerator or freezer, should have at least 1,000 cubic feet of space.
- b. Freezer units preferably should be located outside the building adjacent to the kitchen. If located outside, the unit may be expanded at some future date.

- c. Refrigerated spaces should be equipped with non-corrosive shelving designed to accommodate the kind and shape of units to be stored. A 30-inch aisle space is needed to permit the handling of food in and out of the unit.

28.3(3) Non-food storage

- a. A storage room is needed for cleaning equipment and supplies.
- b. The room should be immediately adjacent to the kitchen.
- c. The room should have its own "clean-up" sink, be well-lighted, and have a good exhaust system.

28.4 Dishwashing Area

- 28.4(1) The dishwashing area should be located immediately adjacent to the dining room and kitchen.
- 28.4(2) The size of the area will be determined by the size of the dishwashing machine plus adequate dishdrying space.
- 28.4(3) The floor should be slip-resistant, durable and easy to clean.
- 28.4(4) The walls should be of material impervious to water and be easy to clean.
- 28.4(5) The room should have 50 foot-candles of lighting and have an excellent ventilating system.
- 28.4(6) Special consideration should be given to the plumbing needs of the room such as adequate water pressure, proper water temperature, greasetraps and floor drains.
- 28.4(7) A garbage disposal should be provided at the dish-return window.

28.5 Office

- 28.5(1) An office with a minimum of 80 square feet should be provided for the director of the program.
- 28.5(2) The office should be located in the general area of the food service facilities. It should not be immediately adjacent to the kitchen.
- 28.5(3) The office should be well-lighted and ventilated.

28.6 Loading Dock

- 28.6(1) Should be immediately adjacent to the dry food storage area.
- 28.6(2) Should be of sufficient height to be level with the floor of the average delivery truck.
- 28.6(3) Should be of adequate size to accommodate normal daily deliveries.

28.7 Can Wash and Garbage Room

- 28.7(1) Should be located adjacent to the loading dock and near the dishwashing area.
- 28.7(2) Should be equipped to accommodate the washing of cans and provide a space to store the cans.
- 28.7(3) Should have an adequate water supply of the proper temperature with a floor drain.
- 28.7(4) Should have durable and easy to clean walls and floors.

28.8 Satellite Kitchen

- 28.8(1) Should be adjacent to the dining area and be accessible to an entrance to the building.
- 28.8(2) Should have a serving window and a plate return window with a garbage disposal.
- 28.8(3) Should have a stove, refrigerator, handwashing sink, a heated serving counter, a sink for washing utensils, and storage cabinets.
- 28.8(4) Should have a closet for custodial supplies and equipment.

28.9 Aid in Planning and Design

- 28.9(1) Special School Food Services. Consultants are available to aid in the planning of the facility and in the selection of equipment. Contact the Food Service Section, Department of Public Instruction.

29.0 SANITARY FACILITIES. Well-located and properly maintained sanitary facilities are essential for the health and comfort of the school occupants.

29.1 Water Supply. A safe water supply which is capable of providing 30 gallons per day per person should be available to all schools.

29.2 Toilet Rooms. Toilet facilities should be available for both sexes on each floor of each building.



- 29.2(1) Floor drains and hose bibs should be provided in each gang toilet room.
  - 29.2(2) Soap dispensers, waste containers, mirrors, book shelves, and hand drying facilities should be provided in each gang toilet.
  - 29.2(3) Warm water should be provided in all lavatories and the temperature should be thermostatically controlled.
- 29.3 Water Closets and Urinals. The following ratio of sanitary fixtures should be considered minimum in all gang toilets.

	<u>Water Closets</u>	
	Girls	Boys
Grades 1-6	1 to 35	1 to 60
Grades 7-12	1 to 45	1 to 100

A minimum of two water closets should be provided in each gang toilet.

Urinals for boys' gang toilet rooms should be provided in the rates of one (1) to each 30 boys or major fraction thereof, but are not required in individual classroom toilet rooms.

In kindergarten and lower primary grades, the "baby" water closet bowl (10 inch rim height) should be provided; in the upper elementary grades a junior size bowl (13 inch rim height) should be provided and for grades 7-12 and adults the standard size bowl (15 inch rim height) should be provided.

- 29.4 Lavatories. Lavatories should be provided in the ratio of one (1) fixture to sixty (60) pupils. Sinks should be installed 25 inches above the floor for elementary grades and 30 inches above the floor for high school pupils and adults.
- 29.5 Drinking fountains. Drinking fountains should be provided in the ratio of one (1) to 75 pupils with a minimum of one fountain on each floor, and two (2) in each school building.
  - 29.5(1) A fountain should be provided in each lower elementary (N.S., K-3) classroom.
  - 29.5(2) The following heights for nozzles should be followed when fountains are installed: kindergarten and primary grades, twenty-four (24) inches; upper elementary grades, twenty-eight (28) inches; junior high school, thirty-two (32) inches; and senior high school, thirty-two (32) inches.
- 29.6 Service Sink. A service sink with both hot and cold water should be provided in each custodian's closet, and at least one custodian's closet should be located on each floor.

30.0 ELECTRICAL. Electrical installations are becoming more complex and increasingly important in the teaching and administrative functions of a school system.

30.1 Main service panels should be located to prevent access by unauthorized persons. All branch panels located in corridor or other places where students have access should be a flush type and should be provided with a lock.

30.2 Switches should be provided at the entrance to all spaces in the building. Such switches should be placed on the knob side of the door entrance.

30.3 Every instructional classroom should be provided with a minimum of two duplex receptacles, one located on the front and one at the back of the room. Where there is a work counter on the side of the room, a third duplex receptacle should be mounted either in the counter or on the wall above the counter.

30.4 All auditoriums, gymnasiums, multi-purpose rooms or other areas used for general assembly purposes should be wired for the use of audiovisual equipment. In areas which contain a stage, built-in speakers and cables should be provided.

30.5 Science laboratories, distributive education areas, media centers, homemaking departments, business education departments, shops and other instructional areas which require a considerable amount of electrical equipment should be provided additional outlets.

30.6 Raceways should be provided in all instructional areas for television antenna and/or closed circuit systems.

30.7 Visual comfort and efficiency is achieved where the total environment has been conditioned and balanced.

30.7(1) The lighting should produce a uniform distribution of shadow-free and glare-free illumination.

30.7(2) Lighting fixtures should not produce a surface brightness on the fixture or on the ceiling that exceeds 10 times the task brightness.

30.7(3) All areas should have lighting fixtures sufficient to provide the following amount of foot-candle lighting evenly distributed at the working surface level.

Regular Classrooms	50 foot-candles
Libraries and Offices	50 foot-candles
Science, Homemaking, Business Education, Art Rooms, Shops & Music Rooms	75 foot-candles

Physical Education Activity Spaces	30 foot-candles
Locker Rooms, Dining Rooms, and School Commons and Auditoriums	15 foot-candles
Drafting Laboratories	100 foot-candles
Food Service Facilities	20 foot-candles

- 31.0 HEATING AND VENTILATING. Heating plants and ventilating systems should be of sufficient capacity to meet the requirements within the building during the period of occupancy, under extremes in local weather conditions, without sustained operation beyond the rated capacity of the system.
- 30.1 Operative Temperature. Heating systems should provide the following temperatures: (a) classrooms, auditoriums, offices, cafeterias, 70 degrees F. measured 30 inches above the floor; (b) corridors, stairways, shops, laboratories, and kitchens, 68 degrees F. measured 60 inches above the floor; (c) activity rooms such as gymnasiums, 65 degrees F. measured 60 inches above the floor; and (d) 65 degrees F. for toilet rooms, 78 degrees F. for locker and shower rooms, and 83 degrees F. for swimming pools measured at 60 inches above the floor. The maximum temperature gradient from floor to 60 inches above the floor should not exceed 3 degrees.
- 31.2 Air Supply. All schools should be equipped with a mechanical ventilating system and these systems should provide for the introduction of fresh air as follows: (a) in classrooms and libraries a minimum of 10 CFM per person; and (b) in toilet and locker rooms, science rooms, food laboratories and kitchens a minimum of six air cleanages per hour. Toilet and locker room ventilating systems should be entirely independent of those serving the rest of the building.
- 31.3 Air Movement. Air movement in occupied areas generally should not exceed 26 lineal feet per minute.
- 31.4 Special Ventilation. Various areas of the school create special ventilating problems. Auditoriums and other spaces where large numbers of people assemble should have ample ventilation. Mechanical supply ventilation, with six to eight air changes per hour, is essential.
- 31.4(1) Toilet rooms, food laboratories, kitchens, and other spaces generating odors should have positive, separate exhaust ventilating facilities.
- 31.4(2) Fume hoods in laboratories should have non-corrosive ducts and have a positive exhaust control switch.
- 31.4(3) Drying rooms should be provided with separate mechanical ventilators.

- 31.5 Air Conditioning. It is recommended that all new buildings be air conditioned. If finances do not permit air conditioning to be included, provision should be made to include the necessary spaces to provide air conditioning at some future date.

## 32.0 OTHER GENERAL CONSIDERATIONS

- 32.1 The Shape of Enclosed Space. Modern technology has given the architect a wide choice of products and materials to use in his design of space for educational use. If he has at his disposal the kind of spaces needed to house the educational program, his talents can be used to be creative which is really the "heart and soul" of an architect. Architects are designers of buildings and are not designers of educational programs. If they are expected to determine the kind of space that is needed, then their best talent is not being used to its full advantage.

- 32.2 Light. The sense of seeing comprises a major part of the learning process. Light - artificial, natural, or a combination of both - will greatly facilitate learning, if properly used. Conversely, if improperly used, light impedes learning and even causes serious optic deficiencies requiring medical attention and/or correction. Quality of light is a much more important factor than quantity. Control of glare should be maintained by holding brightness levels in the visual field to approximately 37 foot lamberts. Brightness contrasts should not exceed 10 to 1, preferably 3 to 1. With good quality, the intensity of light levels directed on the learning task need to be no more than 50-55 foot-candles for a typical learning task involving reading of a standard size text. As the task varies, intensities will of necessity vary to provide the degree and recognition and form resolution required.

- 32.3 Color. The student's perceptive sense comes into play through the introduction of color. Emotional responses are experienced that can be either beneficial or harmful. The psychology of color should be thoroughly understood by the design team to avoid misuses that do violence to the nature of space.

In windowless space, color becomes even more important. Although it can provide a very fine environment, a feeling of claustrophobia could result if certain color combinations are used in high ratios of contrast. Deep color tones should be used with restraint and usually in areas not involving sedentary or concentrated learning situations.

- 32.4 Acoustics. The usual educational acoustic problem usually requires several types of corrective steps. These include: (1) effective sound insulation of individual rooms; (2) prevention or reduction of sound transmission from one activity to another; (3) elimination or reduction of sound interference from external sources; (4)

establishment of acoustical balance where good hearing is required, or reduction of sound intensities where noise reduction is the objective; and (5) reduction of unwanted sounds, both in rooms where quiet is desired and in spaces through which unwanted sounds may travel to quiet or critical areas.

It has been learned that learning groups can function concurrently in "open space" with little or no acoustical privacy. As in many new trends, temperance is well advised to avoid problems that can occur with too much openness and overly high sound levels which act as a deterrent in some learning tasks.

Oral communication comprises the major portion of the audio function, and research indicates that this type of communication is most efficient in space containing approximately 30 decibels of "White Sound" (background sound noise by mechanical devices, fast traffic, communication sounds, and other background sounds involving a wide spread or mix of sound frequencies). In other words, the student experiences better sound resolution of the spoken word with the "White Sound" as contrasted to space substantially devoid of this background sound.

Proper placement of acoustical material will contribute greatly to sound conditions in open space. Carpeting is experiencing a dramatic increase in use due to its high efficiency as an acoustical material.

- 32.5 Temperature. Exacting control of temperature is an important element in the total environmental picture. A case in point - 72 degrees F. is the most conducive temperature for sedentary learning tasks performed during a regular school day. For a 2 degree temperature rise above the ideal - with conditions where all other environmental factors are controlled - research shows the learning rate decreases 20 percent and the learning rate continues to decline with additional temperature rise above 74 degrees F., but at a lesser rate.

Every means should be taken to provide adequate controls to heat and cool the room as needed to keep the temperature control at 72 degrees F.

- 32.6 Humidity. Relative humidity for normal sedentary learning tasks should be maintained between 40 and 60 percent.

- 32.7 Aesthetics. Beauty should become a respected word in the planning and construction of a school building. The taxpayers must learn that beauty need not be expensive and that it has great emotional and cultural value for student and teacher alike. It is important for a school to possess beauty as it provides "the home away from home" for many of the waking hours of those who are enrolled.

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