

WEST VIRGINIA
SECRETARY OF STATE

JOE MANCHIN, III

ADMINISTRATIVE LAW DIVISION

Form #5

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OFFICE WEST VIRGINIA
SECRETARY OF STATE

NOTICE OF AGENCY ADOPTION OF A PROCEDURAL OR INTERPRETIVE RULE
OR A LEGISLATIVE RULE EXEMPT FROM LEGISLATIVE REVIEW

AGENCY: West Virginia Board of Education TITLE NUMBER: 126

CITE AUTHORITY: W.Va. Constitution, Article XII, §2, W.Va. Code §18-9C, 18-5-10, 18-5-13 and 18-5-13a

RULE TYPE: PROCEDURAL XX INTERPRETIVE _____

EXEMPT LEGISLATIVE RULE X

CITE STATUTE(S) GRANTING EXEMPTION FROM LEGISLATIVE REVIEW

W.Va. Code §§29A-3B-1, et seq.; W.Va. Board of Education v. Hechler, 180 W.Va. 451; 376 S.E.2d 839 (1988).

AMENDMENT TO AN EXISTING RULE: YES X NO _____

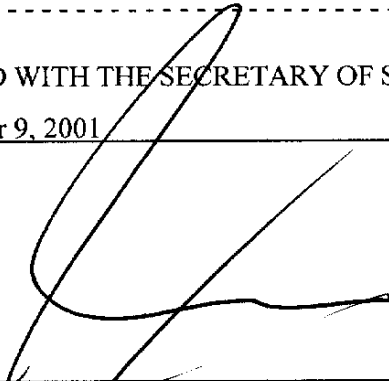
IF YES, SERIES NUMBER OF RULE BEING AMENDED: 172

TITLE OF RULE BEING AMENDED: Handbook on Planning School Facilities (6200)

IF NO, SERIES NUMBER OF NEW RULE BEING PROPOSED: _____

TITLE OF RULE BEING PROPOSED: _____

THE ABOVE RULE IS HEREBY ADOPTED AND FILED WITH THE SECRETARY OF STATE. THE
EFFECTIVE DATE OF THIS RULE IS September 9, 2001



William J. Luff, Jr.
Associate State Superintendent

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Title 126
LEGISLATIVE RULE
BOARD OF EDUCATION

2001 AUG 10 P 4: 12

SERIES 172
HANDBOOK ON PLANNING SCHOOL FACILITIES (POLICY 6200)

OFFICE WEST VIRGINIA
SECRETARY OF STATE

§126-172-1. General.

1.1. Scope. – This legislative rule provides that each county school district maintain and update annually a Comprehensive Educational Facilities Plan. This rule also provides that each county school facility funded totally or partially with funds from the School Building Authority of West Virginia (SBA) or the West Virginia Board of Education has an on-site inspection annually.

1.2. Authority. – W. Va. Const., Article XII, §2, W. Va. Code §18-9C-1 et seq., 18-9D-1 et seq., 18-5-10, 18-5-13, and 18-5-13a.

1.3. Filing date. – August 10, 2001

1.4. Effective Date. – September 9, 2001

§126-127-2. Incorporation by Reference.

2.1. A copy of the rules and regulations is attached. Copies may be obtained in the West Virginia Department of Education, Division of Administration Services.

2.2. Summary of rules and regulations. – The State Department of Education has the responsibility to provide guidance and assistance to counties in their efforts to continuously improve all aspects of educational programming, including physical facilities. The Department of Education endeavors to fulfill its leadership responsibilities and assist in establishing a thorough and efficient system of education for all the children of West Virginia. This handbook of school facilities planning has been prepared to assist public school officials in planning and constructing new facilities, additions and major renovations which will enable West Virginia's 55 county school systems to provide equal educational

opportunities for all children.

2.3. School facilities are an integral and expensive component of the system of education in West Virginia. As educational programs become comprehensive, the importance of adequate facilities is increased. This increasing importance, combined with aging or obsolete facilities, creates an unending demand. This demand must continuously be provided for in the most concurrent method with implementation of an adequately funded program of school facility construction. This will ultimately provide the facilities necessary to accommodate a thorough and efficient system of education.

2.4. The proposed changes to the handbook are in compliance with recent legislation enacted into law, W. Va. Code §18-9D-16, involving procedures for on-site inspections of facilities funded by the School Building Authority of West Virginia (SBA) or the West Virginia Board of Education.

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FOREWORD

The West Virginia Board of Education has adopted this Handbook on Planning School Facilities to provide comprehensive guidelines which address the details of evaluating and renovating existing public education facilities and the construction of new school facilities. Periodic revisions may be necessary in order to meet the demands of evolving educational programs.

The creation of the School Building Authority of West Virginia by the West Virginia Legislature has resulted in one of the most ambitious school construction programs in the United States. The School Building Authority has granted funds for construction throughout the state resulting in modern, state-of-the-art public school facilities with quality educational programs for students in West Virginia.

The West Virginia Department of Education has the responsibility to provide assistance to county school districts through the Office of School Facilities. This handbook offers additional assistance with renovations, construction of new school facilities, and developing or amending the counties' Comprehensive Educational Facilities Plan. Furthermore, the CEFP will serve as a plan of correction for non-compliance items documented by the Office of Education Performance Audits identified in the on-site evaluation process.

This handbook is a working document and should be used as such during all planning stages of evaluation and construction.

Dr. David Stewart
State Superintendent of Schools

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ABBREVIATIONS

AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Boiler Manufacturers Council
ACI	American Concrete Institute
ADA	American with Disabilities Act
ADC	American Diffusion Council
ADDM	Addendum Administration
AGA	American Gas Association
AHA	American Hardboard Association
AISC	American Institute of Steel Construction, Inc.
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association, Inc.
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
ARI	Air Condition and Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASA	Acoustical Society of America
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWCI	Association of the Wall and Ceiling Industries
AWG	American Wire Gauge
AWI	Architectural Woodwork Institute
AWS	American Welding Society
AWWA	American Waste Water Association
AWWA	American Water Work Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America
BICSI	Building Industry Consulting Services International
BOCA	Building Official and Code Administrators International Basic Building Code
CAC	Ceiling Attenuation Class
CADD	Computer Aided Design Drafting
CATV	Cable Television
CD	Construction Documents
CEFP	Comprehensive Educational Facilities Plan
CFM	Cubic Feet per Minute
CFR	Code of Federal Regulations
CISCA	Ceilings and Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CNG	Compressed Natural Gas
COE	Corps of Engineers
CPSC	Consumer Product Safety Commission
CPTED	Crime Prevention Through Environmental Design
CRI	Carpet and Rug Institute
CRI	Color Rendering Index
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards
CSI	Construction Specification Institute
CTI	Cooling Tower Institute

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DD	Design Development
DDC	Direct Digital Control
Div.	Division
DNR	Department of Natural Resources
DOE	Department of Energy
EIA	Electronic Industries Association
EIMA	Exterior Insulation Manufacturer Association
EJMA	Expansion Joint Manufacturers Association, Inc.
EMT	Electrical Metallic Tubing
EPA	Environmental Protection Agency
EPDM	Ethylene Propylene Diene Monomers
ETL	Electrical Testing Laboratories
FACS	Family and Consumer Sciences
FCAN	Full Capacity Above Normal
FCBN	Full Capacity Below Normal
FCC	Federal Communications Commission
FGMA	Flat Glass Marketing Association
FM	Factory Mutual
FS	Federal Specification
GFCI	Ground Fault Circuit Interrupter
gpm	Gallon per Minute
GRI	Geosynthetic Research Institute
HACCP	Hazardous Analysis Critical Control Points
HI	Hydronics Institute
HID	High Intensity Discharge
HPMA	Hardwood Plywood Manufacturers Association
HPVA	Hardwood Plywood and Veneer Association
HSS	Hollow Structural Sections
HUD/FHA	U.S. Department of Housing and Urban Development/Federal Housing
HVAC	Heating, Ventilating, and Air Conditioning
IAPMO	International Association of Plumbing and Mechanical Officials
ICEA	Insulated Cable Engineers Association
IDEA	Individuals with Disabilities Education Act
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IEP	Individualized Education Programs
IES	Illuminating Engineers Society
IPCEA	Insulated Power Cable Engineers Association
IPM	Integrated Pest Management
IT	Information Technology
ITL	Independent Testing Laboratories
L/H	Length/Height
LAN	Local Area Network
LEA	Local Education Agency
LED	Liquid Electronic Display
LPG	Liquid Petroleum Gas
LP	Liquid Propane
MFMA	Maple Flooring Manufacturers Association
MIA	Masonry Institute of America
MIP	Major Improvement Plan
MLMA	Metal Lath Manufacturer Association
MSS	Manufacturers Standardization Society of the Valve and Fitting Industry
NAEB	National Association of Educational Broadcasters
NBC	National Building Code
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NEBB	National Environmental Balancing Bureau
NEC	National Electric Code-Latest Edition

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NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
NMC	National Mechanical Code
NPA	National Particleboard Association
NPC	National Plumbing Code
NRC	Noise Reduction Coefficient
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NWWDA	National Wood Window and Door Association
OTIS	Office of Technology and Information Systems
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PDCA	Painting and Decorating Contractors of America
PDI	Plumbing and Drainage Institute
PID	Proportional, Integral, Derivative
PM	Preventative Maintenance
PPM	Parts per Million
psi	Pounds per Square Inch
psig	Pounds per Square Inch Gauge
RF	Radio Frequency
RJ	Residential Jack
SACMU	Sound Absorbing Concrete Masonry Unit
SBA	School Building Authority
SD	Schematic Design
SDI	Steel Deck Institute
SDI	Steel Door Institute
SF	Square Foot
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association, Inc.
SPRI	Single Ply Roofing Institute
STC	Sound Transmission Coefficient
STI	Steel Tank Institute
TCA	Tile Council of America
THHN	Heat Resistant Thermoplastic Conductor
THWN	Moisture and Heat Resistant Thermoplastic Conductor
TIA	Telecommunications Industry Association
TMS	The Masonry Society
TV	Television
UL	Underwriters Laboratories
UTP	Unshielded Twisted Pair
VAV	Variable Air Volume
VCP	Visual Comfort Probability
VOC	Volatile Organic Compound
WAN	Wide Area Network
WSP	Working Steam Pressure
WVBOE	West Virginia Board of Education
WVDE	West Virginia Department of Education
WWPA	Western Wood Products Association

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Chapter 1

SCHOOL FACILITIES PLANNING

100 COMPREHENSIVE EDUCATIONAL FACILITIES PLAN (CEFP)

Each county shall develop a ten-year Comprehensive Educational Facilities Plan (CEFP) as described in the following sections. The CEFP shall be submitted to the West Virginia Department of Education (WVDE) and the School Building Authority of West Virginia (SBA) in the format described in this chapter. This plan is to be updated annually and rewritten every ten years thereafter beginning with the plan submitted in 1990. Approval of the county CEFP must be granted by the West Virginia Board of Education (WVBOE) and the SBA. Approval must also be granted by the SBA prior to funding any project through the SBA and prior to utilization of federal funds for school improvement (WV Code §18-9D-15). The CEFP must include all projects that alter the instructional square footage of the facility or exceed \$50,000 regardless of the funding source. Routine maintenance projects may not be included in the CEFP unless state funding will be requested or utilized to implement them or if such projects are a part of the Major Improvement Plan (MIP). Required amendments to the plan and/or the plan budget must be submitted to the WVDE and the SBA for approval prior to the initiation of any construction or renovation project and such projects must meet all regulatory requirements.

The development of a ten-year CEFP must be achieved in the following manner:

1. Establish a CEFP planning team and committees representative of citizens and staff from each high school attendance area.
2. Develop countywide goals and objectives and evaluate previous ten year plan.
3. Research and compile data indicated in key elements A through G in Section 100.01 of this chapter.
4. Translate educational needs into facility needs.
5. Develop a finance plan to implement the facility improvements.
6. Conduct public hearings and develop a synopsis of public comments.
7. Develop an objective methodology for evaluating the effectiveness of the plan. This evaluation is to occur during the eighth year of the ten-year planning period.
8. Meet with an official of the SBA and WVDE to assure that the plan meets their mission and goals.
9. Submit proposed CEFP to the local board of education for approval.
10. Submit the CEFP to the WVBOE and SBA for approval.

Should the plan be altered prior to the ten-year anniversary date, the amended document shall be submitted to the WVBOE and SBA for approval.

100.01 The CEFP must include the following components:

- A. Goals and Objectives
- B. The community analysis
- C. Population and enrollment study

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- D. The educational plan
- E. Evaluation and inventory of existing facilities for compliance with state requirements
- F. Major improvement plan for existing facilities
- G. Inter-county facility feasibility study
- H. Translating educational needs into facility needs
- I. Financing plan—includes a prioritized list of all projects within the county and their estimated costs
- J. Synopsis of comments from the public hearing(s)
- K. Evaluation and objective of implementation

100.010 Goals and objectives of the CEFP must be developed and adopted by the county board of education. These goals and objectives must consider all aspects of the educational and facility needs of the county. Long term goals and objectives must be anticipated and strategic planning established to perform comprehensive systemic planning. Additionally, the CEFP will serve as a plan of correction for non-compliance items documented by the Office of Education Performance Audits identified in the on-site evaluation process. Minimally, curriculum delivery models, grade configurations, maximum and minimum school sizes, community expectations, optimal student populations and the number of facilities that can be effectively maintained given limited resources available to the county should be addressed.

100.011 The Community Analysis

References:

2.

- 100.0111 A survey of the community's history provides a background against which present conditions acquire meaning. The following aspects of a county's development should be studied carefully in regard to each school community. Please use maps and charts when available.
- A. Population characteristics and density patterns.
 - B. Population changes due to migration patterns and to fluctuations in the birth rate.
 - C. Changes in land usage (residential, commercial and industrial)
 - D. Major highways and street networks and their probable future development
 - E. Changes in socio-economic patterns resulting in population shifts within the community
 - F. Condition and value Class I, II, III and IV property assessments

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- G. Availability of community services - libraries, recreational areas, health services, public assembly space
- H. Employment opportunities
- I. Parental expectations of the school
- J. Citizen attitudes and aspirations in general
- K. Possible shifts in housing patterns
- L. Study of school attendance zones as they relate to the dispersion of the county school population

100.012 Population and Enrollment Study

References:

2.

- 100.0121 In general, the following statistics are essential components of the enrollment projections:
- A. Population trends
 - 1. County
 - 2. Each school community
 - B. Birth rates and the number of births
 - C. Public school enrollment figures and trends for the past ten years
 - D. Historic non-public school enrollment figures, as available
 - E. Trends of dropout and attrition rates for the past ten years
 - F. Ten-year enrollment projections per school calculated by an approved method which considers the above components

100.013 The Educational Plan

References:

2.

- 100.0131 The Educational Plan proposed for this ten-year planning period provides a standard against which existing facilities can be measured (e.g., how well do the facilities support the goals defined in the plan). This includes an analysis of the current educational program and projections of the planned educational program. The educational plan shall include the following areas:
- A. Describe the educational system proposed for this ten-year CEFP and how it will improve instructional delivery.
 - 1. Describe how the existing plan does not

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- meet the county goals and objectives and how the new plan will meet these goals.
2. Will the school system be predominately organized on a K-4, 5-8, 9-12, or some other pattern?
 3. Will the typical one-teacher-per-class pattern be followed, or are teaching teams to be involved all or part of the time?
 4. Generally, will there be self-contained or departmentalized classroom instruction?
 5. Generally, will there be typical grade patterns or will there be an ungraded or flexible grouping of students?
 6. What will be the maximum or minimum enrollment and total number of instructional areas in each building?
 7. What method of scheduling will be utilized in each building? (traditional, block, flexible, year-round, or other). Indicate the number of periods in each instructional day.
 8. What is the plan for providing vocational/technical education?
- B. The curriculum plan -- What knowledge, understanding, attitudes, skills and habits of life should be developed through the experiences provided for children?
1. What are the general characteristics of a high quality school program?
 2. Are there any students whose needs are not now adequately accommodated? (e.g., handicapped, gifted, etc.)
- C. The instruction plan - Program description and methods of instruction.
1. What will be the major components of the instructional program (e.g., general course of study; vocational, adult or community education; special education; driver education; physical education; co-curricular activities; computerization and technology; or advanced courses in science, math, language arts, and social studies, etc.)?
 2. Will the instructional program be organized into semester subject matter units, mini-courses, core programs,

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- experimental learning units, or some other basis?
- D. The operations plan - Design and conduct of the teaching and learning environment.
1. Curriculum shall drive the new facility design.
 2. Will the educational environment go beyond the classroom (e.g., into the community)?
 3. What, if any, major changes in the teaching-learning environment are anticipated to more fully achieve the county's/state's educational goals?
 4. How will technology deliver the curriculum?
- E. The support plan
1. What kinds of support services are essential to carry out the instructional plans (e.g., cafeteria, health, library, transportation, guidance, educational technology support, Alternative Learning Center)?
 2. How will these services be more operationally efficient in the new plan?
- F. The personnel plan - professional and support services staff
1. What allocation of staff will be made (to each building) to implement the educational plan?
 2. Describe how professional staff efficiency will be addressed in this plan (for example, teacher-pupil ratio, itinerant teachers, traveling teachers within the building).
 3. Describe how support staff efficiency will be addressed in this plan.

100.014 Evaluation and Inventory of Existing Facilities

References:

2.

- 100.0141 The evaluation of existing facilities shall include a survey of each plant in the county, including diagrammatic floor plans and exterior photographs, using the SBA approved School Facility Evaluation Instrument. This evaluation will provide objective data on the condition and components of the existing building, its appropriateness for delivery of the instructional program, and its ability to support the

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present and projected enrollments in an effective and efficient manner. Based on the county's goals and objectives individual facility deficiencies must be identified. This data can help determine if the facility can be economically modified to house the projected educational program and at what cost. The services of a certified Recognized Educational Facility Professional (REFP), architect, and/or professional engineer are necessary.

100.0142

Criteria for Evaluating Existing Buildings

- A. Health and safety considerations. These will be identified as required by the regulatory agencies and will be used as a criteria for determining prioritization of projects for SBA funding. Regulatory agencies include the offices of the West Virginia Fire Marshal, West Virginia Division of Health, West Virginia Division of Highways, Office of School Facilities of the WVDE, SBA, etc. The principles of Crime Prevention Through Environmental Design (CPTED) shall also be included during the evaluation.
- B. Facilities improvements and new facilities must accommodate the educational programs by design. The building design will be dictated by the curriculum as defined in an approved educational specification. Existing and new facilities must meet regulations of the state Handbook on Planning School Facilities Policy 6200.
- C. Facilities must comply with state policies; federal and state laws; all federal, state, and local regulatory agency requirements; and when applicable, guidelines of the SBA.
- D. Economies of scale include compatibility with similar schools that have achieved the most economical organization, facility utilization, and pupil-teacher ratios.
- E. Economies of scale (EOS) established by the SBA are as follows:
 - 1. Elementary schools with a minimum enrollment of 300 students in grades 1-6, 200 in grades 1-4, or a minimum of 2 classes (22 each) per grade level, are recommended to achieve economies of scale. The number of early childhood, kindergarten, and exceptional students may increase this minimum standard.

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2. Middle and junior high schools with a minimum enrollment of 450 students in grades 5-8, 6-8, or 7-9 schools with 600 students, or schools with 150 students per grade level minimum are recommended to achieve economies of scale at the intermediate level.
 3. High schools with a minimum enrollment of 600 students in grades 10-12, 800 students in 9-12, or 200 students at each grade level are recommended to achieve economies of scale.
 4. Geographic or other considerations may require exceptions to be considered and a waiver of the EOS can be requested. Regional planning should also be considered to achieve these minimum enrollment standards.
 5. A minimum of 85% of the building design capacity should be considered for early childhood, intermediate, and adolescent facilities.
- F. Complete an energy efficiency study for each facility and report those in btu's per ft.² and current dollar amounts.
 - G. Appraise how each facility supports or fails to support the educational program.
 - H. Calculate the program utilization for each facility in accordance with the guidelines of the SBA for educational specifications.
 - I. Site analysis - Describe each school site using the criteria in Section 200 of this handbook.

100.015 Major Improvement Plan

Each county shall include in this section of the CEFP a maintenance and capital improvements plan for existing facilities in accordance with the SBA Guidelines and Procedures Handbook and WV Codes §§18-9D-15(d) and 18-9D-16 (b).

100.016 Translating Educational Needs into Facility Needs

In this section of the CEFP, the data collected in the community analysis, the population and enrollment study, the educational plan, the evaluation and inventory of existing facilities, inter-county facility feasibility study, and the MIP will be used to make decisions that will determine the future facility needs of the county. This plan will insure that facilities are in compliance with state and local requirements.

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Comprehensive planning is a way of identifying the best route to the future through a workable plan for handling priority rated, predictable situations, and anticipated changes. A CEFPP defines ultimate goals for the institution and accounts for the facilities required to help achieve these goals. The capacities and capabilities thus defined are realized, if necessary, through several phases of construction and expansion or reduction and modification. These activities are viewed in terms of their relationship to the total program.

A summary of the county's transition to facilities needs should be represented by these items and in this order in the plan:

1. A Building Review and Recommendations Report, compiled alphabetically by school. (SBA/WVDE Form 147)
2. A Feeder School Summary Report (SBA/WVDE Form 132)
3. A feeder school summary report narrative filed together alphabetically by high school attendance area
4. A High School Attendance Area Facility Report, compiled alphabetically by high school attendance area (SBA/WVDE Form 148)
5. A countywide School Facilities Classification Report (SBA/WVDE Form 116)

Analysis of the data compiled in the CEFPP regarding enrollments, the educational program, the condition of existing facilities, and the ability of each facility to support the educational program will result in the identification of specific inadequacies in each school that need to be addressed. The narratives are to describe each school facility, site, enrollments, general conditions, recommendations for future use of the building, and cost estimates to implement the recommendations. Develop a list of projects at each facility needed to address the inadequacies in health and safety, building integrity, or educational capability of the facility. In accordance with SBA/WVDE Form 147, a ten-year timeline will be developed to indicate the anticipated completion of each of these projects.

Upon completion of the recommendations for each individual school, a high school attendance area summary for school improvements will provide an analysis of improvements in

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each community. Complete SBA/WVDE Form #148.

New facilities shall not be constructed for student populations that are projected to fall below 85% of the required economies of scale guidelines for minimum school enrollments within ten years of the completion date of the construction. See Chapter 1, Section 100.0142 (E). Consideration may be given to extraneous factors that may alter this requirement provided the project is approved by the WVBOE and the SBA.

100.017 Inter-County Facility Feasibility Study

- A. Each county shall submit to the WVDE and the SBA a list of grouped, inter-county attendance areas where potential exists for cooperative utilization of a facility between or among counties. (May include multi-county and inter-regional facilities, e.g., magnet school, area vocational centers, etc.)
- B. A planning study is to be completed to assure that an efficient and effective instructional delivery system will be utilized addressing each of the items indicated in Chapter 1, Section 100.01 (A-K).
- C. Describe the results of the study and its impact on school facility needs for students in these attendance areas.

100.018 Financing Plan

The estimated costs for implementing the improvements identified in this plan shall be utilized in the development of the finance plan.

- A. Identify the source of funding to be utilized in the financing plan.
 - 1. Local bonding capacity and unencumbered potential
 - 2. Excess levy funds
 - 3. Federal aid funds
 - 4. Sale of abandoned school sites and buildings
 - 5. State funds (including SBA)
 - 6. Permanent improvement funds
 - 7. Performance-based contracting
 - 8. Lease-purchase arrangement
- B. Identify the fiscal obligations to be considered in the plan.
 - 1. Outstanding Bond indebtedness
 - a. Total obligation
 - b. Amount encumbered annually
 - c. Maturity date(s)
 - 2. Outstanding lease purchase agreements,

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performance-based contract, or certificates of participation

- a. Total obligation
 - b. Amount encumbered annually
 - c. Pay-out date(s)
- C. Cost of needed improvements as determined by an architect, professional engineer, or other professional project estimator (summarize the financial needs identified in Section 100.016 of the handbook indicating the cost for each capital improvement for each facility and its anticipated funding source).
- D. If a proposed project benefits more than one county in the region, include in the plan the manner in which the cost and funding of the proposed project shall be apportioned among the counties.

100.019 Synopsis of Comments from the Public Hearing(s)

Prior to submitting the CEFP to the WVBOE and the SBA for approval, a public hearing(s) must be advertised and conducted in accordance with WV Code §59-3-1 et.al., to provide broad-based community input into the plan. As an addendum to the CEFP, sufficient documentation, including verification of public notices from the local newspapers, a synopsis of all comments received during the hearing(s), and a formal comment from the local board must be included.

100.020 Objective Evaluation of Implementation

As part of the total CEFP, the county shall include the objective means to be utilized in evaluating implementation and effectiveness of the overall plan and each project included therein. The evaluation shall measure how:

- A. Each project furthers each of the quality educational goals of the SBA as defined in §18-9D-16 of the WV Code. This shall include: student health and safety, economies of scale, travel time and other demographics, achievements of effective and efficient instructional delivery system, curricular improvements, innovations in education, and adequate space for projected student enrollment;
- B. Prioritization of projects within the county serves as a basis for determining expenditure of available funds; and,
- C. The overall success of any project relates to the facilities plan of the county and the overall goals of the WVDE and SBA. (Complete WVDE/SBA Form #147)

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101 EDUCATIONAL SPECIFICATIONS FOR A SPECIFIC SCHOOL CONSTRUCTION PROJECT

References:

2.

- 101.01 The development of educational specifications for each new school facility is a team, rather than an individual activity, which is accomplished by school administrative unit personnel with or without the assistance of an outside consultant. The chief school administrator recommends persons for committee appointment. A representative of the SBA will be appointed to the committee if SBA funds are utilized in the project. The (school) appropriate board then acts on these recommendations. The committee chairperson is usually the principal of the proposed facility. If that official has not been identified, then the principal of another administrative unit facility can serve. The working committee should be small and selective. It should be balanced in composition, with diversified interests, knowledge, and skills represented. Members should understand their role in relation to both the immediate task and the entire project. They should also understand the necessity for cooperation. Ordinarily members of the teaching staff and others who will be immediately involved in the use of the proposed facility are most able to provide the type of information required in educational specifications. Some important considerations in the selection of committee members are:
- A. Time available to spend on the project
 - B. Knowledge about the project
 - C. Imagination and creativity
 - D. Ability to work with people
 - E. Interest in the improvement of the school
- 101.02 Educational specifications should describe the learning activities that will be housed in the proposed facility; the number, grouping and nature of the people involved; the spatial relationship between the facility and site; the interrelationships of instructional programs with each other and with non-instructional activities; the major items of furniture and equipment to be used; and any special environmental provisions which would improve the learning environment and promote staff efficiency. Educational specifications should avoid rigid architectural prescriptions, confining its remarks to educational matters.
- 101.03 Educational specifications describe the educational activities which a proposed facility must support and the types of spaces which will best accommodate program requirements. They are not a precise delineation of the instructional program; nor are they technical specifications of the type that the architect or engineer directs to the contractor. They are, however, in a temporal and developmental sense, a connecting link between the program and

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technical statements.

The educational specifications document is a vehicle of communication between the educator and the architect. The educator identifies the educational objectives and suggests general facility needs; the architect bases his/her facility design on this information. Copies of educational specifications for any new facility shall be submitted to the WVDE and the SBA for review with the schematic design submission. The SBA educational specification guidelines and the WVDE Policies 6200 and 2510 must be used for all projects regardless of funding sources.

102 SELECTION OF FURNITURE AND EQUIPMENT

References:

2.

- 102.01 Classroom furniture and equipment should be considered during the initial planning stage and should be selected on the basis of its contribution to, and compatibility with, the total educational program.
- 102.02 Criteria for selection should include the following:
- A. Appearance
 - B. Maintenance
 - C. Safety and security
 - D. Comfort
 - E. Durability
 - F. Building Codes
 - G. Guarantees
 - H. Flexibility
 - I. Availability
 - J. Cost

103 OCCUPANCY OF NEW EDUCATIONAL FACILITIES

References:

2.

- 103.01 Teachers and other employees shall be informed of the operation of the building, particularly fire escape routes, heating, ventilating and air conditioning systems, and communication systems.
- 103.02 No educational facility shall be occupied without prior approval from the WVDE, state and county regulatory agencies, and SBA, when appropriate.

104 FACILITIES PROGRAM CONTROL

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- 104.01 When projects are SBA funded, SBA guidelines regarding administration and project control shall be in effect. On single county projects, the county board of education maintains control of the construction program. On new cooperative multi-county projects, a joint building council of individuals from the cooperating counties shall administer the construction project. This council shall include, but not be limited to: the respective county superintendents, one member from each county Board of Education, the principal of the new facility, if known, and one classroom teacher from each county. The council shall control each project by:
- A. Authorizing a study of the educational program and subsequently adopting educational policies for implementation;
 - B. Authorizing the survey and adopting a building program on the basis of the results thereof;
 - C. Establishing site criteria, inaugurating steps to select and purchase sites and authorizing the purchase of sites;
 - D. Authorizing the preparation of and approving educational specifications for each building;
 - E. Selecting the architect, educational consultant, legal advisor, and other specialists;
 - F. Authorizing the preparation of architectural drawings and specifications, approving of preliminary plans, working drawings and specifications and any subsequent change;
 - G. Deciding when to proceed with construction, soliciting bids, awarding contracts, and inspecting and accepting the completed building;
 - H. Authorizing the expenditure of necessary funds at each stage of the program; and
 - I. Designating one county as the fiscal agent to handle the business functions of the building council on inter-county projects.

105 RULES AND REGULATIONS FOR COUNTY BOARDS OF EDUCATION TO FOLLOW REGARDING SCHOOL CLOSINGS OR CONSOLIDATIONS

Section 13a of Article 5, Chapter 18, of the Code of West Virginia provides that:

...the state board shall promulgate rules and regulations which shall prescribe in detail the type of supporting data a county board of education shall include as part of its written statement of reasons required by this section for school closing or consolidation, and which shall include any data required by the WVBOE to amend a county's comprehensive educational facilities plan.

Pursuant to this statute, all county boards of education, except in cases in which a construction bond issue was passed by the voters and which bond issue included the schools to be closed or consolidated and included in an approved CEFP, must prepare and reduce to writing reasons and supporting data

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concerning proposed school closings or consolidations to be submitted to the WVBOE for approval in accordance with WVBOE Policy 6200 and the West Virginia Code.

In addition to the items listed above, an executive summary will be done of items 105.01 through and including 105.08 shall be provided to the Office of School Facilities that will summarize with page references in the county's documentation those items listed (e.g., enrollment, facilities, finance, personnel, transportation, educational program).

- 105.01 Enrollment
- A. Population changes - trends in population growth or decline in the county, the attendance area of the school targeted for closure or consolidation, and the school or schools which will receive the students affected
 - B. Population characteristics, such as birth rates and age composition (including the number of pre-school and school-age children)
 - C. Projections of enrollment, by grade in respective attendance area, for the next ten years
 - D. Explanation of the projection method utilized
- 105.02 Facilities
- A. Maps showing the schools, by grade configuration and student enrollment, targeted for closure or consolidation and the schools that will receive the students.
 - B. Physical appraisal of the school targeted for closure or consolidation and the school or schools which will receive the students. This appraisal should include age, number of buildings, general condition, adequacy related to structural, electrical and mechanical systems to provide a safe and healthful environment. Refer to SBA facility evaluation form.
 - C. Evaluation of the school targeted for closure or consolidation and the school or schools which will receive the students in regard to their adaptability to the present and proposed educational programs and the provisions of related services.
 - D. Measure of the utilization, as a percentage, of the school targeted for consolidation or closure and the school which will receive the students in regard to the following:
 - 1. What is the operating capacity of each facility?
 - 2. What is the utilization factor of each school?
 - 3. What will be the effect of this proposed school closure or consolidation as to utilization and operating capacity?
 - 4. What is the projected enrollment of receiving school(s)?
 - E. Comparison of the accessibility (barrier-free environment) for the handicapped of the school targeted for closure or consolidation and the school or schools which will receive

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- the students.
- F. Elaboration of the effect the proposed school closing or consolidation will have on the school system's future plans regarding grade configuration, educational programs, and facility requirements.
- 105.03 Finance
- A. Itemization of the anticipated cost or savings the county will experience in all areas as a result of the proposed school closure or consolidation
- B. Cost of any renovation or addition resulting from the proposed school closure or consolidation
- 105.04 Personnel
- An analysis of the effect the proposed school closure or consolidation will have on professional and service personnel
- 105.05 Transportation
- Explain any negative variances of Section 202.02 of this policy and the effects it may have on transportation.
- 105.06 Educational Program
- Complete a projected educational program improvement analysis which includes a statement of assurance that the following have been considered:
- A. WVBOE Policy 2510 - Assuring the Quality of Education: Regulations for General, Vocational and Special Educational Programs
- B. WVBOE Policy 2520 - Instruction Goals and Objectives
- C. WVBOE Policy 6200 - Handbook on Planning School Facilities
- D. WVBOE Policy 2450 - Distance Learning and the West Virginia Virtual School
- 105.07 Pursuant to West Virginia Codes §18-5-13 and §18-5-13a, county boards of education must do the following by the first Monday in April:
- A. Shall hold a public hearing, notice of which shall be advertised by publication in a newspaper in general circulation in the locality of the affected school at least once per week for four successive weeks prior to the date of hearing. The notice shall contain:
1. Time and place of the hearing
 2. Proposed action of the county board of education
- B. Must have written reasons and supporting data regarding the proposed school closings and consolidations in the office of the county superintendent during the four consecutive weeks prior to the public hearing.
- C. Copies of the notice of public hearing must also be posted in all schools in the county in conspicuous working places for

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all professional and service personnel to observe and shall remain posted for four successive weeks.

- D. At least a quorum of the county school board members and the county superintendent from the county wherein the affected school is located shall attend and be present at the public hearing.
- E. During the public hearing, members of the public shall have the right to be present, submit statements and testimony in their behalf, and question county school officials.
- F. After provisions A through E above have been completed, county boards of education must take a formal vote on the school closure or consolidation issue.

105.08

Once the statutory provisions have been complied with, and prior to implementation of any school closure or consolidations, the county's CEFP must be amended. The county must file this amendment with the WVBOE for its approval and this amendment must:

- A. Be signed by the county superintendent and give the date the action was taken by the local board.
- B. Contain assurances that applicable sections of the West Virginia Code §18-5-13, (3), (4), (5), §18-5-13a, and WVBOE Policy 6200 have been addressed.
- C. Contain justification for the proposed consolidation or school closing. This justification must be supported by supplemental data and information pertinent to the following subjects: enrollment, facilities, finance, personnel, transportation, and educational programs; as described above.
- D. Contain documentation of all hearings, motions, and other actions concerning the proposed school closings and consolidations.

105.09

Emergency School Closure Consideration

Should the need for an emergency school closure exist, West Virginia Code §18-5-13, Section 4, provides that the State Superintendent of Schools may make such a declaration. However, this would not waive the statutory requirements of §18-5-13a.

In order to merit consideration for emergency status by the State Superintendent, the following assurances must be met:

- A. Educational program - educational opportunities are equal or greater for students at the receiving school
- B. Transportation - proposed routing schedule does not result in undue time in transit for students according to recommended age-appropriate travel times
- C. Exceptional students - programmatic offerings and

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educational spaces are appropriately accessible to
handicapped students

- D. Health/safety - transfer of students would not result in any health/safety concerns which would adversely affect students and staff
- E. Capacity - receiving school has the capacity to adequately house projected enrollment

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Chapter 2

SCHOOL SITE PLANNING

200 SCHOOL SITE

All school sites provide sufficient space for the school building, future expansion, educational program activities, and support facilities.

References:

- 5.
- 22.

201 SELECTION

- 201.01 Intelligent and imaginative school site selection and development are significant aspects of educational facility planning. Because the design and use of the land on which a school is built is fully as important as the design and use of the facility itself, the site's potential as an educational and community resource must be considered.
- 201.02 The selection of a site requires the cooperative effort of the county board, school staff, planning committee, architect, and legal consultants. Since the educational program is of primary concern to the community, consideration should be given to lay membership on a site selection team.
- 201.03 Resources to be utilized when selecting sites may include: land-use maps, aerial photographs, soil maps, topographic maps, highway maps, flood control maps, neighborhood or school service area maps, pre-school and pupil spot maps, dwelling unit maps, utility service plans, and realtors and developers intentions.
- 201.04 Factors to be considered in selecting a site may include: number and grade level of students, nature of educational program, initial cost, development cost, availability of utilities, transportation systems, availability of activities, provision for a safe and healthful environment, and the protection of the investment in the building.

202 LOCATION

- 202.01 School sites shall be located in proper relationship with existing and proposed physical facilities in the community, including: student population centers, parks, recreation centers, libraries, health centers, streets, highways, residential housing, and other schools.
- 202.02 The following one-way bus transportation time levels are considered the reasonable guidelines for students transported to school:

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- A. Early childhood levels - thirty minutes
- B. Middle childhood/junior high levels - forty-five minutes
- C. Adolescent/high school education levels - sixty minutes
- D. These guidelines apply as follows:
 - 1. To normal weather and operating conditions
 - 2. Provided there is an appropriate school within the designated travel time, counties may meet this need cooperatively

- 202.03 For the safety of students, the site shall be located away from hazards and undesirable environments, such as:
- A. Railroads, arterial highways, heavily traveled streets, traffic and congestion
 - B. Noise, toxic gas escapes from railroads, airports, and odoriferous plants or industries
 - C. Natural barriers limiting accessibility and expandability, such as rivers, lakes, swamps, and protruding ridges
 - D. High voltage transmission lines, booster or reduction stations, high pressure gas lines, and transformer stations
 - E. Taverns, fire stations, bulk storage plants for flammable liquid, and property zoned as industrial
 - F. Situations where a combination of factors such as those presented above could contribute to the possibility of human entrapment

NOTE: Building sites must be located above the 100 year flood plain as determined by the U.S. Corp of Engineers.

- 202.04 Public service facilities which must be available for a school site include: water, gas, telephone, electricity, sewage disposal, fire protection, and transportation.

203 SIZE

- 203.01 The size of any school should provide sufficient and appropriate space for all of the in-school and evening activities.
- 203.02 With the assistance of an architect, trial layouts of the area required for a site should be made and include, but not necessarily be limited to, the following items:
- A. The school building
 - B. Reserve for expansion of building
 - C. Set back from streets, sidewalks, approaches, and driveways
 - D. Parking areas, access, and buffer
 - E. Bicycle entrances and storage racks, with proper buffer areas
 - F. Landscaping and buffer areas at the side and back of the site

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- G. Paved game areas, including space for outdoor basketball and tennis courts
- H. Field game areas for physical education and recreation
- I. Areas for interscholastic athletics (which may overlap with field game areas)
- J. Possible athletic stadium with parking area, access, and buffer
- K. Outdoor area (educational) for nature study, biology, art
- L. Possible driver instruction areas (auto)
- M. Outdoor area adjacent to shops
- N. Unassigned areas held in reserve for future use

- 203.03 School sites of the following minimum sizes shall be provided:
- A. Early Childhood/Primary Education Program (K-4)
5 usable acres + 1 additional acre for every 100 students over 240 students
 - B. Middle Childhood/Junior High Education Program (5-8)
11 usable acres + 1 additional acre for every 100 students over 600 students
 - C. Adolescent/High School Education (9-12)
15 usable acres + 1 additional acre for every 100 students over 800 students
 - D. Area Vocational Schools
10-40 acres

NOTE: If sewage treatment plants and retention pools are required, acreage would have to be increased.

203.04 Site acreage are national norms and apply to traditional suburban schools. Where the nature of the neighborhood is urban, the school site shall also be urban in scale. Where the terrain limits the land available, this factor shall be considered. One remedial measure would be to locate schools adjacent to parks or recreation facilities. However, all sites not meeting the minimum standards must be approved by the WVBOE.

203.05 For modern schools, a portion of the site should be set aside to meet needs that are bound to arise in the future. Many schools constructed in the past have become obsolete because they lacked sufficient size to warrant economical rehabilitation or enlargement. Buying an adequate site is insurance against such educational obsolescence.

204 PHYSICAL FEATURES

204.01 Ordinarily, a school site should not enhance the cost of construction and should permit the architect to place the building in an appropriate place in relation to other facilities to be developed on the site. The services of an architect, other related specialists, and consultants from the WVDE or the SBA are necessary to judge

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a site on this criterion.

- 204.02 A natural elevation with satisfactory approaches avoiding long or difficult climbs makes a desirable setting. The site should be free from drainage from contiguous land and should permit proper drainage throughout at a reasonable cost. Rapid drainage and quick drying should characterize the parts of the site which are expected to serve as recreational and physical education areas. The soil, preferably a sandy loam, should be fertile enough to produce good lawns and vigorous landscaping growth.
- 204.03 There are many site factors which affect cost apart from the purchase price of the land. The following conditions are to be determined in advance and considered along with the purchase price.
- A. The need for extensive hauling of earth due to a surplus or shortage on the site
 - B. The presence of quicksand, deep mines, unsatisfactory fill, pyrites, or other undesirable subsoil conditions which require special footings or pilings to support the building
 - C. The presence of rock or other conditions affecting the cost of necessary excavation or ditches
 - D. The need for the removal of obstructions, such as large boulders or trees; the need for fillings or capping of old wells, clay holes, pits, or mines
 - E. An unduly expensive drainage need
 - F. The need for constructing and maintaining long access drives and special installations due to distance from service utilities
- 204.04 Approval will not be granted for construction of a facility on a site lacking municipal water, adequate fire protection, and sewage services without the approval of local or state health agencies. No water supply can be considered acceptable unless it provides an ample quantity of safe and potable water for the school.
- 204.05 Local or state health agencies will also provide information regarding the required type and location of a sewage disposal system.
- 204.06 The subsoil of a site must provide good drainage and a proper base for economical and substantial foundations for the building. Neither purchase of a site by the county board of education nor building design shall be initiated until the subsoil conditions have been determined acceptable for the entire area of the building by adequate test borings or core drilling made under the direction of a registered professional civil engineer. Soil tests are particularly important for schools that require extensive grading. Underground investigation shall also include the ownership and presence of

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mineral rights, mines and wells, and the effect they have on the site development. The recommendation is made that mineral rights be controlled for long term protection of surface usage.

- 204.07 Some adverse site conditions can be overcome by modern construction methods, but they should be accepted only when the costs of such improvements are cost effective. Many of these conditions are not readily seen at the surface. Before the land is purchased, test borings should be made to accurately determine subsoil conditions and the results should be analyzed and interpreted for the board by a registered professional civil engineer.

NOTE: County boards of education and county superintendents may secure soil information from the United States Department of Agriculture, Soil Conservation Service, Morgantown, West Virginia. This service is provided without cost and could save thousands of dollars by assisting in properly locating schools. Soils are rated by various information; the contracting organization can require certain specifications that prevent problems due to soil limitations.

- 204.08 Sites should be of such shape and contour as to yield reasonable space for the setting of the building and for drives, walks, play, and athletic fields. The contour of a site should be slightly convex to allow placement of the building at the high point. This situation rarely occurs naturally and some earth work to develop this land form will be necessary on almost every site.

- 204.09 Cost for excavating and foundation walls can be reduced by fitting the building to the contours of the land. Extra expense for special footings and special drainage can be eliminated by placing the building on high ground and where subsoil conditions are known to be favorable. Proper placement of the building will reduce the length of utility and drainage lines, drives and walks, thus reducing costs.

205 RECREATIONAL AREAS

All schools housing early childhood education programs contain an adequate blacktopped play area and a field game area large enough to accommodate physical education activities. All centers housing kindergarten programs contain a segregated blacktopped area and a large grassy area with climbing equipment and swings. The playground may be segregated by either time or space allocation. The playground must meet the standards of the Handbook of Playground Safety and be ADA compliant. All middle, junior high, and high school sites contain a blacktopped play area with a minimum size of 4800 ft² and

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a field game area, space and/or facilities large enough to accommodate physical education activities such as soccer, touch football, softball, tennis, and track.

References:

23.

NOTE: The following dimensions refer to actual field or court dimensions; additional space should be provided for spectators.

FIELD AND COURT DIMENSIONS

Activity	Early Childhood/ Primary	Middle Childhood/ Junior High	Adolescent/ High School
Baseball			350' x 350'
Basketball	40' x 60'	50' x 84'	50' x 94'
Football & Track (1)			300' x 600'
Football, Six man			120' x 300'
Football, Touch		120' x 300'	160' x 360'
Hockey, Field			180' x 300'
Hockey, Ice			85' x 200'
Softball (2)	150' x 150'	200' x 200'	250' x 250'
Soccer			165' x 300'
Swimming			60' x 100'
Volleyball	25' x 50'	25' x 50'	30' x 60'
Archery		50' x 150'	50' x 300'
Badminton			20' x 44'
Handball	18' x 26'	18' x 26'	20' x 40'
Horseshoes		10' x 40'	10' x 50'
Shuffleboard			6' x 52'
Tennis		36' x 78'	36' x 78'
Tennis, Deck			18' x 40'
Tennis, Paddle			20' x 44'
Tetherball	10' circle	12' circle	12' circle

(1) Assumes Metric Track

(2) Varies according to ball size

206 WALKS, DRIVES, AND PARKING

All walks, drives, and parking areas are paved. Parking space is adequate to accommodate school visitors, employees, students who must drive, school buses, and school activities. Parking space is provided for the handicapped, and the site is accessible to the handicapped. The bus loading zone is designed to accommodate safely all buses anticipated at one time and is separated from all traffic using school parking and driveway areas and meets the standards set forth by the Federal Highway Standards 17. The exterior area is appropriately lighted as per IES lighting standards.

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- 206.01 Walks should be direct, convenient, and natural to encourage people to stay on them. They should connect the building with streets or highways, the bus loading zone, parking areas, and auxiliary school facilities. Limiting points of access is desirable for control of traffic. Main walks, such as loading areas, and main entrances should be constructed with initial building program. Additional walks should be constructed after traffic patterns have been established.
- 206.02 Walks should be paved in lanes to meet ADA standards with a minimum of three lanes.
- 206.03 Walks should be far enough from building to permit ample space for shrubbery, crowned or sloped high enough for proper drainage, and illuminated per IES standards for night use. Wide paved areas at entrances will help keep the building clean by catching dirt before it gets inside, a good slope will make this area easier to keep clean. They shall have a gradient of not more than five percent. Walks should be of a continuing common surface where practical and should not be interrupted by steps or abrupt changes in level. Walks, driveways, or parking lots should blend to a common level.
- 206.04 Safety is a primary consideration in locating vehicular circulation on the school site. Secondary considerations are economy, convenience, and directness. Driveways should be:
- A. One way with clear views. Two lanes should be provided to main loading entrance and parking areas.
 - B. Hard surfaced, properly drained, and illuminated per IES standards for night use.
 - C. Planned to provide access and control traffic to loading areas and building service entrances. Wherever practical, driveways for buses should be separate.
 - D. Located so as not to connect to a heavily traveled highway if a lightly traveled street is accessible. Points of access to the site should be limited.
 - E. Of adequate space to insure that carbon monoxide does not accumulate in idling vehicles or school buses.
 - F. Every educational facility not readily accessible from public roads shall be provided with suitable gates, access roads, and fire lanes so that all buildings are accessible to fire apparatus. Fire lanes shall be at least 20 feet in width, with the road edge closest to the building at least 10 feet from the buildings. Any dead-end road shall be provided with a turn-around at the closed end at least 90 feet in diameter.
 - G. Location is coordinated with the facility mechanical systems to prevent exhaust fumes from entering the facility through air intakes.
- 206.05 Parking needs of the following should be met:

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- A. Staff
 - B. Students
 - C. Visitors
 - D. With accommodations for the handicapped
- 206.06 Parking spaces can be provided at the rate of about 125 cars per acre. The following quantities are suggested as reasonable:
- A. For staff: 1 parking spaces per staff member including itinerants.
 - B. For students: Approximately 1/3 or more of the pupil population at the adolescent/high school level and space provided as necessary.
 - C. For visitors: an additional 10 to 20% of total staff parking
 - D. A percentage must be labeled for handicapped only as per ADA requirements.
- 206.07 Consideration should be given to the following parking arrangements:
- A. Car parking should be arranged to minimize backing. Parking areas should be hard surfaced, well drained, and illuminated per IES standards for night use. Traffic control signs will be necessary.
 - B. Car parking should not be permitted on streets with street traffic, on pedestrian lanes, or on driveways or loading areas. It should be away from playgrounds but near spectator areas when practical.
 - C. Parking for wheelchair and other handicapped persons must be provided near entrances, if possible.
- 206.08 A designated bus loading zone shall be provided to accommodate all buses anticipated at one time. This shall be based on:
- A. A transportation survey covering bus schedules, partial unloading or transfer of students, provision for handicapped children, and parking.
 - B. Number of students transported, based on the average number of students per bus or rated capacity of the bus.
 - C. Future growth or possible changes in the transportation pattern.
 - D. A designated restricted loading and unloading area is required according to Federal Highway Safety Standards 17.
- 206.09 The bus parking area should be designed in connection with the bus loading zone, independent of driveways, so that backing the vehicle is unnecessary. It should be permanently surfaced and well drained, with designated spaces and traffic control signs.
- 206.10 Bicycle racks near the building are desirable for some schools. A survey to determine the need should indicate the rack space necessary.

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207 FIRE PROTECTION

- 207.01 As per NFPA 101 Life Safety Code and the West Virginia Fire Code, all school facilities shall have fire hydrants at recommended locations to achieve the best fire insurance assessment. Coordinate the type of hydrant required with the local fire department.

208 SAFETY AND CLEANLINESS

- 208.01 The principles of safe design and Crime Prevention Through Environmental Design (CPTED) should be considered when new schools are designed and existing schools experience major renovations.
- 208.02 All school buildings and grounds shall be kept clean and free from debris. All school buildings, grounds, and equipment are free from safety hazards.

209 BEAUTIFICATION

- 209.01 The site should lend itself readily to landscaping and provide a pleasant natural environment. It should permit the location of the building an adequate distance from the street line, both for aesthetic setting and for the safety of children.
- 209.02 The site plan presented by the architect should encompass the total site and show future developments. The same general procedures used for planning the building are appropriate for outdoor facilities. The process of educational planning, writing educational specifications, and architectural designing are as applicable to sites as to buildings.
- 209.03 Well planned site plantings for individual schools should be prepared with the assistance of qualified personnel, such as landscape architects and nurserymen. (There are personnel at West Virginia University and the U.S. Soil Conservation Service who will assist in planning for site beautification.)
- 209.04 No school site plan should be considered adequate without an accompanying planting plan. The site design should consider the harmonious visual integration of the varied plantings with the mass of buildings from all points of view.
- 209.05 The classes of plants usually used on school grounds are: shade trees, evergreens, evergreen shrubs, deciduous flowering shrubs, and ground covers such as grasses. In general, a school ground planting scheme will consist of foundation planting, intersection planting of shrubs at angles and curves of drives and walks, tall

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trees to frame the building, and trees planted in groves for shade.

- 209.06 The choice of plants should be limited to the following varieties:
- A. Require minimum maintenance
 - B. Known to be sturdy
 - C. Thrive in recreational areas.
 - D. Tolerate normal amounts of dry weather
- 209.07 Save all usable existing topsoil on the site. It can be replaced only at great expense. An analysis of the topsoil should be made to determine plant food requirements for the plantings provided.
- 209.08 As per guidelines set forth by the American Standards of Landscape Architects, retain and protect as many existing trees as possible to be absorbed in the total plan. If all the planting cannot be done at once, plant shade or larger trees first. Locate trees in relation to the building so as to shield classrooms from brightness of the sky, reflected snow glare, glare from adjacent buildings, provide shade, and shield from noise eg. traffic. Serious consideration of security and life safety issues should be addressed.
- 209.09 Each school site should have a master plan for plantings approved by the county board of education. Plantings provided by citizens and/or students should be in accordance with the approved plan and should be sanctioned by the board of education prior to the expenditure of money for such plantings.

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Chapter 3

COMMON FACILITIES

300 FACILITIES NECESSARY FOR THE OPERATION OF ALL SCHOOLS

All schools contain the instructional and auxiliary facilities which are necessary to maintain the educational program and accommodate the out-of-classroom needs of both students and staff. The design possibilities for such spaces have increased with the emergence of diverse concepts in school design, increased use of non-printed media, expanded awareness of student/teacher human needs, recognition of the school as a community resource, and improved technology. The planning of auxiliary spaces must involve careful consideration of the future adequacy of the spaces for while additional classrooms can be appended with some ease, the expansion of auxiliary spaces can seldom be accomplished easily after completion of initial construction. Thus, when auxiliary facilities become obsolete and inefficient, the usefulness of the entire facility may be diminished.

In the planning and design of new school facilities, designers should always strive to attain maximum effectiveness and efficiencies and enhance life safety and security by looking at multi-use spaces and shared facilities in both the instructional and auxiliary areas.

301 ADMINISTRATIVE AND SERVICE FACILITIES

References:

- 2.
- 25.

All schools provide the administrative offices necessary for the operation of the school. The school contains a guidance area designed and located to allow privacy, with an entrance separate from the administrative suite. The guidance office is of adequate size to allow for group discussions and is convenient to student records. The guidance office contains adequate secured storage facilities, outside telephone service, and an information display area. The school also contains a health service area which includes an examination room, rest room facilities, and an area for the ill. The health area is equipped to facilitate the operation of its users and contains outside telephone service. Appropriately equipped areas within the administrative suite are available for supplies and book storage, secure area for test booklets, duplicating and/or other activities, conferences and/or small group discussions, staff lounge, and student and teacher rest rooms. A control room, within or adjacent to the administrative suite, is provided to house the communication systems. Factors influencing the location of administrative facilities include: Proximity to the main entrance of the school, convenient access to the instructional areas of the building, insulation from outside noises, and convenient access to the special service facilities.

301.01 General Office and Reception/Waiting Area

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- 301.011 Size
Dependent upon initial enrollment, type of school, and ultimate enrollment of the school, 200 to 800 square feet will likely be needed for secretarial and reception areas.
- 301.012 Location
- A. At the hub of the administrative suite
 - B. Direct access to a building corridor and to work room
 - C. Direct or convenient access to offices of the principal and assistant principal and other rooms in the administrative suite
 - D. Location should provide convenient access to the special service facilities
 - E. Near main entrance to facility
- 301.013 Activities
Reception of school visitors, students and staff, general secretarial activities required in the operation of the school.
- 301.014 Equipment Space and Facilities
- A. Counter separating reception-waiting room or area from the secretarial work area
 - B. Comfortable chairs in reception area
 - C. Small table for magazines and other literature
 - D. Display space and bulletin board
 - E. Mail boxes for faculty members, located for easy access without interference with main office traffic
 - F. Secretarial furniture
 - G. Fire-safe record file or vault
 - H. Master telephone station or other communication to all locations in the administrative and special service areas
 - I. Appropriate floor covering
 - J. Fire alarm control panel
 - K. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - L. Computer Workstations (See OTIS Handbook for specifications)
- 301.02 Principal's Office
- 301.021 Size - 125 to 200 Square Feet
- 301.022 Location
- A. Direct or convenient access to general office
 - B. Convenient access to the corridor without going through the general office
 - C. Convenient access to other areas in the administrative suite

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- 301.023 **Activities**
Planning, research, and administrative activities conducted individually or in small groups.
- 301.024 **Equipment Space and Facilities**
- A. Room design should permit the principal to confer without being overheard or seen from adjacent areas
 - B. Conference desk and chair
 - C. Work table convenient to desk for layout work
 - D. Conference chairs
 - E. Shelving
 - F. Storage for personal belongings
 - G. Telephone service and intercom
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - I. Computer Workstations (See OTIS Handbook for specifications)
- 301.03 **Assistant Principal's Office - Optional**
Depending upon enrollment.
- 301.031 **Size - 125 to 200 square feet**
- 301.032 **Location**
Convenient access to general office and principal's office
- 301.033 **Activities**
Planning, research, and administrative activities conducted individually or in small groups.
- 301.034 **Equipment Space and Facilities**
- A. Room design should permit the assistant principal to confer without being overheard or seen from adjacent areas
 - B. Conference desk and chair
 - C. Work table convenient to desk for layout work
 - D. Conference chairs
 - E. Shelving
 - F. Storage for personal belongings
 - G. Telephone service and intercom
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - I. Computer Workstations (See OTIS Handbook for specifications)
- 301.04 **General Office - Teachers' Work Room**
- 301.041 **Size - 150 to 250 square feet**

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- 301.042 Location
Direct access to the general office and waiting room
- 301.043 Activities
Preparation of testing materials, reports and layouts of instructional materials by both secretarial and teaching personnel
- 301.044 Equipment Space and Facilities
- A. Combination of open shelving and closed cabinets for storage of a variety of supplies and equipment
 - B. Duplicating machine/copier
 - C. Calculator
 - D. Work table or counter
 - E. Lavatory
 - F. Mechanical ventilation
 - G. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - H. Computer Workstations (See OTIS Handbook for specifications)
- 301.05 Teacher Planning Space - Optional
- Teacher planning spaces are provided to increase classroom space utilization and to provide space for individual and team planning. The incorporation of teacher planning spaces should reduce the number of classrooms required.
- 301.051 Size - 50 to 75 square feet per planning area
- 301.052 Location
Convenient access to the instructional spaces for departmentalized program offerings
- 301.053 Activities
Planning and maintaining of records for teachers.
Individualized or shared study/work space.
- 301.054 Equipment
- A. Desk
 - B. Lockable filing cabinets
 - C. Lockable personal storage units
 - D. Other equipment as selected
 - E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - F. Computer Workstations (See OTIS Handbook for specifications)
- 301.06 Supply and Book Storage Room

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- 301.061 Size - 100 to 400 square feet
- 301.062 Location
- A. Convenient access to the general office
 - B. Direct opening to corridor to permit distribution of books and supplies
- 301.063 Activities
- Storage and distribution of instructional materials and supplies, including books, paper, notebooks, erasers and pencils
- 301.064 Equipment Space and Facilities
- A. Cabinets and shelving for books and other school supplies and materials
 - B. Desk and chair
 - C. Work counter or table space
 - D. Filing space
 - E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - F. Computer Workstations (See OTIS Handbook for specifications)
 - G. Secure area for test booklets
- 301.07 Record Vault - Optional
- NOTE: Vault may be eliminated by providing fire-resistant filing cabinets in the general office or other storage area
- 301.071 Size - 50 to 75 square feet
- 301.072 Location
- Direct or convenient access from the general office and to guidance and health areas.
- 301.073 Activities
- Storage of current and inactive pupil records.
- 301.074 Equipment Space and Facilities
- A. New construction should be fire-resistant. The perimeter walls shall be masonry and extend to the ceiling deck for security purposes.
 - B. Cart storage units are preferable for current pupil records
- 301.08 Conference Room
- 301.081 Size - 150 to 300 square feet
- 301.082 Location

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- A. Convenient access to general office, principal's office, counselors' offices, and the public-address system control room
- B. Design and location should permit groups to confer without being overheard or seen from adjacent rooms.

301.083 Activities
Conference room will be used for conferences involving 5 to 12 people and for program broadcasts to instructional areas.

301.084 Equipment Space and Facilities

- A. Conference table and chairs
- B. Marker board
- C. Bulletin board
- D. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- E. Computer Workstations (See OTIS Handbook for specifications)

301.09 Public Address System Control Room

301.091 Size - 50 to 75 square feet

301.092 Location

- A. Adjacent to conference room
- B. Convenient access to general office and principal's office

301.093 Activities
Distribution of information and educational programs within the school.

301.094 Equipment Space and Facilities

- A. Adequate sound and electrical outlets in conferences and control room
- B. Public address control system panel with orientation toward conference rooms
- C. Storage facilities for audio supplies and equipment such as records, tape recordings, sound effects, microphone stands, and similar equipment

NOTE: The following facilities should be closely related to the administrative facilities for internal communication purposes, such as sharing pupil records and using conference room facilities; however, separate entrances and waiting areas may be provided.

301.10 Counselors' Office

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- 301.101 Size - 100 to 125 square feet per counselor
- 301.102 Location
- A. Direct access from reception area and convenient access to conference room and general office in the administrative suite
 - B. Design and location should permit conferences without being seen or overheard in the adjacent areas
 - C. Easy access to student records
- 301.103 Activities
- Individual and group guidance, counseling, and conferences with students, parents, and teachers.
- 301.104 Equipment Space and Facilities
- A. Desk and chair
 - B. Conference chairs
 - C. Shelving
 - D. Bulletin board
 - E. Storage for personal belongings
 - F. Telephone communications with general office and intercom; require private telephone line or lines to the counselor's office
 - G. File cabinet with lock for each counselor
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - I. Computer Workstations (See OTIS Handbook for specifications)

NOTE: Separate waiting and storage rooms are desirable.

- 301.105 Professional Support Staff
See Chapter 7, Section 713
- 301.11 Health Service Unit
- 301.111 Size
250 to 400 square feet.
- 301.112 Location
Direct access from waiting area and from building corridor to permit traffic to pass through the area for various screening tests. Adjacent to general office for access to student records.
- 301.113 Activities
Examinations by nurses, doctors, dental hygienists, administration of first aid, and conferences with students, parents, and teachers.

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- 301.114 **Equipment Space and Facilities**
- A. Small room or curtained area with cots for each sex, to permit rest and isolation in case of illness
 - B. Bulletin board
 - C. Rest room, lavatory, and toilet conforming to requirements for the physically handicapped
 - D. Scales, medicine chest, refrigerator with locked storage area, mirror, clock, and first aid kit
 - E. Storage for bed linens
 - F. Storage closet for nurses' personal belongings (locked)
 - G. Work counter with sink
 - H. Lockable file cabinet
 - I. Desk and chair
 - J. Conference chairs
 - K. Locked medication box
 - L. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - M. Computer Workstations (See OTIS Handbook for specifications)
- 301.12 **Reception Room - For Larger Facilities**
- 301.121 Size as appropriate for school size
- 301.122 **Location**
Direct access to counselor offices, health unit, professional support staff, and directly adjacent to primary building entrance and visually obvious to an unfamiliar visitor entering the building.
- 301.123 **Activities**
Reception of and browsing by students and parents
- 301.124 **Equipment Space and Facilities**
- A. Secretarial desk and chair
 - B. Typewriter/computer and stand
 - C. Comfortable chairs
 - D. Shelving for books, magazines, and variety of occupational information and college bulletins
 - E. Filing cabinet for occupational information not displayed on racks
 - F. Telephone to general office and outside
 - G. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- 301.13 **Teachers' Lounge**
- 301.131 Size - According to Faculty Number

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- 301.132 Location
- A. Direct access from a building corridor
 - B. Location avoiding major pupil traffic, yet reasonably close to the administrative area
 - C. Rest rooms should not have direct opening into the lounge area
- 301.133 Equipment Space and Facilities
- A. Comfortable lounge furniture
 - B. Kitchenette to prepare light refreshments (optional)
 - C. Rest rooms - facilities must conform to ADA standards
 - D. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - E. Computer Workstations (See OTIS Handbook for specifications)

302 FOOD SERVICE FACILITIES

The food service facility is critical to meeting the education, nutrition, and health goals of the school nutrition program. Expanded nutrition standards, advances in technology and production techniques, as well as changes in student expectations impact facility design and equipment decisions. Federal program regulations and state policies recognize the importance of nutrition to students' health and performance by requiring a greater variety of food choices, including fresh vegetables, fruits, and grain-based foods.

To encourage participation in school nutrition programs, students need easy access to quality meals, including time and space to make food choices and practice healthy eating behaviors. Facilities that offer inviting dining and serving environments help to provide these opportunities and shape healthy habits.

High quality nutritious meals must be prepared in a cost effective manner. Well designed and equipped facilities improve efficiency and reduce operating costs. They further help to ensure that production techniques meet stringent standards of food safety.

302.01 General Design

302.011 Location

- A. Kitchen and dining area located on ground level with direct access from outside for deliveries and disposal
- B. Convenient student access to food service area from other areas of the building
- C. Size and design of food production, serving, and dining areas appropriate for student population (Refer to Area Guidelines.)
- D. Food service area designed for efficient food flow and food safety (HACCP): receiving area adjacent to loading dock and near storage area; production area adjacent to storage

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and serving; serving and production adjacent to warewashing; and waste disposal areas adjacent to production

- E. Meal serving and dining areas located away from vending machines and all other food sales/outlets to which students have access during meal service periods

302.012 Walls, Floors, and Surfaces

- A. Finished surfaces including walls and ceilings composed of durable, smooth, nonabsorbent, and easily cleaned materials
- B. Flooring composed of resilient non-porous material, resistant to skidding, grease, and chemicals
- C. Level floor throughout food service facility (free of steps or other uneven surfaces)

302.013 Acoustics

- A. Walls, ceilings, floor materials constructed of sound-dampening materials to meet recommended sound levels of 40 to 70 decibels
- B. Equipment and chairs with noise resisting glides
- C. Food service areas acoustically separated from quiet areas of the building

302.014 Electrical

- A. Separate electrical panel for kitchen area
- B. Fixtures or bulbs mounted flush with the ceiling, with easily removable safety covers
- C. Lock plugs for refrigeration equipment, e.g., milk coolers, ice cream cabinets, to prevent disconnections
- D. Emergency lighting, particularly in areas without windows
- E. Fire safety and fire suppression systems to comply with OSHA, NFPA, and all fire and building codes
- F. Electronic security systems on doors and equipment to protect against unauthorized access and theft
- G. Acceptable levels of lighting; 35 foot candles on equipment, 50-75 in work surfaces, food displays, point of service, warewashing and serving areas, 80-100 in the office area, 20-35 in storeroom, and 40-50 in dining room
- H. Spare circuits for future needs

302.015 Air Quality

- A. Separate climate controls in dining room and kitchen areas
- B. ASHRAE Dust spot efficiency 45-60% in HVAC supply system
- C. Temperature maintained between 72-76° F, relative humidity meets ASHRAE guidelines in kitchen; in dry storage areas, temperature between 50-70° F.

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- D. Air temperature measuring devices meet 1999 Food Code standards (4.203.12), accurate within 1.5° C
- E. Ventilation systems exchange clean air for heat-, odor-, smoke-, steam- and/or grease-laden vapors at rates of (a) 12-20 times/hour in kitchen areas, and (b) 4-5 times/hour in dry storage areas
- F. Ventilation hoods/canopies with removable filters installed over cooking and dishwashing equipment to prevent condensation and grease collection
- G. An AC powered audible and visual alarm for excessive carbon monoxide detection will be provided where combustible gases are used.

302.02 Facilities

302.021 Kitchen

Space Requirements

- A. Adequate space to meet food production needs and meal service types
- B. Kitchen aisle widths measure 4 to 6 feet to accommodate carts and personnel

Equipment

- A. Equipment selection based on number of meals, food preparation needs (school-made foods, processed products, self-serve food bars, menu choices), number of lunch periods, and available labor
- B. Water source and floor drains/troughs installed for cookery as required for equipment, e.g., vertical cutter mixer, steam jacketed kettle
- C. Three-compartment sink for manual dishwashing
- D. Fire suppression equipment interconnected to grills and other top-of-stove equipment
- E. Automatic and manual shut off for fire suppression on ventilator and cooking equipment
- F. Reheating and serving equipment available in facilities to which meals are satellited from a central kitchen
- G. Food transport equipment which maintains proper food temperatures in accordance with Food Code requirements

302.022 Dining and Serving

Location

- A. Flow of traffic leaving the dining area passes close to dishwashing and trash disposal areas
- B. Serving area entrance convenient to the entrance of the dining area
- C. Location and arrangement provides access to students with disabilities in the least restrictive

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manner

Space Requirements

- A. Sufficient area for equipment and seating plus circulation and aisles (Space recommended for the dining area is 8-14 square feet per student)
- B. Dining area that seats more than 500 students divided into smaller rooms or equipped with room dividers
- C. Aisles allow space for two-way traffic of students carrying trays, i.e., a minimum of 6'4" with 8' preferred

Equipment

- A. Tables, seating and serving equipment ergonomically designed and proportional for age/grade levels
- B. Furnishings optimize seating capacity while enhancing the dining environment
- C. Seating based upon approximately one-half the average daily lunches served, with 10-14 square feet of floor area per meal (student) during each serving period
- D. Bulletin boards or display areas
- E. Types and arrangement of serving equipment to accommodate meal options (counter vs self service, single vs multiple food choices or lines), and number of persons served per meal period
- F. Serving equipment maintains food in a safe condition, e.g., heated servers (steam tables, heat lamps), refrigerated servers, and sneeze guards
- G. Tray rails in front of serving line
- H. Warming and refrigeration units located near the serving line
- I. Serving area equipped with sources of power, water and facilities for drainage
- J. Drinking water facility accessible to students during meal service
- K. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- L. Computer Workstations (See OTIS Handbook for specifications)

302.023 Warewashing

- A. Warewashing equipment adequate for number and types of meals served per meal period
- B. Warewashing water temperature meets 1999 Food Code standards
- C. Warewashing area located in separate walled area, with adequate ventilation
- D. Hand sink convenient to warewashing area

302.024 Storage Areas

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Location

- A. Adjacent to kitchen and receiving area

Space Requirements

- A. Adequate space based on:
 1. Number of meals (allow one-half square foot per daily meals served)
 2. Frequency of deliveries
 3. USDA Donated Foods (allow for 8-10 weeks supply)
 4. Types of planned menu items (prepared versus school-made products, canned versus fresh and/or frozen (Refer to Area Guidelines.)
- B. Additional storage for disaster preparedness

Floors, Walls, and Doors

- A. Quality flooring, slip-resistant, durable construction adequate to bear the weight of loaded pallets (600 pounds/square inch)
- B. Exterior and interior walls and sub-floors vapor sealed below ground
- C. Self-closing heavy duty doors with a minimum width of 42 inches secured from the outside (separate from school's master key system)

Dry Storage

- A. Adequate, secured dry storage area (Refer to Area Guidelines)
- B. Easy-to-read wall thermometer mounted at eye level and away from airflows
- C. Free of non-insulated/unsheathed water, steam, and sewer lines
- D. Adequate, adjustable heavy metal shelves (3-5 foot with 3 or 4 tiers per section, 18-24 inches deep and 6 inches above the floor)
- E. Separate storage room or cabinet for storage of cleaning supplies

Refrigerated Storage

- A. Refrigerator space for a 15-day supply of food to store USDA Donated Foods, in addition to purchased foods and leftovers (Refer to Area Guidelines.)
- B. Freezer space based on a 30-day food supply
- C. Walk-in freezer and refrigerator units recommended in schools serving 250 or more meals per day
- D. Walk-in units placed below floor level or set on spacers to provide at least 3 inches of insulation below the refrigeration unit
- E. Skid resistant flooring in walk-in units that is level with the kitchen's floor and capable to withstand 600 pounds per square foot
- F. Secured safety doors that open from the inside on all units
- G. Well lighted interior for all units

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- H. Condensate drain line on the outside of cooler units
- I. Aisles wide enough between shelves to accommodate carts
- J. Heavy duty wire shelving in coolers and freezers, stainless steel preferred
- K. Reach-in or roll-in units located next to serving line to prevent food contamination and preserve freshness
- L. Alarm system that warns of unacceptably high temperatures in freezers and refrigerators
- M. Timed or clock-controlled defrosting cycle for freezers
- N. Dial or digital thermometer mounted on exterior of unit
- O. Adequate capacity of reach-in refrigerators and freezers dependent on menu, preparation methods and serving systems (Refer to Area Guidelines)

302.025 Receiving

- A. Receiving area accommodates delivery equipment and vehicles
- B. Additional dock area for vehicle loading and unloading for off-site food delivery systems

302.026 Waste Control

- A. Outdoor waste storage areas constructed of smooth, durable, nonabsorbent material and sloped to drain.
- B. Waste receptacles of sufficient capacity to hold refuse
- C. Waste storage areas and receptacles constructed with tight-fitting lids, doors and covers and designed to facilitate effective cleaning
- D. Waste receptacles located in all areas where refuse is generated or commonly discarded
- E. Acceptable pest control measures to meet food safety standards

302.027 Manager's Office

Location

- A. Office located near receiving area with visual access to kitchen area

Size

- A. Approximately 75 to 100 square feet

Equipment

- A. Area equipped with desk, chairs, lockable file storage, clock and bulletin board
- B. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- C. Computer Workstations (See OTIS Handbook for specifications)

Communications

- A. Dedicated lines for computer and telephone

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302.028 Locker/Dressing Area

Size

- A. Approximately 75 to 100 square feet

Location

- A. Adjacent to or near kitchen area and rest room facilities

Equipment

- A. Area equipped with mirror, chairs or benches, and a full-length locker for each employee
- B. Hand sink, with proper handles and faucets, located outside rest room facilities

AREA GUIDELINES

The following are approximate space requirements for the five prototypical food service program designs:

AREAS	SQUARE FOOTAGE	COMMENTS
Preparation & Production Satellite Elementary School* On-Site Elementary School** On-Site Middle School On-Site High School High School Food Court	440-460 640-660 620-680 1420-1430 940-960	**"Satellite" refers to facilities where meals produced off-site are received and served. ***"On-Site" refers to school facilities in which meals are produced and served on-site. Production space is affected by the complexity of the menu, the degree of convenience foods used, and the amount of baking done on-site.
Serving Area Satellite Elementary School On-Site Elementary School On-Site Middle School On-Site High School High School Food Court	250-260 420-430 640-650 1120-1130 1650-1670	
Warewashing Satellite Elementary School On-Site Elementary School On-Site Middle School On-Site High School High School Food Court	225 225 260 390 390	
Dry Storage Satellite Elementary School On-Site Elementary School On-Site Middle School On-Site High School High School Food Court	80-100 190-210 300-320 440-460 520-530	Factors affecting storage include use of disposables and the number of operating days between deliveries.

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AREAS	SQUARE FOOTAGE	COMMENTS
Freezer Satellite Elementary School On-Site Elementary School On-Site Middle School On-Site High School High School Food Court	2 door reach-in 100-120 120-140 240-250 250-260	Number of days of supply affects freezer space needed. The quantity and types of USDA donated commodities received also affect storage needs.
Refrigerator/Cooler Satellite Elementary School On-Site Elementary School On-Site Middle School On-Site High School High School Food Court	2-2 door reach-ins 100-120 120-140 150-170 160-180	Cooler space is affected by the frequency of deliveries of milk and other refrigerated foods and the days of supply needed.

303 LIBRARY/LEARNING RESOURCE OR MEDIA CENTER

References:

- 2.
- 24.
- 19.
- 25.

The mission of the library/media program should be to ensure that students and staff are effective users of resources, information and ideas. All schools should contain a center which is located, designed, and equipped to facilitate the instructional programs and to enhance information literacy. This center is a space for the organization, storage, lending, and on-site use of a variety of access, information, and delivery tools. The center should be comfortable and attractive. The environment should be pleasant, and the space should be organized to permit quiet, solitary study; group interaction; easy location; inspection and use of materials; and convenient flow of traffic between areas. The success of the center will depend, to a large degree, on the organization of space and materials, the furniture, and the manner in which the center is operated. The center should be centrally located to ensure easy access. A main floor location is usually preferable. The center should be located away from noisy areas like the gymnasium and meet the acoustical standards of the Acoustical Standards of America and ASHRAE. It should also be placed so that physical expansion will be possible, if necessary. Other considerations in locating the center are (1) access from outside when other parts of the school building are closed; (2) optional uses for distance learning and virtual classes. The size of the facility should be appropriate for school enrollment and should accommodate the current collection of printed and other materials as well as anticipated acquisitions. The nature of the facility will depend on the educational level of the students although there are some common requirements which are

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unaffected by the age of the users. For instance, appropriate floor and wall coverings will ensure a low noise level. Ceilings should provide desired acoustical level; heating and ventilating outlets should be installed so that they do not interfere with shelving and so that heat flow will not damage materials; and electrical outlets should be accessible where multimedia and other equipment will be used.

303.01 Circulation Area

303.011 Space Allocation - 150 to 200 square feet

303.012 Activities
Online research, exhibits, copying equipment, electronic card catalogs, automated circulation capacity, and online periodical indexes. Provisions for computer work stations and other peripherals.

303.02 Reading/Browsing Area

303.021 Size - 30 square feet per reader

303.022 Capacity
8 to 12 percent of the total student body. Provision should be made to include a storytelling area at the elementary level.

303.023 Location
See factors mentioned in comment about this center in Chapter 3, Section 303.

303.024 Activities—Integrated media-rich learning activities
General reading, reference and research work with hard copy and online encyclopedias, books, dictionaries, maps, pamphlets, charts, globes and pictures; browsing; viewing displays; magazines; charge-out of materials; previewing non-book materials; and class instruction in the use of the library/media resources.

303.025 Equipment Space and Facilities

- A. Tables of various sizes and shapes and chairs. All furniture should be sized to the students using it.
- B. Vertical files
- C. Reference stands for dictionaries
- D. Map stand
- E. Storytelling area
- F. Informal reading area - periodicals and books; lounge-type furniture

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- G. Book trucks
- H. Wet and dry carrels
- I. Movable shelving - 5 feet, not to exceed 6 feet, high and 12 inches deep. Some deeper for reference materials
- J. Electrical outlets available. Duplex service receptacles should be installed on all walls. Sufficient branch electrical circuits service should be in each room
- K. Where there are to be specialized facilities such as language labs, study carrels, micro-teaching and television, provision should be made for electrical service in the floor.
- L. Conduits should be provided to permit future installation of computers, television and other electronic instructional devices.
- M. System conduits should be at least 1½ inches in diameter in order to provide for installation of television and other teaching devices as indicated above.
- N. Acoustical treatment in this area is essential. Use of audio devices mandates acoustical treatment of walls, ceilings, and floors in media centers and other such areas. The noise levels shall not exceed the levels that are recommended by the Acoustical Society of America (ASA).
- O. Appropriate floor covering
- P. Light control. Adequate provision for controlling the light level in instructional areas and projection area near computers is essential. For efficient use of projection-type materials, the light in the room, particularly in the area of the projection surface, should not exceed one-tenth foot candle.
- Q. For preservation of book and non-book materials and equipment, temperature and humidity control are essential. Air conditioning of media center and production area is recommended.
- R. Consult OTIS Handbook for tiered designs of technology installation.
- S. Consult with OTIS staff member for additional suggestions based on school/grade levels.
- T. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- U. Computer Workstations (See OTIS Handbook for specifications)

303.03 Director's Office

303.031 Size

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Space, depending upon size of staff, approximately 150 square feet

303.032 Location
Should be located adjacent to, and connected with, the circulation area. A glass partition should be placed in the wall between this area and the office.

303.033 Equipment Space and Facilities
A. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
B. Computer Workstations (See OTIS Handbook for specifications)

303.04 Maintenance, Repair and Distribution Area

303.041 Size - 300 to 400 square feet

303.042 Location
Readily accessible to the administration and reading/browsing areas.

303.043 Activities
Processing, maintenance, and minor repairs of book and non-book materials and equipment.

303.044 Equipment Space and Facilities:
A. Counter tops
B. Storage cabinets
C. Computers
D. Sink
E. Electrical outlets
F. Shelving

303.05 Media Production Lab - Optional

303.051 Size - 300 to 400 square feet

303.052 Location
Accessible to administration area and main building corridor.

303.053 Activities
Production of photographic, graphic, and audio materials.

303.054 Equipment Space and Facilities
A. Refrigerator
B. Sink with running water
C. Electrical outlets

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- D. Exhaust fans
- E. Standard darkroom with equipment
- F. Light control
- G. Floor drains
- H. Air conditioning
- I. Basic graphic production equipment
- J. Basic audio production equipment
- K. Presentation and copying equipment
- L. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- M. Computer Workstations (See OTIS Handbook for specifications)

303.06 Viewing/Listening/Conference Area

- 303.061 Size
150 to 200 square feet with provision for subdivision into viewing/listening or conference areas by movable walls. Provide multi-spaces for larger facilities.
- 303.062 Location
Accessible to reading/browsing area
- 303.063 Activities
Seminars and small group seminars; previewing; multimedia activities.
- 303.064 Equipment Space and Facilities
 - A. Adequate electrical outlets
 - B. Acoustical treatment
 - C. Light control of each small area
 - D. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - E. Computer Workstations (See OTIS Handbook for specifications)

303.07 Equipment Storage Area - Instructional Materials, Supplies, and Equipment

- 303.071 Size - 300 to 400 square feet
- 303.072 Design Capacity
Storage of all multimedia equipment during vacation period.
- 303.073 Location
Adjacent to work room. Limited access with provision for maximum security.
- 303.074 Activities - Storage and Circulation; Optional for wiring closet

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and cable TV access.

- 303.075 Equipment Space and Facilities
 - A. Temperature, humidity, and dust control
 - B. Locking storage cabinets
 - C. Door with lock without threshold strip - minimum 3 feet
 - D. Fire protection
 - E. 18 inch shelving
 - F. See OTIS Handbook for additional specifications

303.08 Periodical, Book and Newspaper Storage Area

- 303.081 Size - 150 to 200 square feet
- 303.082 Location
 - Adjacent to reading/browsing area.
- 303.083 Activities
 - Storage of periodicals, newspapers, books, and non-circulating materials.
- 303.084 Equipment Space and Facilities
 - A. 18 inch shelving
 - B. Work table
 - C. Temperature and humidity control as per ASHRAE 62 guidelines

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Chapter 4

EARLY CHILDHOOD/PRIMARY EDUCATION PRE K-4

400 EARLY CHILDHOOD/PRIMARY EDUCATION K-4 CENTERS

References:

2.

All schools housing early childhood/primary education programs contain general purpose instructional areas, specialized instructional spaces, auxiliary spaces, safety facilities, and service facilities. The school is carefully planned and is large enough to accommodate projected enrollments, to provide an adequate curriculum, and to maintain reasonable efficiency. Available technology is incorporated into environmental controls to provide a comfortable environment which facilitates the educational program. Where design considerations permit, the facility will be constructed in a manner that utilizes maximum natural light.

Early childhood education is the beginning of education in West Virginia public schools. The pre-kindergarten/primary education stages provide developmental activities designed to stimulate the intellectual, physical/motor and social/emotional development of the child, and begin the process of basic skills mastery. The education program in grades pre K-4 reinforces the developmental activities and continues to enhance the mastery of the skills of reading; the basic communication skills of listening, speaking, and writing; technology skills; mathematics; social studies; physical and motor development; health/safety education; science education; and creative arts education.

400.01 Size of Centers

Early childhood/primary school centers should be organized for educational programs and administrative purposes according to the following enrollments.

- A. Schools housing grades pre-K-4 should have a minimum of 110 square feet per pupil unless factors such as enrollment or architectural design permit otherwise as determined by the state superintendent of schools. Regardless of school size, the teacher-student ratio should not exceed 25 students per teacher for regular instructional spaces.
- B. Special class enrollments (such as special and early childhood education) must be considered in addition to the above figures.
- C. Centers shall be planned for a minimum of 240 students per center. Smaller centers require approval from the West Virginia Board of Education.
- D. Square footage of facilities funded by SBA will be established in accordance with SBA Guidelines and Procedures Handbook.

401 ESSENTIAL PHYSICAL AND SERVICE FACILITIES

401.01 Certain physical and service facilities, such as a multipurpose

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room, dining, assembly, and music areas, are provided in larger pre-k primary school centers. Similar facilities, modified in size and/or combined use, are provided in smaller elementary centers.

The following chart indicates the facilities considered essential to the implementation of high quality early childhood/primary education. Consideration should be given to changing various learning spaces and activity areas through the use of flexible or movable walls.

The following is an example of the number, types, and square footage of facilities that should be considered for typical K-4 school enrollments. Specific educational programming should occur for each new facility and the educational program must dictate the actual number and types of spaces provided.

Enrollment				Physical Facility
<u>240 Students</u>	<u>340 Students</u>	<u>440 Students</u>	<u>540 Students</u>	
1@150	1@150	1@150	1@150	<u>ADMINISTRATIVE</u>
1@200	1@200	1@300	1@400	Waiting
1@200	1@200	1@250	1@250	General Office
--	1@75	1@75	1@75	Work Room
1@250	1@250	1@250	1@250	Communications Room
1@180	1@180	1@180	1@180	Conference Room
--	--	--	1@150	Principal's Office
1@100	1@100	1@100	1@100	V. Principal's Office
				Supply & Book Storage
				<u>STUDENT SERVICES</u>
1@250	1@250	1@300	1@300	Clinic
1@120	1@120	1@120	1@120	Guidance
--	--	--	--	<u>ELEMENTARY CLASSROOMS</u>
				Pre-Kindergarten Classroom (optional)
2@900	3@900	4@900	5@900	Kindergarten Classroom
8@720	12@720	16@720	20@720	Primary Classrooms (Classroom area may vary if computer stations are provided within the classroom)
1@1800	1@2400	1@3000	1@3600	<u>MEDIA CENTER</u>
See Chap. 7 - Exceptional Student Instr. Areas <u>SPECIALIZED EDUCATION</u>				
--	--	1@1200	1@1200	<u>MUSIC/ART (optional)</u>

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<u>240 Students</u>	<u>340 Students</u>	<u>440 Students</u>	<u>540 Students</u>	
1@800	1@800	1@800	1@800	COMPUTER LAB and/or Distributed (See OTIS Handbook for specifications)
--	--	1@1800	1@1800	MULTI-PURPOSE (optional)
1@1200	1@1800	1@2200	1@2700	DINING ROOM
See Chap. 3, Section 302 Food Service Facilities Enrollment				KITCHEN Physical Facility
1@250	1@250	1@250	1@250	FACULTY LOUNGE
1@500	1@500	1@500	1@500	CUSTODIAL Mechanical Room (varies)
2@25	2@25	2@25	2@25	Custodial Closet
1@150	1@150	1@150	1@150	Custodian w/Rest room
1@100	1@100	1@100	1@100	STORAGE (Instructional)
4@100	6@100	8@100	10@100	Early Childhood
1@130	1@130	1@130	1@130	Elementary Education
--	2@100	2@100	2@100	Media Center
2@175	2@175	2@175	2@175	Music/Art
1@175	1@175	1@175	1@175	Multi-purpose
				Dining
1@120	1@120	1@120	1@120	STORAGE (Non-Instructional)
1@175	1@175	1@175	1@175	Administrative
1@200	1@200	1@200	2@200	Central Storage
				Outdoor Storage
1@25	1@25	1@25	1@25	REST ROOMS (consult code)
2@20	2@20	2@20	2@20	Student Services
8@20	12@20	16@20	20@20	Early Childhood
2@40	2@40	2@40	2@40	Elementary Education
2@150	2@200	2@200	2@200	Faculty
				Public

The above program of spaces provides the net program area for the example shown. Building circulation, wall thicknesses, and other required area should be incorporated into the building area to arrive at the gross building area required in the total facility.

402 KINDERGARTEN

402.01 Size

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Base the preliminary determination of early childhood education areas upon the allotment of 50 square feet per child.

- 402.02 Design Capacity - 20 students (5 year old students)
- 402.03 Location
- A. On ground floor with easy access to an entrance not generally used by older children. Corner areas are also preferable to permit the development of separate, enclosed, and secure play areas.
 - B. Direct access to segregated outdoor play area that contains a large grassy area with climbing equipment, obstacle course and garden area, and adequate storage for equipment.
 - C. Area of the building which permits maximum natural light.
- 402.04 Activities
- Major learning activities include: Units of work on areas of immediate interest, physical education, conversation, discussion, listening and viewing activities, and creative activities with various media.
- 402.05 Equipment Space and Facilities
- A. Work areas
 1. Deep sink equipped with mud trap, hot and cold water
 2. Waterproof counter top - 2 square feet per student with open/enclosed shelving beneath. Counter height to accommodate 5 year old children.
 3. Grounded duplex electrical outlets at 3 feet intervals over counter top. NOTE: Avoid placing over sink.
 - B. Instructional space and storage area for activities related to: art, science and nature, music and rhythmic, language development, creative play, crafts and construction.
 - C. Pupil storage area (storage for personal belongings)
 - D. Rest room facilities (within the early childhood area) and self contained separate drinking fountains
 - E. Display space - screen/access to display projection unit.
 - F. Provide light control facilities (e.g., dimmer switches and blackout drapes for audiovisual media work)
 - G. Special consideration should be given to the HVAC system design to remove cold air from the floor during the heating season.
 - H. Acoustically treated to protect instructional areas from outside noises
 - I. Appropriate floor covering
 - J. Adjustable student tables and chairs of appropriate height, easily joined or separated

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- K. Teacher's combination desk/table and chair
- L. Large wall clock
- M. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- N. Computer Workstations (See OTIS Handbook for specifications)

403 GENERAL INSTRUCTIONAL AREAS - PRIMARY (*grades 1-4*)

- 403.01 **Size**
Base preliminary determination of area upon the allotment of 28 to 30 square feet per student. To accurately determine the area needed, trial layouts should be made using scaled templates representing furniture and equipment on scaled drawings of floor and wall elevations.
- 403.02 **Design Capacity - 25 students**
- 403.03 **Location**
 - A. Acoustically treated to protect instructional spaces from outside noise
 - B. Convenient access to outdoors, particularly to recreational and physical education areas
 - C. If the building is a multiple-story structure, the first grade shall be assigned to the ground level floor
- 403.04 **Activities**
General learning areas may support a variety of activities including individual study and work, group interaction, lectures, reading, writing, demonstration, and movement. These spaces will accommodate a variety of audiovisual and teaching equipment for both group and individual use.
- 403.05 **Equipment Space and Facilities**
Ample space, movable furniture and equipment and well-designed storage areas are essential.
 - A. Marker boards, bulletin boards and other display areas - as much as possible, a minimum two-thirds of available wall space
 - 1. Marker boards and bulletin boards should have map rails installed above
 - 2. The bottom of the display area should be at the eye level of the student when seated
 - B. Student storage/lockers
 - C. Storage space (may be separate room)
 - 1. Open and closed adjustable shelving of various heights and depths for a variety of sizes of construction paper, charts, and large format books - 30 linear feet of each

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2. Storage for teacher's personal belongings
 3. Filing space for instructional material and supplies equivalent to 4-drawer, legal size file cabinets
- D. Work counter - see Chapter 4, Section 402.05
- E. Teacher's combination desk/table and chair
- F. Conference-type table and chairs
- G. Adjustable desks and chairs, or combination chair-desks
- H. Desirable equipment
1. Corridor display cabinet for students' work
 2. Rack for storage of periodicals pertaining to subject matter being taught
 3. All major types of audiovisual equipment should be readily available within classroom or in the nearby media center
- I. Adequate provision for controlling the light level in instructional areas is essential. For efficient use of projection-type materials, the light in the room, particularly in the area of the projection surface, should not exceed one-tenth footcandle.
- J. Duplex electric receptacles should be installed on all walls of the instructional space for the use of instructional equipment. Sufficient branch electrical circuits service should be in each room. Conduits should be provided to permit installations of network computer drops, television, and other electronic instructional devices. System's feeder conduits should be at least 1½ inches in diameter in order to provide for installation of television and other teaching devices as indicated above. Individual point of service drops should be ¾ to ½ inches.
- K. A projection surface should be permanently installed in each instructional area with provision for eliminating keystoneing.
- L. Use of audio devices mandates acoustical treatment of walls, ceilings, and floors in instructional areas and media centers, particularly in classrooms where many activities are occurring simultaneously.
- M. Appropriate floor covering
- N. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- O. Computer Workstations (See OTIS Handbook for specifications)

404 PRE-KINDERGARTEN (Optional)

- 404.01 Size
Base the preliminary determination of early childhood education areas upon the allotment of 50 square feet per child.
- 404.02 Design Capacity - 20 students

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- 404.03 Location
- A. On ground floor with easy access to an entrance not generally used by older children. Corner areas are also preferable to permit the development of separate, fenced-in play areas.
 - B. Direct access to segregated outdoor play area that contains a large grassy area with climbing equipment, obstacle course and garden area, and adequate storage for equipment.
 - C. Area of the building which permits maximum natural light.
- 404.04 Activities
- Major learning activities include: Units of work on areas of immediate interest, physical education, conversation, discussion, listening activities, and creative activities with various media.
- 404.05 Equipment Space and Facilities
- A. Work areas
 - 4. Deep sink equipped with mud trap, hot and cold water
 - 5. Waterproof counter top - 2 square feet per student with shelving beneath. Counter height to accommodate 5-year-old children.
 - 6. Grounded duplex electrical outlets at 3 feet intervals over counter top. NOTE: Avoid placing over sink.
 - 4. Facilities for hanging mobiles from ceiling.
 - B. Instructional space and storage area for activities related to: art, science and nature, music and rhythmic, language development, creative play, crafts and construction.
 - C. Storage for student's personal belongings.
 - D. One toilet facility per 15 students and drinking fountains.
 - E. Display space - movie screen/access to microcomputer display projection unit.
 - F. Provide light control facilities (e.g., dimmer switches and blackout drapes for audiovisual media work)
 - G. Special consideration should be given to the HVAC system design to remove cold air from the floor during the heating season.
 - H. Acoustically treated to protect instructional areas from outside noises
 - I. Material flooring combination of carpeting and resilient material
 - J. Movable adjustable student tables and chairs of appropriate height, easily joined or separated
 - K. Teacher's combination desk/table and chair
 - L. Large wall clock
 - M. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - N. Computer Workstations (See OTIS Handbook for specifications)

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405 MULTIPURPOSE ROOM

A multipurpose room is to be included. It should be based upon the amount of time required for the separate program activities to be housed.

- 405.01 **Size**
Base preliminary determination of multipurpose room area on the allotment of six to eight square feet per student enrolled in the school. Allow 12 to 15 square feet per student for dining. Allow approximately 65 square feet per student for physical education with 25 students per session.
- 405.02 **Design Capacity**
To be determined by school plant specialists.
- 405.03 **Activities**
To be determined on the basis of the school's program. Consideration should be given to providing a clear height from 20 to 24 feet if the room is used for such activities as basketball.
- 405.04 **Location**
A. Removed from quiet areas of the building by location and/or acoustical treatment
B. Direct access to outdoor physical education or recreation areas
C. Convenient access to public parking areas
D. Direct access to service drive
E. If used for dining purposes, locate adjacent to kitchen serving area.
- 405.05 **Equipment Space and Facilities**
- 405.051 **Stage - Optional**
 A. Provide 500 square feet of permanent or portable platform area. Consideration should be given to staging "in the round."
 B. Two entrances to the stage, one direct from the building corridor. Entrances to be double door size.
 C. Stage location should be one which makes instructional spaces accessible for use as stage dressing rooms.
 D. Proscenium opening should be approximately ½ the width of the body of the multipurpose room.
 E. Stage curtains of fire resistant materials, portable or permanent acoustical paneling, and cyclorama and video projection screens should be part of the stage equipment.
 F. Lighting facilities with controlled illumination.
 G. Grounded duplex electrical receptacles - 5 to 10 -

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should be provided in the stage area.

- H. Storage for electronic and stage equipment.
- I. Every stage equipped with rigging for movable theater-type scenery and every enclosed platform larger than 500 square feet in area shall have a system of automatic sprinklers in accordance with the state fire code.
- J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)

405.052 Chair and Table Storage

- A. Area as needed for storage of tables and chairs used for dining purposes
- B. Provision of ample space to accommodate assembly chairs stored on trucks

405.053 Equipment Storage

- A. Approximately 200 square feet with convenient access to the outdoor physical education area and direct access to multipurpose area
- B. Provide double doors with flush threshold
- C. Shelving and cabinets for storage of miscellaneous types of physical education and other equipment

405.054 Public Rest Rooms

- A. If pupil rest rooms are not conveniently accessible for public use, 2 rest rooms of approximately 50 square feet each should be provided.
- B. Rest rooms must conform to ADA regulations

406 FOOD SERVICE FACILITIES

See Chapter 3, Section 302.

407 ADMINISTRATIVE AND SERVICE FACILITIES

See Chapter 3, Section 301.

408 ENGINEERING AND CUSTODIAL FACILITIES

See Chapter 12.

409 FACILITIES FOR EXCEPTIONAL STUDENTS

All schools having education programs for exceptional students shall provide adequate space designed to facilitate main-streaming and equal access for all students and teachers. All facilities for special education are contained within the building. Facilities are designed to assist students to function safely with as much mobility as possible and are accessible to handicapped students.

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Facilities which house self-contained classes or other specialized facilities required for all exceptions are designed, furnished, equipped, and maintained to facilitate the program requirements set forth in the individualized education program. See Chapter 7, Exceptional Students - Instructional Areas, to determine which programs can best be provided in specialized facilities.

410 ART FACILITIES - Optional

Consideration may be given to providing multi-use space for the instruction of art and music, art and science, and art and social studies.

- 410.01 Space allotment of 45 to 50 square feet per child with movable tables and chairs. Table dimensions no less than 36 inches x 60 inches for each 4 students. Art room should be located on the ground floor.
- 410.02 Equipment Space and Facilities
- A. 2 deep sinks, each with extra large drain, clean-out trap, and long drainage top - stainless steel recommended
 - B. Uncarpeted floor of concrete, tile, linoleum, or other material not easily damaged by paint and clay
 - C. Counter space equivalent to the length of at least one wall
 - D. Closed-in storage shelves under counter - 6 or more drawers of built-in or movable storage space for flat pictures, at least 20 inches x 40 inches - storage cabinets and/or display boards on wall above counter
 - E. Adjacent storage room with shelves for art supplies - space allotment of 250 to 350 square feet
 - F. At least one Marker board, movable or stationary
 - G. Bulletin boards - 30 linear feet recommended. Movable display panels are also recommended. (Recommended for hallways and general areas: glass enclosed display space and movable display cabinets.)
 - H. Electrical outlets, 12 or more, located conveniently to working area
 - I. Audiovisual facilities may be separate, or combined with art room. These require blackout curtains and projection facilities.
 - J. Ceilings should be equipped with facilities for hanging mobiles.
 - K. Art appreciation corner with facilities for rotating display of two and three dimensional objects and related library materials. Recessed wall-display cabinets are desirable, but not essential.
 - L. Mechanical ventilation systems are utilized in the art rooms to handle fumes, dust, odors and gases from turpentine, lacquer thinners, acids, toxic markers, and clays. Special areas such as kiln rooms, dark rooms, pug mills, burnout

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- kilns, and acid areas require additional specific ventilation.
- M. Provision for ceramic kiln
- N. If this space functions as a multi-use space, provide lockable storage for each academic area.
- O. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- P. Computer Workstations (See OTIS Handbook for specifications)

410.03 Location - Ground Floor location

410.04 Art facilities for small schools which have no special art room must include storage space for consumable art supplies, materials and equipment, and an arts and crafts corner.

410.041 Arts and Crafts Space

- A. At least one sink, preferably deep, with long drainboard, large drains and clean-out trap - stainless steel recommended.
- B. Built-in counter with Formica top and closed-in storage shelves beneath - at least 8 feet in length. This may double as work space or drying area for unfinished work.
- C. Display board or bulletin board, 12 linear feet or more
- D. Uncarpeted floor area of tile, linoleum, or other material not easily damaged by paint and clay
- E. Storage for art supplies in closet, case, or small storage room
- F. At least 2 electrical outlets, adjacent to work area

410.042 Art Appreciation Corner

Equipped with glassed-in display case with shelves for crafts; wall space for displaying two-dimensional work. Should also accommodate a section for library materials in the form of built-in shelves or portable unit.

411 LIBRARY/LEARNING RESOURCE OR MEDIA CENTER

See Chapter 3, Section 303.

412 MUSIC FACILITIES - Optional

See Chapter 4, Section 410.

Physical and spatial requirements for music education obviously exceed the capacity of the conventional classroom. Spaces for individual and group vocal and instrumental instruction and rehearsal are necessary. The size, quality, and number of these spaces will be determined by the enrollment and the educational level of the school, the scope of the music program, and the degree

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of encouragement offered music education by the administration and the community.

A good location for the music room is in a wing of the building close to the stage or multipurpose room. Physical isolation should be sought to reduce the transmission of sound to other areas of the building. Practice rooms may be separated acoustically from the rehearsal room by placing storage rooms or walls having dead air space between them. It is important that the facility be arranged for supervision of all practice and storage rooms. Also, the temperature and humidity of instrument storage rooms must be maintained at acceptable levels.

412.01 This facility shall be large enough to accommodate physical movement and daily use of "classroom/general music" instruments for teaching general music and a facility for elementary instrumental music class instruction.

412.011 Size
400 cubic feet per student; ceiling 14 to 16 feet high. Allow space for design capacity of 25 students.

412.012 Location
A. Direct access to instrumental storage
B. Isolated area of building

412.013 Activities
Instruction in instrumental and classroom/general music

412.014 Equipment
A. Stereo sound reproduction and recording equipment
B. Piano and bench
C. Classroom instruments
D. Marker board, 30 linear feet
E. Folding chairs
F. Music stands
G. Filing cabinets - legal size
H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
I. Computer Workstations (See OTIS Handbook for specifications)

412.02 Office Space for Planning or Studio Teaching

412.021 Size
250 to 350 square feet - 8 to 12 students

412.022 Design Capacity
Accommodate small group

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- 412.023 Location
Convenient to music room
- 412.024 Equipment
- A. Desk and chair
 - B. Filing facilities
 - C. Marker board
 - D. Work table and chairs
 - E. Storage for tapes and records
 - F. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - G. Computer Workstations (See OTIS Handbook for specifications)

412.03 Storage Space for Instruments, Equipment and Music

- 412.031 Size
Approximately 150 square feet. Secure room with shelving to accommodate stringed instruments, classroom instruments, and legal size filing cabinets.

413 COMPUTER LAB

Whenever feasible, the use of technology in education will be integrated within the individual classroom, but there is a need for a demonstration/large group/small groups laboratory to house equipment that may be utilized by all teachers and students. This laboratory will provide applications of educational technology by exploring and utilizing hardware, software, and other computer peripherals to meet the instructional goals and objectives, technology and SCANS skills, and career awareness. The lab should be equipped with a data projector; and access to the Internet to also allow for virtual classes. Ideally, the middle school instructional technology facility consists of one large room with an option to have a raised-tiered platform area for student workstations and an adjacent storage/control room. This facility may also be used for large group instruction.

- 413.01 Size - 40 square feet per student
- 413.02 Design Capacity - 25 students
- 413.03 Location
Provide sufficient labs for use by each curriculum area. Core group for smaller facilities and a minimum of one lab for each curriculum area in larger facilities.
- 413.04 Activities
Active use of computer applications related to the curriculum.
- 413.05 Equipment Space and Facilities

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- A. 30 inches x 48 inches computer work stations - 20
- B. 30 inches x 60 inches host station - 1
- C. Time-sharing printer stations - 4
- D. Storage cabinets for disks and paper
- E. Teacher's combination desk-table and chair
- F. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- G. Computer Workstations (See OTIS Handbook for specifications)

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Chapter 5

MIDDLE CHILDHOOD/JUNIOR HIGH EDUCATION 5-8

500 MIDDLE CHILDHOOD/JUNIOR HIGH EDUCATION 5-8 CENTERS

Reference:

- 2.
- 24.
- 19.

Middle childhood education builds upon the results of early childhood education and provides educational opportunities to help students extend competence in basic skills; develop self-understanding, self-knowledge, independence and interdependence; and engage in exploratory experiences in academic areas and career education. In addition, enrichment studies are provided for a broad range of potential growth options. Middle childhood education serves learners during the 10-14 years age range. In this age range, students have rapid changes in physical growth and social and intellectual development and maintain or establish new values, attitudes, and beliefs which influence their decisions to remain in or drop out of school. The middle childhood education program emphasizes extension of basic skills, broadening of academic skills to assist students in making the transition from childhood dependence to adult independence, and opportunities for exploration.

500.01

Size of Centers

An educational facility should be large enough to take advantage of reasonable economies of operation, comfortably accommodate the inhabitants, and support the educational program. Other factors such as density of population, availability of sites, and transportation should be considered in determining the size of the facility.

- A. All middle/junior high schools have a minimum allotment of 120 square feet per student, unless factors such as enrollment or architectural design permit otherwise as determined by the WVDE.
- B. The size and type of facility will be determined by the number of students and the instructional program.
- C. Centers (5-8 organizational pattern) shall be planned for a minimum of 600 students (85% utilization). Smaller centers or combination K-8 centers require approval from the WVDE. See Chapter 1, Section 100.016.
- D. Square footage of facilities funded by SBA will be established in accordance with SBA Guidelines and Procedures Handbook

501 PLANNING PROCESS

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- 501.01 Middle school programs and facilities to accommodate such programs are the result of careful, complete, and creative planning.
- 501.02 Closely coordinated planning will include factors such as the school's role in the community, the characteristics of students, how students learn most effectively, the physically disabled, and what constitutes the total coordinated program of learning in the middle/junior high school. Consideration should be given to changing various learning spaces and activity areas through the use of folding or movable walls.
- 501.03 Educational specifications shall be prepared to include a careful computation of room, area, and building capacity as required to offer programs of study as outlined in the Master Plan, WVBOE Policies 2510 and 2520. Additional educational specification requirements can be found in the SBA Guidelines and Procedures Handbook for new schools or schools with major additions funded by the SBA.
- 501.04 Departmentalization, specialization of instructional spaces, elective subjects, and scheduling are factors to be considered in determining the number of teacher stations.

NOTE: The following formula considers only the number of students; none of the above are considered.

- A. The number of teaching stations needed may be determined by applying the following formula to each subject area. (If general purpose instructional spaces are considered interchangeable for different subject areas, the calculation may be made for a group of subject areas.)
- B. The basic formula:

$$\begin{array}{r}
 \text{Number of} \\
 \text{Teaching Stations} = \frac{\text{Number of students enrolled in subject} \times \text{Number of periods per week in subject}}{\text{Desired average class size} \times \text{Number of periods per week each teaching station can be used}}
 \end{array}$$

- 501.05 The student capacity of a school building is affected by the educational program; it changes each time the program is modified. A more complete analysis of the operational capacity of proposed school buildings may be obtained by referring to:
 - A. Conrad, M.J., *A Manual for Determining the Operating Capacity of Secondary Schools*. Bureau of Educational Research and Service, Ohio State University.

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- B. Castaldi, Basil, *The Castaldi Nomogram*. The New England School Development Council.

- 501.06 In recent years, middle/junior high education has undergone considerable experimentation and change in four areas: School organization, curriculum design, teaching methods, and school community relations. Included in these are:
- A. Computer network
 - B. Use of large group, small group, and individual instruction
 - C. Use of programmed instruction with or without teaching machines
 - D. Use of distance learning and related media

502 GENERAL PURPOSE (ACADEMIC) CLASSROOMS OR INSTRUCTIONAL AREAS

Rooms should be designed to serve specific needs of language arts, foreign language, mathematics, social studies, and certain other subject areas. They should also be designed to permit interchanged use as the educational program demands.

- 502.01 **Size**
Base preliminary determination of area upon allotment of 28 to 30 square feet per student. For example: 700 to 750 square feet of floor area should be planned for 25 students in an instructional space. To more accurately determine the area, trial room layouts should be made using scaled templates representing furniture and equipment and scaled floor and wall elevation drawings.
- 502.02 **Design Capacity - 25 students**
- 502.03 **Location**
- A. Close proximity to the media center
 - B. Location which will permit easy expansion
 - C. Isolation from noisy areas of the building
- 502.04 **Activities**
Speaking; laboratory drills; lecture; group discussion; viewing slides, videos and other projected materials; listening to recordings and broadcasts; doing assignments on marker boards or at desk and/or tables; displaying students' work; storing instructional materials and supplies; demonstrations; and lab activities, where stations with individual assignments are to be done with manipulative materials or computer equipment.
- 502.05 **Equipment Space and Facilities**
- A. Marker boards, bulletin boards, and other display areas - a minimum of two-thirds available wall space
 - 1. Marker boards and bulletin boards with map rails

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- installed above
- 2. Bottom of display area should be at eye level of student when seated
- B. Student wardrobe
- C. Storage
 - 1. Storage for teacher's for personal belongings
 - 2. Storage for teaching aids and supplies
 - a. Closed and open shelving
 - b. 4-drawer filing space
- D. Teacher's combination desk-table and chair
- E. Conference-type table and chairs
- F. Desks and chairs, or combination chair-desks
- G. Desirable equipment
 - 1. Corridor display cabinet for students' work
 - 2. Rack for storage of periodicals pertaining to subject matter being taught
 - 3. All major types of audiovisual and technology equipment should be readily available within classroom or the nearby media center
- H. Adequate provision for controlling the light level in instructional areas is essential. (For efficient use of projection-type materials, the light in the room, particularly in the area of the projection surface, should not exceed one-tenth footcandle.)
- I. Duplex service receptacles should be installed on all walls of the instructional space for the use of instructional equipment. Sufficient branch electrical circuits service should be in each room. Conduits should be provided to permit future installations of network computer drops, television, and other electronic instructional devices. System conduits should be at least 1½ inches in diameter in order to provide for installation of television and other teaching devices as indicated above.
- J. Where there are to be specialized facilities, such as language labs, study carrels, micro-teaching, and television, provision should be made for electrical service in the floor.
- K. A projection surface should be permanently installed in each instructional area with provision for eliminating keystoneing.
- L. Use of audio devices mandates acoustical treatment of walls, ceilings, and floors in instructional areas, media centers, and other such areas, particularly in open-type classrooms where many activities are occurring simultaneously.
- M. Appropriate floor covering
- N. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- O. Computer Workstations (See OTIS Handbook for specifications)

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503 CORRECTIVE/REMEDIAL INSTRUCTIONAL AREAS - Optional

Specialized facilities in the form of small or specially equipped instructional areas are provided in each facility. Facilities should be designed to serve corrective/remedial needs of language arts, foreign language, mathematics, social studies, and certain other subject areas.

- 503.01 **Size**
Base preliminary determination of area upon an allotment of 28 to 30 square feet per student. For example: 420 to 450 square feet of floor area should be planned for 15 students in an instructional space. To more accurately determine the area, trial room layouts should be made using scaled templates representing furniture and equipment and scaled floor and wall elevation drawings.
- 503.02 **Design Capacity - 15 students**
- 503.03 **Location**
A. Close proximity to the media center
B. Location which will permit easy expansion
C. Isolation from noisy areas of the building
- 503.04 **Activities**
Speaking; laboratory drills; lecture; group discussion; viewing slides, videos, and other projected materials; listening to recordings and broadcasts; doing assignments on marker boards, or at desk and/or tables; displaying students' work; storing instructional materials and supplies; demonstrations; and lab activities where stations with individual assignments are to be done with manipulative materials or computer equipment.
- 503.05 **Equipment Space and Facilities**
See Chapter 5, Section 502.05.

504 ART FACILITIES

Art facilities should accommodate the studio and classroom activities of a full art program. Basic to all activities would be space allotment, natural and artificial light, movable furniture or furnishings, display space, several kinds of storage space, deep sinks with clean-out traps, and adequate electrical outlets.

- 504.01 **Size**
Studio, approximately 1,000 square feet or the equivalent, exclusive of storage. Provide one room for every 150 art students enrolled.
- 504.02 **Capacity - Recommended class size for studio activities is 25 students**

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- 504.03 Location - Pertinent factors
- A. Accessibility for consumable materials; ground floor location preferred
 - B. Need for uncarpeted floor in studio areas. Floors should be of concrete, tile, linoleum, or other material not easily damaged by paint or other chemicals
 - C. Good lighting, both natural and artificial. Natural light is important for many activities and essential for painting.
 - D. Space should contain, or be accessible to, facilities for the use of slides and video - blackout curtains, projection facilities, and chairs equipped with tablet arms.
 - E. Power tools and equipment may be borrowed from or shared with industrial arts area, subject to local policy.
 - F. Provide power ventilation for removal of fumes, dust, odors and gases from turpentine, lacquer thinners, acids, and toxic markers that meets ASHRAE standards.
- 504.04 Activities
- Basic - drawing, painting, sculpturing, ceramics, design, art history and appreciation, and crafts.
- 504.05 Equipment Space and Facilities
- A. Sink and work-counter units
 - 1. Hot and cold water with mixing faucets
 - 2. No less than 2 deep sinks of stainless steel with long drainboards
 - 3. Large drains and clean-out traps
 - 4. Long counter for mixing paints and other activities
 - 5. Storage for mixing pans, water jar, and brushes (under sink and counter)
 - B. Special storage for:
 - 1. Drawing boards
 - 2. Shelves for storage of flat work, a minimum of 28 inches x 40 inches - may be built in or movable
 - 3. Prints - similar to above
 - 4. Audiovisual materials and special books
 - 5. Tools used in construction
 - 6. Unfinished work
 - C. Marker board - at least 6 linear feet
 - D. Bulletin boards - all available wall space - at least one full wall
 - E. Display facilities for projects, glass covered in studio and hall
 - F. Work benches, tilt-top tables, and easels as selected by instructors, movable to permit flexible grouping, with accommodations for:
 - 1. Teachers' desk and storage area
 - 2. Provision for hanging mobiles from ceiling
 - G. Doorway opening at least 42 inches wide

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- H. Duplex outlets along wall spaces and above work counter - no less than 12
- I. All electric and gas kilns hooded and mechanically ventilated when in use
- J. A ceramic kiln co-located with each general art classroom
- K. A combustible storage cabinet properly ventilated
- L. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- M. Computer Workstations (See OTIS Handbook for specifications)

504.06 Storage Room
300 to 400 square feet, to include shelves for paper, paints, and supplies; also for unfinished work which cannot be stacked, such as wet paints, prints, and ceramics. Special shelf in studio or storage room for unfinished constructions, at least 20 linear feet.

505 BUSINESS EDUCATION FACILITIES

505.01 All Purpose Business Education Room
This room would be needed for a small school (up to 150 business students per day) with only one business teacher. Therefore, it is necessary to provide adequate space to store, maintain, and use a vast amount of equipment and supplies. The room consists of the following:

- A. Equipment oriented instructional lab area for courses such as Business Computer Applications and Keyboarding
- B. Multipurpose classroom instructional area for courses such as Introduction to Business and Marketing, Bookkeeping, and Business Math
- C. Storage for teaching materials, supplies, and student references
- D. Teacher's desk and demonstration center
- E. Convenient outlets on walls above the work area should be installed.

505.011 Size
1200 to 1400 square feet - 60 to 70 square feet per student

505.012 Design Capacity - 25 students per session

505.013 Location
In the central core of the building

505.014 Activities
Lecture, small group or class discussions; view videos and other projected materials; conferences of small groups of students; display student projects or work; store partially completed student projects; store instructional supplies;

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listen to recordings or broadcasts; view telecasts; write and transcribe notes; operate keyboarding equipment/computers and other business equipment.

- 505.015 Equipment Space and Facilities
- A. Bulletin board - 10 linear feet
 - B. Electrical convenience outlets on each wall
 - C. Calculators
 - D. Storage (lockable) for instructional supplies
 - E. Storage for instructor's personal belongings
 - F. Lockable, legal size file drawers - 16
 - G. Closed book shelving - 10 to 12 linear feet
 - H. Plain paper copier
 - I. Projection equipment (overhead, LCD panel, data projector, and screen)
 - J. Letter quality and laser printers
 - K. Marker board - 40 to 42 linear feet
 - L. VCR and monitor
 - M. Provisions to darken room
 - N. Adjustable classroom furniture (desks and chairs)
 - O. Instructor's desk and chair
 - P. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - Q. Computer Workstations (See OTIS Handbook for specifications)

506 FAMILY AND CONSUMER SCIENCES (FACS) FACILITIES

The middle school family and consumer sciences facility consists of one large multipurpose room with adequate space to carry out a comprehensive curriculum. The facility should be designed to allow students to actively explore areas not limited to, but including good nutrition, wellness, textiles, housing, consumer education, personal development and family relationships, and careers. The facility should encourage group work, project-based learning, and problem solving.

- 506.01 FACS instructional size and space
Ideally the middle school FACS facility consists of one large multipurpose room with adequate space to carry out a comprehensive curriculum.

Description of Facility	Space - Sq.Ft.	Design Capacity
One multipurpose room should provide 60-70 square feet per student (recommended 25 students per class). A peripheral arrangement of fixed equipment or furnishings	60-70 per student	25

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extending into the room promotes flexibility in the use of space. Equipment is arranged in relation to point-of-use to prevent congestion. Five feet is allowed between tables for students to pull out chairs and be seated and to permit instructor supervision.

Teacher Conference/Office Area 100-150

TOTAL SQUARE FEET 1600-1900

506.02 Design Capacity - 25 students (Lab); 25 students (Classroom)

506.03 Location
Facilities should be located on the ground floor, preferably near an outside entrance for:

- A. Convenient delivery of groceries and instructional materials
- B. Convenient installation and removal of large equipment
- C. Easy accessibility for physically handicapped persons
- D. Easy accessibility for parents and other visitors

FACS facilities may be placed near social studies instructional spaces, science laboratories, and art centers to facilitate coordination of subjects.

506.04 Activities
Viewing videos and other projected materials; class discussions; lectures; demonstrations; individual, small or large group activities such as career and technical organization activities; selecting, planning, implementing, and evaluating varied student projects; preparation of teaching materials and planning of program activities.

506.05 Equipment Space and Facilities

- A. Multipurpose tables - 28x42x60- minimum of 5 feet between tables
- B. Multipurpose chairs - 1 per student
- C. Provisions made for blinds, shades, and/or draperies at the windows to control classroom light levels. For efficient use of projection-type materials, the light in the room should not exceed one-tenth footcandle.
- D. Electrical needs
 1. A separate electric control panel for the facility located in or adjacent to the FACS department.
 2. Sufficient grounded electrical outlets located near the point-of-use to accommodate use of many pieces of equipment at one time.
 3. Ample switches and outlets provided on each wall in each room

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- E. Plumbing needs
 1. Adequate and properly located plumbing connections provided for the equipment as per the National Plumbing Code
 2. Continuous supply of hot and cold water provided; separate hot water heater and water softener may be needed
- F. Sufficient space provided for easy movement of students and instructor
- G. Major floor area of each room free of heavy or permanently fixed equipment to allow for flexible room arrangement
- H. Doors placed to prevent interference with traffic patterns
- I. Marker boards, bulletin boards, and other display areas - a minimum two-thirds of available wall space - at least 8 linear feet of Marker board and 15 square feet of bulletin board space per room
- J. Projection surface permanently installed in each instructional area
- K. Tables and chairs for seating of entire class - can be rearranged for small or large groups and for demonstrations as needed
- L. Storage needs - Both general storage and storage within the instructional areas are provided. The two most commonly used types of storage arrangements are: (1) the separate storage room and (2) cabinets and/or open shelves within the classroom. Some advantages to the separate storeroom are: leaves more wall space within the classroom and frees floor space for flexible arrangement when items not in use are placed in the storeroom. A combination of the two types is desirable with a separate room for storage of large equipment which is not used frequently and cabinets in the classroom for student items, small equipment, and frequently used teaching materials.
 1. Shelving conveniently spaced and/or adjustable to fit the size and shape of equipment to be stored, such as portable sewing machines, reference books, audiovisual equipment, and small equipment items
 2. Drawers of a depth to serve the materials or equipment to be stored
 3. Mobile base cabinets providing additional work space and allowing for more flexibility in room arrangement
 4. Heavy articles stored at a carrying level
 5. Movable trays or pullout sections used instead of shelves to facilitate removing articles
 6. Total amount of storage space expanded by using items such as "lazy susan" shelves, divided drawers, vertical shelves, and stair-step shelves
 7. Closed storage space provided for items that need to

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- be protected, are not used frequently, or may detract from the appearance of the room
8. Cabinets with locks provided for storage of items such as electrical appliances, portable sewing machines, food, and audiovisual equipment
 9. Storage units located near the department's entrance for temporary storage of students' books and personal belongings
 10. Storage space provided for cleaning supplies and equipment
- M. Teacher/conference area - located in a designated area of the all-purpose room.
1. Teacher's desk and chair
 2. Lockable storage for teachers' belongings
 3. Open and closed adjustable shelving - minimum 30 linear feet
 4. 4 drawer file cabinet
 5. Electrical outlet by each teacher's desk
- N. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- O. Computer Workstations (See OTIS Handbook for specifications)

506.06

- Nutrition and Foods Specialized Equipment and Facilities
- A. At least two kitchen units arranged in patterns (U-type, L-type, one wall, island, corridor) to simulate home conditions. One should be planned for demonstration purposes and include an adjustable overhead mirror. Kitchen units are arranged for easy supervision by the teacher. Upper peninsular cabinets and range hoods that block the teacher's view are avoided.
1. Each unit kitchen consists of: double sink, range, base and wall cabinets, and 10-12 linear feet of work surface, excluding sink and range
 2. 24 to 30 inches of base cabinets recommended at the left of each range and left and right of the sink; also allow space for mixing centers
 3. Sink located between range and mixing centers in each unit
 4. Waste disposal included in one unit
 5. Dishwasher included in one unit
 6. 24 to 30 inches of counter work space provided for each student working in a unit kitchen. Adequate storage for basic equipment and supplies located in each kitchen unit with special equipment and food supplies located nearby.
 7. Exhaust ducts and/or range hoods with fans to pull odors and fumes out of the room.
- B. At least one 48 inches x 72 inches cabinet with adjustable

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shelves needed for storing extra supplies, equipment, and classroom materials

- C. Use of non-porous floor covering and finish for walls in unit kitchens
- D. Minimum of 3 electrical outlets per kitchen unit needed
- E. Refrigerator, with freezer compartment, accessible to kitchen units - 24 to 36 inches of counter space provided adjacent to the latch side of the refrigerator
- F. Microwave oven - 1 or 2
- G. Fire extinguisher, blanket, and first aid kit

506.07 Laundry Area

- A. Stackable automatic washer and electric dryer, with dryer vent recommended to be exhausted to the exterior
- B. 36 inches of counter space
- C. Base and wall cabinet for storage
- D. Located in a space which allows for class demonstrations

506.08 Textiles/Clothing/Housing Area

- A. One portable sewing machine per 3 students, which must be stored when not in use.
 - 1. Each sewing machine and chair/stool provides a minimum of 3 feet for pull out space
 - 2. Facility planned so that sewing machines can be stored when not in use to free space for multiple uses
 - 3. Grounded electrical outlet available for each machine
- B. Pressing areas - one for each 10 students. These include:
 - 1. Ironing boards
 - 2. Steam irons
 - 3. Grounded electrical outlet in each pressing area
- C. Lockable storage
 - 1. Cabinets for tote trays located near the entrance. One tote tray per student - 4 3/4 inches x 12 inches x 18 inches. Top of upper tote tray should not be more than 60 inches from the floor.
 - 2. Cabinets or walk-in closet for the storage of equipment, samples, portable machines, and other materials and supplies.

507 FOREIGN LANGUAGE FACILITIES

Factors influencing the type of foreign language facility to be chosen include the type of laboratory facility desired. Laboratory facilities can be an electronic classroom, a language laboratory into which students are scheduled from classes held in general purpose classrooms, or general purpose classrooms adapted for foreign language study.

507.01 Electronic Classroom

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- 507.011 Size
35 square feet per student, exclusive of storage space
- 507.012 Design Capacity
Allow five percent more stations - maximum class size 25.
- 507.013 Location
Near media center, and isolated from noisy areas of building, and meets ASHRAE and ASA standards.
- 507.014 Equipment Space and Facilities:
- A. Marker board - minimum of 20 linear feet; display and map rail above
 - B. Bulletin board - minimum of 10 linear feet; display and map rail above
 - C. Storage
 - 1. Teacher's storage for personal belongings
 - 2. Closed and open shelving - minimum of 24 linear feet of each
 - 3. Tape racks and storage cabinet
 - 4. Record racks and storage cabinet
 - D. Teacher's combination console-desk and chair
 - E. Conference-type table and chairs
 - F. Student seating
 - 1. Stationary tables wired to reproduce sound from console and movable chairs
 - 2. Overhead wiring on droppable units to reproduce sound from console and combination chair-desks (This type installation needs fewer square feet per student than stationary tables).
 - G. Duplex electrical outlets on all feasible walls
 - H. Book shelving - minimum of 20 linear feet
 - I. Provision for darkening room
 - J. Microphones, one per station
 - K. Headsets, one per station
 - L. Appropriate floor covering
 - M. Projection surface
 - N. Jack and plug to place sound track from 16 mm projector into classroom sound systems, desirable
 - O. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - P. Computer Workstations (See OTIS Handbook for specifications)
- 507.02 Language Laboratory
- 507.021 Size
35 square feet per student, exclusive of storage space

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- 507.022 Design Capacity
Allow five percent more stations - maximum class size 25 students
- 507.023 Location
In center of, or adjacent to, foreign language classrooms.
- 507.024 Activities
Language laboratory drill and recording
- 507.025 Equipment Space and Facilities
- A. Marker board - minimum of 10 linear feet
 - B. Bulletin board - minimum of 10 linear feet
 - C. Storage
 - 1. 4-drawer filing space
 - 2. Tape storage space
 - 3. Record storage space
 - 4. Lockable storage spaces for any detachable equipment, such as headset and microphones
 - D. Teacher's combination console-desk and chair
 - E. Stationary booths and movable chairs for students
 - F. Duplex electrical outlets on all walls
 - G. Headsets, one per station
 - H. Microphones, one per station
 - I. Provision for darkening rooms
 - J. Appropriate floor covering
 - K. Projection surface
 - L. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - M. Computer Workstations (See OTIS Handbook for specifications)
- 507.03 Teacher Work Area
- 507.031 Size
Area as needed, approximately 250 square feet
- 507.032 Design Capacity
Two instructors and several students
- 507.033 Location
Opening into language laboratory or classrooms
- 507.034 Activities
Preparation of tapes, duplication of CD's, tapes and records, preparation of instructional materials, small group activities, reading, and grading.

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- 507.035 Equipment Space and Facilities
- A. Desk and chair per teacher - 1
 - B. Legal size filing cabinet per teacher - 1
 - C. Storage for instructor's personal belongings
 - D. Table or movable cart for audiovisual equipment
 - E. Conference table and chairs
 - F. Marker board and bulletin board, minimum of 5 linear feet each
 - G. Storage for instructional aids
 - H. Soundproof area for recording tapes
 - I. Telephone, desirable
 - J. Projection surface
 - K. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - L. Computer Workstations (See OTIS Handbook for specifications)

508 TECHNOLOGY EDUCATION FACILITIES

Factors influencing the location include providing location for easy delivery of instructional supplies, equipment and materials, some of which are bulky and heavy; design of laboratory to permit some change in individual room areas as activities are developed. The assistance of specialists should be secured to adequately plan this suite. Technology education programs include instruction in the areas of communication, transportation, construction, and manufacturing.

508.01 Technology Education Production Laboratory

- 508.011 Size
The area should be approximately 800-1000 square feet
- 508.012 Design Capacity - 20 students
- 508.013 Location
- A. Direct access from the building corridor
 - B. Direct access to other rooms in the technology education suite
- 508.014 Activities
The laboratory facility will need to provide space for layout, measurement, cutting, forming, and fabricating using a variety of materials (e.g., wood, metal, plastics); space for using and caring for hand tools and a variety of machines; and space for finishing various materials.
- 508.015 Equipment Space and Facilities
- A. The major floor area should be free of heavy or permanently fixed equipment to allow for flexible room arrangement

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- B. A minimum of 2 work stations, with underneath storage
- C. Maximum work counter and cabinet storage space
- D. Wall mounted lockable tool panels, if a tool room is not available
- E. Windows should be high enough to permit installation of equipment along outside walls
- F. Ceiling electrical grid system for 110 volt power to machines with master switches and with adequately marked emergency shut-off switch.
- G. Adequate electrical wall outlets for power equipment and tools
- H. Facilities for removal of chips, dust, and harmful fumes
- I. Door to corridor, minimum 48 inches wide
- J. A sufficient number of fire extinguishers of the proper types and sizes as per the NFPA Life Safety Code
- K. Wash area for personal cleanliness and preparation and cleaning of tools and supplies
- L. Lighting shall meet IES standards
- M. Refer to the "Technology Education Curriculum Guide" for specific equipment necessary
- N. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- O. Computer Workstations (See OTIS Handbook for specifications)

508.02 Technology Education Communication Laboratory/Classroom

- 508.021 **Size**
Determination of size depends upon the number of students and related activities, varying from 75 to 100 square feet per student.
- 508.022 **Design Capacity - 20 students**
- 508.023 **Location**
Direct access to production laboratory to provide for easy supervision.
- 508.024 **Activities**
Classroom instruction, project planning, small group activities, and a clean environment for instruction and activities with equipment such as computers, robotics, electronics, lasers, and a large open space for construction of group projects.
- 508.025 **Equipment Space and Facilities**

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- A. Glass walls or windows in wall facing laboratory to provide for easy supervision
- B. Marker board - 20 linear feet minimum, and bulletin board - 10 linear feet
- C. Maximum counter and cabinet storage space along walls (Some of this space may be used for computers. If so, height needs to be adjusted accordingly.)
- D. Windows should be high enough to permit installation of counters along outside walls
- E. Provisions made for blinds or shades to allow for showing of audiovisual materials
- F. Adequate electrical wall outlet strips for use of electronic equipment, computers and related peripherals
- G. Reconfigurable tables and chairs for 20-25 students
- H. Bookcase for reference and resource books; magazine rack
- I. Floors - tile
- J. Ceiling - acoustical-type finished ceiling
- K. Air-conditioning
- L. If modular furniture is to be used, room layout needs to be planned accordingly
- M. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- N. Computer Workstations (See OTIS Handbook for specifications)

508.03 Instructor's Office

508.031 Size - 100 to 150 square feet

508.032 Location
Convenient or direct access to production laboratory and communication laboratory.

508.033 Equipment Space and Facilities

- A. Teacher's desk and chair
- B. Conference chairs - 1 or 2
- C. Storage
 - 1. Letter size, 4-drawer file cabinets - 2
 - 2. Open and closed shelving for supplies and references, 20-30 linear feet
- D. Minimum of 2 duplex outlets
- E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- F. Computer Workstations (See OTIS Handbook for specifications)

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508.04 Raw Material and Tool Storage

- 508.041 Size - 150 to 250 square feet
- 508.042 Location
Direct access to production laboratory
- 508.043 Activities
For storage of various types of stock, tools and other supplies necessary in the technology classroom.
- 508.044 Equipment Space and Facilities
 - A. Storage racks for various types of stock. Stock may be as large as 4 feet x 8 feet
 - B. Adjustable shelving and cabinets for small items and portable electric tools
 - C. Peg board for storage of hand tools

508.05 Project Storage

- 508.051 Size - 150 to 250 square feet
- 508.052 Location
Direct access to classroom laboratory
- 508.053 Activities
Limited to storage of student projects and supplies
- 508.054 Equipment Space and Facilities
 - A. Provide maximum adjustable shelving 24 inches deep along walls
 - B. Provide free floor area for storage of large items

508.06 Audiovisual Laboratory

- 508.061 Size - 150 to 250 square feet
- 508.062 Location
Direct access to classroom
- 508.063 Activities
Producing a variety of audiovisual materials such as mock radio and television segments.
- 508.064 Equipment Space and Facilities
 - A. Maximum work counter space with storage underneath
 - B. Electrical outlets along counter

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- C. Soundproof from exterior influences
- D. Additional electrical outlets for equipment usage
- E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- F. Computer Workstations (See OTIS Handbook for specifications)

509 MUSIC FACILITIES

Factors influencing the location of this complex include: isolation from quiet areas of the building; ease of isolating the area for use during and after school hours; inclusion in the general arts area with convenient access to the stage; and direct or convenient access to the outdoors. Location of facilities within the suite should provide ease of supervision of all areas. Acoustical treatment should provide proper sonic environment to prevent sound transmission to remainder of the building as per ASA standards.

509.01 Music Studio

NOTE: Classroom/general music, choral, and instrumental studios may be planned as separate or combined facilities. Assistance in design and planning may be obtained from the music specialist of the WVDE.

509.011 Size - 30 to 40 square feet per student

509.012 Design Capacity - 25 students

509.013 Location

- A. Direct access to instrumental storage
- B. Direct or convenient access to other rooms in the music suite
- C. Isolated as much as possible from quiet areas of the building

509.014 Activities

Instruction in classroom/general music, choral and instrumental music; viewing slides, videos, and other projected materials; listening to recorded music; movements; demonstrations of various types of instruments; writing or drawing on marker board, and display materials.

509.015 Equipment Space and Facilities

- A. Marker board - 30 linear feet, maximum, on front wall of which at least 8 linear feet is etched with staff lines
- B. Bulletin board - 8 to 10 linear feet, located near entrance
- C. Storage for vocal and instrument accessories
 - 1. Wall cabinets for music folders
 - 2. Open shelving for books, tapes, cartridges,

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and record albums, 12" deep and 12" clear height; 40 linear feet

- D. Folding chairs with folding tablet arms
- E. Music stands
- F. Director's podium
- G. Recording device
- H. Conference/work table
- I. Legal size, 4-drawer filing cabinets - 2-3
- J. Wide door with flush threshold for moving large instruments to and from the studio
- K. Microphone outlets for recording in the studio - 2 or 3
- L. Stereo sound reproducing system with a minimum capacity of 40 watts - 20 watts per channel
- M. Piano and bench
- N. Pupil wardrobes
- O. Availability of audiovisual equipment
- P. Instructor's desk
- Q. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- R. Computer Workstations (See OTIS Handbook for specifications)
- S. An independently controlled and schedulable HVAC system

509.02 Practice Room - Optional

509.021 Size - 50 to 60 square feet each

509.022 Design Capacity - 2 to 4 students

509.023 Location

- A. Convenient access from other music rooms
- B. Access to instrumental storage without passing through studio
- C. Convenient access from building corridor
- D. Permit ease of supervision

509.024 Activities - Vocal and Instrumental Practice

509.025 Equipment Space and Facilities

- A. Chairs and music stands - 2 or 3
- B. Glazed partition of insulating glass for ease of supervision
- C. Acoustical treatment
- D. Ventilation

509.03 Instructor's Office and Library
May be separate rooms or combination.

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- 509.031 Size - Approximately 250 square feet
- 509.032 Design Capacity - 2 instructors and 6 students
- 509.033 Location
 - A. Direct or convenient access to other music rooms
 - B. Permit ease of supervision of studio and auxiliary rooms
- 509.034 Equipment Space and Facilities
 - A. Instructor's desk and chair
 - B. Legal size, 4-drawer filing cabinets - 3 or 4
 - C. Storage for instructor's personal belongings
 - D. Marker board and bulletin board - 6 to 8 linear feet each
 - E. Conference table and chairs
 - F. Storage for printed music, records, tapes and other instructional aids
 - 1. Open shelving - 15 to 20 linear feet
 - 2. Closed shelving - 30 to 40 linear feet
 - G. Stereo sound reproducing equipment
 - H. Music sorting rack
 - I. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - J. Computer Workstations (See OTIS Handbook for specifications)
- 509.04 Instrument Storage
 - 509.041 Size - Approximately 350 square feet
 - 509.042 Provide storage shelving necessary to accommodate instruments of various sizes.
 - 509.043 Temperature and humidity are maintained at acceptable levels.
 - 509.05 Robe and Uniform Storage
 - May be in portable wardrobes or separate rooms, ventilate as needed.

510 PHYSICAL EDUCATION FACILITIES

Factors influencing location include: Isolation from quiet areas of the building, direct access to the outside, and provision for closing off the area for after-school use.

NOTE: Although less desirable, these facilities may be combined with assembly facilities.

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- 510.01 Gymnasium (Physical Education Learning station)
- 510.011 Size
Determination of size is dependent upon physical education spaces to be located - 5400 square feet minimum. Floor area should be marked for various games.
- 510.012 Design Capacity - Maximum of 35 students at 125 square feet per student.
- 510.013 Location
Convenient access from locker and shower rooms.
- 510.014 Activities
Include soccer, volleyball, basketball, football, softball, folk and square dance, gymnastics, and other activities to meet the county curriculum. Recommend junior high basketball court (42 feet x 74 feet) with some spectator seating. As a minimum provide 24 feet ceiling height.
- 510.015 Equipment Space and Facilities
- A. Provisions for using the learning center as 2 or more teaching stations may require canvas-net partition, folding door partition or mechanical folding walls.
 - B. Electrical outlets, CD/Tape player, record player, auxiliary lighting, and cleaning equipment. Additional special outlets.
 - C. Ventilation
 - D. Small cases for display purposes - 2 or 3
 - E. Bulletin board - 12 to 16 linear feet
 - F. Public telephone
 - G. Drinking fountains (angle jet type)
 - H. Comfortable, low-wall seating
 - I. Wood gymnasium floor or equal
 - J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- 510.02 Gymnasium Equipment Storage Rooms
At least 2 in each station.
- 510.021 Size - Area as needed to store all equipment
- 510.022 Location
Directly accessible to each teaching station when the station is divided.
- 510.023 Equipment Space and Facilities
- A. Open storage area for items such as standards, vaulting horses, and horizontal bars

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- B. Enclosed storage cabinets for small items of physical education equipment
- C. Double doors and flush threshold

510.03 General Storage

- 510.031 Size
Large enough to store all equipment
- 510.032 Location
Direct or convenient access to learning station

510.04 Male and Female Locker/Dressing Rooms

NOTE: Recommend treatment of walls in these areas with epoxied materials to enhance maintenance. Also similar floor materials.

- 510.041 Size
Dependent upon manner in which gym clothing, street clothing, and towel distribution are handled and the number of students expected to use this facility, 600-700 square feet.
- 510.042 Location
 - A. Direct or convenient access to learning station
 - B. Direct access to outside physical education areas
 - C. Direct access to building corridor
 - D. Direct access to body-drying room
 - E. Permit ease of supervision
- 510.043 Activities
Dressing for physical education; storing street and gym clothes; informal talks with physical education instructors.
- 510.044 Equipment Space and Facilities
 - A. Street clothes lockers dispersed among gym clothes lockers
 - B. Space for additional lockers
 - C. Benches adjacent to or between rows of lockers
 - D. Small rest room or partitioned area with toilet, lavatory, and urinal
 - E. Ventilation
 - F. Mirrors to accommodate large number of students, shelving under each mirror and one full-length mirror
 - G. Bulletin board near entrance - 4 to 8 linear feet
 - H. Marker board - 6 linear feet
 - I. Drinking fountain

510.05 Male and Female Shower Rooms

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- 510.051 Size - Approximately 200 square feet
- 510.052 Location
Access to locker/dressing room only through the body-drying room
- 510.053 Equipment Space and Facilities
- A. Group showers
 - B. Master water volume and maximum temperature controls
 - C. Individual water temperature and on-and-off controls
 - D. Bar soap trays
 - E. Mechanical ventilation
 - F. Easily cleanable construction
 - G. Floor drains away from normal traffic
 - H. Hose bibb for hot and cold water
 - I. Walls of non-absorbent material

NOTE: Individual dressing, drying, and showering booths may be provided in female shower area.

510.06 Male and Female Body-Drying Rooms

- 510.061 Size - Approximately 100 square feet
- 510.062 Location
- A. Direct access from locker/dressing and shower rooms; entries to require maximum travel distance through drying room
 - B. Direct or convenient access from locker/dressing room
- 510.063 Equipment Space and Facilities
- A. Towel holders
 - B. Floor drains away from center
 - C. Ventilation
 - D. Easily cleanable construction
 - E. Hose bibb for hot and cold water
- 510.07 Towel Room - optional
- 510.071 Size - 50 to 60 square feet
- 510.072 Location
- A. Convenient to the locker/dressing and shower areas
 - B. Permit ease of supervision from locker/dressing area and instructor's office
- 510.073 Activities
Temporary storage, distribution and collection of towels.

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- 510.074 Equipment Space and Facilities
- A. Shelving to accommodate laundered towels
 - B. Movable laundry carts to accommodate used towels
 - C. Dutch door for issuing and receiving towels
- 510.08 Laundry Area - optional
- 510.081 Size - Approximately 100 square feet
- 510.082 Location
Convenient to physical education and dressing rooms or areas
- 510.083 Activities
Launder and dry gym clothing.
- 510.084 Equipment Space and Facilities
- A. Washing machine
 - B. A dryer that is vented to the exterior
 - C. Laundry tub
 - D. Separate work surface for handling both clean and soiled clothing and equipment
- 510.09 Instructor's Office - 1 For Each Instructor
- 510.091 Size - Approximately 100 square feet
- 510.092 Location
- A. Direct access to locker/dressing room
 - B. Direct or convenient access to gymnasium and outdoor physical education areas
 - C. Permit ease of supervision of locker/dressing rooms
- 510.093 Activities
Instructor's showering, toilet, and dressing.
- 510.094 Equipment Space and Facilities
- A. Rest room, lavatory, and shower
 - B. Desk and chair
 - C. Conference chairs
 - D. 4-drawer filing cabinet
 - E. Storage of personal belongings
 - F. Book shelving - 10 to 15 linear feet
 - G. First aid equipment
 - H. Telephone
 - I. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - J. Computer Workstations (See OTIS Handbook for specifications)

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510.10 Training Area - Optional

- 510.101 Size - 200 square feet
- 510.102 Location
Convenient to locker/dressing rooms.
- 510.103 Activities - Care of Body
- 510.104 Equipment Space and Facilities
 - A. Whirlpool connections that are code appropriate
 - B. Rub-down table
 - C. Heat lamps
 - D. Supply cabinet

510.11 Equipment Storage Room

- 510.111 Size - Approximately 150 square feet
- 510.112 Location
Convenient to locker/dressing rooms.
- 510.113 Activities
Uniform and equipment storage.

511 SCIENCE FACILITIES

Items to be considered in locating these facilities are: Ease of access to outdoor areas; ease of delivery of supplies and materials; and isolation so odors cannot infiltrate the remainder of the building.

511.01 Integrated Science Classroom/Laboratory

- 511.011 Size
Base preliminary determination of area on allotment of 50 square feet per student; minimum 1200 square feet, exclusive of separate storage room. A base preliminary determination of area on allotment of 45 square feet per student is recommended for a stand-alone laboratory. An additional space of 15 square feet is required for each computer station.
- 511.012 Design Capacity - 25 students
- 511.013 Location
 - A. Direct access to project preparation room
 - B. Direct or convenient access to storage and growing room. Growing room facilities may be included in instructional space laboratory.

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- C. Convenient access to other rooms in the science suite.

511.014

Activities

Instruction and demonstrations; class-size and small group discussion; individual and small group experimentation; viewing slides, videos, and other projected materials; use of TV, VCR, DVD, laser disc player, data projectors, and other video and audio equipment; use of computer and data collection devices; writing or drawing at tables and marker boards; individual study and research; displaying student projects.

511.015

Equipment Space and Facilities

- A. Marker/chalkboard - 20 to 30 linear feet, chart and display rail above. Marker boards with sliding panels are recommended.
 - 1. Minimum of 40 inches clear height
 - 2. Major portion on front wall
- B. Bulletin board - 10 to 12 linear feet, chart and display rail above
- C. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- D. Computer Workstations Minimum 6 mobile with appropriate data collection devices. (See OTIS Handbook for additional specifications)
- E. Work counter - 40 to 50 linear feet minimum, and must have student work space to accompany it
 - 1. Six acid-resistant sinks with hot and cold water
 - 2. Impervious work surface
 - 3. Gas and electricity
 - 4. Storage under work counter
 - 5. Movable aquariums and terrariums
- E. Closed shelving - 30 to 40 linear feet, 18 inches deep
- F. Open shelving - 15 to 20 linear feet
- G. Instructor's demonstration table including sink, hot and cold water, gas, and electricity. Student work space of 2½ linear feet per student may be provided as equivalent student work space, which is not as restrictive as combination desk-chairs. Student desks are to be flat-topped and not tablet-armed.
- H. Student tables and chairs - 2
- I. Teacher's desk and chair
- J. Facilities for darkening room
- K. Projection screen
- L. Portable fume hood
- M. Fire extinguisher and blanket
- N. Eyewash station(s)
- O. First Aid Kit
- P. Goggle sterilization and storage cabinet

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- Q. Hand wash station
- R. Emergency gas shut-off valves located in a readily accessible location

- 511.02 Integrated Science Storage
Shared storage areas recommended in multiple laboratory situations. Storage area must be lockable.
- 511.021 Size - Approximately 200 square feet
 - 511.022 Location
 - A. Direct access from project preparation room
 - B. Direct or convenient access from instructional space laboratory and growing room
 - 511.023 Equipment Space and Facilities
Maximum varied height and depth, adjustable shelving (150 linear feet minimum).
 - 511.024 Chemical Storage Area.
 - A. Acid/Corrosive storage cabinet with proper venting to the exterior
 - B. Flammable storage cabinet
 - C. Adjustable shelving of varied heights and depths
 - D. Area must be properly ventilated
- 511.03 Project Preparation Room. May be planned as combination with storage area.
- 511.031 Size - Approximately 200 square feet
 - 511.032 Design Capacity - Instructor and 6 students
 - 511.033 Location
Direct access from instructional space laboratory and from building corridor.
 - 511.034 Equipment Space and Facilities
 - A. Acid-resistant work surface with acid-resistant sink, hot and cold water, gas, and electricity
 - B. File cabinet
- 511.04 Darkroom - Optional
- 511.041 Size - Approximately 100 square feet
 - 511.042 Design Capacity - Instructor and 4 students
 - 511.043 Location

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- A. Direct access from instructional-space laboratory
- B. Convenient access to corridor without passage through instructional-space laboratory

511.044 Equipment Space and Facilities
Laboratory work-counter-acid-resistant sink, large enough to accommodate three pans. Provide proper venting.

511.05 Greenhouse – Optional

511.051 Size - Approximately 100 square feet

511.052 Design Capacity - Instructor and approximately 4 students

511.053 Location
Direct or convenient access from instructional-space laboratory

511.054 Equipment Space and Laboratory

- A. Heating and cooling system
- B. Work counter
 - 1. Sinks
 - 2. Electricity and hot and cold water
- C. Grow tables
- D. Storage cabinets for equipment and materials
- E. Appropriate grow-light systems
- F. Adequate ventilation

512 LIBRARY/LEARNING RESOURCE OR MEDIA CENTER

See Chapter 3, Section 303.

513 EXCEPTIONAL STUDENT INSTRUCTIONAL AREAS

See Chapter 7, Section 700.

514 COMPUTER LAB - Optional

514.01 Size - 35 to 40 square feet per student

514.02 Design Capacity - 20 students

514.03 Location
Provide sufficient labs for use by each curriculum area. Core group for smaller facilities and a minimum of one lab for each curriculum area in larger facilities.

514.04 Activities
Active use of computer applications related to the curriculum.

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- 514.05 Equipment Space and Facilities
- A. Computer work stations, 30 inches x 48 inches - 20
 - B. Host station, 30 inches x 60 inches - 1
 - C. Time-sharing printer stations - 4
 - D. Storage cabinets for disks, paper, and other supplies
 - E. Teacher's combination desk-table and chair
 - F. Due to the rapid advancement in computer technology, current information must be obtained before design work is completed.
 - G. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - H. Computer Workstations (See OTIS Handbook for specifications)

515 ELECTRONIC TECHNOLOGY LABORATORY - Optional

Whenever feasible, the use of technology in education will be integrated within the individual classroom, but there is a need for a demonstration/lecture laboratory to house equipment that may be utilized by all teachers and students. This laboratory will employ present day and futuristic applications of educational technology by exploring the areas of: computer controlled capability with use of a data projector; distance learning and tele-conferences allowing interactive experiences; and authoring or production capabilities to develop programs and courseware for in-house applications. Ideally, the middle school instructional technology facility consists of one large room with a platform area for teacher demonstration/lecture and adjacent control room. This facility may also be used for large group instruction.

515.01 Electronic Technology Complex

515.011 Size - Approximately 2000 square feet

515.012 Design Capacity - 75 students

515.013 Location

Near media center and isolated from noisy areas of building

515.014 Equipment Space and Facilities

- A. Dustless marking boards, approximately 10 linear feet
- B. Bulletin board, approximately 10 linear feet
- C. Storage
 1. Teachers' storage for personal belongings
 2. Closed and open shelving, approximately 50 linear feet of each
 3. Tape rack and storage cabinet
 4. Disc rack and storage cabinet
- D. Platform area, minimum 8 inches raised flooring for wiring

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- E. Adequate conduit throughout room to distribution panel
- F. Adequate electrical outlets
- G. Teacher station/console with control panel and phone line
- H. Appropriate acoustical treatment depending on use of lab
- I. Wall mounted monitors
- J. Ceiling mounted data projector
- K. Microphones - 1 per student station
- L. Color correct lighting for video production and viewing
- M. Adjustable lighting levels
- N. Pull-down screen in platform area
- O. On/off air sign at doors
- P. Student seating - stationary tables and movable chairs
- Q. Appropriate floor covering
- R. Broadcast-quality audio
- S. Satellite receiving equipment, microwave, and/or fiber optics
- T. Network Computer equipment Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- U. Computer Workstations (See OTIS Handbook for specifications)
- V. Due to the rapid advancement in computer technology, current information must be obtained before design work is completed.
- W. Final technology designs must be approved by the Office of Technology and Information Systems (OTIS) in the WVDE prior to final approval by the WVBOE.

515.015 Control Room

- A. Size - approximately 150 square feet
- B. Downlinking capability
- C. Uplinking capability (when justified)
- D. Broadcast capability

515.016 Activities

Tele-computing concepts to access the Internet, data bases; interactive applications; usage of electronic music keyboards, microscopes, video cameras, etc.; tele-conference allowing live interactive classes. A video production engineer should be consulted when laboratories are designed for video production.

516 ADMINISTRATIVE AND SERVICE FACILITIES

See Chapter 3, Section 301.

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517 FOOD SERVICE FACILITIES

See Chapter 3, Section 302.

518 ENGINEERING AND CUSTODIAL FACILITIES

See Chapter 12

519 STAGE

Locate for use in relation to the gymnasium or dining area for spectator seating. Must have convenient access to language arts and music instructional space and physical education locker/dressing rooms to permit use as stage dressing rooms.

- A. Provide at least 800 square feet of permanent or portable stage area. Consideration should be given to staging "in the round."
- B. Two entrances to the stage, one direct from the building corridor. Entrances are to be double-door size.
- C. Stage location should be one which makes instructional spaces accessible for use as stage dressing rooms.
- D. Proscenium opening should be approximately one-half the width of the body of the multipurpose room.
- E. Stage curtains of fire resistant materials; portable or permanent acoustical paneling, cyclorama, and video projection screens should be part of the stage equipment.
- F. Lighting facilities with controlled illumination.
- G. 5 to 10 grounded duplex electrical receptacles should be provided in the stage area.
- H. Storage for electronic and stage equipment.
- I. Every stage equipped with rigging for movable theater-type scenery and every enclosed platform larger than 500 square feet in area shall have a system of automatic sprinklers in accordance with the state fire code.
- J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)

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Chapter 6

ADOLESCENT/HIGH SCHOOL EDUCATION 9-12

600 ADOLESCENT/HIGH SCHOOL EDUCATION 9-12 CENTERS

- 600.01 **Size of Centers**
An educational facility should be large enough to take advantage of reasonable economies of operation, comfortably accommodate the inhabitants, and support the educational program. Other factors such as density of population, availability of sites, and transportation make it difficult to generalize about optimum size.
- 600.02 Allow 130 square feet per student, unless factors such as enrollment or architectural design permit otherwise as determined by the WVDE. Square footage of facilities funded by SBA will be established in accordance with SBA Guidelines and Procedures Handbook.
- 600.03 The size and type of facility will be determined by the number of students and the instructional program.
- 600.04 Centers shall be planned for a minimum of 800 students, 200 students per grade level. See Chapter 1, Section 100.0142.

601 PLANNING PROCESS

References:

2.

- 601.01 The adolescent/high school programs and facilities should accommodate such programs that are the result of careful, complete, and creative planning.
- 601.02 The planning process is essentially identical for all types of educational environments. It involves identifying the users, describing the learning activities and their desired outcomes, defining the relationship of one learning space to others, describing needed equipment and furnishings, and specifying special environmental considerations.
- 601.03 Educational specifications shall be prepared to include a careful computation of room, area, and building capacities required to offer programs of study as outlined in the Master Plan and WVBOE Policies 2510 and 2520. Consideration should be given to changing various learning spaces and activity areas. Additional educational specification requirements can be found in the SBA

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Guidelines and Procedures Handbook for new schools or schools with major additions funded by the SBA.

601.04 Departmentalization, specialization of instructional spaces, elective subjects, and scheduling are factors to be considered in determining the number of teaching stations. See Chapter 3, Section 301.05.

NOTE: The following formula considers only the number of students; none of the above are considered.

- A. The number of teaching stations needed may be determined by applying the following formula to each subject area. (When general purpose instructional spaces are considered interchangeable for different subject areas, the calculation may be made for a group of subject areas.)

B. The basic formula

Number of Teaching = Stations	Number of students enrolled in subject	x	Number of periods per week in subject
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	Desired average class size	x	Number of periods per week each teaching station can be used

C. Example of tenth grade social studies:

Number of Teaching = Stations	200 students enrolled	x	5 periods per week
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	25 students per class	x	30 periods of use of teaching station
=	<hr style="border-top: 1px solid black;"/>		
	1,000 student-periods of instruction		
	750 student-periods that can be provided in one teaching station		
=	1.4		

E. The formula may also be adopted to determine the student capacity of a proposed school building.

601.05 The student capacity of a school building is affected by the educational program; it changes each time the program is modified. A more complete analysis of the operational capacity of proposed school buildings may be obtained by referring to:

- A. Conrad, M.J., *A Manual for Determining the Operating*

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Capacity of Secondary Schools - Bureau of Educational Research and Service, Ohio State University;

- B. Castaldi, Basil, *The Castaldi Nomogram - The New England School Development*

602 GENERAL PURPOSE (ACADEMIC) CLASSROOMS OR INSTRUCTIONAL AREAS

Rooms should be designed to serve specific needs of language arts, foreign language, mathematics, social studies, and certain other subject areas. They should also be designed to permit interchanged use as program needs demand.

602.01 Size

Base preliminary determination of area upon an allotment of 28 to 30 square feet per student. For example: 700 to 750 square feet of floor area should be planned for 25 students in an instructional space. To more accurately determine the area, trial room layouts should be made using scaled templates representing furniture and equipment and scaled floor and wall elevation drawings.

602.02 Design Capacity - 25 students

602.03 Location

- A. Isolation from noisy areas of the building
- B. Close proximity to the media center
- C. Location which will permit easy expansion

602.04 Activities

Speaking; laboratory drills; lecture, group discussion; viewing slides, videos, and other projected materials; listening to recordings and broadcasts; doing assignments on marker boards, desk and/or tables; displaying students' work; storing instructional materials and supplies; demonstrations; and lab activities where stations with individual assignments are to be done with manipulative materials.

602.05 Equipment Space and Facilities

- A. Marker boards, bulletin boards, and other display areas - as much as possible, a minimum of two-thirds available wall space
 - 1. Marker boards and bulletin boards should have map rails installed above
 - 2. The bottom of the display area should be at the eye level of the student when seated
- B. Student wardrobe
- C. Storage
 - 1. Storage for teacher's personal belongings

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2. Storage for teaching aids and supplies
 - A. Closed and open shelving
 - B. 4 drawer filing space
- D. Teacher's combination desk-table and chair
- E. Conference-type table and chairs
- F. Desks and chairs, or combination chair-desks
- G. Desirable equipment
 1. Corridor display cabinet for students' work
 2. Rack for storage of periodicals pertaining to subject matter being taught
 3. Audiovisual and technology equipment should be readily available within classroom or the nearby media center
- H. Adequate provision for controlling the light level in instructional areas is essential. For efficient use of projection-type materials, the light in the classroom, should be low enough to maintain good projection surfaces.
- I. Duplex electrical receptacles should be installed on all walls of the instructional space for the use of instructional equipment. Sufficient branch electrical circuits service should be in each room. Conduit or other provisions shall be installed to permit future use of network computer drops, television and other electronic instructional devices.
- J. Where there are specialized facilities, such as language labs, study carrels, micro-teaching and television, provision should be made for additional electrical service.
- K. A projection surface should be permanently installed in each instructional area with provision for eliminating keystoneing.
- L. Acoustical treatment of walls, ceilings and floors in instructional areas, media centers and other such areas, when audio devices are used.
- M. Appropriate floor covering.
- N. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- O. Computer Workstations (See OTIS Handbook for specifications)

603 CORRECTIVE/REMEDIAL INSTRUCTIONAL AREAS - Optional

See Chapter 5, Section 503.

603.01

Size

Base preliminary determination of area upon an allotment of 28 to 30 square feet per student. For example: 420 to 450 square feet of floor area should be planned for 15 students in an instructional space. To more accurately determine the area, trial room layouts should be made using scaled templates representing furniture and

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equipment and scaled floor and wall elevation drawings.

603.02 Design Capacity - 15 students

603.03 Location

- A. Isolation from noisy areas of the building
- B. Close proximity to the media center
- C. Location which will permit easy expansion

603.04 Activities

Speaking, laboratory drills; lecture; group discussion; viewing slides, videos and other projected materials; listening to recordings and broadcasts; doing assignments on marker boards, or at desk and/or tables; displaying students' work; storing instructional materials and supplies; demonstrations; and lab activities where stations with individual assignments are to be done with manipulative materials or computer equipment.

603.05 Equipment Space and Facilities

- A. Marker boards, bulletin boards, and other display areas - as much as possible, a minimum two-thirds of available wall space
 - 1. Marker boards and bulletin boards should have map rails installed above
 - 2. The bottom of the display area should be at the eye level of the student when seated
- B. Storage
 - 1. Storage for teacher's personal belongings
 - 2. Storage for teaching aids and supplies
 - a. Closed and open shelving
 - b. 4-drawer filing space
- C. Teacher's combination desk-table and chair
- D. Conference-type tables and chairs
- E. Desirable equipment
 - 1. Rack for storage of periodicals pertaining to subject matter being taught
 - 2. All major types of audiovisual and technology equipment should be readily available within classroom or the nearby media center
- F. Adequate provision for controlling the light level in instructional areas is essential. For efficient use of projection-type materials, the light in the room, particularly in the area of the projection surface, should not exceed one-tenth footcandle.
- G. Duplex electrical receptacles should be installed on all walls of the instructional space for the use of instructional equipment. Sufficient branch electrical circuits service

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should be in each room. Conduits should be provided to permit future installation of network computer drops, television, and other electronic instructional devices. System conduits should be at least 1 ½ inches in diameter in order to provide for installation of television and other teaching devices as indicated above.

- H. Where there are to be specialized facilities, such as language labs, study carrels, micro-teaching, and television, provision should be made for electrical service in the floor.
- I. A projection surface should be permanently installed in each instructional area with provision for eliminating keystoneing.
- J. Use of audio devices mandates acoustical treatment of walls, ceilings, and floors in instructional areas and media centers, particularly in open-type classrooms where many activities are occurring simultaneously.
- K. Appropriate floor covering
- L. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- M. Computer Workstations (See OTIS Handbook for specifications)

604 ART FACILITIES

Art facilities should accommodate the studio and classroom activities of a full art program. Basic to all activities would be space allotment, natural and artificial light, movable furniture or furnishings, display space, several kinds of storage space, deep sinks with clean-out traps and adequate electrical outlets.

- 604.01 Size
Studio - approximately 1200 square feet, exclusive of storage.

- 604.02 Design Capacity
Recommended class size for studio activities - 25 students. For maximum flexibility, the studio should accommodate up to 40 students on occasion.

- 604.03 Location
 - A. Accessibility of freight elevator (if not first floor location) for heavy consumable materials such as clay and sculpture media.
 - B. Need for uncarpeted floor in studio areas. Floors should be of concrete, tile, linoleum or other material not easily damaged by paint or clay.
 - C. Good lighting, both natural and artificial. Natural light is important for many activities and essential for painting.
 - D. Space should contain, or be accessible to, facilities for the use of slides and video. Blackout curtains, projection

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facilities and chairs equipped with tablet arms.

- E. Power tools and equipment may, subject to local policy, be borrowed from or shared with Industrial Arts area.
- F. Provide power ventilation for removal of air that may have become contaminated from the use of chemicals necessary to deliver the curriculum.

604.04

Activities

Discussion, studio, lecture, combination. Basic - drawing, painting, sculpturing, ceramics, design, art, history and appreciation and crafts.

604.05

Equipment Space and Facilities

- A. Sink and work counter units
 1. Hot and cold water with mixing faucets
 2. No less than 2 deep sinks of stainless steel with long drainboards
 3. Large drains and clean-out traps
 4. Long counter for mixing paints and other such activities
 5. Storage for mixing pans, water jar, and brushes (under sink and counter)
- B. Special storage for:
 1. Drawing boards
 2. Shelves for storage of flat work, a minimum of 28 inches x 40 inches
 3. Prints (similar to above)
 4. Audiovisual materials and special books
 5. Tools used in construction
 6. Unfinished work
- C. Marker board - at least 6 linear feet
- D. Bulletin boards - all available wall space (at least one full wall)
- E. Display facilities for projects - glass covered in studio and hall
- F. Work benches, tilt-top tables, and easels, as selected by instructors - movable to permit flexible grouping, with accommodations for:
 1. Teachers' desk and storage area
 2. Provision for hanging mobiles from ceiling
 3. Kilns and potter's wheels. Kiln room - 8 feet x 10 feet is desirable for kiln, clay, glazes, equipment and shelves for work in progress. Adequate electrical circuits, including 240 volts for kiln
 4. Press for graphics
- G. Dark room for photography, with mechanical ventilation
- H. Doorway opening at least 42 inches wide
- I. Duplex outlets along wall spaces and above work county - no less than 12
- J. All electric and gas kilns hooded and mechanically ventilated

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when in use

- K. A ceramic kiln co-located with each general art classroom
- L. Independent forced ventilation
- M. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- N. Computer Workstations (See OTIS Handbook for specifications)

604.06 Storage Room

Approximately 400 square feet is suggested for each full studio, to include shelves for paper, paints and supplies, and for unfinished work which cannot be stacked, such as wet paints, prints, and ceramics, with a special shelf in studio or storage room for unfinished constructions - at least 20 linear feet.

605 DRIVER EDUCATION FACILITIES

Designed to provide a comprehensive course in Driver Education and must include instructional space, laboratory, and storage areas.

605.01 Instructional Space

605.011 Size

A minimum of 28 to 30 square feet per student. A room rectangular in shape is essential to adequately accommodate the projection of visual instructional materials and to station the students a minimum distance from the projection screen.

605.012 Design Capacity - 25 students

605.013 Location

For convenience and efficiency, this facility should be located on the ground level so as to permit easy access to automobiles used for behind-the-wheel instruction.

605.014 Activities

Lecture; group discussions; marker board presentations; use of psycho-physical testing equipment; viewing slides, transparencies, and videos; studying charts, cut-aways, and models; and testing activities.

605.015 Equipment Space and Facilities

- A. Marker board
- B. Bulletin board
- C. Black-out window shades
- D. At least 4 electrical outlets

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- E. Wall rail to suspend charts
- F. Teacher's desk and chair
- G. Work table
- H. Prevent transmission of sound to and from other rooms (Consult WVDE, Division of Instructional and Student Services, for list of required equipment)
- I. Appropriate floor covering
- J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- K. Computer Workstations (See OTIS Handbook for specifications)

605.02 Teacher Study and/or Office Room
Teacher's study and instructional space may be joined by a partition for security and accessibility with facilities for counseling students and lesson preparation, and storage space for personal belongings and records.

605.021 Size - 50 to 75 square feet

605.022 Location - Adjoining Instructional Space

605.023 Equipment Space and Facilities

- A. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- B. Computer Workstations (See OTIS Handbook for specifications)

605.03 Storage Room
Allow 20 to 25 linear feet of open shelving and 40 to 50 linear feet of closed shelving. Instructional equipment, teaching aids, and supplies must be secured to prevent loss and to assure accessibility when needed.

605.04 Laboratory or Simulator Room - Optional
This room should be free of columns which would obstruct the students' vision of the screen.

605.041 Size
Installation of 12 simulator units and the master console requires an absolute minimum area of 38 feet x 25 feet

605.042 Design Capacity - 12 students

605.043 Location
Adjoining driver education instructional space and office storage room with direct access to other areas.

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- 605.044 Equipment Space and Facilities
- A. Conduit for simulators and master control unit
 - B. Provide means for darkening room
 - 1. Black-out shades for windows, if any. Few or no windows are recommended.
 - 2. Multi-staged lighting control
 - 3. Two-way ceiling switch
 - C. Electrical outlets along walls supplied with 120 volt, 60 cycle, 20 amp service
 - D. Control sound as per ASA guidelines
 - E. Instructor's desk and chair
 - F. Projection screen 12 feet x 16 feet for 16-place simulator system and 10 feet x 12 feet for 12-place system
 - G. Storage area - See Chapter 6, Section 605.03
 - H. Adequate ventilation and temperature control system
 - I. Room should not be painted white, which would result in excessive reflection of light. A pastel shade of paint is recommended.
 - J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - K. Computer Workstations (See OTIS Handbook for specifications)

- 605.05 Multi-Media (Programmed Instruction) Instructional Space -
Optional
This area could also be used for the regular instructional space.

- 605.051 Size
Approximately 33 feet long and 28 feet wide
- 605.052 Design Capacity
30 students with special or adapted furniture and the instructor's console. Equipment is available to accommodate larger groups. An increase in class size will require a comparable adjustment in room size.
- 605.053 Location
Adjacent to driver education area
- 605.054 Equipment Space and Facilities
- A. Conduit and master console
 - B. Provide adequate means for darkening room
 - C. A minimum of 12 feet distance between students and screen. The screen should not be viewed from more than a 30 degree angle.
 - D. Electrical current - 120 volt, 80 amp service with 4 -

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- 20 amp breakers
- E. Screen - 6 feet x 12 feet
- F. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)

- 605.06 **Multiple-Car Driving Range - Optional**
Intelligent planning of a multiple-car facility will provide acres of well-drained area. The surfacing of this area with stone or asphalt requires careful consideration to assure stabilization without undue pavement deterioration due to climatic conditions, nature of the soil base, and drainage.
- 605.07 **Planning the Multiple-Car Facility**
These plans must include cost considerations, site selection and development, facility design, equipment, and instructional plan. Consider use as parking for off-hour athletic or community use.
- 605.08 **Planning Assistance**
May be obtained from the WVDE, Division of Research, Technology, and Professional Services, Driver Education Coordinator.

606 FOREIGN LANGUAGE FACILITIES

Factors influencing the type of foreign language facility to be chosen include the type of laboratory facility desired. Laboratory facilities can be an electronic classroom, a language laboratory into which students are scheduled from classes held in general purpose classrooms or general purpose classrooms adapted for foreign language study.

- 606.01 **General Purpose Classrooms Used for Foreign Language**
- 606.011 **Size - 28 to 30 square feet per student, exclusive of storage area**
 - 606.012 **Design Capacity - 25 students**
 - 606.013 **Location**
 - A. Isolation from noisy areas of the building
 - B. Near the media center
 - 606.014 **Activities**
Speaking, laboratory drills; group work; reading; marking board work; using audiovisual materials; singing; working with tapes and records individually (in carrels); play acting; and dancing.
 - 606.015 **Equipment Space and Facilities**

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- A. Marker board - minimum of 20 linear feet with display and map rail above
- B. Bulletin board - minimum of 10 linear feet with display and map rail above
- C. Storage
 - 1. Storage for teachers' personal belongings
 - 2. Closed and open shelving - minimum of 24 linear feet of each
 - 3. Tape racks and storage cabinet
 - 4. Record racks and storage cabinet
- D. Teacher's combination desk-table and chair
- E. Conference-type table and chairs
- F. Non-stationary students' desks and chairs, or combination chair-desks
- G. Duplex electrical outlets on all feasible walls as per NEC
- H. Book shelving - minimum of 20 linear feet
- I. Provision for darkening room
- J. Movable cart for audiovisual equipment
- K. Recording device with jack box and headsets
- L. Carrels for individual work are desirable
- M. Appropriate floor covering
- N. Wireless laboratory, optional
- O. Projection surface
- P. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- Q. Computer Workstations (See OTIS Handbook for specifications)

606.02 Electronic Classroom

- 606.021 Size - 35 square feet per student, exclusive of storage space
- 606.022 Design Capacity - 25 students
Allow five percent more stations; maximum class size
- 606.023 Location
Near media center, isolated from noisy areas of building, and meets ASHRAE and ASA standards
- 606.024 Activities
See Chapter 6, Section 606.014
- 606.025 Equipment Space and Facilities
 - A. Marker board - minimum of 20 linear feet, with display and map rail above
 - B. Bulletin board - minimum of ten linear feet, with

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- display and map rail above
- C. Storage
 - 1. Storage for teacher's personal belongings
 - 2. Closed and open shelving - minimum of 24 linear feet of each
 - 3. Tape racks and storage cabinet
 - 4. Record racks and storage cabinet
- D. Teacher's combination console-desk and chair
- E. Conference-type table and chairs
- F. Student seating
 - 1. Stationary tables wired to reproduce sound from console and movable chairs
 - 2. Overhead wiring on droppable units to reproduce sound from console and combination chair-desks (this type installation needs fewer square feet per student than the stationary tables).
- G. Duplex electrical outlets on all feasible walls as per NEC
- H. Book shelving: minimum of 20 linear feet
- I. Provision for darkening room
- J. Microphones, one per station
- K. Headsets, one per station
- L. Appropriate floor covering (optional)
- M. Projection surface
- N. Jack and plug to place sound track from 16 mm projector into classroom sound systems desirable
- O. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- P. Computer Workstations (See OTIS Handbook for specifications)

606.03 Language Laboratory

- 606.031 Size - 35 square feet per student, exclusive of storage space
- 606.032 Design Capacity - 25 students
Allow five percent more stations
- 606.033 Location
In center of, or adjacent to, foreign language classrooms
- 606.034 Activities
Language laboratory drill and recording
- 606.035 Equipment Space and Facilities
 - A. Marker board - minimum of 10 linear feet
 - B. Bulletin board - minimum of 10 linear feet

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- C. Storage
 - 1. 4-drawer filing space
 - 2. Tape storage space
 - 3. Record storage space
 - 4. Lockable storage spaces for detachable equipment, such as headset and microphones
- D. Teacher's combination console-desk and chair
- E. Stationary booths and movable chairs for students
- F. Duplex electrical outlets on all walls
- G. Headsets, one per station
- H. Microphones, one per station
- I. Provision for darkening rooms
- J. Appropriate floor covering (optional)
- K. Projection surface
- L. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- M. Computer Workstations (See OTIS Handbook for specifications)

606.04 Teacher Work Area

- 606.041 Size - Approximately 250 square feet
- 606.042 Design Capacity - Two Instructors and Several Students
- 606.043 Location
 - Opening into language laboratory or classrooms
- 606.044 Activities
 - Preparation of tapes, duplication of tapes and records, preparation of instructional materials, small group activities, reading, and grading.
- 606.045 Equipment Space and Facilities
 - A. Desk and chair per teacher - 1
 - B. Legal size filing cabinet per teacher - 1
 - C. Storage for instructor's personal belongings
 - D. Table or movable cart for audiovisual equipment
 - E. Conference table and chairs
 - F. Marker board and bulletin board, minimum of 5 linear feet each
 - G. Storage for instructional aids
 - H. Soundproof area for recording tapes
 - I. Telephone, desirable
 - J. Projection surface
 - K. Appropriate floor covering
 - L. Network Computer Drops (See Chapter 11, Section

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- M. 1105 and OTIS Handbook for specifications)
Computer Workstations (See OTIS Handbook for specifications)

607 LIBRARY/LEARNING RESOURCE OR MEDIA CENTER

See Chapter 3, Section 303.

608 MUSIC FACILITIES

Factors influencing the location of this complex include: isolation from quiet areas of the building; ease of isolating the area for use during and after school hours; inclusion in the general arts areas with convenient access to the auditorium stage; and direct or convenient access to outdoors. Location of facilities within the suite should provide ease of supervision of all areas. Acoustical treatment should provide proper sonic environment to prevent sound transmission to remainder of the building as per ADA standards.

608.01 Music Studio

NOTE: Choral and instrumental studios may be planned as combined facilities. Assistance in design and planning may be obtained from the music specialist of the WVDE.

608.011 Size - 30 to 40 square feet per student, with ceiling height of 12 feet.

608.012 Design Capacity - 40 students

608.013 Location

- A. Direct access to instrumental storage
- B. Direct or convenient access to other rooms in the music suite
- C. Isolated as much as possible from quiet areas of the building

608.014 Activities

Conduct instrumental and choral music rehearsals; view slides, videos, and other projected materials; listen to recorded music; demonstrations of various types of instruments; write or draw on marker board; and display materials.

608.015 Equipment Space and Facilities

- A. Marker board - maximum of 30 linear feet, on front wall of which at least 8 linear feet is etched with staff lines

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- B. Bulletin board - 8 to 10 linear feet, located near entrance
- C. Storage for vocal and instrument accessories
 - 1. Wall cabinets for music folders
 - 2. Open shelving for books, tapes, cartridges, and record albums; 12 inches deep and 14 inches clear height; 40 linear feet
- D. Folding chairs with folding tablet arms
- E. Music stands
- F. Director's podium
- G. Recording device
- H. Conference work table
- I. 3 or more legal size, 4 drawer filing cabinets
- J. Wide door with flush threshold for moving large instruments to and from the studio
- K. 2 or 3 microphone outlets for recording in the studio
- L. Stereo sound reproducing system with a minimum capacity of 40 watts - 20 watts per channel
- M. Piano and bench
- N. Student wardrobe or lockers
- O. Instructor's desk
- P. Availability of audiovisual equipment
- Q. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- R. Computer Workstations (See OTIS Handbook for specifications)

608.02 Practice Room - Optional

- 608.021 Size - 50 to 60 square feet each
- 608.022 Design Capacity - 2 to 4 students
- 608.23 Location
 - A. Convenient access from other music rooms
 - B. Access to instrumental storage without passing through studio
 - C. Convenient access from building corridor
 - D. Permit ease of supervision
- 608.24 Activities
 - Vocal and instrumental practice
- 608.25 Equipment Space and Facilities
 - A. 2 or 3 chairs and music stands
 - B. Glazed partition of insulating glass for ease of supervision

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- C. Acoustical treatment
 - D. Mechanical ventilation
 - E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- 608.03 Ensemble Instructional Space - Optional
May be part of multi-use choral and instrumental studio
- 608.031 Size - Approximately 30 square feet per student
 - 608.032 Design Capacity - 8 to 12 students
 - 608.033 Location
 - A. Convenient access from other music rooms
 - B. Access to instrumental storage without passing through studio
 - C. Convenient access from building to corridor
 - D. Permit ease of supervision
 - 608.034 Activities
Choral and instrumental practice and small group instruction
 - 608.035 Equipment Space and Facilities
 - A. Marker board - 16 to 20 linear feet; bulletin board
 - B. Glazed partition for ease of supervision
 - C. Acoustical treatment
 - D. Mechanical ventilation
 - E. Piano and bench
 - F. Folding chairs with folding tablet arms
 - G. Music stands
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- 608.04 Instructor's Office and Library
May be separate rooms or combination
- 608.041 Size - Areas as needed - approximately 250 square feet
 - 608.042 Design Capacity - 2 Instructors and 6 students
 - 608.043 Location
 - A. Direct or convenient access to other music rooms
 - B. Permit ease of supervision of studio and auxiliary rooms
 - 608.044 Equipment Space and Facilities
 - A. Instructor's desk and chair
 - B. 4 drawer, legal size filing cabinets - 3 to 4
 - C. Storage for instructor's personal belongings

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- D. Marker board and bulletin board - 6 to 8 linear feet each
- E. Conference table and chairs
- F. Storage for printed music, records, tapes, and other instructional aids
 - 1. Open shelving - 15 to 20 linear feet
 - 2. Closed shelving - 30 to 40 linear feet
- G. Stereo sound reproducing equipment
- H. Music sorting rack
- I. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- J. Computer Workstations (See OTIS Handbook for specifications)

608.05 Instrument Storage

- 608.051 Size - Area as needed - approximately 350 square feet
- 608.052 Storage Shelving
Necessary to accommodate instruments of various sizes
- 608.053 Temperature
Temperature and humidity are maintained at acceptable levels.

- 608.06 Robe and Uniform Storage
May be in portable wardrobes or separate rooms; ventilate as needed.

609 PHYSICAL EDUCATION FACILITIES

Factors influencing location include: Isolation from quiet areas of the building; direct access to the outside; and provision for closing off area for after school use.

NOTE: Although less desirable, these facilities may be combined with assembly facilities.

609.01 Gymnasium

- 609.011 Size
Determination of size is dependent upon physical education spaces to be located. Allow approximately 7000 square feet. Floor area should be marked for various games.
- 609.012 Design Capacity - Maximum of 35 students at 125 square feet per student

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- 609.013 Location
Convenient access from locker and shower rooms
- 609.014 Activities
Include soccer, volleyball, basketball, football, softball, folk and square dance, gymnastics and other activities to meet county curriculum. Recommend college-size basketball court (50 feet x 94 feet), plus spectator seating. As a minimum, provide 24 feet ceiling height.
- 609.015 Equipment Space and Facilities
- A. Provisions for using the learning center as 2 or more teaching stations may require canvas-net partition, fold-door partition or mechanical folding walls.
 - B. Electrical outlets, CD player, auxiliary lighting and cleaning equipment; additional special outlets.
 - C. Independent mechanical ventilation (optional use of CO² for demand based ventilation control)
 - D. Small cases for display purposes - 2 or 3
 - E. Bulletin board - 12 to 16 linear feet
 - F. Public Telephone
 - G. Drinking fountains (angle jet type)
 - H. Seating to accommodate student body and staff
 - I. Minimum ceiling height - 24 feet
 - J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- 609.02 Equipment Storage Rooms
At least 2 in each station
- 609.021 Size - Area for equipment storage - 150 square feet
- 609.022 Location
When the station is divided into 2, have directly accessible to each teaching station.
- 609.023 Equipment Space and Facilities
- A. Open storage area for items such as standards, vaulting horses, and horizontal bars
 - B. Enclosed storage cabinets for small items of physical education equipment
 - C. Double doors and flush threshold
- 609.03 General Storage
- 609.031 Size - Large enough to store all equipment
- 609.032 Location

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Direct or convenient access to learning station

609.04 Male and Female Locker/Dressing rooms Physical education and varsity programs

NOTE: Recommend treatment of walls in these areas with epoxied materials to enhance maintenance. Also, quarry tile or similar floor materials.

609.041 Size - Dependent upon manner in which such items as gym clothing, street clothing, and towel distribution are handled and the number of students expected to use this facility - 600 to 700 square feet.

609.042 Location

- A. Direct or convenient access to learning station
- B. Direct access to outside physical education areas
- C. Direct access to building corridor
- D. Direct access to body-drying room
- E. Permit ease of supervision

609.043 Activities
Dressing for physical education; storing street and gym clothes; informal talks with physical education instructors.

609.044 Equipment Space and Facilities

- A. Street clothes lockers dispersed among gym clothes lockers
- B. Space for additional lockers
- C. Benches adjacent to or between rows of lockers
- D. Small rest room or partitioned area with toilet, lavatory and urinal
- E. Independent ventilation
- F. Mirrors to accommodate large numbers of students, shelving under each mirror and one full-length mirror
- G. Bulletin board near entrance - 4 to 8 linear feet
- H. Marker board - 6 linear feet
- I. Drinking fountain

609.05 Male and Female Shower Rooms

609.051 Size - Approximately 200 square feet

609.052 Location
Access to locker/dressing room only through the body-drying room

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- 609.053 Equipment Space and Facilities
- A. Group showers
 - B. Master water volume and maximum temperature controls
 - C. Individual water temperature and on-and-off controls
 - D. Bar soap trays
 - E. Mechanical ventilation
 - F. Floors are of easily cleanable material
 - G. Floor drains away from normal traffic
 - H. Hose bibb for hot and cold water
 - I. Walls of non-absorbent material

NOTE: Individual dressing, drying and showering booths may be provided in female shower area.

609.06 Male and Female Body-Drying Rooms

609.061 Size - Approximately 100 square feet

609.062 Location

- A. Direct access from locker/dressing and shower rooms; entries to require maximum travel distance through drying room
- B. Direct or convenient access from varsity locker/dressing room

609.063 Equipment Space and Facilities

- A. Stub towel holders
- B. Floor drains away from center
- C. Mechanical ventilation
- D. Floors are of easily cleanable material
- E. Hose bibb for hot and cold water

609.07 Towel Room - Optional

609.071 Size - 50 to 60 square feet

609.072 Location

- A. Convenient to the locker/dressing and shower areas
- B. Permit ease of supervision from locker/dressing area and instructor's office

609.073 Activities

Temporary storage, distribution, and collection of towels.

609.074 Equipment Space and Facilities

- A. Shelving to accommodate laundered towels

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- B. Movable laundry carts to accommodate used towels
- C. Dutch door for issuing and receiving towels

609.08 Laundry Area - Optional

- 609.081 Size - 100 square feet
- 609.082 Location
Convenient to physical education and dressing rooms or areas
- 609.083 Activities
Launder and dry gym clothing
- 609.084 Equipment Space and Facilities
 - A. Washing machine
 - B. Dryer vented to the exterior
 - C. Laundry tub
 - D. Separate work surface for handling both clean and soiled clothing and equipment

609.09 Instructors' Offices - One for each instructor

- 609.091 Size - Approximately 100 square feet
- 609.092 Location
 - A. Direct access to locker/dressing room
 - B. Direct or convenient access to gymnasium and outdoor physical education areas
 - C. Permit ease of supervision of locker/dressing rooms
- 609.093 Activities
Instructors' showering, toilet and dressing
- 609.094 Equipment Space and Facilities
 - A. Rest room, lavatory, and shower
 - B. Desk and chair
 - C. Conference chairs
 - D. 4 drawer filing cabinet
 - E. Storage of personal belongings
 - F. Book shelving - 10 to 15 linear feet
 - G. First aid equipment
 - H. Telephone
 - I. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - J. Computer Workstations (See OTIS Handbook for specifications)

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609.10 Training Area

- 609.101 Size - Approximately 200 square feet
- 609.102 Location - Convenient to Locker/Dressing Room
- 609.103 Activities - Care of body
- 609.104 Equipment Space and Facilities
 - A. Whirlpool connections that are code appropriate
 - B. Rub-down table
 - C. Heat lamps
 - D. Supply cabinet

609.11 Equipment Storage Room

- 609.111 Size - Approximately 150 square feet
- 609.112 Location - Convenient to Locker/Dressing Rooms
- 609.113 Activities - Uniform and equipment storage

609.12 Optional Spaces

- 609.121 Wrestling - 42 feet x 42 feet, or 1800 square feet
- 609.122 Weight Room - 1000 square feet
- 609.123 Multi-purpose Room - 1600 square feet
- 609.124 Auxiliary Gymnasium
In schools of more than 1000 student population - 5400 square feet

610 SCIENCE FACILITIES

Items to be considered in locating these facilities are: Ease of access to outdoor science areas; ease of delivery of supplies and materials; and isolation so odors cannot infiltrate the remainder of the building. Facilities may be designed for instruction in single disciplines. Although optional, DC electricity, compressed air, and vacuum are desirable inclusions due to the expense of portable units over a series of years.

610.01 Combination Chemistry/Physics Lecture Laboratory

- 610.011 Size - Base preliminary determination of area on allotment of

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60 square feet per student; approximately 1440 square feet, exclusive of separate storage. Base preliminary determination of area on allotment of 45 square feet per student is recommended for a laboratory only. An additional space of 15 square feet is required for each computer station.

- 610.012 Design Capacity - 24 students
- 610.013 Location
- A. Direct access to storage and project preparation room
 - B. Convenient access to other science instructional space laboratories
- 610.014 Activities
- Instruction and demonstrations; class-size and small group discussion; individual and small group experimentation; viewing slides, videos, and other projected materials; use of TV, VCR, DVD, laser disc player, data projectors, and other video and audio equipment; use of computer and data collection devices; writing or drawing at tables and marker/chalkboards; individual study and research; displaying student projects.
- 610.015 Equipment Space and Facilities
- A. Marker/chalkboard- 20 to 30 linear feet, chart and display rail above. Marker boards with sliding panels are recommended.
 - 1. Minimum of 40 inches clear height
 - 2. Major portion on front wall
 - B. Bulletin board - 10 to 16 linear feet; chart and display rail above
 - C. Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - D. Computer Workstations Minimum 8 mobile with appropriate data collection devices and probes (12 are desired) (See OTIS Handbook for specifications)
 - E. Adjustable shelving - 30 linear feet
 - F. Conference table and chairs
 - G. Ventilated (portable or fixed) fume hoods
 - 1. Equip with gas, compressed air, AC and DC electricity, and water with vacuum breakers
 - 2. Wide enough for 2 pupils
 - 3. Easily visible from demonstration area if fixed piece of equipment
 - H. Instructor's demonstration table, including sink, hot and cold water, gas, AC and DC electricity,

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- compressed air, and vacuum
- I. Laboratory work space 2½ linear feet per student (may be provided as tables or work counter)
 - 1. Equip with sink, water, gas AC and DC electricity flush plates, and support rods
 - 2. Individual student storage units
 - 3. Corrosive-resistant work surface and plumbing
 - 4. Perimeter location is not recommended.
- J. Open shelving with a lip that meets NFPA 101 for often used chemicals and other materials
- K. Fire extinguisher and blanket
- L. 2-student work tables and chairs
- M. Teacher's desk and chair
- N. Facilities for darkening the room
- O. Emergency showers and hand station
- P. Fire blanket
- Q. Eye wash stations
- R. Goggle sterilization and storage cabinet
- S. First aid kit
- T. Provide main gas shut-off valves for all laboratory equipment, including adjacent preparation rooms
- U. Emergency exhaust fan vented to the exterior to maintain the space at a negative pressure to adjacent areas

610.02 Chemistry Storage

- 610.021 Size - Approximately 100 square feet
- 610.022 Location
 - A. Direct access from project preparation room
 - B. Convenient access from instructional space laboratory
- 610.023 Equipment Space and Facilities
 - A. 75 to 100 linear feet of adjustable shelving of varied heights and depth with safety lip as per state fire code.
 - B. An independent ventilation system to maintain a constant negative pressure as per ASHRAE standards.
 - C. Window between storage area and instructional space
 - D. Storage cabinet for explosive or flammable material and a properly exterior ventilated corrosion-resistant cabinet for concentrated acids

610.03 Physics Storage Room

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- 610.031 Size - Approximately 100 square feet
- 610.032 Location
- A. Direct access from project preparation room
 - B. Convenient access from instructional space laboratory
- 610.033 Equipment Space and Facilities
- A. Adjustable shelving of varied heights and depths - 75 to 100 linear feet
 - B. Maximum closed adjustable shelving
- 610.04 Project Preparation Room
Optional as a separate room; however, preparation facilities must be provided outside the instructional space laboratory.
- 610.041 Size - Approximately 200 square feet; if combined with storage - 400 square feet
- 610.042 Design Capacity - Instructor and approximately 6 students
- 610.043 Location
- A. Direct access from instructional space laboratory and from building corridor
 - B. Convenient access from other science facilities located in adjacent portions of the science suite
 - C. Permit ease of supervision from instructional space laboratories
- 610.044 Activities
Preparation for demonstrations; storage of projects; individual and small group project work
- 610.045 Equipment Space and Facilities
- A. Maximum work counter space with minimum of 2 sinks
 - B. Storage units above and below work counter
 - C. Water, gas, vacuum, compressed air, and AC and DC electricity at work counter
 - D. File cabinet
- 610.05 Darkroom - optional
- 610.051 Size - Approximately 100 square feet
- 610.052 Design Capacity - Instructor and approximately 4 students

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- 610.053 Location
- A. Direct access from instructional space laboratory
 - B. Convenient access to corridor without passage through instructional space laboratory
- 610.054 Equipment Space and Laboratory
- A. Laboratory work counter
 - 1. Acid-resistant sink, large enough to accommodate three pans
 - 2. Storage below
 - 3. Gas, electricity, and hot and cold water with vacuum breakers
 - 4. Safety lights
 - B. Storage cabinets for photography equipment and materials
 - C. Warning light with switch near door
 - D. Ventilation system to maintain a negative pressure to adjacent areas
- 610.06 Universal Lecture/Laboratory Classroom (For Biology, Human Anatomy, Integrated Science, or Environmental/Earth Science)
- 610.061 Size - Base preliminary determination of area on allotment of 60 feet per student; approximately 1440 square feet, exclusive of separate storage room. Base preliminary determination of area on allotment of 45 square feet per student is recommended for a laboratory only. An additional space of 15 square feet is required for each computer station.
- 610.062 Design Capacity - 24 students
- 610.063 Location
- A. Direct access to project preparation room
 - B. Direct or convenient access to storage and growing room. Growing room facilities may be included in instructional space laboratory.
 - C. Convenient access to other rooms in the science suite
- 610.064 Activities
- Instruction and demonstrations; class-size and small group discussion; individual and small group experimentation; viewing slides, videos and other projected materials; use of TV, VCR, DVD, laser disc player, data projector, and other video and audio equipment; use of computer and data collection devices; writing or drawing at tables and marker/chalkboards; individual study and research;

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displaying student projects.

610.065

Equipment Space and Facilities

- A. Marker/Chalkboard - 20 to 30 linear feet with chart and display rail above. Marker boards with sliding panels are recommended.
 - 1. Minimum of 40 inches clear height
 - 2. Major portion of front wall
- B. Bulletin board - 10 to 12 linear feet with chart and display rail above
- C. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- D. Computer Workstations - Minimum 8 mobile with appropriate data collection devices and probes (12 are desired) (See OTIS Handbook for specifications)
- E. Work counter - 40 to 50 linear feet, minimum; and must have student work space to accompany it
 - 1. 6 acid-resistant sinks with hot and cold water
 - 2. Impervious work surface
 - 3. Gas and electricity
 - 4. Storage under work counter
 - 5. Movable aquariums and terrariums
- F. Closed shelving - 30 to 40 linear feet, 18 inches deep
- G. Open shelving - 15 to 20 linear feet with a safety lip as per the state fire code
- H. Instructor's demonstration table including sink, hot and cold water, gas, and electricity. 2½ linear feet per student may be provided as equivalent student work space, which is not as restrictive as combination desk-chairs. Student desks are to be flat-topped, not tablet-armed.
- I. 2-student tables and chairs
- J. Teacher's desk and chair
- K. Facilities for darkening room
- L. Projection screen
- M. Fire extinguisher and blanket
- N. Fume hood with proper ventilation
- O. Eye wash station and emergency shower
- P. Goggle sterilization and storage cabinet
- Q. First aid kit
- R. Hand wash station
- S. Provide main gas shut-off valves for all laboratory equipment
- T. Exhaust fan

610.07

Universal Laboratory Storage

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- 610.071 Size - Approximately 200 square feet
- 610.072 Location
- A. Direct access from project preparation room
 - B. Direct or convenient access from instructional space laboratory and growing room
- 610.073 Equipment Space and Facilities
- A. Maximum varied height and depth adjustable shelving - approximately 100 linear feet with a safety lip as per the state fire code.
 - B. A ventilation system to maintain a negative pressure to adjacent areas
- 610.08 Project Preparation Room
May be planned as combination with storage area.
- 610.081 Size - Approximately 200 square feet
- 610.082 Design Capacity - Instructor and approximately 6 students
- 610.083 Location
Direct access from instructional-space laboratory and from building corridor.
- 610.084 Equipment Space and Facilities
- A. Acid-resistant work surface with acid-resistant sink, hot and cold water, gas, and electricity
 - B. File cabinet
- 610.09 Greenhouse (May be shared space with vocational programs)
- 610.091 Size - Approximately 100 square feet
- 610.092 Design Capacity - Instructor and approximately 4 students
- 610.093 Location
- A. Direct or convenient access from instructional space/ laboratory
- 610.094 Equipment Space and Laboratory
- A. Heating and cooling system
 - B. Work counter
 - 1. Sinks
 - 2. Electricity and hot and cold water
 - C. Grow tables
 - D. Storage cabinets for equipment and materials

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- E. Appropriate grow light systems
- F. Adequate ventilation with evaporative coolers

- 610.095 Chemical Storage Area
 - A. Chemical storage area not accessible to students
 - 1. Lockable storage
 - 2. Appropriate chemical storage cabinets (acids, flammable materials)
 - 3. Adjustable shelving of varied heights and depths
 - 4. Proper ventilation

611 BUSINESS EDUCATION FACILITIES

See Chapter 8, Section 807.

612 CONSUMER/HOMEMAKING FACILITIES

See Chapter 8, Section 805.

613 TECHNOLOGY EDUCATION FACILITIES

See Chapter 8, Section 808.

614 EXCEPTIONAL STUDENTS - INSTRUCTIONAL AREAS

See Chapter 7.

615 COMPUTER LAB

- 615.01 Size - 40 to 45 square feet per student
- 615.02 Design Capacity - 20 students
- 615.03 Location
 - Provide sufficient labs for use by each curriculum area. Core group for smaller facilities and one lab for each curriculum area in larger facilities.
- 615.04 Activities
 - Integrated use of computer applications in the curriculum.
- 615.05 Equipment Space and Facilities
 - A. 20 30 inches x 48 inches computer work stations
 - B. 1 30 inches x 60 inches server station
 - C. 4 time-sharing printers
 - D. Storage cabinets for disks, paper, and other materials

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- E. Teacher's combination desk-table and chair
- F. Conference-type table and chairs
- G. Marker board - 10 linear feet (dustless-type dry marker)
- H. Bulletin board - 10 linear feet
- I. Dedicated electrical power with surge protection for equipment and conduit for interconnection requirements
- J. Projection surface
- K. Appropriate floor covering
- L. Lighting with segmented room control. Use of rheostats is recommended for dimming purposes
- M. Provision for darkening room
- N. Because of the equipment specifications, air conditioning is highly recommended
- O. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- P. Computer Workstations (See OTIS Handbook for specifications)
- Q. Final technology designs must be approved by the Office of Technology and Information Systems (OTIS) in the WVDE prior to final approval by the WVBOE.

616 AUDITORIUM

Factors influencing the location of the auditorium include: Ground level position isolated from other areas of the building, convenient access to music and language arts instructional space and physical education locker/dressing rooms to permit use as stage-dressing rooms and to service drive for the delivery of bulky properties; location which allows community groups to use the facility during school hours without interfering with school activities; and a location which permits planned multiple use of lobby area. Location shall be convenient to public parking facilities. Consider accessibility of pupil rest rooms for public use and instructional space for coat-check areas during after-school hours.

616.01 Body of Auditorium

- 616.011 Size
Dependent upon ultimate seating capacity desired and singular or multiple use of the facility. Approximately 9-10 square feet will be needed for each seat provided.
- 616.012 Design Capacity
Design to accommodate at least 1/3 of student enrollment with a minimum seating of 250
- 616.013 Activities
Production and performance of various student plays, concerts, and variety shows; performances before student audiences by visiting groups or individuals contributing to

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the educational program of the school; multiple use of the area for instructional purposes, such as large and small group instruction, and distance learning.

- 616.014 Equipment Space and Facilities
- A. Space in front and below auditorium stage for orchestra, band, and other activities
 - B. Acoustical quality so that weak voices of some platform participants may be heard throughout the auditorium with use of sound support system
 - C. Facilities whereby programs originating in the auditorium may be broadcast throughout the school
 - D. Sound amplification controls should be located in projection niche or booth
 - E. Convenience lights arranged and located for partial illumination during performances
 - F. Light control by multi-way switches convenient to entrances, near stairs to the stage, and projection booth
 - G. Convenience and pilot light circuits should be tied into main light panel for control during productions
 - H. Duplex electrical outlets, appropriate in number, should be provided
 - 1. Along front of stage apron
 - 2. At rear of the body of the auditorium
 - 3. About 1/3 the distance from the stage to the rear of the auditorium for use with various audiovisual projectors
 - I. Projection niche (optional) at the rear of the room for use of video projector
 - J. Speakers for use with projector located in the rear of the seating area
 - K. See Chapter 5 for equipment necessary for distance learning
 - L. An independent HVAC system that monitors and controls relative humidity, temperature, and carbon dioxide
 - M. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)

616.02 Lobby or Student Commons

616.021 Size
Area as needed to handle anticipated capacity.

616.022 Location
To serve as common lobby for auditorium and gymnasium if

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facilities are provided in the same unit, or may be used as common lobby with other public service areas.

616.023 Activities
This facility may also serve as a student gathering area.

616.03 Stage

616.031 Size - 1400 to 1600 square feet

616.032 Location

- A. Provide ample wing space on each side of the stage
- B. Access to the stage and building corridor without entering lobby or body of the auditorium

616.033 Equipment Space and Facilities

- A. Apron in front of the main curtain, approximately 8 feet wide, with direct access to the body of the auditorium at each end
- B. Wide double doors with flush threshold opening onto the stage to permit passage of bulky scenery and equipment
- C. The appropriate floor to meet the needs of the curriculum
- D. Electrical circuits
 - 1. Border with roundels of 4 different colors
 - 2. Circuits for adjustable spotlights mounted on at least 2 battens
 - 3. Flush floor pockets or equivalent mounted in floor behind cyclorama with at least one outlet directly behind proscenium arch on each side
 - 4. Duplex electrical outlets mounted near floor on walls of stage
 - 5. Stage work lights (overhead and foot) controlled by multi-way switches at stage entrances
- E. Provide panel for controlling stage and house lights, including beam and spotlights; mount in the ceiling of the auditorium
- F. Light control panel should be designed to avoid overloading of circuits, resulting in dimmer damage, and should be flexible and expandable
- G. Means for mounting 10 to 12 foot roll-up motion picture screen
- H. Microphone outlets to the rear of the proscenium arch and 2 or 3 under the leading edge of the stage apron
- I. Network Computer Drops (See Chapter 11, Section

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1105 and OTIS Handbook for specifications)

616.04 Stage-Crafts-Workshops-Storage

- 616.041 Size - Approximately 750-1000 square feet
- 616.042 Location
Direct access to the stage, arranged to prevent noise interference on the stage.
- 616.043 Activities
Prepare, alter, and store materials, such as stage flats and properties; store general purpose equipment used for auditorium programs.
- 616.044 Equipment Space and Facilities
 - A. Double doors with flush threshold
 - B. Work counter approximately 30 inches deep, with storage: Ten linear feet
 - C. Tool cabinet
 - D. Sink with hot and cold water
 - E. Movable storage cabinets for stage properties
 - F. Electrical outlets on available wall space, including area over work bench
 - G. Bulletin board - 6 linear feet
 - H. Storage for flats of various widths, appropriate for height of the proscenium arch
 - I. Locked storage for grand piano, costumes, stage properties and lighting and projection equipment

617 FOOD SERVICE FACILITIES

See Chapter 3, Section 302.

618 ADMINISTRATIVE AND SERVICE FACILITIES

See Chapter 3, Section 301.

619 ENGINEERING AND CUSTODIAL FACILITIES

See Chapter 12

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Chapter 7

EXCEPTIONAL STUDENT EDUCATION

700 EXCEPTIONAL STUDENTS - INSTRUCTIONAL AREAS

701 PLANNING PROCESS

701.01 Facilities

All facilities for exceptional students are located within the main building. All schools having education programs for exceptional students that provide classrooms for exceptional students must be comparable to the classrooms for non-exceptional students, and located in close proximity to classrooms for age-appropriate non-exceptional peers. Facilities are designed to assist students to function safely with as much mobility as possible and are accessible to students with disabilities. Facilities which house self-contained classes or other specialized facilities required for all exceptional students are designed, furnished, equipped, and maintained to facilitate the program requirements set forth in the individualized education program. The Special Education: Separate class setting requires that the student receive instruction from special education teacher(s) for the majority of the school day. The ages of students in this type of program will vary, usually spanning more than one grade level.

701.02 Additional Factors

Additional factors required to conform with the Uniform Federal Accessibility Standards are:

- A. Accessibility ramps that are ADA compliant
- B. Safe area for loading and unloading of buses and other means of transportation
- C. Rest rooms, drinking fountains, and lavatories that are appropriately equipped and ADA compliant
- D. Special furniture for wheelchair students to permit easy use
- E. Switches, controls, hardware, and fire protection systems that are easily used and understood by the exceptional student
- F. Food service facilities designed to fit the individual needs of students
- G. Non-skid floor covering or carpet
- H. Lockable cabinets for securing medications
- I. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- J. Computer Workstations (See OTIS Handbook for specifications)

701.03 Location

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Special education classrooms should be easily accessible to cafeteria, library, and other central activities. Special education classrooms are situated within the main school facility, located with age-appropriate, non-disabled students, and are physically comparable to regular education classrooms.

702 BEHAVIOR DISORDERS - SEPARATE CLASS

702.01 Size - 600 square feet

702.02 Design Capacity - 8 students

702.03 Location

Should be in an area with a minimum amount of outside distraction, such as traffic or hallway noise, with direct or convenient access to outdoors, and within close proximity to existing rest room facilities.

702.04 Equipment Space and Facilities

Should be stationary or heavy.

A. Instructional Center

1. Teacher's desk and chair
2. 8 desks and chairs or combination desk-chairs, adjustable in height
3. 2 or 3 round or rectangular work tables with chairs for student seating
4. Minimum of 3 individual learning carrels
5. Teacher aide's desk and chair

B. Storage

1. 2 metal storage lockers
2. One 4-drawer file with lock
3. 30 linear feet of open shelving
4. Cart for audiovisual equipment
5. Coat rack or locker available

C. Marker board - 30 linear feet; display and map rail above

D. Bulletin board - 20 linear feet

E. Covered and grounded electrical receptacles located on all walls

F. Carpeting

H. Movable, designed to be secured, screens - for making 2 or 3 study cubicles

I. "Time-out" room - 64 to 100 square feet as described in the student's Individualized Education Program (IEP)

1. Means of monitoring, auditorially and visually (e.g., two-way vision)
2. One bench or chair
3. Remove all locks

I. Phonograph - 1

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- J. Recording device - available
- K. Typewriter - available
- L. Intercom - ideally, two-way intercom unit connected to administrative offices
- M. Capability of darkening room
- N. Clock
- O. Availability of audiovisual equipment
- P. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- Q. Computer Workstations (See OTIS Handbook for specifications)

703 DEAF - BLIND - SEPARATE CLASS

- 703.01 Size - 300 to 500 square feet
- 703.02 Design Capacity - 3 students
- 703.03 Location
See Chapter 7, Section 701.03
- 703.04 Equipment Space and Facilities
 - A. Instructional Center
 - 1. Teacher's desk and chair
 - 2. 2 library tables with 3 chairs each, or seating arrangements appropriate to the concomitant physical handicaps
 - B. Storage (may be common resource area)
 - 1. One cart for audiovisual material
 - 2. One storage locker, recessed if possible. This locker should be of sufficient size to hold braille writer, closed circuit television, typewriter, large print books, and talking-book machines
 - 3. One desk-high file with lock
 - 4. Open shelving - 40 linear feet
 - C. Illumination - the room should be free from glare and direct sunlight. Artificial illumination fixtures should be wired for multi-staged control.
 - D. Wall Surfaces - colors should be chosen in a range of pastel shades; surfaces should have a dull finish and be easily washable.
 - E. Chalkboard - gray or gray-green in color; 4 linear feet; display and map rail above, or as appropriate to the program
 - F. Bulletin board - 4 linear feet, or as appropriate to the program
 - G. Recording device and listening station
 - H. Covered and grounded electrical receptacles located on all

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walls as per NEC.

- I. Appropriate floor covering
- J. Sink with hot and cold water
- K. Typewriter - primary type - available
- L. Projection and magnifying equipment - available
- M. Rest room
- N. Electrical power supply - 3 on each wall
- O. Braille writer and other special equipment, as appropriate
- P. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- Q. Computer Workstations (See OTIS Handbook for specifications)

704 MILD MENTALLY IMPAIRED - SEPARATE CLASS

- 704.01 Size - 600 to 750 square feet
- 704.02 Design Capacity - Maximum of 12 students
- 704.03 Location
See Chapter 7, Section 701.03
- 704.04 Equipment Space and Facilities
 - A. Instructional center
 - 1. Teacher's desk and chair
 - 2. Teacher aide's desk and chair
 - 3. 12 desks and chairs, or combination desk-chairs, adjustable in height
 - 4. 2 library tables with 6 chairs for each
 - B. Storage
 - 1. Cart for audiovisual material - 1
 - 2. Metal storage lockers - 2
 - 3. Desk-high file - 1
 - 4. 4-drawer file with lock - 1
 - 5. 20 linear feet of open shelving
 - C. Full-length mirror - should be designed to be covered
 - D. Marker board - 24 linear feet; display and map rail above
 - E. Bulletin board - as much as possible, minimum of 20 linear feet
 - F. Covered and grounded electrical receptacles located on all walls as per NEC
 - G. Sink with hot and cold water
 - H. Fire extinguisher and blanket
 - I. Phonograph
 - J. Recording device - available
 - K. Clock

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- L. Typewriter - available
- M. Carpeting
- N. Audiovisual equipment should be available
- O. Access to instructional areas/equipment conducive to teaching functional skills
- P. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- Q. Computer Workstations (See OTIS Handbook for specifications)

705 MODERATE MENTALLY IMPAIRED - SEPARATE CLASS

- 705.01 Size - 650 to 850 square feet
- 705.02 Design Capacity - maximum of 12 students
- 705.03 Location
See Chapter 7, Section 701.03
- 705.04 Equipment Space and Facilities
 - A. Instructional center
 - 1. Teacher's desk and chair
 - 2. Teacher aide's desk and chair
 - 3. 12 desks and chairs or combination desk-chairs, adjustable in height
 - 4. 2 library tables with 6 chairs for each table
 - B. Storage
 - 1. Cart for audiovisual material
 - 2. 2 metal storage lockers
 - 3. 4 drawer file with lock
 - 4. 20 linear feet of open shelving
 - C. Marker board - 20 linear feet; display and map rail above
 - D. Bulletin board - as much as possible; minimum 20 linear feet
 - E. Facilities for darkening room
 - F. Electrical receptacles with protective covers on all walls
 - G. Sink with hot and cold water
 - H. Phonograph
 - I. Recording device - available
 - J. Clock
 - K. Typewriter - available
 - L. Carpeting
 - M. Rest room
 - N. Instructional areas/equipment conducive to teaching functional skills (e.g., kitchen facilities, laundry facilities, and bathing facilities)
 - O. Doorways that are 3½ feet wide and without thresholds
 - P. Full length mirror - should be designed to be covered
 - Q. Network Computer Drops (See Chapter 11, Section 1105)

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- R. and OTIS Handbook for specifications)
Computer Workstations (See OTIS Handbook for specifications)

706 ORTHOPEDICALLY IMPAIRED - SEPARATE CLASS

- 706.01 Size - 800 to 1000 square feet
- 706.02 Location
Direct or convenient access to out of doors. See Chapter 7, Section 701.03.
- 706.03 Design Capacity - 10 students
- 706.04 Equipment Space and Facilities
 - A. Teacher's desk and chair
 - B. Teacher aide's desk and chair
 - C. Individual wheelchair cut-out tables for each student, where appropriate; 2 five-foot round tables; some chairs depending on needs
 - D. Storage
 - 1. Cart for audiovisual material
 - 2. 2 metal storage lockers
 - 3. 4-drawer file with lock
 - 4. 30 linear feet of open shelving
 - 5. Adequate storage space for specialized equipment as required by the student's Individualized Education Program (IEP)
 - E. Restroom facilities (bathtub, sink, toilet) to conform with the ADA standard
 - F. Doorways that are 3½ feet wide and without threshold
 - G. Ramps and handrails, if needed
 - H. Non-skid floor surfaces
 - I. Electrical receptacles with protective covers on all walls as per NEC
 - J. Wheelchair-accessible sink with hot and cold water
 - K. Washer and dryer
 - L. Student changing area
 - M. Range and refrigerator, when appropriate
 - N. Convenient access to lunchroom suitable to the individual needs of students
 - O. Marker board - 40 linear feet, display and map rail above
 - P. Bulletin board - as much as possible; minimum 20 linear feet
 - Q. Appropriate floor covering
 - R. Phonograph
 - S. Recording device - available
 - T. Clock

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- U. Typewriter - available
- V. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- W. Computer Workstations (See OTIS Handbook for specifications)

707 SEVERE/PROFOUND MENTALLY IMPAIRED - SEPARATE CLASS

- 707.01 Size - 800 to 1000 square feet
- 707.02 Design Capacity - 9 students
- 707.03 Location
See Chapter 7, Section 701.03
- 707.04 Equipment Space and Facilities
 - A. Instructional Center
 - 1. Teacher's desk and chair
 - 2. 9 desks and chairs or combination desk-chairs, adjustable in height
 - 3. 2 or 3 round or rectangular work tables with chairs for student seating
 - B. Storage
 - 1. Metal storage lockers - 2
 - 2. 4-drawer file with lock
 - 3. 30 linear feet of open shelving
 - 4. Adequate storage space for specialized equipment as required by the student's IEP
 - 5. Cart for audiovisual equipment - 1
 - C. Marker board - 30 linear feet; display and map rail above
 - D. Bulletin board - 20 linear feet
 - E. Covered and grounded electrical receptacles located on all walls
 - F. Full length mirror, designed to be covered
 - G. Appropriate floor covering
 - H. Non-skid floor surface
 - I. Movable screens which can be secured for making 2 or 3 study cubicles
 - J. "Time-out" room - 64 to 100 square feet, as described in the student's IEP
 - 1. Bench or chair
 - 2. Means for monitoring audibly and visibly (e.g., 2-way mirror)
 - 3. Removal of existing locks
 - 4. Free from objects, materials, and equipment
 - K. Phonograph
 - L. Recording device - available

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- M. Instructional areas/facilities to promote the teaching of functional skills, e.g., stove, refrigerator, washer, dryer
- N. Typewriter - available
- O. Range
- P. Doorways that are 3½ feet wide and without thresholds
- Q. Specialized equipment as required by the student's IEP
- R. Diapering area with a lavatory with hot and cold water
- S. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- T. Computer Workstations (See OTIS Handbook for specifications)

708 DEAF AND HARD OF HEARING - SEPARATE CLASS

- 708.01 Size - 600 to 750 square feet
- 708.02 Design Capacity - 10 students
- 708.03 Location
Should be located out of close proximity to high noise level areas (e.g., gymnasiums, rhythm rooms, shops, noisy streets, railroad tracks, and airports). Baffle of trees, embankments, and/or turf should lie between building and possible noise sources. See Chapter 7, Section 701.03.
- 708.04 Equipment Space and Facilities
 - A. Housing structure
 1. Walls to meet ASA noise coefficient (NC) guidelines
 2. Combination cork/peg boards - one wall
 3. Doors, solid-core type (air gaps sealed with rubber edging stripe)
 4. Windowless or partially windowless (double pane) classroom
 5. Ventilation system that meets ASA guidelines for noise
 6. Toilet equipment should be silent in operation and ADA compliant
 7. Minimum of 18 linear feet of marker board (natural slate or dark green) - magnetic chalkboards are optional
 8. Sink, with counter area and storage for books
 9. Closets (walk-in type)
 10. Space to house amplification equipment, audiovisual arts, and storage for books
 - B. Acoustic considerations- Sound levels are to meet ASA guidelines for the hearing challenged. Wall, ceiling, HVAC, and floor construction are to be evaluated in order to meet

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these guidelines

1. Installation of appropriate floor covering
 2. Acoustical plaster and tile (appropriate amounts on walls and ceilings)
 3. Drapes
 4. Sound levels of 30 to 35 db on the A scale of a sound level meter measured in the empty classroom with normal activity in adjacent areas. The signal-to-noise ratio in the occupied classroom is to be 20 to 30 db for optimal speech discrimination opportunities.
- C. Instructional Center
1. Teacher's desk and chair
 2. Students desks/chairs
 3. Round table - 5 foot
 4. Set of carrels for individualized instruction
 5. Movable screen covered with sound absorbing material
- D. Lighting
1. Controls in teaching area
 2. Lighting design to meet requirements of the special needs students
 3. Projection shades for windows
- E. Electrical power supply as per NEC
- F. Equipment
1. FM system with individual aids for each student; loop installation
 2. 16 and 35 mm projector, available
 3. Slide projector, available
 4. Language master, available
 5. Opaque and overhead projectors
 6. Portable VCR, camera, video, and playback/monitor system
 7. Recording device
 8. Record player
 9. 4 drawer file cabinets with locks
 10. Speech mirror - portable, at least 2 feet x 1 foot
 11. Visual fire safety signals
 12. Full length mirror
 13. Telephone trainer unit with teletype device for the deaf
- G. Observation room equipped with amplification system, lock, and one-way glass (entrance outside of classroom)
- H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- I. Computer Workstations (See OTIS Handbook for specifications)

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709 BLIND AND PARTIALLY SIGHTED - SEPARATE CLASS

- 709.01 Size - 600 to 750 square feet
- 709.02 Design Capacity - 10 students
- 709.03 Location
See Chapter 7, Section 701.03
- 709.04 Equipment Space and Facilities
 - A. Instructional Center
 - 1. Teacher's desk and chair
 - 2. Teacher aide's desk and chair
 - 3. Desks and chairs or combination desk-chair, movable and adjustable in height; of light neutral color and with a dull finish
 - 4. 2 library tables with 3 chairs each
 - B. Storage
 - 1. Cart for audiovisual material
 - 2. Storage locker, recessed if possible. This locker should be of sufficient size to hold: braille writer, closed circuit television, typewriter, large print books, and talking book machines (may be storage closet).
 - 3. 4-drawer file with lock, recessed if possible
 - 4. Desk-high file
 - 5. Open shelving - 40 linear feet
 - C. Illumination - the room should be free from glare and direct sunlight. Artificial illumination fixtures should be wired for multi-staged control.
 - D. Environment must be barrier free in order to be conducive to physical mobility of students.
 - E. Facilities and equipment conducive to active physical education program shall be available.
 - F. Low-vision aids or other mechanical and/or electronic aids (e.g., braille writer, closed circuit television, talking computer)
 - G. Wall surfaces - colors should be chosen in a range of pastel shades; surfaces should have a dull finish and be easily washable.
 - H. Chalkboard - gray or gray-green in color; 20 linear feet; display and map rail above
 - I. Bulletin board - 20 linear feet
 - J. Recording device and listening station
 - K. Electrical power source, 2 or 3 on each wall - covered and grounded as per NEC
 - L. Appropriate floor covering
 - M. Sink with hot and cold water

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- N. Two typewriters - primary type
- O. Projection and magnifying equipment - available
- P. Tangible apparatus - brailers, talking book machines, reading stands and racks, and relief globes
- Q. Rest room
- R. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- S. Computer Workstations (See OTIS Handbook for specifications)

710 SPECIFIC LEARNING DISABILITIES - SEPARATE CLASS

- 710.01 Size - 540 square feet
- 710.02 Design Capacity - maximum of 12 students
- 710.03 Location
See Chapter 7, Section 701.03
- 710.04 Equipment Space and Facilities
 - A. Instructional Center
 - 1. Teacher's desk and chair
 - 2. Teacher aide's desk and chair
 - 3. 8 desks and chairs or combination desk-chairs, adjustable in height
 - 4. 2 library tables with 4 chairs for each
 - 5. Minimum of 4 individual learning stations
 - B. Storage
 - 1. Cart to use for audiovisual materials
 - 2. Metal storage lockers - 2
 - 3. Desk-high file with lock
 - 4. 4-drawer file with lock
 - 5. Open shelving - 30 linear feet
 - C. Marker board - 30 linear feet; display and map rail above
 - D. Bulletin board - minimum 20 linear feet
 - E. Movable screens - 2 or 3, 5 feet x 6 feet
 - F. Covered and grounded electrical receptacles located on walls
 - G. Phonograph
 - H. Recording device
 - I. Clock
 - J. Computers and work stations - available
 - K. Audio card readers - 2
 - L. Overhead projector
 - M. Instructional television
 - N. Data projector - available
 - O. Painting easel - 2
 - P. Projector and screen - available

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- Q. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- R. Computer Workstations (See OTIS Handbook for specifications)

711 PRE-SCHOOL HANDICAPPED - SEPARATE CLASS

- 711.01 Size - 600 to 800 square feet
- 711.02 Design Capacity - 10 students
- 711.03 Location
See Chapter 7, Section 701.03.
- 711.04 Equipment Space and Facilities
 - A. Teacher's desks and chairs, one each for teacher and aide
 - B. 2 tables with chairs for pupil seating; carpet squares or low cushions for additional seating per child
 - C. Storage
 - 1. Cart for audiovisual material
 - 2. Storage cabinets
 - 3. 4-drawer file with lock
 - 4. 20 linear feet of shelving adjacent to instructional area
 - D. Restroom facilities (including changing table and cots) to conform with Vocational Rehabilitation requirements
 - E. Doorways that are 3½ feet wide and without threshold
 - F. Ramps and handrails, if needed
 - G. Non-skid floor surfaces
 - H. Electrical receptacles with protective covers on all walls
 - I. Sink with hot and cold water
 - J. Marker board - 30 linear feet
 - K. Bulletin board - as much as possible; minimum 20 linear feet
 - L. Facilities for darkening room
 - M. Appropriate floor covering
 - N. Phonograph - available
 - O. Recording device - available
 - P. Clock
 - Q. Typewriter - available
 - R. Projector and screen - available
 - S. Instructional television - available
 - T. VCR - available
 - U. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - V. Computer Workstations (See OTIS Handbook for specifications)

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712 GIFTED EDUCATION - SEPARATE CLASS

- 712.01 Size 600 to 750 square feet
- 712.02 Design Capacity - 15 students
- 712.03 Location
See Chapter 7, Section 701.03
- 712.04 Activities
Individuals and groups engaging in study and work activities; experimentation; problem solving situations; and such activities as using educational media aids and technology, using a variety of reference materials, developing cultural skills, and displaying student's work.
- 712.05 Equipment Space and Facilities
Ample space, movable furniture and equipment, and well-designed storage areas are essential.
- A. Marker boards, bulletin boards and other display areas: As much as possible, a minimum two-thirds of available wall space
 - 1. Marker boards and bulletin boards should have map rails installed above.
 - 2. The bottom of the display area should be at the eye level of the student when seated.
 - B. Student wardrobe - accessible
 - C. Storage space
 - 1. Open and closed adjustable shelving of various heights and depths for a variety of sizes of construction paper, charts, and large format books - 30 linear feet of each
 - 2. Storage for teacher's personal belongings
 - 3. Filing space for instructional material and supplies equivalent to two 4-drawer, legal-size file cabinets
 - D. Work space - 2 square feet per student with shelving beneath. Sink equipped with mud trap and hot and cold water.
 - E. Teacher's combination desk-table and chair
 - F. 2 conference-type tables and chairs
 - G. Desks and chairs, or combination chair-desk
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - I. Computer Workstations (See OTIS Handbook for specifications)
 - J. Electrical receptacles located on all walls, covered and grounded
 - K. A minimum of 1 movable screen

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- L. Clock
- M. Phonograph

713 PROFESSIONAL SUPPORT STAFF

Services may be provided by professional support staff, such as school psychologists, counselors, audiologists, speech/language pathologists and related service specialists through itinerant or full-time services to the students. If itinerant services are provided, areas of the school may be used by professional support staff on a part-time basis with adequate spaces being made available. Those services which are provided on a full-time basis require an individual full-time room assignment.

- 713.01 Size 250 to 350 square feet
- 713.02 Design Capacity - Maximum of 10 students and, in some cases, parents
- 713.03 Location
These facilities shall be located within the main school facility and easily accessible to all students with disabilities.
- 713.04 Activities
Individual and group guidance; counseling and conferences with pupils, parents and teachers; individual evaluations; individual and group instruction.
- 713.05 Equipment Space and Facilities
 - A. Desk and chair
 - B. Conference chairs
 - C. Shelving - 10 to 15 linear feet
 - D. Bulletin board - 4 to 6 linear feet
 - E. Marker board - 4 to 6 linear feet
 - F. Storage for personal belongings
 - G. 4-drawer file cabinet with lock for each professional assigned full-time to facility
 - H. Additional file space for other professionals providing itinerant services
 - I. Professional support staff facilities, including equipment, must be modified in order to accommodate student needs as specified in the individualized education program
 - J. Telephone with one or more outside lines
 - K. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - L. Computer Workstations (See OTIS Handbook for specifications)

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Chapter 8

VOCATIONAL EDUCATION

800 VOCATIONAL EDUCATION FACILITIES

When planning facilities of a service area program for Vocational-Technical Education, refer to the Division of Technical and Adult Education Services, Handbook on Planning School Facilities Vocational Education Supplement. The assistance of specialists in agricultural education should be secured in planning facilities.

801 AGRICULTURAL EDUCATION FACILITIES

Factors influencing the location of facilities include: Isolation from quiet areas of the building; location which provides easy delivery of instructional supplies, materials, and equipment including farm machinery; location which permits isolation from remainder of the building for after-school use.

801.01 Classroom Space

801.011 Size

Base preliminary determination of area upon allotment of 30 to 40 square feet per student (minimum of 600 square feet), exclusive of storage space. If classroom space is based on the minimum of 30 square feet per student (600 square feet total), an additional 200 square feet should be provided for a demonstration and work area - wet sink, etc.

801.012 Design Capacity - 20 students

801.013 Location

- A. Convenient or direct access to shop and office
- B. Ground floor, convenient to a building entrance

801.014 Activities

Lecture; demonstration; experimentation; discussion; viewing videos and other projected materials; writing or drawing on markerboards; displaying students' work; storing instructional materials and supplies.

801.015 Equipment Space and Facilities

- A. Markerboard - 20 to 24 linear feet; display and chart rail above
- B. Bulletin board - as much as possible; minimum 8 linear feet; height 4 feet; display and chart rail above. Locate one section adjacent to entrance.

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- C. Student tables (minimum of 10 - 24 inches x 60 inches x 30 inches) and chairs
- D. Teacher's desk and chair
- E. Demonstration lab table with wet sink, gas, and electric - 24 inches x 60 inches x 36 inches
- F. Storage
 - 1. Magazine rack
 - 2. Minimum of 40 linear feet of adjustable shelving
 - 3. Record book holder
- G. Duplex electrical outlets on all walls
- H. Facilities for light control to permit use of visual aid
- I. Refer to the "Agricultural Education Program Guide" for list of equipment
- J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- K. Computer Workstations (See OTIS Handbook for specifications)

801.02 Agricultural Mechanics Laboratory

- 801.021 **Size**
Minimum of 2400 square feet. Base preliminary determination of area on allotment of 120 to 150 square feet per student, exclusive of storage and tool room space.
- 801.022 **Design Capacity - 20 students**
- 801.023 **Location**
 - A. Convenient access to classroom space and instructor's office
 - B. Direct access to service drive
- 801.024 **Activities**
Construct and repair agricultural equipment and machinery; weld; finish and paint equipment; operate power machinery or equipment; store tools, materials, and partially-completed projects.
- 801.025 **Equipment Space and Facilities**
 - A. Varies with program offered in shop
 - B. Markerboard and bulletin board - 6 linear feet each
 - C. Windows should be at least 42 inches above the floor to permit installation of equipment along wall and electrical outlets above work benches
 - D. Floor or ceiling electrical grid system for 110 and 220 volt power to various machines with master control

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- switches
- E. Overhead door from service drive, minimum 14 feet wide and 10 feet high
- F. Storage for hand tools, may be provided in separate room or in cabinets and racks within the lab
- G. Fire extinguishers, per State Fire Code
- H. Work benches, wooden, minimum of 30 linear feet
- I. Work benches, metal, minimum of 40 linear feet
- J. Floor drain near machinery repair area
- K. Half-circle wash fountain installed in shop
- L. Emergency eye wash and shower station
- M. Refer to the "Agricultural Education Program Guide" for list of equipment
- N. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- O. Computer Workstations (See OTIS Handbook for specifications)

801.03 Agricultural Mechanics Storage Area

801.031 Size - minimum of 600 square feet

801.032 Location

- A. Adjacent to the laboratory area and machinery storage area
- B. Area should be protected from the weather, but not necessarily heated

801.033 Activities

Storage of instructional materials and consumables

801.034 Facilities

- A. Storage rack for metal
- B. Storage rack for lumber

801.04 Machinery and Material Storage Area

801.041 Size - minimum of 600 square feet

801.042 Location

Adjacent to the lab with direct access through the overhead lab door

801.043 Equipment Space and Facilities

- A. Macadam base sloped for drainage
- B. Surrounded by chain link fence at least 7 feet high
- C. Double gate entrance, minimum of 14 feet wide

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801.05 Greenhouse

- 801.051 Size - minimum of 22 feet x 48 feet
- 801.052 Location
Convenient access to other program facilities
- 801.053 Equipment Space and Facilities
 - A. Frost-proof hose bibs
 - B. GFCI outlets as per NEC

801.06 Instructor's Office and Storage Area

- 801.061 Size - minimum of 100-150 square feet
- 801.062 Location
Convenient or direct access to shop and classroom area
- 801.063 Equipment Space and Facilities
 - A. Teacher's desk and chair
 - B. 1 or 2 conference chair
 - C. Storage
 - 1. Letter size, 4-drawer file cabinet
 - 2. Legal size, 4-drawer file cabinets, minimum of 2
 - 3. Adjustable shelving of various heights and depths
 - D. Duplex electrical outlets as per NEC
 - E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - F. Computer Workstations (See OTIS Handbook for specifications)

802 MARKETING EDUCATION FACILITIES

802.01 Instructional Space

- 802.011 Size
The size of the facility is driven by the curriculum. The Marketing Education curriculum calls for small group work areas, project areas, and regular classroom instruction space. The suggested average space is 40 - 45 square feet per student (1000 - 1125 square feet).
- 802.012 Design Capacity - 25 students

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802.013 Location
The most desirable location for a facility will be found along a main corridor receiving maximum student exposure.

802.014 Activities
Learning activities will include role playing; realistic job situations; demonstrating job related skills; observing and evaluating *videos*; job activities and processes; independent study in an area; panel presentations and discussions; and conferences.

802.015 Equipment Space and Facilities

- A. Trapezoid-shaped tables with chairs
- B. Markerboards and bulletin boards
- C. Exterior display window
- D. File cabinet
- E. Electronic cash register with counter
- F. Calculators, 1 per student, per class
- G. Teacher desk and chair
- H. Bookcase
- I. Mannequins - 1 or 2
- J. Network Computer with Internet connection, drops
(See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- K. Computer Workstations (See OTIS Handbook for specifications)

802.02 Office

802.021 Size
Because of the Marketing Education teachers' daily contact with the business community, an office connected to the classroom is necessary. This office should be 100-150 square feet and should accommodate 1 - 2 teachers. A clear window or partition should separate the office from the classroom.

802.022 Location
Direct or convenient access to instructional space

802.023 Equipment Space and Facilities

- A. Teacher's desk and chair
- B. Telephone
- C. Conference chairs - 1 or 2
- D. Computer with printer
- E. Letter size 4 drawer file cabinets - 2
- F. 20 to 30 linear feet of shelving, open or closed

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- G. Plain paper copier
- H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- I. Computer Workstations (See OTIS Handbook for specifications)

802.03 Storage

- 802.031 Size
A storage closet of at least 100 square feet should be attached to the classroom. Some shelving should be built in.
- 802.032 Location
Direct or convenient access to instructional space or school store
- 802.033 Equipment Space and Facilities
Adjustable shelving throughout

802.04 School Store

- 802.041 Size
If a retail lab is part of the Marketing Education program, spaces from 150 square feet to 1500 square feet can be utilized, depending on the type of store and planned operation. Contact the State Coordinator for Marketing Education for assistance in planning a school store.
- 802.042 Location
The most successful location would be on a high traffic corridor, attached to the Marketing Education Classroom and office.
- 802.043 Equipment Space and Facilities
Contact the State Coordinator for Marketing Education for specs.
- 802.044 Activities
Stock and operate a retail enterprise, selling items identified as appropriate by school survey and the administration, teacher and advisory committee.

803 DIVERSIFIED COOPERATIVE TRAINING FACILITIES

803.01 Instructional Space

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- 803.011 **Size**
The size of this facility will be dependent upon the type of furniture and equipment contained; 30 to 35 square feet per student.
- 803.012 **Design Capacity - 25 students**
- 803.013 **Location**
The most desirable location for a facility will usually be found along a main floor corridor receiving maximum student exposure.
- 803.014 **Activities**
Learning activities will include role playing; realistic job situations; demonstrating job related skills; observing and evaluating videos; job activities and processes; independent study in an area; panel presentations; and discussions and conferences.
- 803.015 **Equipment Space and Facilities**
- A. Tables and chairs
 - B. Bulletin boards and Marker boards
 - C. File cabinets
 - D. Calculators
 - E. Telephone
 - F. Storage cabinet
 - G. Typewriter
 - H. Teacher's desk and chair
 - I. Bookcase
 - J. Network Computer with Internet connection Drops
(See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - K. Computer Workstations (See OTIS Handbook for specifications)

804 **VOCATIONAL HEALTH OCCUPATIONS FACILITIES**

One factor influencing the location of the facilities would be whether the location permits parking and easy access for bus and auto transportation to clinical facilities.

804.01 **Instructional Space**

- 804.011 **Size**
Base preliminary determination of area upon allotment of 25 to 30 square feet per student.

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NOTE: If classroom/laboratory area is combined, need 75 to 100 square feet per student.

- 804.012 Design Capacity - 25 students/classroom
- 804.013 Location
Convenient to laboratory and office.
- 804.014 Activities
Lecture; large and small group discussion; independent study; utilization of audiovisuals; markerboard demonstrations; role playing and similar learning strategies.
- 804.015 Equipment Space and Facilities
- A. Markerboard - 8 to 12 linear feet
 - B. Bulletin board - 4 feet by 4 feet
 - C. Student chairs with arm rests, or 30 inches x 60 inches library tables and chairs
 - D. Teacher's desk and chair
 - E. Equipped simulation/patient care units with provision for privacy. If the instructional space/laboratory area is combined, a demonstration unit is not needed.
 - F. Storage
 - 1. Legal size, 4 drawer file cabinet
 - 2. Magazine rack
 - 3. Adjustable shelving
 - 4. Cabinet storage areas
 - 5. Open shelves within classroom
 - G. Electrical outlets to permit use of equipment at demonstration unit and for small or large group viewing of audiovisuals
 - H. Provisions for light control to permit use of visual aids
 - I. Sink with hot and cold water
 - J. Fire extinguisher (per State Fire Code)
 - K. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - L. Computer Workstations (See OTIS Handbook for specifications)
 - M. Refer to the "Health Occupations Program Guide" for list of equipment for specific programs.

804.02 Health Occupations Laboratory

- 804.021 Size
Base preliminary determination of area on allotment of 75 to 100 square feet per student in the following occupational areas.

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- A. Dental Assistant
- B. Practical Nursing
- C. Health Assistant
- D. Nursing Assistant
- E. Medical Aide/Assistant
- F. Medical Lab Assistant
- G. Dental Lab Assistant
- H. Respiratory Therapy Technician
- I. Pharmacy Technician
- J. Medical Transcriptionists
- K. Surgical Technician

NOTE: The assistance of specialists in health careers and health occupations should be secured in planning these facilities.

804.022 Design Capacity - 25 students/lab

804.023 Location

- A. Convenient access to instructional space and instructor's office
- B. Provision for room privacy during patient care/simulation procedures

804.024 Activities

Learning experiences in patient care and recording, dental/medical office procedures and related activities, depending upon health occupation being taught.

804.025 Equipment Space and Facilities

- A. Equipment should be comparable to that used in the health occupation field.
- B. The equipment and work stations will vary with the occupational objectives of the program.
- C. Windows should be high enough to permit installation of equipment along the wall.
- D. Consultation should be made with Vocational Health Occupations Education Supervisor for equipment needs of various occupational areas.
- E. Sink and lavatory should have hot and cold water.
- F. Counter top should have work space with cabinet storage.
- G. Storage room should have locked storage for visual aids, equipment and supplies.
- H. Equipment supplied should include dressing room and student lockers.
- I. Washer and Dryer

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- J. Refer to the "Health Occupations Program Guide" for list of equipment.
- K. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- L. Computer Workstations (See OTIS Handbook for specifications)

804.03 Instructor's Office/Station

804.031 Size - 100 to 150 square feet

804.032 Location
Direct access to the laboratory, instructional space and corridor.

804.033 Equipment Space and Facilities

- A. Teacher's desk and chair
- B. Conference chairs - 2
- C. 4 drawer file cabinet with lock
- D. Mirror
- E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- F. Computer Workstations (See OTIS Handbook for specifications)

804.04 Resource/Study Area

804.041 Size - 225 square feet

804.042 Location
Can be separate room or can be part of laboratory.

804.043 Equipment and Facilities

- A. Round tables or library tables with 10 chairs each - 2
- B. Bookshelves or bookcases along walls
- C. Storage cabinets for visual aids and independent study materials
- D. Bookkeeping drawer and forms for book borrowing
- E. Magazine display rack for journals, pamphlets, periodicals, and other materials
- F. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- G. Computer Workstations (See OTIS Handbook for specifications)

805 FAMILY AND CONSUMER SCIENCES (FACS) - GRADES 9-12

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FACS education is an instructional program that prepares individuals to become independent to assume family roles, contribute to the good of the community and society, balance work and family, and transfer personal skills to the workplace.

Content areas include but are not limited to: parenting, child development, food and nutrition, consumer education, human services, personal development and family relationships, housing, and fashion.

805.01 FACS Instructional Space

805.011 Size

The FACS facility consists of 1 or more rooms. Regardless of the number of rooms, space is provided for carrying out a comprehensive curriculum. In small high schools, a single room with 1 teacher is used for teaching all aspects of the curriculum. If more than one teacher is currently employed, or if it is anticipated that in the near future more than one teacher will be needed, sufficient rooms are included in the original plan for meeting needs. Regardless of the number of rooms in a facility, each room is used for teaching more than one area of FACS instruction.

A. One all-purpose room shall be designed for a 1-teacher department with space and equipment for teaching textiles and design, nutrition and foods, housing, parenting and child development, family relationships, human services, and consumer education. The total amount of combined classroom and laboratory space needed is 70-80 square feet per student and is designed to include the following areas:

1. Foods laboratory - See Chapter 8, Section 805.021 for specialized equipment and facilities requirements.
2. Textile and Design laboratory/multi-purpose room - See Chapter 8, Sections 805.04 and 805.05 for specialized equipment and facilities requirements. Also, includes space and equipment for:
 - a. Storage for teaching materials, supplies, and student references
 - b. Teaching center
 - c. Display case
3. Multi-purpose tables, 28x42x60 inches - minimum of 5 feet between tables
4. Multi-purpose chairs - one per student
5. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)

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6. Computer Workstations (See OTIS Handbook for specifications)
- B. Two multi-purpose rooms shall be designed for a 2 or more teacher department
 1. Room one consists of:
 - a. Space and equipment for teaching foods and other instructional areas listed above - 55 to 60 square feet per student
 - b. Storage for teaching materials, student projects, supplies, and references
 - c. Teaching center
 2. Room two consists of:
 - a. Space and equipment for teaching Textile and Design lab and other instructional areas listed above - 55 to 60 square feet per student
 - b. Storage for teaching materials, student projects, supplies, and references
 - c. Teaching center with conference/office area of 100 to 150 square feet
 - d. Display areas of 24 square feet

A peripheral arrangement with a minimum of fixed equipment or furnishings extending out into the room promotes flexibility in the use of space. Equipment is arranged in relation to point of use to prevent congestion. Allowance between tables is 5 feet for students to pull out chairs and be seated and to permit instructor supervision.

805.012 Design Capacity - 20 students (lab); 25 students (classroom)

805.013 Location

Facilities should be located on the ground floor, preferably near an outside entrance for:

- A. Convenient delivery of groceries and instructional materials
- B. Convenient installation and removal of large equipment
- C. Easy accessibility for physically handicapped persons
- D. Easy accessibility for preschool age children and their parents

NOTE: In multi-teacher facilities, rooms adjacent to each other tend to unify the program by allowing for ease of communication, sharing of equipment, and exchanging rooms for instruction. In schools with

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several rooms, rooms on both sides of the corridor make for a more compact facility than a row of rooms the length of the corridor.

805.014 Activities

Viewing slides, videos and other projected materials; class discussions; lectures; demonstrations; individual, small or large group activities such as career and technical student organization activities; selecting, planning, and evaluating student projects; preparation of teaching materials and planning of program activities.

805.015 Equipment Space and Facilities

- A. Provisions made for blinds, shades, and/or drapes at the windows
- B. Window sills located 40 inches or higher above the floor when storage cabinets are to be installed along that wall
- C. Electrical needs
 - 1. Separate electric control panel for the facility located in or adjacent to the FACS department
 - 2. Sufficient grounded electrical outlets located near the point of use to accommodate the use of many pieces of equipment at one time
 - 3. Ample switches and outlets provided on each wall in each room
- D. Plumbing needs
 - 1. Adequate and properly located plumbing connections provided for the equipment
 - 2. A continuous supply of hot water provided. A separate hot water heater and water softener may be needed.
- E. Sufficient space provided for easy movement of students and instructor
- F. Major floor area of each room free of heavy or permanently fixed equipment to allow for flexible room arrangement
- G. Doors placed to prevent interference with traffic patterns
- H. Markerboard - minimum of 8 linear feet per room
- I. Bulletin board - minimum 15 square feet per room
- J. Tables and chairs for seating of entire class. Can be arranged for small or large groups and for demonstrations as needed
- K. Storage needs - Both general storage and within the instructional areas are provided. The two most commonly used types of storage arrangement are: (1)

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the separate room and (2) cabinets and/or open shelves within the classroom. Some advantages to the separate storeroom are: it leaves more wall space within the classroom, and it frees floor space for flexible arrangement when items not in use are placed in the storeroom. A combination of the 2 types is desirable with a separate room for storage of large equipment which is not used frequently, and cabinets in the classroom for student items, small equipment and frequently used teaching materials.

1. Shelving conveniently spaced and/or adjustable to fit the size and shape of equipment to be stored, such as portable sewing machines, reference books, audiovisual equipment, and small equipment items
2. Drawers of a depth to serve the materials or equipment to be stored
3. Mobile base cabinets to provide additional work space and allow for more flexibility in room arrangement
4. Heavy articles stored at a carrying level
5. Movable trays or pullout sections used instead of shelves to facilitate removing articles
6. Total amount of storage space expanded by using items such as "Lazy Susan" shelves, divided drawers, vertical shelves, and stair-step shelves
7. Closed storage space provided for items that need to be protected, not used frequently, or may detract from the appearance of the room
8. Cabinets with locks provided for storage of items such as electrical appliances, portable sewing machines, food, and audiovisual equipment
9. Storage units located near the department's entrance for temporary storage of students' books and personal belongings
10. Storage space provided for cleaning supplies and equipment

805.016

Teacher/Conference Area

This center may be located in a designated area of the all-purpose room. A separate room is desirable when there are 2 teachers and is essential for 3 or more teachers. If a separate center is necessary, it should be accessible from all rooms in the FACS facility. Equipment needed:

- A. Teacher's desk and chair (1 each per teacher)

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- B. Lockable storage for teachers' belongings
- C. Open and closed adjustable shelving - minimum 30 linear feet
- D. 4-drawer file cabinet - 1 to 2 per teacher
- E. An electrical outlet needed by each teacher's desk
- F. Rooms size - 100 to 150 square feet. For each additional teacher add 50 square feet
- G. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- H. Computer Workstations (See OTIS Handbook for specifications)

805.02 Nutrition and Foods Specialized Equipment and Facilities

805.021 Equipment Space and Facilities

- A. Kitchen units, 4 to 6, arranged in different patterns (U-type, L-type, one wall, island, corridor). One should be planned for demonstration purposes and includes an adjustable overhead mirror. Unit kitchens are arranged for easy supervision by the teacher. Upper peninsular cabinets and range hoods that block the teacher's view are avoided.
 1. Each unit kitchen consists of: double sink, range, base and wall cabinets, tables, chairs, and 10-12 linear feet of work surface, excluding sink and range.
 2. 24 to 30 inches of base cabinets recommended at the left of each range and left and right of the sink; also allow space for a mixing center.
 3. Sink located between the range and mixing centers in each unit
 4. Waste disposal included in each unit
 5. 24 to 30 inches of counter work space provided for each student working in a unit kitchen and adequate storage for basic equipment and supplies located in each kitchen unit with special equipment and food supplies located nearby
 6. Tables and chairs adjacent to the kitchens for serving purposes
 7. Exhaust ducts and/or range hoods with exhaust fans to pull odors and fumes out of the room and vent to the outside
 8. At least one 48 inches x 72 inches cabinet with adjustable shelves needed for storing extra supplies, equipment, and classroom materials

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9. Variety of cabinet and counter materials, range and refrigerator models, and fuels
10. Non-porous floor covering and finish for walls in unit kitchen
11. Minimum of 3 electrical outlets per kitchen unit
12. Refrigerators with freezer compartments, accessible to kitchen units: One per each 2 kitchen units. 24 to 36 inches of counter space should be provided adjacent to the latch side of each refrigerator.
13. Separate freezer desirable if used extensively as a part of the foods curriculum
14. Portable or built-in dishwasher - 1
15. Microwave oven - 1 to 2
16. Fire extinguisher, blanket, and first aid kit

805.03 Laundry Area

- 805.031 Equipment Space and Facilities
- A. Automatic washer and dryer
 - B. Sink
 - C. 36 inches of counter space
 - D. Base and wall cabinet for storage
 - E. Locate in a space which allows for class demonstrations

805.04 Textiles and Design Area

- 805.041 Equipment Space and Facilities
- A. One sewing machine per 2 students. These may be a combination of cabinet-type and portable (which must be stored when not in use).
 1. Each sewing machine and chair/stool provides a minimum of 3 feet for pull-out space.
 2. The facility is planned so that sewing machines can be stored and the area is available for multiple uses.
 3. A grounded electrical outlet is available for each machine.
 - B. Pressing area - one for each 8 to 10 students. Includes:
 1. Ironing boards
 2. Steam irons
 3. A variety of small pressing equipment, such as seam roll, sleeve board, and tailor's hem
 4. Grounded electrical outlet in each pressing area

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- C. Full length triple mirror
- D. Lockable storage
 - 1. Cabinets for tote trays located near the entrance. One tote tray (4 3/4 inches x 12 inches x 18 inches) per student. Top of upper tote tray should not be more than 60 inches from the floor.
 - 2. Cabinets or closet with adjustable rods for hanging garments. Allow 4 to 6 linear feet.
 - 3. Cabinets or walk-in closet for the storage of equipment, samples, portable machines, and other materials.

805.05 Multi-purpose Area
For instruction in the areas of human services, relationships, housing, parenting, child development, personal and family relations, consumer education, and related subjects.

- 805.051 Equipment Space and Facilities
- A. Variety of equipment, furnishings, and accessories, such as living center furniture (sofa, chair, tables, lamps, and pictures); roll-away bed; play pen; baby bed; high chair; bookcase; vacuum cleaner and attachments; and play equipment
 - B. Low, movable storage cabinets with shallow, open shelves for play supplies, equipment, and children's personal belongings
 - C. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - D. Computer Workstations (See OTIS Handbook for specifications)

Occupational FACS programs are designed to prepare students for employment in occupations utilizing the knowledge and skills in one or more of the areas related to FACS. The programs prepare persons for employment at entry or advanced levels as well as assist in the updating of skills or retraining of those already in the labor force. Jobs that relate to FACS are basically those that produce services. However, some jobs involve the production and distribution of goods. Program offerings include, but are not limited to, child care services; fashion design, production and services; food management, production, and services; housing and interior design services; management services; and hospitality services; as well as interdisciplinary programs such as home-based employment and care services.

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805.06 Food Management, Production and Services Occupational

- 805.061 **Size**
Approximately 2000 to 2500 square feet. Foods laboratory to provide work stations for 20 students - approximately 1500 square feet. Allowance per student lab work station should be at least 5 feet. Dining/café/restaurant area to accommodate up to 40 persons. The dining area may also serve as the classroom instructional area. Space allowances for dining room table service should be provided. Dry storage area should be approximately 1000 to 2000 square feet depending on the size of inventory that must be kept on hand for instruction, preparation, and service.
- 805.062 **Design Capacity - 20 students**
- 805.063 **Location**
Ground level is a preference. Accommodations for delivery purposes, safety considerations, and for adequate ventilation and exhaust are necessary in the laboratory. The dining area should provide for easy accessibility with consideration to ingress and egress.
- 805.064 **Activities**
A television, VCR, and overhead projector are necessary for classroom and lab instruction. Other activities include class discussions, lectures and demonstrations; individual and small or large group activities; instruction in planning, selecting, storing, purchasing, preparing, and serving quantity food and food products; nutritive values; safety and sanitation precautions; use and care of commercial equipment; serving techniques and customer service applications; special diet considerations; and management of food service establishments.
- 805.065 **Equipment Space and Facilities**
- A. Foods laboratory to provide work stations for 20 students, including but not limited to preparation areas for meats, entrees, salads, vegetables, sandwiches, beverages, and baked, fried, and broiled foods. Stainless steel tables are necessary for student work areas.
 - B. Dining area should allow for 12 to 14 square feet per person. The dining area can be utilized as instructional area. Seating accommodates every student enrolled and allows for customer dining service. Additional space is necessary if the facility is

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to accommodate banquets. Most food management classes provide this service as part of their instructional activities.

- C. Dry storage with a temperature of 50 to 70 degrees and a moderate humidity level should be provided. Storage areas should be equipped with locks and located near delivery entrance. Shelving is adjustable and easy to clean.
- D. Storage for cleaning supplies and equipment, located away from food and food preparation areas, should be provided.
- E. Storage should be provided for small wares, miscellaneous equipment, and other supplies.
- F. Both freezer and refrigerator should be placed outside storeroom but adjacent to it where it is accessible to work areas.
- G. Grounded electrical appliances with adequate heavy duty circuits to allow operation of more than one piece of equipment at a time. Provide a sufficient number of conveniently located outlets. Sufficient electrical power and/or gas availability is necessary for the operation of commercial food service equipment.
- H. Dishwashing area which includes a commercial dishwashing machine, disposal, and/or a 3-compartment sink.
- I. Major traffic aisles at least 5 feet wide; adequate space between work tables and equipment, except for ovens, deep fryers, and grills, where the aisle should be 3½ to 4 feet.
- J. Variety of equipment reflective of the food service industry, such as grills, convection ovens, deep-fat fryer, microwave oven, range/stove top, fire suppression system (if necessary), stainless steel units, sandwich refrigerated prep unit, cash register, ice machine, and commercial coffee machine should be made available for industry related instruction and curriculum compliance.
- K. Equipment which can be used for several purposes is desirable, (e.g. a mixer with attachments for cutting, dicing, and slicing).
- L. Salad preparation area to be provided and a vegetable cleaning sink is desirable.
- M. Baking and proofing area should be provided for instruction and curriculum compliance.
- N. Classroom teaching area with standard markerboard and/or flip chart should be provided. Teacher's office/area should include computer and printer with

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- Internet availability. Adequate filing cabinets, desks, chairs for teacher and students. Bulletin boards should be provided in the classroom and kitchen lab areas for posting notices and safety information.
- O. Availability of computers with Internet access are necessary for student instruction and for students to develop Internet research skills (i.e. industry information).
 - P. Hand sink located within 75 feet of food preparation and food service areas.
 - Q. Supply of hot and cold running water available at all times for hand washing and for dishwashing if a 3-bowl sink is used.
 - R. Adequate fire extinguishers and first aid kit will be provided.
 - S. Ventilation adequate to remove smoke, odors, and moisture laden vapor.
 - T. HVAC system to provide year round comfort
 - U. Automatic washer and dryer would be desirable for cleaning of student aprons, uniforms, linens, and clothes used in the kitchen lab and dining area. The washer/dryer should be installed away from food prep and serving areas and vented to the exterior. GFCI outlets as per NEC.
 - V. Portable demonstration table with adjustable mirror
 - W. Facilities and equipment must conform to public health sanitation guidelines and local safety regulations.
 - X. Adequate storage for equipment, texts, workbooks, instructional videos, periodicals, other instructional materials, student portfolios, and an area for student personal belongings.
 - Y. Appropriate lighting for tasks to be completed as per IES standards.
 - Z. Flooring in the kitchen lab should have tile in good condition, be easily cleanable, and free from cracks, tears, or holes. Outside doors should be self closing with tight fitting rubber seals to prevent rodent and insect entry. A pest management company should be contracted to inspect and maintain pest control of the kitchen and dining room on a monthly basis.
 - AA. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - BB. Computer Workstations (See OTIS Handbook for specifications)

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- 805.071 Size - 1800 to 2400 square feet
- 805.072 Design Capacity - 20 secondary students and up to 15 preschool aged children
- 805.073 Location
First floor with direct exit to outside play area
- 805.074 Activities
Viewing **videos** and other projected materials; class discussions, lectures and demonstrations; individual, small or large group activities; observing small children; directing children's play; supervision of rest period; preparing and serving snacks or simple meals; instruction in such areas as child growth and development, nutrition, program planning and management, safety and behavior guidance, play activities, child abuse and neglect, parent-child relationships, and laws, regulations and policies relating to child-care services and maintenance of children's environment.
- 805.075 Equipment Space and Equipment
- A. Outside play area adjacent to indoor area or on same level; half paved - half turf with outdoor play equipment. Allow at least 75 square feet of outside play area per child. Outside play area is enclosed by a 3 feet high, child-safe barrier. An outside water source is located within the outside play area.
 - B. Indoor play equipment and space. Allow at least 35 square feet per child, excluding storage, food preparation and rest room areas. Include organized play centers for activities such as art, language arts, large muscle development, science, math, manipulative and dramatic play and building/climbing.
 - C. Rest room with child-size facilities - one flush toilet and one hand washing basin for each 15 children. Should be easily accessible from outdoor play area.
 - D. Low lavatory near entrance from outside play area
 - E. Isolation area approximately 50 square feet
 - F. Kitchen area consisting of range, refrigerator, sink, and work and cabinet storage areas
 - G. Storage for play equipment, books and reference materials, instructional and food supplies, and teachers' and students' personal belongings
 - H. Child-size tables and chairs for approximately 15 preschool aged children. Tables should be safe, durable and sturdy, with adjustable legs. Chairs should have a 12-inch seat height for 3 or 4 year olds.

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- I. Cot or mat with sheet and blanket for each child should be provided for childrens' rest period if they will be in the program all day.
- J. Low, child-height drinking fountain (angle jet type with non-oxidizing mouth guard).
- K. Fire extinguisher located in the food preparation area
- L. Teaching area with 8 to 10 linear feet of markerboard; minimum 15 square feet bulletin board space; chairs and tables or student desks for enrolled students; teachers' desk, chair, and 4-drawer file
- M. Clean comfortable flooring - Appropriate floor covering on indoor play area.
- N. Child-height lockers or space for childrens' clothing near main entrance
- O. Markerboard, bulletin board, and window space available at child's viewing level (approximately 3 feet from floor).
- P. Electrical outlets sufficient in number (approximately one every 6 feet), grounded and conveniently located as per NEC. Those within reach of children are protected by shields when not in use.
- Q. Temperature should be maintained at comfort conditions at floor level.
- R. First aid kit which includes at least an approved disinfectant, sterile cotton and gauze bandages, and adhesive tape
- S. Soundproof walls and ceiling.
- T. Adequate and safe lighting as per IES standards, heat and ventilation as per ASHRAE standards.
- U. Inside storage provided for outdoor play equipment as well as for indoor toys and play equipment.
- V. Lockable storage for household cleaners, chemicals, and medications
- W. Network Computer with Internet connection Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- X. Computer Workstations (See OTIS Handbook for specifications)

806 VOCATIONAL INDUSTRIAL AND TECHNICAL FACILITIES

Factors influencing the location of the building include: isolation from quiet areas; location to provide easy delivery of instructional supplies, materials, and equipment; and location convenient to parking area for adult education classes.

806.01 Instructional Space - Classroom

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- 806.011 Size
Base preliminary determination of area upon the allotment of 25 to 30 square feet per student with a minimum of 500 square feet per instructional space.
- 806.012 Design Capacity - 20 students
- 806.013 Number Required
One instructional space is required per each industrial or technical laboratory.
- 806.014 Location
Convenient access to the laboratory
- 806.015 Activities
Lectures; demonstrations; viewing videos and other audiovisual materials; reading printed materials; writing or drawing on markerboard; using overhead projector and tables; displaying students' work; instructing with guides, progress charts, and instruction sheets; storing instructional materials and supplies.
- 806.016 Equipment Space and Facilities
- A. Markerboard - 20 to 24 linear feet with display and chart rail above
 - B. Bulletin board - minimum 4 feet x 4 feet
 - C. Tables and chairs for 20 students
 - D. Teacher's planning unit with stool or teacher's desk and chair
 - E. Demonstration table - 30 inches x 60 inches, minimum
 - F. Storage
 - 1. Legal size, 4-drawer filing cabinets - 2
 - 2. Minimum of 40 linear feet of shelving
 - 3. Bookcase for reference books
 - G. Flat mat screen - 60 inches x 60 inches, minimum
 - H. Overhead projector and projection stand
 - I. Duplex electrical outlets - one per 7 linear feet of wall space as per NEC
 - J. Provisions for multi-staged light control to permit use of visual aids
 - K. Ceiling height - 8 feet minimum; 12 feet maximum
 - L. Finish
 - 1. Floors - tile or other resilient covering
 - 2. Ceiling - acoustical-type finished ceiling
 - M. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - N. Computer Workstations (See OTIS Handbook for

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specifications)

806.02 Industrial and Technical Laboratories

806.021 Specific Requirements of Labs

The following labs require:

A. 100 square feet minimum per student work station

CODE

D,M,N,DD,EE,FF
D,M,N,DD,EE,FF
D,F,M,N
D,F,M,BB,DD,EE,FF
D,M,N,DD
D,M,N,CC,DD,
F,N,S,V,DD,EE,FF
D,M,N,DD
A,C,E,G,H,L,N,T,U,V,DD,
A,B,C,G,H,N,O,Q,T,U,V,X,CC,DD

LABS

Aries Technologies
CISCO Networking Academies
Commercial Art/Advertising Design
Computer Systems and Opr. Support
Conventional/Computer Aided Drafting
Cosmetology
Electronics Technology
Interior Design
Masonry
Small Engine Repair

B. A minimum of 120 square feet per student work station

CODE

A,B,C,H,N,R,U,BB,CC,DD
D,F,H,M,N,Q,R,W,BB,CC,DD
B,C,E,F,L,N,S,T,U,V,AA,BB,CC,DD
D,M,N,CC,DD,EE,GG
B,C,E,L,N,P,Q,S,T,U,V,AA,BB,CC,DD,EE

LABS

Air Conditioning & Refrig. Tech
Culinary Arts
Electrical Technology
Plumbing
Sheet Metal
Quantity Foods Occupations-see section 805.06

C. A minimum of 160 square feet per student work, station

CODE

A,B,C,E,H,J,L,N,P,T,U,V,X,CC,DD
A,B,C,E,G,H,K,L,N,O,P,Q,T,U,V,X,Y,
BB,CC,DD
D,F,M,N,S,BB,CC,DD,EE,FF
B,D,F,M,,N,S,V,BB,CC,DD,EE,FF
A,B,C,E,F,H,L,N,O,Q,S,T,U,V,W,Y,
AA,BB,CC,DD
A,B,C,E,F,H,L,N,S,T,U,V,W,Y,AA,
BB,CC,DD

LABS

Automotive Technology
Collision Repair Technology

Communications Technology
Computer Integrated Manufacturing
Facilities Maintenance

General Building Construction

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- A,B,C,E,F,H,L,N,P,Q,S,T,U,V,AA,BB, Machine Tool Technology
CC,DD,FF
- A,B,C,E,F,H,L,N,P,Q,S,T,U,V,AA,BB, Metals Technology
CC,DD,FF
- B,C,E,F,H,L,N,O,P,Q,S,T,U,V,W,Y, Millwork and Cabinetmaking
AA,BB,CC,DD
- A,B,C,E,F,H,L,N,P,Q,S,T,U,V,AA,BB, Welding Technology
CC,DD,FF

D. A minimum of 240 square feet per student work station

CODE

- A,B,C,E,F,G,H,I,L,N,P,Q,S,T,U,V,X,AA,BB
CC,DD
- A,B,C,E,G,H,I,J,L,N,P,T,U,VX,CC,DD
- A,B,C,E,F,G,H,I,L,N,P,S,T,U,V,X,AA,BB,
CC,DD
- C,E,L,N,P,T,U,V,AA,BB,CC

LABS

- Aviation Maintenance
- Diesel Equipment Technology
- Industrial Equipment Maint.
- Materials Distribution

NOTE: The assistance of specialists in Industrial and Technical Education should be secured in planning these labs and must be secured when planning labs not listed above.

806.022 Special Facility Requirements

- A. Hose bibb
- B. Compressed air
- C. Concrete floors
- D. Resilient finish floors
- E. Overhead door - 10 feet x 12 feet, minimum
- F. High electrical demand
- G. Floor drainage
- H. Exhaust system
- I. Monorail
- J. Automobile hoist
- K. Frame rack
- L. Ceiling height - 14 feet, minimum
- M. Student wash area
- N. Spray booths
- O. Heavy machinery
- P. Vents
- Q. Natural gas
- R. Master control switch
- S. Ground floor
- T. Access driveway
- U. Tool room
- V. Storage for flammable materials
- W. Dust collector

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- X. 3 phase
 - Y. 208 V., minimum
 - Z. Dressing and restroom facilities for male and female students
 - AA. Instructional space - See Chapter 8, Section 806.011 for space requirements
 - BB. Storage room - 80 square feet
 - CC. Air conditioning
 - DD. Separate electrical circuit with ground fault
 - EE. Dark room with sink
 - FF. Hair wash station
 - GG. Outside storage for gasoline
- 806.023 Design Capacity - 20 student
- 806.024 Location
- A. Convenient access to instructional space and parking area
 - B. Convenient access must be provided for physically handicapped persons
 - C. High noise labs are to be isolated from quiet area of the school
- 806.025 Activities
- Construct, test, operate, and service equipment and tools; provide personal services for customers; depicting, shaping, forming, assembling, and servicing equipment and materials; demonstrations, lectures, and individualized instruction.
- 806.026 Equipment Space and Facilities
- A. Equipment should be comparable to that used in industry
 - B. The equipment will vary with the occupational objectives of the program
 - C. Markerboard and bulletin board - 6 linear feet, minimum
 - D. Window stools should be high enough to permit installation of equipment along wall - 4 feet, minimum
 - E. Provide appropriate fire extinguishers for equipment and materials used in program
 - F. Consultation should be made with Industrial and Technical Education Office for equipment needs of various occupational areas.
 - G. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - H. Computer Workstations (See OTIS Handbook for specifications)

807 BUSINESS EDUCATION FACILITIES

The facilities for business education should be located, ideally, on the first floor in a central location where it is relatively quiet. A first floor location, in a two-story building, makes the department easily accessible to handicapped students, adult and community education classes, and for service technicians. Business education rooms should be clustered to unify the programs and allow for easy communications, sharing equipment, and exchanging classrooms. The number of students enrolled and the curriculum offered determine the number and type of rooms needed.

807.01 All-Purpose Business Education Room

This room would be needed for a small school (up to 150 business students per day) with only one business teacher. Therefore, it is necessary to provide adequate space to store, maintain, and use a vast amount of equipment and supplies. The room consists of the following:

- A. Equipment-oriented instructional lab area for courses such as Business Computer Applications, Advanced Business Computer Applications, Keyboarding, and Office Technology
- B. Multi-purpose classroom instructional area for courses such as Accounting, Business & Management, and Business Math
- C. Storage for teaching materials, supplies, and student references
- D. Teacher's desk and chair and demonstration center

Convenience outlets on walls above the work area should be installed.

807.011 Size
1200 to 1400 square feet - 60 to 70 square feet per student

807.012 Design Capacity - 25 students per session

807.013 Location
In the central core of the building, preferably first floor

807.014 Activities
Lecture or small group or class discussions; view videos and other projected materials; conferences of small groups of students; display student projects or work; store partially-completed student projects; store instructional supplies; listen to recordings or broadcasts; view telecasts; write and transcribe notes; operate computers and other business equipment.

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- 807.015 Equipment Space and Facilities
- A. Bulletin board - 10 linear feet
 - B. Electrical convenience outlets on each wall
 - C. Calculators
 - D. Storage (lockable) for instructional supplies
 - E. Storage for instructor's personal belongings
 - F. Lockable, legal size file drawers - 16
 - G. Closed book shelving - 10 to 12 linear feet
 - H. Computers/modem and access to network
 - I. Plain paper copier
 - J. Projection equipment (data projectors, LCD panels, overhead, and screen)
 - K. Letter-quality and laser printers
 - L. Markerboard - 40 to 42 linear feet
 - M. VCR and monitor
 - N. Provisions to darken room
 - O. Adjustable classroom furniture (desks and chairs)
 - P. Instructor's desk and chair
 - Q. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - R. Computer Workstations (See OTIS Handbook for specifications)

807.02 Instructional Space
This room is designed to provide space and equipment for teaching courses such as Accounting, Business Management, Business Math, and Business Communications. Also, provided are teacher's desk/chair and demonstration center and storage for teaching materials, supplies, and student references.

807.021 Size
900 to 1000 square feet - 36 to 40 square feet per student.

807.022 Design Capacity - 25 students

807.023 Location

- A. Direct access to the keyboarding, computer lab, or office technology laboratory
- B. Convenient access to other business education rooms

807.024 Activities
Complete accounting projects; listen to recordings or broadcasts; display student projects or work.

807.025 Equipment Space and Facilities

- A. Markerboard - 40 to 42 linear feet

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- B. Bulletin board - 12 linear feet
- C. Display and map rail above marker board and bulletin board
- D. Tables or adjustable desks with space for business equipment and a flat working surface for other desk activities; height-adjustable chairs
- E. Instructors desk and chair
- F. Work table - 3 feet x 6 feet
- G. Work counter - 15 linear feet; 28 to 32 inches deep, with storage underneath
- H. Electrical outlets
 - 1. Convenience strip above work counter
 - 2. Main panel for all electrical outlets located within the room
- I. Closed book shelving - 8 to 10 linear feet
- J. 4 legal size file drawers (lockable)
- K. Storage for instructional supplies
- L. Storage for partially completed pupil projects
- M. Storage for instructor's personal belongings
- N. VCR and monitor
- O. Provisions to darken room
- P. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- Q. Computer Workstations (See OTIS Handbook for specifications)

807.03

Computer/Keyboarding Laboratory

The room consists of the following:

- A. Space and equipment for teaching keyboarding and computer applications
- B. Storage for teaching materials, supplies, and student references
- C. Teacher's desk/chair and demonstration center
Convenience outlets located on walls above the work area.
A lavatory with hot and cold water should be provided.

807.031

Size

The size of this facility is dependent upon the type of furniture and equipment contained; 35 to 45 square feet per student may be used for preliminary estimates.

807.032

Design Capacity - 30 students

807.033

Location

In the central core of the building, in the area of other business education rooms.

807.034

Activities

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Demonstrate computer applications and keyboarding techniques; view electronic projections; display student projects or work.

- 807.035 Equipment Space and Facilities
- A. Markerboard - 16 to 20 linear feet
 - B. Bulletin board - 12 linear feet
 - C. Tables or adjustable desks appropriate for equipment to be used, with height-adjustable chairs - 30
 - D. Instructor's desk and chair
 - E. Teacher's demonstration stand
 - F. Display and map rails above marker board and bulletin board
 - G. Closed book shelving - 8 to 10 linear feet
 - H. Four legal size file drawers (lockable)
 - I. Work table - 30 inches x 72 inches
 - J. Storage for instructional supplies
 - K. Storage for partially-completed pupil projects
 - L. Storage for instructor's personal belongings
 - M. Network Computer Drops (See Chapter 11, Section 1105 and equipment of various types See OTIS Handbook for specifications)
 - N. Computer Workstations (See OTIS Handbook for specifications)
 - O. Provisions for darkening room

- 807.04 Teachers' Office and Conference Room
The room consists of the following:
- A. Area for conferences
 - B. Space for instructional planning, instructional materials, supplies, and record keeping
 - C. Storage for student records and teachers' personal belongings

807.041 Size - 100 to 150 square feet per teacher

807.042 Design Capacity
Office space for teachers and for conferences with individuals

807.043 Location
Direct access to other business education rooms

807.044 Activities
Teacher conferences; teacher-pupil conferences; instructional planning and record keeping.

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- 807.045 Equipment Space and Facilities
- A. Markerboard - 5 to 6 linear feet
 - B. Bulletin board - 5 to 6 linear feet
 - C. Conference table with chairs
 - D. Desk and chair for each teacher plus computer furniture
 - E. Work counter with shelving below - 10 linear feet
 - F. Legal size file drawers - 12 per teacher
 - G. Storage for personal belongings of instructors
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - I. Computer Workstations (See OTIS Handbook for specifications)

- 807.05 Office Technology Laboratory
This room consists of the following items:
- A. Space and equipment for teaching equipment-oriented courses such as Keyboarding, Office Technology, Document Processing, Business Computer Applications, Advanced Business Computer Applications, Web Page Publishing, and Multi Media Computerized Accounting
 - B. Storage for teaching materials, supplies, and student references
 - C. Teachers' desk/chair and demonstration center

The electrical system should be installed on the walls above the work area.

- 807.051 Size
1200 to 1400 square feet, 60 to 70 square feet per student

- 807.052 Design Capacity - 20 students

- 807.053 Location
Convenient access to other business education rooms

- 807.054 Activities
Write at markerboard or tables; conference of small groups of students; display student projects or work; store partially-completed student projects; store instructional supplies; prepare business presentations; and operate business equipment.

- 807.055 Equipment Space and Facilities
- A. Furniture
 - 1. Adjustable desks appropriate to equipment being used, and adjustable posture chairs
 - 2. Two work tables, 3 feet x 6 feet

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- B. Office equipment
 - 1. Plain paper copier
 - 2. Dictation/transcription equipment
 - 3. Calculators
- C. Electrical outlets on walls above work area
- D. Markerboard and bulletin board - 4 to 6 linear feet of each
- E. Base cabinets for storage of supplies and additional machine stations
- F. Provisions to darken room
- G. VCR and monitor
- H. Instructor's desk and chair
- I. Multi-Media equipment, data projector
- J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- K. Computer Workstations (See OTIS Handbook for specifications)

808 TECHNOLOGY EDUCATION FACILITIES - GRADES 9-12

Factors influencing the location include providing location for easy delivery of instructional supplies, equipment, and materials, some of which are bulky and heavy; and design of laboratory to permit some change in individual room areas as activities are developed. The assistance of specialists should be secured to adequately plan this suite. Technology education programs include instruction in the areas of communication, transportation, construction, manufacturing, and engineering.

808.01 Technology Education Production Laboratory

- 808.011 Size
1000-1200 square feet
- 808.012 Design Capacity - 20 students
- 808.013 Location
 - A. Direct access from the building corridor
 - B. Direct access to other rooms in the technology education suite
- 808.014 Activities
The laboratory facility will need to provide space for layout, measurement, cutting, forming, and fabricating using a variety of materials (e.g., wood, metal, plastics); space for using and caring for hand tools and a variety of machines; and space for finishing various materials.

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- 808.015 Equipment Space and Facilities
- A. The major floor area should be free of heavy or permanently fixed equipment to allow for flexible room arrangement
 - B. A minimum of 2 student work stations, with underneath storage
 - C. Maximum work counter and cabinet storage space
 - D. Lockable tool panels, if a tool room is not available
 - E. Windows should be high enough to permit installation of equipment along outside walls
 - F. Ceiling electrical grid system for 120 volt power to machines with master switches and emergency cutoff buttons
 - G. Adequate electrical wall outlets for power equipment and tools
 - H. Equipment for removal of dust, chips, and harmful fumes
 - I. Fire extinguishers of such kinds and sizes as recommended by the State Fire Marshal
 - J. Wash up area for personal cleanliness and preparation and cleaning of tools and supplies
 - K. Lighting as per IES standards with low glare fixtures
 - L. Refer to the "Technology Education Curriculum Guide" for a list of specific equipment

808.02 Technology Education Systems Laboratory/Design Area

- 808.021 Size
Determination of size depends upon the number of students and related activities, varying from 100 to 125 square feet per student.
- 808.022 Design Capacity - 20 students
- 808.023 Location
Direct access to production laboratory to provide for easy supervision.
- 808.024 Activities
Classroom instruction, project planning, small group activities, and a dust-free environment for instruction and activities with equipment such as computers, robotics, electronics, lasers, and a large open space for construction of group projects.
- 808.025 Equipment Space and Facilities
- A. Glass walls or windows in wall facing production

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- laboratory to provide for easy supervision
- B. Marker board - 20 linear feet minimum, and bulletin board - 10 linear feet
- C. Maximum counter and cabinet storage space along walls (some of this space may be used for computers. If so, height needs to be adjusted accordingly).
- D. Windows should be high enough to permit installation of counters along outside walls
- E. Provisions made for blinds or shades to allow for showing of audiovisual materials
- F. Adequate electrical wall outlet strips for use of electronic equipment, computers, and related peripherals
- G. Reconfigurable tables and chairs for 20-25 students
- H. Bookcase for reference and resource books; magazine racks
- I. Floors - tile
- J. Ceiling - acoustical-type finish
- K. Air conditioning
- L. If planning to teach Foundations in Engineering, and modular furniture is to be used, room layout needs planned accordingly.
- M. Network Computer with Internet connection Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- N. Computer Workstations (See OTIS Handbook for specifications)

808.03 Instructor's Office

- 808.031 Size - varying from 100 to 150 square feet
- 808.032 Location
Convenient or direct access to production laboratory and systems laboratory.
- 808.033 Equipment Space and Facilities
 - A. Teacher's desk and chair
 - B. Conference chairs - 1 or 2
 - C. Storage
 - 1. Letter size, 4-drawer file cabinets - 2
 - 2. Open and closed shelving for supplies and references, 20 to 30 linear feet
 - D. Duplex outlets as per NEC
 - E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - F. Computer Workstations (See OTIS Handbook for specifications)

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specifications)

808.04 Finishing Area

This area needs to be a separate room or enclosed, ventilated spray booth.

- 808.041 Size - varying from 75 to 125 square feet
- 808.042 Location
Direct access to production laboratory
- 808.043 Activities
Mixing and application of a variety of surface finishes.
- 808.044 Equipment Space and Facilities
 - A. Window in wall facing laboratory to provide for easy supervision
 - B. Maximum work counter space
 - C. Positive ventilation to provide a negative pressure to the adjacent areas
 - D. Metal storage cabinet for paint, varnish, and other flammable materials
 - E. Fireproof containers for paint rags
 - F. Fire extinguishers
 - G. Adjustable, high intensity, spark-proof lights
 - H. Hooded spray booth vented to the exterior

808.05 Material Storage

- 808.051 Size - varying from 150 to 200 square feet
- 808.052 Location - direct access to other laboratories
- 808.053 Activities
For storage of various types of stock and other supplies necessary in the technology classroom
- 808.054 Equipment Space and Facilities
 - A. Wide access door
 - B. Storage racks for various types of stock. Stock may be as large as 4 feet x 8 feet
 - C. Adjustable shelving and cabinets for small items

808.06 Project Storage

- 808.061 Size -150-250 square feet

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- 808.062 Location
 Direct access to classroom laboratory

- 808.063 Activities
 Limited to storage of student projects and supplies

- 808.064 Equipment Space and Facilities
 - A. Provide maximum adjustable shelving 24 inches deep along walls
 - B. Provide free floor area for storage of large items

- 808.07 Audiovisual Darkroom Laboratory
 - 808.071 Size - varying from 150-200 square feet
 - 808.072 Location
 Direct access to systems laboratory

 - 808.073 Activities
 Developing film and photographic paper; enlarging pictures; demonstrating lasers, producing a variety of audiovisual materials, such as mock radio and television segments.

 - 808.074 Equipment Space and Facilities
 - A. Safe light as well as regular overhead lighting
 - B. Maximum work counter space
 - C. Maximum cabinet storage; some must be light safe
 - D. Ventilation system to maintain a negative pressure to adjacent areas
 - E. Electrical outlets along counter
 - F. Light-proof and soundproof from exterior influences
 - G. Additional electrical outlets for equipment usage
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - I. Computer Workstations (See OTIS Handbook for specifications)

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Chapter 9

GENERAL SUPPORT FACILITIES

900 SUPPORT FACILITIES

County boards of education have sufficient support facilities to maximize the efficient administration of the county schools. Accessible county support facilities are provided and maintained to promote a healthy and safe environment. Space and equipment, available in such facilities, provide the support services necessary for a thorough and efficient educational program. When possible, support facilities are housed together to maximize efficiency.

901 ADMINISTRATIVE FACILITIES

County boards of education provide adequate office and ancillary space to house all administrative personnel and functions.

901.01 Size
Support facilities are organized in such a manner as to provide effective services as economically as possible. The size and number of such facilities are dependent upon the services required by the county.

901.02 Site

901.021 Location
Each administrative facility should be located and developed in proper relationship to the county's governmental agencies, such as the county center of government.

901.022 Size
Site shall be of adequate size to provide parking for the staff and regular visitors. Allow space for each car as per the appropriate standard. See Chapter 2 for applicable site information.

902 GENERAL OFFICE AND RECEPTION/WAITING AREAS - ADMINISTRATIVE FACILITIES

902.01 Size
Size room necessary to meet the needs of the administration

902.02 Location
A. At the hub of the administrative suite
B. Direct access to a building corridor and to workroom
C. Direct or convenient access to other office rooms in the

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- administrative suite
- D. Near main entrance to facility
- E. Convenient access to workroom

902.03 **Activities**
Reception of visitors, pupils, and staff; general secretarial activities required in the operation of the center.

902.04 **Equipment Space and Facilities**
To meet needs of administration

903 WORKROOMS - ADMINISTRATIVE FACILITIES

903.01 **Size - as required**

903.02 **Location - Direct access to the general office and waiting room**

903.03 **Activities**
Preparation of materials, reports, and layouts of instructional materials by both secretarial and other personnel.

903.04 **Equipment Space and Facilities**
As required

904 STORAGE FOR BOOKS AND INSTRUCTIONAL SUPPLIES - ADMINISTRATIVE FACILITIES

904.01 **Size**
Base size on county needs for central instructional supply and distribution.

904.02 **Location**

- A. Convenient access to the general office
- B. Direct opening to corridor to permit distribution of supplies
- C. Exterior door for receiving and distribution

904.03 **Activities**
Storage and distribution of instructional materials and supplies including books, papers, notebooks, erasers, and pencils.

905 BOARD ROOMS/MEETING ROOMS - ADMINISTRATIVE FACILITIES

905.01 **Size**
Depends on the space needed for spectator seating.

905.02 **Location**

- A. Convenient access to general office

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- B. Design and location should permit groups to confer without being overheard or seen from adjacent rooms.

905.03 **Activities**
Conferences and training involving staff, and regular and special board meetings.

905.04 **Equipment Space and Facilities**
A. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
B. Computer Workstations (See OTIS Handbook for specifications)

906 **SUPERINTENDENT'S OFFICE - ADMINISTRATIVE FACILITIES**

906.01 Size - as required

906.02 **Location**
A. Direct or convenient access to general office
B. Convenient access to the corridor without going through the general office
C. Convenient access to other areas in the administrative suite
D. Convenient to board room
E. Design and location should permit the superintendent to confer without being seen or overheard in adjacent areas

906.03 **Activities**
Planning, research, and administrative activities conducted individually or in groups.

906.04 **Equipment Space and Facilities**
A. Room design should permit the superintendent to confer without being seen or overheard in adjacent areas
B. Conference desk and chair
C. Work table convenient to desk for layout work
D. Conference chairs
E. Shelving
F. Storage for personal belongings
G. Telephone service and intercom to secretary in general office
H. Appropriate floor covering
I. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
J. Computer Workstations (See OTIS Handbook for specifications)

907 **ASSISTANT SUPERINTENDENT'S OFFICE - ADMINISTRATIVE FACILITIES**

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- 907.01 Size - as required
- 907.02 Location
Convenient access to the general office and superintendent's office.
- 907.03 Activities
Planning, research, and administrative activities conducted individually or in small groups.
- 907.04 Equipment Space and Facilities
 - A. Room design should permit the assistant superintendent to confer without being seen or overheard in adjacent areas
 - B. Conference desk and chair
 - C. Work table convenient to desk for layout work
 - D. Conference chairs
 - E. Shelving
 - F. Storage for personal belongings
 - G. Telephone service and intercom to secretary in general office
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - I. Computer Workstations (See OTIS Handbook for specifications)

908 OFFICES FOR PROFESSIONAL SUPPORT PERSONNEL - ADMINISTRATIVE FACILITIES

NOTE: Number of spaces required will depend on the local staff size

- 908.01 Size - size to maximize space utilization
- 908.02 Location
 - A. Direct access from reception area and convenient access to meeting room and general office in the administrative suite.
 - B. Design and location should permit should permit the assistant to confer without being seen or overheard in the adjacent areas.
 - C. Easy access to vault and records
- 908.03 Activities - Daily Execution of Job Duties
- 908.04 Equipment Space and Facilities
 - A. Desk and chair
 - B. Conference chairs
 - C. Shelving
 - D. Bulletin board

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- E. Storage for personal belongings
- F. Telephone communication with general office and intercom.
Require private telephone line to the counselor's office
- G. File cabinet with lock
- H. Appropriate floor covering
- I. Network Computer work station drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- J. Computer Workstations (See OTIS Handbook for specifications)

909 RECORD VAULT - ADMINISTRATIVE FACILITIES

NOTE: Vault may be eliminated by providing fire resistant filing cabinets in the general office or other storage area.

- 909.01 Size - as required
- 909.02 Location - Direct or convenient access from the general office
- 909.03 Activities - Storage of current and inactive records
- 909.04 Equipment Space and Facilities
 - A. General construction should be fire resistant
 - B. Cart/storage units preferable for current records

910 SECRETARIAL WORK AREAS OR OFFICES - ADMINISTRATIVE FACILITIES

NOTE: Number of spaces required will depend on the local staff size.

- 910.01 Size - size to maximize space utilization
- 910.02 Location - Direct access to offices served
- 910.03 Activities - Daily execution of job duties
- 910.04 Equipment Space and Facilities
 - A. Secretarial desk and chair
 - B. Typewriter and stand
 - C. Comfortable chairs
 - D. Filing cabinets
 - E. Appropriate floor covering
 - F. Telephone communication with general office
 - G. Computer work station
 - H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - I. Computer Workstations (See OTIS Handbook for specifications)

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911 STAFF LOUNGE - ADMINISTRATIVE FACILITIES

- 911.01 Size - size to maximize space utilization
- 911.02 Location
 - A. Direct access from a building corridor
 - B. Location avoiding major traffic, yet reasonably close to the administrative area
 - C. Rest rooms should not have direct opening into the lounge area
 - D. Appropriate floor covering
- 911.03 Equipment Space and Facilities
 - A. Comfortable lounge furniture
 - B. Kitchenette to prepare light refreshments
 - C. Adequate ventilation
 - D. Rest rooms
 - E. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - F. Computer Workstations (See OTIS Handbook for specifications)

912 SERVICE FACILITIES - ADMINISTRATIVE FACILITIES

See Chapter 11

913 ENGINEERING AND CUSTODIAL FACILITIES - ADMINISTRATIVE FACILITIES

See Chapter 12

914 MAINTENANCE AND OPERATIONS FACILITIES

The maintenance component of the program is concerned with keeping all school facility sites, buildings, and equipment at their original condition of completeness and efficiency, either through repairs or replacement. The operation component of the program is concerned with the day-to-day services which are necessary to keep the physical plant open and in a safe, usable condition.

915 MAINTENANCE FACILITIES

Boards of education provide sufficient, secure, and centrally located repair and maintenance facilities for educational facilities. Boards of education provide sufficient facilities for storage of all supplies, equipment, and food items.

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915.01 **Size**
Maintenance facilities are organized in such a manner as to provide effective services as economically as possible. The size of such facilities is dependent upon the services required by the county.

915.02 **Location/Site**
The operations and maintenance facility should be located centrally in the county for the convenience of maintenance personnel traveling from the facility to schools and other staff traveling to this facility for training sessions. It may be desirable to have a combination administrative, operations, and maintenance facility.

Site shall be of adequate size to provide parking for staff automobiles, maintenance trucks, and delivery vehicles.

916 **GENERAL OFFICE AND RECEPTION/WAITING AREAS - MAINTENANCE FACILITIES**

916.01 **Size**
Dependent upon size of the center, sizing should incorporate maximum space utilization

916.02 **Location**
A. At the hub of the administrative suite
B. Direct access to a building corridor and to work room
C. Near main entrance of facility
D. Convenient access to work room

916.03 **Activities**
Reception of visitors and staff; general secretarial activities required in the operation of the center.

916.04 **Equipment Space and Facilities**
A. Counter separating reception/waiting room or area from the secretarial work area
B. Seating in reception area
C. Small table for magazines and other literature
D. Display space and bulletin board
E. Secretarial furniture
F. Master telephone station or other communications to all locations in the facility
G. Appropriate floor covering
H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
I. Computer Workstations (See OTIS Handbook for specifications)

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917 WORKROOMS - MAINTENANCE FACILITIES

- 917.01 Size - 100 to 150 square feet
- 917.02 Location
Direct access to the general office and waiting room.
- 917.03 Activities
Preparation of reports and layouts of materials by both secretarial staff and other personnel.
- 917.04 Equipment Space and Facilities
 - A. Combination of open shelving and closed cabinets for storage of a variety of supplies and equipment
 - B. Duplicating machine
 - C. Work table or counter
 - D. Lavatory
 - E. Network Computer work station drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - F. Computer Workstations (See OTIS Handbook for specifications)
 - G. Resilient floor covering
 - H. Proper ventilation

918 MEETING ROOMS/TRAINING FACILITIES - MAINTENANCE FACILITIES

- 918.01 Size - Depends on the needs for training sessions.
- 918.02 Location
 - A. Convenient access to general office/reception/waiting areas
 - B. Design and location should permit groups to confer without being overheard in adjacent rooms
- 918.03 Activities - Conferences and Training of Staff
- 918.04 Equipment Space and Facilities
 - A. Conference tables and chairs
 - B. Marker board
 - C. Bulletin board
 - D. Appropriate floor covering
 - E. Pull-down projection screen
 - F. HVAC system designed for maximum occupancy
 - G. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)

919 RECORD STORAGE - MAINTENANCE FACILITIES

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NOTE: Room may be eliminated by providing fire resistant filing cabinets

919.01 Size - as required

919.02 Location - Direct or convenient access from the general office and other areas.

919.03 Activities - Storage of current and inactive building documents.

919.04 Equipment Space and Facilities

- A. General construction should be fire resistant
- B. Files for plans and documents
- C. Plan table
- D. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- E. Filing cabinets

920 OFFICES FOR PROFESSIONAL SUPPORT PERSONNEL AND SERVICE SUPERVISORS - MAINTENANCE FACILITIES

920.01 Size - size to maximize space utilization

920.02 Location
Convenient access to general office and other spaces

920.03 Activities
Planning, research, and administrative activities conducted individually or in small groups

920.04 Equipment Space and Facilities

- A. Room design should permit staff members to confer without being overheard or seen in adjacent areas.
- B. Conference desk and chair
- C. Conference chairs
- D. Shelving
- E. Storage for personal belongings
- F. Telephone service and intercom to secretary
- G. Appropriate floor covering
- H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- I. Computer Workstations (See OTIS Handbook for specifications)

921 SECRETARIAL WORK AREAS OR OFFICES - MAINTENANCE FACILITIES

NOTE: Number of spaces required will depend on the size of the local staff.

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- 921.01 Size - size to maximize space utilization
- 921.02 Location - Direct access to offices served
- 921.03 Activities - Daily execution of job duties
- 921.04 Equipment Space and Facilities
 - A. Secretarial desk and chair
 - B. Appropriate chairs
 - C. Filing cabinets
 - D. Telephone communication with general office
 - E. Appropriate floor covering
 - F. Network Computer work station drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - G. Computer Workstations (See OTIS Handbook for specifications)

922 CARPENTRY, PLUMBING, HEATING, AND ELECTRICAL MAINTENANCE SHOPS - MAINTENANCE FACILITIES

- 922.01 Size - size to maximize space utilization
- 922.02 Location
 - A. Convenient access to the general office
 - B. Exterior door for distribution and receiving
 - C. May be desirable to have an enclosed loading and unloading area for service vehicles
- 922.03 Activities
 - Storage of replacement parts, repairs to building components, and distribution of maintenance supplies.

923 SERVICE FACILITIES - MAINTENANCE FACILITIES

See Chapter 11

924 ENGINEERING AND CUSTODIAL FACILITIES - MAINTENANCE FACILITIES

See Chapter 12

925 STAFF LOUNGE - MAINTENANCE FACILITIES

- 925.01 Size - according to staff number
- 925.02 Location
 - A. Direct access from a building corridor
 - B. Location avoiding major traffic, yet reasonably close to the

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- administrative area
- C. Rest rooms should not have direct opening into the lounge area

- 925.03 Equipment Space and Facilities
 - A. Comfortable lounge facilities
 - B. Kitchenette to prepare light refreshments
 - C. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - D. Computer Workstations (See OTIS Handbook for specifications)

926 STORAGE FACILITIES

Boards of education provide sufficient facilities for storage of all supplies, equipment, and food items.

- 926.01 Custodial and food service storage rooms. (Must be separate spaces.)

- 926.011 Size
 - Base size on county needs for central supply and distribution of custodial supplies, dry foods, refrigerated foods, and frozen foods to the local system.

- 926.012 Location
 - A. Convenient access to the general office
 - B. Direct opening to corridor to permit distribution of supplies
 - C. Exterior door for receiving and distribution

- 926.013 Activities
 - Storage and distribution of materials and supplies.

927 TRANSPORTATION FACILITIES

Transportation services are an integral part of the system of education in West Virginia. With expanding transportation requirements comes the necessity to maximize efficiency and at the same time exercise extreme concern for safety. Boards of education provide sufficient, secure, and centrally located staff offices, training spaces and storage, repair and maintenance facilities for all county school buses and vehicles.

- 927.01 Size
 - Transportation facilities are organized in such a manner as to provide effective services as economically as possible. The size and number of such facilities are dependent upon the services required by the county. The following is generally felt to be

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required to adequately serve a smaller county and may be used as a standard for multi-centers in larger counties.

927.02

Site

The transportation facility must have a site sufficient to park the county's entire fleet of buses, as well as employees' and visitors' vehicles. See Chapter 2, Section 206 for additional information. The following can be used for preliminary planning, but final layouts must be done to insure accurate planning.

- A. Buses - as per applicable standard
- B. Cars -as per applicable standard
- C. Due to the size of buses and their turning radius, large amounts of space are required for circulation of vehicles.
- D. Centers should be located to facilitate easy access and reduce bus runs.

928 BUS REFUELING/PUMP STATIONS - TRANSPORTATION FACILITIES

Refueling pumps and/or stations are safely separated from maintenance and storage areas. Facilities must supply all types of fuel in use, such as gasoline, diesel, LPG, and CNG. Facilities should be visible from the office area, must comply with applicable safety standards, and provide adequate space for bus circulation.

929 RECEPTION/WAITING AREAS - TRANSPORTATION FACILITIES

929.01

Size

Dependent upon size of the center, sizing should incorporate maximized space utilization.

929.02

Location

- A. At the hub of the administrative suite
- B. Direct access to a building corridor and to work room
- C. Direct or convenient access to director's office and other rooms in the administrative suite
- D. Near main entrance to facility
- E. Access to work room

929.03

Activities

Reception of visitors and staff, and general secretarial activities required in the operation of the center.

929.04

Equipment Space and Facilities

- A. Counter top separating reception/waiting room or area from the secretarial work areas
- B. Appropriate chairs in reception area
- C. Small table for magazines and other literature

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- D. Display space and bulletin board
- E. Secretarial furniture
- F. Master telephone station, or other communications, to all locations
- G. Appropriate floor covering

930 DIRECTOR'S OFFICE - TRANSPORTATION FACILITIES

930.01 Size - as needed

930.02 Location

- A. Direct or convenient access to general office
- B. Convenient access to the corridor without going through the general office
- C. Convenient access to other areas

930.03 Activities

Planning, research, and administrative activities conducted individually or in small groups.

930.04 Equipment Space and Facilities

- A. Room design should permit the director to confer without being overheard or seen in adjacent areas.
- B. Conference desk and chair
- C. Work table convenient to desk for layout work
- D. Conference chairs
- E. Shelving
- F. Storage for personal belongings
- G. Telephone service and intercom to secretary
- H. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
- I. Computer Workstations (See OTIS Handbook for specifications)

930.05 Assistant Director/Trainer Offices

These spaces may be needed, depending on the size of the local transportation system.

930.051 Size - as needed

931 WORK ROOM - TRANSPORTATION FACILITIES

931.01 Size - as needed

931.02 Location

Direct access to the general office and waiting room

931.03 Activities

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Preparation of materials, reports, and layouts of materials by both secretarial and other personnel

- 931.04 Equipment Space and Facilities
- A. Combination of open shelving and closed cabinets for storage of a variety of supplies and equipment
 - B. Duplicating machine
 - C. Work table or counter
 - D. Lavatory
 - E. Network Computer work station drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)
 - F. Computer Workstations (See OTIS Handbook for specifications)
 - G. Resilient floor covering

932 STAFF LOUNGE/TRAINING ROOM - TRANSPORTATION FACILITIES

932.01 Size - According to staff number

932.02 Location

- A. Direct access from a building corridor
- B. Location avoiding major traffic, yet reasonably close to the director's office
- C. Rest rooms should not have direct opening into the lounge area.

932.03 Equipment Space and Facilities

- A. Comfortable lounge furniture (if not used for training)
- B. Kitchenette to prepare light refreshments
- C. Rest rooms
- D. Pull-down projection screen
- E. Capability of darkening room
- F. Marker board
- G. Bulletin board
- H. Tables and chairs (if used for training)
- I. HVAC system designed for maximum occupancy
- J. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)

NOTE: The size of staff lounge/training room will vary, depending upon availability of space for training activities at other locations within the system.

933 GENERAL SERVICE BAYS - TWO (2) - TRANSPORTATION FACILITIES

933.01 Size - as appropriate to hold two buses simultaneously

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- 933.02 Location
- A. Direct access to vehicle storage yard
 - B. Access to tool room
 - C. Access to parts room
- 933.03 Equipment Space and Facilities
- A. Mechanic work benches with wall space above
 - B. Overhead beam and lift for engine removal
 - C. Outlets for exhaust removal to the exterior
 - D. Compressed air
 - E. Cold water
 - F. 120 volt and 240 volt electric
 - G. Trench drains connected to an oil-separation reservoir
 - H. Non-slip concrete floor
 - I. Network Computer Drops (See Chapter 11, Section 1105 and OTIS Handbook for specifications)

934 HYDRAULIC LIFT BAY - ONE (1) - TRANSPORTATION FACILITIES

- 934.01 Size - as appropriate for one bus
- 934.02 Location
- A. Access to the new oil storage room
 - B. Access to tool room
 - C. Access to parts room
- 934.03 Equipment Space and Facilities
- A. Mechanic work benches with wall space above
 - B. Adjustable length hydraulic lift for lifting entire bus at one time
 - C. Outlets for exhaust removal to the exterior
 - D. Used oil receiver
 - E. Compressed air
 - F. Cold water
 - G. Electric - 120 volt and 240 volt
 - H. Floor drains connected to an oil separation reservoir
 - I. Non-slip concrete floor

935 WASH BAY - ONE (1) - TRANSPORTATION FACILITIES

- 935.01 Size - as appropriate.
- 935.02 Location
- A. Fully partitioned space
 - B. Adjacent to other service bays
 - C. Easy circulation to and from the service yard
 - D. Access to hot water heater room and mixing equipment

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- 935.03 Equipment Space and Facilities
- A. Adequate heat and ventilation for year-round usage
 - B. Water resistant floor and wall finishes
 - C. Adequate drains and connected to an oil separation reservoir
 - D. Non-slip concrete floor
 - E. All electrical receptacles to be GFCI rated.

936 BODY REPAIR/PAINT BAY - ONE (1) - TRANSPORTATION FACILITIES

936.01 Size - as appropriate for one bus

936.02 Location

- A. Easy access to vehicle storage yard
- B. Access to paint equipment and supply room
- C. Access to parts room
- D. Must be self-contained space

936.03 Equipment Space and Facilities

- A. Mechanic work benches
- B. Heated, filtered make-up air and filtered exhaust air system
- C. Compressed air
- D. Cold water
- E. Electric, 120 volt and 240 volt
- F. Floor drains connected to a sediment trap
- G. Non-slip concrete floor

937 SERVICE FACILITIES - TRANSPORTATION

See Chapter 11

938 ENGINEERING AND CUSTODIAL FACILITIES - TRANSPORTATION

See Chapter 12

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Chapter 10

FACILITY SAFETY

1000 OVERALL FACILITY SAFETY

All school facilities are designed, constructed, furnished, and maintained in a manner that enhances a healthy learning environment and necessary safeguards for the life safety, security, and health of persons who enter and use the facility.

The safety of each facility is determined upon compliance with the minimum requirements of the State Fire Code, as well as the State Department of Health and other regulatory agencies. The contents of this section are not all-encompassing, and reference is necessary to the applicable law for compliance.

1001 STRUCTURAL SAFETY

References:

- 13.
- 14.

All school facilities are to be designed, constructed, furnished, and maintained with methods, materials, and equipment that provide adequate structural safety, fire resistance and protection, and convenience in traffic circulation. All school facilities shall be in compliance with all applicable state regulatory agencies.

- 1001.01 The structural design elements shall provide the following:
- A. The ability of the building to resist lateral forces such as are imposed by extreme winds and earthquakes
 - B. The ability of the building to resist distortion and rapid deterioration from excessive or uneven foundation settling or the overstress of structural members and inadequate tying
 - C. The ability of the building to carry the maximum live loads imposed on it by school and community use

1002 TYPES OF CONSTRUCTION AND AREA LIMITATIONS

1002.01 Buildings **that require approved** automatic sprinkler systems must be installed as per NFPA 101 Life Safety Code and West Virginia Fire Code.

1002.02 Places of Assembly
In educational facilities places of assembly shall include, but are not limited to, all buildings or portions of buildings used for gathering together 50 or more persons for such purposes as deliberation, worship, entertainment, dining, amusement, or

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awaiting transportation. Examples: gymnasiums, auditoriums, libraries, and cafeterias.

Classification of places of assembly are explained as follows: Each place of assembly shall be classified, according to its capacity:

Class A, capacity of 1000 persons or more; Class B, capacity of 300 to 1000 persons; Class C, capacity of 50 to 300 persons. Refer to the appropriate code to pick the appropriate type of building construction.

1003 FIRE PROTECTION

- 1003.01 **Fire Safety**
In educational facilities, fire safety includes, but is not limited to, fire resistive construction, fire alarm systems, sprinkler systems, exits, enclosure of vertical openings, and evacuation plans.
- 1003.02 Refer to appropriate sections of West Virginia Fire Code and NFPA 101 Life Safety Code.
- 1003.03 **Heating Plant and Kitchen Ranges**
- A. The furnace room shall be isolated from pupil-occupied areas by location and/or treatment (fire resistive construction).
 - B. Heat plant installations shall be in accordance with appropriate state and local codes.
 - C. Kitchen ranges of more than four burners and ovens must have ventilation and protection in accordance with the State Fire Code; NFPA 96, Vapor Removal Cooking Equipment and ASHRAE.
- 1003.04 **Electric Services**
All wiring, connections, and electrical installations shall be in accordance with the WV Fire Code and National Electrical Code.
- 1003.05 **Fire Alarm System**
- 1003.051 **General Requirements**
 - A. All fire alarm systems, including all components, shall be electrically supervised. Components shall include pull stations, automatic detection, sounding devices, flow switches, tamper switches, and main panel.
 - B. All fire alarm systems and wiring shall be in accordance with the National Electrical Code and the WV Fire Code.
 - 1003.052 **Requirements for Educational Occupancy**

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- A. A fire alarm system is required in every educational occupancy area (as defined in the NFPA 101 Life Safety Code), and such a system must meet the requirements and standards as provided herein. Educational occupancies area as defined in the NFPA 101 Life Safety Code. Exception: One or two room buildings of less than 2500 square feet gross floor area with two direct exits to the outside from each classroom.
- 1003.06 Fire Extinguishers
A fire extinguisher shall be installed in accordance with the State Fire Code; NFPA 10, Portable Extinguishers.
- 1003.07 Occupant load Calculations
- A. The occupant load of educational facilities, or any individual stories or sections thereof, shall be as determined by the State Fire Code; NFPA 101, Life Safety Code.
- B. Occupant load requirements of lecture rooms, gymnasiums, or cafeterias used for assembly purposes shall also be determined by the State Fire Code; NFPA 101, Life Safety Code.
- 1003.08 Emergency Lighting
Every educational facility shall have emergency lighting as per NFPA 101 Life Safety Code, State Fire Code, and National Electrical Code.
- 1003.09 Extinguishment Requirement
- A. Every portion of each educational building below the floor of exit discharge shall be protected throughout by an approved automatic sprinkler system in accordance with the State Fire Code; NFPA 101, Life Safety Code.
- B. Buildings that require approved automatic sprinkler systems must be installed as per NFPA 101 Life Safety Code and West Virginia Fire Code.
- 1003.10 Vertical Openings
All vertical openings in educational buildings shall be enclosed and protected by fire resistive construction, as required by the State Fire Code and NFPA 101, Life Safety Code.
- 1003.11 Classrooms
Every room or space used for classroom or other educational purposes that do not have a sprinkler system shall have at least one outside window used for emergency rescue or ventilation as per NFPA 101 Life Safety Code and WV Fire Code.

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1004 NOTIFYING THE FIRE DEPARTMENT

Whenever a fire occurs in any building or on any premises of any kind, the owner, manager, occupant, or any person in control of such building or premises, upon discovery of a fire, or evidence of there having been a fire, even though it has apparently been extinguished, immediately shall cause notice of the existence of such fire, circumstances of same, and the location thereof to be given to the Fire Department. This requirement shall not be construed to forbid the owner, manager, or other person in control of the aforementioned building or premises from using all diligence necessary to extinguish such fire prior to the arrival of the Fire Department.

No person shall make, issue, post, or maintain any regulation or order, written or verbal, that would require any person to take any unnecessary delaying action prior to reporting a fire to the Fire Department.

1005 CIRCULATION, SAFETY, AND CONVENIENCE

1005.01 Corridors

- A. Each corridor shall be a minimum of 6 feet wide in the clear. Room and locker doors swinging into corridor shall not, at any point of the swing, reduce the minimum clear passage.
- B. A means of egress shall exist at each end of a corridor, and in no case shall any corridor extend more than 20 feet beyond an exit.
- C. Doors separating corridors from stair enclosures shall be B Label fire rated doors and swing in the direction of exiting.

1005.02 Stairways

- A. All stairways shall conform to the requirements of the State Fire Code; NFPA 101, Life Safety Code. Chapter 5 of the Life Safety Code provides details for construction and dimensions.
- B. Closets, storage areas, or other rooms or spaces shall not open into the stairway enclosure; nor shall such space be permitted under or over stairways.
- C. Buildings of more than one story have a minimum of two stairways, located remote from each other, which provides a continuous exit to the outside. Additional stairways may be necessary, dependent upon occupant load and square footage of the floor(s).

1005.03 Exits

- A. All buildings, including one-room buildings, or classrooms over 1000 square feet shall have a minimum of two exits, remote from each other.

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- B. All exits shall comply with the State Fire Code, NFPA 101, Life Safety Code. Chapter 5, of Code, provides information for determining number, kinds, arrangement, and capacity of required exits.

1005.04 Signs

- A. All auditoriums, assembly areas, gymnasiums, stairways, corridors, and exits should have illuminated signs marked "EXIT" in plain, legible letters (with direction arrow, if necessary) as per the appropriate codes.
- B. Low hanging signs, ceiling lights and similar objects, signs and fixtures that protrude into regular corridors or traffic ways shall be avoided. A minimum height of 7 feet 6 inches from the floor is necessary.

1006 OTHER CIRCULATION AND TRAFFIC PROBLEMS WHICH NEED SPECIAL ATTENTION

1006.01 The plan of the drive and bus-loading platform shall meet the Federal Highway Safety Standard 17 and should be such that all buses can line up in tandem, permitting children to enter the bus from the right (that is, without crossing in front or to the rear of buses). No backing up of buses will be permitted.

1006.02 Access to the school grounds should be such that pupils coming to the site do not need to walk through any part of the building to get to the playground.

1006.03 Pupil circulation to and from toilet units is simplified when these units and hand washing facilities are located as follows.

- A. On normal traffic routes from instructional spaces to outdoor recreation areas
- B. Adjoining playgrounds so that the building proper need not be entered by playground users
- C. Near cafeteria or lunchroom

1007 DEMOLITION, RENOVATION AND ALTERATION

References:

2.

Before embarking on a renovation project, there are preliminary steps which must be taken. The existing facility must be examined carefully. Information about the educational program, the community, enrollment, and so forth must be assembled and analyzed. Educational goals must be clearly established and alternative solutions to the facilities problem (including renovation, renovation plus additions, demolition and replacement, or new site acquisition and new

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construction) must be developed and compared.

- 1007.01 An assessment of the existing facility should include an examination of at least the following areas:
- A. Program support
 - B. Structural soundness
 - C. Adaptability of the building
 - D. Adequacy of space
 - E. Aesthetics
 - F. Operational and maintenance efficiency
 - G. Condition of mechanical systems
 - H. Compliance with safety codes
 - I. Location
 - J. Site characteristics
 - K. Cost of project
 - L. Identify all hazardous materials (e.g. lead, asbestos, PCB, etc.)
 - M. Condition of the electrical system

1008 EMERGENCY SHELTERS

1008.01 Professional advice and assistance in the design of shelter areas for school buildings is available at no cost to architects and school boards. This service is obtained through the state Department of Emergency Services.

1008.02 A plan for locating students and staff for shelter-in-place including a plan for shutting down the HVAC system.

1009 RELOCATABLE, WOOD FRAME OR METAL BUILDINGS

1009.01 These installations shall be made only to relieve overcrowding or to provide interim housing while an approved school construction project is being planned and/or completed. Local school districts must include in their facilities plan a method and time frame for replacing these buildings with permanent structures. These buildings shall comply with all state usage guidelines, including installation of potable water and rest room facilities for early childhood (K-4), applicable building and fire codes, and ADA compliant.

1010 SAFETY AND CLEANLINESS OF BUILDINGS

1010.01 All schools must be maintained in a safe condition. Scheduled inspections will insure that facilities are kept in a state as near to the original condition as possible at all times. Facilities shall also be kept clean and sanitary at all times by scheduled cleaning of all

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sections of the buildings. This shall be insured by regular inspections for compliance with scheduled cleaning tasks.

- 1010.02 Materials which, under normal use conditions, may release formaldehyde in excess of .1 parts per million or asbestos dust which contribute to levels of indoor air pollutants considered potentially harmful to human health, shall not be permitted in building design.
- 1010.03 The Integrated Pest Management program, as per West Virginia Code shall be used for termite and rodent control. Prior to pesticide use, staff and parents are to be notified if they have requested this notification.

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Chapter 11

SERVICE FACILITIES

1100 WATER/SEWAGE FACILITIES

All schools shall contain adequate service facilities that are designed, constructed, maintained, and equipped to facilitate the operation of the school.

- 1100.01 Sanitary Facilities - Water Supply and Sewage Disposal
The water supply and sewage disposal systems of all schools are designed, constructed, maintained, and equipped to facilitate the operation of the schools. The sanitary facilities systems meet all requirements of state and federal regulatory agencies. Rest room facilities are ADA accessible and are provided on each floor level of the building and contain hot and cold water mixing faucets and provisions for privacy. Paper towels and toilet tissue are provided at all times. Service sinks with hot and cold water are provided in each custodial closet, in the custodial general service area, and in the food service area.
- 1100.011 Adequate source of water supply that is both safe and potable. Tests to verify the quantity and sanitary quality must be conducted prior to the occupation of the school. The state and/or local health departments welcome the opportunity for consultation regarding water conditions prior to site selection or acquisition.
- 1100.012 Ample supply and storage of water should be available at all times for present and future expanded needs. The quantity of water shall meet the appropriate code requirements.
- 1100.013 Water must be safe for use, as determined by state and/or local health authorities, and maintained safe by protection of source of supply, treatment if necessary, and periodic analysis.
- 1100.014 Sewage disposal system design requires the technical services of a licensed sanitarian. The type of installation depends upon the character of the soil as determined by percolation tests, location of wells, and sources of water supply. State and local health departments will provide maximum assistance in the development of approved sewage disposal systems in rural and suburban areas.
- 1100.015 The sanitary protection of an individual water supply and/or sewage disposal system shall be upgraded to meet current

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standards when any renovation or addition is to be provided at an existing school.

- 1100.016 All on-site water supplies and extended aeration treatment sewage plants will require personnel that are properly certified by the West Virginia Department of Health to operate these systems.
- 1100.017 All hydronic systems shall have an approved back flow preventer device placed on the make-up water line to prevent contamination of the potable water supply. All laboratories shall be isolated from the remainder of the school by an approved back flow preventer device on the water line. Back flow preventer devices are to be shown on plans submitted for review and included in the specifications to the West Virginia Department of Health.
- 1100.018 The required ratio of toilets, urinals, lavatories or wash fountains and drinking fountains shall be maintained when a renovation or an addition enlarges due to school population.
- 1100.02 Restroom Facilities
Federal regulations demand that restrooms shall have at least one toilet stall and meet ADA standards.
- 1100.021 Restroom facilities should be provided for both sexes on each floor level of school building. Some economy may be achieved if rest room rooms are located adjacent to each other with common utility space between for servicing; the same is true in multi-story buildings, where rest rooms may be located one above the other.
- 1100.022 Entrances to rest rooms must be designed to prevent visibility from the corridor.
- 1100.023 Rest rooms for public use should be conveniently available to the auditorium, gymnasium, and other parts of the building commonly used by the public. Students' general rest room rooms may be strategically located for public use in some cases.
- 1100.024 Rest room floors shall be of an appropriate material that is conducive to sanitation and cleanliness needs.
- 1100.025 Wall surfaces should be of impervious material, such as glazed tile, to a height of at least 6 feet, and preferably to the ceiling.

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- 1100.026 Provide stall rest room partitions with doors of smooth nonporous and non-rusting material. These should be securely anchored to the floor and wall.
- 1100.027 Floor drains, hose bibbs, and clean-out plugs should be provided in group rest rooms.
- 1100.03 Plumbing Fixtures
- 1100.031 Service sinks with hot and cold water should be provided in each custodian's closet, in the custodian's general service room, and in the cafeteria-kitchen. Vacuum breakers should be installed on sink water lines.
- 1100.032 Hydrants, tamper proof and frost proof, should be provided at least every 120 feet around the perimeter of the building and on the roof where the HVAC system is roof mounted. Underground stop and waster cocks shall not be permitted on frost-proof hydrants.
- 1100.033 All piping and valves in the plumbing system should be tagged for identification, and a chart of plumbing layouts should be readily accessible.

1101 ELECTRICAL SERVICE

Reference:

- 15.
- 16.

The electrical system of each school is designed, constructed, maintained, and equipped to facilitate the safe operation of the school. The electrical system provides adequate service for present and anticipated loads to insure maximum efficiency and meets all requirements of applicable state regulatory agencies and the National Electrical Code.

- 1101.01 Electrical Requirements
- A. No conduit less than 3/4 inch shall be installed
 - B. Electrical circuits shall not share common neutrals
 - C. All electrical circuits shall have full-size neutrals
 - D. Underground service entrances shall have approximately **50%** spare conduit capacity with a minimum of **one spare** conduit.
 - E. All feeder panels that are remote from the main distribution center shall include a main circuit breaker
 - F. MC cable shall not be used in concealed locations
 - G. MC cable can be used for lighting connections only when

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distances do not exceed 6 feet.

1102 MULTI-MEDIA FACILITIES

All schools shall be designed, constructed, maintained, and equipped to provide the multi-media facilities required for the educational program of the school.

- 1102.01 Instructional spaces and production areas should be furnished to permit the use of all types of multi-media materials and equipment.
- 1102.02 Adequate provision for controlling the light level in instructional areas is essential.
- 1102.03 Duplex electric service receptacles should be installed on all walls of the instructional space for the use of instructional equipment. Sufficient branch electrical circuits service should be in each room.
- 1102.04 Where there are to be specialized facilities, such as language labs, study carrels, micro-teaching, and television, adequate provisions should be made for the electrical service using flush and recessed electrical fixtures, and prohibit possible use of floor mounted fixtures.
- 1102.05 Conduits shall be provided to permit future installation of network computer drops, television, and other electronic instructional devices.
- 1102.06 System conduits shall be of sufficient size, no smaller than 3/4 inch, to provide for installation of television and other teaching devices.
- 1102.07 A projection surface should be permanently installed in each instructional area.
- 1102.08 Media production centers and photographic darkroom facilities should be provided with adequate sinks for hot and cold running water where the school curriculum dictates the need for this program.
- 1102.09 Adequate ventilating facilities, including exhaust fans, shall be installed in production areas for the removal of fumes resulting from the use of rubber cement and other chemicals.
- 1102.10 For preservation of book and non-book materials and equipment, temperature and humidity control are essential.
- 1102.11 Use of audio devices mandates acoustical treatment, as per ASA guidelines, of walls, ceilings, and floors in instructional areas and

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media centers.

- 1102.12 Adequate display and exhibit facilities, including such things as magnetic boards, marker boards, bulletin boards, and show cases, are required.
- 1102.13 Adequate storage facilities for materials such as supplies, book and non-book materials, and equipment are required.

1103 COMMUNICATION AND PROGRAM FACILITIES

All schools are designed, constructed, maintained, and equipped to facilitate adequate intercommunication among major areas of the school plant. All schools contain a master clock, a signal and tone system, and telephone for outside communication. All schools should consider guidelines from CPTED concerning communications for safe schools. In new construction, consideration should be given to installing closed-circuit video.

1104 FIRE ALARM SYSTEM

References:

- 12.
- 15.
- 16.
- 17.

- 1104.01 Fire alarm signals shall be of the continuous type, shall be distinctly different from all other signals or sounds, and shall comply with the State Fire Code and the appropriate NFPA codes.

1105 INFORMATION and INSTRUCTIONAL TECHNOLOGY

Educational technology must be incorporated into the facility through the educational specifications and the school technology plan to meet the needs of students, educators, parents, and community. In addition to this section, technology is addressed throughout Policy 6200. Because technology specifications change frequently, the Office of Technology and Information Systems (OTIS) Handbook will include the latest information. When planning a facility, the county technology director/contact and a member of the WVDE OTIS staff must be included to ensure coordination with other local and state technology initiatives.

References: 25

- 1105.01 Local Area Network (LAN) Infrastructure
 - 1105.011 LAN standards for administrative and instructional data

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include:

- A. The network infrastructure for data shall adhere to all applicable EIA/TIA standards.
 - B. The network infrastructure for data shall adhere to all applicable IEEE standards.
 - C. The network infrastructure for data shall adhere to all applicable state and local codes.
 - D. Terminations shall be made in accordance with EIA/TIA Standard T568B.
- 1105.012 A distribution frame for data infrastructure shall be established on every floor.
- 1105.013 The data infrastructure should provide a minimum of 100MB Ethernet Layer II Switching to the desktop (See OTIS Handbook for specifications).
- 1105.014 A minimum of CAT5e Plenum rated cabling, rated at 350Mhz, should be utilized for all data infrastructure.
- 1105.015 Fiber optic cabling should be utilized for all backbone cabling between distribution frames and for any connections between buildings.
- 1105.016 A minimum of three network drops (preferably more based upon curricular need) be installed into every curricular classroom, unless fully functional wireless laptops are assigned per student (See OTIS Handbook for specifications).
- 1105.017 All cabling:
- A. Below the ceiling, except for patch cables, should be enclosed within the wall or protected within conduit and/or panduit unless otherwise approved by the WVDE.
 - B. Should be uniform and accurately and clearly labeled, including wiring closets, network electronics, and workstations.
 - C. Should be tested and certified with printed results provided to the county.
- 1105.018 A detailed schematic design of the cabling infrastructure should be provided to the County upon completion.

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1105.02 Communications Devices

1105.021 Adequate facility space to house LAN and wide area network (WAN) communications devices must include appropriate electrical access, climate conditions, and security. (See OTIS Handbook.)

1105.022 When planning for placement of communications devices, consider the point of entry of the communications data lines into the building.

1105.03 Distance Learning and the West Virginia Virtual School

1105.031 Distance learning and virtual classes may be offered to meet the instructional needs of students and staff development needs of staff. (See Policy 2450.)

1105.032 A variety of delivery modes for distance learning may be utilized including, but not limited to, Internet access, satellite, cable, teleconferencing, and public broadcasting. Facilities must be planned according to the delivery mode. (See OTIS Handbook.)

1105.04 Information Technology (IT)

1105.041 Facility requirements for Information Technology will vary based on the specific implementation. (See Chapter 8, Section 806.02 of Policy 6200 and the OTIS Handbook.)

1105.05 Technology Planning

1105.051 School and county technology planning must be done in conjunction with the facility educational specifications.

1105.052 County/school technology contacts and WVDE OTIS staff must be involved in planning to incorporate local and state initiatives, partnership opportunities, and federal funding programs such as FCC E-rate.

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Chapter 12

OTHER FACILITIES

1200 ENGINEERING AND CUSTODIAL FACILITIES

All new or renovated schools are designed, constructed, maintained, and equipped to provide adequate and appropriate space and services for custodians. All new or renovated schools are equipped with custodial and engineering areas, individually accessible to a service drive, with exterior doors sized to permit removal of room equipment or delivery of supplies. The areas are isolated from student occupied areas by location and/or treatment. Custodial closets are located within the school in strategic and convenient areas. Adequate facilities are provided for storage of supplies and equipment, and adequate provisions are made for waste disposal. Each custodial service facility is in compliance with all requirements of appropriate regulatory agencies.

1200.01 Heat Plant - Size
Area as needed.

1200.02 Heat Plant - Location

- A. Directly accessible to service drive, with exterior doors to permit removal of room equipment.
- B. Isolated from pupil-occupied areas by location and/or treatment.
- C. Adequate space to facilitate service to the building heating equipment.

1200.03 Heat Plant - Equipment and Facilities
As needed, with provision to permit expansion, if necessary.

1201 RECEIVING, STORAGE AND WORK ROOM

1201.01 Size - Area as needed

1201.02 Location - Direct access from the service drive

1201.03 Equipment Space and Facilities

- A. Shelving in a variety of depths and heights to provide temporary storage for supplies and equipment delivered to the school and custodial equipment not used daily, such as ladders, vacuum cleaners, and scrubbers. Shelving should be of resilient construction.
- B. Provide work bench equipped with vise and storage for small hand and power tools used in minor repair
- C. Grounded duplex receptacles over work bench at three feet intervals

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1202 GENERAL REQUIREMENTS

- 1202.01 Adequate and appropriate space, facilities, and services should be provided for the custodians, including locker, shower, toilet, and lavatory.
- 1202.02 In larger schools, it is desirable to provide an office for the head custodian near the custodial quarters. These facilities will be available for preparing and filing reports, preparing requisitions, preparing schedules and records, and for holding private conferences.
- 1202.03 Some school buildings, particularly large high schools, have laundry facilities for cleaning physical education, food service, custodial, and other equipment and supplies. Automatic drying machines will require venting to the outside. Compliance to the State Fire Code and NFPA 101 Life Safety Code is necessary.
- 1202.04 Since portable electric floor cleaners are frequently used, ample electrical outlets shall be located at convenient points not more than 75 feet apart in corridors and rooms. See Chapter 11, Section 1101.

1203 LAWN TOOL EQUIPMENT STORAGE ROOM

- 1203.01 Size - 50 to 100 square feet
- 1203.02 Location - Direct access from outdoors
- 1203.03 Equipment Space and Facilities
Shelving and space to permit easy storage of lawn mower, lawn tools, and snow removal and other equipment needed in the care of the school grounds. All equipment containing flammable material shall be located separate from the school.

1204 POWER, METER, AND SWITCH ROOM

- 1204.01 Size - Area as needed
- 1204.02 Location
- A. Convenient access from the boiler room and custodian's area
 - B. Location to avoid damage from water or moisture
 - C. Direct outside access
- 1204.03 Equipment Space and Facilities
Electrical panels, meters, and switches needed to provide electrical

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service in the building. See Chapter 11, Section 1101.05.

1205 LOCKER/DRESSING ROOMS

- 1205.01 Size - as needed
- 1205.02 Location - Adjacent to custodian's room
- 1205.03 Equipment Space and Facilities
 - A. Lockers
 - B. Mirror
 - C. Chairs or benches
 - D. Toilet
 - E. Shower

1206 CUSTODIAL CLOSETS

- 1206.01 Size and Number - Area as needed
- 1206.02 Location

Strategically located along corridors, a minimum of one per floor, and in food service area to reduce the travel necessary to properly maintain a healthy and clean school.
- 1206.03 Equipment Space and Facilities
 - A. Service sink with mud trap and hot and cold water
 - B. Shelving for various cleaning supplies and equipment
 - C. Storage space for mops and brooms
 - D. Storage space for cleaning cart

1207 ACCESSIBILITY OF FACILITIES

Reference:

- 5.
- 12.

All schools are designed, constructed, maintained, and equipped to provide a barrier-free environment and maximum accessibility by the physically challenged to all floors. All facilities are in compliance with the requirements of state and federal regulatory agencies concerned with accessibility.

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Chapter 13

ENVIRONMENTAL CONTROLS

1300 COMMON ENVIRONMENTAL FACTORS

All new or renovated schools are to be designed, constructed, furnished, and maintained in a manner which incorporates appropriate technology into the common environmental factors which facilitate the educational program of the school. Spatial and aesthetic considerations are incorporated into the school design, construction, equipment, and maintenance. The thermal, visual, and acoustical systems are balanced in a manner which properly controls the environment and facilitates the educational program of the school for all seasons.

Determining the type of HVAC system to be used is a highly technical problem dependent upon the life cycle cost, which includes the original cost, the operating cost, the maintenance services available, and the size of the building. Technical advice concerning the type of heating and ventilating system to be utilized shall be secured from mechanical engineers certified to deal with HVAC problems. Because of the many different types of environmental systems available, the variations in owning costs by type, installation, and the relative costs of competing energy sources, the architect and/or engineer must make an in depth life cycle cost analysis to determine the best and most economical system and energy used to meet the objectives regarding space conditioning. The life cycle cost analysis shall be part of the design development documents.

School facilities must be in compliance with the requirements of the State Fire Code, State Health Department, and other regulatory agencies.

1301 THERMAL ENVIRONMENT

References:

- 2.
- 6.
- 19.
- 20.
- 24.

The school facility is designed, constructed, equipped, and maintained in a manner which provides for maximum safety, comfort, and economy. The heating, ventilating, and air-conditioning systems in all school facilities shall be in compliance with the requirements of applicable regulatory agencies.

- 1301.01 Minimum functions of the space conditioning system employed to maintain the proper thermal environment in a school building are as

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follows.

- A. Supply heat for warm-up and balance heat losses from the room to the outside.
- B. Supply conditioned outside air to meet ventilation requirements.
- C. In special cases, the system must remove injurious or noxious gases, vapors, fumes, and dust by the induction of outside air, filtration, and/or exhausting contaminants.
- D. Minimum outside design criteria
 - 1. Winter - 0° F. db
 - 2. Summer - ASHRAE .4% Climatological Data (Cooling and Dehumidification Data)
- E. Indoor occupied design criteria
 - 1. Winter - 68-72° F. $\pm 2^\circ$, humidity $\geq 30\%$ rH
 - 2. Summer - 72-75° F, humidity $\leq 60\%$ rH

1301.02 Space conditioning systems should be of sufficient rated capacity to meet the building requirements under design local weather conditions as per 1301.01. This will avoid sustained operation beyond the capacity of the system.

1301.021 Operative Temperature

It is desirable that HVAC systems provide a maximum temperature gradient not to exceed 2° from floor to 60 inches above the floor.

1301.022 Air supply

Space conditioning systems will have sufficient capacity to provide for introduction of outside air. The amount of outside air will meet guidelines set forth by current ASHRAE Standard 62.

1301.023 Air Movement

Air motion, with proper distribution and without drafts, is recommended in educational facilities. Also important are effective air cleaning, temperature control, low noise level, and acceptable humidity conditions.

- A. Air motion should generally fall within a range of 25 to 50 feet per minute and should be maintained at a constant rate with a pattern that prevents temperature stratification.
- B. Special provisions may have to be made in the window zone to overcome the effects of cold window down draft.
- C. Since positive pressure is required in conditioned areas, with the exceptions of bathrooms, custodial closets, science areas, and other areas that may

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have air contamination, approximately 5-10 percent more air should be introduced than is exhausted, thus minimizing infiltration.

- D. Avoid unnecessary use of duct liner. If duct liner is used it shall be rated at 5000 fpm velocities, and be treated with an EPA approved anti-microbial agent proven to resist microbial growth as determined by ASTM G21 and G22.
- E. Velocity of air across coils shall not exceed 500 fpm to prevent moisture carryover.
- F. In occupied spaces, room thermostats and easily accessible controls to occupants must be used to regulate space temperatures, but must not be permitted to control the fan operation.
- G. The condensate traps shall be designed to operate at greater than 1" w.g. above the static pressure of the HVAC unit.
- H. If flexible duct is to be used, the duct shall be of the internal corrugated metallic type or internal high-pressure fabric with a pressure rating of at least 10" w.g. positive and 5" w.g. negative with a bursting pressure of at least 2 times the working pressure, and externally insulated. The duct shall be rated for a velocity of 5000 fpm. There shall be a maximum of one (1) 90° bend and a maximum length of six (6) feet.
- I. Include in the selection of the grilles, registers, and diffusers the desired NC (noise coefficient) rating that meets the ASA recommendations.

1301.024

Humidity Control

While normal comfort conditions may be maintained with a wide range in relative humidity, it is desirable that actual levels meet the requirements set forth in Sections 1301.01E1 & E2. It should also be stated, that higher sustained humidity promotes unhealthy mold growth.

1301.025

Air Cleaning

Air cleaning is essential in all areas. Filtering, washing, screening, absorption, or other cleaning methods may be used. The HVAC units should be installed with the most appropriate filtration available for the type of equipment selected. It is recommended that a minimum of 25% ASHRAE dust spot filter efficiency be used (MERV 7). The filters efficiency rating shall meet the latest ASHRAE Test Standard 52.1 and 52.2.

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- 1301.03 In new or substantially remodeled schools, some form of cooling system is necessary for schools in areas where the outside temperature is above the optimum during a portion of the school year. This cooling system shall meet all of the standards set forth in Chapter 13 of this policy.
- 1301.04 Building Control systems will be provided in order to secure the maximum utilization of facilities and the greatest economy in operation. Controls shall be a type that will permit easy interfacing of energy management systems and approved by the WVDE and SBA.
- 1301.05 Local boards of education, before accepting the heating contractor's work, should receive complete training regarding the operation and maintenance of the mechanical equipment and should insist that a designated school employee(s) be given direct instruction by one or more competent representatives of the contractor or equipment firms. The training shall be completed prior to the turnover of the building to the Board of Education. For major mechanical and electrical equipment and systems (including HVAC control systems) there shall be a minimum of 1 day follow-up training at 6 months after facility turnover. All training shall be video-taped and turned over to the county Board of Education.
- 1301.06 Inspection of Systems
- 1301.061 The specifications shall include the hiring by the Board of Education an independent AABC, certified air balancing contractor to inspect, balance and evaluate the finished HVAC system before title passes to the school board to assure that the system is installed as designed and is operating according to specifications. An independent EEC, and/or NEBB balancing contractor can also be used as a balancing contractor with prior approval of the design engineer unless directed by the SBA or WVDE to do otherwise. This evaluation shall only be performed with an owner's representative present.

NOTE: Warranties and brochures shall be furnished to the board by the installation contractor on all equipment. The record product data shall be submitted in Adobe Portable Document format (PDF or other acceptable commonly used electronic file format burned to a single CD when available, along with bound copies of the product data.

- 1301.062 The county Board of Education should consider a

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commissioning agent to assure that the HVAC system is designed and installed in accordance with the county's requirements.

- 1301.07 The architect/engineer shall analyze the facility for its total energy efficiency and provide an energy simulation analysis in BTU/Gross S.F./Year. Energy usage must be within guidelines established by the Fuel and Energy Office, Governor's Office of Economic and Community Development.
- 1301.08 Indoor Air Quality Standards
- A. There shall be no open-flame, fuel burning heaters in student and staff occupied spaces. This equipment shall be located in enclosed rooms or cabinets using outside air for combustion and be properly vented to the outside in a manner that exhausts all fuel gases using appropriate piping as per ASHRAE and AGA standards
 - B. Outside air intakes shall be located no closer than 15 feet or the standards set forth by ASHRAE, whichever is greater, to stacks, vents, motor vehicles and other sources of contaminants to minimize cross contamination. Stacks shall be designed to exhaust flue gas away from the building.
 - C. Electric powered carbon monoxide monitors shall be installed in each area that produces combustion gases.
 - D. Outside air dampers shall fully close when the units are off and maintain at least a pre-set minimum position in accordance with ASHRAE Standard 62 during occupied operation for classrooms.
 - E. Heat Recovery systems are recommended for 100% outside air systems. All heat recovery systems shall be constructed to limit cross over contamination.
 - F. It is desired that return air dampers should be sized to produce air velocities of 1500 to 2000 fpm for thorough mixing. The damper should be set such that any deflection of air is towards the outside air to create maximum turbulence and mixing. The mixing damper shall extend across the full width of the unit even though the physical location of the return duct indicates that it could enter through the side to eliminate stratification.
 - G. The HVAC cabinet insulation shall have a non-porous facing on the side exposed to the air stream in areas of potential moisture buildup (cooling coil, outside/mixed air section, etc.). The outside air ductwork located indoors shall be externally lined only.
 - H. All drain pans shall be, if available, double sloped to prevent moisture accumulation.

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1301.09

HVAC System

HVAC systems shall include the following criteria:

- A. Air velocities across HVAC cooling coils should not exceed 500 fpm. The coils shall have a maximum of 12 fins per inch.
- B. Each classroom shall constitute a zone and have its own temperature control device that directly regulates room temperature.
- C. Temperature control devices in the classroom shall have minimum accuracy of $\pm 1^\circ$ F and humidity control devices of $\pm 3\%$ rH for a retrofitted system and $\pm 0.5^\circ$ F tolerance and $\pm 3\%$ rH for new systems.
- D. Fans should be selected for maximum efficiency that will yield minimum noise generation.
- E. Permanent I. D. labels on all HVAC and electrical equipment shall be installed. Labeling of electrical equipment shall include the equipment it serves.
- F. The mechanical engineer shall provide within the specifications for a contractor to include a preventative maintenance program for all HVAC equipment including: BAS software, listing of belts, filters, spare parts, nameplate data, recommended maintenance increments for preventative maintenance tasks, and training on preventative maintenance.
- G. Provide a water meter on condenser water makeup steam systems. Consideration for a water meter on the chilled water makeup shall also be given.
- H. Provide lockable ball valves on expansion tanks.
- I. Provide pressure gauges on expansion tanks.
- J. Provide appropriate isolation valves on all equipment.
- K. Provide water balance ports on all hydronic equipment as per manufacturer's recommendations.
- L. Recommend providing stainless steel, ceramic, or fiberglass for basins and other surfaces in contact with condenser water in cooling towers.
- M. All mechanical, plumbing, and electrical record drawings and/or as-built drawings are to be submitted in AutoCAD release 14 or greater format burned to a CD, in addition to reproducible or paper sets if requested by the county, WWDE, and/or SBA.
- N. It is recommended, if available, that HVAC units that have multiple compressors have independent refrigerant circuits for each compressor.
- O. All drain ports on back-flow preventers, pressure relief valves, and safety valves shall be piped to a drain in accordance with the local plumbing code.
- P. All closed loop water systems shall use scale and corrosion

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- inhibitors as a part of the general water treatment process.
- Q. All open loop condenser water systems shall use biocide(s) and scale corrosion inhibitors as a part of the general water treatment process. These products shall be automatically controlled and fed as directed by a competent water treatment vendor. Water treatment controls for the open loop system shall consist of a conductivity controller, automatic blow-down valve, and chemical feed pump for each water treatment product to be fed. All water treatment controls equipment and chemicals shall be located in a temperature controlled space in close proximity to the cooling tower.
 - R. The blow-down drain for cooling towers shall be piped to an appropriate drain line.
 - S. All water lines and chemical feed lines must be protected from freezing conditions by insulation and heat tracing.

1301.10

DDC control systems

- A. For new buildings and significant additions where there may be a risk of a contaminant entering into the building, provide a program for emergency shelter-in-place, using one input to shut down all HVAC equipment and isolate the facility from airborne hazards and contaminants.
- B. Label all components in interface and control panels.
- C. Provide laminated schematic diagram and attach to inside of interface panel.
- D. Graphics shall accurately represent facility components and architecture.
- E. Analog BCS input and output devices shall be field calibrated or adjusted to represent actual positions at the time of installation.
- F. Nomenclature on inputs and outputs shall represent true logical positions of the devices controlled.
- G. All external devices on the DDC system shall have I.D. labels.
- H. Provide sufficient schedules to cover yearly school holidays and special events.
- I. List spare parts needed for DDC system.
- J. An accurate and detailed set of as-builts, sequence of operation, and control drawings are to be provided for the HVAC system and controls.

1302 VISUAL ENVIRONMENT

Reference:
21.

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The school facility is designed, constructed, equipped, and maintained in a manner which provides a good visual environment. The facility is attractively painted and illuminated in a manner which most effectively contributes to an environment of visual accuracy and comfort. All schools are in compliance with requirements of applicable regulatory agencies. Plans and specifications for new or substantial renovations should be developed to achieve as many of the desired lighting goals as possible in the original construction with due consideration for the need of maintaining a balance between the visual and other major environmental factors. Proper visual environment lessens the expenditure of energy required for students and teachers to carry on visual tasks in the instructional space. A sufficient quantity of light is essential for good visual conditions. However, a task becomes visible, not by the light falling upon it, but by reflected brightness. Visual comfort and efficiency may best be achieved in an environment in which the brightness difference would be as small as possible between the task and the brightest surface and between the task and the darkest surface in the total visual field while the general level of illumination is high. Informal seating in the instructional space has gained wide acceptance. The visual field, therefore, must be recognized as encompassing all four walls, the floor, and the ceiling.

1302.01 General

1302.011 Technical assistance from qualified lighting engineers is generally required to insure adequate visual conditions within spaces.

1302.02 Desirable Brightness

1302.021 In an instructional space, the brightness of any surface viewed from any normal sitting or standing position should not be excessively greater than the brightness of the visual task. As the high brightness of surfaces in the visual field approaches the brightness of the task, visual comfort and efficiency increase.

1302.022 In an instructional space, the brightness of any surface viewed from any normal standing or sitting position should not be excessively lower than the brightness of the visual task. As the low brightness of the surfaces in the visual field approaches the brightness of the task, visual comfort and efficiency increase.

1302.023 The brightness of surfaces immediately adjacent to the visual task is more critical in terms of visual comfort and efficiency than that of more remote surfaces in the visual field. These adjacent surfaces have lower acceptable

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brightness limits than surfaces farther removed from the task.

- 1302.024 The brightness difference between adjacent surfaces in the total visual field should be reduced to an acceptable minimum.
- 1302.025 The characteristics of any lighting system should be such that direct and reflected glare are not objectionable. If the brightness difference produced by a lighting system is held within the limits stated in Goals 1, 2, and 3 of IES standards, direct and reflected glare will not be objectionable.
- 1302.026 Daylight and electric light systems should conform to the same brightness and brightness difference goals, and both systems should be coordinated in design to assure the effective contribution of both.
- 1302.027 The brightness goals stated above assume an illumination level of range 30 to 150 foot-candles on the reference task produced by combined radiant energy of daylight and any system of electric lighting used.

1302.03 Light Source

- 1302.031 Electric lighting systems should be evaluated on the basis of the following items:
- A. The lighting should produce a uniform distribution of shadow-free and glare-free illumination with the intensities necessary to maintain an acceptable brightness balance between the tasks and other surfaces within the total visual environment.
 - B. Consideration should be given to probable deterioration of service efficiency under prevailing conditions of school operation and maintenance.
 - C. Lighting fixtures should not produce a surface brightness on the fixture or on the ceiling that exceeds ten times the task brightness.
 - D. Fluorescent lamps are to be specified as T-8 or better with a color temperature of 3500K or greater, a CRI (color rendition index) of 82, and non-mercury containing as determined by TCLP (Toxicity Characteristic Leaching Procedure) testing as a minimum.
- 1302.032 Where daylight supplements artificial illumination, controls

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(preferably fixed) should be as follows.

- A. Exclude direct sunlight and at the same time admit about 15 percent of the outdoor brightness
- B. Provide a surface free from excessive brightness or glare
- C. Permit ease of maintenance

1302.04 Surfaces within rooms should be finished in accordance with the following items.

- 1302.041 Ceilings should provide a 70 to 90 percent reflection factor, flat, white surface.
- 1302.042 Upper walls (from wainscot or dado upward) should provide a surface with a reflection factor of at least 60 percent.
- 1302.043 Lower walls (from wainscot or dado downward) should provide a surface with a reflection factor of at least 60 percent.
- 1302.044 Where maintenance conditions permit, it is considered good practice to finish entire walls, from ceiling to floor, with surfaces having a 60 percent reflection factor.
- 1302.045 Finishes should be flat or matte on all interior surfaces, particularly at eye level or above.
- 1302.046 Trim should provide a surface with a 40 to 60 percent reflection factor.
- 1302.047 Desks and equipment should have finishes that fall within the 35 to 50 percent reflection factor range.
- 1302.048 Floor finishes should fall within the 30 to 50 percent reflection factor range.
- 1302.049 Marking boards are available with practicable maximum reflection factors of 20 percent. This high factor range is practical only when the level of illumination is sufficiently high to overcome the loss in visibility due to reduced brightness difference between chalk and the light colored board.

1303 SONIC ENVIRONMENT

The new or substantially renovated school facility is designed, constructed, equipped, and maintained to meet ASA guidelines, which provides for the control

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of sound within a particular space so that internal sound can be heard well and unwanted sounds are prevented.

1303.01 General

1303.011 The services of an acoustical engineer may be desired and should be considered when designing educational spaces.

1303.012 Although it is often impossible to prevent the creation of unwanted noises, it is both possible and practicable to prevent excessive noises which inhibit hearing and create distractions.

1303.02 Zoning

1303.021 The concept of zoning as related to acoustical engineering revolves about the basic premise that prevention is better than correction.

1303.022 Site

- A. Every effort should be made to acquire a site that has a relatively low ambient noise level.
- B. Planting of trees, bushes, and shrubs around the perimeter of the site, particularly on noisy sides, will provide added noise reduction.

1303.023 The Building

- A. It is important, where possible, to group noisy activities with other noisy activities, such as playgrounds, gymnasiums, music areas, and shops.
- B. Administrative facilities, general instructional spaces, media centers, and other similar areas should be grouped together in a quiet zone somewhat removed from noisy activities.
- C. Intermediate between the two extremes may be rooms where machines are used, the cafeteria, and home economics facilities.
- D. If these various activity levels are not adequately separated by space, then it is necessary to intercept these noises to the degree necessary to prevent them from conflicting with each other.

1303.024 Instructional and Service Facilities

- A. Administrative Offices
 - 1. Noise reduction by treatment, in the form of absorbent materials, is invariably mandatory to

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keep speech levels low and to keep sound from office machines and traffic noise at a minimum.

2. It is advisable to provide sound-intercepting barriers to keep noisy activities in some administrative rooms from interfering.

B. Corridors

1. Unless adequate noise reduction treatment is provided in corridors, they act as communication channels conveying a sound or noise throughout the building.
2. Acoustical treatment in such passageways should be placed on the ceiling and may also be placed on walls.
3. Undesirable noise may be reduced by proper attention to non-parallel floor or walk surfaces and ceiling surfaces.

C. Instructional Spaces

1. Instructional spaces should be treated for noise reduction to meet ASA guidelines.
2. The degree of sound interception requiring instructional space boundaries depends upon adjacent activities.
3. In the case of certain business education rooms, noise reduction treatment is to be preferred over critical reverberation control, and the boundaries must have a higher degree of sound interception, particularly where such rooms are near or next to the more academic-type instructional spaces.

D. Media Center

1. Noise reduction treatment, coupled with adequate sound interception, is a primary requisite in this area, where there may be disturbing and/or distracting sound from a nearby activity.

E. Shops

1. Adequate noise reduction treatment is essential, and adequate interception should be provided in the boundaries.
2. Where doors are left open, shop layouts must be oriented so that openings are away from academic and similar activities.

F. Cafeterias

1. An environment with a somewhat critical reverberation control is desirable.
2. Kitchens should have considerable noise

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reduction treatment because the noise from a reverberant kitchen can be conducted to the dining room area.

- G. Gymnasiums
 1. An environment with a somewhat critical reverberation control is usually desirable.
 2. Where facilities are near quiet areas, adequate interception must be built into the boundaries.
- H. Rest rooms

Better-planned schools provide noise reduction treatment in rest rooms, as well as special sound interception measures within the room boundaries.
- I. Music Rooms
 1. Choral, band, and orchestral rehearsal rooms require critical reverberation control over a wide range of pitches.
 2. Maximum noise reduction is not the correct solution.
 3. Individual practice rooms are usually most satisfactory when provided with maximum noise reduction treatment.
 4. Maximum sound interception is advisable.
 5. Special attention should be given to insure that strategic walls are not reduced in interception by the insertion of clocks, electrical outlets, or ventilating grills.
- J. Auditoriums
 1. From the standpoint of noise control, the auditorium is one of the most critical rooms in the entire unit or plant.
 2. The level of noise (including that from the ventilating system, heating system, water supply, and external sources) must be kept low.
 3. Adequate barriers must be provided to intercept sounds from such sources as traffic and mechanical equipment room.
 4. The proper acoustical environment of the auditorium is a highly scientific problem; therefore, technical assistance from an acoustical engineer should be secured in order to provide a reasonable environment.

1304 SPATIAL AND AESTHETIC ENVIRONMENT

The school facility is designed, constructed, equipped, and maintained in a manner

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which provides an effective, efficient, safe, and attractive facility and represents the educational philosophy outlined in the CEFP.

1305 BALANCED CONDITIONING OF SPACES

- 1305.01 The form of the facility follows the educational function and is designed to achieve adequate and economical conditioning of educational spaces and must be done by specialists (e.g., architects, engineers, or certified school planners) that are highly specialized in each of the separate major fields involved.
- 1305.02 When value engineering is required, the following list of priorities should not be compromised to assure maximum functionality during the life cycle of the building:
- A. The safety, health, and comfort of teachers and students
 - B. The operational success of the educational program
 - C. The protection of the investment in the building
 - D. The maintenance and repair budget

1306 FIRE INSURANCE

- 1306.01 Some economy in the life time operation and maintenance of a building may be achieved when future fire insurance assessments are considered in the planning stages.
- 1306.02 Items Affecting Insurance Premiums
- A. The building's exposure to adjacent properties not under the jurisdiction of the Board of Education
 - B. The location and treatment of "hot spots" - potential hazards - within the building
 - C. The degree of internal and external protection, such as heat and smoke detectors, sprinklers, extinguishers, and alarms
 - D. The degree of fire-resistance of component construction materials and of the building totally
- 1306.03 For new construction, insurance values and costs can be estimated by having plans and specifications reviewed by the West Virginia Board of Risk and Insurance Management.

1307 ROOF SLOPES

- 1307.01 Unless waived in exceptional circumstances, all new roof areas shall have a minimum slope as per WV Code §5-6-16. This shall include roofs with built-up membrane, as well as single-ply membrane systems.

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Chapter 14

STATUTES, PROCEDURES, AND TASKS

1400 RELATED INFORMATION - STATUTES

Reference:
8.

1400.01 School construction or improvement projects are frequently influenced or regulated by various statutes of the Code of West Virginia. Listed are sections with which school personnel should be familiar.

CHAPTER	ARTICLE	SECTION	SUBJECT
5	G	1-1	Procurement of Architectural and Engineering Services
10	2	1-5	Public Recreation & Playgrounds
10	2A	1-26	Athletic Establishments
11	8	5-33	Levies
11	10	11(d)	Prerequisite to final settlement of contract with this state or political subdivision; penalty
13	1	2-4, 34	Bond Issues for Original Indebtedness
16	1	7	Promulgation of rules and regulations
16	1	9	Supervision over local sanitation
18	3	9a	Authority of state superintendent as to fire hazards and safety of buildings
18	4	10	Duties (5): Close temporarily a school when conditions are detrimental to the health, safety or welfare of the pupils
18	4	11	Other powers and duties (3): Recommend for condemnation buildings unfit for school use
18	5	5	County Bd. of Ed.: Exemption of school property from legal process and taxes
18	5	6	Validation of titles to land in possession of board
18	5	7	Sale of school property at public auction; oil and gas leases
18	5	8	Condemnation of land necessary for educational purposes
18	5	9	Schoolhouses, buildings and equipment
18	5	10	Approval by WVBOE of plans and specifications for buildings
18	5	11	Joint establishment of schools
18	5	12	Bond of contractors
18	5	13	Authority of boards generally

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CHAPTER	ARTICLE	SECTION	SUBJECT
18	5	13a	School closing or consolidation
18	5	25	Duties of superintendent as secretary of board (3) & (4)
18	5	36	Payment for fire services on public school property
18	6	1	Driver Education
18	9	1-8	School Finances
18	9D	1-18	School Building Authority
18	9E	3	Air Quality in New Schools
18	9E	5	Investigations of Air Quality Complaints
21	5A	1-11	Wages for Construction of Public Improvements
29	3	19	Fire Prevention and Control Act: protection
29	12	5a	State Insurance: WV Board of Risk and Insurance Management
30	12	2	Use of title "architect"
30	13	13	What plans of state political subdivisions to be approved by registered engineer
38	2	39	Public buildings; bond of contractor; no lien in such case
47	5	1-3	Safety glazing material in hazardous locations
54	1-2	1-11	Eminent domain
61	10	15	Pecuniary interest of county and district officers, teachers and school officials in contracts; exceptions; offering or giving compensation; penalties

1401 INCLUSION OF PLANS IN COMPREHENSIVE EDUCATIONAL FACILITIES PLAN (CEFP)

1401.01 Regulations of the WVBOE and West Virginia Code §18-9D-16 require all plans for new construction, additions or renovations, major improvements, closings, and grade re-configurations to be included in the CEFP. The CEFP must be amended to include projects deemed necessary by the county board of education but not included in the original CEFP.

In order to ensure that the WVBOE and the SBA be fully informed about proposed amendments to comprehensive plans, the following conditions must be satisfied:

- A. All requests for amendment to CEFPs, including budget amendments, must be signed by the county superintendent and must show the date such amendments were approved by the county board of education and certified that they meet

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statutory regulations .

- B. Changes in comprehensive plans may not be implemented prior to WVBOE and SBA approval.
- C. All amendments must be fully explained; substantive changes must be accompanied by complete justification with data addressing the subjects of enrollment, facilities, finance, personnel, transportation, and educational programs.
- D. The proposed amendments shall include evidence of citizen awareness of changes in the comprehensive plan.
- E. Approval of the closure by the WVBOE automatically amends the CEFP; however, this does not assure SBA funding of a related project.
- F. Selection of architectural and/or engineering services shall be in accordance with Section 1403.

1401.02 Submission of the Educational Specifications - SBA Funded Projects

Once the educational planning committees are established, their objective should be to plan the educational program for the facility. This document must define the learning activities; the number groupings of the students with the staff and the space relationship between areas of the facility; and describe the type of furniture and equipment needed to support the desired program. Once completed, one copy of this document must be submitted to the SBA and the WVDE for review and approval before proceeding to the schematic design phase of the project.

1401.03 Submission of Schematic Design Plans, Specification and Budget Estimates - SBA Funded Projects

Once the educational specification has been approved by the SBA, the schematic design of the facility can proceed. Schematic design drawings, final educational specifications, building outline specifications, and the initial estimate of probable construction cost must be submitted to the SBA and the WVDE for review and approval. Provide one set of each required document. The LEA and architect should not proceed further on the building design until SBA and WVDE approval is secured.

1401.04 Submission of Design Development Plans and Specifications for Individual Projects

Once the comprehensive plan has been approved, individual project planning should be implemented. Under statutory authority and regulations, approval of plans and specifications for the construction of new buildings, additions, and renovations is required by the WVDE Office of School Facilities, the WVDE Office

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of Technology, the SBA, West Virginia Division of Health, West Virginia Division of Highways when new construction, and the State Fire Marshal's Office. The Local Education Agency (LEA) and project architect shall be responsible for securing approval of design development plans from each of these agencies.

1401.05 Plan Review Process - Design Development Plans

The LEA and project architect are responsible for distributing educational specifications, design development drawings, outline specifications, estimated project cost, project budget, and P-1 form for project approval. Documentation must be provided to the WVDE and to the SBA. To insure review and approval prior to planned construction, a **thirty (30)** day period should be set aside for plan review. The LEA will distribute plans to the state agencies in the following manner.

- A. Two complete sets of plans and specifications and the application for project approval (P-1) to the WVDE Office of School Facilities.
- B. One partial set of plans and specifications, including the architectural, electrical and telecommunications, to the WVDE Office of Technology and Information Systems.
- C. One set of plans and specifications to the West Virginia Division of Health
- D. Two sets of plans and specifications to the West Virginia Fire Marshal's Office
- E. If new construction, one set of plans and specifications to the West Virginia Division of Highways.
- F. One set of plans and specifications to the SBA

1401.06 Plan Review Process - Final Plans

Approval of preliminary, design development or final construction plans and specification must always be contingent upon the final review by the appropriate regulatory and funding agencies. The procedures outlined in Chapter 14, Sections 1401.04 and 1401.05 must also be followed in the submission of final plans.

1402 CONTENT OF DOCUMENTS SUBMITTED FOR APPROVAL

1402.01 Schematic Design Phase

Once the initial educational specification is complete, the architect shall develop schematic design drawings that translate the educational and physical needs of the facility into a graphic illustration. The schematic design phase submission must include:

- A. Initial educational specification
- B. Schematic floor plans and exterior building elevation drawings sufficient to describe the general layout and character of the building design
- C. Preliminary building square footage by space, by floor, and

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total building area

- D. A breakdown of academic, support services, and building circulation square footage
- E. Preliminary estimate of probable square footage construction cost
- F. A life cycle cost analysis for alternative systems will be completed for energy related building components. The life cycle cost analysis program to be used shall be equal to the BLCC software offered by the National Institute of Standards and Technology (NIST).
- G. Outline specifications to augment information shown on drawings

1402.02

Design development plans, final educational specifications, and building outline specifications should include the following items.

- A. Plot plan which includes size and shape of site, orientation, general topography, location of existing and new buildings, streets and highways, means of sewage disposal, and tentative development of the site.
- B. Floor plans showing existing and new buildings (minimum scale of 1/16 inch), type of wall, floor, partition, roof and stair construction, size and purpose of rooms, stairs, corridors, doors, windows, plumbing fixtures, built-in equipment, HVAC system type, building automation system type, and probable future additions.
- C. Elevations, at least one side of the building, overall dimensions, finished floor and ceiling levels, finished outside grade level, windows, doors, steps, retaining walls and materials
- D. Sections explaining any conditions not made clear on other drawings
- E. Proposed service connections, including gas, water, electricity and sewer, name of public service district or provider, and location of wells and sewage disposal system, if any
- F. Updated outline specifications to augment information shown on drawings
- G. Description of how the current facility does not meet the following goals, and how the proposed project will meet them
 1. Student health and safety needs
 2. Economies of scale, including compatibility with similar schools that have achieved the most economical organization, facility utilization, and pupil-teacher ratios
 3. Reasonable travel time and practical means of addressing other demographic considerations
 4. Multi-county and regional planning to achieve the most effective and efficient instructional delivery

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- system
5. Curricular improvement and diversification, e.g., computerization and technology, and advanced senior courses in science, math, language arts, and social studies
 6. Innovations in education, e.g., community-based programs and year-round schools
 7. Adequate space for projected enrollment
 8. All projects must have a detailed estimate of probable cost. This must be developed by an approved architect, engineer, construction analyst, or construction manager.
 9. Technology plan

1402.03 Final Plans and Specifications

These shall include the following:

- A. Site or plot plan - size and shape of site, adjoining streets, highways and walks, position of existing and new buildings on the site, location and connections of all service lines, finish contours with finish grades at building and elevation of first floor rooms, location of wells and sewage disposal system, if any, general landscaping and location of walks, driveways, parking areas, and exterior steps
- B. Floor plans showing existing and new buildings (each floor and roof at not less than 1/8 inch scale), footings and foundations, dimensions and schedules showing type and size of each door and window, complete figures so that size and thickness of walls and partitions can be readily determined, level of finished floors, furred walls and ceilings, door swings, location of built-in equipment, floor construction, run, dimensions and spacing of joists and girders, notation of safe live loads, and materials.
- C. Elevations for all sides (same scale as architectural plans)
- D. Sections (same scale, or larger, as that of floor plans), to show clearly special conditions, typical stairs, instructional spaces and corridors, equipment and fixtures, floor construction, levels and thickness, wall and ceiling construction, typical windows, interior and exterior doors, finish material, roof construction, fire barriers, and smoke partitions.
- E. Details (larger scale) showing typical exterior wall sections, footings, foundations, floors, windows, cornice and roof, all vertical dimensions, each type and size of door with glazing and paneling, frame and trim, each type of window, together with distances to floor and ceiling, stairs, including risers, treads, handrails, newels and landing lines, marker board, bulletin board, trim, chalk troughs, built-in equipment, counters, cupboards and drawers, and wardrobes, unless of standard manufacture

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- F. Plumbing plans, including foundation drain lines, storm, acid, and sanitary sewer lines, complete water supply system and location of all plumbing fixtures, including hose cabinets and sewage disposal system
- G. HVAC plans showing the BAS system and the size and type of heating and cooling unit. The plans shall also include all connections; pumps; supply and return lines with sizes, valves and slopes; motors; air-handling equipment; fans, including types, periphery speed, capacity and air velocity in ducts; and locations, sizes and capacity of all ducts, grilles, and ventilators
- H. Electrical plans using standard symbols to show all connections, inside and outside, location of wall, floor and ceiling outlets or receptacles, location and size of all conduits, capacity of outlets, network drops, location and details of switch panels, circuit breakers and fusing, location and connections for all bells, alarms, clocks, and special outlets, and types and designs of lighting fixtures
- I. Structural plans showing all concrete and steel columns, beams, trusses, girders, joists, slabs and reinforcing, fireproofing of structural members, details, diagrams and schedules as required for a complete understanding of plans
- J. Complete specifications augmenting the information shown on the drawing, giving details on construction materials and methods, mechanical equipment and installations and tests. In general, specify all window shades, rest room accessories and lockers and all other permanent equipment forming an integral part of the building.
- K. Final technology plan
- L. Final estimate of probable cost, including total project cost and final budget.

1402.04 Application for Approval of Preliminary and Final Plans and Specifications - Form P-1

1403 STANDARDS FOR ARCHITECTURAL OR ENGINEERING SERVICES

- 1403.01 The project architect or engineer will provide services, plans, and specifications which may be executed within the project budget. It becomes the architect's responsibility to redesign a project at no cost to a board of education in order to construct a facility within the budget and to comply with county boards of education and WVDE requirements.
- 1403.02 It shall be the responsibility of the project architect or engineer to assure that the project meets the requirements of this policy and to assure the legitimacy of bidders.

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- 1403.03 **Basis for Determining Architect's Fees**
- A. The architect's compensation for the basic services discussed above is usually based on one of the following methods:
 - 1. Percentage of construction cost of the work
 - 2. Fixed lump sum fee
 - 3. Professional fee plus reimbursement of expenses
 - 4. Multiple of direct personnel expense
 - 5. Salary, per diem or hourly rate
 - B. Counties may contact the SBA with questions concerning architectural services

- 1403.04 **The Architect's Agreement**
No services should be rendered by the architect, design professional, or engineer without a definite understanding as to the scope of services and the fee basis. This contract is for the protection of both the client and the architect. Where SBA funds are used the contract for design services must be approved by the SBA.

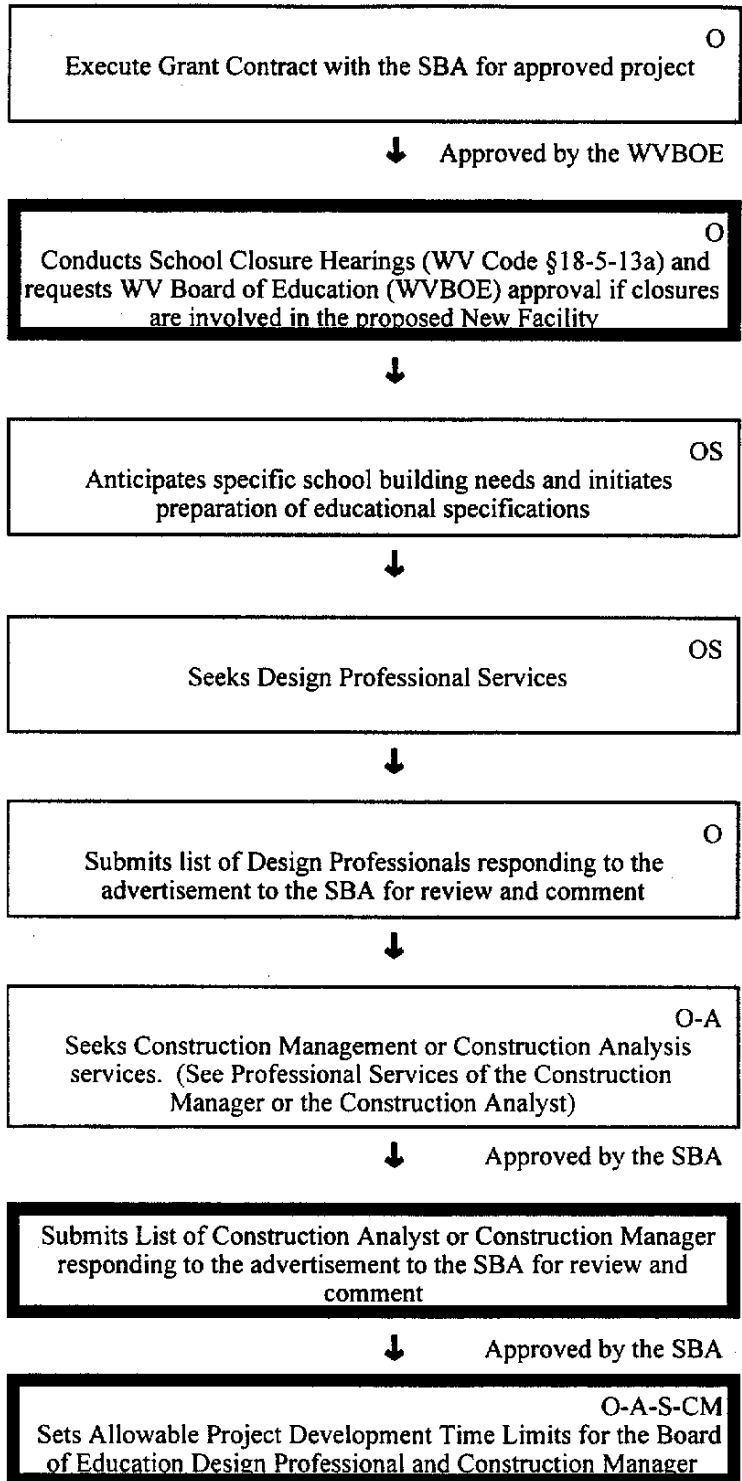
- 1403.05 **If the county Board of Education employs a commissioning agent to assure that the HVAC system is designed and installed in accordance with the county's requirements, it is required that the employment meets the WV Code, Article §§5G-1-1 to §§5G-1-4.**

1404 TRADITIONAL TASKS PERFORMED IN SCHOOL BUILDING PROGRAMS

- 1404.01 Tasks listed are those generally performed during the completion of a satisfactory construction project. The sequence of tasks is not always the same, nor is the time allotment always the same.
- 1404.02 Care should be exercised by the owner (County Board of Education) when undertaking any project to assure that all activities are in accordance with statutory and regulatory provisions and that the investment is adequately protected at all times.
- 1404.03 It is highly recommended that the LEA should not act as its own contractor nor utilize maintenance employees in constructing new school buildings or additions to school buildings without guidance from the WVDE or SBA.

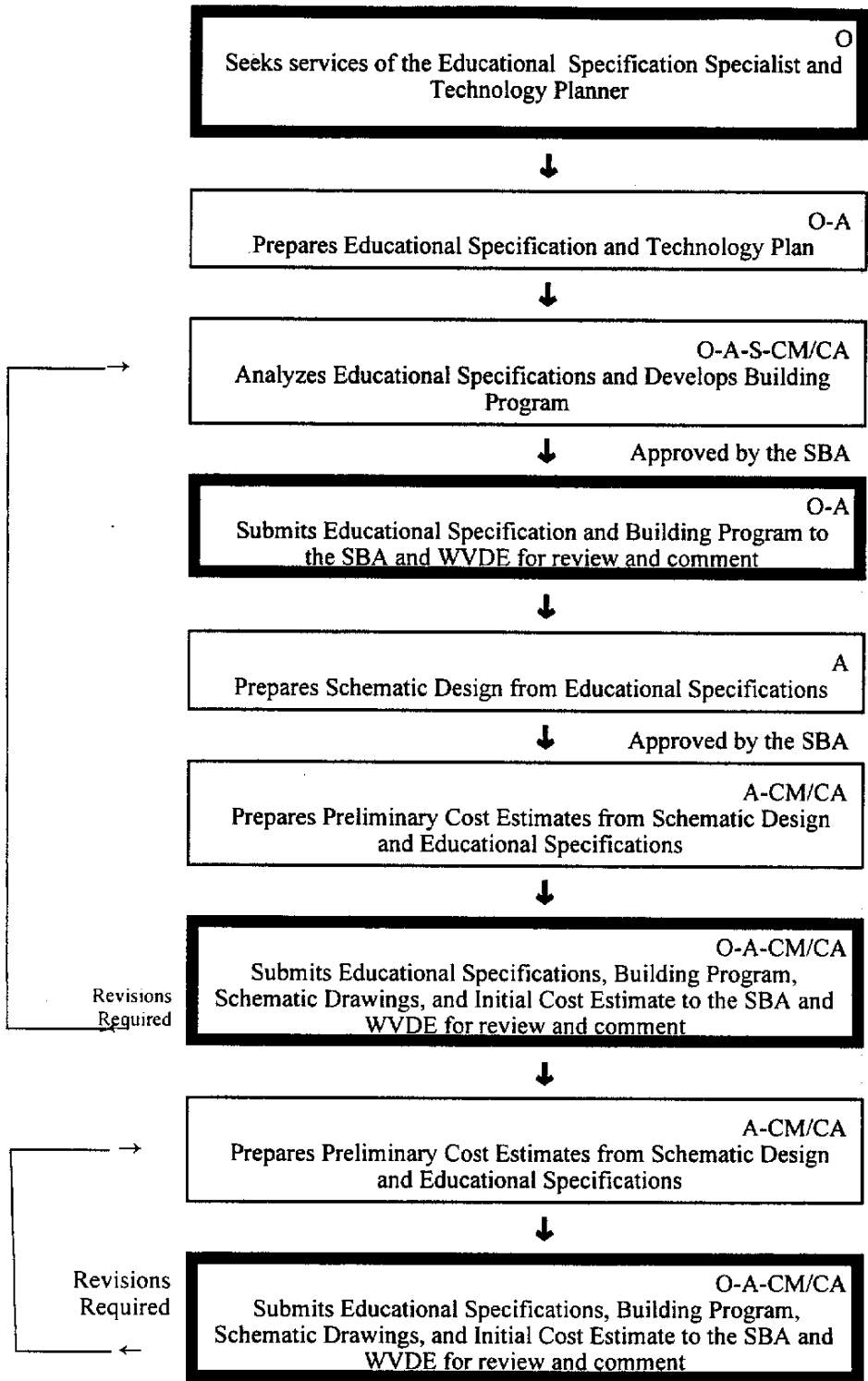
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SCHOOL CONSTRUCTION PROJECT
DEVELOPMENT

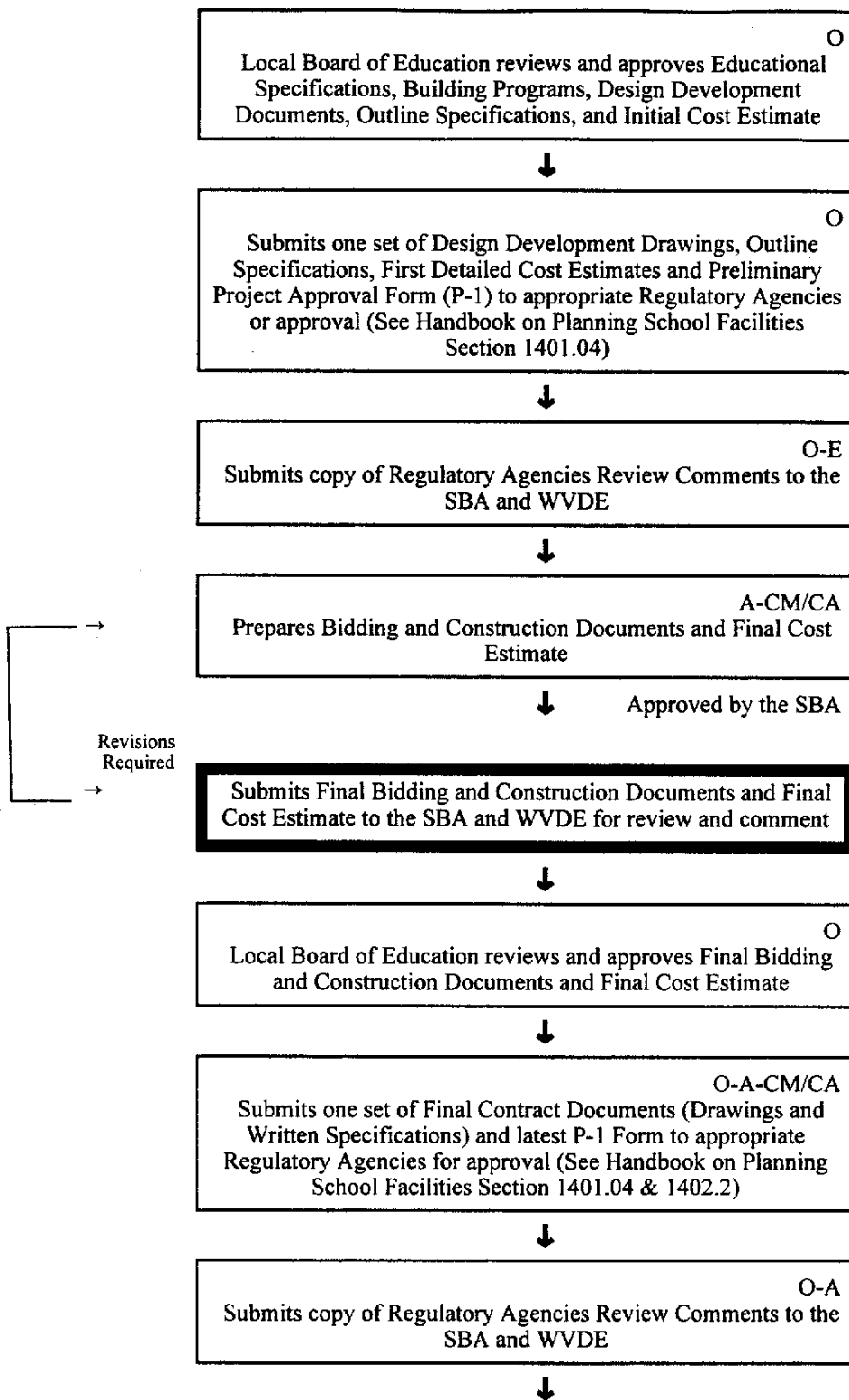


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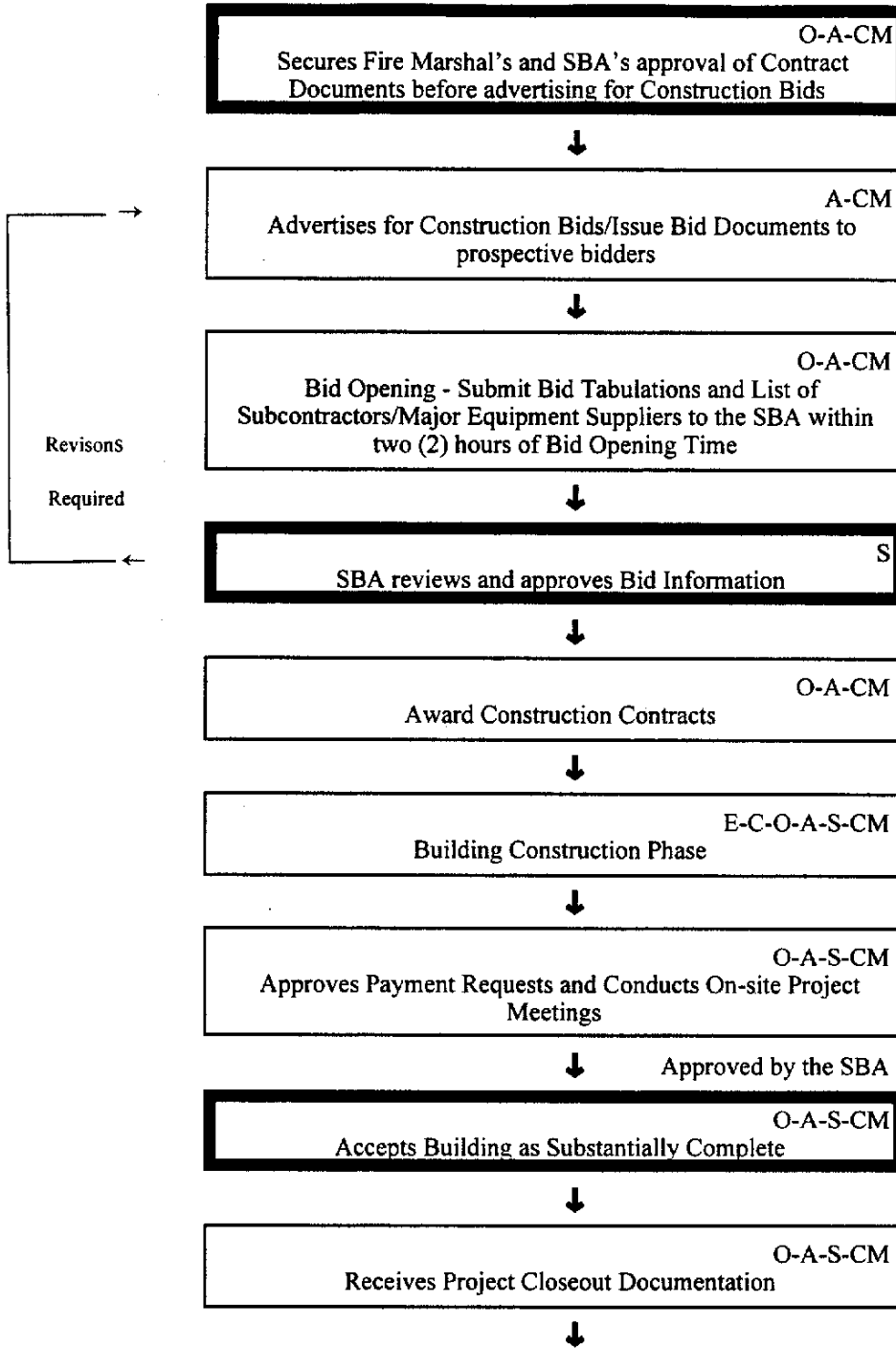


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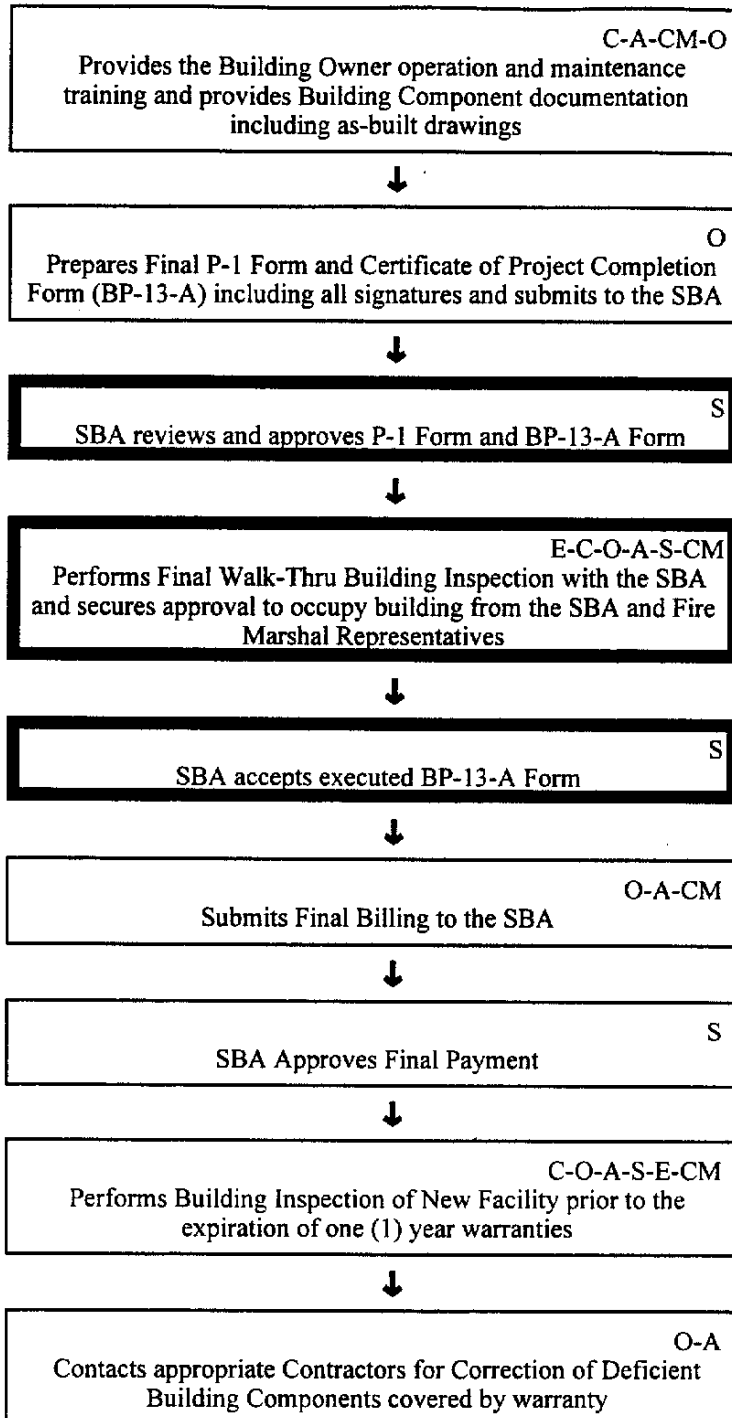


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- *****
- | | |
|---|---------------------------------------|
| A = Architect | E = WVDE (WV Department of Education) |
| C = Contractor | FP = Facilities Planner |
| CA = Construction Analyst (When Applicable) | O = Owner |
| CM = Construction Manager (When Applicable) | S = School Building Authority |
| | WVBOE = WV Board of Education |

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1405 FINAL INSPECTION AND PROJECT CLOSEOUT

1405.01 When a project is completed, the county must complete a Certification of Project Completion, form BP-13-A (See Appendices) and submit it to the Office of School Facilities, and SBA. Following receipt of the BP-13-A, the appropriate agencies will contact the county and schedule a final inspection. A final inspection of completed construction must be conducted by the project architect, the contractor, the State Fire Marshal, WVDE, and the SBA project representative. Additional project closeout documents for SBA funded projects are found in the SBA Guidelines and Procedures Handbook.

NOTE: A certificate of occupancy must be acquired from the Fire Marshal's Office and the SBA, before any completed construction can be occupied.

1405.02 Upon completion of any necessary corrections and subsequent inspection, official final acceptance of the project will be made.

1405.03 For the sake of illustration, the following list contains items which should be examined during the final inspection to assure compliance with final plans and specifications. Examine for proper type, location, installation, finish, cleanliness, mounting heights, operation and as-built drawings. The following building systems should be inspected:

SITE AND DEVELOPMENT

Finish Grading
Landscaping
Drives

Fencing

Seeding
Walks and Ramps
Parking Areas with Curb
Cuts
Playground

BUILDING EXTERIOR

Foundation
Window & Door Frames
Railings
Flashing
Drains

Wall Surfaces
Glass & Glazing
Roof Surface
Trim
School Name

BUILDING INTERIOR

Floor Surfaces
Ceiling Surfaces
Doors & Frames
Thresholds
Marker boards
Wood & Metal Trim

Wall Surfaces
Acoustical Materials
Door Hardware
Window Hardware
Bulletin Boards
All Surface Finishes

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PLUMBING, WATER, GAS

Fixtures
Clean-outs
Special Toilets

Shut-offs
Drainage System

ELECTRICAL SERVICE

Switches & Plates
Lighting Fixtures
Clock & Program System
Telephone System

Distribution Panels
Fire Alarm System
Emergency Lighting

HVAC

HVAC System
Air System Balance Report
Water System Balance Report

HVAC Controls
HVAC System Start-up
Report

EQUIPMENT AND FURNISHINGS

Lockers
Refrigeration
Display Cases
Elevators

Extinguishers
Fountains
Kitchen Equipment

1406 ON-SITE INSPECTION OF FACILITIES FUNDED BY THE SCHOOL BUILDING AUTHORITY OF WEST VIRGINIA OR THE WEST VIRGINIA BOARD OF EDUCATION

1406.01 Annual on-site inspections of school facilities funded totally or partially with funds from the SBA or the WVBOE shall be conducted.

1406.02 These inspections shall be conducted at all SBA "Needs" and "Emergency" funded projects or WVOBE funded projects resulting in new building construction and/or additions of \$1,000,000 or greater.

1406.03 The on-site inspections shall be conducted by appropriate personnel of the WVDE.

1406.04 The on-site inspection shall be separate and in addition to school accreditation on-site reviews that may be performed by the Office of Education Performance Audits as required by West Virginia Code §18-2E-5.

1406.05 The instrument used for the purpose of an on-site evaluation shall be the School Facilities Evaluation form. (See Appendices)

1406.06 A comprehensive report of the inspection shall be submitted to the

APPENDICES

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WVBOE within thirty (30) days of the inspection date by the Office of School Facilities.

1406.07 Copies of each comprehensive report shall be forwarded to the SBA and the county superintendent and principal of the evaluated school.

1406.08 An action plan addressing intended corrections and appropriate time lines for compliance, regarding all items identified during the evaluation as "Recommendations", shall be submitted to the SBA and the WVBOE by the county superintendent within forty-five (45) days of receipt of the comprehensive report.

1406.09 The SBA or the WVBOE shall determine by inspection if the corrective action plan has been implemented within the appropriate time period. In the instance of noncompliance, the WVBOE shall restrict the use of necessary funds or otherwise allocate funds from moneys appropriated by the West Virginia Legislature for those purposes set forth in West Virginia Code §18-9D-16 and §18-9A-9.

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CEFP AMENDMENT

ANNUAL UPDATE

COMPREHENSIVE EDUCATIONAL FACILITIES PLAN

COUNTY UPDATE - Data to be completed and submitted to SBA and SDE by December 1, of each year

1. County-wide Facility Classification Report (SBA/WWDE 116 - Appendix B - SBA Guidelines)
2. High School Attendance Areas Facilities Chart - for each high school in the county (SBA #132)
3. Feeder School Summary Report - narrative
4. School Construction Fund "Needs" Project Summary and Review - For the project that the county is submitting for competitive School Construction Fund "Needs" grant funding from the SBA in the next funding cycle (SBA 120 - Appendix G - SBA Guidelines)
5. MIP Annual Update - (1) List of completed or on-going projects (SBA 145a) and (2) Prioritized list of proposed projects (SBA 145b)
6. Updated CEFP Executive Summary

The annual update is to be compiled and submitted to the State Department of Education (1 copy) and the School Building Authority (1 copy) in tabbed, three (3) ring binder(s). Tabs should locate the above listed categories.

annualupdatedirections

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COMPREHENSIVE EDUCATIONAL FACILITY PLAN
APPLICATION FOR AMENDMENT

To be submitted to the SBA and the WVDE

COUNTY: _____ DATE: _____
AMENDMENT #: _____ AMENDMENT TYPE(s):
A. Budget B. Project C. Overall Plan

Date Amendment Approved by LEA: _____ Signature of County
Superintendent: _____

Briefly describe the nature of the amendment and/or the scope of work to be completed:

1. **BUDGET AMENDMENTS FOR PREVIOUSLY APPROVED PROJECT WITHIN THE CURRENT CEFP**

Include a revised CEFP finance plan summary sheet and any other altered CEFP pages with revision date as per Section E and to specifically reflect the project expenditures requested in this amendment. Briefly describe the need to adjust the present budget.

	<u>Budget Amount</u>
1. Total project budget previously approved in CEFP	\$ _____
a. SBA Grant	\$ _____
b. Other (Describe)	\$ _____
2. Amendment to this project budget (+/-)	\$ _____
a. SBA Grant	\$ _____
b. Other (Describe)	\$ _____
3. Total amount of this project if amendment is approved	\$ _____

A. **AMENDMENT TO EXISTING OR NEW PROJECT** (Complete information on reverse side of form if 2, 3, or 4 are checked below)

1. Revise the scope of an existing project 2. Add a new project not currently in the current CEFP

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3. New addition or renovation project improvement 4. Technology and/or building infrastructure improvement

Provide a revised budget in Part A for the project(s) effected by this amendment. Also, provide replacement sheets for the current approved plan on file in the SBA and WVDE offices for all chapters of the plan affected by the amendment. Include revisions dates on all replacement sheets as per Section E.

C. OVERALL PLAN AMENDMENT (Complete Information on Reverse Side of Form)

Amendments to the overall plan are defined as those changes that alter the educational delivery models (grade configuration, delivery system, etc.) or dramatically effect the major elements of the CEFP identified in State Board Policy 6200, Chapter 1, Handbook on Planning Schools or Goals and Objectives of the SBA (West Virginia Code §18-9D-15). Provide replacement sheets for the current approved plan on file in the SBA and WVDE offices for all chapters of the plan affected by the amendment include revisions dates on all replacement sheets as per Section E.

**D. AMENDMENT JUSTIFICATION AS REQUIRED IN WEST VIRGINIA CODE §18-9D-15
(Attach additional backup information if required.)**

1. Describe how the amendment alters the current ten-year comprehensive educational facilities plan, project, finance plan and changes in the scope of the project. (Narrative)

2. Provide the impact of this amendment upon the educational opportunities of students and the budget of the LEA. (Narrative)

3. Describe how the existing facility plan does not and the proposed amendment does meet the following goals of the SBA:
 - a. Student Health and Safety

 - b. Economy of Scale

 - c. Travel Time

 - d. Multi-County Project

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e. Curricular Improvements

f. Educational Innovations

g. Adequate Space

E. SUBMISSION OF REVISED CEFP PAGES

List the page numbers changed in your CEFP by this amendment, attach the altered pages to this form, place the revision date (revised [date]) on the bottom right hand corner of each revised page and submit one copy to both the SBA and the WVDE. If additional pages are required, use the page number from the preceding page in the CEFP and add successive letters, i.e., 47, 47a, 47b, 48.

FOR SBA AND SDE USE ONLY

Project Number: _____ Previous Budget Approved: \$ _____ Amended Budget Approved: \$ _____

SBA APPROVAL DATE: _____ **SDE APPROVAL DATE:** _____

BUILDING IMPROVEMENT COST SUMMARY

SCHOOL: _____

Description	Priority	Anticipated Completion Date	Total Cost	Anticipated Funding Source
Site Improvements:				
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
New Construction:				
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
Renovations/Additions (List each separate):				
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
Others (Describe):				
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
_____	_____	_____	\$ _____	_____
Contingency @ ___% addition/renovation			\$ _____	
A & E Fees at ___% on \$ _____			\$ _____	
Project Management at ___% on \$ _____			\$ _____	
Survey, geotechnical, contingency and other			\$ _____	
Total Improvement Cost			\$ _____	

SUMMARY OF FUNDING SOURCES:

Local	\$ _____
Local Bond	\$ _____
Local Levy	\$ _____

SBA Needs

SBA MIP

Other (Describe) _____

\$ _____
\$ _____
\$ _____

SBA 147
bldgimpcostsum

WEST VIRGINIA DEPARTMENT OF EDUCATION
AND
SCHOOL BUILDING AUTHORITY OF WEST VIRGINIA

CERTIFICATE OF PROJECT COMPLETION

Upon completion of a facilities project, submit duplicate copies to the State Department of Education and the School Building Authority to initiate close-out procedures.

County _____	Substantial _____
Project/School Name _____	Completion Date _____
Project Number _____	Final Inspection Date _____
Enrollment _____	Fire Marshal - Date _____
# Teaching Stations _____	of Occupancy Permit _____
	(If Required) _____
Sources of Funds:	Summary of Project Data:
State Funds	Sq. Ft. in Building _____
SBA "MIP" \$ _____	Site Acquisition \$ _____
SBA "Needs" \$ _____	Site Preparation \$ _____
Local Funds (Bond) \$ _____	Building Construction
	Costs - Total \$ _____
Local Funds (Other) \$ _____	*Renovation Costs \$ _____
Vocational (State) \$ _____	Building Construction
Vocational (Federal) \$ _____	Costs - Per sq.ft. \$ _____
Federal (Other) \$ _____	Building Renovation
Other Funds (List) \$ _____	Costs - Per sq.f.t. \$ _____
_____	Moveable Eq. Cost \$ _____
_____	A & E Fees \$ _____
_____	**Misc. Costs \$ _____
Total Funds \$ _____	Total Project Cost \$ _____

*A project may include both new construction/addition and renovation costs.
**Geotech, Site Survey, Deed Search, Technology Equipment (Explain on Back)

_____ Architect	_____ Date
_____ Contractor	_____ Date
_____ Clerk-of-the-Works/Construction Manager	_____ Date
_____ Superintendent	_____ Date

*****Inspected this date by a representative of the School Building Authority or the West Virginia Department of Education.**

Signature

Date

*****SBA funded projects must have a final inspection by an SBA representative.
WVDE BP-13-A (Revised 10/94)**

**EXECUTIVE SUMMARY
COMPREHENSIVE EDUCATIONAL FACILITIES PLAN**

RESA _____

COUNTY _____

- Number of existing schools currently within the county
(Include vocational, special education, adult education) _____
- Number of schools that will be closed by the year 2000 if the
CEFP is implemented _____
- Number of schools that will exist in the county in the year
2000 if the CEFP is implemented _____
- Total estimated cost remaining to implement the entire CEFP \$ _____
- Total estimated cost of anticipated SBA funded "needs" and
"net enrollment" projects in the CEFP \$ _____
- Total cost for all other projects within the CEFP to be funded
from county or other sources excluding SBA funds \$ _____
- Has regionalization of school facilities been considered within
the CEFP? If so, please give a brief description. Yes _____
No _____

- * Approximate annual cost savings as a result of
school closures anticipated in the CEFP? \$ _____
Annual Cost Savings
\$ _____
Avoided Costs

Include approximate savings such as: annual utilities, annual maintenance, reduced staff; also, include any related costs associated with additional transportation cost, one time cost for moving of student and staff from a closed facility and securing the facilitated school.

- Has educational innovation been addressed within the 10 year
CEFP? If so, please give a brief description. Yes _____
No _____

*Please indicate annual cost savings per county as indicated. Also, please indicate any cost avoided per county such as anticipated expenditures on schools scheduled to be closed for major renovations that may be required should the facility remain open.

*Please note that the data on the attached Statewide CEFP summary reflects the status you reported in 1990 and will be used for comparative progress toward implementing the CEFP.

Date
cefpexsummary

County Superintendent

SCHOOL BUILDING AUTHORITY OF WEST VIRGINIA			
Maximum Class Sizes			
Classroom Type	EL	MS	HS
Kindergarten & Transitional Kindergarten	20		
General Instruction Areas	25	25	25
Corrective or Remedial Education	15	15	15
Art Rooms (Optional/Elem)	25	25	25
Driver Education Facilities			25
Consumer/Homemaking Classroom (Optional)		25	25
Consumer/Homemaking Lab		25	25
Foreign Language Facilities		25	25
Foreign Language Lab (Optional)		25	25
Technology Education		20	
Music Facilities (Optional Elementary)	25	25	40
Ensemble Room (Optional)			12
Physical Education	25	70	70
Science Facilities		25	20
Micro-Computer Lab	25	20	20
ElectronicTechnology Lab (Optional)		75	
Auditorium (33% of total student body)			
Behavior Disorders	8	8	8
Communication Disorders (Self Contained)	12	12	12
Deaf/Blind (Self Contained)	3	3	3
Mildly Mentally Impaired (Self Contained)	12	12	12
Moderately Mentally Impaired (Self Contained)	12	12	12
Orthopedically Impaired (Self Contained)	10	10	10
Severely/Profoundly Mentally Impaired (Self Contained)	9	9	9
Hearing Impaired Education (Self Contained)10	10	10	10
Visually Impaired Education (Self Contained)	10	10	10
Specific Learning Disabilities (Self Contained)	12	12	12

SCHOOL BUILDING AUTHORITY OF WEST VIRGINIA			
Maximum Class Sizes			
Classroom Type	EL	MS	HS
Pre-School Handicapped (Self Contained)	10		
Gifted Education (Self Contained)	15	15	15
Resource Services (Regular Program Support)	15	15	15
Agricultural Education			20
Agricultural Mechanics Lab			20
Marketing Education			25
Diversified Cooperative Training			25
Vocational Health Occupations			25
Health Occupations Lab			25
Consumer and Homemaking (Occupational)			25
Food Management, Production & Servuces (Occ)			20
Care & Guidance of Children			20
Fashion Management			20
Institutional & Home Mangement (Occ)			20
Vocational-Industrial and Technical Classrooms			20
Industrial and Technical Lab			20
Business Education Classroom			20
Computer/Keyboarding Lab			30
Office Technology			20
Tech Ed. Production Lab			20
Tech Ed. Systems Lab			20

**TRANSLATING EDUCATIONAL NEEDS INTO FACILITY NEEDS
REVIEW AND RECOMMENDATIONS**

Building Name & Address **Phone Date**

Building Number	Grades Served	Program % Utilization	Date of Original Construction	Additions
-----------------	---------------	-----------------------	-------------------------------	-----------

Ten Year Enrollment Projections:

Year _____	Enrollment _____	Year _____	Enrollment _____
Year _____	Enrollment _____	Year _____	Enrollment _____
Year _____	Enrollment _____	Year _____	Enrollment _____
Year _____	Enrollment _____	Year _____	Enrollment _____
Year _____	Enrollment _____	Year _____	Enrollment _____

Existing Facility Data

Describe Existing Facility:

Describe Existing Facility Site:

Recommendations:

SCHOOL BUILDING AUTHORITY OF WEST VIRGINIA

EDUCATIONAL SPECIFICATIONS

By constructing educational specifications, the learning activities, the number, groupings and nature of the people involved, the spatial relationships between sections of the facility, the interrelationships of instructional programs with each other as well as noninstructional spaces and the major furniture/equipment needs for the new facility can be defined and more easily understood. Each Ed Spec Committee must consist of representatives from the educational profession, individuals from the community and the architectural design staff selected by the board of education.

When specifications are agreed upon and committed to a written document, the architect is provided the greatest opportunity to design a school that more nearly meets the needs of the educational program and facilitates the activities that will be occurring in the spaces. To that end, and to more readily value the scope of the project, it is essential that an educational specifications document accompany the schematic drawings submitted to the SBA for review prior to approval by the local board of education.*

To be consistent and assist in understanding the issues to be included in the educational specifications, the following outline is provided but should not be considered all inclusive should other issues be of concern to you and your planning committees.

I. Introduction

A short synopsis describing the configuration of the educational structure, the projected number of students, site location, availability of site utilities, existing availability of ancillary facilities and spaces (ie. athletic etc.) and proposed statistics for the new construction.

II. The Community

A brief description of the community, its history, specific cultural distinctions and maps showing geographic characteristics, attendance areas (present and proposed) and the site location.

III. The Educational Plan

The educational plan can be subdivided into two general areas:

A. Curriculum Plan - States the schools philosophy, educational goals and objectives of the program. This should clarify important issues and priorities for consideration in the planning of the new facility.

B. Support Plan - Provides staffing information including teachers, instructional aides, food service personnel, counselors, custodial staff, and administrative staff including principals, assistant principals, department heads etc.

IV. Building Space Requirements

The utilization of space is extremely important. The SBA requires a minimum 85% utilization of newly constructed schools or schools where building additions are being proposed. In order to assist in developing Section IV, worksheet #1, which compiles data from the calculation of spaces for the new facility, must be completed and

incorporated into Section IV.

The final number of allowable classrooms and the square footage for any facility that incorporates SBA funds will be determined by the SBA staff upon consideration of the program needs, building utilization rates, maximization of multi-use spaces in the design and the potential construction of the project within the allocated funds available.

In order to assure appropriate spaces and utilizations for the projected enrollment, room numbers and labels should be assigned to instructional areas on the schematic drawings and a model student schedule developed using Worksheet #2 to locate students and staff within the facility during each of the instructional periods of the day.

The following formula is to be utilized to determine the maximum number of classrooms that may be considered in each curricular area:

FORMULA FOR DETERMINING TEACHING STATIONS PER SUBJECT AREA**

$$\frac{\text{Number of students enrolled in subject X}}{\text{Maximum class size (see reference sheet)}} \times \frac{\text{Number of periods per week in subject}}{\text{Maximum number of periods per week (every period, every day)}} = \text{Number of teaching stations for this subject area}$$

V. Space Allocations

This section describes the instructional areas (general classrooms, PE areas, tech. ed. labs, science areas, consumer and homemaking areas, special education spaces, administrative offices etc.). Middle/Junior and High School departmentalization, specialization of spaces, electives and scheduling are factors to be considered in determining the number of teaching stations. The maximum number of teaching stations may be determined by applying the formula provide in Section IV to each subject area. The following description of each subject area is needed and should include:

- A. Goals - What are the objectives to be accomplished in the area.**
- B. Space Required - Submit the calculations from the formula in Section IV to identify the number of spaces needed in this subject area and complete worksheet #1 attached. Teacher planning areas must be provided in building design allowing maximum use of teaching stations.**
- C. Planned Activities - Include specific actions to be performed in an area such as paint, read, science experiments, audio visual presentations, telecommunications, robotics lab, multiple use areas, etc.**
- D. Number of Users - Determine the number of administrators, teachers, aides and pupils to use the area at any one time.**
- E. Group Usages - Identify if the area is to be used for large or small group instruction, individual student work, team teaching, multiple usage, etc.**
- F. Spatial Requirements - Identify the spatial relationships of any one space to other are as of the facility whether inside or outside - near to or away from, convenient to media center (as with language arts areas), capability for combining or**

subdividing areas, the frequency of such adjustments and the square footage needed to do so, etc. Bubble diagrams should be used to show interrelationships of spaces.

- G. Support Facilities - Spaces that allow the area to meet its goals: shared storage areas, teacher preparation areas, student work/storage areas, conference rooms, etc.**
- H. Environmental Considerations - Acoustical, Visual, Thermal, Climatic and Aesthetic considerations that enhance the practical usage of the specific space.**
- I. Utility Needs - Utilities needed in the specific area including: water, electrical, toilets, 3-phase power, gas, vacuum capability, telephone, technology wiring, etc.**
- J. Storage - More specific direction as to the cubic feet of storage needed in the specific area. Generally, this denotes built-in storage areas & closets.**
- K. Display Areas - Chalkboards, bulletin boards, display cases (linear feet).**
- L. Furniture and Equipment - quantities and types of items to be used in each area.**
- M. Technology - Specific needs of each space to accommodate the technological delivery system/network incorporated into the facility.**
- N. Other - Identify any other specific information essential to each specific area.**

VI. Technology Plan

A technical plan for delivery of media, voice, data, graphics, text and telecommunications throughout the school includes a description of the instructional and administrative objectives, the technical structure needed to facilitate the system, the equipment needed to implement the system and the physical/design requirements for incorporating the system into the construction of the facility. The technology plan will be developed according to the Department of Education's Office of Technology & Information Systems' guidelines and submitted to them and the SBA for approval with design development documents.

VII. Design Criteria and General Architectural Considerations

This section should regard the total school complex but may be specified in distinct areas or regard special concerns. Following are some suggested considerations:

- A. Health and safety**
- B. Quality of building systems and components**
- C. Economies to be attained - instructional, operational, maintenance**
- D. Flexibility and multi-use of spaces**
- E. Efficient circulation patterns**
- F. Community use considerations**
- G. Communication systems - may be incorporated into the Technology Plan**
- H. Accessibility**
- I. Building security**
- J. Student supervision**

VIII. Educational Specifications Committee Page

A signature page for members comprising the ed spec committee will be included. Names will be organized by the group each individual represents, ie., Teachers, Administrators, Parents, Community Leaders, Design Professionals, etc.

Eedspec/cw/6-95

***Architects** - Please be advised that an SBA review will not occur without submittal of educational specifications with schematic drawings. Continued development of the building design beyond schematics without written approval of the SBA is at the fiscal risk of the designer and the board of education. This constitutes a change in the SBA handbook procedures which asks for Ed Specs to be submitted with the design development documents.

****Bibliography:**

- A. Conrad, MJ., *A Manual for Determining the Operating Capacity of Secondary Schools*. Bureau of Educational Research and Service, OSU.
- B. Castaldi, Basil, *The Castaldi Nomogram*. The New England School Development Council.
- C. CEFPI, Phoenix, AZ, *A Guide for Planning Educational Facilities*

NEEDS

**SCHOOL BUILDING AUTHORITY OF WEST VIRGINIA
CONSTRUCTION FUND PROJECT "NEEDS" - EXECUTIVE SUMMARY**

PROJECT _____
COUNTY _____ **PROJECT COST** \$ _____
FUNDING SOURCE _____

IMPLEMENTING TOTAL CEFP		FUNDING SOURCE - THIS PROJECT	
SBA NEEDS \$ _____	SBA MIP \$ _____	SBA \$ _____	
LOCAL \$ _____	TYPE _____	LOCAL \$ _____	TYPE _____
FEDERAL \$ _____		FEDERAL \$ _____	
OTHER \$ _____		OTHER \$ _____	
TOTAL \$ _____		TOTAL \$ _____	

Bonding Capacity \$ _____ **Available Bonding Capacity** \$ _____
Excess Levy Capacity \$ _____ **Available Levy Capacity** \$ _____

PROJECT DESCRIPTION

PROJECT STATUS

Site Selected Yes _____ No _____ **New Site** _____ **Geotechnical** Yes _____ No _____
Existing Board Owned Property Yes _____ No _____ **Survey Performed** _____
Programming/Preliminary Design Completed - Describe: _____

SCHOOL CLOSURE STATUS

School Closure Required Yes _____ No _____
County Hearing Done Yes _____ No _____
County BOE Approved Yes _____ No _____
WV BOE Approved Yes _____ No _____

COMPLIANCE WITH SBA REQUIREMENTS - PROPOSED NEW PROJECT

HEALTH AND SAFETY

ECONOMIES OF SCALE

Annual Savings \$ _____ **Proposed facility will** _____ **will not** _____
Cost Avoidance \$ _____ **meet the SBA economies of scale guide.**
Students required _____

Students enrolled _____

IF IMPLEMENTED, WHAT IS THE EFFECT OF THIS PROJECT ON PERSONNEL

- **Teacher** Present No. _____ Projected No. _____ Difference _____
- **Service Personnel** Present No. _____ Projected No. _____ Difference _____
- **Administrators** Present No. _____ Projected No. _____ Difference _____

MULTICOUNTY PROJECT

EDUCATIONAL INNOVATIONS AND IMPROVEMENTS

ADEQUATE SPACE FOR PROJECTED STUDENT ENROLLMENT

TRAVEL TIME

LOCAL BOND HISTORY EFFORTS

COMMENTS

#1 DESCRIPTION OF EXISTING FACILITIES

- _____ School currently houses grades _____
- Constructed on a _____ acre site in 19__ which is adequate _____ inadequate _____
- _____ major addition(s) in 19__
- Existing _____ story facility contains _____ sq.ft.
- Current enrollment is _____
- 8th Year Projected Enrollment _____
- Building utilization is _____ %
- Utilities Public Water _____ On-Site Well _____ Public Sewage _____
- Package Plant _____ Other _____
- HVAC Gas _____ Electric _____ Coal _____ Other _____
- Cost to upgrade to current standards is \$ _____
- Existing facility contains _____ major structural problems
- Health, safety and building accessibility,
Comments: _____

Complete one of the above descriptions for each school affected.

SBA 120

Revised 6/97

exsumneeds

**FEEDER SCHOOL SUMMARY REPORT
YOUR COUNTY - UNSER HIGH SCHOOL ATTENDANCE AREA**

Unser High School

Becomes 9-12 facility; Sept., 1997

Goodyear Middle School

Feeder to Unser High School

Opens as 6-8 Middle School; Sept., 1997

Crawford Junior High School

Currently feeds Unser High School

Closes June, 1997

9th Graders transfer to Unser HS; Sept., 1997

7th and 8th Graders transfer to Goodyear MS; Sept., 1997

Brayton Elementary

Currently feeds Crawford JHS

Changes to K-5 facility; Sept., 1997

6th Graders transfer to Goodyear MS; Sept., 1997

St. James Elementary

Currently feeds Crawford JHS

To become feeder to Goodyear MS; Sept., 1997

6th Graders transfer to Goodyear MS; Sept., 1997

Pruett Elementary

Currently feeds Crawford JHS

To become feeder to Goodyear MS; Sept., 1997

6th Graders transfer to Goodyear MS; Sept., 1997

Cheever Elementary

Currently Feeds Crawford JHS

Students transferred to St. James Elementary; Sept., 1997

Becomes Bus Garage; Sept., 1997

Tracy Elementary

Currently feeds Crawford JHS

Students transferred to Brayton EL; Sept., 1997

Fox Elementary

Currently feeds Crawford JHS

120 students transferred to St. James EL; Sept., 1997

30 students transferred to Brayton EL; Sept., 1997

Andretti Middle School

Scheduled to become 6-8 Middle School; Sept., 1997

Feeder to Unser High School

9th Graders transfer to Unser HS; Sept., 1997

Mears Junior High School

Currently feeds Unser High School

Scheduled to become EL Center; Sept., 1997

9th Graders transfer to Unser HS; Sept., 1997

7th and 8th Graders transfer to Andretti MS; Sept., 1997

Mears Elementary Center

Feeder to Goodyear MS

Gache Elementary

Currently feeds Mears JHS

6th Graders to be transferred to Andretti MS; Sept., 1997

Students to be transferred to new Mears EL Center; 9/97

Dobson Elementary

Currently feeds Mears JHS

6th Graders to be transferred to Andretti MS; Sept., 1997

Students to be transferred to new Mears EL Center; 9/97

Sullivan Elementary

Currently feeds Mears JHS

6th Graders transferred to Andretti MS; Sept., 1997

Students to be transferred to new Mears EL Center; 9/97

Foyt Elementary

Currently feeds Mears JHS

To become feeder to Andretti MS; Sept., 1997

6th Graders transfer to Andretti MS; Sept., 1997

UNDERLINED schools are operational facilities in 1999 - 2000
SBA 132 feederschoolreport

**SCHOOL BUILDING AUTHORITY OF WEST VIRGINIA
PROJECT EXECUTIVE SUMMARY
MAJOR IMPROVEMENT PLAN**

PROJECT _____

COUNTY _____ COUNTY PRIORITY _____

PROJECT COST _____ DATE _____ SBA FUNDING CYCLE _____

PROJECT DESCRIPTION:

FUNDING SOURCE:

TO IMPLEMENT TOTAL MIP

FUNDING FOR THIS PROJECT

SBA \$ _____ TYPE _____
 LOCAL _____ TYPE _____
 OTHER _____
 TOTAL _____

SBA \$ _____ TYPE _____
 LOCAL _____ TYPE _____
 OTHER _____
 TOTAL _____

BONDING CAPACITY \$ _____ AVAILABLE BONDING CAPACITY \$ _____
 EXCESS LEVY CAPACITY \$ _____ AVAILABLE LEVY CAPACITY \$ _____

COUNTYWIDE BUDGET INFORMATION

- Are Excess Levy Funds Dedicated Annually to Maintenance? Yes _____
 No _____
 Amount \$ _____
- Are Excess Levy Funds Dedicated Annually to Building Improvements?
 Yes _____
 No _____ Amount \$ _____
- Percent of Total Building Improvement or Maintenance Budget supported by Levy
 _____%. (Based on data provided above)
- Percent of Total County Budget dedicated to Facility Maintenance
 _____%
- Maintenance Budget this Year

\$ _____

• **Maintenance Expenditures Last Year Total**

\$ _____ \$/Square foot _____

• **Average Maintenance Budget for lowest three of the past five years.**

\$ _____

**COMPLIANCE WITH SBA REQUIREMENTS
PROPOSED NEW PROJECT**

Briefly describe how this project affects the following:

• **HEALTH AND SAFETY**

• **ECONOMIES OF SCALE**

Number of students enrolled in the affected facilities _____

Economies of scale will _____ will not _____ be achieved or will not be altered _____ as a result of the completion of this project.

ANNUAL SAVINGS \$ _____ COST AVOIDANCE \$ _____
(Achieved on this project) (Achieved on this project)

IF IMPLEMENTED WHAT IS THE AFFECT OF THIS PROJECT ON PERSONNEL.

•	TEACHER	PRESENT NO. _____	PROJECTED NO. _____	DIFFERENCE _____
•	SERVICE PERSONNEL	_____	_____	_____
•	ADMINISTRATORS	_____	_____	_____

• **MULTICOUNTY PROJECT**

• **EDUCATIONAL INNOVATIONS AND IMPROVEMENTS**

- **ADEQUATE SPACE FOR PROJECTED STUDENT ENROLLMENT**

- **TRAVEL TIME**

- **EFFECTIVE AND EFFICIENT USE OF PROPOSED FUNDING**

- **PROVIDING OR IMPROVING A PREVENTIVE MAINTENANCE PLAN**

- **FURTHERANCE OF THE OVERALL GOALS OF THE SBA AND THE COUNTY/AGENCY MAJOR IMPROVEMENT PLAN**

126CSR172
**WEST VIRGINIA DEPARTMENT OF EDUCATION
 AND
 SCHOOL BUILDING AUTHORITY OF WEST VIRGINIA
 APPLICATION FOR PROJECT APPROVAL**

West Virginia Department of Education
 1900 Kanawha Blvd., E., Bldg #6 Room B-215
 Charleston, WV 25305

School Building Authority of WV
 2300 Kanawha Blvd., East
 Charleston, WV 25311

County _____ Estimated Starting Date _____
 School Name _____ Sq.Ft. Affected by this Project _____
 Location _____ Grades Housed _____ Enrollment _____

Project Description:

Site Acres _____ Useable Acres _____ Gross Building Area New
 Construction _____
 Energy Efficiency (BTU/Sq.Ft./Yr) _____ Sq.Ft. Affected by this Project _____
 Water Source _____ Sewage Disposal Type _____

Line Item	Preliminary Estimate	Final Cost	Final Unit Cost (Per Sq. Ft.)
-----------	----------------------	------------	-------------------------------

- _____ **General Requirements (A/E, Legal, etc.)**
- _____ **Site Acquisition**
- _____ **Site Work (Geotech, Grading, Paving, etc.)**
- _____ **Concrete (Ftg./Foundations, Slabs, etc.)**
- _____ **Masonry**
- _____ **Metals (Str. Stl., Jt., Deck)**
- _____ **Carpentry**
- _____ **Thermal & Moisture Protection**
- _____ **Doors and Windows**
- _____ **Finishes (Floors, Walls, Ceilings, Painting)**
- _____ **Specialties (Chalkbd, Tbd., Locker, Toil Acc.)**
- _____ **Equipment (Food Service, etc.)**
- _____ **Furnishings (Seating, Casework, etc.)**
- _____ **Special Construction**
- _____ **Conveying Systems (Elevators, etc.)**
- _____ **Mechanical (HVAC, Plumbing, etc.)**
- _____ **Electrical**
- _____ **Others (Describe)**
- _____ **Grand Total**
- _____ **Funding**
- _____ **County Source**
- _____ **SBA Needs MIP**
- _____ **Federal Source**
- _____ **GRAND TOTAL**

 Signature of Architect or Engineer
 WVDE P-1
 Rev. 7/16/98

 Signature of County Superintendent

INSTRUCTIONS FOR SBA FORM 132

- 1. One form should be completed for each high school attendance area proposed to be operational in the school year 1999-2000.**
- 2. All facilities that were in operation during the 1990-91 school year must be shown with a dashed box. 1990-91 second month enrollments for these facilities must be shown in the brackets. Only facilities that will be in operation during the 2000 school year must be in solid boxes. Year 1999-2000 projected enrollments must be within parenthesis.**
- 3. If the facility is to be built after 1990-91, list "NEW" in the brackets. If the facility is to be redesignated from its current usage, list "REDSG" in the brackets.**
- 4. CLOSURES - list schools that are scheduled for closure before school year 1999-2000, and will not be used by the county board of education for other purposes.**

FACILITY REDESIGNATION - list schools that are scheduled to change their current usage before the school year 1999-2000. Designate what type of facility it will become.

ELEMENTARY - list only those schools that will still be operational in the year 1999-2000.

JHS/MIDDLE - list only those schools that will still be operational in the year 1999-2000.

HIGH SCHOOL - list only the high school for this attendance area for the school year 1999-2000.

**WEST VIRGINIA SCHOOL BUILDING AUTHORITY
CERTIFICATE OF CONTRACT COMPLETION
FOR MULTIPLE PRIME PROJECT**

Upon completion of each prime contractors contract the agency receiving SBA funding shall be responsible for submitting this completed original form to the SBA, with each prime contractors final request for payment.

To the best of our knowledge, all required project close-out procedures have been followed and all project close-out documents have been submitted to initiate the release of final payment to this contractor.

ARCHITECTURAL FIRM NAME: _____

PROJECT ARCHITECT: _____ **DATE:** _____

PROJECT CONSTRUCTION COST:

LOCAL: _____

SBA: _____

OTHER: _____

PROJECT CONSTRUCTION COST TOTAL: _____

PRIME CONTRACT COST TOTAL: _____

PRIME CONTRACTOR NAME: _____

PRESIDENT/CEO: _____

SUBSTANTIAL COMPLETION DATE: _____

FINAL COMPLETION DATE: _____

COUNTY/AGENCY: _____

COUNTY/AGENCY PROJECT ADMINISTRATOR: _____ **DATE:** _____

PROJECT SCHOOL NAME: _____

Inspected this date by a representative of the School Building Authority. SBA funded projects must have a final inspection by a SBA representative.

Signature

Date

EVALUATION INSTRUMENT
PREVIOUS TEN YEAR COMPREHENSIVE EDUCATIONAL FACILITY
 From _____ To _____

West Virginia Code 18-9D-16(g) and State Board Policy 6200, Article 100.19 requires all county board of education to submit an objective evaluation of the ten year Comprehensive Educational Facilities Plan (CEFP). This evaluation shall be completed by the CEFP committee established by the local board to plan the 2000 ten-year plan consisting of community members and professional staff from each high school attendance area. The committee will familiarize themselves with the state board requirements of the plan and the current county CEFP prior to completing this evaluation form. All amendments to the plan since 1990 will be objectively evaluated for its effectiveness and completeness of projects within that plan. The following should be used to effectuate this evaluation of the 1990 ten-year plan and also be used as a means to improve future plans. Goals to be evaluated include WV Code 18-9D-16(g):

- | | |
|---|--|
| 1. Student Health and Safety | 5. Curricular Improvements |
| 2. Economies of Scale | 6. Educational Innovations |
| 3. Demographic Circumstances and Travel | 7. Adequacy of Space for Projected Enrollments |
| 4. Multi-County Projects | |

(1 - Poor Rating; 3 - Adequately met the need or requirement; 5 - Excellent Rating)

1. Did the CEFP contain all data required in State Board Policy 6200?

1 2 3 4 5

2. Was the data sufficient to allow prudent long-range planning decisions to be made regarding the educational direction and facility needs necessary to accomplish the desired goals of the ten-year plan?

1 2 3 4 5

3. Was the original plan significantly amended during the ten-year cycle?

Yes _____ No _____

If the original plan was altered:

(a) Did alterations in the plan generally prove to be positive changes?

1 2 3 4 5

(b) Did the amended plan effectively improve the county's ability to deliver the curriculum?

1 2 3 4 5

(c) Were the amendments generally politically initiated rather than educationally motivated?

Yes _____ No _____

4. Were local and SBA funds used effectively for individual school projects that further the overall goals of the county plan and the goals of the SBA as defined in 18-9D-16(d)?

1 2 3 4 5

5. To what degree has/will the projects identified in the ten year plan be effectively completed during this planning period?

25% 50% 70% 80% 85% 90% 95% 100%

REFERENCES

126CSR172
REFERENCES

1. ***A Master Plan for Public Education, West Virginia Board of Education, Charleston, WV, 1982-83.***
2. ***Guide for Planning Educational Facilities, The Council of Educational Facilities Planners International, 941 Chatha Lane, Suite 217, Columbus, Ohio 43221.***
3. ***West Virginia Board of Education (WVBOE) - Policy 2510, Charleston, West Virginia***
4. ***School Laws of West Virginia.***
5. ***School Building Authority (SBA) - Requirements for Educational Specifications, Latest Edition***
6. ***American National Standards Institute, Inc., (ANSI) 1430 Broadway, New York, New York 10018***
7. ***National Flood Insurance Program, Federal Emergency Management Agency, 105 South Street, Liberty Square Building, Philadelphia, Pennsylvania 10506.***
8. ***Section 504 - Rehabilitation Act of 1973 (29 U.S.C. 794), Department of Health, Education and Welfare, Washington, D.C.***
9. ***West Virginia Board of Education (WVBOE) - Policy 2419, Charleston, West Virginia***
10. ***Uniform Federal Accessibility Standards.***
11. ***Individuals with Disabilities Education Act (IDEA).***
12. ***Americans with Disabilities Act (ADA).***
13. ***Building Officials and Code Administrators International - Basic Building Code (B.O.C.A.), 17926 South Halsted Street, Homewood, Illinois 60430.***
14. ***State Building Code of West Virginia (Latest Edition)***
15. ***National Electrical Code (NEC) - Supplement A, National Fire Association, Batterymarch Park, Quincy, Massachusetts 02269.***
16. ***West Virginia Fire Code, Rules and Regulations of the West Virginia Fire Commission, Charleston, West Virginia (Latest Edition)***
17. ***Life Safety Code 101 and National Fire Code, National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269 (Latest Edition)***
18. ***Climatological Data for West Virginia, National Climatic Data Center, Asheville, North Carolina***
19. ***American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc. (ASHRAE), Atlanta, Georgia (Latest Edition)***
20. ***Energy Consumption Guidelines for Educational Facilities, West Virginia Governor's Office of Economic and Community Development, Fuel and Energy Office, Charleston, West Virginia***
21. ***Lighting Handbook, Illuminating Engineering Society (IES), 1860 Broadway, New York, New York***
22. ***Crime Prevention Through Environmental Design (CPTED)***
23. ***West Virginia Secondary Schools Activity Commission (WVSSAC)***
24. ***Acoustical Society of America (ASA)***
25. ***Office of Technology and Information Systems (OTIS) Handbook***

All Referenced Codes are to be Latest Editions.

COMMENTS AND SUGGESTIONS LOG
 REVISIONS FOR POLICY 6200
 HANDBOOK ON PLANNING SCHOOL FACILITIES

ACTION
 N: No Response
 NA: Not Accepted
 A: Accepted
 PA: Partially Accepted

TYPE
 - Negative
 + Positive
 • Neutral

<u>Date Received</u>	<u>Individual/Organization</u>	<u>Comments/Suggestions</u>	<u>Action/Type</u>	<u>Rationale</u>
May 25, 2001	Lenore Zedosky	Guidelines for Special Education students - Diapering area - should be in close proximity to the sink area with easy access to area where students are housed for hygiene/cleanliness.		An additional section was added to the policy to address this comment.
May 29, 2001	ZDS	Chapter 13 Section 1300 - Life cycle costs are typically treated as an additional services. SBA needs to recognize these added costs in establishing fees.	N	
		Section 1301.01 - D Will this apply to schools not used during summer? This would require providing humidification in schools. ASHRAE 62 has also recently eliminated this provision from	A	

consideration in an addenda.

N

Section 1301.01 - E This implies that all spaces would require air conditioning. Suggest distinguishing between area that air conditioning is not required (i.e., locker rooms, electrical rooms, Mechanical rooms, kitchens, gyms, storage rooms)

A

Section 1301.02
Extreme cannot be defined and implies that the system should be designed to maintain comfort under any possible condition.

N

Section 1301.023 - E
This is redundant with 1301.09 A

A

Section 1301.023 F
I believe you are trying to ensure that the fan or AHU must operate continuously when occupied. What if the fan speed controls were locked or the space is an unoccupied space like an electric room?

A

Section 1301.023 - H
Some allow for up to 10 feet - we typically use 6 feet. How stringent will this be applied?

N

Section 1301.023 - I
Define ASA in this document for other readers or provide a reference.

N

Section 1301.024
We assume that 30% winter humidity requirements will be omitted.

A

Section 1301.025
Not aware of any potential application for precipitation - keeping it listed here makes this language look excessive. Standard 52.2 covers the MERV rating

system and complements Standard 52.1

N

Section 1301.04

Will the SBA or WVDE be accepting responsibility for rejecting certain manufacturer's or providing an approved list; how will the controls be approved, by contractor, manufacturer, or family of controllers?

A

Section 1301.061

Owner's representative does not mean the engineer. This could mean the clerk of the works, owners' employee or other designated person. If only the engineer then this would not need addressed under additional services.

N

Section 1301.07

Suggest providing contact information or provide a reference for other to obtain this information.

A

Chapter 1301.08 - B

ASHRAE issued Addenda 62aa that provided a procedure for most applications for outside air intakes. This does not match that proposed addenda to Standard 62.

N

Chapter 1301.09 - A

This is ideal but not always possible with VAV systems and DX.

A

Chapter 1301.09 - L

Concerned about pipe, pumps, etc that come in contact with the condensed water.

N

Chapter 1302

Much of this information should be included in the architectural section since it is outside the control of the design engineer.

A

Chapter 1302.012

This is commentary language-consider

folding it into beginning paragraph of this section.

Chapter 1302.013
Same as 1302.012 A

Chapter 1302.014
Same as 1302.012 A

Chapter 1302.015
Same as 1302.012 A

Chapter 1302.016
Same as 1302.012 A

Chapter 1302.027
Duplicated information. A

Chapter 1303
Most of this section needs
incorporated into the
Architectural Section since
many of these issues impact
the building design. N

Chapter 1303.011
SBA needs to recognize this
as an additional consultant
and additional services in
design fees. N

Chapter 1303.024
How low - this can be
interpreted many ways. N

Chapter 1306
This section also need to be
incorporated into the Architectural
Section since these issues impact
the building design. N

Chapter 1306.03
Same as Chapter 1306 N

N

Chapter 1307.01
Same as Chapter 1306

May 30, 2001

Dee Bodkins
Kay Johnson
Office of Special Education
WVDE

In regards to the SBA meeting the needs of the exceptional children as compared to the needs of the non-exceptional students.

N

June 4, 2001

Greg Williamson
Williamson, Shriver,
Gandee Architects

101.3

Ed specs- are they required to be submitted for all projects, specifically small additions or renovations. Including ed specs with the schematic design phase lengthens the overall design process significantly as not all ed spec information is typically gleaned from user Groups by the conclusion of schematics (specially furnishings and technology

N

N

203.03

Should site size not also be dependent upon urban/suburban/rural issues as well as terrain..perhaps should be listed by usable acres rather than total acres.

A

204.08

Modify last two sentences to "The contour of a site should be slightly convex to allow placement of the building at the high point. This situation rarely occurs naturally and some earthwork to develop This landform will be necessary on almost every site"

N

205

- A. This chart also includes interior spaces that should be deleted
- B. Should a minimum size for an outdoor paved play area be listed here
- C. Chart does not indicate which or how many of these fields are required or appropriate
- D. With concerns about weapons in schools, should archery even be listed here?

- 209 Funding for landscaping is almost never available N
- 301 Last sentence says that air conditioning should "considered". Elsewhere in 6200 it is mandated. Wording should be revised to correspond. A
- 301.12 Add "directly adjacent to primary building entrance and visually obvious to an unfamiliar visitor entering the building." A
- 301.09 Due to technological improvements, this room is not generally required N
- Page 44 Chart N
Generally prep area sizes are too small.. How is "food court" defined. Typically these have not been permitted in West Virginia
- 303 General comment-nothing in this section mentions the quality of volumes required for various grade levels. Having said that, nothing in this section mentions the quality of books kept in a public school library, specifically, that they include up-to-date concepts and theories. Books should not be kept just to fill shelves. N
- 401.01 Kindergarten classroom quantities are incorrect for all enrollments.. Ex. 540/5 grade levels = 108 students/ 20 students per CR at kindergarten level = 6 classrooms N
- 410/412 Art and music spaces are often combined in smaller schools. Should this be mentioned in this document? N
- 500.01 85% utilization is virtually impossible in middle school curriculum N
- 501.04 N

- General concerns about relevance of Conrad formula
- 502.01 N
Also all other sections in 6200 dealing with classroom size. 720SF is significantly smaller by national standards. With technology in classrooms playing an ever increasing role, should this size not be increased? Also use of small breakout rooms adjacent to classrooms for individual or small group work should be considered.
 - 505 N
Is business education typically part of the middle school curriculum?
 - 506 N
Use of modular concept in FACS?(similar to tech ed)
 - 600.02 N
This statement does not correspond with SBA sliding scale charts.
 - 603.01 N
Is reduced size special education permitted or must all rooms be visually equal to standard classrooms?
 - 609.014 N
Competition volleyball generally requires 30' clear height from floor to lowest obstruction
 - 610 N
No standards are included for computerized science lab. Is this permitted?
 - 616.011 A
Auditorium size of 6 SF/seat is seriously insufficient. Actual number should be approx 9-10 sf/seat.
 - 616.041 A
300 sf is generally too small for a standard stagecraft area. This space should be 750 to 1000 sf
 - 700 N
Is reduced size special ed classrooms permitted?

1002.01 A

Although the State Fire Code does strongly encourage the use of sprinkler systems, it is still possible, and often practical to not sprinkler small buildings. Also, lack of sufficient water pressure and flow in rural sites can significantly increase the cost of new buildings and additions. Is this statement really correct in all cases?

1002.02 N

The State Fire Code and the model codes that it includes are lengthy, complicated documents. Is it wise to attempt to summarize it here, and if so, for what purpose?

1003.11 A

This statement is not correct. This is only correct when the building is not sprinklered.

1301.01 NA

0 degrees for all projects located in WV is much lower than ASHRAE's recommendations. For example, Charleston's 99.6% design winter outdoor temperature is 6 degrees. The 99% value is 11 degrees. For Morgantown, these values are 4 degrees and 11 degrees. The winter indoor design condition required 35% relative humidity (\approx 5%) To achieve this during winter operation will require humidification, at significantly increased construction cost and increased energy usage. The summer indoor design condition is 73 degrees and 55% RH. Typically, we have been designing to 75 degrees indoor temperature and have not been providing active dehumidification SYSTEMS. To insure that 55% RH is maintained will require the installation of reheat (hot water, electric or hot gas) coils that will increase construction cost and energy usage.

1301.021 NA

To insure the maximum gradient between floor and 60" AFF is 2 degrees will necessitate the installation of supplemental skin heating systems (radiant panels, finned tube radiation, etc.) That are not typically provided.

1301.022 N

Is the most current version of ASHRAE Standard 62 to be used to determine ventilation requirements?

1301.024

Regarding relative humidity control, the SBA documents says it is desirable. Does this mean optional? AS noted above, the RH requirements will necessitate humidification and active dehumidification. Is this saying that any problems (complaints, lawsuits...) That may arise from not having humidity control Are the professionals responsible? This document could be used against professionals in the event of any litigation.

N

1301.05

Who shall be responsible for the video-taping of training seminars?

N

1301.06

Who pays for the independent testing/balancing contractor? This will necessitate a separate bid package that will increase the work required by architect/engineer.

N

1301.07

What is the definition of "certify?" The energy analysis required in the DD phase of the project will not be based upon the actual designed HVAC system. To accurately determine actual energy usage that will be compared to measured energy usage will require that the analysis be updated/revise/redone at the completion of the design process. This adds significant hours to engineering requirements. In addition, energy measurement will require more sophisticated controls, at greater construction cost.

PA

1301.08

20' clearance from outside air intakes to contaminates exceeds BOCA's requirement for a 10' clearance. At times, this will add additional cost due to longer duct runs. The installation of carbon monoxide sensors in all rooms with combustion equipment (mechanical rooms, kitchens, etc.) Will add construction cost. The SBA requirement says that heat recovery systems shall be constructed to prevent cross over contamination. This Needs to be further defined. If exhaust air is relief air, does this apply? All heat recovery systems (with exception of runaround coils) have some cross contamination. What is maximum amount of cross contamination that is acceptable?

PA

1301.09

NA

Requiring that each classroom have an independent thermostat is a good idea, but will eliminate the potential use of less expensive HVAC systems. It will not longer be possible to specify a single-zone constant volume RTU to serve two classrooms. Having a dedicated rooftop unit for each classroom may generate an impossibly congested roof plan, forcing a project to use a more expensive VAV, multizone, fan-coil or water-source heat pump system.

The requirement for the mechanical engineer to prepare a preventative PM program for all HVAC equipment will add to design costs. How will this be accommodated? Stainless steel for fiberglass cooling tower basins and fill will add construction cost.

Who is responsible for cadded as-builts? If professionals, additional fee is required.

Regarding the lighting issues, Ted Dannerth offers the following comments:

1302.043 generally 50 percent would be acceptable

1302.044 generally 50 percent would be acceptable.

All other items are in compliance with current recommended standards. To achieve the lighting quality that they are recommending, parabolic lighting fixtures, or better yet, direct/indirect lighting fixtures should be used. Recessed troffer with K-12 lenses would not meet the recommendations for glare control. The parabolic fixtures are more expensive and the direct/indirect are much more expensive (75 cents per square foot) than prismatic fixtures.

**COMMENT SHEET
HANDBOOK ON PLANNING SCHOOL FACILITIES
(POLICY 6200)**

Directions: Please use this form when commenting on the proposed revised policy and regulations on Handbook on Planning School Facilities

NAME OF INDIVIDUAL/ORGANIZATION _____

ADDRESS _____

Chapter 1	
Chapter 2	
Chapter 3	
Chapter 4	
Chapter 5	
Chapter 6	
Chapter 7	

Chapter 8	
Chapter 9	
Chapter 10	
Chapter 11	
Chapter 12	
Chapter 13	
Chapter 14	

Return before June 11, 2001 to:

**Bill Elswick, Executive Director
West Virginia Department of Education
Office of School Facilities
1900 Kanawha Blvd., E, Bldg. 6, Room 215
Charleston, WV 25305-0330
FAX: (304) 558-8867
email: cwelswic@access.k12.wv.us**

FISCAL NOTE WORKSHEET

(Submit 4 Copies)

HD NO _____ DRAFT NO _____ BILL NO _____ RESOLUTION NO _____

SUBJECT Policy 6200 Revision - Handbook on Planning School Facilities FUND _____

SOURCE OF REVENUE: GENERAL FUND SPECIAL OTHER (SPECIFY) _____

COST OF ESTIMATE BASED ON: AN ORIGINAL ESTIMATE BUDGET BILL OTHER (SPECIFY) _____

INCOME ESTIMATE BASED ON: AN ORIGINAL ESTIMATE BUDGET BILL OTHER (SPECIFY) _____

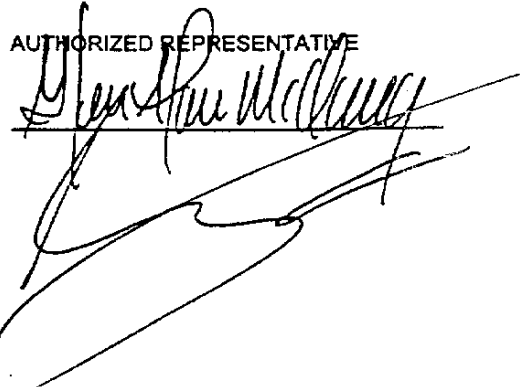
SHOW OVER-ALL EFFECT IN ITEMS 1 AND 2 & GIVE EXPLANATION OF BREAKDOWN BY FISCAL YEAR INCLUDING LONG-RANGE EFFECT

EFFECT OF PROPOSAL	ANNUAL		FISCAL YEAR		
	INCREASE	DECREASE	CURRENT	NEXT	THEREAFTE
1. ESTIMATED TOTAL COST	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
PERSONAL SERVICES CURRENT EXPENSES REPAIRS/ALTERATIONS EQUIPMENT OTHER	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. ESTIMATED TOTAL REVENUES	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

3. EXPLANATION OF ABOVE ESTIMATES (INCLUDING LONG-RANGE EFFECT):

DATE
April 30, 2001

AGENCY
Education

AUTHORIZED REPRESENTATIVE


Bill Elswick

From: Wayne Clutter [wclutter@access.k12.wv.us]
Sent: Wednesday, May 02, 2001 9:05 AM
To: cwelswic@access.k12.wv.us
Subject: Fw: facilities question

This should have been sent to you and I guess could be included in the public comment log.

Wayne

----- Original Message -----

From: Lenore Zedosky
To: Wayne Clutter
Sent: Thursday, April 26, 2001 3:04 PM
Subject: FW: facilities question

Wayne, I am going to be out of the office for the next 10 days, can you respond to Mary Jane Rinard regarding facilities requirements as discussed in her e-mail. I already addressed with her the issue of the "Needs Assessment Manual--it doesn't belong there at all, but you may have some ideas for her. Thanks.

Lenore Zedosky
 Executive Director
 Office of Healthy Schools
 WV Department of Education
 1900 Kanawha Blvd. E.
 Charleston, WV 25305
 Phone: 304-558-8830
 Fax: 304-558-3787
 E-mail: lzedosky@access.K12.wv.us

-----Original Message-----

From: Mary Jane Rinard [mailto:mjrn76@hotmail.com]
Sent: Wednesday, April 25, 2001 8:32 AM
To: lzedosky@access.k12.wv.us
Subject: facilities question

Hi Lenore. Just got home from SHEC last night. There were outstanding speakers and I think it was better than last year. Monday evening we were eating at the Golden Anchor with Dr. Henry Taylor and I brought up a subject that he says comes back to you. The Health Department has strict guidelines for DayCare Centers about proximity of sink in areas where diapering area. Apparently there is no suggested criteria in school buildings. Ex. We have a classroom with 5 severely handicapped students, all requiring diapering and 2 with g tubes and 1 with j tube. To get to a sink, you must leave the room, unlock a bathroom door (that is nearby), proceed, return. If one of the children is brought in to wash hands, wheelchairs make a sink completely inaccessible. To Dr. Taylor's line of thinking, this is something to be addressed in the needs assessment manual. I had always thought it was more a facilities/health department issue. Dr. Taylor thinks it could be put in the manual with this update. What's your take on this?

I know you're busier than ever. There were very few nurses at SHEC. Crowd in general was pretty small. Missed you! Monday would have been a great golf day. Gotta go. Mary Jane Rinard/Berkeley County

Acc. 707 added additional section

Get your FREE download of MSN Explorer at <http://explorer.msn.com>



Greg Williamson comments regarding final draft of new Policy 6200

- 101.3 Ed specs – are they required to be submitted for all projects, specifically small additions or renovations. Including ed specs with the schematic design phase lengthens the overall design process significantly as not all ed spec information is typically gleaned from user groups by the conclusion of schematics (specifically furnishings and technology)
- 203.03 Should site size not also be dependent upon urban / suburban / rural issues as well as terrain ... perhaps should be listed by usable acres rather than total acres
- 204.08 Modify last two sentences to “The contour of a site should be slightly convex to allow placement of the building at the high point. This situation rarely occurs naturally and some earthwork to develop this landform will be necessary on almost every site”
- 205 a. This chart also includes interior spaces that should be deleted.
b. Should a minimum size for an outdoor paved play area be listed here.
c. Chart does not indicate which or how many of these fields are required or appropriate
d. With concerns about weapons in schools, should archery even be listed here?
- 209 Funding for landscaping is almost never available
- 301 Last sentence says that Air conditioning should “considered”. Elsewhere in 6200 it is mandated. Wording should be revised to correspond
- 301.12 Add “directly adjacent to primary building entrance and visually obvious to an unfamiliar visitor entering the building”
- 301.09 Due to technological improvements, this room is not generally required
- Page 44 Chart – Generally prep area sizes are too small ... How is “food court” defined. Typically these have not been permitted in West Virginia
- 303 General comment – nothing in this section mentions the quantity of volumes required for various grade levels. Having said that, nothing in this section mentions the quality of books kept in a public school library, specifically, that they include up-to-date concepts and theories. Books should not be kept just to fill shelves.
- 401.01 Kindergarten classroom quantities are incorrect for all enrollments ... ex. 540/5 grade levels = 108 students / 20 students per CR at kindergarten level = 6 classrooms
- 410/412 Art and music spaces are often combined in smaller schools. Should this be mentioned in this document?
- 500.01 85% utilization is virtually impossible in Middle School curriculum
- 501.04 General concerns about relevance of Conrad formula

502.01 Also all other sections in 6200 dealing with classroom size. 720 SF is significantly smaller by national standards. With technology in classrooms playing an ever increasing role, should this size not be increased? Also use of small breakout rooms adjacent to classrooms for individual or small group work should be considered.

505 Is business education typically part of the middle school curriculum

506 Use of modular concept in FACS? (similar to tech ed)

600.02 This statement does not correspond with SBA sliding scale charts

Pg 97-102 These pages were missing in my document

603.01 Is reduced size special education permitted or must all rooms be visually equal to standard classrooms?

609.014 Competition volleyball generally requires 30' clear height from floor to lowest obstruction

610 No standards are included for computerized science lab. Is this permitted?

616.011 Auditorium size of 6 SF / seat is seriously insufficient. Actual number should be approx 9 – 10 sf / seat

616.041 300 sf is generally too small for a standard stagecraft area. This space should be 750 to 1000 sf

700 Is reduced size special ed classrooms permitted

1002.01 Although the State Fire Code does strongly encourage the use of sprinkler systems, it is still possible, and often practical to not sprinkler small buildings. Also, lack of sufficient water pressure and flow in rural sites can significantly increase the cost of new buildings and additions. Is this statement really correct in all cases.

1002.02 The State Fire Code and the model codes that it includes are lengthy, complicated documents. Is it wise to attempt to summarize it here, and if so, for what purpose?

1003.11 This statement is not correct. This is only correct when the building is not sprinklered.

See attached notes for chapter 13



School Building Authority of West Virginia
Clacy E. Williams, Executive Director

2300 Kanawha Boulevard, East • Charleston, West Virginia 25311-2306 • Office Number (304)558-2541 • FAX Number (304)558-2539

MEMORANDUM

JUN 12 2001

TO: G.A. McClung
FROM: *DS* David Sneed, Chief of Architectural Services
SUBJECT: Comments Regarding Revisions Proposed for State Board Policy 6200
DATE: June 12, 2001

We have reviewed the revised State Board Policy 6200, Handbook on Planning School Facilities and we have requested and received comments from several design engineers relating to the proposed changes. We offer the following:

- Special Education Section - The following areas were in the old handbook but not found in the new draft.

- Sections not found in Elementary School Section (Chapter 4)
 - (1) Corrective or Remedial Education
 - (2) Communication Disorders (Self Contained)
 - (3) Resource Services (Regular Program Support)

Special Ed.

*7-
Butler*

- Middle School Section (Chapter 5)
 - (1) Corrective or Remedial Education (listed in new draft as optional)
 - (2) Communication Disorders (Self Contained)
 - (3) Resource Services (Regular Program Support)

Special

- High School Section (Chapter 6)
 - (1) Corrective or Remedial Education (listed in new draft as optional)
 - (2) Communication Disorders (Self Contained)
 - (3) Resource Services (Regular Program Support)

- The attachment pages for forms have the SBA Guidelines Handbook numbers instead of following the page numbering of the new Policy 6200.

Forms -

- School Construction Project Development Form (we recommend using the latest SBA edition)

MEMO: G.A. McClung
June 12, 2001
Page Two

- Amendment Forms (we recommend using the latest SBA forms)
- Annual Update Forms (we recommend using the latest SBA forms)

We have attached comments from several of our design engineers and we would like the opportunity to address all of the comments with your staff and suggest changes in the proposed new policy where appropriate before this document is presented to the State Board of Education for final approval. It is our understanding that a meeting has been scheduled with you and your staff on Friday, June 15, 2001 to discuss the ZMM comments on the new policy. Perhaps we can discuss the other engineering comments at that time.

We appreciate your cooperation on this matter. If the Friday meeting is going to occur, we would like to participate, if possible. Please contact our office regarding the final details of the meeting.

If you have any questions, please feel free to call me at 558-2541.

DS:sg

Attachments

6200comments



PRINCIPALS

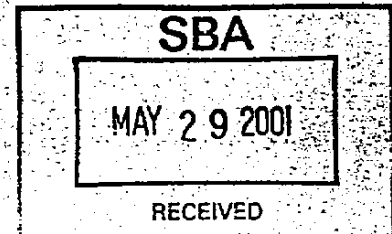
GARY E. STARR, P.E.
MICHAEL P. WESNER, P.E.
JAMES P. KULICK, P.E.

ASSOCIATES

JAMES E. ECKMAN, P.E.
KEVIN M. NOBLE, P.E.
MARLON C. HATHAWAY, P.E.
W. BRYAN HARRIS, P.E.
JOHN A. MCDONOUGH, P.E.
CHRISTOPHER J. SCHOONOVER, P.E.

May 22, 2001

School Building Authority of West Virginia
2300 Kanawha Boulevard East
Charleston, WV 25311-2306



Attn: David Sneed

Re: Comments on HVAC Chapter in 6200

Dear David:

My thoughts on this document are that it can be of some use provided that it is administered properly. It is hard to come up with a document that fits every project. Also, it is hard to have a document that covers all aspects of the Engineering and Architecture and planning for a school. No matter how extensive the manual is there will always be better ways to do the job.

The following are my comments on Chapter 13, Environmental Controls. I have the following comments in the sub-sections:

1. Paragraph 1300: The requirement for an "in depth" life cycle cost analysis is a little vague. This does not tie down exactly what is required. Perhaps it would be better to leave the wording like this until there are some years of experience so that somebody at the School Building Authority can pick out the best ways that the various engineers are presenting the life cycle cost analysis and then make this the standard. My thoughts on life cycle cost analysis are that a lot of effort can be made in preparing these analyses that sometimes are never read and really end up not meaning very much. The requirement for a life cycle cost analysis is adding to the engineering workload, so I would encourage that whoever is enforcing this document, recommend that a life cycle cost analysis be done just as efficiently as possible without overworking it so that engineering time can be spent on more practical matters, like making sure the equipment fits and it is not too loud and the equipment is serviceable.
2. Paragraph 1301: In Paragraph E the indoor-occupied design criteria lists a minimum percent relative humidity. What this means to me is that humidifiers will be required in West Virginia school projects. I strongly caution on including the requirement to meet a minimum relative humidity in the winter. From a practical standpoint, I just don't see how it would be possible for West Virginia schools to maintain humidifiers when a lot of hospitals that I work in don't have the ability to maintain their humidifiers even though they have a highly trained maintenance staff on site. It should also be noted that the addition of humidifiers will add considerably to the project cost and the operating cost of the building. A final note on this humidifier issue, humidifiers are extremely hard to apply correctly to buildings. A humidifier that has a poor installation can, and will, almost always do more harm than good. So this requirement really has me concerned.
3. Paragraph 1301.07: My initial reaction to this item is, is an energy simulation analysis needed for every project? The way this paragraph is worded, there will probably be a wide variety and wide quality of energy simulation analysis provided. It might be better to have the designers show how the building complies with ASHRAE Standard 90.1, since this might give some uniformity to this energy portion of the HVAC design. In either event, energy simulation, or producing ASHRAE Standard 90.1 compliance forms, will take quite a bit of effort by the design engineer.

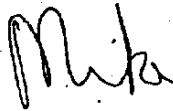
Mr. David Sneed
May 24, 2001
Page 2

4. Paragraph 13.01.08: Indoor Air Quality Standards; I have the following comments:
- a. Paragraph A – I suggest that this paragraph be reworded to prohibit the use of ventless heaters in any SBA building. Note, ventless heaters are also prohibited by the West Virginia Fire Code, except in 1 and 2 family dwellings, see paragraph 87-1-3 of the WV fire code.
 - b. Paragraph B, suggests that a reference to BOCA also be made in this paragraph.
 - c. Paragraph C, carbon monoxide sensors are a good idea, and I wonder why the building codes don't require these to be installed. These devices are pretty inexpensive.
 - d. Paragraph D – There is a lot more work that could be put into this subparagraph. For instance, on variable air volume systems it could be noted that the minimum outside air quantity shall remain constant. It might be better to just reference the latest version of the International Mechanical Code than including this paragraph since the International Mechanical Code does a better job of conveying what is actually required.
 - e. Paragraph F – I am not sure what this paragraph is trying to say other than mixing and a mixing box is a good idea.
 - f. Paragraph H – I suggest that all drain pans be required to slope in two directions rather than allowing the "if available" option.

If you have any questions on the above, please do not hesitate to call. I can be reached at 1-800-448-9338, extension 117, or via e-mail at mwesner@sbmce.com.

Very truly yours,

Scheeser*Buckley*Mayfield, Inc.



Michael P. Wesner, P.E.
V.P. Mechanical Engineering

MPW:mm\IP:\clerical\unassigned\mpw\WV School Bldg Authority-David Sneed.doc

Printed
5/25/01

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Chapter 13

ENVIRONMENTAL CONTROLS

1300 COMMON ENVIRONMENTAL FACTORS

All *new or renovated* schools are *to be* designed, constructed, furnished and maintained in a manner which incorporates *appropriate* technology into the common environmental factors which facilitate the educational program of the school. Spatial and aesthetic considerations are incorporated into the school design, construction, equipment and maintenance. The thermal, visual and acoustical systems are balanced in a manner which properly controls the environment and facilitates the educational program of the school *for all seasons*.

Determining the type of *HVAC* system to be used is a highly technical problem dependent upon the *life cycle cost; which includes the* original cost, the operating cost, the maintenance services available; and the size of the building. Technical advice concerning the type of heating and ventilating system to be utilized *shall* be secured from *mechanical* engineers *certified* to deal with *HVAC* problems. Because of the many different types of environmental systems available, the variations in owning costs by type, installation, and the relative costs of competing energy sources, the architect and/or engineer must make an in depth *life cycle cost analysis* to determine the best and most economical system and energy used to meet the objectives regarding space conditioning. *The life cycle cost analysis shall be part of the design development documents.*

School facilities must be in compliance with the requirements of the State Fire Code, State Health Department and other regulatory agencies.

1301 THERMAL ENVIRONMENT

References:

- 2.
- 6.
- 19.
- 20.
- 24.

The school facility is designed, constructed, equipped and maintained in a manner which provides for maximum *safety*, comfort and economy. The heating, ventilating and air-conditioning systems in all school facilities shall be in compliance with the requirements of applicable regulatory agencies.

- 1301.01 Minimum functions of the space conditioning system employed to maintain the proper thermal environment in a school building are as

follows.

- A. Supply heat for warm-up and balance heat losses from the room to the outside.
- B. Supply **conditioned** outside air to meet ventilation requirements.
- C. In special cases, the system must remove injurious or noxious gases, vapors, fumes and dust by the induction of outside air, filtration **and/or exhausting contaminants**.
- D. **Outside design criteria**
 - 1. **Winter - 0° F. db**
 - 2. **Summer - ASHRAE .4% Cooling and Dehumidification Data**
- E. **Indoor occupied design criteria**
 - 1. **Winter - 70° F. ± 2°, 35% ± 5% rH**
 - 2. **Summer - 72-75° F, 55% ± 5% rH**

1301.02 Space conditioning systems should be of sufficient rated capacity to meet the building requirements under extreme local weather conditions. This will avoid sustained operation beyond the capacity of the system.

1301.021 Operative Temperature
It is desirable that HVAC systems provide a maximum temperature gradient not to exceed 2° from floor to 60 inches above the floor.

1301.022 Air supply
Space conditioning systems **will** have sufficient capacity to provide for introduction of outside air. **The amount of outside air will meet guidelines set forth by ASHRAE Standard 62.**

1301.023 Air Movement
Air motion, with proper distribution, and without drafts, is **recommended** in educational facilities. Also important are effective air cleaning, temperature control, low noise level and acceptable humidity conditions.

- A. Air motion should generally fall within a range of 25 to 50 feet per minute and should be maintained at a constant rate with a pattern that prevents temperature stratification.
- B. Special provisions may have to be made in the window zone to overcome the effects of cold window down draft.
- C. Since positive pressure is required in conditioned areas, **with the exceptions of bathrooms, custodial closets, science areas, and other areas that may**

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have air contamination, approximately 5-10 percent more air should be introduced than is exhausted, thus minimizing infiltration.

- D. Avoid unnecessary use of duct liner. If duct liner is used it shall be rated at 5000 fpm velocities, and be treated with an EPA approved anti-microbial agent proven to resist microbial growth as determined by ASTM G21 and G22.*
- E. Velocity of air across coils shall not exceed 500 fpm to prevent moisture carryover.*
- F. Room thermostats and controls may be used to regulate space temperatures, but must not be able to otherwise change the operation of the HVAC equipment.*
- G. The condensate traps shall be designed to operate at greater than 1" w.g. above the static pressure of the HVAC unit.*
- H. If flexible duct is to be used, the duct shall be of the internal corrugated metallic type or internal high-pressure fabric with a pressure rating of at least 10" w.g. positive and 5" w.g. negative with a bursting pressure of at least 2 times the working pressure, and externally insulated. The duct shall be rated for a velocity of 5500 fpm. There shall be a maximum of one (1) 90° bend and a maximum length of five (5) feet.*
- I. Include in the selection of the grilles, registers and diffusers the desired NC (noise coefficient) rating that meets the ASA recommendations.*

1301.024

Humidity Control

While normal comfort conditions may be maintained with a wide range in relative humidity, it is desirable that actual levels *meet the requirements set forth in Section 1301.01E1 & E2. It should also be stated, that higher sustained humidity promotes unhealthy mold growth.*

1301.025

Air Cleaning

Air cleaning is essential in all areas. Filtering, washing, screening, precipitation, absorption or other cleaning methods may be used. *The HVAC units should be installed with the most appropriate filtration available for the typed of equipment selected. It is recommended that a minimum of 25% ASHRAE dust spot filter efficiency be used (MERV 7). The filters efficiency rating shall meet ASHRAE Test Standard 52.1.*

1301.03 ***In new or substantially remodeled schools, some form of cooling system is necessary for schools in areas where the outside temperature is above the optimum during a portion of the school year. This cooling system shall meet all of the standards set forth in Chapter 13 of this policy.***

1301.04 ***Building Control*** systems will be provided in order to secure the maximum utilization of facilities and the greatest economy in operation. Controls shall be a type that will permit easy interfacing of energy management systems ***and approved by the WVDE and SBA.***

1301.05 ***Local*** boards of education, before accepting the heating contractor's work, should receive complete ***training*** regarding the operation and maintenance of the mechanical equipment and should insist that a designated school employee(s) be given direct instruction by one or more competent representatives of the contractor or equipment firms. ***The training shall be completed prior to the turnover of the building to the Board of Education. For major mechanical and electrical equipment and systems (including HVAC control systems) there shall be a minimum of 1 day follow-up training at 6 months after facility turnover. All training shall be video-taped and turned over to the county Board of Education.***

1301.06 Inspection of Systems
The specifications ***shall include the hiring by the Board of Education an independent NEBB, certified air balancing contractor*** to inspect, balance and evaluate the finished HVAC system before title passes to the school board to assure that the system is installed as designed and is operating according to specifications. ***An EEC, and/or AABC balancing contractor can also be used as a balancing contractor with prior approval of the design engineer. This evaluation shall only be performed with an owner's representative present.***

NOTE: Warranties and brochures shall be furnished to the board by the installation contractor on all equipment. ***The record product data shall be submitted in .pdf or other acceptable commonly used electronic file format burned to a single CD when available, along with bound copies of the product data.***

1301.07 The architect/engineer shall analyze the facility for its total energy efficiency and ***provide an energy simulation analysis*** in BTU/Gross S.F./Year. Energy usage must be within guidelines established by the Fuel and Energy Office, Governor's Office of

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Economic and Community Development.

1301.08

Indoor Air Quality Standards

- A. There shall be no open-flame, fuel burning heaters in student and staff occupied spaces. This equipment shall be located in enclosed rooms or cabinets using outside air for combustion and be properly vented to the outside in a manner that exhausts all fuel gases *using appropriate piping as per ASHRAE and AGA standards.*
- B. Outside air intakes shall be located *no closer than the standards set forth by ASHRAE standards for stacks, vents, motor vehicles and other sources of contaminants,* to *minimize cross* contamination. Stacks shall be designed to exhaust flue gas away from the building.
- C. *Electric powered Carbon monoxide monitors shall be installed in each area that produces combustion gases.*
- D. *Outside air dampers shall fully close when the units are off and maintain at least a pre-set minimum position in accordance with ASHRAE Standard 62 during occupied operation for classrooms.*
- E. *Heat Recovery systems are recommended for 100% outside air systems. All heat recovery systems shall be constructed to prevent cross over contamination.*
- F. *It is desired that return air dampers should be sized to produce air velocities of 1500 to 2000 fpm for thorough mixing. The damper should be set such that any deflection of air is towards the outside air to create maximum turbulence and mixing. The mixing damper shall extend across the full width of the unit even though the physical location of the return duct indicates that it could enter through the side to eliminate stratification.*
- G. *The HVAC cabinet insulation shall have a non-porous facing on the side exposed to the air stream in areas of potential moisture buildup (cooling coil, outside/mixed air section, etc.). The outside air ductwork located indoors shall be externally lined only.*
- H. *All drain pans shall be, if available, double sloped to prevent moisture accumulation.*

1301.09

HVAC System

HVAC systems shall include the following criteria:

- A. *Air velocities across HVAC cooling coils should not exceed 500 fpm. The coils shall have a maximum of 12 fins per inch*
- B. *Each classroom shall constitute a zone and have its own temperature control device that directly regulates room*

- temperature.*
- C.** *Temperature control devices in the classroom shall have minimum tolerances of ± 2 F and humidity control devices of $\pm 5\%$ rH for a retrofitted system and $\pm .5$ F tolerance and $\pm 5\%$ rH for new systems.*
 - D.** *Fans should be selected for maximum efficiency that will yield minimum noise generation.*
 - E.** *Permanent I. D. labels on all HVAC and electrical equipment shall be installed. Labeling of electrical equipment shall include the equipment it serves.*
 - F.** *The mechanical engineer shall provide within the specifications for a contractor to include a preventative maintenance program for all HVAC equipment including: BAS software, listing of belts, filters, spare parts, nameplate data, recommended maintenance increments for preventative maintenance tasks, and training on preventative maintenance.*
 - G.** *Provide a water meter on condenser water makeup steam systems. Consideration for a water meter on the chilled water makeup shall also be given.*
 - H.** *Provide lockable ball valves on expansion tanks.*
 - I.** *Provide pressure gauges on expansion tanks.*
 - J.** *Provide appropriate isolation valves on all equipment.*
 - K.** *Provide water balance ports on all hydronic equipment as per manufacturer's recommendations.*
 - L.** *Provide stainless steel, or fiberglass for cooling tower basins and other surfaces in contact with condenser water.*
 - M.** *All mechanical, plumbing, and electrical record drawings and/or as-built drawings are to be submitted in AutoCAD release 14 or greater format burned to a CD, in addition to reproducible or paper sets if requested by the county, WVDE, and/or SBA.*
 - N.** *It is recommended that HVAC units that have multiple compressors have independent refrigerant circuits for each compressor.*
 - O.** *All drain ports on back-flow preventers, pressure relief valves, and safety valves shall be piped to a drain in accordance with the local plumbing code.*
 - P.** *All closed loop water systems shall use scale and corrosion inhibitors as a part of the general water treatment process.*
 - Q.** *All open loop condenser water systems shall use biocide(s) and scale corrosion inhibitors as a part of the general water treatment process. These products shall be automatically controlled and fed as directed by a competent water treatment vendor. Water treatment*

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controls for the open loop system shall consist of a conductivity controller, automatic blow-down valve and chemical feed pump for each water treatment product to be fed. All water treatment controls equipment and chemicals shall be located in a temperature controlled space in close proximity to the cooling tower.

- R. The blow-down drain for cooling towers shall be piped to an appropriate drain line.*
- S. All water lines and chemical feed lines must be protected from freezing conditions by insulation and heat tracing.*

1301.10 DDC control systems

- A. For new buildings and significant additions where there may be a risk of a contaminant entering into the building, provide a program for emergency shelter-in-place, using one input to shut down all HVAC equipment and isolate the facility from airborne hazards and contaminants.*
- B. Label all components in interface and control panels.*
- C. Provide laminated schematic diagram and attach to inside of interface panel.*
- D. Graphics shall accurately represent facility components and architecture.*
- E. Analog BCS input and output devices shall be field calibrated or adjusted to represent actual positions at the time of installation.*
- F. Nomenclature on inputs and outputs shall represent true logical positions of the devices controlled.*
- G. All external devices on the DDC system shall have I.D. labels.*
- H. Provide sufficient schedules to cover yearly school holidays and special events.*
- I. List spare parts needed for DDC system.*
- J. An accurate and detailed set of as-builts, sequence of operation, and control drawings are to be provided for the HVAC system and controls.*

1302 VISUAL ENVIRONMENT

Reference:
21.

The school facility is designed, constructed, equipped and maintained in a manner which provides a good visual environment. The facility is attractively painted and illuminated in a manner which most effectively contributes to an environment of visual accuracy and comfort. All schools are in compliance with requirements of applicable regulatory agencies.

1302.01 General

- 1302.011 Technical assistance from qualified lighting engineers is generally required to insure adequate visual conditions within spaces.
- 1302.012 Plans and specifications for new *or substantial renovations* should be developed to achieve as many of the desired lighting goals as possible in the original construction with due consideration for the need of maintaining a balance between the visual and other major environmental factors.
- 1302.013 Proper visual environment lessens the expenditure of energy required for students and teachers to carry on visual tasks in the instructional space.
- 1302.014 A sufficient quantity of light is essential for good visual conditions. However, a task becomes visible, not by the light falling upon it, but by reflected brightness.
- 1302.015 Visual comfort and efficiency may best be achieved in an environment in which the brightness difference would be as small as possible between the task and the brightest surface and between the task and the darkest surface in the total visual field while the general level of illumination is high.
- 1302.016 Informal seating in the instructional space has gained wide acceptance. The visual field, therefore, must be recognized as encompassing all four walls, the floor and the ceiling.

1302.02 Desirable Brightness

- 1302.021 In an instructional space, the brightness of any surface viewed from any normal sitting or standing position should not be excessively greater than the brightness of the visual task. As the high brightness of surfaces in the visual field approaches the brightness of the task, visual comfort and efficiency increase.
- 1302.022 In an instructional space, the brightness of any surface viewed from any normal standing or sitting position should not be excessively lower than the brightness of the visual task. As the low brightness of the surfaces in the visual field approaches the brightness of the task, visual comfort and efficiency increase.
- 1302.023 The brightness of surfaces immediately adjacent to the visual

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task is more critical in terms of visual comfort and efficiency than that of more remote surfaces in the visual field. These adjacent surfaces have lower acceptable brightness limits than surfaces farther removed from the task.

- 1302.024 The brightness difference between adjacent surfaces in the total visual field should be reduced to an acceptable minimum.
- 1302.025 The characteristics of any lighting system should be such that direct and reflected glare are not objectionable. If the brightness difference produced by a lighting system is held within the limits stated in Goals 1, 2 and 3, of *IES standards*, direct and reflected glare will not be objectionable.
- 1302.026 Daylight and electric light systems should conform to the same brightness and brightness difference goals, and both systems should be coordinated in design to assure the effective contribution of both.
- 1302.027 Any lighting system should be designed in such a manner that it will contribute to a cheerful, friendly and aesthetically pleasing instructional space environment.
- 1302.028 The brightness goals stated above assume an illumination level of range 30 to 150 foot-candles on the reference task produced by combined radiant energy of daylight and any system of electric lighting used.

1302.03 Light Source

- 1302.031 Electric lighting systems should be evaluated on the basis of the following items:
- A. The lighting should produce a uniform distribution of shadow-free and glare-free illumination with the intensities necessary to maintain an acceptable brightness balance between the tasks and other surfaces within the total visual environment.
 - B. Consideration should be given to probable deterioration of service efficiency under prevailing conditions of school operation and maintenance.
 - C. Lighting fixtures should not produce a surface brightness on the fixture or on the ceiling that exceeds ten times the task brightness.
 - D. *Fluorescent lamps are to be specified with a color temperature of 3500K or greater, a CRI (color rendition index) of 82, and non-mercury containing*

Policy 6200 - Handbook on Planning School Facilities

New Draft

Old Version

Early Childhood/Primary Ed K-4

Kindergarten 20 50 sq.ft.

General Instruct. 25 28-30 sq.ft.

Pre-Kindergarten 20 50 sq.ft.
(optional) NEW

Not in this Version

Multipurpose Room

Facilities for Exceptional Students

Art Facilities 45-50 sq.ft
(optional)

Library/Learning Resource/ Media Center

Music Facilities 25 400 cubic feet

Computer Lab 25 40 sq.ft.

Policy 6200 - Handbook on Planning School Facilities

New Draft

Old Version

Middle Childhood/Junior High School

General Classrooms 25 28-30 sq.ft.

Corrective/Remedial 15 28-30 sq.ft.
(optional)

Art Facilities 25 1,000 sq.ft.

Business Ed 25 60-70 sq.ft. 1,200-1,400

↳ Family/Consumer Sciences Fac. 1,600 - 1,900
(Lab) 25 60-70 sq.ft.
(Classroom) 25

Consumer/Homemaking 25 95-100
1 - 1,900-2,500 sq.ft.
2 - 2,874-3,474 sq.ft.

Foreign Language 25 35 sq.ft.

↳ Tech Ed Facilities 20 800-1,000

Tech Ed 20 100-125 sq.ft.

Music Facilities 25 30-40 sq.ft.

Physical Ed. Fac. 35 125 sq.ft.
5,400 min.

↳ Science Facilities 25 60 sq. ft.
1,200 min.

Science 25 40-50 sq.ft.

Library/Learning Resource/ Media Center

Exceptional Student Instructional

Computer Lab 20 35-40 sq.ft.
(optional)

Electronic Tech Lab 75 2,000
(optional)

Policy 6200 - Handbook on Planning School Facilities

New Draft

Old Version

Adolescent/High School

General Classrooms 25 28-30 sq.ft.

Corrective/Remedial 15 28-30 sq.ft.
(optional)

Art Facilities 25 1,200 sq.ft.

Driver Education 25 28-30 sq.ft.

Foreign Language 25 28-30 sq.ft.

Library/Learning Resource/
Media Center

Music Facilities 40 30-40 sq.ft.

Physical Ed. Fac. 35 125 sq.ft.

> Science Facilities 24 60 sq.ft. 1,440 sq.ft.
Chemistry/Physics
Lecture/Classroom

Science
Chemistry/ 20 50-60 sq.ft.
Physics 1,200

Business Ed 25 60-70 sq.ft.
1,200-1,400

Instructional Space 25 36-40
900-1,000

Computer/Keyboard 30 35-40 sq.ft.
Office Tech Lab 20 60-70 sq.ft.
1,200-1,400

Consumer/Homemaking Facilities

Consumer/Homemaking

< 3 Family & Consumer 20lab 70-80 sq.ft.
Classroom 25
Food Management 20 2,000-2,500
Production & Services

Lab 20 95-100 sq.ft.
Classroom 25
Food Manage 20 1,940-2,540

Tech Ed Facilities

< Tech Ed Prod. Lab 20 1,000-1,200
- Tech Ed Lab/ 20 100-125 sq.ft.
Design Area

Tech Ed Prod 20 1,200-1,500
Tech Ed Lab/ 20 100-125 sq.ft
Design Area

Policy 6200 - Handbook on Planning School Facilities

New Draft

Old Version

Exceptional Students

Computer Lab 20 40-45 sq.ft.

Auditorium

Policy 6200 - Handbook on Planning School Facilities

New Draft

Old Version

Exceptional Services

Behavior Disorders separate classroom	8	600 sq.ft.
Deaf-Blind separate classroom	3	300-500 sq.ft.
Mild Mentally Impaired (sep. class)	12	600-750 sq.ft.
Moderate Mentally Impaired (sep. class)	12	650-850 sq.ft.
Orthopedically Imp. separate classroom	10	800-1,000 sq.ft.
Severe/Profound Mentally Impaired separate classroom	9	800-1,000 sq.ft.
Deaf & Hard of Hearing separate classroom	10	600-750 sq.ft.
Blind & Partially Sighted separate classroom	10	600-750 sq.ft.
Specific Learning Disabilities separate classroom	12	540 sq.ft.
Pre-School separate classroom	10	600-800 sq.ft.
Gifted Education separate classroom	15	600-750 sq.ft.
Professional Support Staff	10	250-350 sq.ft.

To: "Greg Williamson \ (E-mail 2)" <gwilliamson@newwave.net>
 Subject: SBA Requirements

Following are our comments regarding the SBA documents you sent to our office:

General:

When will the requirements of this document begin to be enforced? *cost.*

When complete, will this document be available over the internet? In addition to your office, we should have a full copy of it.

Will project budgets be increased to accommodate these requirements?

Is BOCA only adopted specific municipalities or will it be a state-wide code requirement at some time in the future. When BOCA is in effect, which takes precedence (BOCA or SBA requirements) *same*

1300

How will consulting engineers be compensated for the cost of the detailed life cycle cost analysis that is to be done on each project. As a minimum, 12K should be allocated to this.

The SBA document says that the detailed life cycle cost analysis shall be done as part of the DD documents. This implies that a decision regarding the HVAC system selection will not be made until close to the completion of the DD phase. At that time, significant decisions have been made regarding the general construction requirements of the project that will make it difficult to accommodate any changes that may arise from a life cycle analysis.

*fining
schematic*

1301

ASA - not sure what this stands for, but it appears to be related to acoustics

1301.01

0 degrees for all projects located in WV is much lower than ASHRAE's recommendations. For example, Charleston's 99.6% design winter outdoor temperature is 6 degrees. The 99% value is 11 degrees. For Morgantown, these values are 4 degrees and 11 degrees.

The winter indoor design condition requires 35% relative humidity (+/- 5%). To achieve this during winter operation will require humidification, at significantly increased construction cost and increased energy usage.

The summer indoor design condition is 73 degrees and 55% RH. Typically, we have been designing to 75 degrees indoor temperature and have not been providing active dehumidification systems. To insure that 55% RH is maintained will require the installation of reheat (not water, electric or hot gas) coils that will increase construction cost and energy usage.

1301.021

To insure that maximum gradient between floor and 60" AFF is 2 degrees will necessitate the installation of supplemental skin heating systems (radiant panels, finned tube radiation, etc.) that are not typically provided.

1301.022

Is the most current version of ASHRAE Standard 62 to be used to determine ventilation requirements?

1301.024

Regarding relative humidity control, the SBA documents says it is desirable. Does this mean optional? As noted above, the RH requirements will necessitated humidification and active dehumidification. Is this saying that any problems (complaints, lawsuits, ...) that may arise from not having humidity control are the professionals responsibility? This document could be used against professionals in the event of any litigation.

1301.05

Who shall be responsible for the video-taping of training seminars? *Equipment mon./contract*

1301.06

Who pays for the independent testing/balancing contractor? This will necessitate a separate bid package that will increase the work required by architect/engineer. *SBA*

1301.07

What is the definition of "certify"? The energy analysis required in the DD phase of the project will not be based upon the actual designed HVAC system. To accurately determine actual energy usage that will be compared to measured energy usage will require that the analysis be updated/revised/redone at the completion of the design process. This adds significant hours to engineering requirements. In addition, energy measurement will require more sophisticated controls, at greater construction cost. ?

1301.08

20' clearance from outside air intakes to contaminants exceeds BOCA's requirement for a 10' clearance. At times, this will add additional cost due to longer duct runs.

The installation of carbon monoxide sensors in all rooms with combustion equipment (mechanical rooms, kitchens, etc.) will add construction cost.

limit The SBA requirement says that heat recovery systems shall be constructed to prevent cross over contamination. This needs to be further defined. If exhaust air is relief air, does this apply? All heat recovery systems (with exception of runaround coils) have some cross contamination. What is maximum amount of cross contamination that is acceptable? *Quoted?*

1301.09

Requiring that each classroom have a independent thermostat is good idea, but will eliminate the potential use of less expensive HVAC systems. It will not longer be possible to specify a single-zone constant volume RTU to serve two classrooms. Having a dedicated rooftop unit for each classroom may generate an impossibly congested roof plan, forcing a project to use a more expensive VAV, multizone, fan-coil or water-source heat pump system.

The requirement for the mechanical engineer to prepare a preventative PM program for all HVAC equipment will add to design costs. How will this be accommodated?

Stainless steel or fiberglass cooling tower basins and fill will add construction cost.

Who is responsible for cadded as-builts? If professionals, additional fee is required.

Regarding the lighting issues, Ted Dannerth offers the following comments:

1302.043 generally 50 percent would be acceptable.

1302.044 generally 50 percent would be acceptable.

All others items are in compliance with current recommended standards. To achieve the lighting quantity that they are recommended, parabolic lighting fixtures, or better yet, direct/indirect lighting fixtures should be used. Recessed troffer with K-12 lenses would not meet the recommendations for glare control. The parabolic fixtures are more expensive, and the direct/indirect are much more expensive (75 cents per square foot) than prismatic fixtures.

ENVIRONMENTAL CONTROLS

1300 COMMON ENVIRONMENTAL FACTORS

All schools are designed, constructed, furnished and maintained in a manner which incorporates all existing technology into the common environmental factors which facilitate the educational program of the school. Spatial and aesthetic considerations are incorporated into the school design, construction, equipment and maintenance. The thermal, visual and acoustical systems are balanced in a manner which properly controls the environment and facilitates the educational program of the school.

School facilities must be in compliance with the requirements of the state Fire Code, state Health Department and other regulatory agencies.

1301 THERMAL ENVIRONMENT

References:

? whether this should be used →

18
17
19
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18

- 2. I-16 and G-2,3
- Climatological Data for West Virginia
- American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. ~~Standard~~ (62, 15)
- Energy Consumption Guidelines for Educational Facilities

ASA.

The school facility is designed, constructed, equipped and maintained in a manner which provides for maximum comfort and economy. The heating, ventilating and air-conditioning systems in all school facilities are in compliance with the requirements of applicable state regulatory agencies.

1301.01 Minimum functions of the space conditioning system employed to maintain the proper thermal environment in a school building are as follows.

- 1. Supply heat for warm-up and balance heat losses from the room to the outside.
- 2. Supply tempered outside air *to meet ventilation requirements* for the removal of excess heat.
- 3. Dilute and remove unpleasant odors by ventilation.
- 4. In special cases, the system must remove injurious or noxious gases, vapors, fumes and dust by the induction of outside air or by filtration, exhaust.

Outside Design Criteria:

<u>winter</u>	<u>Summer</u>
0°F db	92°F db
	76°F wb

Indoor

<u>winter</u>	<u>Summer</u>
70°F ± 2°F	73°F ± 2°F
55% ± 5% RH	50% ± 5% RH

should not overlap

Year Round
72 ± 2°F
40 ± 5% RH

2-1
1000 ft² | 1 ft = 0.12 / PC -

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With the increasing tendency toward longer school terms and, in some cases, year-round use of physical plants, it is recommended that serious consideration be given to summer air conditioning to provide the desired level of environmental control.

1301.02

Space conditioning systems should be of sufficient rated capacity to meet the building requirements under extreme local weather conditions. This will avoid sustained operation beyond the capacity of the system. ~~Outdoor design temperatures shall be based on climatological data collected by the U.S. Department of Commerce~~

1301.021

Operative Temperature

Heating systems of conventional design should provide the following temperatures.

- A. Instructional spaces, auditoriums, offices and cafeterias - ~~68~~ degrees F, measured 30 inches above the floor *70 ± 2°*
- B. Closed corridors, stairways, shops, laboratories and kitchens - ~~68~~ degrees F, measured 60 inches above the floor *70 ± 2°*
- C. Activity rooms, such as gymnasiums - ~~68~~ degrees F, measured 60 inches above the floor *70 ± 2°*
Special cases: Toilet rooms - ~~68~~ degrees F, locker rooms and showers - 78 degrees F and swimming pools - ~~83~~ degrees F, each measured 60 inches above the floor. *2° warmer than H₂O temp.*
- D. The maximum temperature gradient from floor to 60 inches above the floor should not exceed ~~three~~ *2?* degrees.

1301.022

Air supply

Space conditioning systems should have sufficient capacity to provide for introduction of outside air as follows:

- A. Classrooms 8 cubic feet per minute/person
- Library 8 cubic feet per minute/person
- Auditorium 7 cubic feet per minute/person
- Corridors .02 cubic feet per minute/feet squared
- Utility Rooms .02 cubic feet per minute/feet squared
- Offices 20 cubic feet per minute/person
- Meeting Rooms 35 cubic feet per minute/person
- Teachers' Lounge 35 cubic feet per minute/person

Do Not state CFM

Refer to ~~current~~ current
ASHRAE 62 std.

0.1 CFM/ft²

4
7 High

ASHRAE 62J

- B. If air conditioning is not provided, 12 to 15 air changes per hour may be desired in auditoriums or other assembly space in summer.

1301.023 Air Movement

Air motion, with proper distribution and without drafts, is essential in educational facilities. Also, important are effective air cleaning, positive temperature control, low noise level and acceptable humidity conditions.

- A. Air motion should generally fall within a range of 25 to 50 linear feet per minute and should be maintained at a constant rate with a pattern that prevents temperature stratification.
- B. Special provisions may have to be made in the window zone to overcome the effects of cold window down draft.
- C. Since positive pressure is usually desirable in conditioned areas, approximately 10 percent more air should be applied than is exhausted, thus minimizing infiltration.

1301.024 Humidity Control

While normal comfort conditions may be maintained with a wide range in relative humidity, it is desirable that actual levels not fall below 30 percent nor exceed ⁶⁰70 percent. This may require the installation of humidification equipment for winter use, while air conditioning may meet dehumidification requirements during warmer weather. It should also be stated that very dry conditions contribute to eye, nose, and throat irritation, while higher moisture promotes unhealthy mold growth. [?] _{ok}

NOTE: Special requirements for libraries, resource rooms and music facilities.

1301.025 Air Cleaning

High efficiency filtration. Air cleaning is essential in areas where the air is heavily laden with dust or smoke. Filtering, washing, screening, precipitation, absorption or other cleaning methods may be used.

1301.026 Radiant Temperature

Reduced radiant temperatures are usually compensated for

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by increased air temperatures. Special treatment of the window zone may be desirable to compensate for the greatly reduced radiant temperature there as compared with the rest of the room.

1301.03 Some form of cooling system is desirable, and may be essential, for schools in areas where the outside temperature is above the optimum during a portion of the school year.

1301.04 Determining the type of heating and ventilating system to be used is a highly technical problem dependent upon the original cost, the operating cost, the maintenance services available, the size of the building, the level of student comfort which can be economically obtained and, in some instances, the designer's preference. Technical advice concerning the type of heating and ventilating system to be utilized should be secured from consulting engineers qualified to deal with heating and ventilating problems. Because of the many different types of environmental systems available, the variations in owning costs by type installation and the relative costs of competing energy sources, the architect and/or engineer must make an in depth study to determine the best and most economical system and energy used to meet the objectives of the school board regarding space conditioning.

1301.05 Zone control heating and ventilating systems should be provided in order to secure the maximum utilization of facilities and the greatest economy in operation. Special education centers require special room control to satisfy student needs. Controls shall be a type that will permit easy interfacing of energy management systems.

*Aud. it., gym, cafet,
Independent sys w/
CO₂ control.*

1301.06 Boards of education, before accepting the heating contractor's work, should receive complete written instructions regarding the operation and maintenance of the mechanical equipment and should insist that a designated school employee be given direct instruction by one or more competent representatives of the contractor or equipment firms.

seasonal

1301.07 Inspection of Systems
The specifications should require an independent consulting engineering firm or other qualified individuals to inspect, balance and evaluate the finished system before title passes to the school board to assure that the system is installed as designed and is

*AABC, NEBB
TAB*

126CSR172

operating according to specifications.

NOTE: Warranties and brochures should be furnished to the board by the installation contractor on all equipment.

1301.08 The architect/engineer shall analyze the facility for its total energy efficiency and shall certify the energy usage in BTU/Gross S.F./Year. Energy usage must be within guidelines established by the Fuel and Energy Office, Governor's Office of Economic and Community Development.

1301.09 Interior Air Quality Standards

- A. There shall be no open-flame, fuel burning heaters in student and staff occupied spaces. This equipment shall be located in enclosed rooms or cabinets using outside air for combustion and be properly vented to the outside in a manner that exhausts all fuel gases.
- B. Materials which, under normal use conditions, may release formaldehyde in excess of .1 parts per million or asbestos dust, or which contribute to levels of indoor air pollutants considered potentially harmful to human health, shall not be permitted in building systems.
- C. Pesticides used for termite and rodent control shall not be used at levels that might cause contamination of air quality in interior spaces.
- D. Fresh air intakes shall be located to disallow contamination from stacks, vents or motor vehicles. Stacks shall be designed to completely exhaust flue gas away from the building.

footage?
10
15
20

1302 VISUAL ENVIRONMENT

Reference:

- 20. Lighting Handbook, Illuminating Engineering Society

The school facility is designed, constructed, equipped and maintained in a manner which provides a good visual environment. The facility is attractively painted and illuminated in a manner which most effectively contributes to an environment of visual accuracy and comfort. All schools are in compliance with requirements of applicable state regulatory agencies.

1302.01 General

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level of range 30 to 150 footcandles on the reference task produced by combined radiant energy of daylight and any system of electric lighting used.

1302.03 Light Source

1302.031 Electric lighting systems should be evaluated on the basis of the following items:

- A. The lighting should produce a uniform distribution of shadow-free and glare-free illumination with the intensities necessary to maintain an acceptable brightness balance between the tasks and other surfaces within the total visual environment.
- B. Consideration should be given to probable deterioration of service efficiency under prevailing conditions of school operation and maintenance.
- C. Lighting fixtures should not produce a surface brightness on the fixture or on the ceiling that exceeds ten times the task brightness.

1302.032 Where daylight supplements artificial illumination, controls (preferably fixed) should be as follows.

- A. Exclude direct sunlight and at the same time admit about 15 percent of the outdoor brightness
- B. Provide a surface free from excessive brightness or glare
- C. Permit ease of maintenance

1302.04 Surfaces within rooms should be finished in accordance with the following items.

1302.041 Ceilings should provide a 70 to 90 percent reflection factor, flat, white surface.

1302.042 Upper walls (from wainscot or dado upward) should provide a surface with a reflection factor of at least 60 percent.

1302.043 Lower walls (from wainscot or dado downward) should provide a surface with a reflection factor of at least 60 percent.

1302.044 Where maintenance conditions permit, it is considered good practice to finish entire walls, from ceiling to floor, with

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surfaces having a 60 percent reflection factor.

- 1302.045 Finishes should be flat or matte on all interior surfaces, particularly at eye level or above.
- 1302.046 Trim should provide a surface with a 40 to 60 percent reflection factor.
- 1302.047 Desks and equipment should have finishes that fall within the 35 to 50 percent reflection factor range.
- 1302.048 Floor finishes should fall within the 30 to 50 percent reflection factor range.
- 1302.049 Chalkboards are available with practicable maximum reflection factors of 20 percent. This high factor range is practical only when the level of illumination is sufficiently high to overcome the loss in visibility due to reduced brightness difference between chalk and the light colored board.

1303 SONIC ENVIRONMENT

The school facility is designed, constructed, equipped and maintained in a manner which provides for the control of sound within a particular space so that internal sound can be heard well and unwanted sounds are prevented from intruding from the outside environment.

1303.01 General

Acoustic
~~Sound~~

1303.011 A sonic engineer should be consulted when designing educational spaces.

1303.012 Although it is often impossible to prevent the creation of unwanted noises, it is both possible and practicable to prevent excessive noises which inhibit hearing and create distractions.

1303.02 Zoning

1303.021 The concept of zoning as related to *Acoustical* sound engineering revolves about the basic premise that prevention is better than correction.

ENVIRONMENTAL CONTROLS

1300 COMMON ENVIRONMENTAL FACTORS

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School facilities must be in compliance with the requirements of the state Fire Code, state Health Department and other regulatory agencies.

1301 THERMAL ENVIRONMENT

References:

*Should be used
? without this*

*18
17
18
30
30*

- 2. I-16 and G-2,3
- Climatological Data for West Virginia
- American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. ~~State~~ (U2, 15,)
- Energy Consumption Guidelines for Educational Facilities
- ASA.

The school facility is designed, constructed, equipped and maintained in a manner which provides for maximum comfort and economy. The heating, ventilating and air-conditioning systems in all school facilities are in compliance with the requirements of applicable state regulatory agencies.

1301.01 Minimum functions of the space conditioning system employed to maintain the proper thermal environment in a school building are as follows.

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- ~~3.~~ Dilute and remove unpleasant odors by ventilation.
- 4. In special cases, the system must remove injurious or noxious gases, vapors, fumes and dust by the induction of outside air or by filtration, *exhaust.*

Outside Design Criteria:

<i>winter</i>	<i>Summer</i>
0°F db	92°F db
	76°F wb

Indoor

<i>winter</i> ²³⁴	<i>Summer</i>
70°F ± 2°F	73°F ± 2°F
55% ± 5% RH	50% ± 5% RH

Year Round
72 ± 2°F
40 ± 5% RH

should not overlap

$$\frac{529}{1000 \text{ ft}^3} \times \frac{15 \text{ CFM}}{1 \text{ P}} = .75 \text{ CFM/ft}^2$$

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With the increasing tendency toward longer school terms and, in some cases, year-round use of physical plants, it is recommended that serious consideration be given to summer air conditioning to provide the desired level of environmental control.

1301.02

Space conditioning systems should be of sufficient rated capacity to meet the building requirements under extreme local weather conditions. This will avoid sustained operation beyond the capacity of the system. ~~Outdoor design temperatures shall be based on climatological data collected by the U.S. Department of Commerce~~

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Operative Temperature

Heating systems of conventional design should provide the following temperatures.

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- B. Closed corridors, stairways, shops, laboratories and kitchens - ~~68~~ degrees F, measured 60 inches above the floor $70 \pm 2^\circ$
- C. Activity rooms, such as gymnasiums - ~~65~~ degrees F, measured 60 inches above the floor $70 \pm 2^\circ$
Special cases: Toilet rooms - ~~65~~ degrees F, locker rooms and showers - 78 degrees F and swimming pools - ~~83~~ degrees F, each measured 60 inches above the floor. 2° warmer than H_2O temp.
- D. The maximum temperature gradient from floor to 60 inches above the floor should not exceed ~~three~~ $2?$ degrees.

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- Utility Rooms .02 cubic feet per minute/feet squared
- Offices 20 cubic feet per minute/person
- Meeting Rooms 35 cubic feet per minute/person
- Teachers' Lounge 35 cubic feet per minute/person

Do Not state CFM

Refer to ~~current~~ current ASHRAE 62 std.

0.1 CFM/ft^2

4
? High

ASHRAE 62J

- B. If air conditioning is not provided, 12 to 15 air changes per hour may be desired in auditoriums or other assembly space in summer.

1301.023

Air Movement

Air motion, with proper distribution and without drafts, is essential in educational facilities. Also, important are effective air cleaning, positive temperature control, low noise level and acceptable humidity conditions.

- A. Air motion should generally fall within a range of 25 to 50 linear feet per minute and should be maintained at a constant rate with a pattern that prevents temperature stratification.
- B. Special provisions may have to be made in the window zone to overcome the effects of cold window down draft.
- C. Since positive pressure is usually desirable in conditioned areas, approximately 10 percent more air should be applied than is exhausted, thus minimizing infiltration.

1301.024

Humidity Control

While normal comfort conditions may be maintained with a wide range in relative humidity, it is desirable that actual levels not fall below 30 percent nor exceed ⁶⁰70 percent. This may require the installation of humidification equipment for winter use, while air conditioning may meet dehumidification requirements during warmer weather. It should also be stated that very dry conditions contribute to eye, nose, and throat irritation, while higher moisture promotes unhealthy mold growth. ok

NOTE: Special requirements for libraries, resource rooms and music facilities.

1301.025

Air Cleaning

High efficiency filtration.

Air cleaning is essential in areas where the air is heavily laden with dust or smoke. Filtering, washing, screening, precipitation, absorption or other cleaning methods may be used.

1301.026

Radiant Temperature

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by increased air temperatures. Special treatment of the window zone may be desirable to compensate for the greatly reduced radiant temperature there as compared with the rest of the room.

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1301.04 Determining the type of heating and ventilating system to be used is a highly technical problem dependent upon the original cost, the operating cost, the maintenance services available, the size of the building, the level of student comfort which can be economically obtained and, in some instances, the designer's preference. Technical advice concerning the type of heating and ventilating system to be utilized should be secured from consulting engineers qualified to deal with heating and ventilating problems. Because of the many different types of environmental systems available, the variations in owning costs by type installation and the relative costs of competing energy sources, the architect and/or engineer must make an in depth study to determine the best and most economical system and energy used to meet the objectives of the school board regarding space conditioning.

1301.05 Zone control heating and ventilating systems should be provided in order to secure the maximum utilization of facilities and the greatest economy in operation. Special education centers require special room control to satisfy student needs. Controls shall be a type that will permit easy interfacing of energy management systems.

Aud. r., gym, cafet,
Independent sys w/
CO₂ control.

1301.06 Boards of education, before accepting the heating contractor's work, should receive complete written instructions regarding the operation and maintenance of the mechanical equipment and should insist that a designated school employee be given direct instruction by one or more competent representatives of the contractor or equipment firms.

seasonal

1301.07 Inspection of Systems
The specifications should require an independent consulting engineering firm or other qualified individuals to inspect, balance and evaluate the finished system before title passes to the school board to assure that the system is installed as designed and is

AABC, NEBB
TAB

126CSR172

operating according to specifications.

NOTE: Warranties and brochures should be furnished to the board by the installation contractor on all equipment.

1301.08 The architect/engineer shall analyze the facility for its total energy efficiency and shall certify the energy usage in BTU/Gross S.F./Year. Energy usage must be within guidelines established by the Fuel and Energy Office, Governor's Office of Economic and Community Development.

1301.09 Interior Air Quality Standards

- A. There shall be no open-flame, fuel burning heaters in student and staff occupied spaces. This equipment shall be located in enclosed rooms or cabinets using outside air for combustion and be properly vented to the outside in a manner that exhausts all fuel gases.
- B. Materials which, under normal use conditions, may release formaldehyde in excess of .1 parts per million or asbestos dust, or which contribute to levels of indoor air pollutants considered potentially harmful to human health, shall not be permitted in building systems.
- C. Pesticides used for termite and rodent control shall not be used at levels that might cause contamination of air quality in interior spaces.
- D. Fresh air intakes shall be located to disallow contamination from stacks, vents or motor vehicles. Stacks shall be designed to completely exhaust flue gas away from the building.

footage?
10
15
20

1302 VISUAL ENVIRONMENT

Reference:

- 20. Lighting Handbook, Illuminating Engineering Society

The school facility is designed, constructed, equipped and maintained in a manner which provides a good visual environment. The facility is attractively painted and illuminated in a manner which most effectively contributes to an environment of visual accuracy and comfort. All schools are in compliance with requirements of applicable state regulatory agencies.

1302.01 General

126CSR172

level of range 30 to 150 footcandles on the reference task produced by combined radiant energy of daylight and any system of electric lighting used.

1302.03 Light Source

1302.031 Electric lighting systems should be evaluated on the basis of the following items:

- A. The lighting should produce a uniform distribution of shadow-free and glare-free illumination with the intensities necessary to maintain an acceptable brightness balance between the tasks and other surfaces within the total visual environment.
- B. Consideration should be given to probable deterioration of service efficiency under prevailing conditions of school operation and maintenance.
- C. Lighting fixtures should not produce a surface brightness on the fixture or on the ceiling that exceeds ten times the task brightness.

1302.032 Where daylight supplements artificial illumination, controls (preferably fixed) should be as follows.

- A. Exclude direct sunlight and at the same time admit about 15 percent of the outdoor brightness
- B. Provide a surface free from excessive brightness or glare
- C. Permit ease of maintenance

1302.04 Surfaces within rooms should be finished in accordance with the following items.

1302.041 Ceilings should provide a 70 to 90 percent reflection factor, flat, white surface.

1302.042 Upper walls (from wainscot or dado upward) should provide a surface with a reflection factor of at least 60 percent.

1302.043 Lower walls (from wainscot or dado downward) should provide a surface with a reflection factor of at least 60 percent.

1302.044 Where maintenance conditions permit, it is considered good practice to finish entire walls, from ceiling to floor, with

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surfaces having a 60 percent reflection factor.

- 1302.045 Finishes should be flat or matte on all interior surfaces, particularly at eye level or above.
- 1302.046 Trim should provide a surface with a 40 to 60 percent reflection factor.
- 1302.047 Desks and equipment should have finishes that fall within the 35 to 50 percent reflection factor range.
- 1302.048 Floor finishes should fall within the 30 to 50 percent reflection factor range.
- 1302.049 Chalkboards are available with practicable maximum reflection factors of 20 percent. This high factor range is practical only when the level of illumination is sufficiently high to overcome the loss in visibility due to reduced brightness difference between chalk and the light colored board.

1303 SONIC ENVIRONMENT

The school facility is designed, constructed, equipped and maintained in a manner which provides for the control of sound within a particular space so that internal sound can be heard well and unwanted sounds are prevented from intruding from the outside environment.

- ASA →*
- 1303.01 General *Acoustic*
 - 1303.011 A sonic engineer should be consulted when designing educational spaces.
 - 1303.012 Although it is often impossible to prevent the creation of unwanted noises, it is both possible and practicable to prevent excessive noises which inhibit hearing and create distractions.
 - 1303.02 Zoning
 - 1303.021 The concept of zoning as related to *Acoustical* sound engineering revolves about the basic premise that prevention is better than correction.

So what are they evaluating

want to see sample page

1 page that illustrates
how resource eval. is occurring

APPENDIX A - 2

126CSR13

5.5. Facilities - the West Virginia Board of Education shall develop, and the performance audit teams shall utilize, an assessment instrument for the evaluation of school facilities which follows generally the requirements of Policy 6200.

5.5.1. School location and site generally meet minimum standards. Recreational areas, walks, drives and parking are adequate. (Policy 6200 § 202-206)

5.5.2. Administrative and service facilities are generally adequate (Policy 6200 § 301). Teachers work room is adequate (Policy 6200 § 301.04). Counselor's office is adequate (Policy 6200 § 301.10)

5.5.3. Library/media & technology center meets standards (Policy 6200 §§ 303, 413, 514). 9 - 12 Computer Lab is adequate in facility equipment and materials (Policy 6200 § 615)

5.5.4. K classrooms - Each kindergarten room has sufficient space, equipment and materials (Policy 6200 § 402.01 and 4.02.05)

5.5.5. 1 - 12 classrooms - Each classroom has sufficient space, equipment and materials (Policy 6200 §§ 403, 502, 602)

5.5.6. K - 12 remedial - Each remedial instructional area has sufficient space, equipment and materials (Policy 6200 §§ 404, 503, 603)

5.5.7. Specialized instructional areas - Each art, music and PE area has sufficient space, equipment and materials (Policy 6200 §§ 410, 412, 504, 509, 510, 604, 608, 609)

5.5.8. 6 - 12 science facility - Each specialized instructional area in science has sufficient space, equipment and materials (Policy 6200 §§ 511, 610)

5.5.9. 7 - 12 - Media and auditorium facilities are adequate (Policy 6200 § 519, 616)

5.5.10 7 - 12 School site vocational - Main school site vocational space is available for business education and informational technology and other appropriate courses to meet curriculum needs. (Policy 6200)

5.5.11. Food Service areas and Health Service Unit are adequate (Policy 6200 § 301 and 302)

5.5.12. 7 - 12 - Vocational. Vocational equipment and materials in each curriculum area are adequate to meet curriculum needs. (Policy 6200)

Appendix B

- (i) Criteria not requiring routine evaluation §§1.1; 5.1.3; 5.6.8; 5.6.10; 5.6.20; 5.10.13; 5.10.16.

- (j) Criteria that are duplicative
 - 5.1.2 and 5.16 combined
 - 5.1.4 expanded weekly writing K-12
 - 5.1.14 adolescent curriculum offerings 9-12 established
 - 5.1.14 vocational curriculum offerings established
 - 5.2.1 and 5.2.2 combined
 - 5.2.3 and 5.2.4 combined
 - 5.5 rewritten Appendix A
 - 5.6.1., 5.6.2, 5.6.10 and 5.6.13 combined
 - 5.6.9 rewritten to require coordination with business vocational needs and vocational college offerings
 - 5.7.1, 5.7.2 and 5.7.3 combined
 - 5.8.2 and 5.8.3 combined
 - 5.8.4 and 5.8.5 combined
 - 5.9.1 and 5.9.4 combined
 - 5.9.2 and 5.9.8 combined
 - 5.10.1 through 5.10.6 each repeat earlier standards - combined
 - 5.10.10 and 5.10.11 combined
 - 5.11.1 and 5.11.3 combined
 - 5.11.4 , 5.11.5 and 5.11.6 combined
 - 2.3.3 and 2.3.4 altered.

IN THE CIRCUIT COURT OF KANAWHA COUNTY, WEST VIRGINIA

GLORIA TOMBLIN, et al.,

Plaintiffs,

v.

CIVIL ACTION NO. 75-1268

GLEN B. GAINER, III, AUDITOR OF THE
STATE OF WEST VIRGINIA, et al.,

Defendants.

AMENDED AGREED ORDER

This day came the West Virginia State Board of Education, by counsel, Michael J. Farrell; the Governor of West Virginia, by counsel, John T. Poffenbarger; the West Virginia State Superintendent of Schools, by counsel, Katherine L. Dooley, and moved the Court to accept the agreements hereinafter set forth as a resolution on the nonfunding issues pending before this Court. The plaintiff class, by counsel, Daniel F. Hedges, and the WVEA, by counsel, William B. McGinley, are in agreement with said motion. The Court took the motion under advisement and considering all the ramifications thereof is of the opinion that said motion should be granted.

The plaintiffs made a motion for an Order of Implementation seeking that resource evaluations be reinstated, that court action be taken to implement the Master Plan in terms of formula and other funding changes and that there be a commissioner appointed to oversee the implementation of the decree and for other relief. The defendant State Board of

SEP 20 2000

Education and Superintendent made the motion that H.B. 4306 be accepted in lieu of the Master Plan for such other relief set forth in their motion. The parties being interested in fully compromising all matters pending before the Court have agreed to the terms hereinafter set forth.

The parties recognize that the West Virginia Constitution gives constitutionally preferred status to public education. State ex rel Board of Education v. Rockefeller, 167 W.Va. 72, 281 S.E.2d 131 (1981); West Virginia Education Assoc. v. Legislature of West Virginia, 179 W.Va. 381, 369 S.E.2d 454 (1988). Education is the primary responsibility of State government in the State of West Virginia. Article XII of the West Virginia Constitution requires that the Legislature develop and fund a high quality education system. Pauley v. Kelly, 162 W.Va. 672, 255 S.E.2d 859 (1979); West Virginia Education Assoc. v. Legislature of West Virginia, 179 W.Va. 381, 369 S.E.2d 454 (1988) (with the general supervision of the school system being entirely vested in the West Virginia Board of Education); West Virginia Board of Education v. Hechler, 180 W.Va. 451, 376 S.E.2d 839 (1988) (implicit in this definition of the entire system of schools are (1) good physical facilities, instructional materials and personnel; and (2) careful State and local supervision to prevent waste and to monitor pupil and teacher administrative competency; Pauley v. Kelly, 162 W.Va. 672, 255 S.E.2d 859 (1979). The parties recognize that in 1990, evaluation of resource needs, which had been accomplished utilizing the Criteria of Excellence, was altered by passage of W.Va. Code §18-2E-1. The parties also recognize that

(1) substantial progress has been made in the implementation of this Court's decree in improvement of facilities through a statewide facility planning and funding mechanism which prevents waste and promotes the efficient use of existing resources, a significant step in the implementation of the Master Plan, and that (2) with the exception of high school curriculum offerings and vocational offerings that the significant portion of the Master Plan has been incorporated into State Board of Education policy.

It is also recognized that all funding needs verified as a result of resource evaluation cannot be immediately funded. West Virginia recognizes and wants to give public primary and secondary education the priority in funding that it deserves but also recognizes that the proper balance of (a) curriculum, facilities and equipment improvements and (b) formula changes is essential given the limited resources of the State.

The State seeks to assure that all of its students are able to compete academically and vocationally in the national and international economy. For that reason, the State Superintendent and the State Board of Education do hereby state their commitment to the highest quality of education, and that priority will be given to those funding needs which produce the greatest benefit for students at the earliest possible time. That is not to suggest that any of the funding needs hereinafter set forth will not be pursued on a timely basis.

Upon the agreements of the parties and the Court's review of the applicable law, it is hereby **ORDERED** and **DECREEED** that:

1. Identification of Resource Needs.

~~b)~~ The State Board of Education shall fully implement resource evaluations as a part of the accreditation and evaluation process. The process will meaningfully evaluate the needs for facilities, personnel, curriculum, equipment and materials in each of the county's schools and how those impact program and student performance. (See e.g., the proposed changes, Appendix A).

There is a controversy about whether a number of evaluation criteria set forth in the Training Manual and Handbook for Education Performance Audits which (a) do not require routine evaluation and should not continue to occupy a significant role in the accreditation process because they are generally followed or are not significant issues affecting delivery of education, or (b) are duplicative, will be reviewed by a committee of the State Board of Education and substantive changes made. (See Appendix B). The high school curriculum offerings and vocational offerings to be available in a high quality school and system shall be listed and all reviewed in the accreditation process. The offerings shall be consistent with elective offerings listed in Policies 2510 and 2520 as updated from time to time by the State Board of Education. The vocational offerings shall be developed consistent with paragraph 3(b) and included in the manual and evaluated in the accreditation process.

~~b)~~ In effectuating the resource evaluations, Chapters 1 through 14 of Policy 6200 shall be used as the guiding document in the evaluation of the facilities and equipment.

Defering to the efforts on what features should be now and in the future!

portion of the evaluations in all schools throughout the State; and that Policy 6200 shall be

updated by the Board to: (a) delete Chapter 15; (b) add computer technology; (c) continue

detailed description of facility *what are the details? How long - Continuum to learning!* and equipment needs in each program; (d) assure all service

areas are covered; and (e) otherwise reflect that it is the document for facility and equipment

evaluation in all of the schools in the State. The parties recognize that corrective measures

to be taken in response to any identified resource deficiencies will always of necessity be

subject to the feasibility of modifying existing facilities, availability of funding and

prioritization of educational needs.

c) Performance audit teams shall be made up primarily of professional personnel employed by the State who routinely perform the same functions in the audit process to insure consistency in the evaluation process.

d) The State Board of Education shall assure in the accreditation process that writing shall continue to be a part of every child's weekly educational curriculum in grade 1 through 12, that writing takes place in every appropriate class, and that the effectiveness of the writing education shall be thoroughly evaluated in the process of school evaluation.

e) The Director of the Office of Education Performance Audits shall propose recommendations regarding policy and regulatory changes contemplated by Paragraph 1 of the Order on or before the October, 2000 meeting of the State Board of Education, to be placed in policy, if accepted, on or before March 1, 2001, with pilots to begin thereafter, and

full implementation by July 1, 2001.

2. Testing.

a) In the implementation of the accreditation/evaluation process, and in particular that portion of the evaluation relating to student success rate, the State Board of Education shall establish a minimum of six criteria for the evaluation of testing data which shall include, but shall not be limited to: (1) annual changes in students' scores; (2) trends in scores; (3) goals for schools in average scores. This is a value added approach.

The goals of the testing and evaluation process shall be to (i) remove any adverse impact upon schools related to the demographics of the children attending the school, and (ii) improve performance of all children attending all schools. The composite of these criteria shall refine these goals.

b) Questions about the validity and effectiveness of the tests used in the school of this State (grades 3-12) have been raised, both as to basic skills and substantive area tests. Testing procedures/tests to be employed shall be identified by a committee consisting of seven persons: (i) four designees of the State Board of Education, (ii) one designee of the State Legislature, (iii) a designee of WVEA, and (iv) an educator designated by counsel for the plaintiff class of school children. The committee shall, by January 1, 2002, identify basic skills and substantive area tests to be considered by the State Board of Education for implementation on or before the school year 2002-2003, and in addition identify the types of testing mechanisms to be considered by the State Board of Education and be in place

beginning September 2004, and submit the same to the State Board of Education. The decisions of the committee shall be by consensus.

3. Substantive Needs. Certain substantive needs exist in many West Virginia schools and require the development of effective strategies as hereinafter set forth:

a) In order to pursue a remedy for (i) shortage in foreign language teachers, (ii) art and music program limitations and (iii) projected teacher shortages in all areas in upcoming years, in each of the three areas a committee composed of one legislator or designee, three education specialists, and one higher education supervisor shall be appointed by the State Board of Education, with one of the education specialists to be designated by WVEA and one to be designated by counsel for the plaintiff class of school children. Said committees shall develop a strategy and present a needs analysis to the State Board of Education, Governor, and Legislature initially by January 1, 2001 and annually thereafter as the subject area warrants.

b) Vocational Offerings. In order to address delivery of appropriate vocational offerings in public secondary schools in every county in the State, a committee composed of one legislator or designee, three vocational educational specialists, one higher education supervisory person, and a business representative, including one education specialist designated by WVEA and one education specialist designated by counsel for the plaintiff class, shall be appointed by the State Board of Education. The committee shall develop and submit to the State Board of Education for its consideration. strategies for the public schools

to remedy this inadequacy which shall include (a) personnel needs; (b) alternate methods of delivery; and (c) interfacing with community and technical colleges offerings. A needs analysis will be presented to the State Board of Education, Governor, and the Legislature by July 1, 2001, and annually thereafter as the subject area warrants.

The State Department shall supply sufficient staff to coordinate development of technology vocational education in every county of the State. The State Board of Education shall assure that the evaluation and accreditation process includes meaningful evaluation of the vocational offering components.

c) Science facilities and equipment. In order to address inadequacies in some school science facilities for grades 7-12 students, a committee of four persons consisting of one legislator or designee, one State Board of Education designee, one designee of WVEA and one designee of counsel for plaintiff class of school children. The committee will devise strategies to immediately address this issue and present a needs analysis to the State Board of Education for its consideration, with copies to the School Building Authority, Governor, and the Legislature, by January 1, 2001 and annually thereafter as warranted.

4. The resolution of the pending motions filed by the plaintiff class and other plaintiffs, as reflected in this Order, does not change, alter, diminish or otherwise modify the constitutional and statutory powers of the West Virginia State Board of Education to supervise the K-12 public school system of the State of West Virginia. The advisory committees provided for herein are not designed to, in any way, impinge upon that

constitutional and statutory authority.

5. The plaintiffs retain the right to seek further relief from this Court regarding issues of nonimplementation.

FINALLY, the parties address the status of the Master Plan (Chapters II and III) adopted by this Court by its Order dated March 4, 1983 and the motion by the State Board of Education that the Court recognize the policies of the State Board of Education adopted from the Master Plan, including but not limited to: Policy 2510 - Assuring the Quality of Education: Regulations for Education Programs; Policy 2520 - Instructional Goals and Objectives for West Virginia Schools; and Policy 6200 - Handbook on Planning School Facilities together with the requirements hereinbefore set forth in paragraphs 1 through 3 of this Order as the standards of a high quality education, which are so recognized.

The parties further agree that the process set forth in W.Va. Code §18-2E-5 be used as the evaluation process for ascertaining delivery of a high quality education for the students in West Virginia so long as the changes hereinbefore contemplated, in paragraphs 1-3, including but not limited to, the evaluation of resource needs, are included, and govern the implementation of such process.

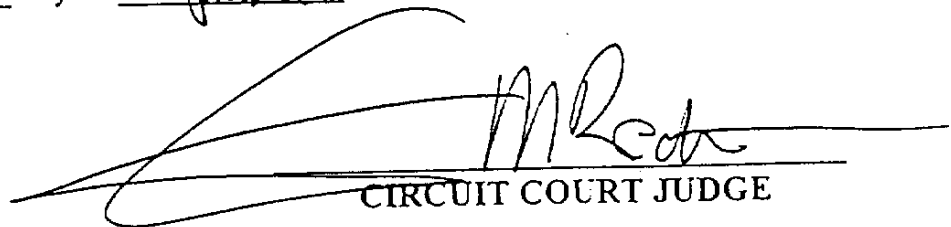
Therefore, this Order is adopted as a modification of this Court's Order of March 4,

1983 and to the extent that they are in conflict, said Order is hereby vacated. The Court expressly grants the plaintiffs' motion to reinstate resource evaluations, as moulded, and expressly grants the State Board of Education's motion to recognize W.Va. Code §18-2E-5 as the implementation process for ascertaining compliance with the constitutional mandate.


The plaintiffs' pending motion to appoint a commissioner is withdrawn. The Plaintiffs have pending before this court motions relative to funding issues articulated by this Court in its original opinion, further identified by the Department of Education and the State Board of Education in the Master Plan adopted by the Court in 1983, and reiterated by this Court in its 1997 Order. The plaintiffs contend that the issues include, but are not limited to, the areas of (1) facility financing, (2) the elimination of the excess levy as an essential part of educational financing, and (3) all Steps of the funding formula including the primary problem areas of Step 1 and Step 2 of the formula.


It is so ORDERED.


Entered this 12th day of September, 2000.

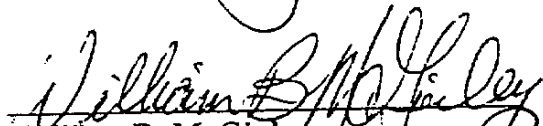

CIRCUIT COURT JUDGE


September 2000
Cecily A. Dalton


Michael J. Farrell
Counsel for WV State Board of Education


John T. Poffenbarger
Counsel for Governor Cecil H. Underwood


Katherine L. Dooley
Counsel for Defendant State Superintendent
of Schools


William B. McGinley
Counsel for Intervenor WV Education
Association


Daniel F. Hedges
Counsel for Plaintiff Class

126CSR13

5.1.12. IGOs. The curriculum is based, at a minimum, on the instructional goals and objectives approved by the West Virginia Board of Education. (Policy 2520) The mission of the school is consistent therewith. Copies are provided to the teacher and public upon request. (Policy 2510)

5.1.2+46. Programs of study are provided in grades K-12 as listed in Policy 2510; (Policy 2510, Policy 2520) K-2 English Language Arts, Mathematics daily; also required Science, Social Studies, Art, Music, PE, Health; 3-8, English Language Arts, Math, Science, Social Studies daily; also required Art, Music, PE, Health; in addition 5-8 must include Career Exploration, Developmental Guidance, Foreign Language, and General and Instructional Music no later than grade 6. (Policy 2510, 2320)

5.1.3. The high school curriculum (grades 9-12) ensures student access to those courses identified by the State Board of Education as components of a high quality education: (a) art education - 4 offerings; (b) foreign language - 4 levels of one language, 2 levels of second language; (c) health education - 2 offerings; (d) english language arts education curriculum - drama, theater, journalism, mass media, television, film, speech, creative writing, technical writing, desk top publishing, an english, english college courses, yearbook, newspaper, library/media; (e) mathematics education curriculum - elective offerings - applied mathematics I, applied mathematics II, geometry/applied geometry, algebra II, trigonometry, probability and statistics, pre-calculus, ap calculus, discrete mathematics, algebra/geometry preparation, algebra support, ap mathematics, mathematics college course; (f) music education - 6 offerings; (g) physical education - 5 offerings; (h) science - biology and science - 3 offerings; chemistry - 3 offerings; health/environmental science - 2 offerings; physics - 2 offerings; (i) social studies education curriculum offerings - civics/government, economics, geography, ap social studies, 2 ap courses. It is recognized that it will take time for some schools to meet these curriculum goals. Distance learning, cooperative teaching and other approaches should be employed to maximize curriculum offerings.

5.1.4. Vocational Curriculum - The program of student for vocational courses includes those offerings identified by the Board of Education as components of a high quality education: (a) business education, (b) computer science, (c) Information/Technology, (d) Industrial/Recreational, (e) Wood Products, (f) Food Service, (g) Health Care, plus at least 10 other electives consistent with state board vocational programming policy.

5.1.5. Vocational curriculum is consistent with job market needs and employability.

5.1.45. Honors and advanced placement education programs are provided in grades 9-12 (W. Va. Code §18-2-3a; & 2510).

5.1.57. Curriculum and instruction generally Curriculum and instructional practices reflect high expectations for all students. (Policy 2510) Staff demonstrate the use of the various

Bill Elswick

G. A. McClung

From: Grogg, Sherry [SGrogg@wvsba.state.wv.us]
Sent: Monday, June 11, 2001 9:11 AM
To: 'gmclung@access.k12.wv.us'

G.A.

We have received comments concerning Policy 6200 from the following:

1. SBA Staff
2. Greg Williamson, Williamson Shriver Gandee Architects
3. Michael Wesner, Scheeser, Buckley, Mayfield, Inc.
4. Rod Watkins, ZMM, Inc.

If we receive any more comments today, I will send you the name today.

David is sick today, so we will meet first thing tomorrow and comply all the comments for you and I will have them all to you by 4:00 tomorrow. If you need any additional information from me today, please let me know.

Thanks for all your help.

Sherry

Bill:

Sherry formally notified me Friday that she had comments concerning 6200. Today is 6-11-01 - They will be here today or tomorrow. I told her I would speak to you about this notification to make certain it was ok with you.

Glen Alan

ENVIRONMENTAL CONTROLS

1300 COMMON ENVIRONMENTAL FACTORS

All new or renovated schools are to be designed, constructed, furnished, and maintained in a manner which incorporates appropriate technology into the common environmental factors which facilitate the educational program of the school. Spatial and aesthetic considerations are incorporated into the school design, construction, equipment, and maintenance. The thermal, visual, and acoustical systems are balanced in a manner which properly controls the environment and facilitates the educational program of the school for all seasons.

Determining the type of HVAC system to be used is a highly technical problem dependent upon the life cycle cost, which includes the original cost, the operating cost, the maintenance services available, and the size of the building. Technical advice concerning the type of heating and ventilating system to be utilized shall be secured from registered professional mechanical engineers certified to deal with HVAC problems. Because of the many different types of environmental systems available, the variations in owning costs by type, installation, and the relative costs of competing energy sources, the architect and/or engineer must make an in depth life cycle cost analysis to determine the best and most economical system and energy used to meet the objectives regarding space conditioning. The life cycle cost analysis shall be part of the design development documents.

School facilities must be in compliance with the requirements of the State Fire Code, State Health Department, and other regulatory agencies.

Comment: Life cycle costs are typically treated as an additional services. SBA needs to recognize these added costs in establishing fees.

1301 THERMAL ENVIRONMENT

References:

- 2.
6.
19.
20.
24.

The school facility is designed, constructed, equipped, and maintained in a manner which provides for safety, comfort, and economy. The heating, ventilating, and air-conditioning systems in all school facilities shall be in compliance with the requirements of applicable regulatory agencies.

Deleted: maximum

1301.01 Minimum functions of the space conditioning system employed to maintain the proper thermal environment in a school building are as follows.

- A. Supply heat for warm-up and balance heat losses from the room to the outside.
B. Supply conditioned outside air to meet ventilation requirements.
C. In special cases, the system must remove injurious or noxious gases, vapors, fumes, and dust by the induction of outside air, filtration, and/or exhausting contaminants.
D. Minimum Outside design criteria
Winter - 0°F. db
Summer - ASHRAE 0.4% Climatological Data (Cooling and Dehumidification Data)
E. Indoor occupied design criteria
Winter - 68-72°F. ± 2°
Summer - 72-75°F, humidity 60% rH

Comment: Will this apply to schools not used during summer?

Comment: This would require providing humidification in schools. ASHRAE 62 has also recently eliminated this provision from consideration in an addenda

Deleted: , humidity 30% rH

Comment: This implies that all spaces would require air conditioning. Suggest distinguishing between area that air conditioning is not required (i.e. locker rooms, electrical rooms, mechanical rooms, kitchens, gyms, storage rooms)

1301.02 Space conditioning systems should be of sufficient rated capacity to meet the building requirements under design local weather conditions as per 1301.01. This will avoid sustained operation beyond the capacity of the system.

Comment: Extreme can not be defined and implies that the system should be design to maintain comfort under any possible condition

1301.021 Operative Temperature
It is desirable that HVAC systems provide a maximum temperature gradient not to exceed 2°F from floor to 60 inches above the floor.

Deleted: extreme

1301.022 Air supply
Space conditioning systems will have sufficient capacity to provide for introduction of outside air. The amount of outside air will meet guidelines set forth by current ASHRAE Standard 62.

1301.023 Air Movement
Air motion, with proper distribution and without drafts, is recommended in educational facilities. Also important are effective air cleaning, temperature control, low noise level, and acceptable humidity conditions.

A. Air motion should generally fall within a range of 25 to 50 feet per minute and should be maintained at a constant rate with a pattern that prevents temperature stratification.

B. Special provisions may have to be made in the window zone to overcome the effects of cold window down draft.

C. Since positive pressure is required in conditioned areas, with the exceptions of bathrooms, custodial closets, science areas, and other areas that may have air contamination, approximately 5-10 percent more air should be introduced than is exhausted, thus minimizing infiltration.

D. Avoid unnecessary use of duct liner. If duct liner is used it shall be rated at 5000 fpm velocities, and be treated with an EPA approved anti-microbial agent proven to resist microbial growth as determined by ASTM G21 and G22.

E. Velocity of air across cooling coils shall not exceed 500 fpm to prevent moisture carryover.

F. Room thermostats and easily accessible controls to occupant may be used to regulate space temperatures, but must not be used, to control the fan operation.

G. The condensate traps shall be designed to operate at greater than 1" w.g. above the static pressure of the HVAC unit and must be trapped properly to allow for proper drainage.

H. If flexible duct is to be used, the duct shall be of the internal corrugated metallic type or internal high-pressure fabric with a pressure rating of at least 10" w.g. positive and 5" w.g. negative with a bursting pressure of at least 2 times the working pressure, and externally insulated. The duct shall be rated for a velocity of 5000 fpm. There shall be a maximum of one (1) 90° bend and a maximum length of five (5) feet.

I. Include in the selection of the grilles, registers, and diffusers the desired NC (noise coefficient) rating that meets the ASA recommendations.

Comment: This is redundant with 1301.09 A.

Deleted: temperatures,

Deleted: but must not be able to otherwise change the operation of the HVAC equipment (e.g., unable

Comment: I believe you are trying to ensure that the fan or AHU must operate continuously when occupied. What if the fan speed controls were located under locked cover or the space is an unoccupied space like an electric room?

Deleted: 5

Comment: Some allow for up to 10 feet – we typically use six feet. How stringent will this be applied?

Comment: Define ASA in this document for other readers or provide a reference.

Comment: We assume that 30% winter humidity requirements will be omitted.

Comment: Not aware of any potential application for precipitation – keeping it listed here makes this language look excessive.

1301.024 Humidity Control
While normal comfort conditions may be maintained with a wide range in relative humidity, it is desirable that actual levels meet the requirements set forth in Sections 1301.01E1 & E2. It should also be stated, that higher sustained humidity promotes unhealthy mold growth.

Deleted: precipitation,

1301.025 Air Cleaning
Air cleaning is essential in all areas. Filtering, washing, screening, absorption, or

other cleaning methods may be used. The HVAC units should be installed with the most appropriate filtration available for the type of equipment selected. It is recommended that a minimum of 25% ASHRAE dust spot filter efficiency be used (MERV 7). The filters efficiency rating shall meet the latest ASHRAE Test Standard 52.1 and 52.2.

Comment: Std 52.2 covers the MERV rating system and complements Std. 52.1.

Deleted: 1

1301.03 In new or substantially remodeled schools, some form of cooling system is necessary for schools in areas where the outside temperature is above the optimum during a portion of the school year. This cooling system shall meet all of the standards set forth in Chapter 13 of this policy.

1301.04 Building Control systems will be provided in order to secure the maximum utilization of facilities and the greatest economy in operation. Controls shall be a type that will permit easy interfacing of energy management systems and approved by the WVDE and SBA.

Comment: Will the SBA or WVDE be accepting responsibility for rejecting certain manufacturer's or providing an approved list? How will the controls be approved; by contractor, manufacturer, or family of controllers?

1301.05 Local boards of education, before accepting the heating contractor's work, should receive complete training regarding the operation and maintenance of the mechanical equipment and should insist that a designated school employee(s) be given direct instruction by one or more competent representatives of the contractor or equipment firms. The training shall be completed prior to the turnover of the building to the Board of Education. For major mechanical and electrical equipment and systems (including HVAC control systems) there shall be a minimum of 1 day follow-up training at 6 months after facility turnover. All training shall be video-taped and turned over to the county Board of Education.

1301.06 Inspection of Systems

1301.061 The specifications shall include the hiring by the Board of Education an independent AABC, certified air balancing contractor to inspect, balance and evaluate the finished HVAC system before title passes to the school board to assure that the system is installed as designed and is operating according to specifications. An independent EEC, and/or NEBB balancing contractor can also be used as a balancing contractor with prior approval of the design engineer unless directed by the SBA or WVDE to do otherwise. This evaluation shall only be performed with an owner's representative present.

Comment: Owner's representative does not necessarily mean the engineer. This could mean the clerk of the works, owner's employee or other designated person. If only the engineer then this would need addressed under additional services.

NOTE: Warranties and brochures shall be furnished to the board by the installation contractor on all equipment. The record product data shall be submitted in Adobe ".pdf" or other acceptable commonly used electronic file format burned to a single CD when available, along with bound copies of the product data.

1301.062 The county Board of Education should consider a commissioning agent to assure that the HVAC system is designed and installed in accordance with the county's requirements.

1301.07 The architect/engineer shall analyze the facility for its total energy efficiency and provide an energy simulation analysis in BTU/Gross S.F./Year. Energy usage must be within guidelines established by the Fuel and Energy Office, Governor's Office of Economic and Community Development.

Comment: Suggest providing contact information or provide a reference for other to obtain this information.

1301.08 Indoor Air Quality Standards

A. There shall be no open-flame, fuel burning heaters in student and staff occupied spaces. This equipment shall be located in enclosed rooms or cabinets using outside air for combustion and be properly vented to the outside in a manner that exhausts all fuel gases using appropriate piping

as per ASHRAE and AGA standards

- B. Outside air intakes shall be located no closer than 15 feet or the standards set forth by ASHRAE for stacks, vents, motor vehicles and other sources of contaminants, whichever is greater, to minimize cross contamination. Stacks shall be designed to exhaust flue gas away from the building.
- C. Electric powered carbon monoxide monitors shall be installed in each area that produces combustion gases.
- D. Outside air dampers shall fully close when the units are off and maintain at least a pre-set minimum position in accordance with ASHRAE Standard 62 during occupied operation for classrooms.
- E. Heat Recovery systems are recommended for 100% outside air systems. All heat recovery systems shall be constructed to limit cross over contamination.
- F. It is desired that return air dampers should be sized to produce air velocities of 1500 to 2000 fpm for thorough mixing. The damper should be set such that any deflection of air is towards the outside air to create maximum turbulence and mixing. The mixing damper shall extend across the full width of the unit even though the physical location of the return duct indicates that it could enter through the side to eliminate stratification.
- G. The HVAC cabinet insulation shall have a non-porous facing on the side exposed to the air stream in areas of potential moisture buildup (cooling coil, outside/mixed air section, etc.). The outside air ductwork located indoors shall be externally insulated only.
- H. All drain pans shall be, if available, double sloped to prevent moisture accumulation.

Comment: ASHRAE issued Addenda 62aa that provided a procedure for most applications for outside air intakes. This does not match that proposed addenda to Standard 62.

Deleted: buildup(

Deleted: lined

1301.09

HVAC System

HVAC systems shall include the following criteria:

- A. Air velocities across HVAC cooling coils should not exceed 500 fpm unless documentation is provided that shows moisture carryover will not occur at design conditions. The coils shall have a maximum of 12 fins per inch.
- B. Each classroom shall constitute a zone and have its own temperature control device that directly regulates room temperature.
- C. Temperature control devices in the classroom shall have minimum accuracy of $\pm 1^\circ\text{F}$ and humidity control devices of $\pm 3\%$ rH for a retrofitted system and $\pm 0.5^\circ\text{F}$ tolerance and $\pm 3\%$ rH for new systems.
- D. Fans should be selected for maximum efficiency that will yield minimum noise generation.
- E. Permanent I. D. labels on all HVAC and electrical equipment shall be installed. Labeling of electrical equipment shall include the equipment it serves.
- F. The mechanical engineer shall provide within the specifications for a contractor to include a preventative maintenance program for all HVAC equipment including: BAS software, listing of belts, filters, spare parts, nameplate data, recommended maintenance increments for preventative maintenance tasks, and training on preventative maintenance.
- G. Provide a water meter on condenser water makeup steam systems. Consideration for a water meter on the chilled water makeup shall also be given.
- H. Provide lockable ball valves on expansion tanks.
- I. Provide pressure gauges on expansion tanks.
- J. Provide appropriate isolation valves on all equipment.
- K. Provide water balance ports on all hydronic equipment as per

Comment: This is ideal but not always possible with VAV systems and DX.

- manufacturer's recommendations.
- L. Recommend providing stainless steel, ceramic, or fiberglass for cooling tower basins and other surfaces in contact with condenser water in a cooling tower.
 - M. All mechanical, plumbing, and electrical record drawings and/or as-built drawings are to be submitted in a format readable in AutoCAD release 14 or greater format burned to a CD, in addition to reproducible or paper sets if requested by the county, WVDE, and/or SBA.
 - N. It is recommended, if available, that HVAC units that have multiple compressors have independent refrigerant circuits for each compressor.
 - O. All drain ports on back-flow preventers, pressure relief valves, and safety valves shall be piped to a drain in accordance with the local plumbing code.
 - P. All closed loop water systems shall use scale and corrosion inhibitors as a part of the general water treatment process.
 - Q. All open loop condenser water systems shall use biocide(s) and scale corrosion inhibitors as a part of the general water treatment process. These products shall be automatically controlled and fed as directed by a competent water treatment vendor. Water treatment controls for the open loop system shall consist of a conductivity controller, automatic blow-down valve, and chemical feed pump for each water treatment product to be fed. All water treatment controls equipment and chemicals shall be located in a temperature controlled space in close proximity to the cooling tower.
 - R. The blow-down drain for cooling towers shall be piped to an appropriate drain line.
 - S. All exterior water lines and chemical feed lines must be protected from freezing conditions by insulation and heat tracing or other approved means.

Deleted: P

Deleted: e

Comment: What about the pipe, pumps, etc. that come in contact with the condenser water.

1301.10

DDC control systems

- A. For new buildings and significant additions where there may be a risk of a contaminant entering into the building, provide a program for emergency shelter-in-place, using one input to shut down all HVAC equipment and isolate the facility from airborne hazards and contaminants.
- B. Label all components in interface and control panels.
- C. Provide laminated schematic diagram and attach to inside of interface panel.
- D. Graphics shall accurately represent facility components and architecture.
- E. Analog BCS input and output devices shall be field calibrated or adjusted to represent actual positions at the time of installation.
- F. Nomenclature on inputs and outputs shall represent true logical positions of the devices controlled.
- G. All external devices on the DDC system shall have I.D. labels.
- H. Provide sufficient schedules to cover yearly school holidays and special events.
- I. List spare parts needed for DDC system.
- J. An accurate and detailed set of as-builts, sequence of operation, and control drawings are to be provided for the HVAC system and controls.

1302 VISUAL ENVIRONMENT

Reference:
21.

Comment: Much of this information should be included in the architectural section since it's outside the control of the design engineer

The school facility is designed, constructed, equipped, and maintained in a manner which provides a good visual environment. The facility is attractively painted and illuminated in a manner which most effectively contributes to an environment of visual accuracy and comfort. All schools are in compliance with requirements of applicable regulatory agencies.

1302.01 General

1302.011 Technical assistance from a qualified professional engineer is generally required to insure adequate visual conditions within spaces.

Deleted: lighting
Deleted: s

1302.012 Plans and specifications for new or substantial renovations should be developed to achieve as many of the desired lighting goals as possible in the original construction with due consideration for the need of maintaining a balance between the visual and other major environmental factors.

Comment: This is commentary language – consider folding it into beginning paragraph of this section.

1302.013 Proper visual environment lessens the expenditure of energy required for students and teachers to carry on visual tasks in the instructional space.

Comment: This is commentary language – consider folding it into beginning paragraph of this section

1302.014 A sufficient quantity of light is essential for good visual conditions. However, a task becomes visible, not by the light falling upon it, but by reflected brightness.

Comment: This is commentary language – consider folding it into beginning paragraph of this section

1302.015 Visual comfort and efficiency may best be achieved in an environment in which the brightness difference would be as small as possible between the task and the brightest surface and between the task and the darkest surface in the total visual field while the general level of illumination is high.

Comment: This is commentary language – consider folding it into beginning paragraph of this section

1302.016 Informal seating in the instructional space has gained wide acceptance. The visual field, therefore, must be recognized as encompassing all four walls, the floor, and the ceiling.

Comment: This is commentary language – consider folding it into beginning paragraph of this section

1302.02 Desirable Brightness

1302.021 In an instructional space, the brightness of any surface viewed from any normal sitting or standing position should not be excessively greater than the brightness of the visual task. As the high brightness of surfaces in the visual field approaches the brightness of the task, visual comfort and efficiency increase.

1302.023 The brightness of surfaces immediately adjacent to the visual task is more critical in terms of visual comfort and efficiency than that of more remote surfaces in the visual field. These adjacent surfaces have lower acceptable brightness limits than surfaces farther removed from the task.

Comment: Duplicated information
Deleted: 1302.022 In an instructional space, the brightness of any surface viewed from any normal standing or sitting position should not be excessively lower than the brightness of the visual task. As the low brightness of the surfaces in the visual field approaches the brightness of the task, visual comfort and efficiency increase. ¶

1302.024 The brightness difference between adjacent surfaces in the total visual field should be reduced to an acceptable minimum.

1302.025 The characteristics of any lighting system should be such that direct and reflected glare are not objectionable. If the brightness difference produced by a lighting system is held within the limits stated in Goals 1, 2, and 3 of IES standards, direct and reflected glare will not be objectionable.

1302.026 Daylight and electric light systems should conform to the same brightness and brightness difference goals, and both systems should be coordinated in design to assure the effective contribution of both.

1302.027 Any lighting system should be designed in such a manner that it will contribute to

a cheerful, friendly, and aesthetically pleasing instructional space environment.

- 1302.028 The brightness goals stated above assume an illumination level of range 30 to 150 foot-candles on the reference task produced by combined radiant energy of daylight and any system of electric lighting used.
- 1302.03 Light Source
- 1302.031 Electric lighting systems should be evaluated on the basis of the following items:
- A. The lighting should produce a uniform distribution of shadow-free and glare-free illumination with the intensities necessary to maintain an acceptable brightness balance between the tasks and other surfaces within the total visual environment.
 - B. Consideration should be given to probable deterioration of service efficiency under prevailing conditions of school operation and maintenance.
 - C. Lighting fixtures should not produce a surface brightness on the fixture or on the ceiling that exceeds ten times the task brightness.
 - D. Fluorescent lamps are to be specified as T-8 or better with a color temperature of 3500K or greater, a CRI (color rendition index) of 82, and non-mercury containing as determined by TCLP (Toxicity Characteristic Leaching Procedure) testing as a minimum.
- 1302.032 Where daylight supplements artificial illumination, controls (preferably fixed) should be as follows.
- A. Exclude direct sunlight and at the same time admit about 15 percent of the outdoor brightness
 - B. Provide a surface free from excessive brightness or glare
 - C. Permit ease of maintenance
- 1302.04 Surfaces within rooms should be finished in accordance with the following items.
- 1302.041 Ceilings should provide a 70 to 90 percent reflection factor, flat, white surface.
- 1302.042 Upper walls (from wainscot or dado upward) should provide a surface with a reflection factor of at least 60 percent.
- 1302.043 Lower walls (from wainscot or dado downward) should provide a surface with a reflection factor of at least 60 percent.
- 1302.044 Where maintenance conditions permit, it is considered good practice to finish entire walls, from ceiling to floor, with surfaces having a 60 percent reflection factor.
- 1302.045 Finishes should be flat or matte on all interior surfaces, particularly at eye level or above.
- 1302.046 Trim should provide a surface with a 40 to 60 percent reflection factor.
- 1302.047 Desks and equipment should have finishes that fall within the 35 to 50 percent reflection factor range.
- 1302.048 Floor finishes should fall within the 30 to 50 percent reflection factor range.
- 1302.049 Marking boards are available with practicable maximum reflection factors of 20 percent. This high factor range is practical only when the level of illumination is

Deleted: Characteristic

Comment: Architectural Issues

sufficiently high to overcome the loss in visibility due to reduced brightness difference between chalk and the light colored board.

1303 SONIC ENVIRONMENT

The new or substantially renovated school facility is designed, constructed, equipped, and maintained to meet ASA guidelines, which provides for the control of sound within a particular space so that internal sound can be heard well and unwanted sounds are prevented.

Comment: Most of this section needs incorporated into the Architectural Section since many of these issues impact the building design.

1303.01 General

1303.011 The services of an acoustical engineer may be desired and should be considered when designing educational spaces.

Comment: SBA need to recognize this as an additional consultant and additional services in design fees.

1303.012 Although it is often impossible to prevent the creation of unwanted noises, it is both possible and practicable to prevent excessive noises which inhibit hearing and create distractions.

1303.02 Zoning

1303.021 The concept of zoning as related to acoustical engineering revolves about the basic premise that prevention is better than correction.

1303.022 Site

- A. Every effort should be made to acquire a site that has a relatively low ambient noise level.
- B. Planting of trees, bushes, and shrubs around the perimeter of the site, particularly on noisy sides, will provide added noise reduction.

1303.023 The Building

- A. It is important, where possible, to group noisy activities with other noisy activities, such as playgrounds, gymnasiums, music areas, and shops.
- B. Administrative facilities, general instructional spaces, media centers, and other similar areas should be grouped together in a quiet zone somewhat removed from noisy activities.
- C. Intermediate between the two extremes may be rooms where machines are used, the cafeteria, and home economics facilities.
- D. If these various activity levels are not adequately separated by space, then it is necessary to intercept these noises to the degree necessary to prevent them from conflicting with each other.

1303.024 Instructional and Service Facilities

- A. Administrative Offices
 - 1. Noise reduction by treatment, in the form of absorbent materials, is invariably mandatory to keep speech levels low and to keep sound from office machines and traffic noise at a minimum.
 - 2. It is advisable to provide sound-intercepting barriers to keep noisy activities in some administrative rooms from interfering.
- B. Corridors
 - 1. Unless adequate noise reduction treatment is provided in corridors, they act as communication channels conveying a sound or noise throughout the building.
 - 2. Acoustical treatment in such passageways should be placed on the ceiling and may also be placed on walls.
 - 3. Undesirable noise may be reduced by proper attention to non-parallel floor or walk surfaces and ceiling surfaces.

- C. Instructional Spaces
1. Instructional spaces should be treated for noise reduction to meet ASA guidelines.
 2. The degree of sound interception requiring instructional space boundaries depends upon adjacent activities.
 3. In the case of certain business education rooms, noise reduction treatment is to be preferred over critical reverberation control, and the boundaries must have a higher degree of sound interception, particularly where such rooms are near or next to the more academic-type instructional spaces.
- D. Media Center
1. Noise reduction treatment, coupled with adequate sound interception, is a primary requisite in this area, where there may be disturbing and/or distracting sound from a nearby activity.
- E. Shops
1. Adequate noise reduction treatment is essential, and adequate interception should be provided in the boundaries.
 2. Where doors are left open, shop layouts must be oriented so that openings are away from academic and similar activities.
- F. Cafeterias
1. An environment with a somewhat critical reverberation control is desirable.
 2. Kitchens should have considerable noise reduction treatment because the noise from a reverberant kitchen can be conducted to the dining room area.
- G. Gymnasiums
1. An environment with a somewhat critical reverberation control is usually desirable.
 2. Where facilities are near quiet areas, adequate interception must be built into the boundaries.
- H. Rest rooms
Better-planned schools provide noise reduction treatment in rest rooms, as well as special sound interception measures within the room boundaries.
- I. Music Rooms
1. Choral, band, and orchestral rehearsal rooms require critical reverberation control over a wide range of pitches.
 2. Maximum noise reduction is not the correct solution.
 3. Individual practice rooms are usually most satisfactory when provided with maximum noise reduction treatment.
 4. Maximum sound interception is advisable.
 5. Special attention should be given to insure that strategic walls are not reduced in interception by the insertion of clocks, electrical outlets, or ventilating grills.
- J. Auditoriums
1. From the standpoint of noise control, the auditorium is one of the most critical rooms in the entire unit or plant.
 2. The level of noise (including that from the ventilating system, heating system, water supply, and external sources) must be kept as low as economically and reasonably possible.
 3. Adequate barriers must be provided to intercept sounds from such sources as traffic and mechanical equipment room.
 4. The proper acoustical environment of the auditorium is a highly scientific problem; therefore, technical assistance from an acoustical engineer should be secured in order to provide a

Comment: How low? This can be interpreted many ways.

reasonable environment.

1304 SPATIAL AND AESTHETIC ENVIRONMENT

The school facility is designed, constructed, equipped, and maintained in a manner which provides an effective, efficient, safe, and attractive facility and represents the educational philosophy outlined in the CEFP.

1305 BALANCED CONDITIONING OF SPACES

- 1305.01 The form of the facility follows the educational function and is designed to achieve adequate and economical conditioning of educational spaces and must be done by specialists (e.g., architects, engineers, or certified school planners) that are highly specialized in each of the separate major fields involved.
- 1305.02 When value engineering is required, the following list of priorities should not be compromised to assure maximum functionality during the life cycle of the building:
 - A. The safety, health, and comfort of teachers and students
 - B. The operational success of the educational program
 - C. The protection of the investment in the building
 - D. The maintenance and repair budget

1306 FIRE INSURANCE

- 1306.01 Some economy in the life time operation and maintenance of a building may be achieved when future fire insurance assessments are considered in the planning stages.
- 1306.02 Items Affecting Insurance Premiums
 - A. The building's exposure to adjacent properties not under the jurisdiction of the Board of Education
 - B. The location and treatment of "hot spots" - potential hazards - within the building
 - C. The degree of internal and external protection, such as heat and smoke detectors, sprinklers, extinguishers, and alarms
 - D. The degree of fire-resistance of component construction materials and of the building totally
- 1306.03 For new construction, insurance values and costs can be estimated by having plans and specifications reviewed by the West Virginia Board of Risk and Insurance Management.

Comment: This section also needs incorporated into the Architectural Section since these issues impact the building design.

1307 ROOF SLOPES

- 1307.01 Unless waived in exceptional circumstances, all new roof areas shall have a minimum slope as per WV Code §5-6-16. This shall include roofs with built-up membrane, as well as single-ply membrane systems.

Comments: Do they charge for review? This provision should be incorporated into the Architectural Section as well.

Comment: This provision should be incorporated into the architectural section.