Wyoming Department of Education
Dr. Jim McBride, Superintendent of Public Instruction
Hathaway Building, 2nd Floor, 2300 Capitol Avenue
Cheyenne, WY 82002-0050
Phone 307-777-7673 Fax 307-777-6234 Website www.k12.wy.us

MEMORANDUM 2007 – 116

TO: School District Superintendents

FROM: Mary Kay Hill, Director
Administration Unit

DATE: June 22, 2007

SUBJECT: Chapter 17 – Rules for Site Selection and School Construction for Wyoming Public School Buildings

---

PLEASE READ AND RESPOND AS NECESSARY

Please find enclosed Notice of Intent to **Revoke** Rules for Chapter 17, Rules for Site Selection and School Construction for Wyoming Public School Buildings. The public comment period runs from June 22– August 6, 2007.

If you have any questions or need further information, please contact Jennifer Duncan at (307) 777-6213.

Thank you.

MKH: jd

Enclosures

NOTICE OF INTENT TO REVOKE RULES

1. Agency: Wyoming Department of Education
   Address: Hathaway Bldg., 2nd Fl., 2300 Capitol Ave., Cheyenne, Wyoming 82002-0050
   Agency Contact Person for these Rules: Fred Hansen
   Work Phone: 307-777-7804

2. Statement of the terms and substance of the proposed rule or a description of the subjects and issues involved. In 2002 the legislature created the School Facilities commission and transferred the Department of Education's responsibilities in capital construction, building maintenance and repair programs to the Commission. The Chapter 17 rules and regulations should be revoked as the Department no longer has the statutory authority in this area.

3. Citation to each agency rule being amended or **repealed**: Chapter 17, Rules for Site Selection and School Construction for Wyoming Public School Buildings.

4. If the proposed rules amend existing rules, a copy of the proposed rules in a format that clearly indicates additions to and deletions from existing language may be obtained at: Copies of the proposed rules can be obtained at the Wyoming Department of Education, c/o Fred Hansen, Hathaway Building, 2nd Floor, 2300 Capitol Avenue, Cheyenne, Wyoming 82002-0050.

5. Statement of the time when, the place where, and the manner in which interested persons may present their views on the intended action: The public comment period runs from June 22 thru August 6, 2007. Please submit comments to Fred Hansen, Hathaway Building, 2nd Floor, 2300 Capitol Avenue, Cheyenne, Wyoming 82002-0050.

6. A public hearing will be held if requested by 25 persons, a governmental subdivision or by an association having not less than 25 members. Requests for a public hearing may be addressed to: Fred Hansen, Hathaway Building, 2nd Floor, 2300 Capitol Avenue, Cheyenne, Wyoming 82002-0050.

7. Yes __ No _X_ A public hearing on the proposed rules has been scheduled. If Yes: Date, time and place of scheduled hearing:_____

8. Any person may urge the agency not to adopt the rules and also request the agency to state its reasons for overruling the consideration urged against adoption. Requests for an agency response under this item must be made prior to, or within (thirty) 30 days after adoption of the rule, addressed to: Fred Hansen, Hathaway Building, 2nd Floor, 2300 Capitol Avenue, Cheyenne, Wyoming 82002-0050.

9. Yes ___ No _X__ These are New Rules (i.e., these are the first set of rules to be promulgated by the agency after the Legislature's adoption of a new statutory provision or an act significantly amending an existing statute. A new rule is one that is promulgated in direct response to, or that is mandated by, the enacted statute and may involve creation of an entirely new provision in the agency's rules or the repeal or amendment of an existing rule.)

If Yes: Citation to the specific legislation resulting in promulgation of these rules:

_____

10. Yes ___ No _X_ These rules are adopted, amended or **repealed** to comply with federal law or regulatory requirements.

If Yes:

(a) Citation to applicable federal law or regulation:

_____

(b) Indicate one:

___ The proposed rules meet but do not exceed minimum federal requirements;

or

___ The proposed rules exceed minimum federal requirements;

(c) Any person wishing to object to the accuracy of any information provided by the agency under this Item 10 should submit their objections prior to final adoption to: _____

If timely objections are submitted the agency will provide the objecting person with a written response explaining and substantiating the agency's position by reference to federal law or regulations.

11. Indicate one: (Required by W.S. 16-3-103(a)(i)(G)

_X_ The proposed rule change meets minimum substantive state statutory requirements.

_____ The proposed rule change exceeds the minimum substantive state statutory requirements.

If the rule change exceeds the minimum substantive state statutory requirements, the agency shall include a statement explaining the reason the rule exceeds minimum substantive statutory requirements.

STATEMENT OF REASONS

REVOCATION OF CHAPTER 17, RULES FOR SITE SELECTION AND SCHOOL CONSTRUCTION FOR WYOMING PUBLIC SCHOOL BUILDINGS

In 2002 the legislature created the School Facilities Commission and transferred the Department of Education's responsibilities in capital construction, building maintenance and repair programs to the Commission. The Chapter 17 rules and regulations should be revoked as the Department no longer has the statutory authority in this area.

Rules for Site Selection and School Construction
for Wyoming Public School Buildings

CHAPTER 17

RULES FOR SITE SELECTION AND SCHOOL CONSTRUCTION FOR WYOMING PUBLIC SCHOOL BUILDINGS

CHAPTER 17
GENERAL PROVISIONS

Section 1. **Authority**. These rules are promulgated pursuant to Section 207 (a), Chapter 3, 1997 Special Session Laws and Rules for Adequacy of School Buildings, W.S. 21-15-107.

Section 2. **Applicability**. These rules pertain to the purchase or acquisition of sites and construction of public school buildings (K-12). These rules are intended to establish adequacy standards with which public school buildings (K-12) must comply and are intended to be used in conjunction with the *Wyoming Public School Facilities Guidelines*.

Section 3. **Promulgation, Amendment, or Repeal of Rules**. Any amendments to these rules shall become effective as provided by the Wyoming Administrative Procedure Act (W.S. 16-3-101 through 16-3-115).

Section 4. **Definitions**.

(a) Building: A structure consisting of foundations, floors, walls, columns, beams, roof, or other structural features, or a combination of any number of these parts and may include related mechanical and electrical equipment and site, which are incidental thereto.

(b) Site: A space of ground occupied or to be occupied for school program(s). The site may include the main school building(s), support structure(s), play or athletic fields(s), road(s), parking space(s) and landscaping.

(c) Life-Cycle Cost Analysis: A comparison of life-cycle costs for alternative building envelopes as well as mechanical/electrical systems. The life-cycle cost is the sum of the initial cost and fuel cost over the life of the building in addition to the maintenance/operation cost as it pertains to the energy systems.

(d) Gross Square Feet (GSF): Measurement of a building in square feet from outside exterior walls.

(e) Department: The Wyoming Department of Education.

(f) Building Proposal: The report, with supporting documentation and preliminary plans, developed by the district building advisory committee.

(g) Preliminary Plans: The drawings of the proposed construction project showing the footprint of the building on the site, basic floor plans showing arrangements of internal space, and total building GSF with student capacity and room size data. These sketch plans are not full architectural blueprints.

(h) Projected Design Capacity: The student capacity for which a building is designed.

Section 5. **Planning**.

(a) The local school board shall organize a district building advisory committee to assist

in project planning. It may include, but not be limited to, administrators, teachers, students, parents, architects, curriculum specialists, school facilities planners, patrons and other persons, as necessary, to promote community participation. It is recommended that the committee consider the following before determining the capital facilities needs of the school district:

(i) The district's educational goals and objectives.

(ii) Student needs identified through the Wyoming State Board of Education accreditation process.

(iii) Specific curricula to be offered--math, science, fine arts, etc.

(iv) Services to be provided--guidance, food services, transportation, etc.

(v) The organization of the district--grade patterns, departmentalization, programs to be individualized, etc.

(vi) Pupil-teacher ratios.

(vii) Adequacy of current facilities.

(b) Current and Projected Information: The district building advisory committee should consider social, political and economic conditions within the district such as:

(i) Current and projected census data.

(ii) Current and projected school enrollments.

(iii) Current and projected employment figures.

(iv) Projected housing developments and business starts.

(v) Projected adequacy of current facilities.

(vi) Applicable legislation.

(c) Statement of Need: The district building advisory committee shall report its recommendations to the local board of education. The report shall include a review of comprehensive cost estimates and low cost alternative solutions.

(d) Building Proposal: For new construction or renovation, supporting documentation and preliminary plans, as a minimum, constitutes the building proposal. This is to be reviewed by the local school board. If required by governing codes, a professional architect or engineer shall be used.

(e) Space Efficiency Review: If a new school is identified by the district's building advisory committee as the preferred solution, a space efficiency review shall be conducted for the preliminary building plans by at least one member of the chosen architectural firm, one member of the applicant district and (optionally) one member of the Department.

Section 6. **Site Size**.

(a) New Buildings: Ultimate site size requirements shall be determined considering the

initial site acquisition, careful planning and minimum site standards.

The district shall consider the following as part of its planning for the selection of school sites:

(i) Outdoor physical education facilities.

(ii) Buildings, walkways, landscaping.

(iii) Parking and access roads.

(iv) Municipal and/or county codes.

(v) Bus and unloading areas.

(vi) Vocational needs.

(vii) Other demands outside the school building, such as walk-in freezers, maintenance buildings and other support structures.

(viii) Plans for the use of off-site resources and facilities.

(ix) Future expansion needs considerations.

(x) Americans with Disabilities Act and other federal, state and local codes.

(b) Minimum Site Requirements: The Wyoming site requirements are shown below. If a district possesses a unique site situation not applicable to the standards, it may use the exception to the guidelines form available in the *Wyoming Public School Facilities Guidelines*. Approval by the Department must occur prior to construction.

(i) For elementary schools, the minimum site size is four acres. An additional acre for each 100 pupils in ultimate projected enrollment is required; hence, 5 acres for enrollments of 100 to 199 pupils, 6 acres for enrollments of 200 to 299 pupils, etc.

(ii) For middle/junior high schools, the minimum site size is 10 acres for enrollments up to 300 pupils, 15 acres for enrollments up to 500 pupils and 20 acres in ultimate projected enrollments above 500 pupils.

(iii) For senior high schools, the minimum site size is 20 acres for enrollments up to 400 pupils, 25 acres for enrollments up to 800 pupils and 30 acres in ultimate projected enrollments above 800 pupils.

(iv) For schools that intend to organize and operate more than one of the above school types on a single site, the higher of the two site sizes serves as the applicable requirement.

(v) Alternative schools are not required to abide by the same site considerations as mainstream schools. The site requirements should be closely reviewed on a case-by-case basis by appropriate district personnel prior to plan submittal to the Department.

(vi) For the purpose of this section, "elementary school" means a school with two (2) or more teachers consisting of a kindergarten through grade eight (8), or any combination of grades within this range, as determined by the plan of organization for schools authorized by the

district board of trustees.

"Middle/Junior high school" means a school consisting of grades six (6) through nine (9), or any combination of grades within this range, as determined by the plan of organization for schools authorized by the district board of trustees.

"High school" means a school consisting of grades nine (9) or ten (10) through twelve (12) in an organized high school as determined by the plan of organization for schools authorized by the district board of trustees.

(vii) Depending upon the use made of certain areas, all land included in a school site need not necessarily be adjoining, but all the land segments shall be within a reasonable distance from each other.

(viii) Needs for schools which are designed for a total student enrollment of under 100 pupils are handled by the Department on a case-by-case basis.

(ix) Existing Sites: Many older schools have sites that fall far below the minimum requirements. In those cases, districts shall refrain from construction that will increase the square footage of any school building situated on a site which is less than 50 percent (50%) of the currently recommended site sizes.

Section 7. **Standards for School and Classroom Size**. As required by W.S. 21-15-107, new school building construction (excluding small schools ranging to a capacity of 350 pupils) shall not exceed 10 percent (10%) of the regional building GSF/student averages. The ranges below take this need into account in addition to the practical need to establish lines at the nearest, most usable unit of ten to eliminate disallowable gross square footage values and to translate the legislative mandate into a form to which the districts are accustomed.

(a) Elementary schools shall be designed within the range of 90 to 120 GSF per student.

(b) Middle/Junior high schools shall be designed within the range of 120 to 150 GSF per student.

(c) Senior high schools shall be designed within the range of 150 to 180 GSF per student.

(d) Teaching stations, common space, mechanical space, gym space as shown in the facilities guidelines, and auditoriums in facilities having a projected design capacity of 1200 students or more, *are included* in the space standards shown above. Gym space that exceeds the typical space of the guideline examples, auditoriums in schools that have fewer than 1200 students in projected capacity, mezzanine space and natatoriums *are not included* in the space standards.

(e) Schools designed for fewer than 350 pupils shall have a graduated adjustment made to the applicable standard to account for common spaces.

(f) For new construction, the projected design capacity, as used for gross square footage computations, may not exceed the enrollment for the prior school year by more than 10 percent (10%).

(g) General classrooms shall not be designed at more than 1050 total GSF. No classroom shall be constructed which provides less than 35 GSF per pupil in anticipated

enrollment. No classroom shall have less than 560 GSF. If required, resource rooms may be constructed from 100 to 560 GSF. Districts are encouraged to study the program needs that may require a balance of all three (large, medium and small) types of spaces.

(h) All buildings shall be constructed to allow for the installation of technology infrastructure for use by all students, faculty and staff. Infrastructure refers to connectivity and all necessary frameworks to implement technology. Infrastructure must meet current industry standards. If the infrastructure is not to be installed at the time of original construction, the capability to install these systems at a later date shall be provided.

(i) For new construction having projected enrollments fewer than 600 pupils, a multi-purpose room may serve in place of an auditorium. Where auditoriums are provided, they should seat one-half of the school's Average Daily Membership (ADM). Additional city or community funds, above those required to qualify for state assistance, can be combined with school funds if a larger auditorium is desired for community use.

Section 8. **Facilities Guidelines.**

(a) The *Wyoming Public Schools Facilities Guidelines* adopted by the Department of Education in October 2001, are incorporated by reference and are made part of these rules pursuant to W.S. 16-3-103 (h). They should assist the local district planning advisory group, architects and technical advisors. Filing for an exception from the guidelines is within the authority of the local school district, as long as the plans meet safety and fire provisions of the Uniform Building Code (UBC) or the latest building code effective for Wyoming, or alternatives as might be allowed under home rule or local codes.

(b) Architects submitting final plans for new construction and major renovation to the Department shall include a letter indicating the numbered and named teaching stations with their associated GSF and the final GSF of the entire project.

(c) New schools may, on occasion, be smaller than the facilities they replace. This may be true when the old facility was over the current space standards, when the new facility is a notably efficient design or when there is declining student enrollment.

Section 9. **Plan(s) Submission.** A district planning new school building(s), remodeling projects or modernization projects, including changes in interior walls or building envelopes, shall submit a building proposal with basic design drawings to the Department for standards validation prior to construction (state-assisted projects utilize the capital construction application form). In all cases, final architectural working drawings shall be submitted to the Department, State Fire Marshall and/or home rule fire safety jurisdiction. Plans to obtain proper building permits may also need to be submitted to appropriate city or county agencies prior to construction.

Section 10. **Life-Cycle Cost Analysis.** All plans of new school buildings containing 18,000 gross square feet or more shall include a life-cycle cost analysis. This analysis shall be sent to the Department with the building proposal.

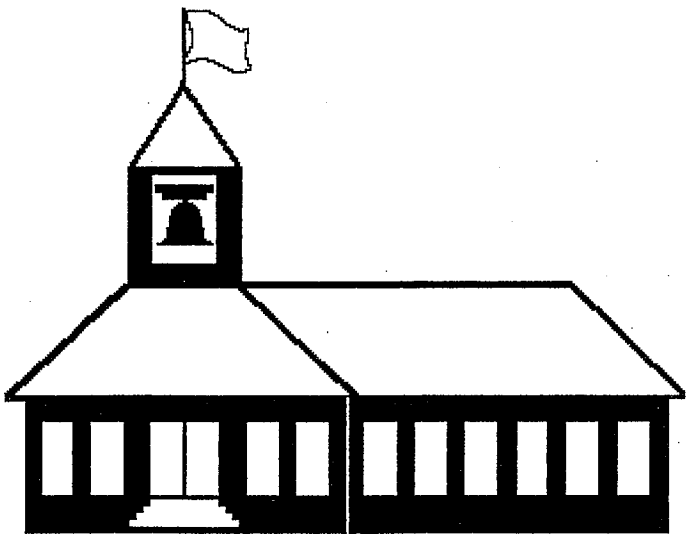
Section 11. **Coordination with Statewide Needs Assessment of K-12 Public School Buildings.** Currently, one-fourth of the state's educational space each year has a condition assessment performed. This assessment, combined with annual reporting data, is used to generate a facility/building immediate need list. The State Superintendent of Public Instruction forwards this document to the Legislature and the Governor.

Section 12. **Effective Date**. The above standards, Sections 1 through 11, shall apply to any district applying for state capital construction assistance beginning in 2001.

Wyoming Public Schools

FACILITIES GUIDELINES

A Guide for Planning School Facilities



WYOMING DEPARTMENT OF EDUCATION
October 2001

Forward

The *Wyoming Public School Facilities Guidelines* have been developed to provide school districts and designers with useful and reliable design information to use as a basis for new schools, additions and renovations. We believe that these guidelines will balance the need to enhance the ability of local school systems to plan effective and efficient facilities that maximize instructional opportunities for students while still allowing for reasonable building efficiencies expected of major projects. It is our hope that these guidelines provide strong direction for school design, while maintaining local control of that process. We want to thank the North Carolina Department of Public Instruction for sharing the *North Carolina Public Schools Facility Guidelines, (January 1997)* with the Capital Construction Advisory Committee. We also want to thank CEFPI (Council of Educational Facility Planners, International) for assistance with these guidelines.

This document is intended to be used in conjunction with the *Rules for Site Selection and School Construction for Wyoming Public School Buildings*. Together, these documents will guide the planning and construction of school buildings in Wyoming.
With *adaptation as needed*, these guidelines can also be used by local school districts to evaluate existing buildings.

Judy Catchpole
State Superintendent of Public Instruction

Table of Contents

Purpose

The *Wyoming Public School Facility Guidelines* are recommended parameters and ranges that research and regional states have shown to provide valid space requirements. They allow the districts maximum local control of new construction and renovation needs while maintaining the overall basic space requirements needed for adequate education. They are designed to help assure reasonable consistency with state school facilities. They are also designed to help assure that current and future construction will provide adequate educational experiences for pupils.

At no time should it be construed that previously constructed school facilities are, in a way, inadequate because they do not fall in-step with one or more of the guidelines for new construction. The guidelines will be reviewed from time to time and adjustments made as required by new knowledge and circumstances.

Although intended to assure adequacy, the guidelines do allow minor exceptions *where design efficiency dictates*. Such flexibility is essential to good design but should not be allowed to become a general means of altering the guidelines.

It should be understood that, in certain circumstances, some guidelines will not be appropriate or cannot be met due to atypical programs or special conditions. Also, many older, existing facilities will not meet many of the guidelines and the cost of renovations to bring them into compliance may be prohibitive.

Phased construction is often necessary and appropriate. When a space to support future program needs is not provided in the original application, show it on the plans as a future phase of construction.

Small schools will not be able to meet the guidelines that are designed for larger schools. Multipurpose spaces may serve for specialized needs such as dance, theater arts or vocational education labs. Where single spaces can adequately provide for multiple uses, the guidelines will be considered met. *Generally speaking, a school designed for less than one hundred pupils shall have its space needs reviewed on a case-by-case basis.* Multipurpose spaces must be designed so that the room, furniture, equipment and storage are compatible with the intended programs. The intent of the guidelines is to assure that adequate space is provided for those classes and activities that make up instructional programs as indicated by the Common Core of Knowledge and Common Core of Skills, while at the same time allowing districts maximum design freedom to handle unique local school needs.

The facility guidelines do not replace the need for educational specifications. Instructional staff should be involved in the development of educational specifications and the review of facility design. From educational specifications, the planners should be able to determine the unique spatial needs to support an individual program and which spaces can serve several activities or functions. Resourcefulness is expected from the planners to use skill to plan for efficient use of space while still providing the services referenced in W.S. 21-9-101.

A permanent record of exceptions will be prepared for each project that differs substantially from these guidelines. Copies of this list will be placed in the permanent file for that facility.

This document is intended to be used in conjunction with the *Rules and Regulations for Site Selection and School Construction for Wyoming Public School Buildings, (May 2001)*. Together, these documents will guide the planning and construction of school buildings in Wyoming.

The most current federal, state and local codes must be followed in the planning and construction of school buildings.

Long-Range Planning

To develop a long-range plan (which includes efficient utilization of existing facilities), priorities for new construction and renovation, cost estimates, and estimates of available resources, a board of education must address the following five questions:

° How many schools are needed?
° Which grades will they serve?
° How many students will they accommodate?
° Where will they be located?
° Which students will they serve?

In the 1950's, most rural school systems were organized to serve grades 1-12 or 1-8 and 9-12, while schools in urban areas were generally organized to serve grades 1-6, 7-9 and 10-12. In recent years, there has been a significant movement toward a middle school plan of organization across the state. A typical organization based on the middle school concept serves grades K-5, 6-8 and 9-12, but organizational patterns with schools for grades K-4, 5-8, 9-12 or K-6, 7-8 and 9-12 are not uncommon.

While the movement toward a middle school plan of organization has been substantial, other organizational patterns still exist. *Alternative plans of organization will continue to be appropriate in some communities because of existing facilities, natural geographic boundaries, student enrollment, road patterns, and travel times and distances.*

Boards of education are urged to keep abreast of educational trends that affect the design of school facilities.

As with grade structure, school size must ultimately be determined by factors such as current legislation, existing usable facilities, areas of population density, natural geographic barriers, enrollment trends, transportation times and distances, and local needs.

Though usually not in initial designs, it is acceptable for school campuses to evolve where more than one building is used to deliver educational services. Permanent modular buildings are acceptable as a vehicle to deliver quality education.

School Sites

The requirements for school sites are contained in Chapter 17, *Rules and Regulations for Site Selection and School Construction for Wyoming Public School Buildings, (May 2001)*. The following are other areas that should be taken into consideration when selecting or evaluating a school site:

Traffic
Drives that completely circle a building, or have to be crossed when going from building to building or playground, are hazardous and should be avoided. Parent auto traffic and bus traffic should be separated once on the school site.

Power Lines
Where possible, avoid locating facilities near electric power transmission lines.

Site Evaluation
These factors should be used for evaluating existing or potential school sites:

° Location (bus and auto routes)
° Size (number of acres; road frontage)
° Shape (rectangular 3:5 ratio preferred)
° Topography/Drainage (usable acreage)
° Access (separate traffic types on site)
° Traffic (buses; cars; pedestrians)
° Soil conditions (foundations; waste disposal)
° Plant life (trees; bushes)
° Noise/Air pollution (airport; traffic; industrial)
° Utilities (availability)
° Television signals (ETV; school TV)
° Security (emergency access; lighting)
° Protection (intruder; vandalism prevention)
° First cost (cost per acre)
° Developed cost (actual cost)
° Seismic potential (fault line location; probability factors)

Alternative School
Alternative schools, by definition, are designed to give an alternative program to students that do not fit the traditional or mainstream provisions of public education. Alternative schools, however, are still expected to adhere, *where applicable*, to the provisions of Chapter 17, *Rules for Site Selection and School Construction for Wyoming Public School Buildings* and Chapter 24, *School Capital Constructions Grants, Building Maintenance and Repair Programs*, and these guidelines. As with traditional school facilities, each new alternative school should be jointly reviewed for space requirements on a case-by-case basis by the district and the Department to ensure compliance for practical purposes.

The required acreages refer to usable (land which can be developed) land. Purchase additional acreage to account for areas that cannot be built upon, such as steep slopes, wetlands, rights-of-way, easements, setbacks, buffers or poor soils. If on-site water or sewer is required, substantial additional acreage may be needed.

A high school may need an additional area of 10 acres or more if a stadium and spectator parking are anticipated.

Pre-kindergarten and kindergarten students should have a shared play area that is separate from the other students. Fencing may be necessary for safety or control for kindergarten play areas.

All grade levels should have paved activity areas available on the site.

The number and types of physical education fields depend on the size and grade structure of the school.

Natural features of a new school site should be considered for their potential contributions to the teaching of science. Natural areas suited to the teaching of biology and earth science classes should be preserved in a landscape plan.

Handicapped accessibility to all site programs, including athletic facilities, is required.

Pedestrian traffic in auto and bus areas should be carefully studied. Safety on the school site will carry the same importance as building safety in the review process.

On-site parking needs have increased greatly. Spaces for all staff, itinerant specialists, and an additional 10%-20% for visitors should be provided. Student parking for high schools should be provided for a fourth or more of the student population.

Space Requirements

Note: On the space requirements discussed in pages 5 to 24, the noted space is the "not to exceed" value or the maximum space allowed. Their ultimate values will vary tremendously with the local educational program and will likely be less than the noted space, especially for small schools. Outside of unusual circumstances, all fundamental school spaces will fit within the aggregate GSF/Student ranges discussed in Chapter 17, *Rules and Regulations for Site Selection and Buildings, (May, 2001).*

In order to enhance the facility utilization rate, it is recommended that districts stagger the size of the school's classrooms. Typically, not all classrooms have large populations. Some classrooms can be built larger for the mandatory classes that are expected to have high enrollments. Medium to smaller classrooms can be provided for courses that have had historically low enrollment. Resource rooms can be provided for extremely small classes or mentoring.

Districts are also encouraged to see what spaces can be effectively combined where it is practical to offer a variety of courses within the same space at different periods.

Note: MGSF = Maximum Gross Square Footage
SGSF = Suggested Gross Square Footage

Seismic Issues

Due to the nature of the land, there is inherent risk of living through certain seismic movements in Wyoming. The Department of Education recognizes that significant seismic movements are rare and unpredictable. Building codes represent minimum standards that are designed to remove unreasonable risk. Building codes are updated every several years to include advances in knowledge and techniques.

Knowledge about the potential seismic impact on a public school changes far faster than the school itself. The building code that was in force at the time a facility was built has, historically, been the only available standard by which one could, in practical terms, build "seismic readiness" or "safety" into the structure. With time, structures that were built to a more rudimentary code will be replaced with newer, more earthquake resistant buildings as the older buildings fill out their normal useful life.

Regular Classrooms

Grades	Guidelines MGSF
Pre-K (3 & 4 yr. olds)	1,050
K	1,050
1-3	1,050
4-8	1,050
9-12	1,050

Include an additional 15 sq. ft. for each separate, permanent desktop computer workstation when provided within the classroom.

Ceiling Heights	Guidelines
850 sq. ft. or less	9'-4"
851 sq. ft. or more	10'-0"
Modular or Mobile classrooms	8'-0" to 9'-0"

Windows
All classrooms should have windows for rescue, light, ventilation and psychological reasons.

Grades	Guidelines
K-5	Classrooms should have windows equal to or greater than 8% of the floor area.
6-12	Classrooms should have windows equal to or greater than 6%-8% of the floor area.
9-12	No more than 20% of the total number of teaching stations should be windowless.

Every classroom should have at least one outside window that can be used for emergency rescue or ventilation, unless an exterior door is provided. The window shall be operable from the inside and provide a minimum clear opening dimension of 24 in. and 5.7 sq. ft. in area. Maximum sill height shall be 32 in. (K-6) and 44 in. (7-12) or to code. Windowless classrooms shall provide secondary access (through an adjoining classroom or directly) to an exit corridor that is separated by one-hour rated construction from the primary exit corridor or to code.

Wet Areas
A wet instructional area may be needed by the instructional program in grades K-3 and in grades 4-6 when science is taught in the classroom.

Science

Grades		Guidelines Rooms	MGSF
6-8	Science		1,250
	Combination Math/Science		1,050
9-12	Biology, Chemistry, Physics		
	Storage/Prep Rooms		250 GSF per 2 labs
	Labs*		
9-12	Physical Science		1,250
	Biology		1,250
	Physics		1,250
	Earth Science		1,250
	Chemistry		1,500
	Multipurpose Science (If required)		1,500

* These maximums are valid for most class enrollments. Larger schools with high science Average Daily Membership (ADM) may need to see the exception form on page 27 for larger spaces.

Windows
Project and Science rooms should have windows.

Ceiling Height	Guidelines
	10'-0"

Gas Outlets
Do not provide gas outlets in science rooms when not required by the program. Gas installations must include master cut-off valves and must comply with other safety code requirements.

Eye Protection/Showers	Guidelines
Classroom/lab areas where OSHA requires eye protection	Safety goggle cabinet and eyewash fountain
Chemistry labs	Add emergency deluge shower

Wet Areas
A wet instructional area may be required by the instructional program.

Exceptional Children

SELF-CONTAINED ROOM:

Grades	Guidelines MGSF
K-12	Varies with the program and type of exceptional student.

Space needs for exceptional children may vary greatly depending on the conditions that pertain to each student.

RESOURCE ROOM:

Grades	Guidelines MGSF
K-12	560

These spaces tend to add versatility to the program.
Additional support spaces may be necessary depending upon the program.

Wet Areas
Wet area requirements are the same as for regular classrooms except certain programs will require an instructional area with water in both classrooms and resource rooms.

Ceiling Heights Room Size	Guidelines
850 sq. ft. and less	9'-4"
851 sq. ft. or more	10'-0"
Mobile classrooms	8'-0"

Music

Grades	Guidelines MGSF
K-6	
General Music	1,050
6-8	
General Music	1,050
Vocal	Reference*
Instrumental	Reference*
9-12	
Vocal	Reference*
Instrumental	Reference*

* This space should be studied carefully. Some references recommend 10-18 sq. ft. per singer for Vocal rooms and 25-35 sq. ft. per student for Instrumental rooms. Class sizes for these programs vary depending on enrollment.

Support Spaces	Guidelines MGSF
Instrument Storage Room (Varies with enrollment)	600
Instrument Lockers along music room wall (Increase main room-no separate storage room)	300
Music Library	200
Instrument Repair	150
Office (each)	150
Uniform Storage	Varies
Practice Room	60
Ensemble Practice Room	200

Wet Areas
A sink adequate for cleaning brass instruments is optional for middle and high school band programs.

Ceiling Heights	Guidelines
Room Size	
900 sq. ft. & less	9'-4"
901-999 sq. ft.	10'-0"
1,000-1,199 sq. ft.	12'-0"
1,200-1,800 sq. ft.	14'-0"-18-0"
Over 1,800 sq. ft.	16'-0"-18'-0"+

High ceilings in music spaces dramatically improve acoustics.

Art Education

Art Rooms		Guidelines
Grades	MGSF	
K-8	1,400	
9-12	1,500	

Support Spaces		Guidelines
Grades	MGSF	
K-12		
Kiln/Clay Storage		60
Art Material Storage		150

For fire safety and air quality, place kilns in a separate room with proper ventilation and exhaust. Do not locate in a storage room other than one used for clay products and projects.

Ceiling Heights	Guidelines
K-12	10'-0"

Windows
An art classroom should have windows.

Lighting
Incandescent task and display lighting should be switched separately to avoid use as general illumination.

Wet Areas
A wet instructional area may be required by the instructional program.

Theater Arts - Auditoriums

Grades	Guidelines Seating Capacity
K-8	Not Recommended
9-12	1/2 of ADM* when provided

For enrollments under 600, a multi-purpose room is recommended. An auditorium is covered in the overall space per student standard for schools designed for 1200 or more students.

9-12 Auditorium Support Spaces	Guidelines
Stage, Storage & Dressing Rooms	Varies with the program**
Light Lock Vestibule, Lobby, Concessions	Varies
Toilets	As required by code
Scene, Costume, Shops	May provide where extensive drama program is offered

* Average Daily Membership

** By locating band, chorus and drama classrooms adjacent to backstage areas, these spaces can serve double duty as staging, green room, dressing and set-up areas during large performances.

Consideration should be given to allow relamping and/or changes in lighting levels and types without major effort or reconstruction. Stage lights are costly and the amount and types needed vary by the types of performances. Consider the purchase of minimal lights with circuits and grid for installation of rental units.

Vocational Education

Vocational Education Classrooms/Labs:

Grades	Guidelines
5-12	Square footage will vary depending on school size, program and/or projected student load.

Ceiling Heights **Guidelines**

See regular classrooms for vocational education classrooms and light-duty laboratories up to 1,200 sq. ft.

Room Size

1,200-2,000 sq. ft.	12'-0"
2,000 sq. ft. and above	14'-0"

Windows

See regular classrooms for vocational education classrooms and light-duty laboratories. Laboratories with hazardous equipment should have windows, skylights, or some other daylight source.

Wet Areas

A wet instructional area may be required by the instructional program.

Media Centers

Grades	Spaces	Guidelines MGSF
K-12	Main Room	4-6 GSF per ADM* 1250 GSF minimum
K-5	Support Spaces (See Below)	1,200
6-8	Support Spaces (See Below)	1,800
9-12	Support Spaces (See Below)	2,000
K-5	Video Production Room	300
6-12	Video Studio	400
	Control/Editing	260
	Equipment Storage	80

Capacity
40 students or 10% of the ADM*, whichever is greater.

Support Spaces	Guidelines MGSF
Media Office/Administration	Up to 200 + 50/add'l staff
Workroom	600
Production	600
Darkroom	150
Professional Area	150
Conference/Small Group	150
Equip. Storage/Distribution/Maintenance	175
Periodical Storage (If not on CD-ROM)	250

The size and types of various support spaces needed are dependent upon the size and grade level of the school.

Ceiling Heights	Guidelines
Main Room	Minimum 12'-0"
Support Areas	9'-4"

* Average Daily Membership

HVAC System
The HVAC system should be separately zoned from those parts of the building that are not mechanically conditioned year-round. Special attention must be given to adequate ventilation and humidity control to prevent mold and mildew year-round. Computer hardware and software must be protected from temperature and humidity extremes.

Windows
Windows are recommended in the main media center room, but are not recommended for electronic equipment storage rooms. They are recommended in the support areas, but are not necessary if there are windows into the main room.

Wet Areas
A wet instructional area may be required by the instructional program.

Physical Education

Grades	Spaces	Guidelines MGSF	
K-6	Multipurpose/Indoor P.E. (Play Area)	4 sq. ft./pers over 600 pers	3,600 Min.+
6-9	Gymnasium	Varies	

Play area
42x74 practice court (minimum)*
50x84 competition court (desirable)*

Seating
400-500 sq. ft./100 seats

9-12	Gymnasium	One competition court with two practice cross-courts. Exact GSF may vary depending on seating.

Play area
50x84 court*

Seating
400-500 sq. ft./100 seats

9-12	Wrestling (competitive)	3,000
9-12	Resistive exercise (weight room)	2,000-3,000

* Add a safety space of 6' on each side and 8' on each end of a basketball court to reduce accidents and injury.

Ceiling Heights	Guidelines
Grades	
K-6 Multipurpose	15' (18' recommended)
6-9 Gymnasiums	20'-22' Min.
9-12 Gymnasiums	20'-24' Min. (25' recommended)
Support areas under 850 sq. ft.	9'-4"
Dressing, showers, etc.	10'-0"
P.E. and athletic teaching areas (weight, team, wrestling rooms)	12'-0"

Showers

Although use of showers has declined in recent years, some showers should be provided that could be used for both P.E. and athletics. To encourage their use and maintain modesty, provide private shower stalls with an enclosed dressing area for both boys and girls. Locker and dressing rooms should be visible from P.E. teachers' offices to reduce vandalism and violence.

Home Economics

Grades	Guidelines
SGSF	
9-12	Reference*

* This area will vary from school to school. Some smaller schools may not even choose to operate this space. Its use is left to the judgment of the district. If this space is programmed in, it may be so designed to be utilized to teach other disciplines as well.

Ceiling Heights

See regular classrooms for guidelines.

Windows

Home Economics spaces should have adequate ventilation and windows. Check with the latest codes for compliance issues.

School Building Administration

Rooms	Guidelines MGSF
Principal	200
Assistant Principal (each)	150
Reception area	400
Secretary	150
Other student services	200
Workroom/Storage	200*
Conference room	200
Record storage	100
General storage	100*

* Larger square footage may be necessary depending on district or site needs and does not take into consideration other available (separate) administrative buildings within the district. These values may be figured on a case-by-case basis.

Student Support Areas

Grades	Rooms	Guidelines MGSF
K-5	Guidance	450
6-12	Guidance	300
9-12	Reception/Career center	Varies
K-12	Counselor office	150
K-5	Other student services	150
6-12	Other student services	200
K-8	Health room	200
9-12	Health room	200
K-12	Health room toilet	50

Staff Support Areas

Grades	Rooms	Guidelines MGSF
K-12	Group Teacher	100
	Office/Planning	Per Teacher
K-12	Special assistant and itinerant teacher office/work space	100 Per Teacher
K-12	Workroom	Varies
K-12	Lounge	Varies

Support Staff
Educational Assistants, volunteers may also need an area in which to work. The space will vary depending on the number of people and the work to be performed.

Staff Toilets
Faculty toilets should be located near classrooms.

Commons, Circulation and Entries

Corridor Widths	Guidelines	
Serving more than two classrooms	8'-0"	
Serving more than ten classrooms	9'-0"	
Elementary and middle school major corridors		10'-0"
High school major corridors	12'-0"	
Lockers along one wall add	2'-0"	
Lockers along two walls add	3'-0"	

Commons Size	Guidelines
Grades	SGSF
7-12	Varies

Entries
Separate bus rider entries and automobile rider entries should receive equal attention.

Stairs
A single run of stairs should not exceed an 8'-0" height without a landing.

Toilets
Group toilet entries should have adequate privacy screening that does not depend on doors. Group toilets should have a minimum of two water closets.

Ceiling Heights	Guidelines
Corridors	9'-4"

Doors
Doors that open into a corridor must be recessed or protected by wing walls so that any part of the door swing does not project into the circulation path more than 7".

Except for delivery areas, multiple single doors, rather than double doors, are recommended. Use oversized doors for exceptional children entries, shops, kitchens and music areas or to code.

Cafeterias

Dining Area Seating	Guidelines
Grades	SGSF
K-6	12-14*
5-8	12-14*
7-9	14*
9-12	14*
	Per pupil dining including 2 sq. ft. for circulation

Dining Area Ceiling Heights	Guidelines
Minimum below 3000 sq. ft.	12'-0"
Minimum 3000 sq. ft. or above	14'-0"

Serving Area
Varies with design.

Kitchen	Guidelines
Lunches Served	SGSF
100	856
250	1,261
500	1,518
750	1,938
1,000	2,208
1,250	2,566
1,500	2,880

* The above table may fluctuate due to school scheduling variations.

Building Support Areas

Spaces	Guidelines SGSF
Mechanical rooms	Varies
Electrical rooms	Varies
Custodial rooms	Varies
Storage areas	Varies
Book storage	Varies
General storage	Varies
Receiving	Varies

In certain cases, the mezzanine areas under sloped roofs may serve as appropriate storage space as long as codes are followed and two stairwells are provided. The mezzanine space is not counted in the total GSF/Student calculations.

Technology

All buildings shall be constructed to allow for the installation of technology infrastructure for use by all students, faculty and staff. Infrastructure refers to connectivity issues and all necessary frameworks to implement technology. Infrastructure must meet industry standards such as those defined by EIA/TIA-568 Telecommunications Cabling Standards, EIA/TIA-569 Commercial Building Standard for Telecommunication Pathways and Spaces and TIA/EIA-607 Commercial Building Grounding and Bonding requirements for telecommunications. *If the infrastructure is not to be installed at the time of original construction, the capability to install these systems at a later date shall be provided.*

Spaces	Guidelines SGSF
Regular/Science classrooms	Add 15 sq. ft. per PC
K-5 Computer/Keyboarding labs	1,050
6-8 Computer/Keyboarding labs	1,050-1,400
9-12 Computer/Keyboarding labs	1,050-1,400
Distance Learning room	1,050
Wiring closets	15-120
Main Head-End room	450-800

Note: It has been observed that technology can, at times, actually reduce the need for space. One case for this is the use of laptop computers in the classrooms that have wireless connections to a contact box. In some cases this approach has removed the need for one or more "computer labs." Each district may be different.

Electrical and Lighting Considerations

ELECTRICAL SYSTEM VOLTAGES

480Y/277 volt systems (with transformers for 208Y/120 volt uses) should be provided when connected loads exceed 500 KVA. A cost analysis may warrant maintaining the existing voltage system with addition/renovation projects.

SERVICE ENTRANCE

The impact of the short circuit interrupting capacity of the electrical utility at the secondary terminals of its transformer MUST be used when designing service entrance equipment and panels. Consider placing this capacity on a plaque on the main panel board for future reference.

The use of spare conduits from the utility transformer to the main panel for future growth is recommended.

WIRING SYSTEMS

Copper conductors should be used for feeder circuits from the main panel to its sub-panels. Copper clad aluminum wiring for feeder circuits 100 amps and larger can be used if splices and terminations are mechanically crimped.

ELECTRICAL PANELS

Verification should be made that the panels, conductors, and the over-current protection for each are coordinated.

GROUNDING

The proper grounding electrode system should be included with the correct sizes for the grounding "electrode conductors." Connections to ground rods and a second grounding point are required, such as the building steel or metallic water piping in contact with the earth for at least a ten-foot length. This applies to service entrance panels and step-down transformers. Bonding and grounding diagrams should be included.

ILLUMINATION

See recommended illumination levels in the appendix. Compact fluorescent fixtures should be installed where incandescent fixtures have been used traditionally for wall washing, display cases and down lighting in traffic patterns. Fluorescent lighting fixtures can be installed with equipment used in most desired applications for dimming, but where color rendition and brightness control may be critical, such as drama class settings in auditoriums, incandescent spot lighting fixtures (track lights) may be used.

Incandescent fixtures should be avoided due to high operation cost and short lamp life. The use of electronic ballasts and T-8 fluorescent lamps, metal halide and high-pressure sodium lighting fixtures in appropriate locations is strongly recommended.

Light-emitting diodes (LED) exit lighting fixtures are recommended because of their very long life and very low operational cost. Incandescent exit fixtures should be avoided. Locations of exit and emergency lighting fixtures are critical.

ENERGY CONTROLS

The use of remote switches for lighting in corridors, rest rooms, gymnasiums and common areas is recommended. These switches should be located in areas accessible only to designated staff. Key-operated switches are a second choice.

FIRE ALARM SYSTEM

See the Uniform Building Code, or latest applicable code, for required locations of fire alarm pull stations and horns. Verify that enough horn/strobe lights are provided for sufficient coverage. Strobe lights are required in rest rooms. Connect ductwork smoke detectors into the fire alarm system and design to shut down the air-handling units. Provide connections for the kitchen fire extinguishing system to the fire alarm system and the shunt trip mechanisms to disconnect the cooking equipment and the kitchen hood fans.

COMMUNICATIONS SYSTEMS

Thoughtful planning is required to accommodate sufficient numbers and proper locations of computers, telephones, TV, intercom/paging/radio and other integrated communication equipment. For computers and other high-speed electronic equipment, the backbone can be fiber optic cables with "level 5" copper cables to the individual items of equipment. If connections to the State Information Highway are desired or required, fiber optic cables are required. Isolation transformers, surge suppression and lightning protection devices should be used to protect all electronic equipment and the panels to which they are connected. Sufficient wire ways should be installed and located for ample expansion. Cable tray over lay-in ceilings in corridors is the most common method for routing communications and computer cables.

MISCELLANEOUS

Disconnect switches are required for all motors, water heaters and large laundry equipment.

Classrooms and labs should be equipped with a two-way communication system for informational and emergency use.

Every classroom should be wired for a telephone.

Design Information

Work Counter Heights	Guidelines
Grades	
Pre-K-3	24" to 26"*
4-5	30"*
6-8	30" to 36"*
9-12	33" to 36"

* Handicapped standards for children up to age 12 must be met.

Marker/Chalkboard Rail Heights	Guidelines
Grades	
Pre-K-3	21"-26"
4-5	28"-30"
6-8	29"-32"
9-12	33"-36"

Plumbing Fixture Mounting Grades	Height (to rim)	Americans with Disabilities Act (ADA) Standards
Water Closets		
K-3	15"	15"
4-6	15"	15"
7-12	15"	17"-19"
Urinals		
K-3	14"-17"	14"
4-6	20"	14"
7-9	22"	17"
10-12	24"	17"
Lavatories		
K-1	24"	28" (24" min. knee space)
2-6	27"	30"
7-12	31"	34"
Drinking Fountains		
K-3	24"	30"
4-6	28"	30"
7-12	34"	34"

Plumbing Fixture Mounting Grades	Height (to rim)	Americans with Disabilities Act (ADA) Standards
Showers		
K-5 Boys & Girls	50"-56"	*
7-9 Boys	72"	*
7-9 Girls	60"-66"	*
10-12 Boys	72"	*
10-12 Girls	66"	*

* Fixed and flexible plumbing fixtures shall comply with the most recent ADA federal standards.

APPENDIX

Exception to the Wyoming Public School Facilities Guidelines

Each school district shall evaluate its proposed plans for capital construction projects using the *Wyoming Public School Facilities Guidelines*. Any exception to these guidelines shall be reported on the attached form and submitted with the proposed plans.

The exception form is on the following page.

Exception to the Wyoming Public School Facilities Guidelines

Date:
Local School District:
Designer:
School Facility & Project:

The items noted below significantly differ from the guidelines adopted in the *Wyoming Public Schools Facilities Guidelines, (May, 2001).* Filing for an exception regarding the construction of this facility *may* result in difficulty or even the inability to provide an effective educational program, reduced function of the facility, impaired performance of building systems or other significant problems.

A copy of this notice will be placed in the permanent file for this school facility.

	Guidelines	Amount Shown	Comments/Explanation
Site			
K Regular Classrooms			
1-3 Regular Classrooms			
4-8 Regular Classrooms			
9-12 Regular Classrooms			
Science Classrooms/Labs			
Exceptional Children			
Music			
Visual Arts			
Theater			
Vocational Education			
Media Center			
Physical Education			
Staff Offices			
Circulation			
Other (Itemize)			

Initials: _____Local Board of Education Member _____State Superintendent of Public Instruction
_____Designer _____WDE Consultant

RECOMMENDED LIGHTING SYSTEMS WITH ILLUMINATION LEVELS

INTERIOR LOCATIONS	MAINTAINED ILLUMINATION IN FOOT-CANDLES* MINIMUM	MAXIMUM	TYPE OF LIGHTING FIXTURES
AUDITORIUMS			
SEATING AREA	10	15	FLUORESCENT (DIMMING OR MULTIPLE SWITCHING)
STAGE SET-UP	20	30	FLUORESCENT
CONCERTS ON STAGE	50	75	FLUORESCENT
DRAMA WITH ACCENTS	VARIABLE	100	INCANDESCENT (TRACKS WITH DIMMING EQUIPMENT)
CAFETERIAS			
KITCHEN/SERVING AREA	50	75	FLUORESCENT
DINING ROOM	10	20	FLUORESCENT
CASHIERS	20	30	FLUORESCENT (TASK LIGHTING)
DISH WASHING	20	30	FLUORESCENT (LISTED FOR WET LOCATIONS)
CLASSROOMS			
GENERAL	50	75	FLUORESCENT
ART	50	75	FLUORESCENT
COMPUTER	50	75	FLUORESCENT (INDIRECT LIGHTING)
DRAFTING	75	100	FLUORESCENT
STUDY HALLS	50	75	FLUORESCENT
HOME ECONOMICS	50	75	FLUORESCENT
LABORATORIES			
GENERAL	50	75	FLUORESCENT
DEMONSTRATION	100	150	FLUORESCENT (TASK LIGHTING)
LIPREADING	100	150	FLUORESCENT
MUSIC	50	75	FLUORESCENT
SEWING	75	100	FLUORESCENT (TASK LIGHTING)
SHOPS	50	75	FLUORESCENT (HIGHER LEVELS MAY BE USED FOR DETAILED
TYPING	50	75	WORK)
CORRIDORS AND STAIRWELLS (USE REMOTE OR KEYED SWITCHING)			
MIDDLE AND HIGH	20	30	FLUORESCENT
ELEMENTARY	10	15	FLUORESCENT
TROPHY CASES	50	75	COMPACT FLUORESCENT
WALL "WASHING"	MIN. AMOUNTS		COMPACT FLUORESCENT

INTERIOR LOCATIONS	MAINTAINED ILLUMINATION IN FOOT-CANDLES* MINIMUM	MAXIMUM	TYPE OF LIGHTING FIXTURES

GYMNASIUMS - MULTIPLE SWITCHING TO OBTAIN VARIOUS LEVELS - COMPETITION GAMES VERSUS PHYSICAL EDUCATION)			
COMPETITION BETWEEN SCHOOLS	30	50	METAL HALIDE
PHYSICAL EDUCATION	20	30	METAL HALIDE
LOCKERS AND SHOWERS	20	30	FLUORESCENT (LISTED FOR WET LOCATIONS)
ELEMENTARY (MULTIPURPOSE)	20	30	METAL HALIDE OR FLUORESCENT
MECHANICAL, ELECTRICAL & BOILER ROOMS	30	50	FLUORESCENT (INDUSTRIAL FIXTURES) OR INCANDESCENT IF ON WHILE "TEMPORARILY" OCCUPIED
MEDIA CENTERS			
READING ROOM, CHECK IN/OUT, CARD FILES	50	75	FLUORESCENT FLUORESCENT
BOOK STACKS, MAGAZINE RACKS	30	50	FLUORESCENT
OFFICE AREAS	50	75	FLUORESCENT
AV AND OTHER STORAGE	7.5	10	FLUORESCENT (TASK LIGHTING)
AV REPAIR	75	100	
OFFICES			
GENERAL OFFICE WORK	75	100	FLUORESCENT
CLOSE WORK	100	150	FLUORESCENT (TASK LIGHTING)
TEACHER WORKROOM	30	50	FLUORESCENT
CONFERENCE ROOM	30	50	FLUORESCENT
STORAGE ROOMS, PIPE CHASES, ATTICS, CRAWL SPACES	7.5	10	FLUORESCENT (OR INCANDESCENT IF ON "TEMPORARILY" WHILE OCCUPIED)
SWIMMING POOLS	7.5	10	METAL HALIDE OR FLUORESCENT (LISTED FOR WET LOCATION)
WASHROOMS/GROUP TOILETS	20	30	FLUORESCENT (USE REMOTE OR KEYED SWITCHING)
WASHROOMS/FACULTY TOILETS	10	15	FLUORESCENT

EXTERIOR LOCATIONS (ALL FIXTURES SHALL BE LISTED FOR WET LOCATIONS AND OUTDOOR USE)

EXTERIOR LOCATIONS	MAINTAINED ILLUMINATION IN FOOT-CANDLES* MINIMUM	MAXIMUM	TYPE OF LIGHTING FIXTURES
BUILDING EXTERIOR (FOR SECURITY PURPOSES)	1	1 1/2	HIGH PRESSURE SODIUM OR METAL HALIDE
PARKING LOTS AND WALKWAYS	1	1 1/2	HIGH PRESSURE SODIUM OR METAL HALIDE (COMPACT FLUORESCENT MAY BE USED FOR WALKWAYS)
SPORTS COMPLEXES			
SOCCER/FOOTBALL STADIUM	30	50	METAL HALIDE
BADMINTON/VOLLEYBALL/TENNIS COURTS	20	30	METAL HALIDE
BASEBALL/SOFTBALL			METAL HALIDE
OUTFIELD	15	30	METAL HALIDE
INFIELD	20	50	
SEPARATE RUNNING TRACKS (NOT A PART OF A FOOTBALL OR BASEBALL STADIUM)	15	15	METAL HALIDE

*BASED ON IES RECOMMENDATIONS

PLUMBING CONSIDERATIONS

CODES

Uniform Plumbing Code (UPC), which may be modified by local authority.

PIPING

a. Domestic Water Line Material

Above Grade
AL@ copper joined with lead free solder.

Below Grade
AK@ copper silver solder or cement lined cast iron except in areas with chemically active soil.

b. Waste and Vent Material

Above Grade
Cast iron no hub or PVC where code permitted (special requirements must be used when PVC penetrates fire rated walls, floors, or is installed in fire rated walls). PVC should not be installed in return air plenums.

Below Grade
Cast iron no hub or PVC.

c. Acid Waste Material
Chemistry or photography waste and vent should be polypropylene.

d. Water lines should be installed to conserve energy and prevent condensation.

e. If sinks or lavatories are over 80 ft. from hot water source, hot water should be recirculated.

f. Protect public drinking water from toxic and health hazard sources such as boilers, ice machines, fire and lawn sprinklers with backflow prevention devices.

PLUMBING FIXTURES

a. Number of water closets, lavatories, urinals and drinking fountains should adhere to the UPC, Appendix C as a minimum count.

b. Flush valve water closets generally have larger passageways, are less susceptible to damage, and require less maintenance.

c. Lavatories and lavatory faucet types should generally be selected for replacement availability.

d. Electronic faucets and flush valves are now reliable and provide handicap compliant devices when they can be afforded.

e. Placement and fixture type must conform to ADA requirements.

WATER HEATERS

a. Long-term energy costs should be examined before choosing the fuel type.

b. Generally 110 deg. F hot water should be delivered to lavatories and showers.

c. Showers should have some kind of flow restricting device (3 gpm) and shower timers are recommended to limit water usage.

d. Kitchen hot water requirements are dependent on the dishwasher and triple compartment sink Health Department requirements. Temperature requirements are found in the Wyoming Food Service Regulation that may be modified by local County Health officials.

SPECIAL WASTE REQUIREMENTS

a. Most kitchens will require grease interceptors. The size and location will be determined by the code authority. Generally they are required to be outside so that they may be emptied easily. The location of the code required venting is very important because of the foul odor that can be emitted.

b. Waste from vehicle repair areas is generally required by code to be discharged through oil/sand separators with provisions for collecting the oil and removing the sand.

c. Waste discharge from chemistry laboratories should be neutralized in specially constructed tanks containing limestone chips. These need to be located where they can be easily filled and observed.

d. Photo lab waste (depending on the size of the lab) may require special metal recovery devices.

HEATING, VENTILATING AND AIR CONDITIONING (HVAC) CONSIDERATIONS

CODES

The Uniform Building Code (UBC) and the Uniform Mechanical Code (UMC).

FUEL SOURCES

Life cycle costing analysis should be performed to aid in choosing the type of fuel (oil, gas, elec.) and the overall type of HVAC system used in school design.

RECOMMENDED

References: ASHRAE
HVAC Applications: Educational Facilities

RECOMMENDED INDOOR TEMPERATURES

Recommended Winter and Summer Temperatures for Various Types of Spaces in Schools:

Space	Winter Design Deg. F	Summer Design Deg. F
Classrooms, Laboratories, Libraries, Adm. Areas, etc.	72	78
Shops	72	78
Locker, Shower Rooms	75	
Toilets	72	
Storage	65	
Mechanical	60	
Corridors	68	80

It is recommended that when indoor temperatures exceed recommended maximums for more than 10% of the school hours that mechanical air conditioning be installed.

RECOMMENDED OUTDOOR DESIGN TEMPERATURES

It is recommended that the median of extremes be used as winter design temperature and that the 0.5% occurrence be used as the summer design temperature.

	Summer		Winter
	Design Dry Bulb 0.5%	Design Wet Bulb 0.5	Median of Extremes
Big Piney	82	60	-35
Buffalo	91	65	-23

Casper Airport	91	62	-20
Cheyenne Airport	88	63	-20

	Summer		Winter
	Design Dry Bulb 0.5%	Design Wet Bulb 0.5	Median of Extremes
Cody Airport	89	60	-20
Douglas	92	63	-22
Dubois	81	58	-29
Evanston	83	60	-22
Farson	83	58	-36
Gillette	93	65	-22
Greybull	95	63	-26
Jackson	83	61	-30
Kemmerer	84	58	-22
Lander Airport	89	61	-21
Laramie Airport	81	60	-23
Lusk	92	66	-20
Newcastle	91	68	-21
Rawlins	85	62	-20
Riverton	92	62	-27
Rock Springs Airport	85	58	-20
Sheridan Airport	94	66	-24
Sundance	90	69	-22
Thermopolis		93	62 -24
Torrington	93	68	-20
Wheatland	92	63	-19
Worland	94	63	-28
Yellowstone Park (North Gate)	83	60	-22

RECOMMENDED VENTILATION RATES

Ventilation for School Spaces

Occupancy Type	Est. Persons per 1000 ft.^{2} of Floor Area	Required Outdoor Air Per Occupant cfm/ person	cfm/ ft.^{2}

Classrooms	50	15		
Laboratories	30	20		
Training Shops		30	20	
Music Rooms	50	15		
Libraries	20	15		
Locker Rooms				0.50
Corridors			0.10	
Auditoriums	150	15		

Note: Where code requirements exceed values in this table, code requirements shall govern.

RECOMMENDED SOUND LEVELS DUE TO HVAC EQUIPMENT

	A-Sound Levels Decibels	Desired NC (Noise Criteria)
Libraries, Classrooms	35-45	30-40
Laboratories, Shops	40-50	35-45
Gyms, Multipurpose corridors	40-55	35-50
Kitchens	45-55	40-50

CONTROLS

Since there are relatively long periods of unoccupied time, systems should have the ability to close off the ventilation dampers and to reduce the temperature set points of the various spaces during unoccupied periods.

SPECIAL SYSTEMS

a. Kitchens

Exhaust requirements should match the recommendations of the exhaust hoods and dishwashing equipment and at a minimum to meet the UMC. Filtered, heated make-up air should be provided for the exhaust.

Portable class K extinguishers are required.

Fixed suppression equipment on kitchens with hood and dust stoves shall be in use as of January 1, 2002.

b. Shops

Exhaust should be provided for welding areas, woodworking and automotive repair areas. Filtered, heated make-up air should be provided to replace exhaust air. Ventilation rates and equipment should conform to Industrial Ventilation requirements of the American Governmental Industrial Hygienists.