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ABSTRACT

The Jefferson County School District (Colorado) has developed a manual of high school specifications for Design Advisory Groups and consultants to use for planning and designing the district's high school facilities. The specifications are provided to help build facilities that best meet the educational needs of the students to be served. Descriptions of the learning spaces and the spaces required to support and manage the learning activities are provided, along with descriptions of each space's function and the spatial relationship requirements, and specific specifications for furnishings and equipment where applicable. Areas covered include: the core spaces for administration/counseling; cafeterias; auditoriums; physical education and athletic complex; the instructional spaces for general classrooms, science labs, various special labs, music and art classrooms; and classrooms for special education. Additional specifications cover site development standards; building space allocations and wiring standards; mechanical, electrical, and communication rooms; special systems; acoustic criteria; and furniture and equipment. Appendices include a data diagram, an enrollment projection report, media and room finish matrices, prototype kitchen plans, and technical guidelines. (GR)

High School Educational Specifications

Facilities Planning Standards

Edition I
January, 1998

Facilities Planning and Design Department
Jefferson County School District
Colorado

http://www.jeffconet.jeffco.k12.co.us/cm/specguides/edspecs1.html

HIGH SCHOOL
EDUCATIONAL SPECIFICATIONS

JEFFERSON COUNTY SCHOOL DISTRICT
COLORADO

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EDITION I
January, 1998

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INTRODUCTION

The purpose of this document is to provide a guide for Design Advisory Groups (DAG) and consultants for planning and designing high school facilities. A description of the learning spaces and the spaces required to support and manage the learning activities is provided. The function of each space and spatial relationship requirements for spaces are defined. The primary objective in planning and designing the learning spaces is to develop facilities that will best meet the educational needs of the students to be served. The learning spaces must be designed to facilitate the implementation of the District's secondary educational program. The spaces should also be designed to accommodate changes in use, educational program, teaching methods and instructional technology. Flexibility should be inherent in the design concept to minimize the cost and time required to make facility changes.

Historically, the District's high school program has been designed for grades 10, 11, and 12. However, the 9th grade programs has been added to some of the high schools in the District to more adequately and efficiently house students in a particular geographic areas. As a consequence the high school program has been adapted for either a 9-12 or 10-12 grade structure. This guide is based on a high school for **2000 students** with a **9-12 grade pattern**.

These High School Educational Specifications were developed in 1997 by a committee representing a cross section of District staff including principals, teachers, and other Central Administrative staff. The following committee members contributed to the preparation of these new specifications:

Ron Mitchell ..... Area Administrator
Dale Anderson ..... Principal, Arvada West High
Ken Robke ..... Principal, Arvada High
Kevin Land ..... Athletic Director, Columbine High
Don Cross ..... Director, Facilities Planning and Design
Pete Doherty ..... Design Coordinator, Facilities Planning and Design
Candi Roberts ..... Math Teacher, Green Mountain High
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Marta Vigil ..... Foreign Language Teacher, D'Evelvyn Jr./Sr.
Bonnie Jensen ..... Library Media Center, Conifer High
Greg Pedersen ..... Technology Education Teacher, Dakota Ridge High
Sheryl Mitchell ..... Consumer & Family Studies Teacher, Arvada West High
Craig Wilkie ..... Social Studies Teacher, Arvada High
Ken Sawyer ..... Music Teacher, Alameda High
Max Hendon ..... Building Engineer, Conifer High
Sharon Simmons ..... Secretary, Facilities Planning and Design

JEFFERSON COUNTY SCHOOL DISTRICT R-1: STRATEGIC PLAN

Our Mission:
To provide a quality education that prepares all children for a successful future.

We believe:
- All children can learn basic skills and achieve high standards.
- Our public schools are essential institutions that reflect community values and prepare students to participate fully in our democratic society.
- We recognize that student learning is impacted by life circumstances that are beyond the control of the school district; however we are committed to all children achieving high standards and becoming successful, contributing members of society.
- Our schools, as part of a community system, must work collaboratively with families, other human service institutions, businesses and higher education to prepare students for future success.
- Schools are primarily responsible for ensuring that students learn; however, as students mature, they must assume increasingly greater responsibility for their own learning.
- Respect includes valuing differences among people, honoring people as our greatest resource, and giving people quality choices.
- Parents are responsible for working in partnership with the school and community to support, encourage and participate in their child's learning.
- We are committed to continuous improvement and lifelong learning.

Our community requires that we:
1. Make a commitment to all students being successful, safe, and well disciplined.
2. Deliver a high quality, consistent curriculum, designed to ensure that all students in every school master basic skills in reading, writing, mathematics, and the application of such skills to lie situations.
3. Set high standards and ensure that students can be successful in the next phase of their lives whether they go to college, attend technical school, begin an entry-level job, and/or serve as community members.
4. Measure student progress toward meeting standards and report results to students, staff, parents and the community on a regular basis.
5. Ensure that the K-12 standards are understood and supported by students, staff, parents, and community members.
6. Employ highly skilled, caring staff members who are committed to and held accountable for the success of each student.

7. Provide students and parents with quality choices.
8. Work in partnership with parents and others in the community to ensure that all students thrive.
9. Provide strong central leadership for the district's schools and assume responsibility for sound fiscal management.
10. Provide access to state-of-the-art learning, resources, including technology, which support increased student learning.

PHILOSOPHY OF HIGH SCHOOL EDUCATION

Teaching and learning are cooperative communicative activities which are directly affected by classroom environment. A variety of study environments are necessary to accommodate various kinds of learning styles. Because of the thoughtfully developed curriculum, space to properly teach the curriculum should also be as thoughtfully designed.

Senior high schools should be designed to accomplish the following:
1. Equip students with basic skills and prepare them for careers and/or advanced study.
2. Offer students and teachers an exciting learning environment in which individualization, application, involvement, relevancy and progress are the norm.
3. Offer students opportunities to become involved in activities and programs designed to cultivate pride, self worth, responsibility, and understanding.

This document defines the educational functions of each space, the relationship of one area to another and the space required for the various functions. The suggestions and recommendations of the Educational Specification Review Committee are based on their knowledge of workable facilities, an understanding of the District's curriculum and educational program, professional expertise in directing the instruction of high school students in today's world and an understanding of the resources available for facilities development.

These specifications describe the following for each identified area.
1. The educational function of each area.
2. The spatial relationships of related areas.
3. The space required to accommodate the program.
4. Specific specifications for furnishings and equipment where applicable.

Teaching and learning are cooperative communicative activities that can be affected by the classroom environment. A variety of classroom organizations, large groups, small groups and independent study are necessary to accommodate various kinds of learning styles and activities including physical movement, long term projects, cooperative learning groups, work with manipulatives, learning centers, and process learning. The school should provide the child with essential facts, experiences, skills and sources of information. Because of the thoroughly developed curriculum programs, space for specific materials and equipment to support those programs must be appropriately designed.

The educational facility is an integral part of the educational program. The facility has an influence on learning, the performance of staff and students, and indirectly influences attitudes and behavior. The facility serves a greater purpose than merely housing students or the educational program. The following factors are to be considered in the design of high schools:

1. The educational facility should reflect the value placed on education by the residents, staff and Board of Education of this District. The facility also reflects the goals and aspirations of the educational community and the community at large in educating our young people.
2. The educational facility should create a setting that is conducive to optimal learning and human performance. The materials, textures, colors, lighting climate, and fixtures should be considered vital to the learning process and should be scaled throughout to the social-emotional needs and developmental level of the elementary student.
3. The educational facility should be designed to provide flexibility in accommodating a variety of teaching and learning styles. The facility should allow for changing program needs with spaces that are conducive to restructuring without major impact on building systems or requiring major renovation.
4. Technological changes in our society are occurring at an ever-accelerating pace. The educational facility must be designed to accommodate current technologies such as computers, computer networking, Internet, distant learning, teleconferencing, telecommunications, television and video. The facilities design should be flexible to accommodate the installation of emerging new technologies.
5. The educational facility should foster communication between and among students, teachers, administrators, counselors, support staff and parents.
6. The design of the school should encourage the development of community, both within the school and with the surrounding neighborhood. It should provide meeting and display spaces that foster constructive interactions and pride among children in both academic and social situations. It should provide the flexibility for a broad utilization of the school building and site by a variety of community groups.
7. The educational facility should provide a humane, stimulating, roomy environment that is inviting to students, staff and parents.
8. The educational facility should provide an environment that encourages the staff to perform in a professional manner.
9. Full accommodations for the disabled are required in all new facilities. Continuing remodel and renovation of older facilities requires accommodations be made, where readily achievable and structurally practical. When accommodations cannot be made in older buildings then the district will offer program accessibility by providing the same service or program in an accessible facility elsewhere.
10. The educational facility is to be efficiently designed to minimize energy usage, provide maximum assignable space/utilization, be easily maintained/operated and provide maximum life cycle value.

CORE AREAS

Core areas consist of spaces which house functions that are relatively independent of school size and curriculum. Quantities of personnel involved can change with increases or decreases in student enrollment and should be considered in the final design. The spaces described are for a 2,000-student high school.

The **core area** spaces include:

Administration
Guidance/Counseling
Auditorium
Support Spaces
Cafeteria/Student Center
Library Information Center
Physical Education/Athletic Complex

Most of the core areas will have extensive after school student and community use. Their location must provide direct public access from convenient parking, provide for building security needs and provide flexible utilization by both school and community groups.

ADMINISTRATION/COUNSELING

SPACE DESCRIPTION:

This area houses the administrative function of the school including offices of the principal and assistant principals; reception area for students, parents and visitors; telephone switchboard and intercom system; business office; mail receipt and distribution; attendance office; clinic; and student records. Specific activities include meeting students and parents, management of physical facilities, determining staff needs and assignments, maintaining student records, financial administration, supervision of student conduct, delivering health services to students and organizing and supervising extracurricular activity programs.

The administration area should be located at the main entrance to the building and adjacent to the parking lot used by visitors. The main entrance should be visible from the administrative area. The area should also be in close proximity but separate from Guidance and Counseling.

The guidance and counseling area will provide office space for six counselors and one SERS, a receptionist, waiting space for fifteen to twenty students, vocational and college resource materials, files, copy machine, etc.

The area should be near the main entry, adjacent to but separate from administration and located for easy access to student traffic directly from a main corridor and possibly near the cafeteria/student center. Ideally the Counseling Center would be adjacent to the Library.

A. Administration Offices

1. Principal's Office
2. Assistant Principal's Offices (6)
3. Reception Area/General Office
4. Secretary
5. Business Office
6. Mail Area
7. Conference Room(s)
8. Athletic Office
9. Attendance Office
10. Health Center/Clinic
11. Work Room
12. Staff Toilets (2 unisex)
13. Building Engineer Office
14. Storage - Office and Student Senate/Clubs
15. Campus Supervisor & Police Sub-office
16. Suspension Rooms (3 – optional)

Guidance and Counseling

1. Reception Area
2. College/Career Center
3. Conference/Testing Room
4. Records and Storage
5. Counselor Offices (8)

DESIGN CRITERIA:

A. Administration Offices

1. Principal's Office

a. There is one principal's office of approximately 250 square feet.
b. The office should be in a prominent location but also provide privacy when required. The principal's office should be adjacent to the administrative conference room.
c. This office should accommodate an executive desk and credenza, side table with four (4) chairs and bookshelves along one wall.
d. Ideally there should be two (2) exits from the principal's office; one opening directly into the principal's secretary's area and the other opening into an interior hallway leading to the exterior or a door directly to the exterior.

2. Assistant Principal's Offices

a. There are six assistant principal's offices of approximately 180 square feet each.
b. These offices need to be in close proximity to the principal's office and be accessible from the general reception/secretarial area.
c. The offices need to accommodate an executive desk, side table and three (3) chairs, bookshelves and two (2) four-drawer legal files.

3. Reception/General Office

a. This area will be a receiving point for students, parents and visitors to the administrative complex. The receptionist may double as a secretary so the reception counter needs to be adjacent to and visible from the general secretarial area.
b. The reception area should seat as many as twelve (12) people. The reception area will also house the telephone, fire alarm and intercom system's central electronic controls.

4. Secretary Area

a. As many as four secretarial work stations should be provided. Each secretarial area should have a standard secretarial desk to accommodate a computer, four four-drawer legal files and a telephone.
b. Secretaries should be located to provide:
    1. General supervision of the reception area;
    2. Back-up to the clinic;
    3. Good communication to principal and assistant principals and
    4. Access to the business office, mailroom, conference room, attendance office, work room, restroom and storage areas.

5. Business Office

a. The Business Office is a contact point for students to pay fees. Student access should be confined to a hall service window to reduce congestion at the reception area.
b. Employee access to the business office should be from the administration general office.
c. The room should have:
   1. Service window to the corridor
   2. Counter and base cabinets under the service window
   3. Space for a vault (consult with Purchasing Department on current model number and size being supplied to schools).
   4. There should be space for two desks, one with typing return, two four-drawer legal files and a computer with printer.

6. Mail Area

a. The mail area is a wall filled with slots in the reception and secretarial area. General secretarial staff distributes mail. Mailboxes should not be a pass through type and should be closed at one end. Mail slots should be large enough to handle a "pony" envelope at least 3 inches thick.

7. Conference Room(s)

a. The conference room should be located centrally to the principal's and assistant principal's offices and general office area and be capable of housing groups of twenty people. An option to have this room divisible for two small conference rooms should be considered. Variable lighting for presentations should be considered.

8. Athletic Office

a. Provide an office space for the athletic department to house a secretary, keep records and collect fees. This space should separate from administration and have access directly to the corridor.

9. Attendance Office

a. The attendance office should also be located adjacent to the reception and general secretarial area. Student access should be confined to a corridor service window and employee access through the secretarial area.
b. The room should have:
   1. Counter and cabinets under the service window.
   2. Space should be provided for two secretarial stations and four 4-drawer legal files.

10. Health Center /Clinic

a. The clinic should be easily viewed from the main office secretarial area. On days when the nurse is not scheduled to be at the school, one of the secretaries fills this position as needed.

b. A separate reception area for up to five students is desirable. This space should also have display space for health publications.
c. The clinic should have an office for a nurse aide. The room should have a desk and large enough to seat four people. It should provide adequate sound separation for confidentiality.
d. The clinic should have a handicapped accessible toilet with an out swinging door.
e. The bed area needs to have room for two beds and be separated by privacy curtains (ceiling track mounted). Other equipment to be located in this area is:
    1. Refrigerator
    2. Scale
    3. Lockable upper and lower first aid cabinets with a sink. The sink should have a gooseneck faucet and blade handles.

11. Work Room

a. The workroom also needs to be adjacent to the secretarial area to provide maximum usage and minimum foot traffic. This area will house the copy machines, miscellaneous storage cabinets and worktables for production of daily tasks. This area is likely to be staffed by student volunteers or part-time aides.

12. Staff Toilets

a. A unisex toilet area should be provided to service the administrative and counseling areas.

13. Building Engineer Office

a. A custodial office should be provided near the receiving area and adjacent to the Commons area and Kitchen. It should also be near the Office and have easy access to the Gymnasium and the Auditorium.

14. Office Storage

a. Provide a room for general storage of office supplies. Both administration and guidance/counseling can use this room.

15. Campus Supervisor/Police Sub-office

a. Provide an office for the campus supervisor and/or police sub-station. This office should be located near the main entry lobby and administrative area but can be separate from the other administrative offices.

16. Suspension Rooms (optional)

a. Provide three small workstations or rooms for isolating in-house suspended students. These rooms shall have only a desk for the student to work on and have visual supervision from the administrative area.

B. Guidance and Counseling

1. **Reception Area**
   a. This space will house a secretary and a receptionist and a casual seating area for fifteen to twenty students. (With shelf and display space for information on vocations, colleges, technical and business schools.)

2. **College/Career Center**
   a. This space will provide shelf and display space for career information related to postsecondary training, military options, and job entry positions. Counter space should be available in the career center to accommodate computers, a VCR, and room for college/military representatives to talk with students. Work tables to read the information is also necessary. Bulletin Board space is needed to display information. Hallway access is necessary to the career center

3. **Conference/Testing Room**
   a. This space is to be divisible into two spaces to be used as testing areas. When combined this space should provide conference space for ten people. The conference room should be accessible from the administration area.

4. **Records Storage**
   a. This is shared space with administration and includes a secured storage system for the keeping of permanent records. This should be a separate locked room with fire protection (oxygen suppression).

5. **Offices**
   a. Each office should be large enough to house a five-foot desk and executive chair, one four-drawer legal file and three side chairs.

ADMINISTRATION SQUARE FEET SUMMARY

Principal's Office	250
Assistant Principal's Offices (6@ 180 sq. ft.)	1080
Reception Area	430
Secretary	800
Business Office	300
Mail Area	70
Conference Room	600
Athletic Office	300
Attendance Office	300
Health Center/Clinic	300
Work Room	400
Rest Rooms (2 unisex at 75 sq. ft.)	150
Building Engineer Office	200
Office Storage	500
Student Senate/Club Storage	400
Campus Supervisor & Police Sub-office	200
Suspension Room (3 at 40 sq.ft.)	120
Administration Total	**6,400 S.F.**

GUIDANCE AND COUNSELING SQUARE FEET SUMMARY

Reception	400
College/Career Center	700
Conference/Testing Room	250
Records and Storage	225
Offices (8 @ 125)	1,000
Guidance and Counseling Total	**2,575 S.F.**

AUDITORIUM

SPACE DESCRIPTION:

The high school auditorium is utilized for many activities that will be open to the public. For many visitors this will be their only contact with the school. The facility must be designed to instill on visitors a favorable impression of the school.

The auditorium is a special use facility that must be configured to allow multiple use to the greatest extent possible. As the main performance space, it must be suitable for assemblies, theater, films, special speakers and large group instruction and testing. Acoustical and lighting control must be on a professional scale but also in the realm of a teaching medium. Space should be provided for seating 550, a platform area that will provide full production space (both vertically and horizontally), adequate lobby area for large group meetings and adequate space and position of a projection and control booth.

The auditorium should be located near the vocal music area of the school. The commons area can act as a lobby with concessions during intermissions. Auditorium should be accessible to the main corridor system and have access to the control booth if possible. Provide catwalks for safe access to lighting/sound equipment. Ideally, access to the catwalk should be from an adjacent upper level space in lieu of wall mounted vertical access ladder.

The platform area should be located directly off of a loading dock and be adjacent to the Vocal and Instrumental Music areas.

Auditorium Complex

1. Seating (house)
2. Stage
3. Control Booth
4. Director's Office
5. Orchestra Pit
6. Dressing Rooms - 2
7. Stagecraft Workroom & Storage
8. Ticket Sales

DESIGN CRITERIA:

1. Seating (House)

a. The seating area contains the general seating, entry vestibule, ticket office, orchestra pit and access to the control booth. Seating for 500 – 600 is necessary. Light levels in this area should be variable to a maximum of 35 foot candles at chair height. The entry vestibule should be located adjacent to the ticket office and the student commons area; the director's office will also be in this vicinity. Excellent sight lines and acoustical characteristics are desirable from all seats.

2. Stage/Platform

a. The Stage or platform should provide the necessary components for professional performances. Flexibility should be inherent in all systems to allow maximum educational benefit as well as production benefit. The platform should have a fifty foot minimum side-to-side proscenium opening with tormentors that are adjustable from side to side, a minimum thirty foot depth and have florescent work lights. All house and stage lights must be controllable from this area as well as from the control booth. Direct exterior access from this area with a 10' x 10' overhead door to a loading dock area is needed for transfer of props. Storage area, if provided, should be adjacent to this door.

3. Control Booth

a. The control booth should house the projection room and an observation deck. These should be located above the entry/lobby area and may be stacked, depending on available space and building code interpretation. All house and stage lights must be controllable from this room. Glass facing the stage should be operable windows.

4. Director's Office

a. The director's office should be located at the main entry level. This area should provide access to the control booth if located directly adjacent or above.

5. Orchestra Pit

a. Unless directed otherwise, the Architect shall include an orchestra pit for thirty musicians. This should be located to the front of the platform but below sight lines to the platform. The orchestra pit should be designed to be covered when not in use to form a thrust stage over the pit.

6. Dressing Rooms

a. The dressing rooms, one for men and one for women, may be incorporated into other spaces depending on the design concepts, such as restrooms or music practice rooms. A minimum of ten lineal feet of counter space with two sinks and mirror and incandescent lighting above the counter should be provided in each room. Provide a minimum of five lineal feet of space for hanging clothes.

7. Stagecraft Workroom

a. This space should be located near the stage and be accessible to the stage with a minimum 10' x 10' overhead door. Balcony storage should be considered.

8. Ticket Sales

a. Ticket sales shall be located at the school store.

AUDITORIUM SQUARE FEET SUMMARY:

1. Seating (500 - 600)	6,000 S.F.
2. Stage	2,000
3. Control Booth	450
4. Director's Office	200
5. Orchestra Pit	400
6. Dressing Rooms - 2 @ 100 sq.ft.	200
7. Stagecraft Workroom & Storage	1,000
8. Ticket Sales	-
Auditorium Total	**10,250 S.F.**

CAFETERIA/STUDENT CENTER

SPACE DESCRIPTION:

The student center contains spaces for the commons, kitchen, faculty lounge, toilet facilities, student store and custodian.

The student center should be centrally located to all school areas and activities. A direct relationship exists to the auditorium and gymnasium as a support facility. Provisions should be made for access to the delivery area for collection and disposal of trash.

A. Cafeteria/Student Center

1. Commons/Cafeteria
2. Kitchen
3. Faculty Lounge
4. Toilet Facilities
5. Student Store/Ticket Office
6. Custodial storage

DESIGN CRITERIA:

1. Commons/Cafeteria Area

a. The commons area is a multi-use space that will function for: cafeteria; school and community meetings; informal student gatherings; school dances and a possible lobby for gym or auditorium.

2. Kitchen

a. The kitchen is a cooking kitchen for two elementary schools as well as a cooking and serving kitchen for the high school. The kitchen should (be) provide (d with) a minimum of three serving areas that relate to a scramble line concept and should open directly onto the commons area. Direct access to the loading dock area is requested if at all possible. The kitchen should provide for the following areas:

Walk-in Freezer	100 sq.ft.
Walk-in Refrigerator	120 sq.ft.
Walk-in Dry Storage	400 sq.ft.
Dish washing	160 sq.ft.
Serving Areas	850 sq.ft.
Lockers and Dressing Area	90 sq.ft.
Toilet	40 sq.ft.
Trash	100 sq.ft.
Custodian	40 sq.ft.
Bake Shop	375 sq.ft.
Transfer Cart Storage Area	225 sq.ft.
Preparation Area	700 sq.ft.
Kitchen Total	3,200 sq.ft

b. Close coordination with the District's Food Service personnel will be required for the specific design of this facility.

3. Faculty Lounge

a. A single faculty lounge will be provided for staff members to eat lunch and hold meetings. The faculty lounge should have a kitchenette with a sink equipped with a disposal and a full size refrigerator and should also have a pair of unisex toilets for faculty use. The area should be adjacent to the commons area.

4. Toilet Facilities

a. The toilets adjacent to the commons area should satisfy 100% of the total building requirements by student count. This does not relieve the requirements for athletic areas and other special use areas. Toilets should be in a minimum of two areas to eliminate congestion.

5. School Store/Ticket Office

a. The student store is used to sell clothing, supplies, and prepackaged food items. A hand wash sink should be provided for this area. This area should be directly accessible to the commons area. If close to the gymnasium, a ticket sales office should also be included in this area.

6. Custodian

a. Provide a janitor's closet adjacent to each toilet facility for storage of supplies required to care for the commons area.

CAFETERIA/STUDENT CENTER SQUARE FEET SUMMARY

Commons/Cafeteria	4,550 S.F.
Kitchen	3,200
Faculty Lounge	1,200
Toilet Facilities	1,200
Student Store/Ticket Office	300
Custodial storage	150
Cafeteria/Student Center Total	**10,600 S.F.**

LIBRARY INFORMATION CENTER (LIC)

SPACE DESCRIPTION:
The Library Media Center is the academic core of the building. The LIC should have a high degree of visibility to students, teachers and visitors. The LIC is used for individual study, group study, group instruction and conferences. The prime function of the library is to teach students how to gather information and therefore should be considered a "Teaching Station".

Community use of the LIC is also encouraged. A partnership between the school district and the public library should be researched to promote community use. Any additional space needed for a public library that is not usually part of the high school library should be funded by the public library.
Staffing and public use hours are just two of the many items that need to be discussed and agreed to before the facility opens.

A. Library Information Center

1. Instructional seating, stacks
2. Circulation desk/Periodicals and Reserve
3. Catalog/Reference/Research
4. Media Production Area
5. Library Staff Office
6. Classroom
7. Processing/work rooms/AV Storage
8. Staff Toilet (optional)

DESIGN CRITERIA:

1. Instructional Seating, Stacks Area

a. This is the body of the LIC from which everything should be serviceable. Stacks in the center shall be no more than 48" high. Seating in this area should hold two groups of 30 students in separate environments. This area should accommodate at least two groups working simultaneously in the LIC as well as individual or small groups of students in independent work areas. Space should allow for both classroom use of these resources as well as independent users.

b. Size of the LIC collection is estimated at 12,000 to15,000 volumes. Shelf space is figured at one inch per volume. Oversize volumes, e.g. Atlases, require that some shelving be adjustable. Traffic patterns in this space should be structured to allow movement with the least disturbance to people in study areas.

c. The LIC shall be ADA accessible. A minimum of 25 multi-media computers, printers shall be spaced throughout the LIC. There will be shelving on the outside perimeters

2. Circulation Desk

a. The circulation desk should be near the main entry, with a direct access route to major

traffic patterns off of central corridors. Visibility to the entire library is a necessity. Space should be provided at the circulation desk for three workstations for computer use with printer, circulation records, and book checkout security (desensitizer) equipment.Security equipment at the entry must be a minimum of ten feet from computer terminal and entry magnetic fields. Local options may provide shelving for open access to these resources as a part of the instructional seating as well as a Copy machine and a fax. The circulation desk is part of the FF&E package and not included in the general construction contract.

3. Catalog/Reference/Research

a. Provide area for 30 computer workstations (combination of stand-up and sit-down) for students to lookup catalog and reference information. These workstations should be networked to printers and can either be located in one area or clustered throughout the student area. At least two stations must be wheelchair accessible.

4. Media Production Room

a. Provide a room for students to produce video projects using scanners and a digital camera. The room should have visibility from the main LIC area through windows. Provide space for 8 computer stations and two printers.

5. Library Staff Office

a. The office location should optimize supervision of the instructional seating area and enhance access by students and staff. Proximity to the circulation desk with visibility to all areas is critical. The space should support two or three "systems furniture" workstations and conferences with staff.

6. Classroom

a. Provide a standard classroom that can be subdivided into two separate rooms for student, staff and community use. Direct access from a public corridor is preferred. Locate away from heavy traffic and noise areas. Provide a small section of casework with a sink. Technology should be provided as per the District standard. Refer to the media matrix for the specific requirements.

7. Processing/Work Room/AV Storage

a. This area should have a combination of shelving types. One wall of this room should have a work counter with storage shelves under it.
b. Space will be provided for graphics production, photocopying, copy stand photography, and desktop publishing. LIC workroom space supports the clerical activities involved in processing learning resources.

8. Staff Toilet (optional)

a. Provide a unisex staff toilet that is handicapped accessible.

LIBRARY INFORMATION CENTER (LIC) SQUARE FEET SUMMARY

Instructional seating, stacks	5,750 S.F.
Circulation desk/Periodicals and Reserve	450
Catalog/Reference/Research	350
Media Production Room	650
Library Staff Office	300
Classroom	900
Processing/work rooms/AV Storage	850
Staff Toilet	60
Library Information Center Total	**9,310 S.F.**

PHYSICAL EDUCATION & ATHLETIC COMPLEX

SPACE DESCRIPTION:

This area should have maximum usable space for the multiple presentation of boys and girls physical education activities. The students are actively involved at all time within the limiting factors of space, equipment, supervision and safety. Total involvement in the physical education program as well as the athletic and intramural activities requires flexibility and adaptability of the physical plant and grounds. A minimum of five teaching stations will allow the type of program that today's curriculum needs.

Athletic programs are comprised of ten sports for boys and eleven sports for girls.

BOYS SPORTS		GIRLS SPORTS
	FALL	
Cross Country		Softball
Golf		Cross Country
Tennis		Volleyball
Soccer		Gymnastics
Football		
	WINTER	
Basketball		Basketball
Wrestling		Swimming
	SPRING	
Swimming		Track
Track		Tennis
Baseball		Golf
Lacrosse		

In order to conduct these programs the following areas are needed:

- Large multi-purpose gymnasium
- Auxiliary gymnasium
- Fitness/Weight Room
- Wrestling/Aerobics

Outdoor facilities require regulation size playfields for:

- Football/Track
- Soccer
- Baseball
- Softball
- Tennis
- Lacrosse and field hockey can share use of the fields listed above.

As other sports are sanctioned by Colorado High School Sports Activities Association, they will be added to the list.

These programs will be conducted in a multi-purpose gymnasium; auxiliary gymnasium; fitness/weight room and outside playfields and facilities. Program support areas include boys and girls locker room facilities, storage space, and training rooms.

The gymnasium should have easy access to the outside playfields and facilities.

PHYSICAL EDUCATION & ATHLETIC COMPLEX

1. Multi-Purpose Gym
2. Auxiliary Gym
3. Wrestling, Aerobics Area
4. Fitness/Weight Room
5. Locker Room Facilities (Athletic & P.E.)
6. Equipment Storage
7. Coaches/team meeting room
8. Custodial Storage (wet)
9. Concession Stand

DESIGN CRITERIA:

1. Multi-Purpose Gymnasium

a. Configuration and Finishes - The gymnasium should be a single uncluttered space with masonry block walls and a hardwood floor. The walls are used for the physical education program as well as the floor. Walls should be flat, straight and smooth and the surface should be easy to clean. Braces, columns, windows, etc. which cause recesses or projections should be avoided.

b. Dimensions - The minimum dimensions of the gymnasium should be 114' x 80' for the floor with additional space for bleachers and a 25' clear ceiling height.

c. Drop Curtain - An electrically operated vinyl/net drop curtain is to be installed. The curtain should be open at the top and solid at least 10' from the floor. The curtain in the raised position must provide a minimum clearance of 23' to the floor. A door or opening is needed on both ends.

d. Bleachers - Provide motorized bleachers with wall mounted controls on two walls to seat 1,500 on one side and 1000 additional seats on the other side for a total of 2,500 seats for the main court seating. Each bleacher that has an option of providing primary seating for an event should be equipped with an appropriate attachable score-keeper/timer bench. Balcony area not required or desired.

e. Scoreboard - Provide two scoreboards, capable of dual and individual operation with central console locations as identified in the bleacher section and automatic time-out clock. Control console to be connected by appropriate extension cable to an outlet in the wall behind the bleachers.

f. Public Address System - Provide a public address system with provisions for

interconnection with the intercom system. Room acoustics for assemblies should be considered in the design.

g. Installed Equipment - Furnish, deliver, and install requested floor inserts for gym equipment Location of installed equipment is subject to building approval. Provide six - eight electrically operated, glass swing-up basketball backboards with break away rims. No exit should be located behind the main goals.
h. Floor Markings - Markings on the gymnasium floor should be in accordance with the National Federation rules and include the following and are subject to location placement once space is allocated. Special review with the athletics and P.E. personnel are required before final alignment of equipment and court layout.
    1. Spectator basketball court - 6" line
    2. Spectator volleyball court - 2" lines
i. Parking - Provide good access to parking for after hours usage with security closures.
j. Storage - Need gymnastic carpet, crash pads, with a power hoist system, wrestling mat storage area. Batting cage on pulley system

2. Auxiliary Gymnasium

a. Location - This area and the fitness area should be located in close proximity to main gym and locker area. Provide a scoreboard with separate controls, floor inserts for volleyball and gymnastics equipment, two - three rows of bleachers and a sound system.
b. Ceiling Height - The same as the Multi-purpose Gymnasium.

3. Fitness/Weight Room

a. Location - Adjacent to the gymnasium and in close proximity to the Auxiliary Gymnasium.
b. Ceiling Height - At least ten feet.
c. Floor Finish - Rubberized mat
d. Mirror - One plexiglass mirror, wall size

4. Locker Rooms (Athletic/P.E.)

a. Includes:
    1. Toilet facilities
    2. Showers
    3. Athletic locker rooms
    4. Physical education locker rooms
    5. Training room
    6. Towel room
    7. Offices(s)
    8. Storage
b. Ventilation - Provide air conditioning.
c. Training Room Equipment - Training rooms should be equipped with a whirlpool and icemaker machine. This area should be adjacent to the gym with separate access from both male and female locker rooms.

d. Design - The athletic locker room should be one large facility common to the varsity and junior varsity areas. The physical education dressing room should be adjacent to this area with coaches and physical education offices, the training room and storage in between the two areas. The PE office should be directly accessible to the gymnasium as well as to the locker room.

   The basic design should be one large room with the shower area located in the center. Walls for the shower should not exceed five feet to allow supervision of the area. Lockers not located on the outside wall should not exceed five feet for the same reason. Provide benches between the lockers rather than concrete seats.

e. Lockers: Physical education locker basket arrangement - Should be the single locker concept 12"x 12" x 18" with build-in locks.
   Number of physical education lockers - Girls 400, boys 600.
   Number of athletic lockers;
   Girls 250 half-length 12" x 15" x 36" perforated mesh-type team lockers.
   Boys 150 half-length 12" x 15" x 36" perforated mesh-type team lockers.
   Also provide 150 full-length lockers 12 x 15 x 72 perforated mesh type team lockers.

f. Offices - Girls and Boys, PE and Athletics:
   1. Physical Education - Space is needed for office and dressing area. Provide 5 full lockers 12" X 12" x 72".
   2. Athletic Offices - Provide separate office space for male and female coaches with separate gender, dressing areas. Provide 25 men and 15 women full lockers 12" x 12" x 72". Also provide counter space, chairs and a telephone.
   3. A combination dressing/shower area for each sex could be used between P.E. and athletic coaches.
   4. Provide one office for usage of PE teacher, separate from the coaching staff.
   5. Whiteboard and tackboard - Provide four feet of tackboard in each locker room and four feet of whiteboard in each room.
   6. Telephone requirements - Provide a telephone in each office.

5. Storage Areas

a. General - This area is to be used for large apparatus and team sports. Additional uniform and physical education storage is to be located in the locker rooms. Storage space is critical and this area should not be cut.
b. Storage Cages - Provide cages twenty 5' x 10', one 5' x 20' for football and one large 600 sq. ft. for storage. Storage should be accessible to gyms, floor to ceiling dividers.
c. Mat storage area - provide an area large enough to store gymnastic crash pads.

6. Outdoor Facilities

See "Site Standards"

P. E. & ATHLETIC COMPLEX SQUARE FEET SUMMARY:

Multi-Purpose Gym w/bleachers	14,000
Auxiliary Gym	7,400
(104' x 70') with 2-3 rows of bleachers	
Wrestling, Aerobics Area	2,400
Fitness/Weight Room	3,200
Locker Room Facilities (Athletic & P.E.)	7,600
(Girls - 3,600 sq.ft.) (Boys - 4,000 sq. ft.)	
Equipment Storage	1,900
Classroom/team meeting room	900
Custodial Storage (wet)	50
Concession Stand	200
P.E. and Athletic Total	**37,650 S.F.**

BUILDING SUPPORT AREAS

SPACE DESCRIPTION:

This includes space for corridors and stairways, student lockers, restrooms, custodial rooms, outside walls, mechanical rooms, unclassified storage, etc.

Student lockers are optional and shall be a decision made by each school's Design Advisory Group. If provided, lockers should be located along the walls of **main** corridors, **away from academic areas**. Banks of lockers located in clusters is undesirable. Restrooms should be dispersed throughout the building including faculty restrooms. Custodial closets should be conveniently located to serve all areas of the building. The main custodial room should be near the administrative area. The mechanical room should be located so as to be accessible from inside the building.

Support space should be the minimum needed to provide the support facilities included within the building. The amount of support space should be 35% or less of the combined total of instructional and non-instructional space.

Support Spaces:

1. Corridors
2. Toilets/Janitor Closets
3. Storage and Receiving
4. Student Lockers
5. Display Cabinets
6. Media Production/Retrieval/Studio
7. Technologists Office/Workroom
8. Communications Rooms (technology distribution)
9. Community/Conference/Seminar Room(s)

1. Corridors

a. Width - Should be adequate for anticipated traffic flows through each segment of hallway of each stairway. Hallways should be wider if student lockers are installed. Ceiling height should be in proportion to corridor width and sufficient to promote safe circulation during passing periods.
b. Finishes - Finishes should be durable and easily maintained and repaired.
c. Acoustics - Incorporate good sound attenuating qualities to prevent excessive noise within corridors, etc.
d. Vestibules - Provide vestibules for each major entrance/exit to corridors. Vestibules not required at emergency exits and classroom doors.
e. Natural light - Natural light through clearstories is desirable.

2. Toilets/Janitor Closets

a. Student toilets
   1. Location -distribute toilets throughout the building per code requirements. Provide
   2. adequate toilets near the gym and auditorium for after hours functions where other portions of the building are closed to the public.
   3. Finishes must meet state health department requirements.
   4. Toilet partitions should be plastic resin, floor mounted.

b. Faculty toilets - Location - Faculty toilets should be separate from student toilets and directly accessible from the teacher's lounge. The toilets shall be unisex with a lock inside door.

c. Janitor Closets - Location – distribute janitor closets throughout the building in similar locations as student/public toilets. Janitor closets should have a mop sink and shelving for storage.

3. Storage and Receiving

a. Deliveries - Will be of two kinds:
   1. Deliveries of expendable supplies paper material, etc. to the school including janitorial supplies and shall be equipped with a notification system. A receiving dock with a storage area of 800 square feet shall be provided.
   2. Delivery of food and equipment for the kitchen.

b. Storage areas - Need to be provided as follows:
   1. Book storage area - Shall be dispersed throughout the entire facility.
   2. Unclassified storage for materials and supplies should be accessible to all areas and convenient to a delivery station for receiving supplies and materials.

c. General Storage - Provide a storage room for receiving, stacking and processing of all school purchases. It should be located adjacent to the main receiving doors and near the Custodial Office.

d. Student Senate/Club Storage - Provide a room for the storage of materials for student senate and various clubs. Student senate or school clubs will meet in any available room but must store their materials in this central location.

4. Student Lockers

a. The need for lockers shall be optional based on a decision by the Design Advisory Group.

b. The location shall be in main corridors, away from the academic areas.

c. Size - 12" x 15" x 36" minimum. Full height lockers are optional.

d. Number - Lockers should not be shared. Provide one per student with space to add future lockers when student enrollment exceeds design capacity.

5. Display Cabinets

a. Provide lockable display cabinets distributed throughout the building. Cabinets are for display of trophies, awards, artwork, school store items, etc.

6. Media Production/Retrieval/Studio

a. Provide a central location for the media retrieval system equipment.

7. Technologist Office/Workroom

a. Provide an office/workspace for the school technologist. The office should be located near the media production/retrieval studio and will serve as an in-school hardware repair and programming room.

8. Communications Rooms

a. Provide a central telephone and data communications room with appropriate intermediate distribution rooms as required by the District data diagram.

9. Community/Conference/Seminar Room(s)

a. Provide a multi-use room for school and community meetings. This room should be centrally located with easy access by the public after school hours.

BUILDING SUPPORT AREAS SQUARE FEET SUMMARY

1.	Corridors	Included in Building % Factor
2.	Toilets/Janitor Closets	Included in Building % Factor
3.	Storage and Receiving	1,000
4.	Student Lockers	Included in Building % Factor
5.	Display Cabinets	Included in Building % Factor
6.	Media Production/Retrieval/Studio	750
7.	Technologists Office/Workroom	300
8.	Communications Rooms (technology distribution)	500
9.	Community/Conference/Seminar Room(s)	600
Building Support Area Total		**3,150 S.F.** (plus building % factor)

INSTRUCTIONAL AREAS

SPACE DESCRIPTION:

This Educational Specification can be implemented for either a departmental or interdisciplinary program. The instructional area includes space for both general and specialized classrooms. General classrooms would include the subjects of:

- Language Arts
- Social Studies
- Foreign Language
- Mathematics

Specialized classrooms would include the subjects of:

- Science
- Music
- Art
- Business Education
- Consumer/Family Studies
- Technical Education
- Special Education

Flexibility in space is essential for all general classrooms. Each classroom shall be able to house an average of 30 students. Each instructional "house, pod or academy" shall include teacher offices, adequate storage and a staff toilet. Refer to matrix in appendix for specific requirements in each room.

A. General Classrooms

1. Classrooms (50 general CR)
2. Teacher workrooms/offices
3. Storage
4. Staff Toilets (1 unisex at each workroom)

B. Language Arts

1. Publication Room
2. Book Storage

C. Social Studies

D. Foreign Language

E. Mathematics

DESIGN CRITERIA:

A. General Classrooms

1. Criteria

a. Since students spend the majority of their school day in general classrooms, these rooms should be as large as possible to accommodate a variety of teaching techniques. Classrooms shall be a minimum of 900 useable square feet with 1000 square feet desirable and shall be a proportion of 1 to 1.3. Folding partitions between some general classrooms should be considered to provide flexibility for group instruction and team teaching.

b. Classroom utilities such as electrical, data, telephone, CATV, etc. shall meet the district standards. See appendix for schedule of required utilities.

c. Whiteboard and tackboard - Provide sixteen feet of each. Where a classroom is divisible, each room should have eight feet of each.

d. Storage - Provide a minimum of 12 feet of lockable storage cabinets in each room for a variety of software, hardware, texts, etc. and capable of accommodating a minimum of 100 textbooks.

e. Windows/natural light - Windows or natural light are desirable in each classroom. All exterior windows shall have sun control devices such as blinds or shades.

f. Ceiling height in all classrooms shall be adequate for direct/indirect lighting and to accommodate a ceiling mounted 27"TV. Minimum ceiling height to be 9'-6".

2. Teacher Workroom(s)

a. Workstations - Provide space for individual work stations for all teachers. For maximum flexibility, it is suggested that systems furniture be used. Provide a minimum desktop surface of 32" x 48" with drawers, keyboard tray, wall shelves and a file cabinet for each teacher. Assume each workstation will have a computer and a telephone and that a printer located in the workroom will be networked to all workstations.

b. Utilities - Provide an electrical, data and telephone outlet for each workstation.

c. Conference Area - The workroom should also include space for informal meetings at a table with 4 chairs.

3. Storage

a. Provide a storage room at each teacher workroom to store books and supplies.

4. Staff Toilet

a. Provide a unisex staff toilet in each teacher workroom. Toilet is to be fully handicapped accessible lockable from the inside.

B. Language Arts

1. General Classrooms

a. The language arts curriculum can function within the criteria for general classrooms. Specific needs include a video projection and overhead projection requirement. Access to a computer lab is also necessary.

2. Publications Room

a. In addition to the general classrooms, provide a space for a newspaper publication room in close proximity to the media production area. The space should have workstations for ten computers.

b. Provide storage cabinets for supplies and material to accommodate the needs of the year book publication.

c. Utilities - The room should have adequate electrical, data and telephone as per the schedule of utilities in the appendix. A hand sink should also be provided.

d. Provide space for layout tables and large tackable wall surface.

3. Storage

a. Within the language arts classroom area provide book storage of 500 s.f. with high-density shelving.

C. Social Studies

1. General Classrooms

a. The social studies curriculum can function within the criteria for general classrooms. Specific needs include a video projection and overhead projection requirement. Access to a computer lab is also necessary.

D. Foreign Language

1. General Classrooms

a. The foreign language curriculum can function within the criteria for general classrooms. Specific needs include a video projection and overhead projection requirement. Access to a computer lab is also necessary.

E. Mathematics

1. General Classrooms

a. The mathematics curriculum can function within the criteria for general classrooms. Specific needs include a video projection with a screen for overheads used with a graphing calculator. Also provide additional whiteboards in each math classroom.

INSTRUCTIONAL AREA GENERAL CLASSROOMS
SQUARE FEET SUMMARY:

Classrooms 50 general CR @ 900sf	45,000 S.F.
4 Teacher workrooms (16 teachers)	4,250 (1060 s.f. each)
4 Storage @ 400 s.f. each	1,600
4 Staff Toilets @ 50 s.f. each	200
1 Publications Room	900
1 Language Arts book storage	500
General Classrooms Total	**52,450 S.F.**

SCIENCE LABS

SPACE DESCRIPTION:

The Science Program shall have seven laboratory stations serving four students each. The High School Science Program is a laboratory-oriented, inquiry program in the areas of Earth Science, Biology, Chemistry, Physics, Unified Science and advanced courses (Biology II and Physics II). Instruction in the Science program requires the use of classes with a maximum size of 30 students for discussion and laboratory work. Biology, Earth Science, Chemistry, Physics and one small project laboratory.

A. Science Classroom Labs

1. General Science (1)
2. Earth Science (4)
3. Biology (4)
4. Chemistry (2)
5. Physics (2)
6. Laboratory Preparation/Storage
7. Teacher Workroom (16 work stations)

DESIGN CRITERIA:

1. General Science / All Science Classroom/Labs

a. Floor Covering - Vinyl
b. Ceiling - Acoustically treated to reduce above average sound level of laboratory activity
c. Teaching Station - Orient students toward a teaching station equipped with a minimum of 16' of whiteboard, 16' of tackboard, projection screen and space for a demonstration table. Location of Teaching Station should avoid students viewing whiteboard or projection screen from a wide angle.
d. Counter - In each area counter space with lockable storage should be provided on all available walls. The storage space under the counters should be equipped with adjustable shelves. The wall above the counter should be used for tackboard, space to be available for lockable glass front display cases and closed shelving.
e. Safety Facilities
f. Paper towel and soap dispensers should be provided at each sink.
g. Utilities – Electrical and data outlets are required above the countertop along all casework counters. For chemistry and biology labs, the counters should be provided with gas outlets, hot and cold water and four full size sinks. Each full size sink should have inside dimensions of at least 28"L x 16"W x 7"D.
h. Lockable glass front display case - Each student area should have a lockable glass front display case, key rack, and a notebook cabinet.
i. Security - Provide gas and electricity cut-off controls which can be locked. All rooms should be equipped with lockable doors, including doors from common preparation areas. All science area doors should have a common key.

j. Fire detection - Systems used throughout the science area should be heat detectors rather than ion detectors.
k. Networking connections: Each room should have a set of networking connections on all permanent walls.
l. Exhaust System - Eight to ten air changes/hour with 100% outside air is required for all labs. This should be independent of the HVAC system and have a manual control.

2. Earth Science

a. Same as general science above.
b. A 3/4-inch conduit should be provided with an outlet near the counter area to provide cable access to a rooftop weather station.

3. Biology

a. Laboratory Stations - The seven laboratory stations should accommodate four students each. Each station should be equipped with electrical outlets, a sink, gas, cold water and lockable storage underneath. Minimum station area is 24 sq.ft. Plumbing should be acid proof. Top of desk should be acid resistant. At least two duplex electrical outlets per station should be provided. An individual storage drawer of at least one cubic foot is required for each student.
b. Teaching Station - Orient students toward a teaching station equipped with a minimum of 16' of whiteboard, 16' of tackboard, projection screen and space for a demonstration table. The demonstration table should be equipped with a gas, a sink, and cold water. Location of Teaching Station should avoid students viewing whiteboard or projection screen from a wide angle.
c. Counter - In each area counter space with lockable storage should be provided on all available walls. The storage space under the counters should be equipped with adjustable shelves. The wall above the counter should be used for tackboard, lockable glass front display cases and closed shelving.
d. Safety Facilities
e. Microscope Cabinets - Lockable microscope cabinets should be provided to store a microscope for each student.

4. Chemistry

a. Laboratory Stations - The seven laboratory stations should accommodate four students each. Each station should be equipped with electrical outlets, a sink, gas, cold water and lockable storage underneath. Minimum station area is 24 sq.ft. Plumbing should be acid proof. Top of desk should be acid resistant. At least two duplex electrical outlets per station should be provided. An individual storage drawer of at least one cubic foot is required for each student.
b. Teaching Station - Orient students toward a teaching station equipped with a minimum of 16' of whiteboard, 16' of tackboard, projection screen and space for a demonstration table. The demonstration table should be equipped with a gas, a sink, and cold water. Location of Teaching Station should avoid students viewing whiteboard or projection screen from a wide angle.
c. Counter - In each area counter space with lockable storage should be provided on all

available walls. The storage space under the counters should be equipped with adjustable shelves. The wall above the counter should be used for tackboard, lockable glass front display cases and closed shelving.

d. Safety Facilities
One Fume Hood: Minimum specifications hood face velocity 100 linear ft. per minute. The hoods shall be two sided with access from prep and classroom should be located as far away as possible from door openings.

5. Physics

a. Similar to general science above.

6. Laboratory Preparation/Storage Area

a. Location - Laboratory preparation area(s) should be adjacent to the classrooms and incorporate the storage area. To the greatest extent possible, the preparation/storage area(s) should serve multiple laboratories.

b. Counter - Each area should contain a full size sink, all utilities (including hot water) and ten feet of counter space (chemical resistant in the Chemistry area). Each full size sink should have a garbage disposal with inside dimensions of at least 28"L x 16"W x 7"D. Locations of sinks should be in different parts of the preparation area.

c. Biology Storage and Preparation Area - In addition to the counter mentioned above, this area should provide utilities and space for a 16-18 cubic foot upright refrigerator, 30" electric range, full size dishwasher, autoclave, and the following safety facilities. These are to be provided by Owner and installed by General Contractor.
   1. Fire Extinguisher - One ten-lb. dry chemical (rated 2A, 10B:C) ideally within 25 feet of any point in the room, but not more than 50 feet. The extinguisher should be located at room exits.
   2. Adequate Ventilation - Twenty-four hour special exhaust ventilation. NFPA code requires at least six changes of room air per hour.
   3. Drain - The storage/preparation area in a new building should have a floor drain. It should also allow for fast flushing of the stockroom floor.
   4. Shelves - Shelving eight feet high with 18" adjustable shelves should be provided in the storage area.
   5. Flammables Cabinets and Acid Cabinets - If the biology storeroom is not conveniently located near the chemistry storeroom, a fire resistant storage cabinet equipped with a flame arrestor should be provided. The door should have self-locking hardware. Provided space and utilities for these items shall be provided by Owner and installed by General Contractor.

d. Chemistry Storage and Preparation Area - In addition to the counters mentioned above, this area should be equipped with a 16-18 cubic foot upright icemaking refrigerator, full size dishwasher, and the following safety facilities:
   1. Fume Hood - Minimum specification: 100 linear feet per minute. The hood should be located as far away as possible from door openings.
   2. Drain - The storage/prep area should have a floor drain (not required for retrofit). It should also allow for fast flushing of the stockroom floor.

3. The Chemistry shelving should be six feet high and contain 12" adjustable shelves with safety lip. One metal cabinet approximately four feet wide should be equipped with an exhaust fan or gravity vent for storage of corrosive chemicals. One flammable materials cabinet and one active metals should also be provided.
4. Adequate Ventilation - Twenty-four hour special exhaust ventilation. NFPA code requires at least six changes of room air per hour.
5. Flammable Cabinets - Flammables should be stored in a fire resistant storage cabinet equipped with a flame arrestor.
6. A separate locking closet shall be provided in prep room. A chemistry pantry with self locking
7. Acid Cabinets - Store acids together in a separate flammables cabinet. Provide space and utilities for.
8. Active Metals Cabinet - Store active metals together in a separate flammable cabinet.
9. The door should have self-locking hardware.

e. Physics Storage and Preparation Area
   1. Fire Extinguisher - One ten-lb. dry chemical (rated 2A, 10B:C) ideally within 25 feet of any point in the room, but not more than 50 feet. The extinguisher should be located at room exits.
   2. The door should have self-locking hardware.
   3. Shelving eight feet high with 18" adjustable shelves should be provided in the storage area.

f. Earth Science Storage and Preparation Area
   1. Fire Extinguisher - One ten-lb. dry chemical (rated 2A, 10B: C) ideally within 25 feet of any point in the room, but not more than 50 feet. The extinguisher should be located at room exits.
   2. The door should have self-locking hardware.
   3. Shelving eight feet high with 18" adjustable shelves should be provided in the storage area.

7. Teacher Workroom

a. A Science department/planning area, equipped with desks, file cabinets and bookshelves, should be located near the classrooms and, if possible, the storage areas. Provide office space for sixteen staff members. This room should not be a part of the storage or laboratory preparation areas. Should this be separate from general teacher workroom?

SCIENCE CLASSROOMS/LABS SQUARE FEET SUMMARY

Science Classroom Labs

1. General Science (1)	1,200 S.F.
2. Earth Science (4 @ 1200)	4,800
3. Biology (4 @ 1200)	4,800
4. Chemistry (2 @ 1200)	2,400
5. Physics (2 @ 1200)	2,400
6. Laboratory Preparation/Storage (6 @ 400)	2,400
7. Teacher Workroom (16 work stations)	1,200
Total Science Labs	**19,200 S.F.**

SPECIAL LABS

SPACE DESCRIPTION:

Special labs include technology, consumer and family studies (foods and clothing labs), business (keyboarding and marketing), and general computer labs. Total School - Technology Education is an integral part of the total educational program in Jefferson County. It relates well and is supportive to the content of the other disciplines such as English, Mathematics, Science and Social Studies. The Technology Education and Science areas should be located in the same general area to allow a multi-discipline approach to technological studies.

A. Technology Labs

1. Computer Aided Drafting Lab
2. Technology Laboratory
3. Fabrication Room
4. File Server Room
5. Lecture/Presentation Room
6. Teacher Workroom (3 teachers)
7. Multipurpose/Practical Skills Lab
8. General Storage
9. General Design Provisions

B. Consumer and Family Studies

1. Foods Laboratory
2. Multi-use Lab/Classroom
3. Storage
4. Teacher Workroom
5. Multi-use Classroom

C. Business Education

1. Computer Labs (2)
2. Keyboard/Business Classrooms (2)
3. Marketing Classroom
4. Teacher Workroom

DESIGN CRITERIA:

A. Technology Labs

1. Computer Aided Drafting Lab

a. Student Stations - Space allocated for drafting and graphics should accommodate 28.
b. Storage Cabinets - Adequate student and capacity for computer aided drafting and design.built-in cabinet space with shelving and drawers large enough to accommodate drawings and supplies are required.
c. Bookshelves - Bookcase unit is essential for reference books and catalogs needed in drafting.
d. AV Capabilities - The drafting room should be designed for audiovisual aid use.

e. Electrical Service - Electric outlets are required for each workstation.
f. Sink - Washing facilities with hot and cold water should be provided.
g. Whiteboard and Tackboard - Eight feet of whiteboard and a minimum of sixteen feet of tackboard.

2. Technology Laboratory

Technology Education is defined as the "application of human knowledge". The Technology Lab is designed to meet the needs of all students who are the leaders, consumers, and citizens of the future. Specialized jobs that exist today may be gone tomorrow. Technical and critical thinking skills will be more in demand. The capacity to be retrained will be of most value. To make wise decisions, people must be able to analyze complex technology related issues in the areas of health, science, environmental impact, and social relations. Teamwork is an essential skill needed in the future work force. All of these are taught and reinforced in a well-designed Technology Lab. The Technology Lab is a hands-on activity based instructional area and is student centered v. Teacher centered. Adjoining the Technology Lab is a Fabrication Room for students to build prototypes of projects designed and engineered in the Technology Lab. The Fabrication Room is used for teaching tool use and safety and will contain both power and hand tools for student use. The Technology Lab emphasizes the transferability of knowledge and skills between disciplines.

The Technology Lab, while not being a computer lab, is well equipped with computers (15 minimum) and modular workstations. The workstations should be flexible: movable and have multi-use capabilities (more than one computer application or activity per station). To maintain flexibility and adaptability, it is recommended that workstations are not built in, with the exception of perimeter workstations if needed.

The curriculum developed for the Technology Lab uses computers as tools for the facilitation of learning in the following areas: robotics, computer aided drafting & manufacturing, computer numeric control, electronics, systems simulations, satellite technology, pneumatics, aerodynamic testing, simulated flight, hydroponics, desktop publishing and many other "high tech" activities. The curriculum is designed to teach students basic skills that can be built upon in more advanced coursework fashioned around students' individual interests.

a. Location - The area devoted to Technology Education facilities should be adjacent to or connected with the other areas used for educational purposes. However, laboratories in which noisy activities are conducted should be located so the noise will not disturb other educational activities. Ample space for future expansion should be provided.
b. Accessibility - The facilities should be accessible to service vehicles and have service entrances and exits located adjacent to driveways. Such planning facilitates the delivery of supplies and materials, transportation or projects and evening school use.
c. Entrance/Exit Doors - All laboratories should have at least two entrance/exit doors. One door should be large enough to accommodate the largest piece of equipment or

instructional project to be moved in or out of the facility. Providing open floor space near these entrance/exit doors eliminates congestion.

d. Student Lab/Demonstration area - This laboratory will be a clean room. Areas of instruction and laboratory work will include electronics, fiber optics, laser and microcomputer technology.
   1. Provide a demonstration table, minimum 12' long, with sink and hot/cold water at one end of the table along one side of the laboratory.
   2. Provide minimum of 16' of whiteboard and a projection screen along the wall behind the demonstration table.
   3. Provide glazing in the wall between the student lab/demonstration area and technical training laboratory for observation and supervision.
   4. Provide lockable counters along two walls with storage cabinets, 24' minimum, below and above the counter. Provide electrical outlets, minimum 4' apart, above the counter.
   5. Provide one student sink, 4' x 14" x 10" with hot/cold water along walls.
   6. Provide additional outlets for workstations based on the requirements shown by the major equipment list.

e. Ceiling Height - Normally it is desirable that Technology Education laboratories be one story in height unless shown otherwise. There should be a minimum clearance of 12' although 14' is desired. Additional height may be needed for hydraulic lifts or vertical storage of materials.

f. Arrangement - Laboratories should be arranged so as to avoid the necessity of passing through one to get to another. Likewise, doors between laboratories should be located so pupil movement from one room to another averts confusion and congestion.

g. Whiteboard and Tackboards - Tackboards and whiteboards should be placed at strategic locations in each facility for academic/demonstration instruction.

h. Design Guidelines - Facility construction and installations should meet the standards set by the State Department of Labor, Safety Inspection Branch, the State Department of Education and the State Board for Community Colleges and Occupational Education.

i. Laboratory layout:
   1. The ratio of width to length should be 1 to 1 ½ as a minimum (most desirable) and 1 to 2 as a maximum. Width of a laboratory should be no less than 30 feet, excluding auxiliary areas, i.e., storage, and washroom.
   2. All areas of the laboratory should be visible to the instructor to ensure maximum supervision of work and safety. Avoiding the development of laboratories with irregular shape enhances this facet.
   3. Aisles of travel should be provided for free flow of traffic between all areas and points of common use; such as auxiliary rooms, tool panels and common machine areas. These aisles should be at least four feet in width.
   4. Spacing between benches, machinery and other equipment is determined by the nature of the Technology Education activities and the environment, but in all instances should be at least three feet. Forty inches is recommended.

j. Toe Space - Bases for cabinets, benches and machines should provide toe space.

k. Equipment Placement - Equipment should be placed to allow for ease of cleaning and around the base.
l. Floor Finish - Sealed concrete, except the drafting room which should be tiled.
m. Toilet Facilities - Toilet facilities should be provided in the Technology Education complex or in close proximity to it.
n. Sink and Drinking Fountains - Each laboratory requiring such, shall be provided with a lavatory of appropriate size to meet its cleanup needs. A drinking fountain should also be included in each laboratory.
o. Storage for Portable Equipment - Portable equipment, machinery and special tools will require storage space to ensure proper security and control. This includes both large and small items.
p. Project Assembly Areas - An adequate area for the assembly of articles under construction should be allocated in each laboratory requiring space for this purpose. Project storage must be provided.
q. Materials Racks and Shelving - In those laboratories where lumber, bar steel and other materials are to be stored, special racks and shelving should be provided.
r. Tools and Supplies Racks and Shelving - Racks, shelving, drawers and closed cabinets designed for items to be stored should be provided for supplies and tools.
s. Standards for Furnishings - Standard types of cabinets, lockers, shelves and workbenches should be used in all Technology Education facilities.
t. Type of Shelving - Shelving in cabinets, lockers and other areas requiring shelves should be adjustable except where safety dictates rigid shelving.
u. Furnishings and Equipment - Instructional space in each laboratory should be provided with a teacher table, whiteboard, necessary seating and cabinets for storage of instructional materials. Table and seating N.I.C.

3. Fabrication Room

a. Laboratory - This laboratory will be a dirty room. Welding and machining operations will be performed in this laboratory to support the learning activities of the High Tech program
   1. Provide electrical service based on the requirements shown by the major equipment list. An electrical power panel should be installed that will provide separate circuits to each major machine of the type current and voltage indicated with 30 percent additional circuit capacity for future additional equipment.
   2. Provide compressed air at several convenient locations in the laboratory. Natural gas supply should be provided in both laboratories.
   3. Provide glazing in the wall between the student lab/demonstration area and technical trainer laboratory for observation and supervision.
   4. Floor - vinyl tile

4. File Server Room

a. Provide a room for computer file server equipment to network computers with printers,plotters and the building wide network. This room should have adequate ventilation for the file server equipment.

5. Lecture/Presentation Room

a. Provide a lecture/presentation room for 30 students. The room will primarily serve the technology lab classes but can be shared by other classes.
b. The room should be equipped similar to a general classroom.

6. Teacher Workroom

a. Provide space for 3 teacher workstations with desks, file cabinets and storage. Observation of one or more of the labs from the workroom is desirable.
b. Teacher workroom should meet the District standards for technology.

7. Multipurpose/Practical Skills Lab

a. The multipurpose/practical skills lab is a full size lab space with flexibility to adapt to a yet to be developed educational program. The goal of the program is to provide students and/or community with practical skills for everyday living such as general home and auto maintenance.
b. This lab should have direct access from the exterior with a pair of doors and/or an overhead door.
c. This lab should be considered a flexible "shop" space with adequate lighting, power, ventilation and technology.

8. General Storage

a. Storage - This space must be located for convenient access from both Technology laboratories.
   1. Design space for maximum wall storage area.
b. Location of Material Storage - The material storage room or area should be located conveniently for the unloading of delivery trucks and for issuing materials to the students.

9. General Design Provisions

a. Exhaust System - Dust, smoke, odors, fumes, vapors and gases must be exhausted by mechanical means.
b. Air Conditioning - All four areas of the Technology Education program should be air-conditioned. If not feasible or practical to air condition, the three laboratories should have a minimum of two 24" fans to circulate air and possibly a roof exhaust fan.
c. Dust and Shavings Collection and Disposal - Adequate systems shall be provided for the collection and disposal of dust and shavings in those laboratories where it is necessary. Air filter systems will be provided in the wood and metals laboratory.
d. Finishing Room - A separate, dust proof finishing room equipped with a commercial-type spray booth is necessary for laboratories in which finishing is done.
e. Windows- Windows along the outside walls of a laboratory should be high-level type no lower than seven feet above floor level.
f. Color Applications - The application of color to the Technology Education laboratory can

control the reflection of light, reduce fatigue, produce useful optics, create certain psychological effects, improve appearance and promote safety.

1. Ceilings should be an off-white. Walls, trim and built-in equipment should be a light color. Machines are to be safety color-coded utilizing the Pittsburgh Color Dynamics System. This system should be used for the entire facility to ensure total color design. Safety lanes will be provided to separate walkways from work areas.
2. Semi-gloss paints are suggested for most laboratory applications to minimize glare and facilitate cleaning.

g. Acoustical Treatment/Sound Attenuation - Sound and noise are concomitant to Technology Education activities and should be minimized because they can cause physical damage to the human ear.

1. As shown in the applicable rules and regulations, the permissible noise exposure level for a one-hour duration per day is 105 decibels. A 90-decibel environment may be endured for a period of eight hours.
2. Exposure to impulsive or impact noise should not exceed 140 decibels sound pressure levels.
3. Air compressors and similar support units should be located so noise from their operation does not disturb classes and they can be serviced conveniently.
4. Machines that create a vibration problem should be cushioned with rubber mountings or other shock-absorbing material or they should be mounted on an isolated foundation.

h. Electricity:

1. The laboratories should be provided with 115V, single-phase, 208V, three-phase and, in the wood technology laboratory only, 420V three-phase electrical service.
2. Electrical circuit distribution to machines not located near a wall should be an overhead raceway (preferred) or a rigid conduit system. Metal raceways may be used around the walls. Floor outlets should be other than flush type.
3. Power controls should be centralized on a master control panel that can be locked. It should be located near the teacher□s desk or office. Remote safety relay cutout switches within a laboratory controlling the main power supply should be provided for emergency shut down.
4. Extra circuits should be provided to allow hook-up of additional equipment.
5. Controls for room lights in classrooms should be located where they may be used with a minimum of teacher movement.
6. A sufficient number of electrical outlets should be provided for the various kinds of audio-visual equipment.
7. Laboratories in which portable power tools are used should be provided with electrical outlets with ground. Provision should be made for one double electric outlet (115 volts) for every eight feet of wall length or continuous wall plug mold. The mold or outlets should be located approximately 42 inches above the floor.
8. The start-stop switch on a machine should be located within easy reach of the operator and should be magnetic type.
9. Power service should be 50 percent more than connected load for future needs.

i. Water - Hot and cold water should be available in each laboratory. Adequate washing facilities and a drinking fountain should also be provided in each facility.
j. Sewers - Appropriate sewer lines should be provided each shop based upon their disposal requirements. A three-inch diameter drain is recommended as a minimum.
k. Natural Gas - Natural gas should be provided in each shop on a basis of their total BTU requirements plus future expansion needs.
l. Compressed Air - Compressed air should be available through a centralized unit system for all laboratories excluding the finish room, which will have its own system.
m. Telephone - A telephone outlet should be provided in the wood, metal and drafting offices.

B. Consumer and Family Studies

The Consumer and Family Studies (CFS) program focuses on issues and skills related to the family, including balancing work and family tasks. The value of courses exists in the practical application of the academics as well as the individual course curriculums. Courses offered vary from Relationships, Parenting, Consumerism, Housing, Clothing and Textiles, to Foods and Nutrition. CFS programs are changing to reflect changing family lifestyles as well as teaching methods. Departments should be designed with the flexibility to meet interdisciplinary and other team partnerships. Classrooms need to be multi-functional to provide for teaching in a traditional classroom mode to small group to labs and hands-on activities.
This department should have a Foods Laboratory and a multi-purpose room that could function as a regular classroom. These two labs will also be used as classrooms for Parenting/Child Development, Relationships and Family Living, Fashion, Housing, and the World of Work on the Job Experience program.

The Consumer and Family Studies facilities should be grouped together and located on the ground floor. The Foods Laboratory should be located near the faculty parking area to facilitate grocery delivery.

Spaces are:

1. Foods Laboratory
2. Clothing/Multi-use Lab
3. Storage
4. Teacher Workroom
5. Multi-use Classroom

1. Foods Laboratory

a. This space shall serve as a classroom for Consumer and Family Studies. The classroom should be designed so that kitchen units are along the perimeter walls and space is available in the center of the room for standard teaching. Tables for student use can be moved into place at each kitchen unit to divide the unit and provide more counter space.
b. Kitchen Units - One unit per four students to include stove or surface units and oven, sink-centered and nine running counter feet of work surface. One table, four chairs, seven units required for 28 students. One kitchen unit must meet ADA requirements.

c. Equipped with adequate storage for:
   1. Dishes for place settings - service for seven classroom sets
   2. Tableware (silver) - service for seven classroom sets
   3. Glassware - service for seven classroom sets
   4. Serving dishes
   5. Small appliances - can opener, mixer
   6. Cookware - for seven classroom sets
   7. Staple groceries and supplies
   8. Mixing and measuring equipment
   9. Cleaning equipment

d. General storage and furnishings:
   1. Space for three refrigerators, one with water for an icemaker.
   2. Freezer
   3. Garbage disposal
   4. Dishwasher
   5. Clothes washer
   6. Clothes dryer
   7. Microwave and convection oven
   8. Books, reference and cookbooks
   9. Magazines
   10. Aprons
   11. Pantry for staples
   12. Pantry for small appliances and supplies
   13. Storage for linens
   14. Ventilating fans
   15. Teacher's table or desk
   16. Utility cart

e. Kitchen layout - Unit kitchens designed with adequate storage to facilitate organization within each kitchen unit. Kitchen unit includes;
   1. range or surface unit and oven,
   2. sink and disposal,
   3. nine linear feet of workable counter surface.

f. Demonstration area - One of the seven kitchens arranged with an island-type demonstration area, consisting of a least three feet of uninterrupted space with adjustable tilt overhead mirror and with adequate open space for students during demonstrations. Electrical, built-in cook-top and storage is to be provided in the demonstration island. The demonstration area should not infringe on the space needed to conduct a class of 32 students in the open area of the lab.

g. Electric range – Six freestanding upright electric ranges will be provided by the Owner. Allow a 31" wide space for each range. Provide one wall oven in the demonstration kitchen.

h. Range vent hoods - All ranges are to be equipped with vent hoods.

i. Sinks and garbage disposals - Use double sinks and liquefying garbage disposals in all six kitchens and the demonstration unit. Place sink discharges low enough that disposals can be installed correctly.
j. Refrigerator/freezers - Provide spaces for three refrigerators and a freezer – 34" space allowance. Prepare copper tubing for icemaker attachments. The refrigerator/freezers are provided by the Owner.
k. Freezer - Provide space for one freezer - 32" space allowance. The freezer is provided by the Owner.
l. Dishwasher - Provide one 27" space for dishwasher to be provided by the Owner. A built-in dishwasher should be provided in the demonstration kitchen.
m. Laundry area - Plan the laundry area (out of the first view as you enter the laboratory) in a separate service area, Allow a 30" space for the washer and a 30" space for the dryer. Plan storage nearby for detergent and washing supplies as well as storage near dryer for clean linens. The laundry should not disrupt classes while in use. The washer and dryer are provided by the Owner.
n. Pantry - The pantry must be large enough for staples, food supplies, small appliances and portable equipment. Use adjustable shelves for best use of space. Have shelves to top of space for storage of low use items. The pantry must be lockable.
o. General storage - General storage for cleaning equipment, supplies, tea towels, place mats and linens.
p. Whiteboard and bulletin board - Eight linear feet of whiteboard and four linear feet of tackboard.
q. Furnishings – Provide seven round or rectangle study/food service tables with thirty chairs.

2. Clothing/Multi-Use Lab

a. This classroom should be designed for flexibility to teach large group lecture, small group activities and perimeter casework for sewing machines.
b. Storage:
   1. Wardrobe - hanging
   2. Tote-tray - one per student (125), large 14" x 20"
   3. Supplies – such as magazines, wallpaper books, carpet samples, etc.
   4. Pressing equipment
   5. Illustrative materials – child development models, posters, etc.
   6. Reference materials
   7. AV equipment and materials
   8. Storage for sewing machines when not in use.
c. Equipment:
   1. Tackboard - 4' x 4'
   2. Whiteboard - 8' x 4'
   3. Mirrors - triple
   4. Teacher's table or desk
   5. One rectangular table per four students - minimum work surface

6. One worktable, extra - minimum work surface
7. Eighteen sewing machine heads (2 for each 3 students). Place plug mold above counter for machines

c. Sewing machines - Space for eighteen sewing machines provided by Owner. Eighteen chairs. (2 machines per 3 students)
d. Fitting room - Fitting room with triple mirror, well lighted with door space for hanging garments.
e. Ironing board - Two built-in ironing boards with nearby storage for pressing equipment and irons.
f. Sink - with hot and cold water and bubbler for drinking, out of view from entryway.
g. Provide technology as required by the District standards.

3. Storage

a. Back storage - Storage space for textbooks, reference and library books.
b. Equipment storage - Large storage for equipment to be used in Child Development and supplies for Housing and Interior Design classes and specialized food lab equipment.
c. Classroom supplies such as glue, scissors, paper, computer software, etc.

4. Teacher Workroom

a. Furnishings - Space for three to four teacher workstations desks, file cabinets, textbook storage, library book storage, shelves for video storage.
b. Classroom observation - Glazing in wall between workroom and classroom
c. Technology as required by the District standards.

5. Multi-use Classroom

a. When more than two teachers are in the department, an extra multi-purpose classroom will be needed to avoid scheduling conflicts. If a generic classroom were available in the vicinity, it would need one wall of counters to provide workspace.

C. Business Education

Provide two classrooms for Typing/Computer instruction, one each for Business/Office Education, Business Machines and Marketing Education.

The Business/Marketing Education curriculum is subject to rapid change to meet changing needs in the market place. Thus the instructional area should be designed to accommodate change.

The keyboarding classroom should accommodate 32 student stations and the computer lab should accommodate 15 computers. All other classrooms should have 28-32 student stations. The Marketing Education classroom will also be used as a general business classroom.

All business classrooms should be grouped together. The business area may be located anywhere within the building but the preferred location is near the school store.

1. Computer Labs

a. Layout/size - The computer lab will house the microcomputers and related peripherals which will be used by students taking courses in both the Computer Science strand and the Applications strand of the District's computer curriculum.
Room arrangement should accommodate 30 students, 15 microcomputer systems, an area for lectures/demonstrations and an area for deskwork. Short nap carpeting is recommended and should be specially treated to protect against static discharge.

b. Location - The computer lab should be located centrally to classrooms in order to maximize use of the computers by all disciplines.

c. Ventilation - The computer lab should meet District ventilation requirements.

d. Visibility - A large window should be installed in a wall between the lab and an adjacent classroom. This window will ensure simultaneous monitoring of the lab and a classroom in case only one staff member is available for supervision.

e. Security - The lab should be monitored by the District's computerized intrusion detection/alarm system to prevent vandalism and theft during non-school hours. The ceiling must be secured in this room or the walls around the room must provide security to the deck.

f. Telephone - A telephone jack with a single line should be installed at the instructor's station in the lab. The line should be reserved for computer communications but need not be a special "dedicated line.

g. Electrical service - Electrical wiring for the microcomputer systems should be broken into three separate 110 VAC circuits, 20 amperes each, supplied through wall mounted outlet strips for 14 student stations. The instructor□s station should receive 110 VAC electrical power via a floor raceway or overhead outlet. All power to the student stations should be switched at the wall near the instructor's station using special switches to eliminate accidental actuation.

   Electrical wiring for three ceiling mounted 25" monitors should be 110 VAC and switched at the wall near the instructor's station. 75 ohm coaxial cabling with appropriate connectors should be wired to all 25" monitors from the instructor's computer.

   Lighting should consist of fixtures ringing the perimeter of the room with lighting for a central work area on a dimmer switch. Placement of lighting fixtures should avoid glare on student's monitor screens of any additional video displays. Lighting controls should be mounted on the wall near the instructor's station.

h. Whiteboards and tackboards - Each lab should have one 4' x 8' tackboard and one 4' x 8' whiteboard for use with dry-erase marking pens.

i. Equipment and furnishings - Each lab should include but not be limited to the following:
   1. Fifteen microcomputer systems (current models determined by Computer Equipment Evaluation Committee and Computer Science).
   2. Five printers (current models determined by Computer Equipment Evaluation Committee and Computer Science).

3. Two 25" monitors (current models determined by Computer Equipment Evaluation Committee and Computer Science). Alternative video display configurations may be substituted. Contact Computer Science for details.
4. Three ceiling mounts appropriate for mounting 25" monitors to ceiling.
5. One 60" x 60" wall mount projection screen.
6. One overhead projector (current model determined by Audio-Visual Equipment Evaluation Committee and Computer Science).

j. Storage cabinets - All classrooms should have two-foot deep storage cabinets with adjustable shelves along one entire sidewall of classroom. Wall cabinets must have individual locks.
k. Whiteboards and tackboards - All classrooms should have a minimum of 16' of whiteboard and 8' of tackboard.
l. AV capabilities - All classrooms should be equipped with screen to view video materials and shades to darken the rooms for projection equipment.
m. Telephone - A telephone outlet should be provided in each classroom as well as data communication.

2. Keyboarding/Business Classrooms

a. Provide classrooms for general keyboarding and business curriculum. Classrooms should be equipped to accommodate 30 students.
b. Equip classrooms to meet District technology standards.

3. Marketing Classroom

a. Provide a generic classroom available to the business curriculum for marketing classes.

4. Teacher Workroom

a. Size - Provide space for five teachers.
b. Desks - Provide built-in desks and file cabinets.
c. Electrical service - Outlets around the perimeter of the room.
d. Storage cabinets - Provide two-foot deep storage cabinets with adjustable shelves across one wall of the workroom. Each cabinet should have an individual lock.

SPECIAL LABS SQUARE FEET SUMMARY:

A. Technology Labs	
1. Computer Aided Drafting Room	1,250
2. Storage	100
3. Technology Laboratory	1,200
4. Fabrication Room	400
5. File Server Room	100
6. Lecture/Presentation Room	600
7. Teacher Workroom (3 teachers)	400
8. Multipurpose/Practical Skills Lab	1,400
9. General Storage	400
B. Consumer and Family Studies Labs	
1. Foods Laboratory	1,400
2. Clothing/Multi-use Lab	1,100
3. Storage	400
3. Teacher Workroom	400
4. Multi-use Classroom	900
C. Business Labs	
1. Computer Labs (2 @ 1100)	2,200
2. Keyboard/Business Classrooms (2 @ 900)	1,800
3. Marketing Classroom	900
4. Teacher Workroom	400
Special Labs Total	**15,350 S.F.**

MUSIC

SPACE DESCRIPTION:

The students will be engaged in a wide range of classroom activities that include performing, singing, composing, listening, viewing, demonstrating, reading, moving and writing. Additionally, experience in concerts, exchange assemblies, musicals, marching band, solo and ensemble work are provided. Materials to be used include musical instruments, audio-visual equipment, films, filmstrips, tapes, books and sheet music. The majority of regular class periods will be spent in large group instruction. The largest classes, both vocal and instrumental, will be from 20 to 150 students. The music program is continuous within both the instrumental and vocal areas with practice rooms for individuals.

All music spaces should be grouped together. Both music areas, vocal and instrumental, should be in close proximity to the Auditorium. The instrumental music room should have convenient access to the playing field for the marching band. Provide a toilet. An entrance from the exterior directly to the music area is desirable.

Music Area:

1. Vocal Music Room
2. Instrumental Music Room
3. Ensemble Room
4. Practice Rooms
5. Teacher Workroom
6. Storage (files, uniforms)
7. Large Instrument Storage

DESIGN CRITERIA:

1. Vocal Music Room

a. Acoustics - Separated, acoustically controlled facilities are required for both vocal and instrumental areas. This acoustical treatment means not only eliminating echoes, dead spots and excessive reverberation, but also preventing sound transmission through walls, floors, doors, ceilings, windows and air ducts. The Instrumental Music Room should be more acoustically dead than the Vocal Music Room. If draperies are required for acoustical treatment, the draperies should be included in the contract.

b. Carpet - The use of carpet in all music rooms is desirable.

c. Electrical Service - Learning from recorded music is a part of the teaching program. Sufficient electrical outlets and provisions are needed for use of quality record players and tape-recording equipment as well as using electric instruments (guitar, bass, piano, synthesizers) in regular rehearsal. Outlets are required in all rooms in the music areas. Computers will be used in the teacher workroom and ensemble room.

d. Blackboard and Tackboard - Blackboard should have two sets of music staff lines. Tackboard may be incorporated as part of the cabinet doors.

e. Accessibility - The access for large instruments requires (extra-width doors or) pairs of doors, 6'6" minimum without a mullion. They should be of sufficient size to allow a grand piano to be moved in and out of both the Vocal and Instrumental rooms. The area should also be designed to allow the movement of a grand piano from music rooms to the stage of the Auditorium. There should be outside access through an overhead door.
f. Ceiling Height - The quality of physical space for the music program is less important than total area and acoustical consideration. A high ceiling is preferable. A minimum ceiling height of 16 feet is desired in both music rooms.
g. Drinking Fountain - A drinking fountain should be provided outside the vocal music room in a secondary corridor.
h. Attire Storage - Storage space is needed for at least 100 choir robes or formal performance attire.

2. Instrumental Music Room

a. Instrument Storage - Storage is required for at least 150 instruments of varying sizes. The larger instruments should be stored in the rear of instrumental rooms. Pupil traffic patterns should be considered in locating the storage cabinets and the doors on the cabinets. Shelving for storage of instruments should have a metal edge.
b. Uniform Storage - Storage is required for 150 band uniforms, including hats.

3. Ensemble Room

a. Whiteboards - A 4' x 8' whiteboard is to be provided.

4. Practice Rooms

a. Provide five practice rooms to be shared in both the Vocal and Instrumental Music programs.

5. Teacher Workroom

a. Location - Should be adjacent to the Vocal and Instrumental Music rooms with observation of both rooms.
b. Work Stations - Provide District standard work stations for three teachers.

6. Storage

a. General storage should be provided for the music department for files, sheet music and uniforms.

7. Large Instrument Storage

a. See Instrument Music Room comments for storage requirements.

MUSIC SQUARE FEET SUMMARY:

1. Vocal Music Room	1,500	
2. Instrumental Music Room	2,050	
3. Ensemble Room	300	
4. Practice Rooms, 5 @ 50 sq.ft.		250
5. Teacher Workroom	350	
6. Storage (files, uniforms)	550	
7. Large Instrument Storage	500	
Music Area Total	**5,500**	

ART

SPACE DESCRIPTION:

This area will provide instructional spaces for jewelry, ceramics and drawing/ painting/ printmaking. Approximately one third of the student population (670 students) enrolls in one or more of the art programs. The art facility should be at grade to provide access for a service drive for delivery of supplies and materials to the ceramic studio. Natural north light is preferred, particularly for the drawing/painting/printmaking studio. Provisions should be made for darkening each studio for the use of films. Instructional areas should be designed for 30 students.

The jewelry studio, ceramics studio and drawing/painting/printmaking studio should be designed as a cohesive unit. A kiln room must be provided adjacent to the ceramics studio. The teacher workroom should be accessible from each of the three studios.

Art Area

1. Jewelry Studio
2. Ceramics Studio
3. Drawing/Painting/Printmaking Studio
4. Kiln Room with storage area
5. Storage
6. Teacher Workroom
7. Computer Art Room (Digital Photography)

DESIGN CRITERIA:

1. **Jewelry Studio**
   a. Lapidary counter space - 3'W x 2'D with running water and drain hookup close to the sink.
   b. Centrifugal casting area - 8'W x 3'D with counter space next to casting machine for one enameling kiln and burn-out kiln with outlets and vented hood.
   c. Workbenches - Two large 4' x 4' heavy workbenches suitable for installing vices, bench plates, rolling mills, squaring shears, etc.
   d. Buffing wheel safety shield - 4' x 4' x 1/4" constructed of tested plastic (plexiglass) and hung 3 ½ feet behind each buffing wheel.
   e. Jewelry display case - 4'W x 4'H x 6"D, wall mounted, lockable, glass with glass shelves, adjustable shelving brackets, tackable surface under backing and lighted.
   f. Scullery Sink - One scullery sink, double compartment, stainless steel (24" x 21") with 12" high back and clay trap with two 24" x 24" drain sieves and equipped with single lever sing spout faucet.
   g. Jewelers bench - One jewelers bench, 24 lineal feet with five working stations; four torch compartments with fireproof surface for soldering and enameling; a manifold system to provide gas to the work stations; exhaust system for eliminating acid fumes; continuous electrical outlets above the countertop; and lockable wall cabinets for equipment storage.

h. Whiteboard: Eight lineal feet.
i. Wall storage cabinets - Two cabinets, 3 ft. High, 10" deep, and 36" wide with peg board.
j. Jewelry Storage Room - Minimum 200 sq.ft., equipped with a counter base cabinet unit along one wall with lockable drawers, lockable cabinets with adjustable shelving. Wall above counter equipped with pegboard. Opposite wall has built-in open and adjustable shelving floor to ceiling. Door to storage should be dutch door with shelf.

2. Ceramics Studio

a. This room, by its nature, will be dirty due to the residue from clay and plaster. It should have the look of a ceramic workshop area, rather than a tidy classroom. It should also contain an area for sculpture.
b. Spray booth - One spray booth to be constructed, 2' D x 3' W x 5'H with exhaust system; built-on standard cabinet surface.
c. Wedging boards - Two wedging boards, 24"D x 36"W, standard cabinet height (concrete slab top).
d. Scullery sinks - Two scullery sinks, double compartment, stainless steel, 24" x 21" with 12" high back and clay trap, with two 24" x 24" drain boards. Furnish both with single lever swing spout faucets. Care must be taken in the design of the sieve in the clay trap, too small of a hole will require daily cleaning.
e. Welding bench - One welding bench, 5'W, free standing, firebrick surface, enclosed on three sides from bench top to ceiling.
f. Display structure - Provide for a method of hanging mobiles and three-dimensional sculptures from ceiling by the use of hooks or strips of unistrut. At one wall, provide a tackable surface with hanging display lighting on a dimmer bank for setting up pottery examples, prints and sculpture.
g. Clay box - Large damp box for clay, three units 7'H x 8'W x 2'D with doors and adjustable shelves for a variety of clay projects. Metal screened or vented shelves. Cabinets, including doors, should be lined with galvanized metal. Locked storage cabinet for tools.
h. Pug mill canopy vent hood is required to expel silica dust.
i. Wheel throwing area - Adequate space for 10 to 12 potter's wheels with sufficient electrical circuits and "drop cord outlets (two per drop) for all to operate at once.
j. Workbenches - Four 4' x 4' heavy-duty workbenches with vices and supported by metal locker base.
k. Floor Drain - Floor drain trough with clay trap for easy washing down of floor.
l. Wall storage cabinets - Two cabinets, 3' x 10" x 3' with pegboard.
m. Student project storage - Eight cabinets 36"W x 24"D x 7'H with seven adjustable shelves (3/4" thick) in each cabinet, double doors, lockable Formica-type covering for wash-down cleaning.
n. Individual student lockers - Forty small lockers (one cubic foot each) for students' personal tools, supplies, smocks, etc.
o. Compressed air manifold - A compressed air manifold system into all the art rooms with

individual air hookups throughout each room for pneumatic tools (i.e., grinders, sanders, drills, air brush) and for the glaze booth.

p. Counter space next to sinks - For cleaned tools, splash pans, etc. and also for glazing pottery. Counter space next to the sink to mix glazes, clean pottery, wax ware, etc.
q. Display case for samples of three dimensional work - Glass display case (5'L x 2'D x 3'H) on a stand or legs to make top of case 6'H, with four tempered glass shelves (different lengths of one, two, three and four feet); lockable and lighted.
r. Glaze formulation table with dry chemical bins - Approximately 100 sq.ft. Needed and it could be in the classroom; however, it would be best in the ceramic storage room just off the ceramic room. It should have good lighting, ventilation, one utility sink, waterproof counter on table top, adjustable shelving above counter top for smaller amounts of dry chemical storage. This space could also house the ten gallon glaze buckets.
s. Tackboard surface - 4' x 4' minimum.
t. Whiteboard: Eight linear feet

3. Drawing/Painting/Printmaking Studio

a. This area should provide a studio space for drawing, painting, printmaking and photography instruction. The space should have northern light if possible. (In-room storage should be minimized so maximum space is available for project work.)
b. Wall counter - Wall counter with two sinks approximately eight feet apart, double sinks 16" x 22" x 12", standard swing faucet with clay traps. Stainless steel.
c. Display structure - Unistrut grid, for hanging mobiles and three-dimensional sculptures from the ceiling by the use of hooks or strips (of unistrut).
d. At one wall, provide a tackable surface with hanging, adjustable display lighting (8' minimum) on a dimmer bank for setting up still life models, tacking up finished drawings, etc.
e. Exhaust fan and hood - A vented fan and hood area above printmaking station to carry off acid fumes.
f. AV screen - Wall screen or white surface to provide for projection films, filmstrips and slides. Also provide "blackout capabilities.
g. Electrical service - Electrical outlets for 11-V near all cabinet tops and walls. Could be strip type.
h. Vertical Storage cabinet - Room should be equipped with built in vertical slot storage for paintings and drawings, two levels of 4' slots, 36" deep and 12 to 16 lineal feet. Slots are 3" wide.
i. Scullery Sinks - Provide two double compartment 21" x 24: stainless steel sinks with 12" high backsplash and clay trap. Extend drainboard on each side of the sink a minimum of 24". Provide single lever controls and swing spout. Care must be taken in the design of the sieve in the clay trap to prevent the need for daily maintenance.
j. Provide space for an 8' x 3' print press.
k. Provide locking storage cabinets.

4. Kiln Room

a. Gas-fired kiln (Optional) - To be furnished and installed by outside vendor. 12 cu. ft. minimum, floor area will require 150 sq.ft.
b. Gas shut-off valve - Provide a gas shut-off valve outside the kiln room.
c. Provide adequate controllable combustion and ventilation air for the kiln room to:
   1. Control "reduction" firings
   2. Provide air for kiln operator
   3. Remove toxic fumes
d. Electric Kiln – Two kilns with Envirovents to be provided as part of the District equipment budget. Kiln size is a minimum of 7 cu. ft., plus storage and shelving area for green ware.

5. Storage Area for Drawing and Painting Studio

a. Suggested space distribution is as follows:

1. Ceramic and sculpture	300 sq.ft.
2. Scullery	175 sq.ft.
3. Drawing/Painting/Printmaking	175 sq.ft.
Total	650 sq.ft.

b. Shelving - Flat storage for drawings and paintings to accommodate 28" x 32" paper, eight sections flat storage, 7'H, each section divided by shelves. Twenty linear feet of adjustable shelf storage, 32"D x 4'W, for projects, found objects, still life material, dry clay, plaster, buckets, etc. No doors on any of the above.
c. Cabinets - Twelve linear feet of floor-to-ceiling storage, three sections 4'W x 30"D, adjustable shelves for storing large drawing paper, mat board, paint, oils, links and other instructional materials that should be in a locked control cabinet.
d. Storeroom should include a lockable Flammable Materials Cabinet.

6. Teacher Workroom

a. Workstations - Provide work stations for five teachers.
b. Windows- Provide glassed area for viewing classroom area.

7. Computer Art Lab

a. Provide a classroom with 15-30 computer workstations. Provide windows between rooms for supervision of this area
b. Provide space for scanners, printers, storage cabinets and flat layout space. Equipment for this room

ART SQUARE FEET SUMMARY:

1. Jewelry Studio		1,100
2. Ceramics Studio		1,350
3. Drawing/Painting/Printmaking Studio	1,350	
4. Kiln Room with storage area		400
5. Storage		800
6. Teacher Workroom (5 @ 50 S.F.)		250
7. Computer Art Room (Digital Photography)		1,200
Art Total		**6,450 S.F.**

SPECIAL EDUCATION

SPACE DESCRIPTION:
This area will provide instruction to those students with moderate to serious handicaps and those with perceptual communicative disorders. Instruction will be provided in five classrooms, each capable of accommodating 15 students.

The building must be designed to be 100% accessible under ADA regulations.

A. Special Education
1. P.C. Classrooms (5)
2. Teacher Workroom
3. SERS Conference Room
4. Storage
5. Changing Area/Toilet

DESIGN CRITERIA:

1. P.C. Classrooms
a. Furnishings - Teacher desk and chair and student seating for 15 in each classroom
b. Storage - Provide cabinets or closets in each room for storing educational materials.

2. Teacher Workroom
a. Occupancy - Four staff members plus one student.
b. Location - Accessible from at least two classrooms and the conference room, but sound isolation to ensure confidentiality.
c. Furnishings - Work station for five persons.
d. Provide power and technology per the District standards

3. SERS Conference Room
a. Furnishings - Conference table with 8 chairs.
b. Equipment - 8' of whiteboard.
c. Storage - Storage cabinets for educational materials.

4. Storage
a. Provide storage room for educational materials, equipment and supplies.

5. Changing Area/Toilet
a. Provide a dedicated changing area and handicapped accessible toilet.

SPECIAL EDUCATION SQUARE FEET SUMMARY:

1. P.C. Classrooms 5 @ 800 sq.ft.	4,000
2. Teacher Workroom (8)	300
3. SERS Conference Room (6 person)	250
4. Storage	100
5. Changing Area/Toilet Handicap accessible	100
Special Education Total	**4,750 S.F.**

SITE DEVELOPMENT STANDARDS

INTRODUCTION

The Jefferson County School District has followed a practice of maintaining current standards for educational facilities (educational specifications and technical requirements). These standards, for elementary, junior high and senior high levels, are reviewed and revised periodically. Site development standards are a part of the educational facility standards.

The standards are used as a guide for school district staff and architects/landscape architects in planning and constructing school facilities for the District that will meet educational program operation and maintenance needs of the District. Consideration is also given to community/joint use of school facilities. The standards also provide the framework to insure equal educational opportunity.

DESIGN CRITERIA:

1. GENERAL:

A. Site development should allow for maximum utilization of passive solar design alternatives - both for structures and site amenities minimize north exposure and building shading of site amenities.

B. The building and site amenities shall generally follow existing contours so that all building exits shall be on grade.

C. For security reasons, configuration of the building shall be arranged to minimize areas not exposed to general public view.

D. School District Standards suggest a site of 50 acres is adequate for development of a high school.

2. SITE COMPONENTS:

A. General Site Elements:

1. Bus loading for 20 buses @ 40'/bus
2. Parking - 650 students (including adequate handicapped spaces)
3. 200 staff & visitor (including handicap spaces)
4. Room for 10 temporary classroom buildings (26 x 48)
5. Bike pad & enclosure 1000 sq.ft.
6. Trash containers - 34" x 77" x 80" (high) adjacent to cafeteria

B. P.E./Athletic Elements

1. Multi-Use Courts 8 (Optional)
   a. Stripe for volleyball, handball, racquetball, half court basketball and tennis serving.
   b. Provide basketball goals and inserts for volleyball standards. All basketball goals to be sturdy 4' cantilever type and chain nets. Sleeves to be set in concrete and have safety type covers

c. Perimeter of courts to be enclosed with a 6'0" chain link fence with two limited swing 3'0" gates each side.

2. Softball Fields (2)
   a. Provide a "skinned" infield, with covered dugouts. Batting cages should be provided adjacent to the field with electrical service provided. Backstop shall be 18' high, 20' wide with 10' wings, located 20' from home plate. Foul lines shall be a minimum of 250' long. Where possible, group backstops for ease in supervision. Provide 8' high perimeter fencing. Electric service shall be provided for pitching machines, scoreboard and concession stand
3. Soccer Field:
   a. Orientation is not critical. Portable goals are preferred. Standard size for this field is 195' x 330'.
4. Field Buildings (2):
   a. Fireproof, constructed of fully grouted reinforced masonry or precast or sitecast concrete. Pair of 4' x 7' steel doors. Electrical service is necessary. Locate one building near the football track to store hurtles, vaulting and high jump equipment. Locate the other building near the baseball softball fields.
5. Marching Band/Multi-Use Field - Provide 1 multi-use field of 150' x 300'.
6. Practice Field - Provide a practice field of 150' x 150'
7. Baseball Field:
   a. Provide grass infield with skinned base paths, 18" pitchers mound, covered concrete or masonry dugouts, backstop to 30' high, 20' wide with 20' wings, located 45' from home plate. Wing extensions 10' high x 100' long. Outfield enclosed with 8' chain link fencing. Provide foul line poles and gates for mowers and players. An electrical outlet is required for a pitching machine. Where possible, align outfield fencing to allow layout of 150' x 150" multi-purpose field on the grass outfield. Provide space for future portable bleachers. (325' foul lines and 350' to center).
8. Track:
   a. 400 meters, 18' wide curves and backstretch, 24' wide straightaway, concrete curbs with scuppers. Layout to comply with Colorado High School Activities Association Standards. All weather track surface may be considered.
9. Football Field:
   a. Located in track infield with NW/SE orientation, with 18" crown. Football only goals for senior highs. (160' x 360') A practice field of approximately 150' x 150'.
10. Pole Vault:
    a. 1-50' x 4' asphalt paved runway with fiberglass planting pit set in concrete. Provide asphalt pad to receive foam "landing pit". Orient runway with prevailing winds, if possible.
11. Long/Triple Jump:
    a. 2-150' x 4' (or end to end) runway with redwood edged landing pits, cedar takeoff boards. 9' wide x 20' long pit located 8' from takeoff board. The runway shall continue to the pit.

12. High Jump Pad:
    a. 16' x 8' wide pad for "foam pit" and 50' radius approach pad.
13. Discus Area:
    a. Locate outside of, adjacent to track area, 60 degrees throwing sector - 160' to 200' distance. Provide 10' x 10' concrete pad with painted 8' -2#" inside D. circle with sector and centerlines. Provide a safety screen, per National Federation standards.
14. Shot Area:
    a. Locate outside of and adjacent to track area. Provide 10' x 10' concrete pad with painted 7' inside D. circle with manufactured wood or fiberglass stopboard. A 100-foot safety area shall be provided.
15. Tennis Courts (4):
    a. Slope courts 1% from end to end or diagonally for each pair of courts. Over asphalt paving apply surfacing and lines to comply with "Laykold" standard specifications. Provide fabric nets and posts with concealed take-up mechanism. Where unusual wind conditions exist, provide vinyl fabric wind screen attached to chain link fencing. North-south orientation is mandatory. No basketball goals are allowed. Electrical outlet required at senior highs for serving machine. All courts to be in same area for coaches' supervision. (60 x 120 area for each court)

3. RELATIONSHIP OF COMPONENTS:

a. P.E. and athletic fields shall be located with concern for (1) noise generated and its effect of building users and neighbors, (2) minimizing errant balls landing on neighbors' property, parking lots, building roofs or window areas.
b. Orientation of soccer fields is not critical.
c. One field storage building needs to be located adjacent to the football/track area. One storage building shall be located adjacent to the baseball/softball area.
d. Football field should be oriented north-south. Pole vault pits should be oriented to prevailing winds if possible. Locate discus area outside of track area. Locate shot area outside of track area. Orientation of tennis courts must be north-south. All tennis courts to be in same area (grouped). Multi-purpose courts to have center wall orientation of north-south. Football field to be located within track infield. P.E. and athletic fields shall be located directly adjacent to the gymnasium complex and shall afford access from the student parking area.

4. SITE CIRCULATION:

a. All facilities, including athletic fields, parking pedestrian walks and building entries shall be designed for handicap accessibility.
b. Pathways and/or sidewalks are required to connect all building exits with fire refuge areas, parking lots, bike enclosures, service areas, play pads, site pedestrian access points and along street frontages.
c. Bus loading shall be off street and circulation shall be counter-clockwise. Bus turning radius, for design purposes, shall be 59'. Bus loading may be combined with student

parking. Parking lots should be designed to avoid pedestrian/bicycle/vehicle traffic conflicts.

d. Sites shall be designed for easy addition and removal of temporary and driver education relocatable wood frame buildings. These buildings must relate to the main building access doors and be serviceable by all utilities.
e. Locate bike pads and enclosures for ease of supervision and security while minimizing conflicts with pedestrians and vehicles.
f. Site shall be designed to provide access for service and deliveries to the Tech Arts, Home Economics, Kitchen/Cafeteria, Office, Custodial Facilities, Gymnasium and Athletic/P.E. Fields and Structures. Delivery vehicles need a turn around space to avoid long backing distances. Trash compactor trucks require a concrete loading pad with minimum grade and no curbs. Trash trucks will back up to trash area. Design site to minimize student and pedestrian cross traffic through service areas.

BUILDING SPACE ALLOCATIONS

Department/Program	Teaching Stations	Area (Sq. Ft.)
Core Facilities		
Administrative Complex		6,400
Guidance and Counseling		2,575
Auditorium		10,250
Cafeteria/Student Center		10,600
Library Information Center		9,310
Physical Education Complex	6 @ 28	37,650
Building Support Areas		3,150
Subtotal		79,935 S.F.
Instructional Areas		
General Classrooms	50 @ 28	52,450
Science	13 @ 28	19,200
Technology Labs	3 @ 28	5,850
Consumer & Family Studies	3 @ 28	4,200
Business Education	5 @ 28	5,300
Music	2 @ 70	5,500
Art/Photography	5 @ 28	6,450
Special Education	0	4,750
Subtotal	87 @ 2520	103,700 S. F.
Programmed Subtotal		183,635 S.F.
Support Space @ 35% of Programmed Space Hallways, Restrooms, (Custodial Space), Student Lockers, Mechanical Rooms, Stairways, Unclassified Storage		64,237 S.F.
Total Building Area		**247,872 S.F.**
87 Teaching Stations x 28 students	2520 Total Students	
Using 80% utilization factor 2520 x 80%	**2016 Student Capacity**	
Square Feet per Student Ratio	122.95 S.F./Student	

SPACE COMPARISON WITH 1991 EDUCATION SPECIFICATION

Department/Program	Teaching Stations	Area (Sq. Ft.)	Previous Ed Spec '91 (1500 Students)
Core Facilities:			
Administrative Complex		6,400	4,600
Guidance and Counseling		2,575	2,000
Auditorium		10,250	10,000
Cafeteria/Student Center		10,600	10,700
Library Information Center		9,310	10,850
Physical Education Complex	6 @ 28	37,650	28,500
Building Support Areas		3,150	In 35% Factor
Subtotal		79,935 S.F.	66,650 S.F
Instructional Areas			
General Classrooms	50 @ 28	52,450	30,100
(Lang. Arts; Social Studies;			
Science	13 @ 28	19,200	12,940
Technology Labs	3 @ 28	5,850	10,870*
Consumer & Family Studies	3 @ 28	4,200	3,000
Business Education	5 @ 28	5,300	5,000
Music	2 @ 70	5,500	4,500
Art/Photography	5 @ 28	6,450	6,100
Special Education	0	4,650	4,650
Subtotal	87 @ 2,520	103,600 S.F.	77,160 S.F
Programmed Subtotal		183,535 S.F.	143,810 S.F.
		2000 Students	1500 Students
Support Space @ 35% of Programmed Space			
Hallways, Restrooms, (Custodial Space), Student Lockers,			
Mechanical Rooms, Stairways, Unclassified Storage		64,237 S.F.	50,333 S.F.
Total Building Area		**247,772 S.F.**	**194,143 S.F.**
87 Teaching Stations x 28 students		2520 Total Students	
Using 80% utilization factor 2520 x 80%		2016 Student Capacity	
Square Feet per Student Ratio		122.90 S.F./Student	

***Note:** The 1991 High School Ed Spec listed auto mechanics and wood shop as Technical Education in a prevocational curriculum. Technology labs such as Tech 2000 and CAD drafting have replaced auto and wood shops. Warren Tech is a District wide facility that has an excellent prevocational curriculum open to all students.

BUILDING WIRING STANDARDS

Purpose:
The purpose of the standards listed below for wiring configurations within all school buildings is to ensure conformance with the School District Technology Plan. The standards were approved by the District Technology Committee and implemented October 11, 1996.

General:
Refer to the School District Data Diagram for further information. The Data Diagram is available from the Offices of Facilities Planning and Design and Construction Management. The construction contract provides design and construction of a Communications Room and for the installation of video, voice and data outlet boxes, conduits, and conduit stub-ups in the spaces listed below.

The District hires a communications contractor under separate contract and separate Technology budget to install and terminate cable for video, voice and data devices. Also included are data cabinets and electronics necessary to support the standards. Ethernet/token ring hubs, work station cables and data patch cables will be installed to support the number of computers currently in use plus a 20% growth factor at the time of installation. Additional hubs will be installed once the 20% growth factor is reached.

A school may choose to upgrade above the standards outlined below. The cost of outlet boxes, conduits, conduit stub ups, cable and cable terminations must be paid for from the school budget.

A. Video Standards:

Video Outlet Locations:

1. One per classroom
2. Two in the Library Information Center
3. One drop each in the gymnasium, cafeteria and or assembly area
4. One drop in high school auditorium*
5. One in each multi-teacher workroom (up to a limit of five)
6. One in administrative office
7. One in the Principal's office or administrative conference room.

*If area is to be used for school TV broadcast studio, increase to two video drops. Locate one at 84" above floor for monitor and one at approximately 18" above floor to accommodate video camera.

B. Voice Standards: **

Voice (telephone) Outlet Locations:

1. One per classroom

2. One per Library Information Center
3. One per library office or library media production area
4. Two per administrative office support staff
5. One for school FAX machine
6. One for gymnasium
7. One in cafeteria
8. One in teacher workrooms
9. One per Administrator or full time staff
10. One per Special Program

**When two-piece wiremold strips are required for installation, the wiremold must meet shielding requirements for Category 5 data cable. Duplex backboxes are required for use with wiremold.

C. Data Standards: **

Data Outlet Standards:

1. Three* per classroom, except temporary classrooms. One data outlet should be located near or below the video outlet for use with video camera. (*Revised from 5 outlets 10/99.)
2. One per administrator and/or in each room in office area
3. One in Building Engineer office
4. One in the elementary school cafeteria; two in secondary school cafeterias. Coordinate location with Food Services representative.
5. Library Information Centers:
   a. Two for circulation desk
   b. One for Library Information Specialists office
   c. Five locations within library
6. One in gymnasium near or below video outlet for use with video camera
7. One in cafeteria near or below video outlet for use with video camera
8. One in assembly area
9. One in high school auditorium
10. Fifteen to thirty drops for rooms used as computer labs

**If two-piece wiremold strips are required for installation, the wiremold must meet shielding requirements for Category 5 data cable. Duplex backboxes are required for use with wiremold.

D. Temporary Building Wiring Requirements:

1. One video outlet
2. Three data outlets and three telephone outlets located in same backbox.
3. One wall telephone outlet located near entrance door.

MECHANICAL, ELECTRICAL AND COMMUNICATIONS ROOMS

DESIGN CRITERIA:

Mechanical and Electrical Rooms:

1. Provide adequate floor space for both mechanical and electrical rooms. Rooms must be of adequate size to facilitate maintenance of equipment and movement of personnel during normal maintenance procedures.
2. Floors should at constructed at grade level.
3. Floor materials and painted walls are not required. Suspended ceilings in electrical rooms are not required.
4. Direct exterior access should be through a set of double doors. The door opening size must permit passage of the largest piece of equipment and equipment maintenance items. Building access must also be provided from an internal corridor.
5. Acoustical isolation from adjacent rooms and areas is a critical consideration in the location and design of mechanical and electrical rooms.
6. All building systems should be concealed in public areas, classrooms and finished spaces.
7. Vertical ladders with safety accessories must provide access to roof equipment.

Communications Rooms:

Each school is required to have a communications room to house all building special systems control equipment. When data cable-run lengths exceed 300 total linear feet, the communications room must be connected to remote intermediate data closets. The equipment contained in the room is costly and environmentally sensitive. For that reason the room is not permitted to be used as a building storage room. Key access will be limited.

1. Locate the room centrally within the building and provide a door from the corridor.
2. Ceiling height should be a minimum of 8'-0". A suspended ceiling is not required.
3. The floor may be either unfinished concrete or vinyl composition tile. Carpet is not permitted.
4. The wall finish is required to be ¾" nonflammable unpainted plywood. Further requirements are contained in the District Data Diagram provided by the District's project Coordinating Architect.
5. Provide cooling for the room as required in the District Technical Specifications.

SPECIAL SYSTEMS

A. Audio Enhancement System (Optional):
The system, consisting of a base unit, four speakers, and a wireless microphone, allows use of a hands free, wireless microphone to enhance voice projection. One unit is installed for each teaching station. The system must be purchased and installed entirely from the school budget.

B. Building Signs:

1. Exterior signs:
   Building name and address identification, directional and traffic controls signs will be provided from the construction budget.
2. Interior signs:
   The construction contract will provide for directional signs in the lobby to the main building areas. Individual room number and identification signs, with a replaceable teacher name plaque at classrooms only, will be provided for each space at the room entrance door. Signs contain Braille information to meet Americans with Disabilities Act requirements. The signs will be provided from the construction budget.
3. Interior Dedication Plaque:
   A dedication plaque will be provided from the construction budget. See Technical Guidelines for details.

C. CATV:

1. Cable TV will be installed throughout the school. Refer to the media matrix in the Appendix for specific locations.
2. Cable outlet boxes, empty conduit and convenience outlets to serve the televisions are supplied and installed as part of the construction contract.
3. Television cable is pulled through the conduit, cable terminations made, and outlet covers provided by the District communications contractor.
4. Cable television control equipment is located in the Communications Room by the communications contractor.

D. Central Energy Management System (CEMS):
The central energy management system monitors the heating, ventilating and air conditioning system (HVAC) and reports status information to a District central monitor location.

1. The system is supplied and installed as a part of the construction contract.
2. CEMS control equipment is located in the Communications Room.

E. Clock System:
School clocks are on a master self-adjusting electrical system.

1. The system is supplied and installed as a part of the construction contract.
2. Locate the master control in the Communications Room.

F. Communications Room:
A dedicated room will be provided under the construction contract to house all building special system control equipment. The room is not intended as a storage room and key access will be limited.

G. Data Systems:
A computer network will be installed throughout the school. Refer to the media matrix diagram in the Appendix for specific data outlet locations.

1. Outlet boxes and empty conduit are supplied and installed as a part of the construction contract.
2. The District communications contractor installs cable, data box covers, and related hardware devices. Program cards, software and other devices selected by the school are paid for from the school budget.
3. Control equipment is located in the Communications Room.

H. Fire Alarm System:
A fire alarm system will be installed throughout the school. A fire alarm status panel will be located in the administrative/counseling area.

1. The system is supplied and installed by the construction contract.
2. Control equipment is located in the Communications Room.

I. Knox Box:
The construction contract provides for a recessed dual keyed Knox box at the main entrance that provides a secure location for building keys to be used by the Fire Department in the event of an emergency. The consultant and the jurisdictional Fire Marshall will determine the location.

J. Security System:
Security detection devices are located in corridors, administration/counseling areas, and Computer Laboratories.

1. The system is supplied and installed by the construction contract.
2. The system control equipment is located in the Communications Room.

K. Sound Amplification Systems:
A sound amplification system will be provided in the Auditeria and Gymnasium.

1. The system consists of an amplifier, speakers, two wired microphones and two wireless microphones.
2. Locate operation controls in the Auditeria performance area and the Gymnasium offices.
3. The system is supplied and installed by the construction contract.

L. Stereo System:
A school stereo system is provided which consists of an amplifier, CD player, tuner, tape recorder, two remote speakers and one wire microphone.

1. The system is supplied and installed by the construction contract.
2. Portable Music Room stereo systems are purchased from the school budget.

M. Telephone System:
A programmable telephone/paging speaker system will be installed. Stand-alone intercom systems are no longer provided because of the enhanced capabilities of the telephone system.

Refer to the media matrix diagram for device locations.

1. Telephone boxes, empty conduit room stub ups, and a corridor "bridle ring" system are supplied and installed by the construction contract.
2. Telephone cable, cable terminations, outlet covers, and telephone instruments, installed by the District communications contractor and Telecommunications are paid for from the construction budget.
3. Telephone control equipment is located in the Communications Room.

HIGH SCHOOL
ACOUSTIC STANDARDS

Room Acoustics Criteria:

Proper room acoustics is essential to providing a conducive learning environment for students, and a comfortable working environment for Teachers and Staff. To ensure proper room acoustics, school designs must meet the criteria outlined below.

Design goals for Reverberation Times (T_{60}) are provided for each space. To meet the criteria (and approach the goal), the Architect shall select finish materials to provide the space-averaged Noise Reduction Coefficients (NRC) required by Table 1 below. The worksheet given in Figure 1 may be used to calculate the space-averaged NRC. NRC values of some common construction materials are given in Table 2, and should be used for the calculation unless another value can be supported by laboratory test data of the selected material. The NRC values for ceiling tile and other materials that are not listed should be acquired from the product manufacturer (and be based on laboratory tests).

Table 1 - Room Acoustics Criteria

Room Description	Minimum Space Averaged NRC	Design Goal T_{60} (seconds)
Classroom	0.23	0.5
Science Classroom	0.20	0.6
Art Classroom	0.20	0.8
Private Office	0.16	0.5
Computer Lab	0.20	0.6
Conference Room	0.22	0.5
Teacher Work Room	0.18	0.5
Library (LIC)	0.23	1.0
Cafeteria (Commons)	0.15	1.5
Gymnasiums	0.21	2.0
Music Practice Room (Individual)	0.25	0.3
Auditorium	Note 1	
Instrumental Room	Note 1	
Vocal Room	Note 1	
Multi-Purpose Music Room	Note 1	

Table 1 Notes

1. To provide proper acoustical characteristics for this room, the acoustical design goals should be established on a case-by-case basis by qualified personnel or acoustical consultants. The room, including its shape, volume, diffusive and absorptive treatments, should be selected to achieve the established design goals.

Table 2: NRC values of some common materials

Material	NRC
Gypsum Board, painted	.05
CMU, coarse, unpainted and unsealed	.35
CMU, painted or sealed	.05
Brick, unglazed and unpainted	.05
Brick, unglazed, painted	.00
Classroom Marker or Chalk Board, wall mounted	.05
Metal roof deck, exposed	.05
Metal roof deck, acoustical deck (perforated with insulation fill)	.35
Concrete, sealed or painted	.00
Floor, wood	.10
Floor, Vinyl Composite Tile	.05
Carpet, 1/8" pile height	.15
Carpet, 1/4" pile height	.25
Carpet, 3/16" combined pile and foam	.25
Window	.10
Door	.05

FIGURE 1: SPACE-AVERAGED NRC WORKSHEET

JEFFERSON COUNTY SCHOOL DISTRICT

SCHOOL:

ROOM:

Enter the NRC and area of *all* floor, ceiling, and wall surfaces in the room. Multiply each component's NRC by its area. Add columns B and C. Calculate the space-averaged NRC.

DESCRIPTION	A NRC	B AREA (SQ. FT.)	C (Col. A x Col. B) AREA x NRC
1. FLOOR SURFACE:			
2. FLOOR SURFACE:			
3. CEILING SURFACE:			
4. CEILING SURFACE:			
5. WALL SURFACE:			
6. WALL SURFACE:			
7. WALL SURFACE:			
8. WINDOWS:			
9. DOORS:			
10.			
11.			
12.			
13.			
14. (Add Rows 1 Through 13) **TOTALS:**			

SPACE-AVERAGED NRC ____

(14C ÷ 14B)

Sound Isolation Criteria

Most rooms in a school can be grouped into the following categories:

Type A: Classrooms, Library Information Center (LIC), Principal's Office, Counselor's Office, Health Office, Science Classroom

Type B: Assistant Principal's Office, Teacher Work Rooms, Conference Rooms, Auditorium Control Room, Computer Lab

Type C: Stairways, Locker Rooms, Staff Restrooms, Wrestling, Exercise, and other Recreational rooms.

Type D: Instrumental (Band) Room, Vocal Room, Multi-Purpose Music Room, Drama Room, Music Practice Rooms (solo), Auditorium, Stage, Student Restrooms.

Type E: Corridor

Type F: Mechanical Rooms, Electrical Rooms with transformers (25 KVA or larger), Vocational shops with power tools or other sources of loud noise.

The airborne sound insulation requirements between each type of space are given in the matrix shown by Table 1 (with the exceptions given by the numbered notes). The requirements are listed as Sound Transmission Class (STC) values. The selected walls or floor-ceiling assemblies should meet these requirements, based on their laboratory STC ratings, or ratings estimated by qualified personnel.

To ensure compliance, the partitions may be field tested per ASTM E336, Standard Test Method for Measurement of Airborne Sound Insulation in Buildings. Sound insulation test results will be reported as a Field Sound Transmission Class (FSTC) value in accordance with ASTM E413, Classification for Rating Sound Insulation. The measured FSTC should be no more than 5 points below the required STC rating (according to Table 1). For example, a wall separating two classrooms should have a laboratory STC rating of 40, or a minimum FSTC of 35.

Table 1: Sound Transmission Class (STC) Ratings between spaces.

	A	B	C	D	E	F
A	40	45	45	55	40	Note 5
B		40	45	55 Note 1	40	Note 5
C			40	55	30	Note 5
D				60 Notes 2,3	45 Note 4	Note 5
E					--	Note 5
F						Note 5

Table 1 - Notes

1. Sound isolation of the Control Room from the Auditorium should be STC-40 or greater.

2. Wherever practical, the following guidelines should be followed: Instrumental, Vocal, and Multi-Purpose Music rooms should not be located directly adjacent to each other; and Music Practice Rooms (solo) should be located such that they do not open directly into the larger Music Rooms.

3. Sound isolation between Restrooms should be STC-40 or greater.

4. Sound isolation between a Restroom and a Corridor should be STC-40 or greater.

5. Separation of Type F rooms from other occupied spaces should be analyzed on a case-by-case basis. Where practical, Type F rooms should be separated from occupied space with a buffer space (i.e., Storage rooms or other unoccupied space). In any case the partition(s) separating the Type F room from the occupied room should be designed to reduce the intrusive noise into the occupied room to 5 decibels below the required mechanical Noise Criterion (NC) level at each octave-band frequency, for the occupied room. Refer to Division 15 for the applicable mechanical noise level criteria.

General Requirements

Sound isolating gypsum board partitions should be installed and sealed per ASTM E497, Standard Practice for Installing Sound-Isolating Gypsum Board Partitions, and ASTM C919, Standard Practice for Use of Sealants in Acoustical Applications.

Doors in sound isolating walls shall be solid-core wood or insulated metal doors. Where the wall must be rated for STC-40, the doors should be equipped with a perimeter smoke seal. Where the wall is rated for STC-45, the doors should be equipped with a perimeter smoke seal, an automatic door bottom, and threshold (if the floor is carpeted). For walls rated 55 or higher, the doors shall be an acoustically rated door assembly having an STC rating no less than 5 points below the wall rating.

Floor-ceiling assemblies *over* Classrooms, Conference Rooms, Offices, and Music Rooms should provide impact noise isolation equal to or greater than an Impact Insulation Class (IIC) of 50.

Mechanical System Noise Criteria

The mechanical system design shall include means and methods to reduce the mechanical noise levels in occupied spaces to the levels shown by Table 1. The criteria is given as Noise Criterion (NC) ratings. These ratings must be maintained at any location within the room that may be occupied by a person as part of the normal use of the room.

To determine compliance with this specification, octave band noise levels will be measured (by the Owner) in an *unoccupied* space, with all mechanical systems operating, at locations that are 3 feet or more from the floor, ceiling, walls, or other solid surface. A Type 1 or 2 sound level meter (according to ANSI S1.4-1983, Specification for Sound Level Meters) will be used. NC ratings will be determined from the octave band noise levels.

Table 1 - Mechanical Noise Criteria

Room Description	Maximum RC(N) & NC [1] Rating
Auditorium	25
Stage	25
Auditorium Control Room	30
Instrumental Room	30
Vocal Room	30
Multi-Purpose Music Room	30
Music Practice Room (solo)	30
Private Offices	35
Classroom	35 [2]
Science Classroom	35 [3]
Computer Lab	35
Conference Room	35
Teacher Work Room	35
Open Plan Office Administrative areas	40
Stagecraft Workroom	40
Library (LIC)	40
Wrestling Room	40
Fitness Room	40
Cafeteria (Commons)	45
Gymnasiums	40
Corridor	50
Stairway	50

Table 1 Notes

1. Refer to Chapter 7 of the 1997 ASHRAE Handbook - Fundamentals, for a description of the NC curves.

2. NC-35 is the maximum allowable noise level. A noise level of NC-30 is desirable.

3. This noise level may be exceeded when the Science Classroom exhaust fan is on.

FURNITURE AND EQUIPMENT

In addition to the construction budget, school projects generally contain three additional equipment budget allocations:

- Instructional Equipment
- Food Service Equipment
- Custodial Equipment

Projects for new and replacement schools, for substantial building renovations and for additions to existing schools contain funds for purchase of new and replacement instructional equipment. Food Service Equipment funds are provided for new and replacement schools and for those schools receiving major food service area renovations and building additions. Custodial Equipment funds are provided for new and replacement schools and for building additions. The funds are determined by a per student allocation which varies according to the project type. The District Coordinating Architect will provide a copy of the project cost estimate (PCE) showing the amounts and account numbers at the beginning of the project. In addition, the Director of Construction Management and the Director of Purchasing hold information meetings several times a year for Principals, Financial Secretaries and Building Engineers regarding regulations and guidelines for expenditures of bond funds.

In addition to the Design Advisory Group members, the project design team consists of:

- The District Coordinating Architect who guides the project through design
- The District Construction Manager who guides the project through construction
- The Consulting Architect, a firm that is contracted for the design and construction of the project
- The Furnishings and Interiors Coordinator who is available on an as needed basis to work with the project team on design issues

The Coordinating Architect will introduce the Facilities Planning and Design Furnishings and Interiors Coordinator as the design portion of major projects near completion. The Coordinator will be available to provide assistance to Principals, Design Advisory Groups and school furniture committees regarding space planning, setting up budgets, use of District furniture bids and color and materials selection.

The project Consulting Architect is responsible for providing adequate voice, data and power outlets in every space. It is very important that during the Design Advisory Group process the Consulting Architect be given as much information as possible with regard to how rooms and spaces will be used, where furniture will likely be placed, and how equipment will be used and by whom. Once a construction project has been bid changes in voice, data and power locations become very expensive and generally cannot be made. The FI Coordinator can use project construction plans to verify that voice, data and power are in place for school purchased furniture and equipment.

The project Consulting Architect is responsible for providing space planning services for furniture and equipment layouts as noted in the Consultant Guidelines. Educational specifications recommend that built-in furniture be minimized in order to provide maximum future flexibility. The FI Coordinator works with Principals to plan administrative areas, with LIC Specialists to plan Library Information Centers for maximum efficiency, and with teachers to plan "typical" classrooms in order to demonstrate how much furniture and equipment can be placed in a classroom without overcrowding. In addition, the FI Coordinator works with the Coordinating Architect to provide pricing for those items paid for by the construction budget.

The District's Purchasing Department bids a large variety of furnishings and equipment for school use each year. A binder containing the various products is available to each school

Administration Offices and Reception Areas:
As noted in the educational specifications, it is strongly recommended for future flexibility that administration areas be designed as open space without built-in casework. The intent is that the District's vendor, HON systems furniture, will be used. The systems furniture is paid for from the FFE budget. As soon as Coordinating Architects have a color/material sample board from the Consulting Architect, it should be made available to the Principal and FI Coordinator along with a reproducible architectural floor plan. The range of colors from HON will be compatible with any color palate. A drawing showing voice and data outlets, fire alarm annunciator panels and thermostat locations should also be conveyed.

Counseling Offices, Conference Rooms or Other Administrative Areas:
For future flexibility use HON systems furniture wherever possible.

LIC's (LMC's):
Elementary School circulation desks are paid for from the construction budget. The design of the desk is standardized in size, height and natural oak finish. Circulation desks may not be specified to be HON systems furniture. A drawing for information purposes is available from the Facilities Planning and Design. The drawing may be used to scale in on construction drawings in order to located voice, data and power outlets. The desk is provided and installed by others. Obtain pricing from the Furnishings and Interiors Coordinator.

Middle and High School circulation desks are paid for from the construction budget. The design is not standardized, however, Coordinating Architects are strongly encouraged to have the design reviewed by the Coordinator of Library Services to ensure functionality. The desk can also be provided and installed by the same vendor that builds elementary school circulation desks. The advantage of this method is both reduced price through elimination of contractor markups as well as reduced need for coordination of wood species and stain colors to match wood top canopies, end panels, tables and chairs that are likely to be provided by the same vendor. Woods other than oak for wood top canopies and end panels usually result in extra charges to school FFE budgets because furniture available through the District contract is often standard in oak finish.

Metal library shelving is standardized in all schools. All metal shelving attached to walls is paid for from the construction budget. Custom shelving, without exception, is not permitted. The shelving is provided and installed by a vendor coordinating with the FI Coordinator. All freestanding shelving is paid for from the FFE budget. Wood top canopies and end panels that cover metal shelving are paid for from the FFE budget whether the shelving is freestanding or wall attached.

High Density Shelving:
High-density rolling shelving is paid for from the construction budget and is optional. The FI Coordinator works with Purchasing to bid high-density shelving. The Consulting Architect should provide a floor plan showing the location and size to the Coordinating Architect for use by the FI Coordinator and Purchasing. The Construction Project Manager and FI Coordinator coordinate installation requirements.

The LIC Specialist office can be HON systems furniture paid for by the FFE budget.

Teachers' Lounge:
Teachers' lounge requirements are identified in the educational specifications. Schools may wish to purchase from their FFE budget full size or undercounter refrigerators, disposals, microwaves, dishwashers or clothes washers. The District bids appliances each year. Schools should contact the FI Coordinator who will assist them in selecting the products and coordinating requirements (e.g., coordinating plumbing for the icemaker feature with the project manager). Coordinating Architects should also refer to the FI Coordinator for size, power and other requirements of appliances.

Tack Boards and White Boards:
The educational specifications define the type and amount of tack boards and white boards. Schools often wish to purchase more than that amount. The District uses a local vendor to supply additional tack boards at very reasonable cost. The vendor constructs any desired size using a vast array of fabric choices. The FI Coordinator can assist the school in determining size and color selections.

White boards in addition to what is supplied by the educational specifications can also be coordinated with the FI Coordinator.

Consumer and Family Studies Appliances:
Appliances are purchased from the school FFE budget. As noted above, the District bids appliances each year and the FI Coordinator will coordinate with the Coordinating Architect and Project Manager regarding requirements.

GLOSSARY

Americans with Disabilities Act (ADA):
A civil rights law that mandates building and site accessibility for all people.

As-Built Drawing:
A drawing showing the exact condition after the construction is complete.

Asset Management Plan:
A District published book, updated yearly, that describes all of the school district assets and details the history and future expenditures anticipated for that asset.

Assigned Square Feet:
Net building square feet that is assigned to a school program function, e.g., a classroom is an assigned use. Corridors or other support spaces that are not available for instructional use are not assigned.

Bid:
A formal process to secure pricing of work to be preformed by a General Contractor.

Bond Project:
Voter approved funds for school district capital improvement projects. Projects must have a 20-year or greater life expectancy to use bond funds.

Building Efficiency:
The ratio expressed as a percentage of a building's net square footage to the gross square footage.

Capacity:
Permanent Design Capacity:
Number of regular classrooms times 28 students. Core areas are not counted as regular classrooms.
Temporary Building Capacity:
Number of temporary buildings multiplied by 28 students.
Deduct Classrooms:
Number of regular classroom that may be used for core classroom activities.

Capital Reserve Funds:
Funds set aside from the yearly general operating fund for capital improvement projects. Improvements must have less than a 20-year life expectancy.

Casework:
Either floor-supported or wall-hung cabinets that are permanently attached to building structure.

CD:
Construction Documents. The final stage of design that results in complete drawings and specifications that are used in the bidding process.

CM:
Construction Management Department of Jefferson County School District.

Design Advisory Group (DAG):
A group of people generally selected by the Principal who are invited to work with the District Coordinating Architect and Consulting Architect or Planner to provide input on needs, program function and appearance of a school capital improvement project. The members are composed of the principal, building engineer, teaching staff, parents, and interested community members.

Data Diagram:
A schematic diagram produced by Facilities Planning and Design, Telecommunications and Networking Services that illustrates for Consultants the District's standards for telephones, computer wiring, power, fire alarms, security systems, and communication rooms in elementary, middle and high schools.

Design Development (DD):
The second stage of design in which the schematic design is expanded to show more in-depth construction materials, methods and details.

Design Review:
At the end of each project design phase, the District coordinating architect holds a formal technical review of the design drawings, specifications and cost estimate.

Educational Specifications (Ed Specs):
Written specifications developed by the District that outline facility planning standards. The specifications guide development of the architectural program for the school building.

Furniture, Fixtures, and Equipment (FFE):
Items that are not permanently attached to the building structure.

FP&D:
Facilities Planning and Design Department of the Jefferson County School District.

General Contractor:
The prime construction contracting company, selected through a competitive bidding process, that is responsible for construction of the improvements. The contractor works directly for the School District.

Gross Square Feet:
The total enclosed floor area of a building measured from the outside surface of the exterior walls. This definition pertains to District educational specifications only, because a number of definitions have been developed by various organizations.

HVAC:
An abbreviation for a building's heating, ventilation, and air conditioning system.

JCSD:
Jefferson County School District.

LF or lf :
An abbreviation for lineal feet.

Net Square Feet:
The usable floor area of a building. Wall thickness, corridors, restrooms and mechanical spaces are not counted when determining a building's net square feet. This definition pertains to District educational specifications only, because a number of definitions have been developed by various organizations.

Project Cost Estimate (PCE):
A Facilities Planning and Design/Construction Management form used to track all design and construction costs for a project.

Preparation (Prep) Kitchen:
A school kitchen that prepares food for its student lunch program and for lunch programs at other nearby school facilities.

Program:
A written document that defines the function of various spaces within a building or on a site. The program is developed by the Consulting Architect to aid in setting desired parameters for areas and spatial relationships for use by DAGs.

Satellite Kitchen:
A school kitchen that receives prepared food to serve from another school's preparation kitchen.

Scope of Work:
The agreed upon type and amount of work that will be accomplished during construction at a facility.

Schematic Design (SD):
The first phase of architectural design in which conceptual ideas are developed and outlined from

the District provided Scope of Work description and the consultant's program developed with the DAG.

SF or sf :
Abbreviation for square feet.

Subcontractor:
A specialty contractor who contracts to work for the General Contractor, usually as part of the bidding process, e.g., electrical contractor or painting contractor.

Systems Furniture:
A furniture system using modular components that can be rearranged for different configurations and uses by adding or removing components.

Technical specifications:
JCSD Field Services Division, in conjunction with FP&D and CM, publishes guidelines intended to establish uniform and consistent quality standards for JCSD school facilities. The guidelines outline minimum acceptable standards for products, materials and building systems used in District facilities.

Total Program Capacity:
The sum of the Permanent Design Capacity plus the Temporary Building Capacity minus the deduct classroom capacity. The Total Program Capacity determines the number of spaces available for students at a school site.

UBC:
Uniform Building Code. The building code that governs school design in Colorado with regard to life safety issues.

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