OHIO SCHOOL FACILITIES COMMISSION

2012 OHIO SCHOOL DESIGN MANUAL

The Ohio School Facilities Commission is pleased to announce the 2012 Ohio School Design Manual (OSDM) update.

Each year the Commission revises the OSDM with support and valuable input from the design and construction community, school districts, state agencies and other interested parties. The result is a dynamic document that reinforces our commitment to high quality school facilities while maintaining flexibility and local control.

The manual is a cornerstone of the Commission's efforts to promote the 21st century learning environment, providing guidelines that serve the diverse needs of local school communities and their students. For our Design Professionals, the OSDM provides a wide selection of high quality materials and systems to serve the districts over the entire lifecycle of the building. This approach ensures that both the district and the taxpayers of Ohio achieve the maximum benefit from their investment.

Ohio continues to build on past design achievements that meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) for Schools. The LEED system is the national benchmark for high performance green buildings.

The OSFC acknowledges the difficult design and construction tasks that ultimately result in the buildings so critical to our Ohio communities and the new educational goals set by Governor Kasich. There is a necessary balance measured between the complexity and cost of 21st century structures and the sustainability and maintenance requirements to be born by local taxpayers for decades to come. This year there have been significant changes to the technology sections with the incorporation of a wireless local area network in lieu of the wired network. This will help in the promotion of 1:1 computing and help districts incorporating "bring your own device" strategies.

We look forward to working with you to design and build exciting educational environments for Ohio school students.

Sincerely,
Ohio School Facilities Commission

Richard M. Hickman
Executive Director

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OHIO SCHOOL DESIGN MANUAL
Ohio School Facilities Commission

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(Revised 7/1/99, 7/1/00, 7/1/01, 4/1/02, 4/1/03, 4/1/04, 4/1/05, 2006, 2007, 2008, 2009, 2010, 2011 and ***2012***)

EXECUTIVE SUMMARY
INTRODUCTION

The Ohio School Facilities Commission (OSFC) is charged with overseeing the design and construction of school facilities in the state of Ohio. A school facilities project is a very exciting event for a school district, but it can also be complex and overwhelming. The OSFC Design Manual ***has*** been developed to provide consistent, clear information for school districts and design professionals as a new generation of schools is being created for Ohio. The guidelines are the culmination of standards, accepted procedures, statutory requirements, and the experience of experts and authorities throughout the United States. The guidelines provided in the Design Manual establish a uniform level of quality ***and sustainability*** for all public school buildings. The Design Manual will apply to new school facilities and new additions to existing buildings. Renovation to existing facilities should adhere to the Design Manual guidelines wherever possible.

Since the Design Manual communicate***s a vast amount of*** information ***on*** so many ***planning, design, and construction*** issues, the length and quantity of the Manual can be intimidating. However, understanding how the Design Manual is organized and which information will be needed during the various phases of the process will enable each participant to be better prepared for the exciting opportunity of creating school facilities.

An important consideration in developing a state-wide program that must provide equity among districts is the balance between broadly applicable standards and program delivery. A fundamental tenet of educational facility planning is that school facilities must be responsive to a school district's educational program. The Design Manual allows districts to develop building programs that respond to their current, unique needs as well as preparing for their educational future. There are also many different ways in which districts are delivering educational programs and helping students accomplish learning objectives at ***each grade*** level ***and school***. By designing classrooms and other instructional spaces to be flexible and adaptable, district***s are*** better prepared to accommodate future educational program developments.

Additionally, sustainable, energy efficient features will be incorporated into school facilities designs. These features will have a positive impact on student academic achievement. By promoting the design and construction of green schools, we can make a significant impact on student heath, test scores, teacher retention, school operating costs and the environment.

In response to the desire for sustainable designs and the Governor's Executive Order 2007-02S, Coordinating Ohio Energy Policy and State Energy Utilization, the OSFC adopted Resolution 07-124, Approving Incorporation of Energy Efficiency and Sustainable Design Features into the Commission's Programs. As a measure of success, the Commission adopted the U.S. Green Building Council's (USGBC) LEED for Schools (Leadership in Energy and Environmental Design) Silver Certification as its benchmark with preferred investment in attaining LEED points in the energy and atmosphere category.

The Design Manual is required by state law to provide the parameters for building assistance programs in which the school district and the State of Ohio share the building costs. Throughout the planning, design, and construction phases of every project there are ***four*** factors that must be considered and held in balance: quality, cost, ***optimizing energy performance,*** and time (schedule). The Design Manual was created to provide parameters for balancing these ***four*** essential elements fairly for all the projects in each district throughout the state.

The Career-Technical School sections are intended to be used in conjunction with the Design Manual to address all aspects of programming, design, and construction of Career-Technical and Comprehensive High Schools that are not explicitly covered by other sections of the Design Manual. They provide guidelines for the size and quantity of instructional and support spaces as well as material/system components necessary for the construction of Career-Technical School facilities and the Career-Technical components of Comprehensive High Schools.

Equality among school districts related to size of career-technical spaces, finishes, systems and costs is the primary purpose of the Career-Technical sections. It is the intent of the OSFC Vocational Facilities Assistance Program (VFAP) to improve existing Career-Technical program spaces, especially in relation to curriculum and instructional delivery methods, building codes, OSHA requirements, and fire safety. The space guidelines set forth in these sections are intended to meet these requirements as well as to accommodate the best practices for the delivery of Career-Technical programming.

There is no intent within the context of the Design Manual to restrict, encourage, or otherwise influence the requirements of the public bidding laws of the State of Ohio relative to entities bidding on labor, material, products, or services. Names of proprietary organizations are not stated within the manual, and the intent is to encourage open, competitive bidding for the work.

The Ohio School Design Manual is the exclusive property of the Ohio School Facilities Commission of the State of Ohio, and the Ohio School Facilities Commission reserves the right to add, delete, modify, or otherwise change the content of this manual at any time. Specific information contained within the manual will be periodically modified to reflect current conditions.

OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

A. ROLES OF PARTICIPANTS IN PLANNING, DESIGN, AND CONSTRUCTION

The Project Team is responsible for creating and implementing a district facility plan. The planning, contracting, and project management strategies involved in this process have been developed, refined, and have proven to be successful in millions of dollars worth of school projects. Each team member will need to access various portions of the Design Manual to better understand his/her role and fulfill his/her responsibilities.

1. Participants in ***Creating*** the Master Facility Plan

Role: Assessment Consultant

Responsibilities: The Assessment Consultant assesses the condition of buildings, evaluates the overall building needs of the district, estimates costs and assists in developing the Master Facilities Plan.

Role: Educational Planner

Responsibilities: The Educational Planner develops and reports the most likely projected enrollment for the next ten years for assigned school districts. The following data is considered in developing the enrollment projections: historical enrollment of the school district, including special education enrollment; previously completed enrollment projections; grade level survival or transfer patterns; community school and open enrollment numbers; federal and school district census data to include population, household, and economic information; live birth data for the district by zip code and municipality; housing development patterns and building permits for single-family and multi-family units, including historical permits for the last ten years; and maps of the district. Career-Technical enrollment will be determined based on Commission guidelines ***(10 year historic enrollment)***.

Role: Regional Program Consultant (RPC)

Responsibilities: The Regional Program Consultant coordinates, manages, monitors, and plans the resources and schedule for the facilities assessment, student enrollment study, and Master Facilities Plan for assigned school districts. For the projects included in the Expedited Local Partnership Program (ELPP or VFAP ELPP), the RPC reviews plans and specifications for Design Manual compliance, reviews budget estimates prepared by the Design Professional (DP) and/or Construction Manager (CM), and provides various services during the construction phase.

2. Participants in ***Creating and Implementing*** the Master Facility Plan

Role: School District Representative

Responsibilities: Depending on the size of the district and the complexity of the projects, the school district representatives may include the Superintendent, a Principal, and/or the district's Facility Director. The school district representative is responsible for representing and making decisions on behalf of the school district in planning, design, and construction throughout the process. ***Final decisions are made by the District Board of Education.***

Role: OSFC Planning Staff

Responsibilities: Various OSFC staff members provide comprehensive support for the Project Team. A Planner is responsible for using the facility assessment information and enrollment study information to develop the Master Facility Plan for a district. Additional staff members with varying expertise participate as needed and serve as information resources throughout the project.

3. Participants in *Implementing* the Master Facility Plan

Role: The Design Professional (DP)

Responsibilities: The DP is involved in developing the Program of Requirements for the project. The DP, along with his or her consultants, is responsible for the documents that are developed during design and that are ultimately used for the construction of the project.

Role: The Construction Manager (CM)

Responsibilities: The CM is responsible for scheduling, estimating, and providing overall coordination for projects

Role: School District Representative (District)

Responsibilities: The School District Representative is responsible for making decisions during the planning, design, and construction of the school project.

Role: OSFC Project Administrator (PA)

Responsibilities: A Project Administrator is the primary interface for the school district, the CM, and the DP. The PA accommodates the unique needs of the school district within the framework of Commission policies and procedures.

Role: Commissioning Agent

Responsibilities: The Commissioning Agent is hired by the district to provide a single point responsibility to ensure efficiency of operation and performance of the building's major systems.

Every team member must understand and fulfill his or her responsibilities for the planning, design, and construction process to be successful. Fortunately, the team works together to be sure that everyone's voice is heard and decisions are made and implemented in a timely manner. Partnering sessions are held throughout the process to help all the stakeholders work together in an environment of mutual trust with open channels of communication.

OHIO CONSTRUCTION REFORM

On June 30, 2011, Governor Kasich signed House Bill 153 which included the first changes I nthe state's method of performing public construction in over 134 years. These changes collectively known as Ohio Construction Reform, or OCR, will substantially alter how public improvement projects are completed and will allow for alternative construction delivery methods.

Ohio Construction Reform retains the current multiple-prime design-bid-build project delivery method, but gives public owners a number of other project delivery options that could be:

- ***Faster***
- ***Have less risk***
- ***More flexible***
- ***Lower cost***

Once Ohio Construction Reform goes into effect, these new delivery methods can be used by state agencies, colleges/universities, counties, townships, municipal corporations, school districts, or other political subdivisions. These changes do not impact the Ohio Turnpike or ODOT's road construction.

Alternative Project Delivery Methods:

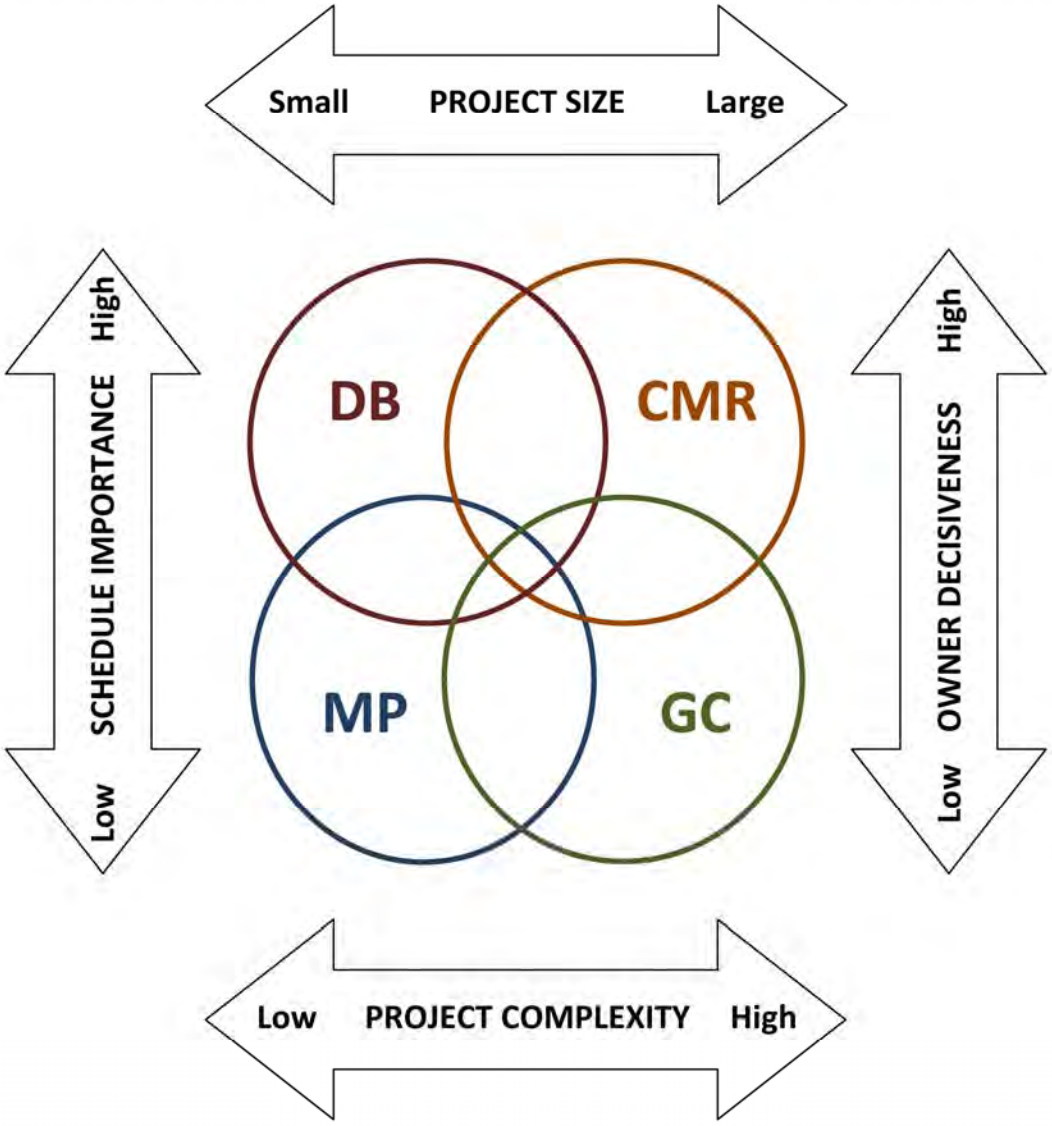
- ***Retains multi-prime design-bid-build project delivery***
- ***Removes limitations on single-prime design-bid-build project delivery – General Contracting***
- ***Allows design-build (D-B) project delivery – a single entity assumes risk for final design and construction of facility including cost overruns***
- ***Retains construction manager (CM) as agent delivery – the CM acts as owner's agent***
- ***Allows construction manager at risk delivery (CMR) – the CM holds subcontracts and assumes risk for cost overruns***
- ***Allows for open-book Guaranteed Maximum Price, design-assist, and subcontractor prequalification within design-build and CM at risk delivery methods.***

See next page for a Project Delivery Method Comparison Guide.

Project Delivery Method Comparison Guide

	Description	Advantages	Disadvantages
MULTIPLE PRIME	Traditional approach in which the owner hires an A/E to fully document the project criteria and design prior to bidding. Multiple packages are separately bid and awarded to the lowest responsive and responsible prime contractors. The owner holds all prime contracts and is responsible for coordination during construction.	• Familiar delivery method • Fully defined project scope • Both designer and contractor accountable to owner • Creates most prime bidding opportunities (lowest bonding) • Lowest initial price • Good for simple projects that are not schedule-driven and not subject to change	• Linear process means longer schedule • Limited control over contractor and subcontractor selection • No design or cost input from contractor • Lack of flexibility for change • Can be adversarial in nature • Not good for complex projects that are schedule-driven
CM as AGENT	An owner's agent is hired through a qualifications based selection process during the design phase. The owner's criteria and full design is documented by a separate A/E. The CMA provides estimates during design, assists with bidding and coordinates prime contractors during construction. The owner bids and holds all contracts for construction.	• Fully defined project scope • Supplements owner's staff • Independent professional services & expertise for owner • Creates most prime bidding opportunities (lowest bonding)	• Adds level of bureaucracy • Limited control over contractor and subcontractor selection • Owner still holds contracts for construction • Not suited for small projects • Drawbacks common to the design-bid-build process
GENERAL CONTRACTING	A linear design-bid-build process in which the owner selects an A/E to fully document the project criteria and design prior to bidding. The lowest responsive and responsible GC (single prime) is awarded the contract. The owner holds a single contract with the GC.	• Familiar delivery method • Fully defined project scope • Both designer and contractor accountable to owner • Simple procurement method • Single contractor to manage • Good for simple to moderately complex projects that are not schedule-driven	• Sequential process means longer schedule • Limited control over contractor and subcontractor selection • No design or cost input from contractor • Can be adversarial in nature • Not good for complex projects that are schedule-driven • Bonding requirements
CM at RISK	A contractor is hired through a best value selection process during the design phase. The owner's criteria and full design is documented by a separate A/E. The CMR provides a guaranteed maximum price prior to bidding. The CMR bids to prequalified subcontractors and holds all subcontracts for construction.	• Contractor input on design • Selection of contractor based qualifications and price • Open-book GMP • Faster project delivery than traditional design-bid-build • Provides flexibility to handle changes during design phase • Good for large or complex schedule-driven projects • More control selecting subs	• Relationship changes during design to construction phase • Increased contingency for assumption of risk • Difficult to determine if best price has been achieved • Bonding requirements • Disputes if GMP scope not clear
DESIGN-BUILD	A single entity is hired through a best value selection process to deliver a complete project. The owner's criteria and design intent is documented by a separate criteria architect. The design is completed by the DB entity and a guaranteed maximum price is provided prior to bidding. The DB entity bids to prequalified subcontractors and holds all subcontracts for construction.	• Single point of responsibility for design and construction • Contractor selection based on qualifications and price • Fastest project delivery Open-book GMP • No changes orders for design errors and omissions • Good for new construction that is time sensitive and not subject to change • Good for less complex projects • More control selecting sub's	• Owner has less control over selecting designer • Owner has less input in details • Over emphasis on price may compromise quality • Difficult to determine if best price has been achieved • Owner required to make quick decisions • Changes difficult & expensive • Bonding requirements • Disputes if criteria not clear

Project Delivery Method Selection Diagram



B. SUMMARY OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

PRE-PLANNING

The school district establishes partnerships with the community, establishes and refines their educational program, and connects their educational program and with their shared vision of the facilities.

PLANNING, APPROVAL & FUNDING

An enrollment study is developed and facility assessments are conducted to help establish the planning parameters. A master facility plan is jointly developed, a site is selected with assistance from the Design Professional (DP), and funding is secured.

CONTRACTING

Agreements and contracts are established between the state and the district for ***the project, the DP, and the CM.***

DESIGN

The Project Team works together to develop a Program of Requirements (POR), the detailed square footage requirements for each space in the building. Once the POR is approved the design phases begin:

- Schematic Design Phase: Spaces are drawn to the correct scale indicating relative sizes as stated in the POR. Spaces are shown in the correct relationship to each other. Energy simulation modeling to occur.
- Design Development Phase: The drawings indicate greater levels of detail. In addition to classroom and building size, the building systems, materials, and furnishings are shown in the documents. Commissioning process begins.
- Construction Documents Phase: The documents show the detailed information that will ultimately be used by the contractors to bid and construct the building.

BIDDING

The project is bid, bidders are evaluated, and contracts are executed.

CONSTRUCTION

The Project Team and the Contractor work together to construct the building. Throughout the construction phase the Project Team holds regular meetings to review the progress of construction. The Project Team uses proven methods to assist in monitoring the budget, schedule, project quality, and change orders during construction. Furniture and equipment are procured. Commissioning is implemented.

OCCUPANCY

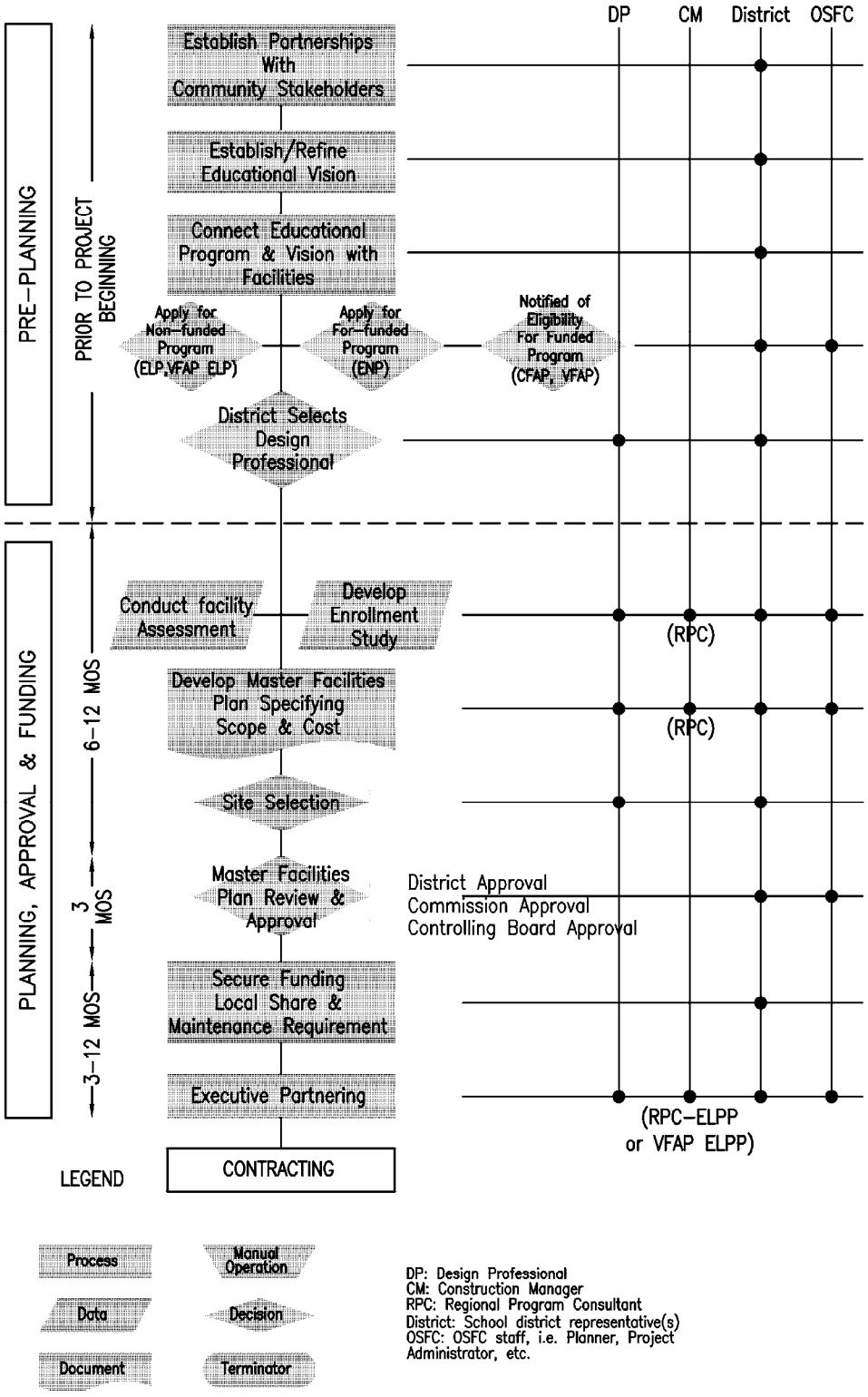
Furniture and equipment are delivered and put in place. Students, faculty, and staff move into the building.

POST-OCCUPANCY

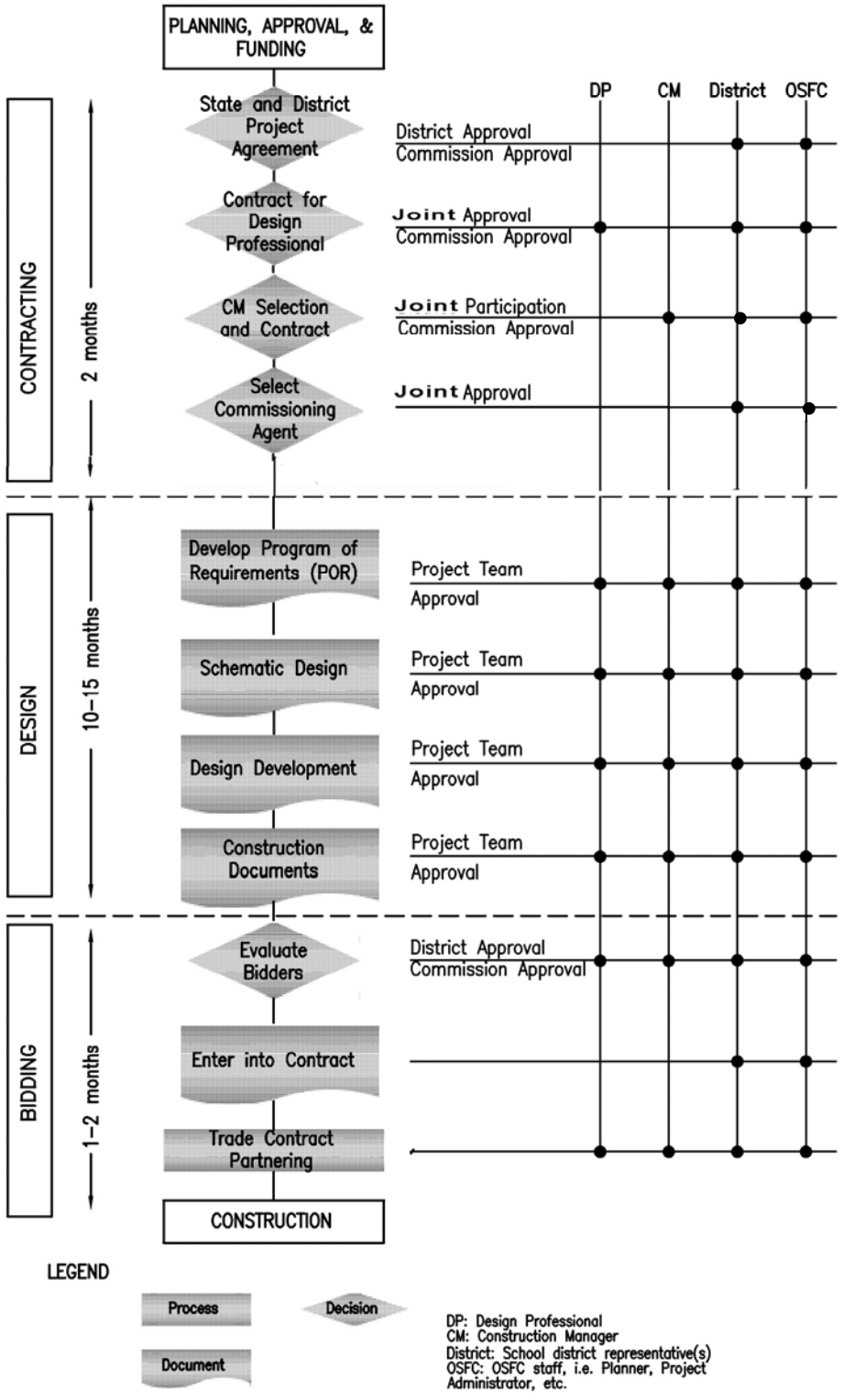
The warranty phase begins and a Maintenance Plan is implemented. The project and financial closeout steps occur.

The following diagrams illustrate the planning, design, and construction process; the participants in each step, and the estimated timeline for each phase.

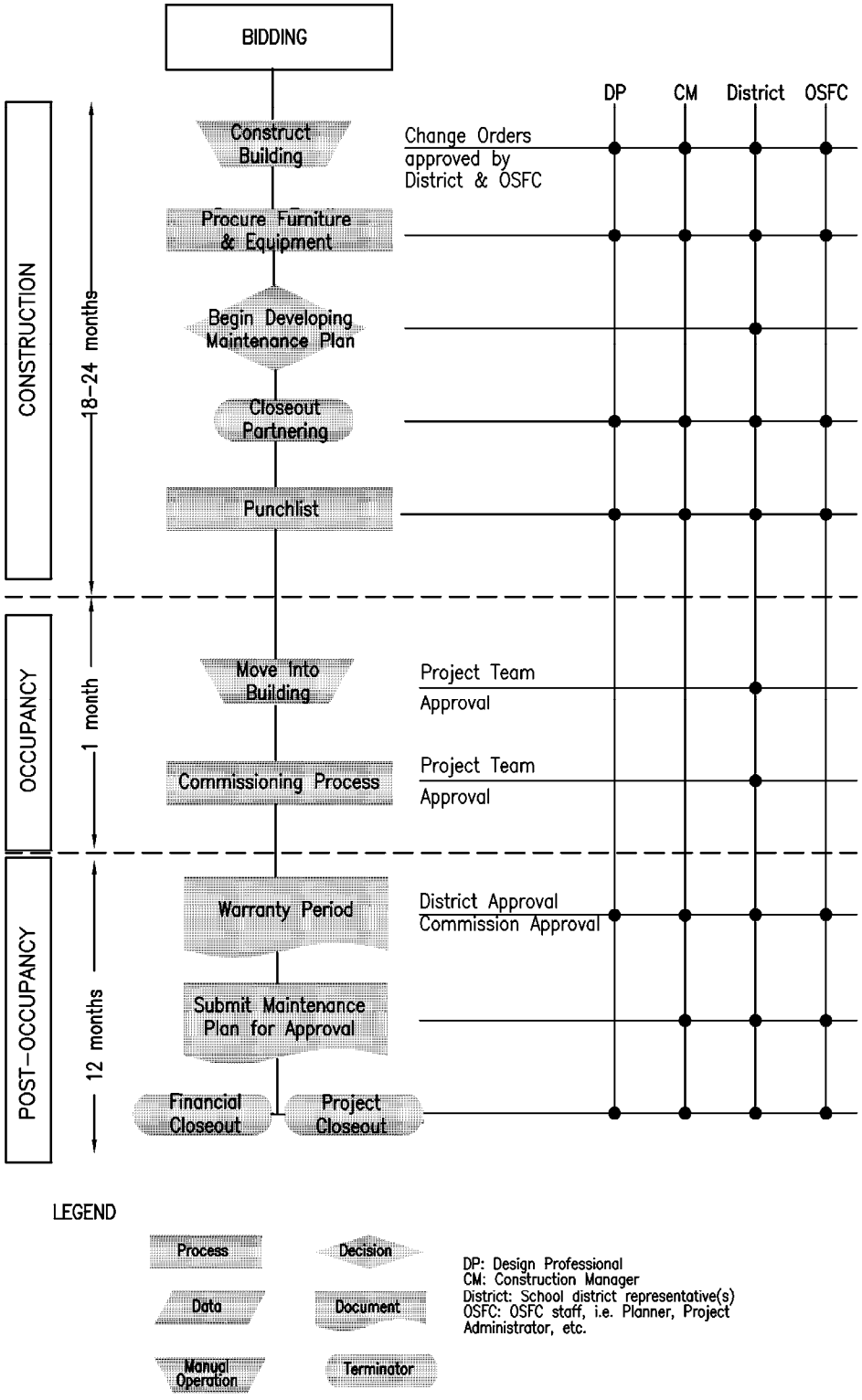
B. SUMMARY OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS *(CM Agency)*



B. SUMMARY OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS *(CM Agency)*



B. SUMMARY OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS



C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

PRE-PLANNING

Establish Partnerships with Community Stakeholders

It is important to include the community in the educational planning process. Critical links should be established among students, building administrators, faculty members, parents, school board members, and the community. These connections ensure a good outcome and continued support of construction endeavors. ***For more information on the planning process, see Section 1120 Student Center Learning Environment.***

Establish/Refine Educational Vision

Stakeholders should work together to develop an educational vision. Questions that may be answered include:

- What are the most appropriate program areas and delivery systems for the district?
- What does educational research suggest?
- What is the most appropriate grade configuration or school size?
- What areas are working? What needs to be changed?

Connect Educational Program and Vision with Facilities

Connections must address the relationship of every site's school improvement planning process, the facility that is being considered, and community involvement in taking ownership of the process. Questions that address connecting the educational program with facilities include:

- What are the future educational programs and/or systems that will impact facilities?
- What priorities should be addressed regarding the educational program and facilities?

Once the district has developed an educational vision it is now time to assess the physical condition of the district's classroom facilities and the ability of those facilities to support the district's educational vision. The district may apply for the facilities assessment only program at any time to determine the condition of their classroom facilities.

Apply for Assessment Only Program permits school districts to receive a district-wide assessment and master facility plan for existing classroom facilities. This information empowers the district to make informed decisions regarding their facilities.

Apply for Non-funded Program (Expedited Local Partnership Program – ELPPor Vocational Facilities Assistance Program (VFAP) ELPP))

ELPP permits school districts that are estimated to be over two years away from eligibility for state assistance under the Classroom Facilities Assistance Program (CFAP) to receive a district-wide assessment and master facilities plan from the Commission. The Commission will assess the classroom facilities needs of participating districts, and, in collaboration with the district, develop a district-wide master facilities plan. Program participants may spend local resources on a discrete part of their overall master facilities plan (either new construction or major renovation) and later receive credit for qualifying expenditures from the school district's share of the overall project budget when the district becomes eligible for state assistance under CFAP or VFAP.

Apply for Funded Program (Exceptional Needs Program – ENP)

ENP is a building replacement program that provides low wealth school districts with the ability to protect the health and safety of their students with a new facility. The program has a single building orientation, so it will not necessarily fund a district's entire facilties needs. Eligibility is open only to those districts with a ranking on the yearly Ohio Department of Education "Equity List" of lower than the ***75th*** percentile.

OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

PRE-PLANNING

Notification of Eligibility for Funded Program (CFAP,VFAP or ENP)

CFAP is the largest of the OSFC programs and provides funding for the entire ***or a segment of the*** facility needs of a school district. Each district is ranked on the Equity Aid Distribution List supplied to the Commission by the Ohio Department of Education.

District Selects Design Professional

The district is responsible for interviewing and selecting the Design Professional (DP) for the project(s). The DP is responsible for securing sub-consultants, such as mechanical and electrical engineers and technology experts, to design the building. In making this selection, factors include: experience in school design, energy efficient design, and sustainable design.

PLANNING, APPROVAL & FUNDING

The Planning, Approval, and Funding portion of the OSFC process includes data-gathering activities (developing enrollment projections and assessing existing facilities), incorporating the data into a Master Facilities Plan, site selection, approvals of the Master Facilities Plan, and securing funding for the district's building program.

OSFC Conducts Facility Assessment

The development of a uniform and comprehensive assessment of a district's facilities is central to CFAP, VFAP, ENP, ELPP and VFAP ELPP. The process has evolved since 1997 and is accomplished through assessing consultants working with a sophisticated Internet-based Assessment Tool. The school district will be requested to provide floor plans and other information and to make Facilities Managers available to assist the consultants in the evaluation of the facilities.

The Facility Assessment report contains a variety of data about each of the district's buildings, such as: site acreage, current grade configuration, capacity, number of floors, number of teaching stations, total building square footage, and the dates of construction for the original building and additions. However, it is important for all parties to understand that the use of the Facility Assessment report is for the purpose of developing an estimated project cost and scope based on best available data. Conditions which are hidden or otherwise unknown may have an impact on the final project cost.

OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Example of Building Assessment Summary

PLANNING, APPROVAL & FUNDING

The Summary includes inventory details about all the buildings that were assessed.

The Facility Assessment Summary indicates the rating of each of the 23 building systems.

Ratings:
1=Satisfactory
2=Needs Repair
3=Needs Replacement

The CEFPI Appraisal is an instrument that yields information about the ability of the building to support the educational program.

Each item on the summary is linked to a detailed description of the assessor's findings and recommendations

Estimated cost to fully renovate building before application of cost factor.

District: **County:** **Area:**
Name: **Contact:**
Address: **Phone:**
Date Prepared:
Bldg. IRN: **Date Revised:**

Current Grades	9-12	Acreage:	12
Proposed Grades	N/A	Teaching Stations:	31
Current Enrollment	395	Classrooms:	
Projected Enrollment	N/A		

Addition	Date	HA	Number of Floors	Current Square Feet
Mechanicsburg High	1934	no	2	7,425
	1950	no	3	26,460
	1957	yes	3	11,160
	1976	yes	2	13,770
				58,815

CEFPI Appraisal Summary

Section	Points Possible	Points Earned	Percentage	Rating Category
Cover Sheet				
1.0 The School Site	100	44	44%	Poor
2.0 Structural and Mechanical Features	200	109	55%	Borderline
3.0 Plant Maintainability	100	51	51%	Borderline
4.0 Building Safety and Security	200	97	49%	Poor
5.0 Educational Adequacy	200	82	41%	Poor
6.0 Environment for Education	200	88	44%	Poor
Commentary				
Total	1000	471	47%	Poor
C=Under Contract				
Renovation Cost Factor				98.73%
Cost to Renovate (Cost Factor applied)				$4,293,230.86

The Replacement Cost Per SF and the Renovate/Re... ratio are only provided when this summary is requested from a Master Plan.

Handicapped Access
...atisfactory
...ds Repair
=3 ... Replacement
*Const P/S = Presc... Scheduled Construction

		FACILITY ASSESSMENT	Rating	Dollar Assessment	C
[IMAGE]	A.	Heating System	1	$0.00	-
[IMAGE]	B.	Roofing	3	$148,2...	-
[IMAGE]	C.	Ventilation / Air Conditioning	3	$730,780.00	-
[IMAGE]	D.	Electrical Systems	3	$529,335.00	-
[IMAGE]	E.	Plumbing and Fixtures	3	$23,500.00	-
[IMAGE]	F.	Windows	3	$259,450.00	-
[IMAGE]	G.	Structure: Foundation	1	$0.00	-
[IMAGE]	H.	Structure: Walls and Chimneys	2	$2,000.00	-
[IMAGE]	I.	Structure: Floors and Roofs	1	$0.00	-
[IMAGE]	J.	General Finishes	2	$623,439.00	-
[IMAGE]	K.	Interior Lighting	2	$88,222.50	-
[IMAGE]	L.	Security Systems	3	$117,630.00	-
[IMAGE]	M.	Emergency/Egress Lighting	3	$29,407.50	-
[IMAGE]	N.	Fire Alarm	2	$73,518.75	-
[IMAGE]	O.	Handicapped Access	3	$44,890.75	-
[IMAGE]	P.	Site Condition	1	$0.00	-
[IMAGE]	Q.	Sewage System	1	$0.00	-
[IMAGE]	R.	Water Supply	1	$0.00	-
[IMAGE]	S.	Exterior Doors	1	$0.00	-
[IMAGE]	T.	Hazardous Material	3	$62,691.00	-
[IMAGE]	U.	Life Safety	3	$366,148.75	-
[IMAGE]	V.	Loose Furnishings	3	$235,260.00	-
[IMAGE]	W.	Technology	3	$165,858.30	-
-	X.	Construction Contingency / Non-Construction Cost	-	$848,044.71	-
Total				$4,348,456.26	

B. Roofing

Description: The existing roof membrane system was installed in 1989 and 1990. There were no significant problems observed with the roofs on any of the buidlings. However, all roofs are at least 10 years old.

Rating: 3 Needs Replacement

Recommendations: Replace membrane roofs.

Item	Cost	Unit	Whole Building	Mechanicsburg High School (1934) 7,425 ft²	Mechanicsburg High School (1950) 26,460 ft²	Mechanicsburg High School (1957) 11,160 ft²	Mechanicsburg High School (1976) 13,770 ft²	Sum	
Other: Membrane	$148,280.00	lump sum		Required				$148,280.00	replace membrane roofs $5.00 x 29656 SF
Sum:			$148,280.00	$148,280.00	$0.00	$0.00	$0.00		

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Develop Enrollment Study for a Typical *Pre-K*-12 School

An important component of the OSFC planning protocol is the development of student enrollment projections. Upon entering a program, OSFC assigns an educational planner to develop the enrollment projections. The objective is to determine the number of students for which the buildings should be designed. The enrollment history of the district is obtained through an online district questionnaire. District demographics such as live birth statistics, population information, housing starts, and survival rates are all combined to project the district's enrollment 10 years into the future.

An Enrollment Projections Report will generally include the following information:

Historical Enrollment

For example:

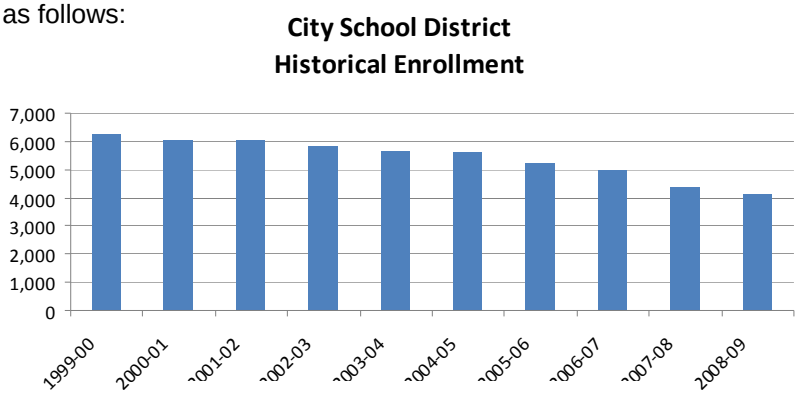
Over the past ten years, student enrollment in the _____ School District has decreased by 2,127 students in grades Pre-K – 12, including ungraded, special education, career-technical, and full-time JVS students. Total Pre-K - 12 enrollment for the 2008-09 school year was 4,126 students, including the full-time JVS students. The approximate percentages of mainstreamed special education students [Pre-K - 12] for the current school year are as follows:

- Pre-K-5 – 9%
- 6-8 – 11%
- 9-12 – 10%

The approximate percentages of self-contained special education students [Pre-K - 12] for the current school year are as follows:

- Pre-K-5 – 0%
- 6-8 – 0%
- 9-12 – 0%

This graph illustrates the District's K- 12 enrollment history from 1999-00 through 2008-09.



The report itemizes historic***al*** enrollment by grade, by grade group, and by year.

Live Birth Data

Utilization of live birth data is recommended when projecting future enrollments. This provides a helpful overall trend, as well as a useful estimation of kindergarten enrollment five or six years in the future. Large bubbles in birth rates, either up or down, can also be planned for and anticipated by the district.

Live Birth Count
1993-2007

Year	Municipality
1993	924
1994	860
1995	890
1996	927
1997	877
1998	867
1999	907
2000	905
2001	741
2002	674
2003	737
2004	662
2005	653
2006	720
2007	718

Source: Ohio Department of Health, Statistical Analysis Unit

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

PLANNING, APPROVAL & FUNDING

Develop Enrollment Study for a Typical Pre-K-12 School, continued

Demographics

Tables such as the following are developed to show important demographic information.

General Demographic Information

	County
Per Capita Income (1999)	$18,582
Median Household Income (2004)	$43,320
Persons Below Poverty (2004)	11.9%

Source: US Census

Total Population

	2000 Census	2007 Estimate
County	128,852	125,679
Township	14,680	11,441
City	49,346	49,675

Source: ODOD Office of Strategic Research

Several maps ***are*** generated ***to illustrate the data identified in the tables identifying population estimates and projections by age group, average household income, average family size, and average family income. Color coding on the maps indicated areas within the District that may be increasing or decreasing at different rates.***

Housing Information

Various tables are also developed to enumerate the likely growth in housing units in the district.

Building Permits Issued for Single Family Dwellings

Year	_____ Township # of Permits Issued	Village of _____ # of Permits Issued	Village of _____ # of Permits Issued	_____ Township # of Permits Issued	_____ County # of Permits Issued
1991	N/A	N/A	N/A	N/A	949
1992					1,302
1993					1,466
1994					1,520
1995					1,508
1996					1,858
1997					2,165
1998	48	2	9	130	2,516
1999	55	2	12	165	2,725
2000	40	4	12	136	2,353
2001	50	1	9	148	2,649
2002	51	7	8	216	2,650
2003	44**	1**	8**	239***	1,220*
Total	**288**	**17**	**58**	**1,034**	**24,881**

Source: SOCDS Building Permits Database; _____ County Building Inspection Department

_____ Township

Subdivision	Number of Lots	Section Number	Final Plat Year	Number of Zoning Permits Issued	Number of Lots Remaining
_____	29	1	1994	26	3
_____	19	1	1993	17	2
_____	1	2	1998	1	0
_____	11	3	1998	7	4
_____	1	3	2002	1	0
_____	4	4	2003	0	4
Total	65			52	13

Source: Township Planning and Zoning

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Develop Enrollment Study for a Typical *Pre*-K-12 School, continued

Projected Enrollment

Tables (by grade and by grade group) and graphs detail the projected enrollment for a 10-year period.

City School District
Projected Enrollment by Grade Group

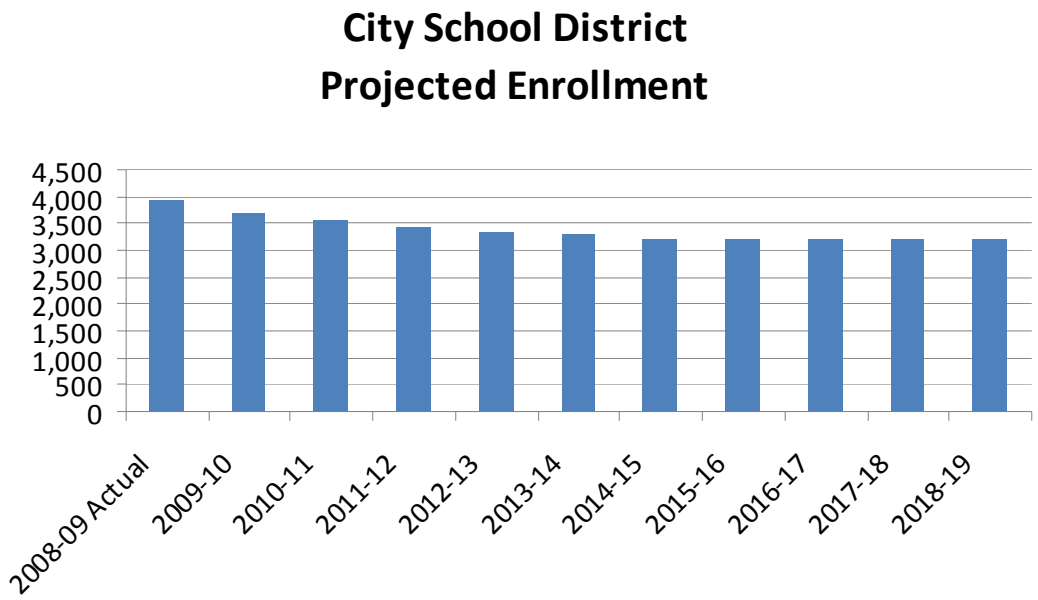
Grade	2008-09 Actual	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Pre-K (special needs) - 3	**1,371**	1,331	1,302	1,334	1,384	1,398	1,417	1,407	1,399	1,399	1,399
4 - 6	**835**	827	814	797	740	719	712	752	773	789	781
7 - 8	**630**	562	481	458	461	461	433	398	397	408	427
9 - 12	**882**	792	770	671	595	556	541	532	506	476	472
Pre-K - 12 Total	**3,718**	3,512	3,367	3,260	3,180	3,134	3,103	3,089	3,075	3,072	3,079
Special Education	**12**	12	12	11	11	11	11	11	11	11	11
Career Tech Comprehensive - Low Bay	**178**	148	149	131	125	110	95	90	91	91	85
Career Tech Comprehensive - High Bay	**52**	33	33	29	28	25	22	20	21	20	20
Grand Total	**3,960**	3,705	3,561	3,431	3,344	3,280	3,231	3,210	3,198	3,194	3,195

Source: DeJONG-HEALY

City School District
Master Planning Year Projected Enrollment

Grade	2013-14
Pre-K - 12 Total	3,079
Ungraded	0
Special Education	11
Career Tech Comprehensive - Low Bay	85
Career Tech Comprehensive - High Bay	20
Total	3,195

Source: DeJONG-HEALY

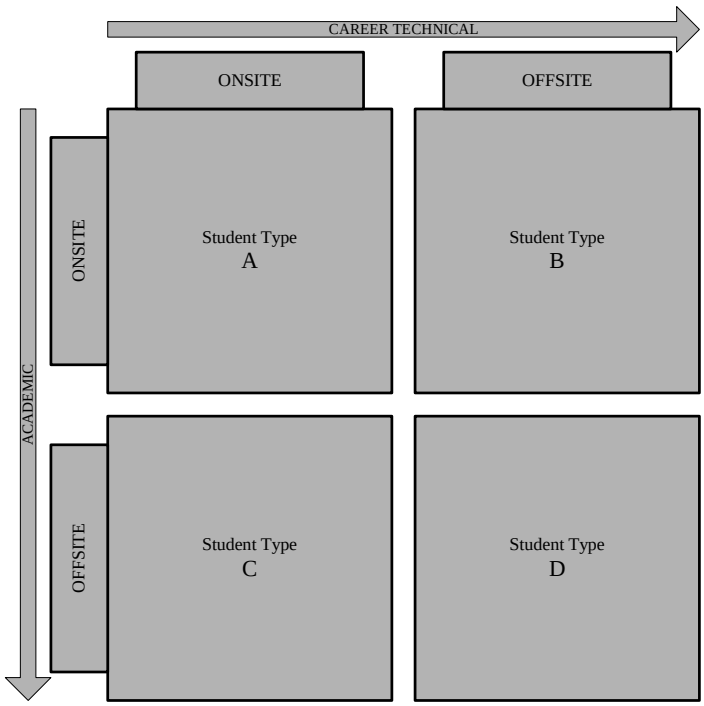


C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Develop Enrollment Study for a Career-Technical School

An important component of the OSFC planning protocol is the development of student enrollment. Upon entering the VFAP ELPP or VFAP, the OSFC assigns an educational planner to produce the enrollment report. The objective is to determine the number of students for which the buildings should be designed. The enrollment history of the district is obtained through an online district questionnaire. Additional enrollment information is obtained from the Ohio Department of Education.

The following "Student Type" matrix illustrates the way that career-technical students are assigned to categories and enrollment is apportioned among the various secondary school types:



Student Type A – Comprehensive Career-Technical Student
Spends entire day at home high school attending academics and career-technical courses on single campus

Student Type B – Career-Technical Off-Site Student
Attends academic courses at home high school and attends career-technical courses at another location, i.e. JVS, comprehensive high school in another district, etc.

Student Type C – Career-Technical On-Site Student
Attends career-technical courses at home high school and attends academics at another location, i.e., high school in another district or high school within same district.

Student Type D – Full-Time Career-Technical Student
Attends both academic and career-technical courses at a site other than the home high school.

Student Type E – does not attend Career-Technical courses at all

The following tables are to clarify the connection/labeling between the Enrollment Project report and the Career Tech PORs. Note that when the school is a Comp HS, the emphasis is on the location of the CT student. When the school is a JVS or Coop school, the emphasis is on the location of the Academic student.

For example:

- **Type B – A CT Off-site Comp HS student is a student that has academic program on-site and CT programs off-site.**
- **Type B – An Acad On-site JVS student is a student that has academic programs on-site and CT programs off-site.**

Comp HS School - Relates to location of CT Students	
Type A - Full time	Acad On-site + CT On-site of Comp HS
Type B - CT Off-site	Acad On-site + CT Off-site of Comp HS
Type C - CT On-site	Acad Off-site + CT On-site of Comp HS

JVS/Compact School - Relates to location of Academic Students	
Type A - Full time	Acad On-site + CT On-site of JVS
Type B - Acad On-site	Acad On-site + CT Off-site of JVS
Type C - Acad Off-site	Acad Off-site + CT On-site of JVS

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

New Process for Projecting JVSD Enrollment

In the past, JVSD have provided historical enrollment for three years by program for full-time and half-time students and students with special needs. The enrollment of the JVSD for the most recent three years was reviewed. A report was developed identifying the highest year of enrollment of those 3 years as the master planning year enrollment. No projection of enrollment was done. Breakdowns were provided for high bay and low bay programs, full-time and half-time students, and students with special needs.

A new process has been developed that more closely resembles the process used for the K-12 districts. In the new process, the 10-year historical enrollment of all the feeder districts of the JVSD are collected. Based on the historical enrollment and birth data, a 10-year projection for the combined feeder districts is provided.

The JVSD will be asked to provide one year of data by program as they do now, but they will also be asked to provide 9 years of historical enrollment for 11th and 12th grade full-time and half-time students.

JVSD Historical Enrollment

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Full Time 11th	256	309	283	263	323	376	343	338	369	355
Full Time 12th	238	235	283	236	271	265	298	262	283	303
Full Time Total	494	544	566	499	594	641	641	600	652	658
Half Time 11th	0	0	0	9	40	6	23	28	28	49
Half Time 12th	30	25	21	49	42	44	35	54	59	62
Half Time Total	30	25	21	58	82	50	58	82	87	111
Grand Total	524	569	587	557	676	691	699	682	739	769

Source: JVSD

High Bay Programs

		2011-12
High Bay Grand Total	Full-time 11th	117
	Full-time 12th	112
	Full-time Total	**229**
	Half-time 11th	23
	Half-time 12th	7
	Half-time Total	**30**

Source: JVSD

Low Bay Programs

		2011-12
Low Bay Grand Total	Full-time 11th	215
	Full-time 12th	199
	Full-time Total	**414**
	Half-time 11th	20
	Half-time 12th	35
	Half-time Total	**55**

Source: JVSD

The percentage of 11th and 12th students who attend the JVSD from the feeder districts will be determined and a projection ratio developed. This ratio will then be applied to the projected enrollment for 11th and 12th grade of the feeder districts for each of the 10-years, resulting in a 10-year projection for the JVSD.

JVSD Projected Enrollment

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Full Time 11th	363	361	381	378	415	398	408	418	390
Full Time 12th	285	291	289	305	303	333	319	327	335
Full Time Total	648	652	670	683	718	731	727	745	725
Half Time 11th	36	36	38	38	42	40	41	42	39
Half Time 12th	59	61	60	63	63	69	66	68	70
Half Time Total	95	97	98	101	105	109	107	110	109
TOTAL	743	749	768	784	823	840	834	855	834

Source: DeJONG-HEALY

The previous JVSD Enrollment Report will now be an Enrollment Projection Report. The report will contain the feeder district historical and projected enrollment, birth data, the JVSD historical and projected enrollment, and master planning year. Breakdowns will still be provided for high and low bay programs, full-time and half-time students, and students with special needs.

JVSD

Master Planning Year Enrollment - 2020-21

Full-time Low Bay Enrollment	468
Full-time High Bay Enrollment	257
Half-time Low Bay Enrollment	76
Half-time High Bay Enrollment	33
Total	834

Source: DeJONG-HEALY

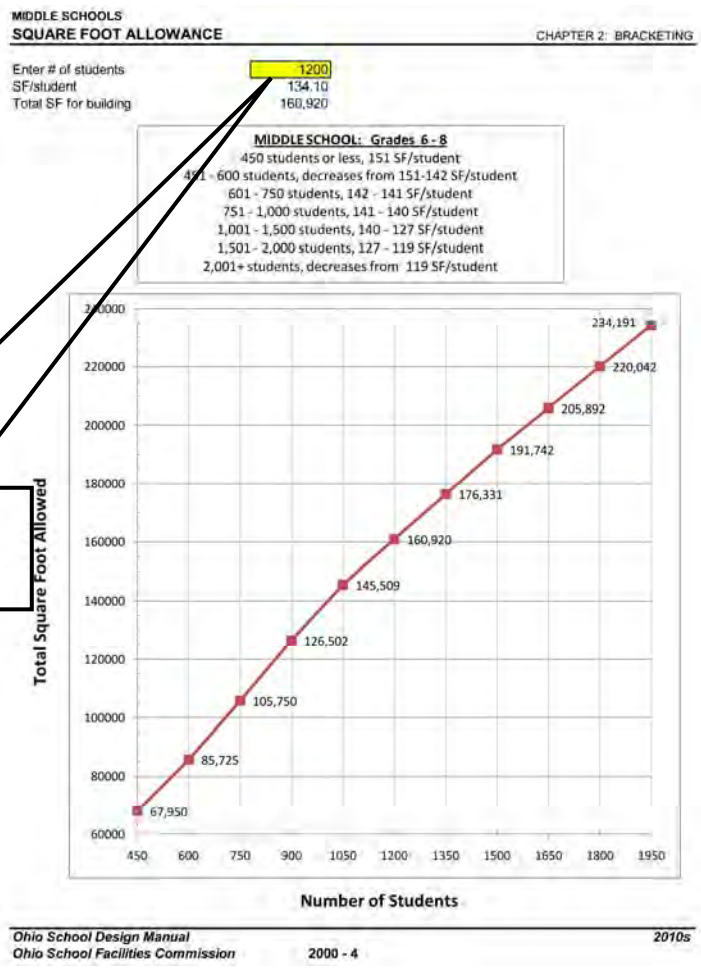
C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Develop Master Facilities Plan Specifying Scope and Cost for K-12 Schools

After the Assessment and Enrollment Projection reports are completed, the Master Facilities Plan is developed to define the scope of work and budget for each of the district's classroom facilities. The number of students projected for each school is entered into the grade level-appropriate spreadsheet in the Design Manual to determine the total gross square footage for that school in the Master Facilities Plan. Square foot allowance charts can be found in Chapter 2, Section 2000 of the Design Manual. When Career-Technical programs are provided at the facility, the projected enrollment in the Career-Technical program is used along with the types of programs to develop a space allocation for those high schools housing Career-Technical programs.

The square footage for each school is then multiplied by the allowable cost per square foot for that school level and school size (data found in Section 1200 of the Design Manual). All buildings in the district are aggregated to determine the overall budget for the Master Facilities Plan.

To determine the gross square footage for a school building, enter the number of students.

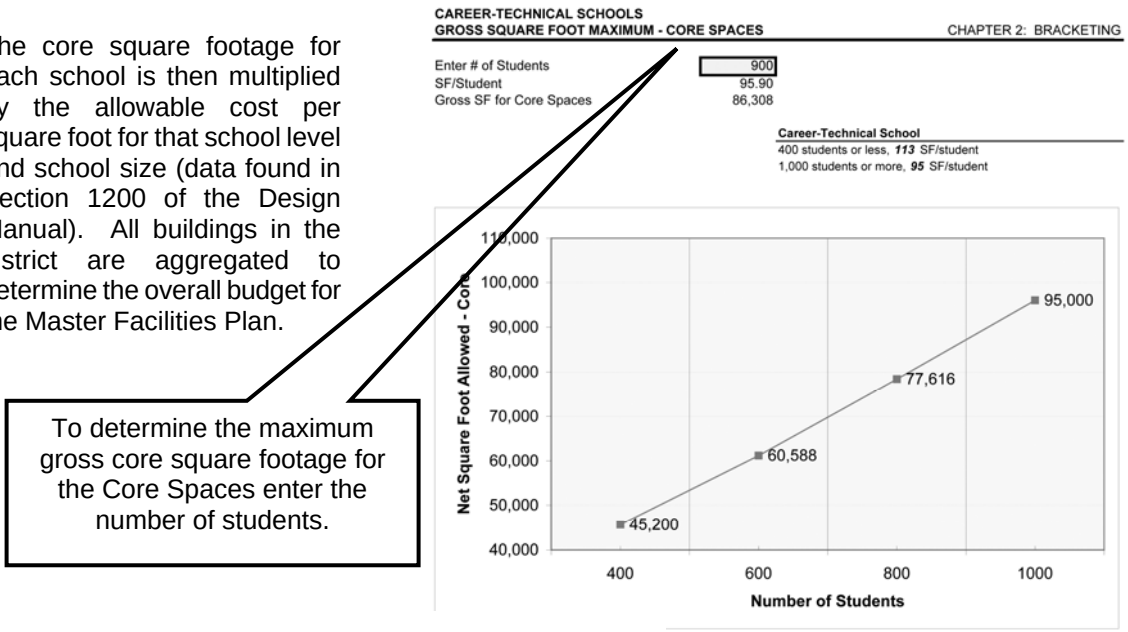


C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

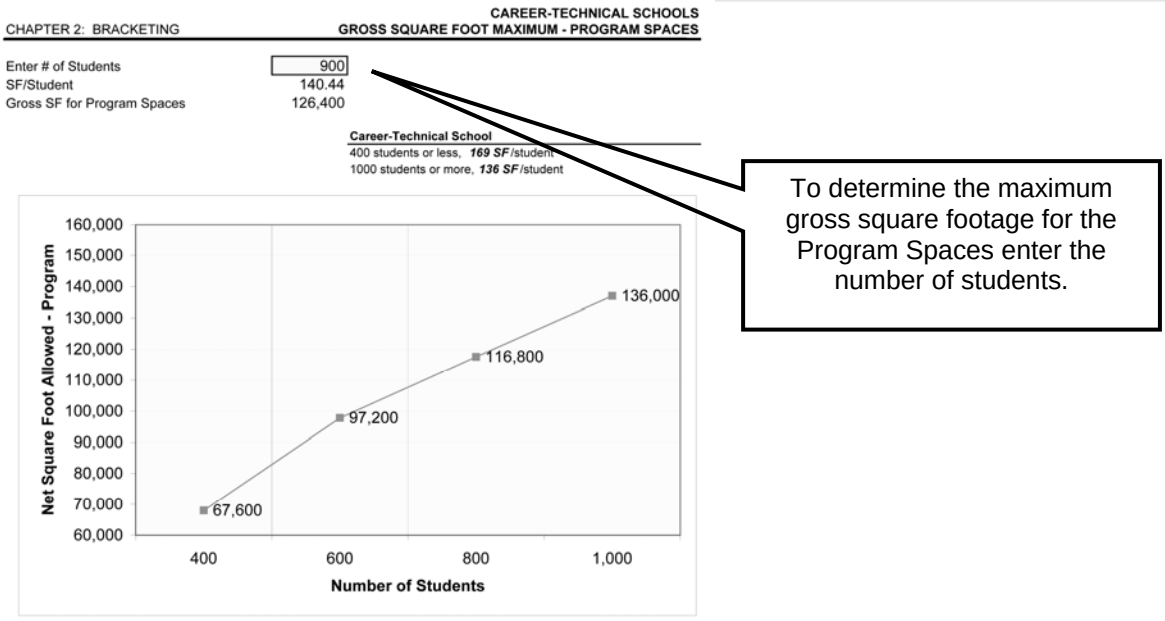
Develop Master Facilities Plan Specifying Scope and Cost for Career-Technical Schools

After the assessment and enrollment reports are completed, the Master Facilities Plan is developed to define the scope of work and budget for each of the district's classroom facilities. The number of career-technical students for each school is entered into the core space spreadsheet in Chapter 2 of the Design Manual (Career-Technical section) to determine the total gross core square footage for that school in the Master Facilities Plan. The program area is determined by developing a program of requirements. Square foot maximum charts can be found for both core and program areas in Chapter 2, Section 2700 of the Design Manual (Career-Technical section).

The core square footage for each school is then multiplied by the allowable cost per square foot for that school level and school size (data found in Section 1200 of the Design Manual). All buildings in the district are aggregated to determine the overall budget for the Master Facilities Plan.



To determine the maximum gross core square footage for the Core Spaces enter the number of students.



To determine the maximum gross square footage for the Program Spaces enter the number of students.

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Develop Master Facilities Plan Specifying Scope and Cost for Career-Technical Schools, continued

Due to the unique nature of Career-Technical program spaces, the methodology for determining space (square footage) requirements for program areas is different than the methodology used for core academic areas.

The space requirements for program areas is program driven: Each of the Career-Technical Programs recognized by the Ohio Department of Education is assigned to one of seven Program Types which outlines the general lab space, general support spaces, and program specific support spaces identified for a given Career-Technical Program.

The space requirements for the core academic areas of a stand alone Career-Technical facility is student population driven: Much like the methodology in the K-12 Design Manual, the number of students in a facility drives the space requirements for core facilities including areas such as academic classrooms, science & computer labs, administration, media centers, dining & kitchen areas, custodial & general service spaces.

Because of the unique challenges presented by Career-Technical facilities in developing an appropriate and equitable Program of Requirements (POR), there are several guidelines adopted by the OSFC to manage the development of the POR and the subsequent facilitation of a funding level for a given project.

Program of Requirements (POR) Guidelines

1. ***The OSFC will develop an enrollment projection for determining the student enrollment.***

2. The assessment of existing facilities will take into account Career-Technical Programs that are approved by (not just applied for) the Ohio Department of Education for the specific Career-Technical facility.

3. Program spaces and core spaces are considered separately in determining the square footage deficiencies and credits in a POR. Additional space allowed for program areas cannot be applied to core area deficiencies or vice-versa. The final use of existing space is not restricted, however, as existing core space could be converted to program space and vice-versa if it balances with allowable programming guidelines and the efficient disposition of space within the facility.

4. Spaces in existing facilities which are not indicated in the Career-Technical sections as approved and funded core or program spaces will be disregarded in the assessment of a career-technical facility and the development of a fundable POR. For example, adult education only spaces, district administration, county service offices, auditoriums and convocation spaces, etc. will not be included in assessment or determination of net and gross square footage calculations.

5. Core space assessment which determine square footage deficiencies and allowed expansion must address academic classroom requirements first before addressing any other areas of allowed core spaces.

6. As a cap to the POR, the ratio of total students to program spaces must be a minimum of 30:1 for Lab Types 5-7 and a minimum of 50:1 for Lab Types 1-4.

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Develop Master Facilities Plan Specifying Scope and Cost for Career-Technical Schools, continued

7. As a cap to the development of program and core space requirements, the gross funded square footage indicated in a fundable POR cannot exceed the sq.ft. per student per the Gross Square Foot Allowance Chart on page 2000-2.

8. Program Type 7 covers extraordinary sized programs. The fundable limit for Program Type 7 areas shall be 10,000 sq.ft.

9. Any existing lab space which is assessed at less than 75% of its recommended square footage will be eligible to receive funding for an addition and/or a renovation of other available existing space within the facility. The total fundable square footage is still subject to all other guidelines as listed.

10. The square footage calculations for the master plan are based on the assumption of all day student participation. Deviation from this assumption will be addressed on a case by case basis.

11. The career-technical facility must complete the POR phase of pre-design prior to final acceptance/approval of the Master Facilities Plan. The district has the option of using the OSFC assessment consultant or their selected design professional to complete this phase.

12. Renovations and expansion of core and program spaces in excess of these guidelines must be funded by local initiative in addition to the local + state share of the master plan.

OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Example of a High School Master Facilities Plan including Career-Technical Areas

When additions are highlighted for an existing school, this is an indication these additions are to be demolished.

Assessment summary

Number of students to be housed in facility by grade group and allowable square feet

Estimated project cost based on square footage by grade group

	New Comprehensive HS
Building	New High
Program	
Cost Set	
Assessing Consultant	
Type	High
Acres	
Grades Housed	
Current Enrollment	
Additions to Demolish	
Grades Housed - Proposed	9-12, CT Low Bay Comprehensive, CT High Bay Comprehensive
Projected Enrollment	541
CT Projected Enrollment	345
Scope of Work	Build New
CEFPI Rating	
Existing ft²	
Cost/ft² (DM)	
Cost to Replace	$0.00
Cost to Renovate	
Reprogramming	$0.00
Renovate+Replace	
Right Replacement	
Right Ratio	
Addition Required	No
	New ft²
Elementary (PK-5)	
Projected Enrollment	
ft²/Student	
ft² Required	
Middle (6-8)	
Projected Enrollment	
ft²/Student	
ft² Required	
High (9-12)	
Projected Enrollment	541
ft²/Student	166.00
ft² Required	89,806
Career Technical Core Space	
Projected Enrollment	345
ft²/Student	98.04
ft² Required	33,133.8
Total ft² Required	122,939.8
ft² Existing	
Oversized ft²	
Less Oversized ft²	
CT ft² Existing	
CT ft² Not Programmed	
Less CT ft²	
Addition ft²	122,940
Cost per ft²	*see below*
Total Addition Cost	
	Cost to Rebuild
Elementary (PK-5)	
Total ft² Required	
Cost/ft² (DM)	
Cost to Rebuild	$0.00
Middle (6-8)	
Total ft² Required	
Cost/ft² (DM)	
Cost to Rebuild	$0.00
High (9-12)	
Total ft² Required	122,939.0
Cost/ft² (DM)	$203.60
Cost to Rebuild	$25,030,543.28
Career Technical Program Space	
CT Existing ft²	
CT New ft²	37,928.32
CT Total ft²	37,928
CT Program Total	$7,240,190.88
Total Proposed ft²	160,868
Total to Rebuild	$25,030,543.28
Total to Rebuild All Buildings	
Cost to Renovate	$0.00
Total Addition Cost	
Total to Renovate/Add	$0.00
Total Career Technical	$7,240,190.00
Project Cost	$32,270,734.16
Asbestos Abatement	$0.00
Demolition	$0.00
Specific Allowance	$0.00
Page Subtotal	$32,270,734.16
General Allowance	$0.00
Project Agreement LFI	$0.00
Co-Funded Project	$32,270,734.16
Total Project Cost	**$32,270,734.16**

Master Plan Name New Comprehensive HS
Rank 3888
School District XYZ Local School District
School District IRN 48888
County RXYZ County
Cost Region 0 (New Construction Cost Factor: 100%)
Cost Set 2008
Bracketing Set 2008
Educational Planner ABC & Associates

Projected Enrollment (10 Yr)

Grade	2012-13
PK	59
K	200
1	221
2	218
3	223
4	229
5	244
6	205
7	254
8	241
9	213
10	226
11	46
12	56
CT Low Bay Comprehensive	238
CT High Bay Comprehensive	107
Total	**2986**

Grade Configurations			
Grades	Total	Placed	Remaining
PK-12	2641	*541*	***2100***
PK-5	1400	*0*	***1400***
6-8	700	*0*	***700***
9-12	541	*541*	*0*
PK-8	2100		
6-12	1241		
CT	345	*345*	*0*

Project Scope:
Build one new 9-12 comprehensive high school.

Master Planner Commentary:
The project budget for new buildings shown on this Master Plan anticipates attaining the USGBC (U.S. Green Building Council, Leadership in Energy and Environment Design) Silver (with a prefer points in the Energy and Atmosphere category).

Enrollment projections summary

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Example of a *Comprehensive HS (New Comprehensive HS)* Program of Requirements (POR)

Program of Requirements for New Comprehensive HS (New Comprehensive HS)

SF per Student		
POR SF/Student	109.94	(not to exceed Maximum Allowable)
Maximum Program SF/Student	109.94	(Maximum Allowable)
OSDM Bracketed SF/Student	141.15	

General Info	
Number Of Students Low Bay	238
Number Of Students High Bay	107
Number of High School Students	541
Funded Programs Low Bay (50:1)	4
Funded Programs High Bay (30:1)	3
Career Tech Excess SF	

Square Footage		
Total POR SF	37,928	(not to exceed Maximum Allowable)
Maximum Program SF	37,929	(Maximum Allowable)
OSDM Bracketed SF	48,697	

	Subject Code	Existing Indoor SF	Existing SF	Indoor SF Specified In DM	SF Specified In DM	Existing Lab Percent Of Required	SF Reprogrammed	Reprogramming Cost ($23.62)	Proposed New Indoor SF	Proposed New SF	Cost New	Total Cost	Final SF
Program Type 1													
Administrative/Office Technology	14.0300	0	0	1,520	1,520	0.00%		$0.00	1,200	1,200	$250,668.00	$250,668.00	1,200
Business Management	14.0800	0	0	1,520	1,520	0.00%		$0.00	1,200	1,200	$282,504.00	$282,504.00	1,200
Information Support and Services	14.0210	0	0	1,520	1,520	0.00%		$0.00	1,320	1,320	$276,962.40	$276,962.40	1,320
Interactive Media	14.0240	0	0	1,520	1,520	0.00%		$0.00	1,460	1,460	$306,337.20	$306,337.20	1,460
Program Type 6													
Auto Collision Repair	17.0301	0	0	7,608	7,608	0.00%		$0.00	7,608	7,608	$1,459,062.24	$1,459,062.24	7,608
Auto Technology	17.0302	0	0	9,068	9,068	0.00%		$0.00	9,068	9,068	$1,578,013.36	$1,578,013.36	9,068
Precision Machining	17.2302	0	0	6,858	6,858	0.00%		$0.00	6,858	6,858	$1,137,262.14	$1,137,262.14	6,858
Net Program Space Total		0	0				0	$0.00	28,714	28,714	$5,290,809.34	$5,290,809.34	28,714

Building Services Spaces					
	Existing Indoor SF		Proposed New Indoor SF		Cost($211.56)	Final Sf
Mechanical Electrical 5%	0		1,435.70		$303,736.69	1,435.7
Corridors 14%	0		4,019.96		$850,462.74	4,019.96
Building Services Spaces Subtotal	0		5,455.66		$1,154,199.43	5,455.66

Building Gross Square Footage					
	Existing Indoor SF		Proposed New Indoor SF		Cost($211.56)	Final Sf
Net Program Space + Building Services Spaces (From Above)	0		34,169.66			
Construction Factor (11% Of Additional And Indoor)	0.00		3,758.66		$795,182.11	3,758.66

POR Totals					
	Existing Indoor SF		Proposed New Indoor SF		Cost($211.56)	Final Sf
Net Program	0		28,714		$5,290,809.34	28,714
Regional Cost Factor 100%					$0.00	
Building Services Spaces	0		5,455.66		$1,154,199.43	5,455.66
Construction Factor	0.00		3,758.66		$795,182.11	3,758.66
Total	0		37,928.32		$7,240,190.88	37,928

POR Worksheet

Program of Requirements for New Comprehensive HS (New Comprehensive HS)

SF per Student					Square Footage		
POR SF/Student	109.94	(not to exceed Maximum Allowable)	Number of Low Bay Students:	238			
			Number of High Bay Students:	107			
			Number of High School Students:	541	Total POR SF	37,928	(not to exceed Maximum Allowable)
Maximum Program SF/Student	109.94	(Maximum Allowable)	Funded Programs Low Bay: 50:1	4			
			Funded Programs High Bay 30:1	3	Maximum Program SF	37,929	(Maximum Allowable)
OSDM Bracketed SF/Student	141.15		Low Bay Programs Requiring Funds :	4	OSDM Bracketed SF	48,697	
			High Bay Programs Requiring Funds :	3			

POR Planner data
Cost Set: 2008

Program Type 1

14.0300 Administrative/Office Technology ‹ housed in new space

Related Space	Funded Square Feet	Existing Square Feet	Proposed New Square Feet	Cost Per Square Foot	Total
Laboratory	1200		1200	$208.89	$250,668.00
CT-P1-2 Office	120			$208.89	$0.00
CT-P1-3 Storage	200			$208.89	$0.00
CT-P1-4 Other				$0.00	$0.00
Total:	**1,520**	**0**	**1,200**		**$250,668.00**
Reprogrammed SF:					
Comments:					

14.0800 Business Management ‹ housed in new space

Related Space	Funded Square Feet	Existing Square Feet	Proposed New Square Feet	Cost Per Square Foot	Total
Laboratory	1200		1200	$235.42	$282,504.00
CT-P1-2 Office	120			$212.60	$0.00
CT-P1-3 Storage	200			$212.60	$0.00
CT-P1-4 Other				$0.00	$0.00
Total:	**1,520**	**0**	**1,200**		**$282,504.00**
Reprogrammed SF:					
Comments:					

14.0210 Information Support and Services ‹ housed in new space

Related Space	Funded Square Feet	Existing Square Feet	Proposed New Square Feet	Cost Per Square Foot	Total
Laboratory	1200		1200	$209.82	$251,784.00
CT-P1-2 Office	120		120	$209.82	$25,178.40
CT-P1-3 Storage	200			$209.82	$0.00
CT-P1-4 Other				$0.00	$0.00
Total:	**1,520**	**0**	**1,320**		**$276,962.40**
Reprogrammed SF:					
Comments:					

14.0240 Interactive Media ‹ housed in new space

Related Space	Funded Square Feet	Existing Square Feet	Proposed New Square Feet	Cost Per Square Foot	Total
Laboratory	1200		1200	$209.82	$251,784.00
CT-P1-2 Office	120		120	$209.82	$25,178.40
CT-P1-3 Storage	200		140	$209.82	$29,374.80
Other				$0.00	$0.00
Total:	**1,520**	**0**	**1,460**		**$306,337.20**
Reprogrammed SF:					
Comments:					

Program Type 6

17.0301 Auto Collision Repair ‹ housed in new space

Related Space	Funded Square Feet	Existing Square Feet	Proposed New Square Feet	Cost Per Square Foot	Total
Laboratory	5000		5000	$191.78	$958,900.00
CT-P6-2 Related Classroom	900		900	$191.78	$172,602.00
CT-P6-3 Office	120		120	$191.78	$23,013.60

(Program of Requirements, continued)

CT-P6-4 Storage	200		200	$191.78	$38,356.00
Related Restroom	68		68	$191.78	$13,041.04
CT-P6-5 Changing Room (one per type 5, 6 & 7)	270		270	$191.78	$51,780.60
CT-P6-6 Tool Crib	550		550	$191.78	$105,479.00
CT-P6-7 Reference Room	200		200	$191.78	$38,356.00
Auto Parts Storage	300		300	$191.78	$57,534.00
CT-P6-8 Other				$0.00	$0.00
Total:	**7,608**	**0**	**7,608**		**$1,459,062.24**
Reprogrammed SF:					
Comments:					
17.0302 Auto Technology ‹ housed in new space					
Related Space	**Funded Square Feet**	**Existing Square Feet**	**Proposed New Square Feet**	**Cost Per Square Foot**	**Total**
Laboratory	5000		5000	$174.02	$870,100.00
CT-P6-2 Related Classroom	900		900	$174.02	$156,618.00
CT-P6-3 Office	120		120	$174.02	$20,882.40
CT-P6-4 Storage	200		200	$174.02	$34,804.00
CT-P6-5 Changing Room (one per type 5, 6 & 7)	270		270	$174.02	$46,985.40
Related Restroom	68		68	$174.02	$11,833.36
CT-P6-6 Tool Crib	550		550	$174.02	$95,711.00
CT-P6-7 Reference Room	200		200	$174.02	$34,804.00
Engine Storage	800		800	$174.02	$139,216.00
Machine Room	900		900	$174.02	$156,618.00
Flammable Material Storage	60		60	$174.02	$10,441.20
CT-P6-8 Other				$0.00	$0.00
Total:	**9,068**	**0**	**9,068**		**$1,578,013.36**
Reprogrammed SF:					
Comments:					
17.2302 Precision Machining ‹ housed in new space					
Related Space	**Funded Square Feet**	**Existing Square Feet**	**Proposed New Square Feet**	**Cost Per Square Foot**	**Total**
Laboratory	3500		3500	$165.83	$580,405.00
CT-P6-2 Related Classroom	900		900	$165.83	$149,247.00
CT-P6-3 Office	120		120	$165.83	$19,899.60
CT-P6-4 Storage	200		200	$165.83	$33,166.00
CT-P6-5 Changing Room (one per type 5, 6 & 7)	270		270	$165.83	$44,774.10
Related Restroom	68		68	$165.83	$11,276.44
CT-P6-6 Tool Crib	550		550	$165.83	$91,206.50
CT-P6-7 Reference Room	200		200	$165.83	$33,166.00
CNC Room	900		900	$165.83	$149,247.00
Inspection Room	150		150	$165.83	$24,874.50
CT-P6-8 Other				$0.00	$0.00
Total:	**6,858**	**0**	**6,858**		**$1,137,262.14**
Reprogrammed SF:					
Comments:					

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

Once the master facilities plan is developed a program specific calculation worksheet will be used to determine the state and local share. For values that change over time, e.g. net bonded indebtedness and assessed valuation, consult with OSFC and bond counsel for the correct figures to use.

Example of a Classroom Facilities Assistance Program (CFAP) Calculation Worksheet

SCHOOL DISTRICT
COUNTY
DATE

Draft

Step 1. Assessed Valuation	$	77,975,820
Step 2. Net Bonded Indebtedness	$	-
Step 3. Project Cost	$	29,856,780
Step 4. Required level of indebtedness .05 + [.0002 x (21percentile** - 1)]		5.40%
of assessed valuation*	$	4,210,694

Step 5. To increase the district's net bonded indebtedness to within $5,000 of the required level of indebtedness, the district would need additional bond debt of:

	Worth of Local Share	
Step 4:	$	4,210,694
minus Step 2:	$	-
Total	$	4,210,694

Step 6. Required percentage of the project costs		21.00% **
equals	$	6,269,924
(.01 x basic project costs) x 21 percentile**		

Step 7. Amount of Bond issue or Alternative Funding must be the greater of:

a. a required percentage of the project costs	$	6,269,924
b. the amount necessary to raise the net bonded indebtedness of the district to within $5,000 of the required level of indebtedness	$	4,210,694
c. Therefore, the district's share would be for	$	6,270,000

STATE	$	23,586,780	79%
LOCAL	$	6,270,000	21%
TOTAL	$	29,856,780	

*District's valuation for the year preceding the year in which the Controlling Board approved the project under 3318.04 of the O.R.C.

**Percentile in which the district ranks. (By law, the minimum State share is 5%; therefore, all districts in the 95-100 percentile are shown as 95%).

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

The following example illustrates the methodology for calculating the local share for a VFAP.

Example of a Vocational Facilities Assistance Program (VFAP) Calculation Worksheet

_____ SCHOOL DISTRICT
_____ COUNTY
_____ DATE

Draft

Step 1. Project Cost	$	32,721,546
Step 2. Required percentage of the project costs equals		25.00%
(basic project costs x 25 percentile)**	$	8,180,387
Step 3. Amount of Bond issue or Alternative Funding must be the greater of:		
a. **A required percentage of the project costs**	$	8,180,387
b. Therefore, the district's share would be for	$	8,180,387

STATE	$	24,541,160	75%
LOCAL	$	8,180,387	25%
TOTAL	$	32,721,546	

(**Percentile in which the district ranks. By law, the minimum State share is 5%; minimum local share is 25%)

Site Selection

Site acquisition is the responsibility of the school district. Chapter 3 of the Design Manual provides criteria upon which to base selection decisions. Each potential site must be analyzed in terms of size, topography, soils characteristics, utility infrastructure, environmental restrictions and other criteria indicated in the Design Manual. The district's Design Professional should be involved in this process.

Master Facilities Plan Review and Approval

The Master Facilities Plan is reviewed and approved by the district, the Commission, and the Ohio Controlling Board.

Secure Funding for Local Share and Maintenance Requirement

The district secures funding for the local share portion of the project and the maintenance fund requirement.

Executive Partnering *(CM Agency)*

Soon after the Project Scope and Budget are established, an Executive Partnering Meeting is scheduled. Board members, the Superintendent, building Principals, department heads, building operations staff, technology coordinators, architects, engineers, construction manager, and representatives of the OSFC come together for the first time. With the aid of a professional facilitator, the stakeholders have an opportunity to establish working relationships with other members of the design/planning team. Roles are defined along with schedules and other objectives that must be met for the project to be successful. Best practices as well as pitfalls are discussed and efficient communication channels are established. Additionally, the concept of integrated design and energy simulation modeling is introduced in order to foster a culture of sustainability.

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

CONTRACTING

State and District Project Agreement

This standardized Agreement serves as the basis of the relationship between the school district and the OSFC until the Project Completion Certificate is signed. It has been coordinated with three other documents; the Architect's Agreement with the district, the CM's agreement, and the General Conditions or the Contracts for Construction.

Contract for Design Professional

The selection of the Design Professional to provide services for the Design/Bid/Build process is made ***jointly*** through a publicly-advertised qualifications-based selection process. The typical process involves publicly requesting Statements of Qualifications, review and short-listing of the submitting firms, and final interviews to rank as many as three candidate firms. Only after selecting the top firm ***do the owners*** enter into fee negotiations. OSFC must approve the DP's contract.

CM Selection and Contract

The selection of the Construction Management Firm is made by the ***owner team***. The selection process again is a qualifications based open process involving advertisement, short-listing, interviews and final ranking and final selection. The fees are negotiated by the ***owner team***.

Select Commissioning Agent (Cx)

The Commissioning Agent, employed directly by the District, acts independently of the Designers to assure that the Building Systems will function within the parameters established as the basis for their design and the owners design intent. At the beginning of the design process, the agent establishes a Commissioning Plan to be followed throughout design and construction efforts and post occupancy. The Plan establishes operational objectives, monitors installation procedures, and incorporates functional testing protocols.

The Cx is an independent third party with no other ties to the project. The Cx cannot be tasked with conducting any subsequent corrective actions beyond that of their Cx role.

DESIGN

Sustainable Design

Additionally, sustainable, energy efficient features will be incorporated into school facility designs. These features will have a positive impact on student academic achievement. By promoting the design and construction of "green" schools, we can make a significant impact on student health, test scores, teacher retention, school operating costs, and the environment. Emphasis is given to energy efficiency in the design of new and renovated facilities. An integrated design approach is encouraged, and energy modeling early in the design process is required. This modeling should include the design choices and optimize the building's energy efficiency. (See Chapter 7, pages 7010-1 and 7010-2.

OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

DESIGN

Develop Program of Requirements (POR)

The Development of the Program of Requirements (identification of space needs) should begin with a thorough understanding of current and future student instructional needs. The District Administration is encouraged to consider contracting with an Educational Planner, whose primary function will be to assist the district and its stakeholders in developing/reviewing its educational mission, goals, and vision and then communicating that vision to the design team. This process should include administration, staff, OSFC representatives, students and interested community members.

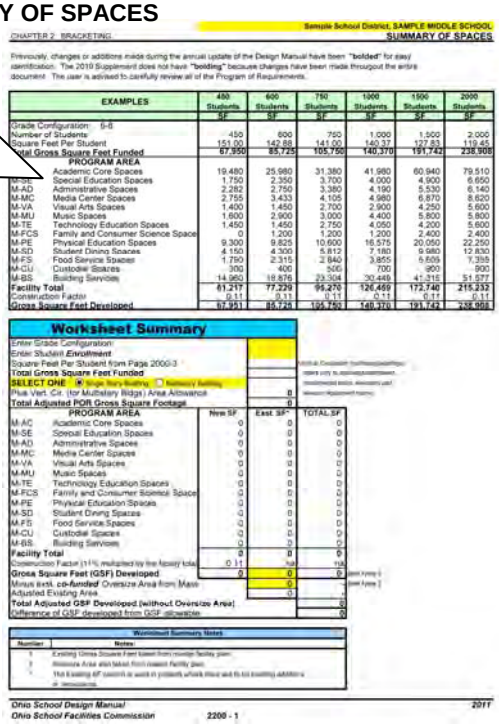
Following the planning process with the Educational Planner, information such as the grades to be housed, the number of students per grade and the square footage per student are entered into the Design Manual's active Excel spreadsheets yielding the Total Gross Building Square Footage. Using the Bracketing Chapter of the Design Manual, prototypical space allocations for specific grade groupings are reviewed and a district specific written building space plan is developed. Various schemes are developed and tested against the allowable square footage until the District's Educational Delivery Plan is manifested in a space plan. The POR is a written listing of the spaces along with their respective square footages. Two-dimensional graphic building plans should not be developed until the written Program of Requirements has been completed and approved by the Project Team.

If the district elects to proceed with components not listed as acceptable in the Design Manual, the district may proceed with district funds in addition to the prescribed district millage requirement or apply for a variance. Deviations should be discussed with the OSFC staff during the early planning phases of the project. Upon recommendation of the Variance Committee, the Executive Director may approve the variance, where there is agreement that the variation will result in good value for the district while maintaining the budget.

K-12 BRACKETING EXAMPLE

The Bracketing spreadsheet is an interactive tool that aids in the development of the Program of Requirements.
The spreadsheet is organized by Program Area, i.e. Core Academic, Special Needs, etc. Spaces in each of the program areas will be included in every school.
The top table shows examples of programs for various school size levels.
The table labeled WORKSHEET is linked to the detailed pages for each program area.

SUMMARY OF SPACES



PROGRAM AREA

EXAMPLE	1000 Students			1500 Students			2000 Students		
Space	Qty	SF	Area	Qty	SF	Area	Qty	SF	Area
M-AC-1 Middle School Classroom	36	900	32,400	54	900	48,600	72	900	64,800
M-AC-2 Project Laboratory	8	1,100	8,800	8	1,100	8,800	9	1,100	9,900
M-AC-3 Sci/Tech/Eng/Math/Computer Lab	1	1,000	1,000	1	1,000	1,000	1	1,000	1,000
M-AC-4 Teacher Prep Area/Workroom	3	300	900	4	300	1,200	6	300	1,800
M-AC-5 Individual Restroom	3	60	180	4	60	240	6	60	360
M-AC-6 Instructional Material Storage	3	200	600	4	200	800	6	200	1,200
M-AC-7 Small Group Room	2	150	300	2	150	300	3	150	450
M-AC-7a Small Group Room	***0***	***150***	***0***	***0***	***150***	***0***	***0***	***150***	***0*** See note 1
M-AC-8 Multi-use Studio	***0***	***1,500***	***0***	***0***	***1,500***	***0***	***0***	***1,500***	***0*** See note 1
M-AC-9 Kinesthetic Learning Studio	***0***	***1,500***	***0***	***0***	***1,700***	***0***	***0***	***2,000***	***0*** See note 1
Academic Core Total			41,980			60,940			79,510

Academic Core Worksheet

Space	New SF Qty	New SF SF	New SF Area	Existing SF Qty	Existing SF SF	Existing SF Area	TOTAL SF Qty	TOTAL SF SF	TOTAL SF Area
M-AC-1 Middle School Classroom	0	900	0	0	0	0	0	varies	0
M-AC-2 Project Laboratory	0	1,100	0	0	0	0	0	varies	0
M-AC-3 Sci/Tech/Eng/Math/Computer Lab	0	1,000	0	0	0	0	0	varies	0
M-AC-4 Teacher Prep Area/Workroom	0	300	0	0	0	0	0	varies	0
M-AC-5 Individual Restroom	0	60	0	0	0	0	0	varies	0
M-AC-6 Instructional Material Storage	0	200	0	0	0	0	0	varies	0
M-AC-7 Small Group Room	0	150	0	0	0	0	0	varies	0
M-AC-7a Small Group Room	***0***	***150***	***0***	***0***	***0***	***0***	***0***	***varies***	***0*** See note 1
M-AC-8 Multi-use Studio	***0***	***1,500***	***0***	***0***	***0***	***0***	***0***	***varies***	***0*** See note 1
M-AC-9 Kinesthetic Learning Studio	***0***	***1,200***	***0***	***0***	***0***	***0***	***0***	***varies***	***0*** See note 1
Academic Core Total			0			0			0

When the number of rooms is entered into the spreadsheet, the total square footage for that program area is automatically calculated. The total is also automatically linked to the program area summary of spaces.

OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

DESIGN

Develop Program of Requirements (POR), continued

CAREER-TECHNICAL BRACKETING (example)

The Bracketing spreadsheet is an interactive tool that aids in the development of the Program of Requirements.

The spreadsheet is organized by Program Area, i.e. Core Academic, Special Needs, etc. Spaces in each of the program areas will be included in every school.

The top table shows examples of programs for various school size levels.

Sample School District, Sample School Building
CAREER-TECHNICAL SCHOOL
CHAPTER 2: BRACKETING — SUMMARY OF SPACES EXAMPLE

Number of Students	400	600	800	1,000
Core SF/student Funded	113	101	97	95
Total Core Space Funded	45,200	60,588	77,616	95,000
Program SF/student Funded	169	162	146	136
Total Program Space Funded	67,600	97,200	116,800	136,000
Total Gross SF Funded	112,800	157,788	194,416	231,000

Core Spaces				
CT-AC Academic Core	14,420	20,520	26,890	33,370
CT-SE Spec. Ed./Student Svs.	4,000	4,000	5,170	5,290
CT-AD Administration	3,030	3,910	4,910	6,180
CT-MC Media Center	2,790	4,090	4,840	5,980
CT-SD Student Dining	4,480	5,730	7,447	9,504
CT-FS Food Service	1,815	2,315	3,015	3,855
CT-CU Custodial	300	400	500	500
CT-GS General Services	0	0	0	0
Net Core Space	**30,635**	**40,965**	**52,772**	**64,679**
Mechanical/Electrical Space (6.9%)	2,114	2,827	3,641	4,463
Corridors (14%)	4,289	5,735	7,388	9,055
Total Core Space	37,038	49,527	63,801	78,197
Construction Factor (11%)	4,074	5,448	7,018	8,602
Gross Core Space Developed	**41,112**	**54,975**	**70,819**	**86,799**
Gross Core Space Co-Funded	45,200	60,588	77,616	95,000

Program Spaces				
CT-P1 Program Type 1	4,860	6,380	7,900	12,460
CT-P2 Program Type 2	4,620	2,310	4,620	4,620
CT-P3 Program Type 3	3,700	6,840	9,070	11,360
CT-P4 Program Type 4	8,355	11,015	14,465	19,335
CT-P5 Program Type 5	10,126	18,752	19,252	15,389
CT-P6 Program Type 6	18,889	23,249	32,475	28,912
CT-P7 Program Type 7	0	0	0	10,000
Net Program Space	**50,550**	**68,546**	**87,782**	**102,076**
Mechanical/Electrical Space (5%)	2,528	3,427	4,389	5,104
Corridors (14%)	7,077	9,596	12,289	14,291
Total Program Space	60,155	81,570	104,461	121,470
Construction Factor (11%)	6,617	8,973	11,491	13,362
Gross Program Space Developed	**66,771**	**90,542**	**115,951**	**134,832**
Gross Program Space Co-Funded	67,600	97,200	116,800	136,000

Total Gross SF Developed	107,883	145,517	186,770	221,631
Total Gross SF Co-Funded	112,800	157,788	194,416	231,000
Difference	**4,917**	**12,271**	**7,646**	**9,369**

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CAREER-TECHNICAL PROGRAM SPREADSHEET

Laboratory and Support Spaces Worksheet

Laboratory Space		Quantity	SF	Area
Biotechnology	07.4850		1500	0
Biotechnology for Food, Plant, Animal Science	01.2000		1500	0
Community Health Aide	07.0906		1500	0
Criminal Science Technology	17.2815		1500	0
Dental Laboratory Technology	07.0103		1500	0
Emergency Medical Technician	17.2811		1500	0
Energy Science	17.1600		1500	0
Exercise Sci/Sports&Rec Health Care	07.0410		1500	0
Health Information Management Services	07.4890		1500	0
Health Support Pathway	07.4840		1500	0
Health Unit Coordinator	07.0913		1500	0
Home Health	07.0307		1500	0
Medical Laboratory Technology	07.0203		1500	0
Pharmacy ***Technician***	07.0912		1500	0
Practical Nursing	07.0302		1500	0
Therapeutic Pathway	07.4830		1500	0
Total Lab Spaces		**0**		
Related Space				
CT-P2-2 Office			120	0
CT-P2-3 Storage			200	0
CT-P2-4 Changing Room			490	0
Total Program Type 2				**0**

When the number of rooms is entered into the spreadsheet, the total square footage for that program area is automatically calculated. The total is also automatically linked to the program area summary of spaces.

DESIGN

Pre-Design (PD)

The Pre-Design Phase of the project includes the development of the Program of Requirements defined above, LEED Registration, LEED point checklist and initial energy modeling. The Pre-Design information is reviewed and approved by the Project Team before starting the Schematic Design.

Schematic Design (SD)

During the Schematic Design Phase, the required spaces developed during the POR process are organized in functional groupings and orientated around building circulation and service systems. Along with the Schematic Design, the Architect will submit the POR, LEED point checklist, energy modeling, technology system schematic and description, and energy consumption information. The Schematic Design information is reviewed and approved by the Project Team before starting the Design Development Phase.

Design Development (DD)

During the Design Development Phase the design is further refined to incorporate the actual materials and systems that will be used in construction. Detailed calculations for material stresses, heat loss/gain, and electrical loads are made and the final configuration of materials is established. Preliminary Specifications for all components are prepared and are used along with the drawings in the preparation of the Construction Estimate of Cost by the CM. The Design Development documents including the POR, LEED point checklist, energy modeling, technology system documents, and drawings, are reviewed and approved by the Project Team before starting the Construction Documents Phase.

Construction Documents (CD)

At the conclusion of the Design Development Phase all decisions regarding the make-up of the new building should be resolved and documented. Adjustments should have been made in the design to bring the cost estimate into alignment with the project budget. The objective of the Construction Documents Phase is to prepare documentation that will accurately and precisely convey that design to the prime contractors who will construct it. In essence the Design Development drawings and specifications are refined and combined with Instructions to Bidders and General Conditions of the Contract for Construction and other documents necessary to define the activities of all parties during the actual construction. Additionally, the LEED point checklist, energy modeling, technology drawings, and USGBC Design Review Comments are included as part of the CD documents. These documents are used as the basis of the final CM Estimate of Construction Cost necessary for a recommendation to the Board of Education and OSFC prior to entering the Bidding Phase. These documents are submitted for agency approval necessary for the issuance of a building permit.

The structure of the bidding process is defined by statute. The process begins with the public advertisement for bidders. This advertisement describes work divided into trade packages. It indicates where the documents can be obtained and states the date, time, and place of the public bid opening. It establishes a time and place for a pre-bid conference during which the Contractors can ask questions related to the project. Sealed prime contract bids are received at the bid time and publicly opened, read aloud and tabulated.

BIDDING

Evaluate Bidders

After the bid opening meeting, the apparent low bidders are evaluated to determine whether they are responsible according to criteria set forth in law. The Bid Packages are carefully examined by district counsel and the CM for compliance with the Bidding Requirements.

Enter Into Contracts

Within 60 days of the receipt of bids the CM and low bid Contractors work together to prepare Construction Contracts for the work on form documents provided by OSFC. The Contracts are approved by Resolution of the Board of Education and the Commission.

Trade Contractor Partnering

Similar in format to the previous day-long Executive Partnering Session, the Trade Contract Partnering Session introduces the Prime Contractors to the team. Objectives and concerns are discussed, communication channels are established and dispute resolution procedures are agreed upon.

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

CONSTRUCTION

Construct Building

This phase takes more time than any of the others. Sometimes it takes as much as 18 or 24 months for a single K-12 or High School. Often it begins with a sitework package which commences prior to all the documents being complete for the building itself. This work can include the preparation of the entire site and the construction of the building pad. Normally the construction of a school is done as if the building were divided up into four or six different building projects allowing the contractors to move sequentially through the entire project.

Procure Furniture and Equipment

While the furniture plan for a school can and should be created at the same time that the SD, DD, and CD Phases are being completed, the actual bidding and ordering of the furniture is typically postponed until 6 to 9 months before the anticipated move in date. Specifications and materials change frequently in the furniture industry and items bid as much as a year ago, may no longer be available.

Develop Maintenance Plan

The District Maintenance Plan is normally prepared by a ***Commissioning Agent (Cx)***. Aided by a comprehensive web tool, the ***Cx*** creates an exhaustive list of every asset requiring maintenance in the building. The asset manufacturer's recommendations for ongoing maintenance and useful service life are analyzed and a report is generated outlining the cost impact of maintaining the building. The revenue for maintenance is also analyzed and a business plan is developed and presented to the district for their use.

Closeout Partnering

The Closeout Partnering Meeting brings all stakeholders together in a session to focus on the smooth completion of each participant's obligations under their contracts. A professional facilitator guides all parties step by step through the requirements.

Punch List

Having been notified by the Prime Contractors that their work is complete and compliant with the project documents, the Architect and Construction Manager inspect the work and prepare a "punchlist" of missing or deficient items. The items on this list must be completed, repaired or replaced by the Prime Contractors. When the corrections are accomplished and all items are accounted for on the punch list, the A/E Team and the CM are notified to make a final inspection.

OCCUPANCY

Move Into Building

Time must be allocated in the schedule to deliver and set up loose furnishings and move equipment, supplies, and materials into the building.

Final Commissioning

While the Commissioning Agent should be an active team member from the beginning, the work involved with system documentation and performance testing can only start as the systems come on line. Commissioning begins as systems are started and deemed functionally operational.

C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

POST-OCCUPANCY

Warranty Period

Normally the Project Specifications call for the Contractor to provide a labor guarantee for a period of one year commencing when the District begins to use the building. Equipment and product warranties are usually longer in duration and are set forth in the specifications. During the applicable period, the Contractor is obligated to repair or replace any systems or materials that are not functioning as intended. An eleven month inspection of the building is conducted by the Architect, ***Commissioning Agent,*** and CM and deficiencies are listed. The Contractor is obligated to correct those deficiencies much as he is obligated to do in the punch listing process.

Project Closeout

The Project Closeout focuses more on the relationships between the District and the Prime Contractors than on the District and the OSFC. The Closeout Process is necessary to monitor and verify the submission of Owner/Operator Manuals, Owner Training, attic material stock, Certificates Contract Completion and other documentation. The Design Professional shall provide record documents to the district prior to final completion. The requirements for record drawings and other provisions of the closeout process are set forth in the contracts and in OSFC Policy and Procedure Memoranda.

Financial Closeout

The Financial Closeout primarily focuses on reconciling and concluding the fiscal relationship between the district and the OSFC. This process includes a comprehensive recap of the original project budget, any budget increases that were approved, the State share, the local share, and the interest earned on both the State and the district shares. All expenditures are recapped, including those for contracts, change orders, miscellaneous district expenses, and soft costs. Once the financial reconciliation is agreed to, a Certificate of Project Completion is executed. Principal dollars remaining in the project construction fund are distributed to the State and district in proportion of the original State and district shares. Remaining interest earned on State and district funds is returned to the State and deposited in the district maintenance fund.

The Design Manual is organized into ten chapters that explain the planning, design, and construction process; identify the square footage provisions for each school level; detail the features and amenities of each space; and provide systems, materials, and specification information. This section of the Executive Summary contains an overview of key points included in each chapter.

The chapters included in the Design Manual are:

Chapter 1: Introductory Information
Chapter 2: Bracketing
Chapter 2: Bracketing (Career-Technical)
Chapter 3: School Site
Chapter 4: Elementary School
Chapter 5: Middle School
Chapter 6: High School
Chapter 6: High School (Career-Technical)
Chapter 7: Sustainable Design
Chapter 8: Systems and Materials
Chapter 8: Systems and Materials (Career-Technical)
Chapter 9: Specifications
Chapter 9: Specifications (Career-Technical)
Chapter 10: Miscellaneous
Chapter 10: Miscellaneous (Career-Technical)

Chapter 1: Introduction

Chapter 1 contains introductory information that provides a general overview of the planning, design, and construction process and the Design's responsiveness to educational planning.

Key Points

- Developing a clearly articulated educational program is the essential first step to any successful school building project. Partnerships should be developed between school personnel and the community to establish and refine the educational vision and begin the connection between the educational vision and a building program.
- Enrollment Projections and Facility Assessments provide essential data for decision-making.

EXECUTIVE SUMMARY
DESIGN MANUAL ORGANIZATION

Chapter 2: Design Manual Bracketing

Chapter 2 assists the school district in establishing the square footage for a new facility. Bracketing first identifies the overall square feet for a facility and then identifies spaces that may be included. The size of a school facility is based on student capacity, grade configuration, and square foot per child.

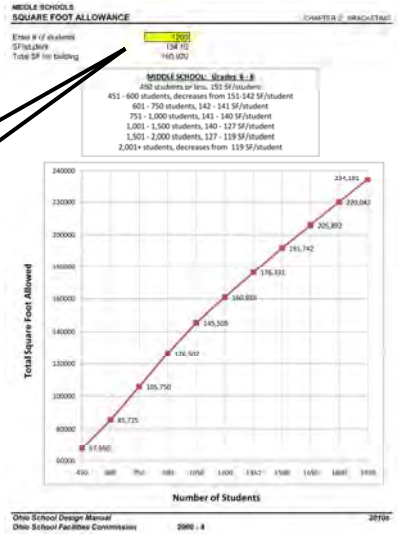
K-12 Key Points

- The formula for determining the overall square footage of a school facility is:

grade grouping # of students **X** student square feet **=** total overall square feet funded

Additional Key Points in Chapter 2:
- The minimum school size at any grade configuration is 350 students (per 3318.03 ORC).
- The ranges of ***gross*** fundable square footage per student per school level are:
  Elementary (K-5) – from 115.6 – 125 square feet on a sliding scale
  Middle (6-8) – from 141 – 151 square feet on a sliding scale
  High (9-12) – from 156 – 180 square feet on a sliding scale
  The sliding scale allows for the fact that larger buildings that must be provided for larger student populations are more space efficient and require fewer square feet per student.
- Additional graphs indicate total funded gross square footage for K-12, K-8, and 6-12 school buildings.
- There are certain parameters for which spaces must be included and how large those spaces must be. Aside from those parameters, the planning team must work together to determine which spaces are needed. The parameters for developing the Program of Requirements (POR) include:
  - "Academic Space" refers to space in: Core Academic, Special Education, Art, Music, Family and Consumer Science, Technology Education, and Business Education. All other space is considered to be "Non-Academic." Space can be moved from Non-Academic areas to Academic areas, but not *vice versa*.
  - The total square footage for all Academic areas must equal or exceed the total listed in the design manual for that school level and enrollment.
  - For grades PK-5: the size of a classroom may be reduced 10% from the size listed in the Design Manual.
  - The total square footage developed may vary no more than one-tenth (0.001) of one percent above or below the total square footage in the Master Plan.
  - For all grade levels: Academic spaces may be reduced up to10% to accommodate extended learning areas.
- See charts in Chapter 2 for additional information
  - Section 2100 for elementary schools (grades K-5)
  - Section 2200 for middle schools (grades 6-8)
  - Section 2300 for high schools (grades 9-12)
  - Section 2400 for grade K-12 combination schools
  - Section 2500 for grade K-8 combination schools
  - Section 2600 for grade 6-12 combination schools

To determine the gross square footage for a school building, enter the number of students.



Design Manual Tolerance

During the development of the original Design Manual, published in 1997, extensive research was conducted into existing local, state, and national classroom size standards. It was determined that a 900 SF classroom was the appropriate size to accommodate current and future student needs, project based delivery, ***exceptional children***, and multiple program delivery methods ***for twenty-five (25) students.***

As part of the implementation of the Design Manual, it was found that a ***certain amount of*** tolerance was needed to allow flexibility when designing ***the spaces contained within the*** school ***and the overall total size of the school building. Additionally, allowing a tolerance of 10% so*** districts ***may*** reduce ***the*** overall classroom size to no less than 810 SF ***provided extra space to apply to Extended Learning Areas, Student Commons and other instruction areas such as art and music.*** This reduction allows classrooms to remain adequately sized to meet student educational needs. ***Following is a brief summary of the primary points of the tolerance policy. The full tolerance policy follows this summary.***

» Reduction in Classroom Size at the Elementary Schools
A reduction in the size of the classroom at 10% for the development of additional learning areas and classrooms and to increase the size of other educational spaces is an acceptable re-assignment of square footage for elementary schools.

» Reduction in Classroom Size at the Middle, High, and Career-Technical Schools
A 10% reduction of the middle, high, and career-technical classroom is NOT ***permitted,*** unless the space is reallocated to develop an extended learning area adjacent to a group of academic classrooms.

Measurement and Area Calculations for Building Spaces

Classrooms and other instructional spaces are sized to be flexible and adaptable to curricula of the future. Core areas, circulation, and building services are appropriately sized to support a range of design solutions. The following spaces shall be measured as indicated below when evaluating design solutions for compliance with the Design Manual:

Corridors: Stairs, ramps, and elevators shall be included in the Program of Requirements (POR) as Corridor area.

Stairs: Stair area shall be calculated as one hundred percent (100%) on the ground floor and fifty-percent (50%) on elevated floors. Area shall be calculated based on the total area inside the stair enclosure walls.

Elevators: Elevators shall be calculated as one hundred percent (100%) on the ground floor and zero percent (0%) on elevated floors.

Overhangs: Overhangs located at building entrances and exits do not count as area. Interior balconies are generally counted as circulation space.

Total Square Footage of a Room: Calculated as the measurement of the interior area excluding the wall thickness.

Mechanical Equipment Space: Includes "traditional" mechanical equipment rooms and an elevated "walkable" space for mechanical equipment and its servicing. "Vaults" associated with geothermal systems are counted as mechanical room square footage.

Design Manual Tolerance for Square Footage Requirements

Square Footage Flexibility for the Total Building

For multi-story construction, the developed area may be increased for vertical circulation up to the square footage provided in the bracketing tool. The project budget is not increased due to offsetting reductions in site development costs with multi-story construction.

On a building-by-building basis, the total square footage developed for a building may vary from the square footage specified in the Master Facilities Plan or the square footage adjusted for vertical circulation by:

Plus 1/10th of one percent (0.001)
or
Minus ½ of one percent (0.005)

Square Footage Flexibility for Non-Academic Spaces

Non-Academic Spaces are defined as those areas that do not comprise the academic core of the building and include specific areas such as: administration spaces, media center, physical education areas, food service, custodial spaces and building services. The Commission may apply discretion to approve reasonable flexibility for the square footage of non-academic spaces specified in the Design Manual. Increasing the square footage of non-academic spaces is not an acceptable justification for a reduction to the square footage of academic space, however the Commission does support expanding academic spaces through the reallocation of non-academic space to the academic core. Corridor area should be appropriately sized to accommodate the design solution for the project.

See 1120-2 for SCLE exemption to minimum square footage.

Square Footage Flexibility for Academic Spaces

Academic Spaces are defined as all bracketed program areas except the non-academic spaces within a building. The Design Manual provides a range of flexibility for the square footage of such spaces. The total square footage of the academic core shall equal or exceed the total square footage of the academic core space specified in the Design Manual.

For all grade levels, academic spaces may be increased above the square footage of spaces specified in the Design Manual. Required non-academic spaces must still satisfy their intended uses. The total square footage of the building shall not be increased.

1. ***For all grade levels, academic spaces may be reduced up to ten percent (10%) below the square footage of spaces specified in the Design Manual. Designers are encouraged use this flexibility to accommodate, where applicable to a district, reduced class size or for Extended Learning Areas, however the flexibility is not limited to these applications. Extended Learning Areas (ELAs) are defined as academic areas that provide supplemental space to support adjacent classroom needs. ELAs may be used for a variety of activities such as: gross motor skills, computer-based learning, tutoring, individual reading and study activities, informal social interaction, hands-on projects, wet/dry learning areas, or small group special projects. ELAs are spaces adjoining multiple classrooms and should be shared by all. To permit observation by the classroom instructor, it is recommended that the ELA have a visual connection to each classroom that the ELA supports. ELAs should not be construed as regular classrooms or teaching stations and will not be furnished as such. Soft seating or large worktables are preferred. For additional information on ELAs, refer to the Ohio School Design Manual.***

Variance Requests for Design Manual Systems, Materials and Square Footages

The design professional is required to pursue a Design Manual Variance Request from the Commission for deviations from the standards, material and system specifications, and area square footages provided in the Design Manual. The design professional may provide data to support the use of alternative products through the Design Variance Request process. Variances may be requested via the Construction Manager website at http://www.cmw.osfc.state.oh.us using the online Design Manual Variance Request tool. The Commission has established a Design Manual Variance Request Committee that is tasked to review these requests, to conduct proper research on each request, and to make appropriate recommendations.

Extended Learning Areas or Commons

Allowing the 10% reduction in the size of the classrooms can provide exciting opportunities for flexibility in educational programming. Over the past few years, educational program delivery has changed to accommodate differences in students' learning habits, an increasing information base, project based assignments, and technology. When this reduction is used, it can result in a "commons" or "extended learning area" where students can receive instruction, conduct small group activities, practice drama, and engage in other learning activities.

Extended Learning Areas [ELA's] or commons are intended to provide students, staff, and teachers with an area adjacent to the classroom where a multitude of activities can take place. This space does not have walls and is intended to "extend" the classroom area for instructional and support purposes. A few of the activities that can occur are:

- Small group work/study areas using soft or hard seating (3-7 students per group)
- Rehearsal area for student skits or plays
- One-on-one tutoring by peers or community volunteers
- Individual projects requiring more space than what is allotted in a traditional classroom (ex: creating a poster display board, doing a large painting or drawing, etc.)
- Reading by a teacher or volunteer to a large group of children (8-15 students, soft seating or soft floor space)
- Individual study or quiet time to read, reflect, or do homework
- Space to showcase student art and projects
- Service learning activities (volunteerism)
- Physical activities not incorporated in gym or outside areas (ex: gross motor skills, tumbling on mats, cheerleading practice)
- Accessibility for after-school student clubs (key club, school newspaper, student officers, etc.)
- English as a Second Language (ESL) tutoring
- Lecture/presentation space that combines students from two or more classes
- Lounging space for students with soft furniture to allow for wireless Internet access, reading, conversation, and other other forms of informal social interaction
- Make-up tests (proficiency and school subject exams)
- Showing of films, class parties, fun activities

When designing commons or extended learning areas, it is important to note some of the characteristics that define what an ELA is and is not. The characteristics below are not meant to limit the design team in its creative endeavors, but are meant to provide a guideline for discussions between the District and the design team.

An Extended Learning ***Area IS***:

- A flexible learning and support space
- Adjacent to classrooms
- Classrooms on most sides
- May be part of the means of egress/corridor
- Has a visual connection to each of the adjacent classrooms

An Extended Learning Area ***IS*** NOT:

- Enclosed with walls and/or doors
- A room
- A "teaching station"
- A room with desks, chairs, a teacher's desk, or fixed furniture

Chapter 2: Career-Technical Bracketing

Chapter 2 assists the school district in establishing gross square footage for a new facility. The size of a Career-Technical school facility is based on student capacity, approved program square feet and core square foot area per student.

Number of Students	Maximum Square Feet Per Student		
	Core Area	Program Area	Total
400 or less	113	169	282
600	101	162	263
800	97	146	243
1,000 or more	95	136	231

Number of students **/** 50 students per program **=** # of Type 1 – 4 programs funded
Number of students **/** 30 students per program **=** # of Type 5 – 7 programs funded
Core Area(# of students x square feet) + Program Area(# of programs x program square feet) = Total Overall Square Feet Funded

- There are certain parameters for which spaces must be included and how large those spaces must be. Aside from those parameters, the planning team must work together to determine which of the spaces are needed. The parameters for developing the Program of Requirements (POR) include:
  - A ratio of 25 students per classroom is used to determine building capacity.
  - A ratio of 50 students per program is used to determine the number of funded Type 1 - 4 programs and 30 students per program in Type 5 - 7 programs.
  - "Academic Space" refers to space in: Core Academic, Special Education and Program Types 1 - 7. All other space is considered to be "Non-Academic." Space can be moved from Non-Academic areas to Academic areas, but not *vice versa*.
  - The total square footage for all Academic areas must equal or exceed the total listed.
  - The total square footage developed may vary no more than one-tenth (0.001) of one percent above or below the total square footage in the Master Plan. See charts in Chapter 2, Section 2700, for additional information.

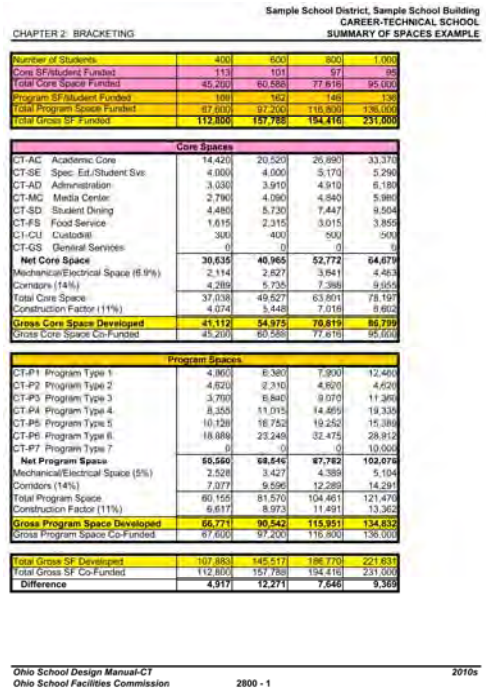
The Bracketing spreadsheet is an interactive tool that aids in the development of the Program of Requirements.

The spreadsheet is organized by Program Area, i.e. Core Academic, Special Needs, etc., as well as Program Types 1-7.

The table at the top of the page shows examples of Core Spaces.

The second table shows examples of Program Spaces.

The table labeled WORKSHEET is linked to the detailed pages for each program area.



Sample School District, Sample School Building
CAREER-TECHNICAL SCHOOL
CHAPTER 2: BRACKETING — SUMMARY OF SPACES EXAMPLE

Number of Students	400	600	800	1,000
Core SF/student Funded	113	101	97	95
Total Core Space Funded	45,200	60,588	77,616	95,000
Program SF/Student Funded	169	162	146	136
Total Program Space Funded	67,600	97,200	116,800	136,000
Total Gross SF Funded	112,800	157,788	194,416	231,000

Core Spaces				
CT-AC Academic Core	14,420	20,520	26,890	33,370
CT-SE Spec. Ed./Student Svs	4,000	4,000	5,170	5,290
CT-AD Administration	3,030	3,910	4,910	6,180
CT-MC Media Center	2,790	4,090	4,840	5,980
CT-SD Student Dining	4,480	5,730	7,447	9,504
CT-FS Food Service	1,615	2,315	3,015	3,855
C1-CU Custodial	300	400	500	500
CT-GS General Services	0	0	0	0
Net Core Space	**30,635**	**40,965**	**52,772**	**64,679**
Mechanical/Electrical Space (6.9%)	2,114	2,827	3,641	4,463
Corridors (14%)	4,289	5,735	7,388	9,055
Total Core Space	37,038	49,527	63,801	78,197
Construction Factor (11%)	4,074	5,448	7,018	8,602
Gross Core Space Developed	**41,112**	**54,975**	**70,819**	**86,799**
Gross Core Space Co-Funded	45,200	60,588	77,616	95,000

Program Spaces				
CT-P1 Program Type 1	4,860	6,380	7,900	12,400
CT-P2 Program Type 2	4,620	2,310	4,620	4,620
CT-P3 Program Type 3	3,760	6,840	9,070	11,360
CT-P4 Program Type 4	8,355	11,015	14,465	19,335
CT-P5 Program Type 5	10,128	18,752	19,252	15,380
CT-P6 Program Type 6	18,086	23,249	32,475	28,912
CT-P7 Program Type 7	0	0	0	10,000
Net Program Space	**50,560**	**68,546**	**87,782**	**102,076**
Mechanical/Electrical Space (5%)	2,528	3,427	4,389	5,104
Corridors (14%)	7,077	9,596	12,289	14,291
Total Program Space	60,155	81,570	104,461	121,470
Construction Factor (11%)	6,617	8,973	11,491	13,362
Gross Program Space Developed	**66,771**	**90,542**	**115,951**	**134,832**
Gross Program Space Co-Funded	67,600	97,200	116,800	136,000

Total Gross SF Developed	107,883	145,517	186,770	221,631
Total Gross SF Co-Funded	112,800	157,788	194,416	231,000
Difference	**4,917**	**12,271**	**7,646**	**9,369**

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Chapter 3: School Site

Chapter 3 contains information about site size, site circulation, and site amenities. Design requirements are also outlined for a multitude of factors that must be considered, including: various types of circulation and site access, drainage, play fields and playgrounds, fencing, lighting, mechanical/electrical yard, landscaping, site furnishings, and exterior security provisions.

Key Points

- Site size guidelines accommodate a variety of sizes for schools located in rural and suburban districts. Recommended site sizes are:
  - Elementary School: 10 acres plus 1 acre per 100 students
  - Middle School: 20 acres plus 1 acre per 100 students
  - High School or Career-Technical School: 35 acres plus 1 acre per 100 students
  - Combination Schools:
    K-12 School: 40 acres plus 1 acre per 100 students
    K-8 School: 20 acres plus 1 acre per 100 students
    6-12 School: 35 acres plus 1 acre per 100 students
- It is recognized that not all urban sites will be able to accommodate a new or replacement facility, even with the smallest site sizes recommended in the Design Manual. The Design Manual provides a list of possible site size reductions that may be considered. Strategies include decreasing the building footprint, decreasing the amount of parking, decreasing the size of the mechanical yard, providing curbside bus and parent drop-off, reducing the amount of greenspace, and reducing the size or decreasing the number of outdoor play spaces. These strategies are not intended to be all-inclusive and implementing these reductions should involve all interested parties. Chapter 3 identifies a process to determine the area required for an urban school's site needs.
- Deviations from the site size may be required due to extenuating circumstances. In such case, the OSFC will require the Design Professional to evaluate and recommend that the school district's educational program needs can be accomplished within a facility on the applicable site.
- Site selection applies to new construction. A review of the site selection criteria is required for additions to existing facilities to determine if the existing site can accommodate the site design requirements. The site selection is to be done by the school district with the assistance of a design professional.
- Factors to be used for judging the merits of a site are:
  - Adjacent Property
  - Aesthetic Considerations
  - Codes and Zoning
  - Easements/Right-of-way
  - ***Environmental Restrictions***
  - ***Safe Routes To Schools***
  - ***Safety***
  - ***Site preparation***
  - ***Site Size***
  - ***Site Utilities***
  - ***Soil Characteristics***
  - ***Testing***
  - ***Topography***
  - ***Vehicle Access***
  - ***Walkability***
- Site design requirements detail design considerations and provide diagrams for important site elements, including:
  - a. Vehicular circulation
  - b. Pedestrian circulation
  - c. Emergency vehicle access
  - d. Bicycle circulation
  - e. Storm drainage
  - f. Sanitary sewerage
  - g. Directional signage
  - h. Physical education
  - i. Playgrounds
  - j. Fencing
  - k. Lighting***/Light Pollution***
  - l. Mechanical/electrical yard
  - m. Landscaping
  - n. Site furnishings
  - o. Exterior security provisions
- Parent drop-off and bus drop-off areas are to be separate.
- Particular emphasis is placed on safety issues, such as separation of vehicular and pedestrian traffic.
- In addition to stating design requirements, this chapter indicates items that the school district and the design professional should "plan for" in future improvements. Items indicated to be "planned for" are not funded by the OSFC.

Chapter 4: Elementary School

Chapter 4 begins with an overall building diagram detailing the way in which various areas of an elementary school could be arranged. There are also program area diagrams throughout this chapter that demonstrate how specific spaces might relate to each other within a program area. Space plates are included for each type of space in the program area.

Key Points

The information in this diagram is referred to as a *space plate*. There is a space plate for each room in each program area in each school level.

Each room has a unique code that appears in the bracketing and on the space plate. In this case:
E=Elementary
AC=Academic Core
1=Space Plate #1

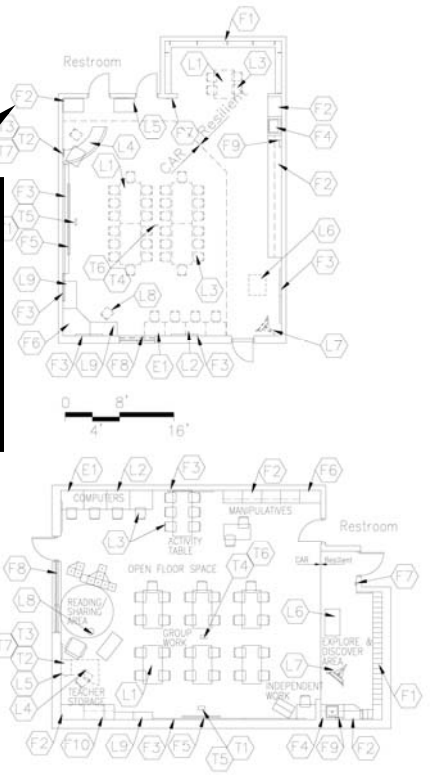
A diagram of the space shows how some of the features and loose furnishings may be organized. The space is not required to be designed in the configuration shown.

Program activities indicate the type of activities that may occur in the space. These activities will vary from district to district depending on the educational program.

Relationships of a particular room to other spaces and activities have been identified to assist the A/E in the design of the facility.

Environmental considerations are items that may affect the educational program. They are the basis of some requirements of Finishes, Features, Plumbing, HVAC, Electrical, and Communications.

Size must be maintained except for tolerance previously noted.



PRE-K/KINDERGARTEN CLASSROOM
CHAPTER 4: ELEMENTARY SCHOOL **E-AC-1**

PROGRAM ACTIVITIES:
- Kindergarten instruction through active exploration
- Children practice with tangible articles and are encouraged to develop learning skills, creativity, and imagination.
- Activities include, but are not limited to: group discussions, demonstrations, music activities, listening skills, gross motor skills, art and science projects, and small group activities.

SPATIAL RELATIONSHIPS:
- Near other pre-k/kindergarten classrooms
- Near teacher prep area/workroom
- Direct access to outdoor playground or access through adjacent corridor
- Near vehicle drop-off/pick-up drive
- Adjacent to pre-k/kindergarten restroom

ENVIRONMENTAL CONSIDERATIONS:
- Required: View glass – minimum 5% without daylighting design; minimum 3% with daylighting design.
  Recommended: Daylighting design with glazing area determined by design solution
- Environmental sound control –
  wall only minimum STC 45
  ceiling minimum CAC 35, NRC 0.70
- Resilient and stain-resistant floor covering
- Ergonomically appropriate furniture and equipment heights

CAPACITY:	25 students
SIZE:	1,200 SF
ANCILLARY SPACES:	Pre-K/Kindergarten Restroom E-AC-2

NOTES:
1. Loose furnishings shown represent one of many possible configurations based on educational program.
2. Depending upon the educational program of the district, a tall wardrobe may be located in this classroom or could be placed in a teacher prep area/workroom.
3. Second exit from space to meet code need not open to exterior.

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Chapter 4: Elementary School, continued

Key Points, continued

This is the subsequent page of information for each space.

Each room has a unique code that appears in the bracketing and on the space plate. In this case:
E=Elementary
AC=Academic Core
1=Space Plate #1

Features identified on the space plates are required for the space. Features include: Fixed Items, Fire Suppression, Plumbing, HVAC, Electrical, Communications, and Electronic Safety & Security Systems.

PRE-K/KINDERGARTEN CLASSROOM
E-AC-1

FINISHES[1]:	Spec. Ref.#
Flooring:	
Combination carpet, carpet tile, with resilient options	096816 096500
Optional: All linoleum, ET, sheet vinyl, or rubber	096516 096813
Base:	
Resilient base	096500
Ceiling:	
Suspended, acoustical	095113
Walls:	
Painted concrete masonry units	042000/099100

LOOSE FURNISHINGS:
L1 Student desks/tables
L2 Computer workstation furniture (fixed or mobile)
L3 Student chairs
L4 Teacher workstation/computer support and chair (fixed or mobile)
L5 File cabinet
L6 Sand/water table
L7 Children's painting easel
L8 Teacher reading chair or stool
L9 8'-10' of low bookcases (fixed or mobile)
Loose carpet/rug (optional)
Wastebasket

Electronic Safety and Security:
Life safety devices per code 283111

Miscellaneous:
Pencil sharpener (optional)

E1 Duplex receptacle with dedicated circuit for wireless devices

FEATURES[1]:	Ref.#
Fixed Items:	
F1 Open casework - student coats and personal items, (cubbies) (optional wall cabinets above)	123550
F2 18'–24' combination tall wardrobe, base and wall cabinets	123550
F3 28'-36' combination marker board, tack board, & tackable surface	123550
F4 3' sink base cabinet	123550
F5 Projection screen (optional)	115213
F6 Technology support casework (could be mobile)	123550
F7 Pencil sharpener support (optional)	062000
F8 Window with integral blinds	085113
F9 Towel dispenser (optional)	102813
F10 36"- 42" high storage cabinet	123550
Fire Suppression:	
Fire suppression system	211000
Plumbing:	
Sink with drinking fountain	224000
Plumbing connections	224000/221116/221119
HVAC:	
Supply/return air system	Div. 23
Independent temperature control	230923
Electrical:	
Fluorescent lighting Illumination level: See Table 8600-5	265100
Multilevel switching	262726
4 duplex receptacles	262726
Double duplex receptacle adjacent to each data and video port	262726
Emergency lighting	265100
Means of egress lighting per code	265100
Communications:	
T1 1 ***projector*** video port	271543
T2 1 voice port and phone	271513/273123
T3 1 data port near teacher workstation	271513
T4 ***Wireless access point cable above ceiling***	271513
Central sound system	275123
Clock	275313
Sound reinforcement system	275127
T5 ***Ultra-short throw interactive*** projector	274119
T6 Wireless access point (WAP) as determined by design – refer to Note 4	***272133***
T7 Classroom technology center videoport	***271543, 274116, 274119, 275127***

NOTES:
1. Finishes/Features: Refer to Chapter 9 for specification references.
2. Technology components may be placed in a separate small cabinet, or integrated in the other casework in the room.
3. Where appropriate, some casework may be mobile to add flexibility and become part of loose furnishings.
4. ***Baseline includes WAP cable per classroom. WAP device quantity/placement per 272133 requirements.***

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The loose furnishings shown on the space plates are often found in spaces of the room type. The list is not inclusive of all furniture that might be included. Loose furnishings are funded as part of the project cost.

Chapter 5: Middle School

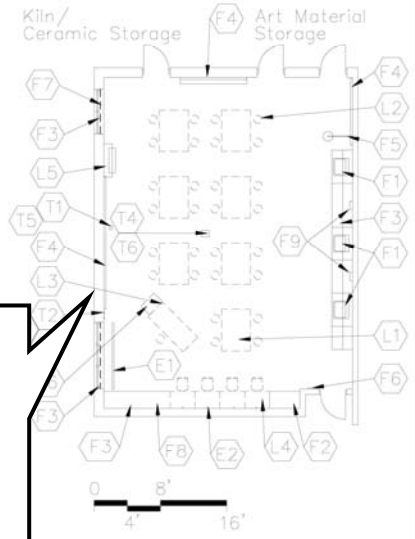
Chapter 5 begins with an overall building diagram showing how the various areas of a middle school could be arranged. There are also program area diagrams throughout this chapter that demonstrate how specific spaces might relate to each other within a program area. Space plates are included for each type of space in the program area.

Key Points

The following space plate is for a middle school art room.

CHAPTER 5: MIDDLE SCHOOL

ART ROOM
M-VA-1



PROGRAM ACTIVITIES:
- Art students will work on a variety of two- and three-dimensional art projects. Projects will include drawing and painting, computer graphics, sculpture and model making, collage, fiber arts, and ceramics.

SPATIAL RELATIONSHIPS:
- Near academic core classrooms
- Direct access to outdoors or access through corridor

ENVIRONMENTAL CONSIDERATIONS:
- Required: View glass – minimum 5% without daylighting design; minimum 3% with daylighting design.
  Recommended: Daylighting design with glazing area determined by design solution.
- Environmental sound control -
  wall only minimum STC 45
  ceiling minimum CAC 35, NRC 0.70
- Stain-resistant floor covering

CAPACITY:	28 students
SIZE:	1,200 SF
ANCILLARY SPACES:	Kiln/Ceramic Storage M-VA-2 Art Material Storage M-VA-3

NOTES:

1. Loose furnishings shown represent one of many possible arrangements.

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Each room has a unique code that appears in the bracketing and on the space plate. In this case:
M=Middle
VA=Visual Arts
1=Space Plate #1

Program activities indicate the type of activities that may occur in the space. These activities will vary from district to district depending on the educational program.

Relationships of a particular room to other spaces and activities have been identified to assist the A/E in the design of the facility.

Environmental considerations are items that may affect the educational program. They are the basis of some requirements of Finishes, Features, Plumbing, HVAC, Electrical, and Communications.

A diagram of the space shows how some of the features and loose furnishings may be organized. The space is not required to be designed in the configuration shown.

Chapter 5: Middle School, continued

Key Points, continued

This is the subsequent page of information for each space.

Features identified on the space plates are required for the space. Features include: Fixed Items, Fire Suppression, Plumbing, HVAC, Electrical, Communications, and Electronic Safety & Security Systems.

Each room has a unique code that appears in the bracketing and on the space plate. In this case:
M=Middle
VA=Visual Arts
1=Space Plate #1

ART ROOM
M-VA-1

CHAPTER 5: MIDDLE SCHOOL

FINISHES[1]:	Spec. Ref.#
Flooring:	
ET, sheet vinyl, rubber,	096500
sealed concrete,	033000
polished concrete finishing, or	033510
colored concrete finishing	033519
Base:	
Resilient base	096500
Ceiling:	
Suspended, acoustical	095113
Walls:	
Painted concrete masonry units	042000/099100

The loose furnishings shown on the space plates are often found in spaces of the room type. The list is not inclusive of all furniture that might be included. Loose furnishings are funded as part of the project cost.

LOOSE FURNISHINGS:
L1 Student work tables
L2 Student chairs or stools
L3 Teacher desk and chair/stool and teacher computer support
L4 Computer workstation furniture
L5 Desk height file cabinet
Wastebasket

EQUIPMENT:
E1 Drying rack

Electronic Safety and Security:
Life safety devices per code 283111

Miscellaneous:
Pencil sharpener (optional)

E2 Duplex receptacle with dedicated circuit for wireless devices

FEATURES[1]:	Spec. Ref.#
Fixed Items:	
F1 3'-5'sink base cabinets, or several wash fountains	123550
F2 Tall wardrobe with file drawers	123550
F3 26'-34' combination tall cabinets, base and wall cabinets	123550
F4 26'-34' combination marker board, tack board & tackable wall surface	101100
F5 Emergency eyewash (recommended)	224000
F6 Pencil sharpener support(optional)	062000
F7 Windows with integral blinds	085113
F8 Technology support casework	123550
F9 Towel dispenser (optional)	102813
F10 Projection screen (optional)	115213
Fire Suppression:	
Fire suppression system	211000
Plumbing:	
Sinks with solids interceptor	224000
Emergency eyewash connections	224500
Plumbing connections	224000/221116/221119
HVAC:	
Supply/return air system	Div. 23
Independent temperature control	230923
Manually controlled general exhaust	Div. 23
Electrical:	
Fluorescent lighting	265100
Illumination level: See Table 8600-5	
Multilevel switching	262726
4 duplex receptacles	262726
Double duplex receptacle adjacent to each data and video port	262726
Track lighting	265100
Means of egress lighting per code	265100
Emergency lighting per code	265100
Communications:	
T1 1 ***projector*** video port	271543
T2 1 voice port and phone	271513/273123
T3 1 data port near teacher workstation	271513
T4 ***Wireless access point cable above ceiling***	271513
Clock	275313
Central sound system	275123
Sound reinforcement system	275127
T5 ***Ultra-short throw interactive*** projector	274119
T6 Wireless access point (WAP) as determined by design – refer to Note 4	***272133***
T7 Classroom technology center videoport	***271543, 274116, 274119, 275127***

NOTES:
1. Finishes/Features: Refer to Chapter 9 for specification references.
2. ***Baseline includes WAP cable per classroom. WAP device quantity/placement per 272133 requirements.***

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Chapter 6: High School

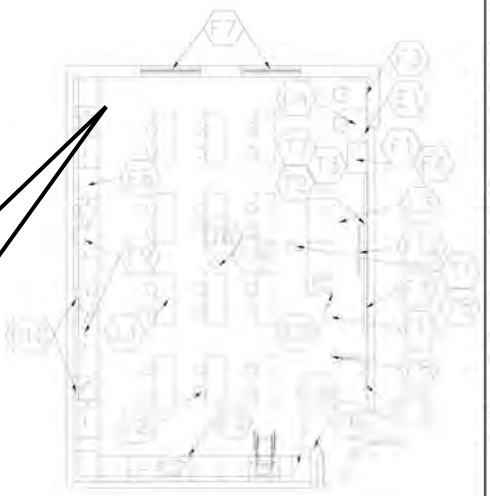
Chapter 6 begins with an overall building diagram showing how the various areas of a high school could be arranged. There are also program area diagrams throughout this chapter that demonstrate how specific spaces might relate to each other within a program area. Space plates are included for each type of space in the program area.

Key Points

The following space plate is for a high school general science/physics classroom.

CHAPTER 6: HIGH SCHOOL

SCIENCE CLASSROOM- GENERAL/PHYSICS
H-AC-2



PROGRAM ACTIVITIES:
- Large group, small group, and individual instruction
- Group and individual work
- Laboratory experimentation
- Data collection and analysis
- Demonstrations
- Project work

SPATIAL RELATIONSHIPS:
- Near other science classrooms
- Adjacent to science prep room
- Classrooms located in academic "zone" that is away from noisy or public activities
- Classrooms with access to media center and administrative services
- Proximity to large group restrooms
- Flexibility of space

ENVIRONMENTAL CONSIDERATIONS:
- Required: View glass – minimum 5% without daylighting design; minimum 3% with daylighting design.
  Recommended: Daylighting design with glazing area determined by design solution.
- Environmental sound control -
  wall only minimum STC 45
  ceiling minimum CAC 35, NRC 0.70
- Higher than normal ventilation requirements
- Moisture- and stain-resistant finishes
- Chemical-resistant counter tops

CAPACITY:	24 - 28 students
SIZE:	1,200 SF
ANCILLARY SPACES:	Science Prep H-AC-5

NOTES:

1. Loose furnishings shown represent one of many possible arrangements.
2. Science casework layout to be determined by the school district.
3. Depending upon the educational program of the district, a tall wardrobe may be placed in this classroom or could be placed in a teacher prep area/workroom.
4. The layouts shown do not restrict or reflect the variety of arrangements available to the Design Professional.

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Ohio School Facilities Commission 6101 - 5

Each room has a unique code that appears in the bracketing and on the space plate. In this case:
H=High
AC=Academic Core
2=Space Plate #2

Program activities indicate the type of activities that may occur in the space. These activities will vary from district to district depending on the educational program.

Relationships of a particular room to other spaces and activities have been identified to assist the A/E in the design of the facility.

Environmental considerations are items that may affect the educational program. They are the basis of some requirements of Finishes, Features, Plumbing, HVAC, Electrical, and Communications.

Diagrams of the space show how some of the features and loose furnishings may be organized. The space is not required to be designed in the configuration shown.

Chapter 6: High School, continued

Key Points, continued

This is the subsequent page of information for each space.

Features identified on the space plates are required for the space. Features include: Fixed Items, Fire Suppression, Plumbing, HVAC, Electrical, Communications, and Electronic Safety & Security Systems.

Each room has a unique code that appears in the bracketing and on the space plate. In this case:
H=High
AC=Academic Core
2=Space Plate #2

SCIENCE CLASSROOM - GENERAL/PHYSICS
H-AC-2

CHAPTER 6: HIGH SCHOOL

FINISHES[1]:	Spec. Ref.#
Flooring:	
Linoleum,	096500
rubber, ET, sheet vinyl,	096516
polished concrete finishing, or	033510
colored concrete finishing	033519
Base:	
Resilient base	096500
Ceiling:	
Suspended, acoustical	095113
Walls:	
Painted concrete masonry units	042000/099100

LOOSE FURNISHINGS:
L1 Student work tables
L2 Student stools/chairs
L3 Teacher chair or stool
L4 Computer workstation furniture
L5 File cabinet
Wastebasket

L4 could be fixed casework.

Electronic Safety and Security:	
Life safety devices per code	283111
Miscellaneous:	
Pencil sharpener (optional)	

E1 Duplex receptacle with dedicated circuit for wireless devices

FEATURES[1]:	Spec. Ref.#
Fixed Items:	
F1 Tall wardrobe with file drawers	123553
F2 Demonstration table/teacher desk	123553
F3 20'-32' combination marker board, tack board and tackable wall surface	101100
F4 Technology support casework	123553
F5 40'-60' of lab casework with sinks	123553
F6 Pencil sharpener support (optional)	062000
F7 Windows with integral blinds	085113
F8 Emergency shower/eyewash	224000
F9 18'-24' of wall cabinets	123553
F10 Towel dispensers (optional)	102813
F11 2 eye hooks for demonstrations (optional)	055000
F12 Projection screen (optional)	115213
Fire Suppression:	
Fire suppression system	211000
Plumbing:	
Plumbing connections	224000/221116/221119
Emergency shower/eyewash connections	224000
Gas connections (optional)	226313
Master shutoff for gas	226313
Compressed air connections (optional)	221500
HVAC:	
Supply/return air system	Div. 23
Independent temperature control	230923
Manual exhaust	Div. 23
Electrical:	
Fluorescent lighting:	265100
Illumination level: See Table 8600-5	
Multilevel switching	262726
Duplex receptacles at perimeter workstations and teaching wall	262726
Double duplex receptacle adjacent to each data and video port	262726
Emergency lighting	265100
Means of egress lighting per code	265100
Communications:	
T1 1 ***projector*** video port	271543
T2 1 voice port and phone	271513/273123
T3 1 data port at demonstration table	271513
T4 ***Wireless access point cable above ceiling***	271513
Clock	275313
Central sound system	275123
Sound reinforcement system	275127
T5 ***Ultra-short throw interactive*** projector	274119
T6 Wireless access point (WAP) as determined by design – refer to Note 4	***272133***
T7 Classroom technology center videoport	***271543, 274116, 274119, 275127***

The loose furnishings shown on the space plates are often found in spaces of the room type. The list is not inclusive of all furniture that might be included. Loose furnishings are funded as part of the project cost.

NOTES:
1. Finishes/Features: Refer to Chapter 9 for specification references.
2. Technology components may be placed in a separate small cabinet, or integrated in the other casework in the room.
3. Master gas shutoff valve shall be clearly labeled, easily accessible, and immediately operable by staff.
4. ***Baseline includes WAP cable per classroom. WAP device quantity/placement per 272133 requirements.***

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Ohio School Facilities Commission **6101 - 6**

Chapter 6: Career-Technical School

This Chapter begins with general information about the design and construction of Career-Technical schools. Two subject code/program tables are include with references to the space plates that follow. There are also program area diagrams throughout this chapter that demonstrate how specific spaces might relate to each other within a program area. Space plates are included for each type of space in the various program areas.

Key Points

The information in this diagram is referred to as a *space plate*.

There is a space plate for each room in each program area and each program type.

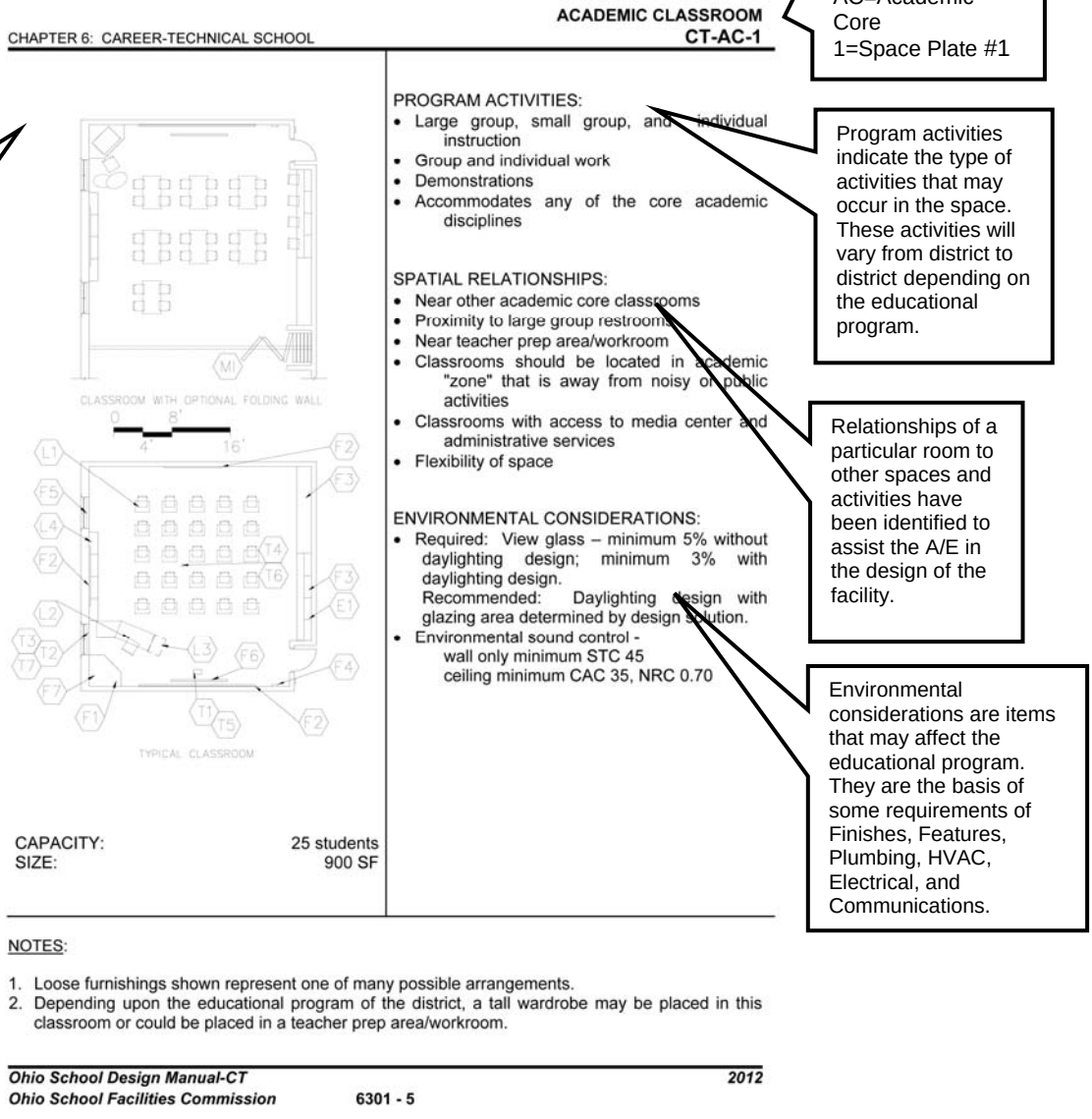
Each room has a unique code that appears in the bracketing and on the space plate. In this case:
CT=Career Tech
AC=Academic Core
1=Space Plate #1

A diagram of the space shows how some of the features and loose furnishings may be organized. The space is not required to be designed in the configuration shown.

Program activities indicate the type of activities that may occur in the space. These activities will vary from district to district depending on the educational program.

Relationships of a particular room to other spaces and activities have been identified to assist the A/E in the design of the facility.

Environmental considerations are items that may affect the educational program. They are the basis of some requirements of Finishes, Features, Plumbing, HVAC, Electrical, and Communications.



CHAPTER 6: CAREER-TECHNICAL SCHOOL

ACADEMIC CLASSROOM
CT-AC-1

CLASSROOM WITH OPTIONAL FOLDING WALL

TYPICAL CLASSROOM

PROGRAM ACTIVITIES:
- Large group, small group, and individual instruction
- Group and individual work
- Demonstrations
- Accommodates any of the core academic disciplines

SPATIAL RELATIONSHIPS:
- Near other academic core classrooms
- Proximity to large group restrooms
- Near teacher prep area/workroom
- Classrooms should be located in academic "zone" that is away from noisy or public activities
- Classrooms with access to media center and administrative services
- Flexibility of space

ENVIRONMENTAL CONSIDERATIONS:
- Required: View glass – minimum 5% without daylighting design; minimum 3% with daylighting design.
  Recommended: Daylighting design with glazing area determined by design solution.
- Environmental sound control -
  wall only minimum STC 45
  ceiling minimum CAC 35, NRC 0.70

CAPACITY: 25 students
SIZE: 900 SF

NOTES:

1. Loose furnishings shown represent one of many possible arrangements.
2. Depending upon the educational program of the district, a tall wardrobe may be placed in this classroom or could be placed in a teacher prep area/workroom.

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Ohio School Facilities Commission 6301 - 5

Chapter 6: Career-Technical School

Key Points, continued

This plate contains detailed information about the Career-Technical Academic Classroom.

Each room has a unique code that appears in the bracketing and on the space plate. In this case:
CT=Career Tech
AC=Academic Core
1=Space Plate #1

Features identified on the space plates are required for the space. Features include: Fixed Items, Fire Suppression, Plumbing, HVAC, Electrical, Communications, and Electronic Safety & Security Systems.

ACADEMIC CLASSROOM
CT-AC-1

CHAPTER 6: CAREER-TECHNICAL SCHOOL

FINISHES[1]:	Spec. Ref.#
Flooring:	
Carpet, carpet tile	096816
Optional: ET, sheet vinyl, linoleum, or rubber	096516 096500 096813
Base:	
Resilient base	096500
Ceiling:	
Suspended, acoustical	095113
Walls:	
Painted concrete masonry units	042000/099100

LOOSE FURNISHINGS:
L1 Student desks and chairs
L2 Teacher desk or workstation/computer support and chair
L3 File cabinet
L4 9' of low bookcases (fixed or mobile)
Wastebasket

Electronic Safety and Security:	
Life safety devices per code	283111
Miscellaneous:	
Pencil sharpener (optional)	
M1 Operable partitions between classrooms are optional	102226
Duplex receptacle with dedicated circuit for wireless devices	

FEATURES[1]:	Spec. Ref.#
Fixed Items:	
F1 Tall wardrobe with file drawers	123550
F2 20'-32' combination marker board, tack board and tackable wall surface	101100
F3 18'-24' combination base and wall cabinets	123550
F4 Pencil sharpener support (optional)	062000
F5 Windows with integral blinds	085113
F6 Projection screen (optional)	115213
F7 Technology support casework	123550
Fire Suppression:	
Fire suppression system	211000
Plumbing: N/A	
HVAC:	
Supply/return air system	Div. 23
Independent temperature control	230923
Electrical:	
Fluorescent lighting: Illumination level: See Table 8600-5	265100
Multilevel switching	262726
4 duplex receptacles	262726
Double duplex receptacle adjacent to each data and video port	262726
Communications:	
T1 1 ***projector*** video port	271543
T2 1 voice port and phone	271513/273123
T3 1 data port near teacher workstation	271513
T4 ***Wireless access point cable above ceiling***	271513
Clock	275313
Central sound system	275123
Sound reinforcement system	275127
T5 ***Ultra-short throw interactive*** projector	274119
T6 Wireless access point (WAP) as determined by design – refer to Note 4	***272133***
T7 Classroom technology center videoport	***271543, 274116, 274119, 275127***

The loose furnishings shown on the space plates are often found in spaces of the room type. The list is not inclusive of all furniture that might be included. Loose furnishings are funded as part of the project cost.

NOTES:
1. Finishes/Features: Refer to Chapter 9 for specification references.
2. Technology components may be placed in a separate small cabinet, or integrated in the other casework in the room.
3. Where appropriate, some casework may be mobile to add flexibility and become part of the loose furnishings.
4. ***Baseline includes WAP cable per classroom. WAP device quantity/placement per 272133 requirements.***

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Ohio School Facilities Commission **6301 - 6**

Chapter 6: Career-Technical School

Following is a Program Space Plate for an Electronics lab in A Career-Technical School.

R*1* / 1503 ELECTRONICS
***R0* / 17.0370 AUTOMATION & ROBOTICS**

CHAPTER 6: CAREER-TECHNICAL SCHOOL **CT-P1-1**

PROGRAM DESCRIPTION:

Electronics: Classroom, laboratory, and practical learning experiences that includes both theory and practice. Students learn construction, maintenance, and repair of digital, analog, and microprocessor circuits in applications such as communications equipment, consumer equipment, and industrial equipment.

Automation & Robotics: Utilizing business and Industry, math, English, science and technology standards, introduces concepts in Automation and Robotics technologies: Computer Numerical Control (CNC), Data Acquisition and Analysis, Electrical/Electronic controls, Fluid Power, Robotics and Programmable Logic Controllers (PLC).

Program Type: 1

Size Requirements: 1,800 SF Lab

Lab Requirements:

FINISHES:	Spec. Ref #
Flooring:	
Carpet	096816
Optional: ET, sheet vinyl, or linoleum	096500 096516
Base:	
Resilient	096500
Ceiling:	
Suspended acoustical	095113
Walls:	
Painted concrete masonry units	042000/ 099100

LOOSE FURNISHINGS:
(12) Two-person work tables w/storage below
(24) Computer workstation furniture & chairs
(1) Teacher station & chair
Wastebasket

FEATURES[1]:	Spec. Ref.#
Fixed Items:	
F1 24' of marker board, tack board, or tackable wall surface	101100
F2 Reserved	
F3 60' of base and wall cabinets	123550
F4 Reserved	
F5 Pencil sharpener support (optional)	062000
F6 Windows with integral blinds	085113
F7 Projection screen, 6'x8'	115213
Fire Suppression:	
Fire suppression system	211000
Plumbing:	
N/A	
HVAC:	
Supply/return air system	Div. 23
Independent temperature control	230923
Electrical:	
Fluorescent lighting, parabolic lenses; Illumination level: See Table 8600-5	265100
Multilevel switching	262726
6 duplex receptacles	262726
Double duplex receptacle adjacent to each data and video port	262726
Communications:	
1 ***projector*** video port	271543
1 voice port and phone	271513/273123
1 data port near teacher workstation	271513
Wireless access point cable above ceiling	271513
Clock	275313
Central sound system	275123
Sound reinforcement system	275127
Ultra-short throw interactive projector	274119
Wireless access point (WAP) as determined by design – refer to Note 4	***272133***
Classroom technology center videoport	***271543, 274116, 274119, 275127***
Electronic Safety and Security:	
Life safety devices per code	283111
Miscellaneous:	
Pencil sharpener (optional)	
Duplex receptacle with dedicated circuit for wireless devices	

NOTES:
1. Finishes/Features: Refer to Chapter 9 for specification references.
2. ***Baseline includes WAP cable per classroom. WAP device quantity/placement per 272133 requirements.***

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Ohio School Facilities Commission **6311 - 9**

Chapter 7: *Sustainable Design*
High performance buildings are in the forefront of today's construction. This product is the result of sustainable design and is judged by the United States Green Building Council's LEED rating system. Initially, this chapter indicates suggestions and good practices in daylighting considerations with emphasis on energy conservation.

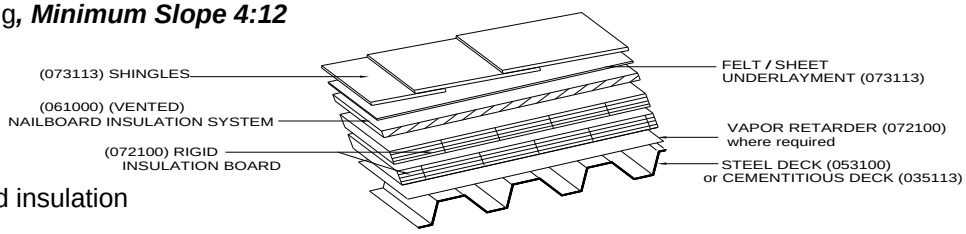
Chapter 8: Systems and Materials
Chapter 8 provides an overview and options of the various materials and systems that have been used to establish a design standard and level of quality for the systems and materials to be incorporated into new buildings. Systems and materials are described in the following categories

- Exterior walls
  - masonry cavity wall
  - veneer and metal framing
  - ***metal panel on concrete masonry wall***
  - ***Plant pre-cast concrete insulated sandwich wall***
  - ***Metal panel on metal framing***
  - ***Exterior wall/roof closure***
- Roofs
  - shingle roof ***& shingle roof system***
  - metal roof with rigid insulation ***& metal roof with rigid insulation system***
  - built-up roof
  - membrane roof
  - ***recommended roof ridge***
  - ***exterior wall system***
  - ***recommended wall-low roof***
- Interior walls
- Structural
- Plumbing
- HVAC
  - central plant VAV system with hot water reheat terminals
  - central plant VAV system with fan powered reheat terminals
  - water-source heat pump system
- Technology
- Electrical

EXAMPLE: Shingle Roof

- Application - Steep Roofing***, Minimum Slope 4:12***
- Components
  1. Roof Membrane
     - Shingles
     - Underlayment
  2. Roof insulation
     - (Vented) nailboard insulation
     - Rigid insulation
  3. Vapor Retarder
     - Where required. Refer to Chapter 9.
  4. Structural Support
     - Steel deck or cementitious deck

  5. Air Barrier System Required
     - ***Self-adhering sheet or Closed-cell polyurethane insulation***
- Performance
  1. Features
     - Impact Resistant, Moisture Resistant, Thermal Resistant



Chapter 9: Specifications

Chapter 9 identifies specifications, which are an element of construction documents, and defines the qualitative requirements for products, materials, and workmanship. This chapter is a guide for the Design Professional who will prepare detailed specifications for the project. The OSFC requires that the specifications for a project promote competition among manufacturers of materials, equipment, and furnishings incorporated into the project. ***At least three manufacturers should be listed for all materials and systems.***

This chapter includes both performance (a statement of required results with criteria for verifying compliance, but without unnecessary limitations on the methods for achieving the required results) and reference (requirements set by authority, custom, or general consensus and are established as accepted criteria) standards.

The sections are organized into CSI's (Construction Specifications Institute) format:

- 9101 General Requirements
- 9102 Existing Conditions
- 9103 Concrete
- 9104 Masonry
- 9105 Metals
- 9106 Wood, Plastics, and Composites
- 9107 Thermal and Moisture Protection
- 9108 Openings
- 9109 Finishes
- 9110 Specialties
- 9111 Equipment
- 9112 Furnishings
- 9113 Special Construction
- 9114 Conveying Equipment
- 9121 Fire Suppression
- 9122 Plumbing
- 9123 Heating, Ventilating, and Air Conditioning
- 9126 Electrical
- 9127 Communications
- 9128 Electronic Safety and Security
- 9131 Earthwork
- 9132 Exterior Improvements
- 9133 Utilities

Excerpt from Section 096816 Carpet Specification

FINISHES CHAPTER 9: SPECIFICATIONS

SECTION 096816
SHEET CARPETING

GENERAL GUIDELINES

1.1 SECTION INCLUDES
A. Qualitative requirements for carpet materials and accessories for a direct-glue down or pre-applied adhesive installation of one of the following:.
1. Tufted Broadloom
2. Variable Cushion Tufted Textile (VCTT)

1.2 QUALITY ASSURANCE
A. Chemical Emission/Indoor Air Quality: All carpet specified must be in compliance with the Carpet and Rug Institute (CRI) "Green Label Plus" Indoor Air Quality Carpet Testing Program. The program label and registration number serve as evidence of compliance.

1.3 PROJECT CONDITIONS
A. Concrete subfloors must meet the following requirements before carpet may be installed:
1. pH range of 5 to 9.
2. Moisture-emission rate of 3 lb/1000 sq.ft. per 24 hours or less.

1.4 WARRANTY
A. Tufted Broadloom: 10 years (minimum).
B. Variable Cushion Tufted Textile: 15 years (minimum)

1.5 CARPET
A. Carpet, Tufted Broadloom: Shall meet or exceed the following CRI guidelines:

SCHOOL CARPET MINIMUM AVERAGE SPECIFICATIONS		
Carpet Property/Characteristic	**Minimum Specifications**	**Test Method**
Type Yard	Solution or Yarn Dyed	--
Color	Multi-Colored Products (select colors complimentary to soil type/color in region)	--
Surface/Style	Level Loop, Multi-Level Loop, Textured Loop, or Cut & Loop	--
Static	3.5 kv (max – not to exceed)	AATCC-134 Step Method
Indoor Air Quality (IAQ)	CRI IAQ Certification "Green Label Plus"	CRI Test Program ASTM D-5116
In glue-down installation, include CRI IAQ Testing Program label for installation adhesives. Carpet over cushion, include CRI IAQ Testing Program label for carpet cushion.		
Flammability – Radiant Panel Test	Class I	ASTM E-648
NBS Smoke	<450 Flaming Mode	ASTM E-662
Tuft Bind (dry)	8 lbs, all products (16-20 lbs suggested for unitary backing)	ASTM D-1335
Delamination	Secondary backed products, 3.5 lbs	ASTM D-3936
Dimensional Stability	Removable modular products, 0.2% or less	ISO 2551
Colorfastness: light	4 or better (60 AFU 3 cycles)	AATCC 16-E
Colorfastness: ozone	4 or better after 2 cycles	AATCC 129
Colorfastness: crocking	4 or better (wet & dry)	AATCC 165
Colorfastness: water	4 or better, AATCC Transference Scale (only yarn dyed carpet) (grade change in color and staining)	AATCC 107
Soil Resistant Treatment	Minimum average of 350 ppm fluorine on pile fiber of 3 separate tests	CRI TM-102

B. Carpet, Variable Cushion Tufted Textile (VCTT): Shall meet or exceed the following guidelines:

Ohio School Design Manual 096816 – Sheet Carpeting *2012*
Ohio School Facilities Commission **9109 - 28**

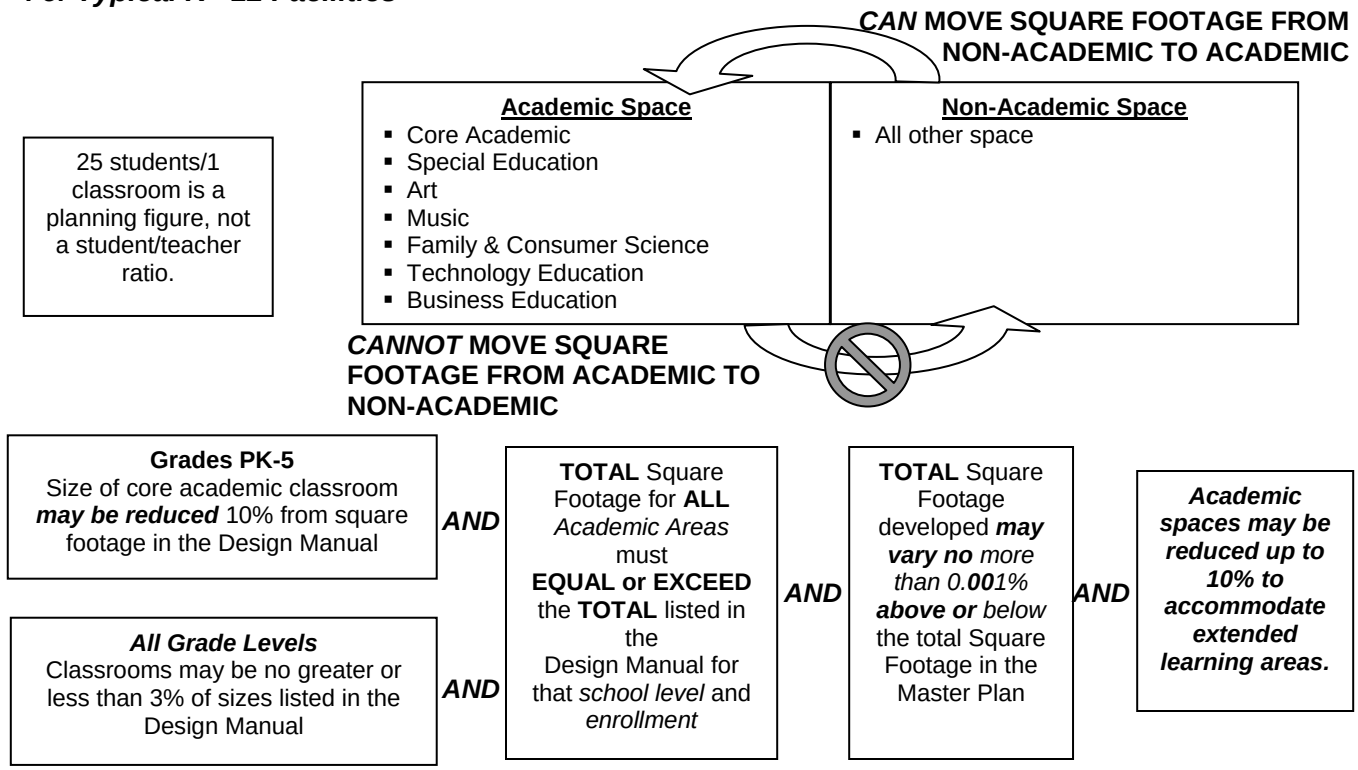
Chapter 10: Miscellaneous

Chapter 10 provides an overview explaining the importance of color in schools, including general recommendations regarding the use of color for various items and finishes; suggests loose furnishings and equipment for various spaces at each school level; and provides quality guidelines and furniture selection considerations. ***Additionally, this section contains information on the selection of Food Service Equipment.***

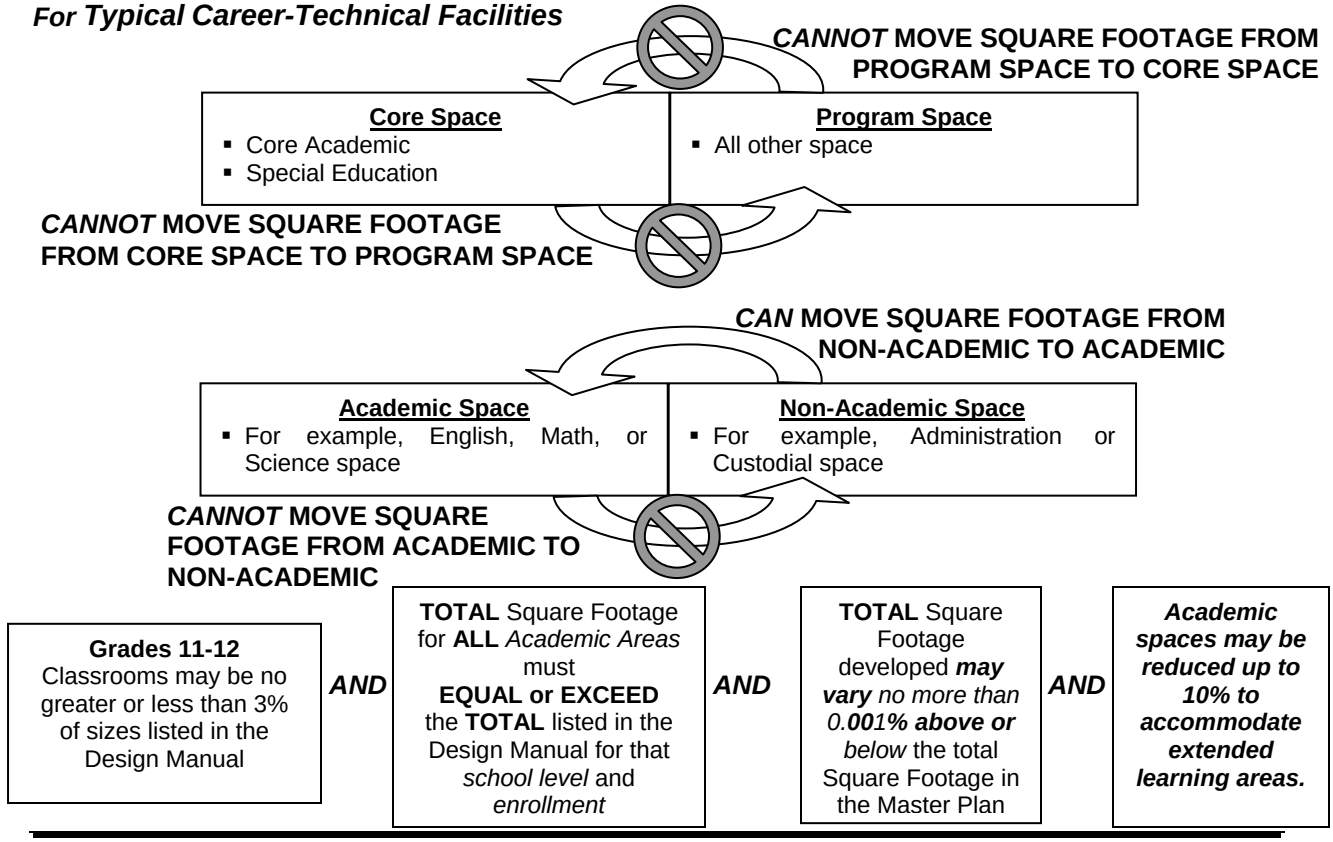
For Elementary Schools Chapter 10 suggests warm base, background colors such as light salmon, beiges, soft yellows or peaches on the walls to produce a calming environment. Deeply saturated bright hues on architectural elements should be avoided, since the colors will create too much stimulation. Similar approaches are suggested for the upper grades. School colors can be integrated into the building color scheme in the athletic areas and possibly in the locker specifications. Color is also a very helpful tool in wayfinding, and this may be accomplished by identifying grade level or team areas with different colors.

Loose furnishings and equipment in the project are those items that are not attached to the building such as furniture, special subject equipment, appliances, trash receptacles, cleaning equipment, etc. The type of loose furnishings and equipment for a school should be selected to support the educational curriculum and the function of the spaces, but also provide flexibility for change and development in the future. The exact items and styles may vary from school to school.

Parameters for Developing the Program of Requirements (POR)
For Typical K –12 Facilities



Parameters for Developing the Program of Requirements (POR)
For Typical Career-Technical Facilities



Parameters for Funding *Typical K –12 Facilities*

Sources for **Project Cost Local Share**:
- Bond Issue
- Permanent Improvement Tax
- School District Income Tax
- Local Donated Contribution

Basic* Project Cost Calculation** considers:***
- Square footage (SF) and $/SF for grade levels to be housed
- Variation across 9 regions in the state in construction & related costs
- Cost of site utilities & preparation (based on average anticipated conditions)
- Cost of insuring the project until completion
- Partnering sessions
- Professional planning, administration & design fees
- Allowances for security, loose furnishings & technology

Costs Included in the Project

Construction Costs
- Site Costs
- Building Costs
- Furnishings (including playgrounds for elementary)
- Technology infrastructure, telephone system, video distribution system, computer network system
- Construction Contingency

Non-Construction Costs
- Land Survey
- Soils/Environmental Report
- Agency Approval Fees
- Construction Testing
- Printing – Bid Documents
- Advertising for Bids
- Builder's Risk Insurance
- Design Professional Compensation
- Construction Management Compensation
- Non-construction Contingency may include Partnering/Mediation and Commissioning Agent

Parameters for Funding *Typical Career-Technical Facilities*

Sources for **Project Cost Local Share**:
- Bond Issue
- Permanent Improvement Tax
- School District Income Tax
- Local Donated Contribution

Basic* Project Cost Calculation** considers:***
- Square footage (SF) and $/SF for students and programs to be housed
- Variation across 9 regions in the state in construction & related costs
- Cost of site utilities & preparation (based on average anticipated conditions)
- Cost of insuring the project until completion
- Partnering sessions
- Professional planning, administration & design fees
- Allowances for security, loose furnishings & technology

Costs Included in the Project

Construction Costs
- Site Costs
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  - Furnishings (including playgrounds for elementary)
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Non-Construction Costs
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Parameters for Funding, continued

If the school district elects to proceed with components not listed as acceptable in the Design Manual, the school district may proceed with a locally funded initiative in addition to the required local share. Deviations should be discussed with the OSFC staff during the early planning phases of the project.

ELIGIBLE USE OF PROJECT FUNDS

- Advertising for bids
- Agency approval fees
- Allowance for abatement and demolition of facilities to be abandoned by the school district
- Builder's risk insurance
- Building construction costs
- Construction testing
- Data/computer hardware (Head-End)
- Design and construction management fees
- Land survey
- Loose furnishings
- Maintenance plan advisor fee
- Multipurpose field(s) – grading & seeding only
- Partnering (Facilitation Services & Facilities)
- Phasing and Staging Costs
- Printing of bid documents
- Project insurance (Professional Liability Insurance)
- Renovation scope as defined in the Master Facilities Plan
- Softball field(s) – grading only
- Soil borings/Phase I environmental report
- Technology infrastructure and wiring
- ***Commissioning***

NON-ELIGIBLE USE OF PROJECT FUNDS

- Baseball fields
- ***Board offices***
- Bus compounds or garages
- Community outreach programs
- Computers/software
- Consulting services to support property acquisition
- Consulting services (supplemental to the funded architectural design and construction manager services)
- Costs associated with bond sales and other financing arrangements
- Equipment or tool sheds
- Fixed-seating auditoriums and natatoriums
- Legal representation, unless Joint Defense and Confidentiality Agreement approved by the Commission and school district
- Levy support services
- Modular tech equipment
- Multipurpose field(s) – imported fill
- Nature areas
- Off-site utilities
- Running tracks
- Site acquisition and preparation
- Soccer fields
- Sports stadiums
- Tennis courts

NOTE: This list is not necessarily all-inclusive.

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Well in advance of application for a non-funded program (ELPP or VFAP ELPP) or notification of eligibility for a funded program (CFAP, ENP or VFAP), the school district should undertake a process to establish partnerships with community stakeholders, establish and refine its educational vision, and review school facilities in connection with that educational program and vision.

There are many processes that have been developed to engage the community in this dialogue. Key elements of any successful process include:

- **Educational Visioning** – The purpose of these activities is to provide an in-depth discussion of "best practices" for education and ways in which that influences facility needs. This is often done through a series of visionary workshops to address national trends and current research in the areas of early childhood, elementary, middle school, and high school education. Based on this framework, the group determines how this information influences facility needs.

- **Site Meetings** – Site meetings provide the opportunity for a large number of stakeholders to share their ideas, issues, and concerns regarding the long-range facility needs of the district. This also provides an opportunity to ascertain some of the short term needs and concerns of each building. These meetings provide the opportunity for a large number of constituents to participate and are a recruitment tool for participants in subsequent Key Communicator meetings.

- **Business Community Meetings** – Meetings with a number of local business and community groups are held to share information and obtain input.

- **Steering Committee/Stakeholder Group** – The primary purpose of this group is to "arm" the participants with information about the schools. This group considers the needs of the entire District and processes the information from all the Site Meetings as well as the data assembled for all the schools. This information will be organized to enable the Steering Committee/Stakeholder Group to process and understand it. Each participant becomes a "key communicator" within the community [and at the subsequent Community Forums/Dialogues] to discuss the issues/concerns facing the schools. This level of engagement also forms a large number of persons who are strongly invested in the planning process and the ultimate outcome.

- **Options Development** – The stakeholder group develops and considers options for the district's facilities to narrow these options to a reasonable number for further consideration. Workshops are conducted with stakeholder volunteers and district staff to develop options with consideration for the financial, facility, educational, social, political, and community implications.

- **Community Forums/Dialogues** – Community Forums/Dialogues are held to inform and obtain feedback from the community regarding the options under consideration. The volunteers involved with authoring the various options will are actively involved with presenting the options at the Community Forums/Dialogues. The comments from the Community Forums/Dialogues serve as essential feedback in obtaining the reaction of the community to the proposed direction of the district's educational program and vision as it relates to facilities.

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SPECIAL EDUCATION PROGRAM SUMMARY

Just as every student is unique as represented in their IEP (Individualized Education Program), so is every school district in addressing the specific needs of the students they serve. It is the intent of the OSFC Design Manual to accommodate the specific needs of all students, realizing that a large majority of those students identified with special needs may utilize a variety of spaces throughout the school day to address their IEP. Since Ohio is experiencing a continued increase in the number of students identified with special needs, the facility requirements must provide the flexibility to address the changing demographics as well.

Since the Design Manual serves as a guide, it is necessary during the planning process to identify the specific needs of the school in meeting the special needs population and plan early in the process to ensure that those needs are being met through the design.

Section 1110 of the Design Manual contains a detailed overview of Special Education programs in the State of Ohio.

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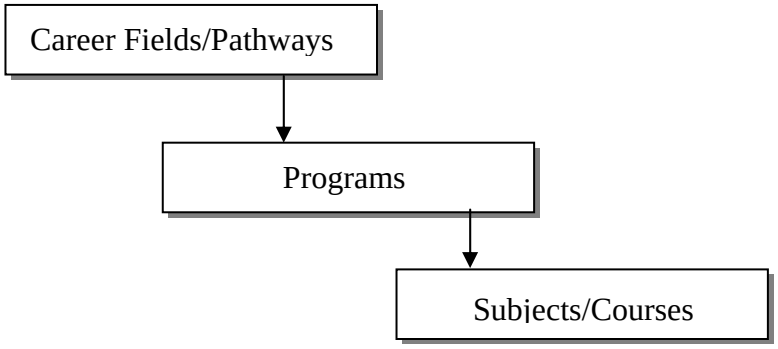
Career technical education has been and continues to be an evolving part of the academic curriculum. Historically, career technical education was identified as vocational training and associated with programming such as woodshop, auto mechanics, and agriculture courses. These programs were designed to teach the student technical skills to prepare them for work in factory jobs.

With the infusion of technology into everyday life, the focus of vocational schools, now referred to as career-technical schools, has shifted to preparing students for a lifetime of learning in areas such as electronics, criminal justice, dental assistant, engineering technology, and health care. These areas of study provide students with an opportunity to obtain sufficient knowledge to enter the workforce or prepare them to pursue more advanced educational training upon graduation.

The Ohio Department of Education has identified career fields with pathways and specializations that provide academic instruction and field specific training and education to prepare students for future careers. Following is list of career fields currently recognized by ODE.

Agricultural and Environmental Systems
Arts and Communication
Business and Administrative Services
Construction Technologies
Education & Training
Engineering & Science Technologies
Finance
Government & Public Administration
Health Science
Hospitality and Tourism
Human Services
Information Technology
Law and Public Safety
Manufacturing Technologies
Marketing
Transportation Systems

These career fields are identified by a CTE Program Code setting into place the hierarchy of career fields, programs and subjects/courses as identified the Ohio Department of Education Crosswalk.



Additional information can be obtained from ODE.

These career fields/pathways/specializations are being implemented in comprehensive high schools, as well as career technical facilities, throughout Ohio. Spaces required for this coursework are similar to core academic classrooms and include administrative and support spaces. However, most of the career pathway learning occurs in spaces that are designed and equipped to support the specialized curriculum. The Career-Technical sections of the OSFC Design Manual were developed to guide the programming, design, and construction of Career-Technical School Facilities within career-technical school districts constructed under the Vocational Facilities Assistance Program. The information may also be used when planning a comprehensive high school.