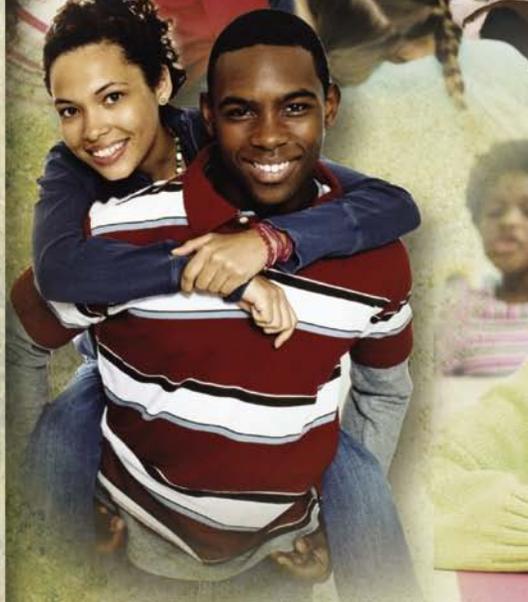


OHIO SCHOOL  
FACILITIES  
COMMISSION

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2009  
OHIO  
SCHOOL  
DESIGN  
MANUAL

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The Ohio School Facilities Commission is pleased to present the 2009 Ohio School Design Manual (OSDM) update.

Each year the Commission updates 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 school facilities programs. It provides guidelines that serve the diverse needs of local school communities and their students. It is the intent of the OSDM to provide a wide selection of high quality materials and systems to the designers and school districts. These materials and systems will 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.

This year's update incorporates materials and systems that meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) for Schools. These additions can be found in Chapters 7 and 9 of this manual. The LEED system is the national benchmark for high performance green buildings. The LEED for Schools certification program verifies that schools have been built to meet a high level of energy and environmental performance.

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

Sincerely,

Ohio School Facilities Commission

Michael Shoemaker  
Executive Director

## FOREWORD

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# OHIO SCHOOL DESIGN MANUAL

## Ohio School Facilities Commission

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6306	<b>CT-FS</b> CT-FS-1 CT-FS-0 CT-FS-1a CT-FS-1b <b>CT-FS-1c</b> CT-FS-1d CT-FS-1e <b>CT-FS-2</b> <b>CT-FS-3</b> CT-FS-4	<u>Food Service Spaces</u> <b>Spatial Relationships Diagram</b> Kitchen Warming Kitchen Preparation Area Serving Area <b>Dry Food Storage</b> Cooler/Freezer Ware Washing <b>Dietician's Office</b> <b>Restroom / Locker Room</b> Locker Room
6307	CT-CU <b>CT-CU-1</b> <b>CT-CU-2</b>	<u>Custodial Spaces</u> Spatial Relationships Diagram <b>Workroom</b> <b>Custodial Office</b>
6308	CT-GS-1 <b>CT-GS-2</b> <b>CT-GS-3</b> <b>CT-GS-4</b> <b>CT-GS-5</b> <b>CT-GS-6</b> <b>CT-GS-7</b> <b>CT-GS-8</b>	<u>General Spaces</u> Large Group Restrooms <b>Custodial Closet</b> <b>Electrical Closet</b> <b>Telecommunications Room</b> <b>Storage Area</b> <b>Central Storage/Distribution Center</b> <b>Loading/Receiving/Warehouse Area</b> <b>Restroom</b>
6309	<b>CT-BS-1</b> <b>CT-BS-2</b>	<u>Building Spaces</u> <b>Corridors</b> <b>Mechanical/Electrical/Space Decks</b>

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#### **Program Type 1 - Table of Contents**

Spatial Relationship Diagram

Example

CT-P1-1 Lab

***Accounting***

***Administrative and Professional Support***

***Legal Management and Support***

***Aviation Occupations***

***Business Management***

***Diversified Cooperative Health Occupations***

***Drafting Occupations***

***Electronics***

***Automation & Robotics***

***Entertainment Marketing***

***Financial Services***

***Travel and Tourism***

***Hospitality and Tourism***

***Visual Design and Imaging***

***Information Support & Services***

***Interactive Media***

***Network Systems***

***Programming and Software Development***

***Medical Management and Support***

***Telecommunications***

CT-P1-2 Office

**CT-P1-3 Storage Area**

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#### **Program Type 2 – Table of Contents**

Spatial Relationship Diagram

Example

CT-P2-1 Lab

***Energy Science***

***Biotechnology***

***Pharmacy Assisting***

***Biotechnology for Food, Plant, Animal Sciences***

***Animal Bioscience***

***Plant Bioscience***

***Chemical Laboratory Assisting***

***Industrial Laboratory Assisting***

***Medical Laboratory Technology***

***Criminal Science Technology***

***Community Health Aide***

***Home Health***

***Dental Laboratory Technology***

***Emergency Medical Technician***

***Exercise Science/Sports & Recreation Health Care***

***Health Support Pathway***

***Therapeutic Pathway***

***Health Unit Coordinator***

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### *Health Information Management Services Practical Nursing*

CT-P2-2 Office

**CT-P2-3 Storage Area**

**CT-P2-4 Changing Room**

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### **Program Type 3 – Table of Contents**

Spatial Relationship Diagram

Example

CT-P3-1 Lab

#### **Commercial Art Occupations**

**Darkroom**

#### **Commercial Photography Occupations**

**Print Darkroom / Film Darkroom / Film Loading Room**

#### **Early Childhood Education and Care**

**Observation Room / Infants Room / Kitchen/Break Room**

**Work Room / Toddler Restroom / Reception**

#### **Graphics Occupation**

**Darkroom**

#### **Ground Operations**

**Reference Room**

#### **Lodging**

**Banquet Room**

#### **Hotels and Resorts**

**Banquet Room**

#### **E-Commerce Marketing**

#### **Marketing Communications**

**Bookstore/Display**

#### **Marketing Management and Research**

**Bookstore / Display**

#### **Marketing Technology**

**Bookstore / Display**

#### **Sports Marketing**

**Bookstore / Display**

CT-P3-2 Office

**CT-P3-3 Storage Area**

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### **Program Type 4 – Table of Contents**

Spatial Relationship Diagram

Example

CT-P4-1 Lab

#### **Animal Science and Management (small animal)**

**Pet Shop/Clinic/Grooming/Animal Room #1/Animal Room #2/Kennel**

#### **Cosmetology**

**Dispensary / Laundry Room / Facial Room / Manicure Room /**

**Customer Toilet**

#### **Career Paths for the Law Profession**

**Weight Room / Interrogation Room**

#### **Criminal Justice**

**Weight Room / Interrogation Room**

#### **Culinary and Food Service Operations**

**Restaurant / Dry Storage**

#### **Culinary Arts and Food Service Management**

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- Restaurant / Dry Storage*
- Dental Assistant*
  - X-Ray Room / Darkroom*
- Diversified Health Occupations*
  - Exam Room*
- Fire Fighter Training*
  - Weight Room*
- Medical Assistant*
  - Training Restroom / Laundry Room*
- Clinical Health Care Services*
  - Training Restroom / Laundry Room*
- Nurse Assisting*
  - Training Restroom / Laundry Room*
- Optometric Occupations*
  - Exam Room*
- Patient Care Technician*
  - Training Restroom / Laundry Room*
- Surgical Technology*
  - Operating Room / Instrument Room / Scrub Room*
- Diagnostic Pathway*
  - Exam Room*
- Performing Arts*
  - Practice Room*
- Arts and Communications – Performing Arts Pathway*
  - Practice Room*
- Media Arts*
  - Media Arts Control Room/Edit / Vestibul*
  - Arts and Communications – Media Arts Pathway*
    - Media Arts Control Room/Edit / Vestibule*
- CT-P4-2 Related Classroom**
- CT-P4-3 Office
- CT-P4-4 Storage Area**
- CT-P4-5 Changing Room**

**6315**      **Program Type 5 – Table of Contents**

Spatial Relationship Diagram

Example

CT-P5-1 Lab

- Acquisition and Logistics*
- Agribusiness and Production Systems*
- Appliance Repair*
- Auto Specialization*
- Brick, Block, and Cement Masonry*
- Building and Property Maintenance*
- Building Technology*
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*Plumbing and Pipefitting*  
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**CT-P5-3** *Office*  
**CT-P5-4** *Storage Area*  
**CT-P5-5** *Changing Room*  
**CT-P5-6** *Tool Crib*  
**CT-P5-7** *Reference Room*  
**CT-P5-8** *Toilet Room*

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**Program Type 6 – Table of Contents**

Spatial Relationship Diagram

Example

**CT-P6-1** *Lab*

*Agriculture/Industrial Equipment*  
*Engine Storage / Flammable Material Storage*  
*Auto Collision Repair*  
*Auto Parts Storage*  
*Auto Technology*  
*Engine Storage / Machine Room / Flammable Material Storage*  
*Carpentry*  
*Finishing Room / Material Storage*  
*Construction (2 clusters)*  
*Design/Build / Management / CADD Room*  
*Engineering Technology*  
*Design / Process / Product/Service / CADD Room*  
*Engineering Technologies*  
*Design / Process / Product/Service / CADD Room*  
*Food Science and Technology*  
*Freezer / Cooler / Retail*  
*Horticulture*  
*Retail*  
*Medium/Heavy Truck Technician*  
*Engine Storage / Flammable Material Storage / Machine Room*  
*Precision Machining*  
*CNC Room / Inspection Room*  
*Wood Product Technologies*  
*Finishing Room / Material Storage*

**CT-P6-2** *Related Classroom*

**CT-P6-3** *Office*

**CT-P6-4** *Storage Area*

**CT-P6-5** *Changing Room*

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7100	Daylighting Considerations 7100-1 Consider Human Factors 7100-3 Consider the Energy Ramifications 7100-9 Account for Site Constraints and Benefits 7100-9 Select Well-Integrated Daylighting Strategies 7100-14 Optimize the Most Appropriate Daylighting Strategies 7100-31 Accurately Simulate Daylighting Performance 7100-33 Verify and Modify Your Design Process
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<b>7400</b>	<b><i>Solar Ready Schools</i></b> <b>7401    <i>Solar Hot Water System – Indirect Drain-Back Option 1</i></b> <b>7402    <i>Solar Hot Water System – Indirect Drain-Back Option 2</i></b> <b>7403    <i>Solar Hot Water System – indirect Pressurized Glycol</i></b>

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<b>8112</b>	<b><i>Metal Panel On Concrete Masonry Wall</i></b>
<b>8113</b>	<b><i>Plant-Precast Concrete Insulated Sandwich Wall</i></b>
<b>8114</b>	<b><i>Metal Panel on Metal Framing</i></b>
<b>8115</b>	<b><i>Metal Panel on Metal Framing</i></b>
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<b>075400</b>	<b><i>Thermoplastic Membrane Roofing</i></b>
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### 9108

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<b>236416</b>	<b><i>Packaged, Centrifugal Water Chiller</i></b>
<b>236423</b>	<b><i>Packaged, Scroll Water Chiller</i></b>
<b>236426</b>	<b><i>Packaged, Rotary Screw Water Chiller</i></b>
<b>236440</b>	<b><i>Refrigerant Monitoring Systems</i></b>
<b>236500</b>	<b><i>Packaged Cooling Towers</i></b>
<b>236533</b>	<b><i>Closed Circuit Fluid Coolers</i></b>
<b>237119</b>	<b><i>Ice Storage System</i></b>
<b>237200</b>	<b><i>Air to Air Energy Recovery Equipment</i></b>
<b>237313</b>	<b><i>Modular Indoor Air Handling Units</i></b>
<b>237323</b>	<b><i>Custom Indoor Air Handling Units</i></b>
<b>238113</b>	<b><i>Unitary Air Conditioning Equipment</i></b>
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<b>238146</b>	<b><i>Water Source Heat Pumps</i></b>
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<b>238219</b>	<b><i>Fan Coil Units – Four Pipe</i></b>
<b>238223</b>	<b><i>Unit Ventilators – Four Pipe</i></b>
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261300	Medium Voltage Switchgear
262200	Low Voltage Transformers
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### Chapter 10: Miscellaneous (Career-Technical)

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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 communicates **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, districts **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 health, 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.

**EXECUTIVE SUMMARY  
INTRODUCTION****CHAPTER 1: INTRODUCTION**

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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

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#### 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.

**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.

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

---

### 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: Maintenance Plan Advisor (MPA)**

*Responsibilities:* The MPA is hired by the district to provide a detailed plan to service, maintain, and prolong the life of the facilities using the maintenance fund.

**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.

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

#### 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, between the district and the DP, and between OSFC and the CM.

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:

##### DESIGN

- 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

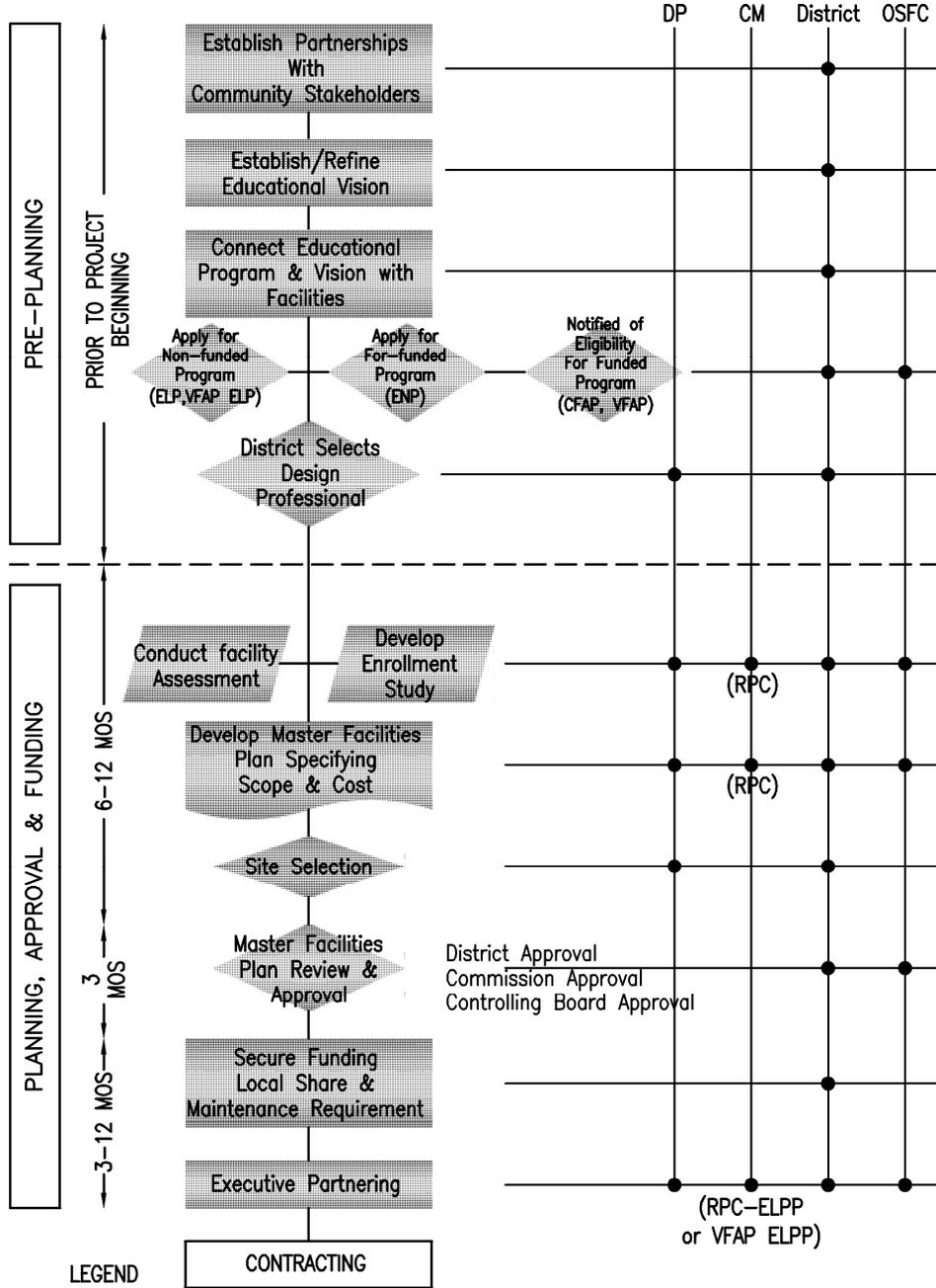
The warranty phase begins and a Maintenance Plan is implemented. The project and financial closeout steps occur.

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

# OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

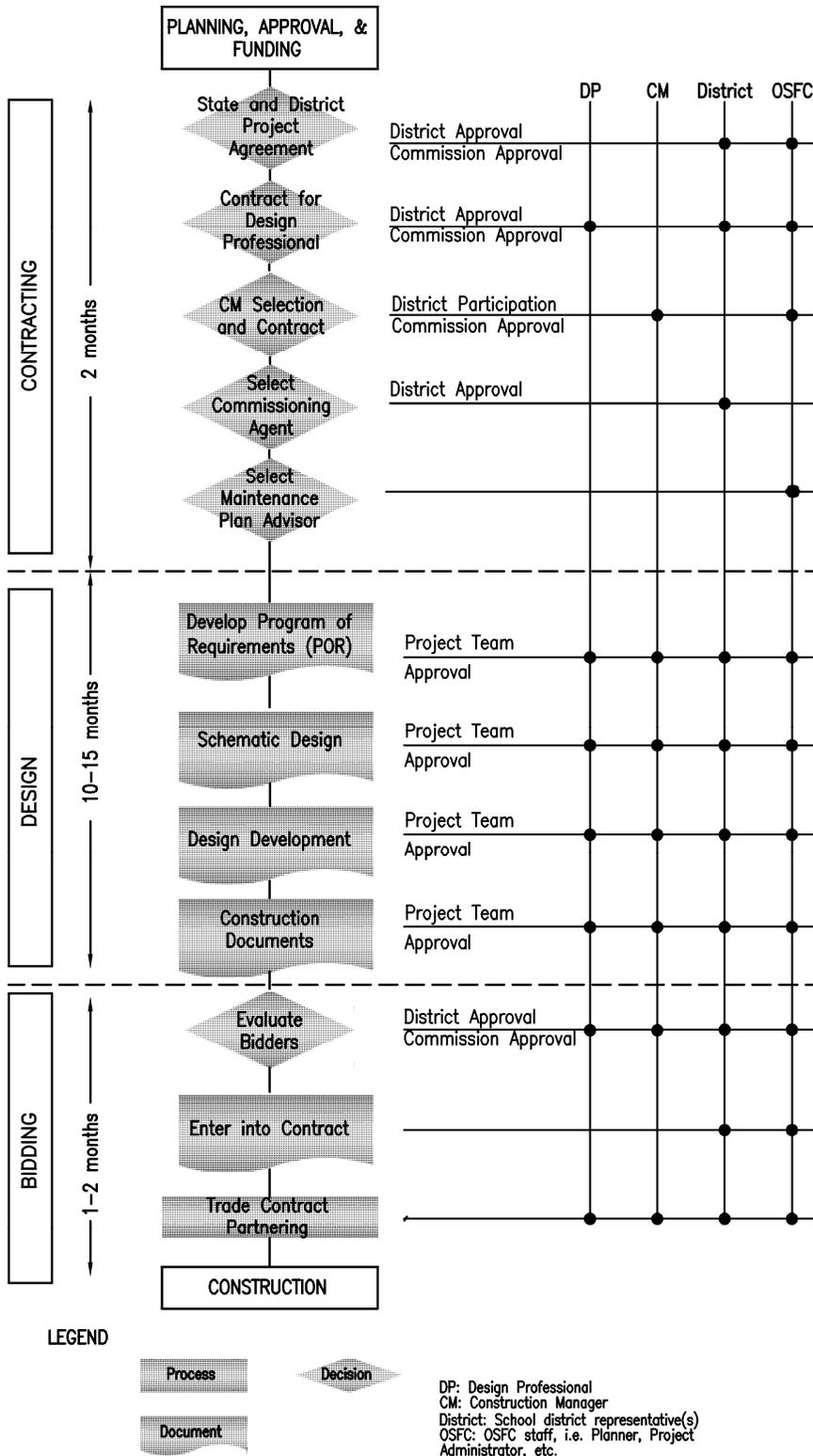
## B. SUMMARY OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS



# OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

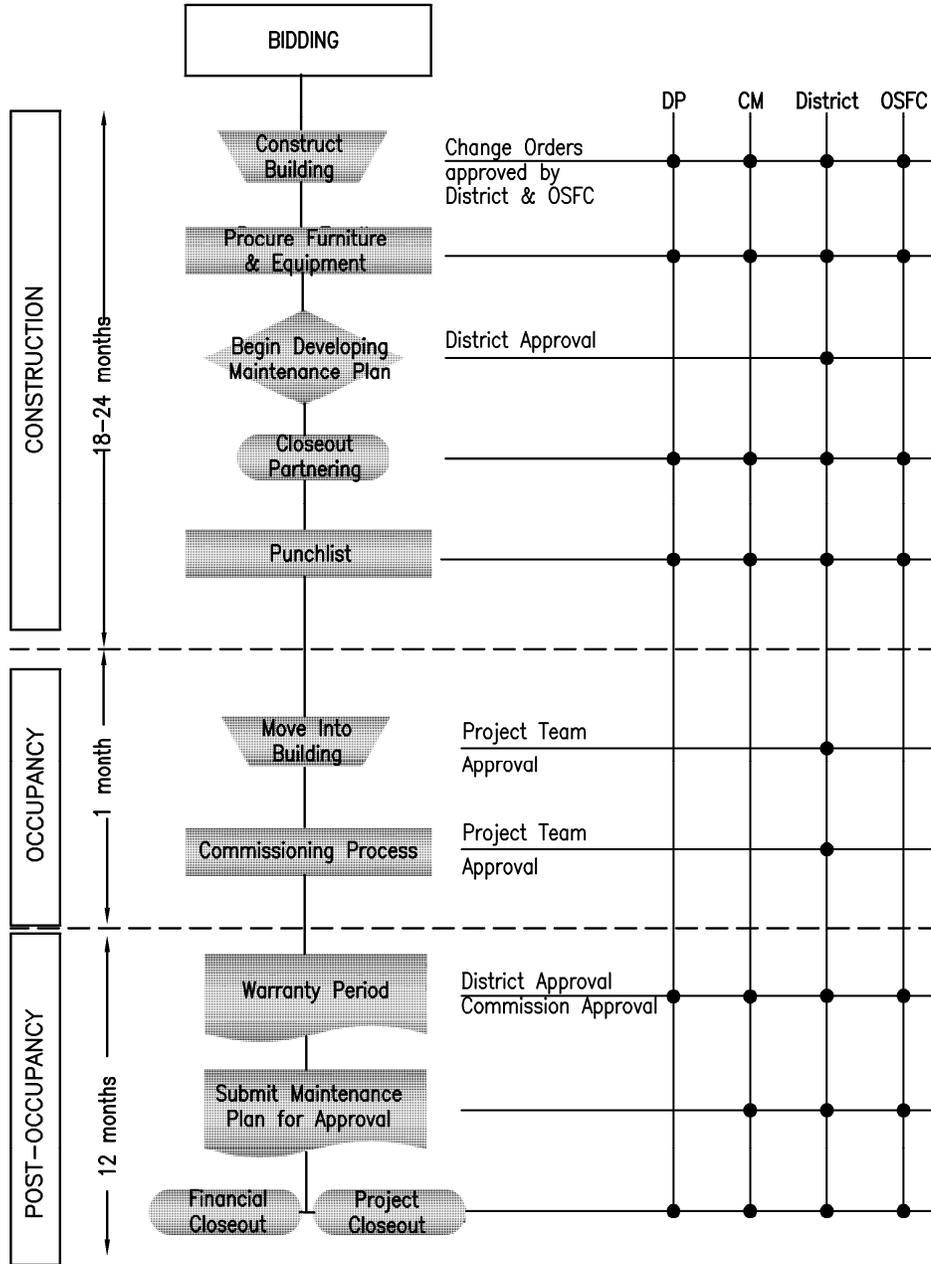
## B. SUMMARY OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS



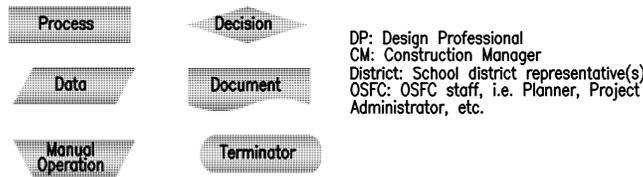
# OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

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



LEGEND



## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

#### 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.

##### **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 – ELPP or 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 facilities needs. Eligibility is open only to those districts with a ranking on the yearly Ohio Department of Education "Equity List" of lower than the **75<sup>th</sup>** percentile. Districts that can be expected to be served by the CFAP within a 3-year period are ineligible to participate.

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

### 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. The Commission approves the district's agreement with the Design Professional.

#### 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

District:		County:		Area:		
Name:		Contact:				
Address:		Phone:				
Bldg. IRN:		Date Prepared:				
		Date Revised:				
Current Grades	9-12	Acreage:	12	CEFPI Appraisal Summary		
Proposed Grades	N/A	Teaching Stations:	31			
Current Enrollment	395	Classrooms:				
Projected Enrollment	N/A					
				<b>Section</b>	<b>Points Possible</b>	
					<b>Points Earned</b>	
					<b>Percentage</b>	
					<b>Rating Category</b>	
<b>Cover Sheet</b>						
1.0 The School Site				100	44	44%
2.0 Structural and Mechanical Features				200	109	55%
3.0 Plant Maintainability				100	51	51%
4.0 Building Safety and Security				200	97	49%
5.0 Educational Adequacy				200	82	41%
6.0 Environment for Education				200	88	44%
Commentary						
<b>Total</b>				<b>1000</b>	<b>471</b>	<b>47%</b>
C=Under Contract						
Handicapped Access						
Satisfactory						
Paints Repair						
Replacement						
Scheduled Construction						
Renovation Cost Factor						96.73%
Cost to Renovate (Cost Factor applied)						\$4,293,230.86
The Replacement Cost Per SF and the Renovate/Repair ratio are only provided when this summary is requested from a Master Plan.						
<b>FACILITY ASSESSMENT</b>		<b>Rating</b>	<b>Dollar Assessment</b>			
[IMAGE] A.	Heating System	1	\$0.00			
[IMAGE] B.	Roofing	3	\$148,280.00			
[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	\$117,830.00			
[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	2	\$165,858.30			
[IMAGE] X.	Construction Contingency / Non-Construction Cost	-	\$848,044.71			
<b>Total</b>			<b>\$4,348,456.26</b>			

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.

#### 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 buildings. 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)	Mechanicsburg High School (1950)	Mechanicsburg High School (1957)	Mechanicsburg High School (1976)	Sum	
Other: Membranes	\$148,280.00	ump sum		7,425 ft²	26,460 ft²	11,160 ft²	13,770 ft²	\$148,280.00	replace membrane roofs \$5.00 x 29656 SF
<b>Sum:</b>			\$148,280.00	\$148,280.00	\$0.00	\$0.00	\$0.00		

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

### 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:

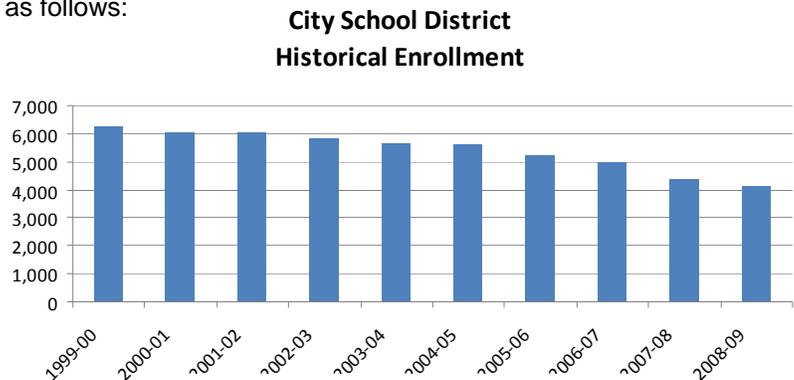
Over the past *ten* years, student enrollment in the \_\_\_\_\_ School District has **decreased** by **2,127** students in grades **Pre-K – 12**, including **ungraded, special education, career-technical, and** full-time JVS students. Total **Pre-K - 12** enrollment for the **2008-09** school year was **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 *historical* 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

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

#### 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					949
1992					1,302
1993					1,466
1994	N/A	N/A	N/A	N/A	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*
<b>Total</b>	<b>288</b>	<b>17</b>	<b>58</b>	<b>1,034</b>	<b>24,881</b>

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
<b>Total</b>	<b>65</b>			<b>52</b>	<b>13</b>

Source: \_\_\_\_\_ Township Planning and Zoning

**OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS**

CHAPTER 1: INTRODUCTION

**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.

**PLANNING, APPROVAL & FUNDING**

**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
<b>Pre-K - 12 Total</b>	<b>3,718</b>	<b>3,512</b>	<b>3,367</b>	<b>3,260</b>	<b>3,180</b>	<b>3,134</b>	<b>3,103</b>	<b>3,089</b>	<b>3,075</b>	<b>3,072</b>	<b>3,079</b>
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	62	33	33	29	28	25	22	20	21	20	20
<b>Grand Total</b>	<b>3,960</b>	<b>3,705</b>	<b>3,561</b>	<b>3,431</b>	<b>3,344</b>	<b>3,280</b>	<b>3,231</b>	<b>3,210</b>	<b>3,198</b>	<b>3,194</b>	<b>3,195</b>

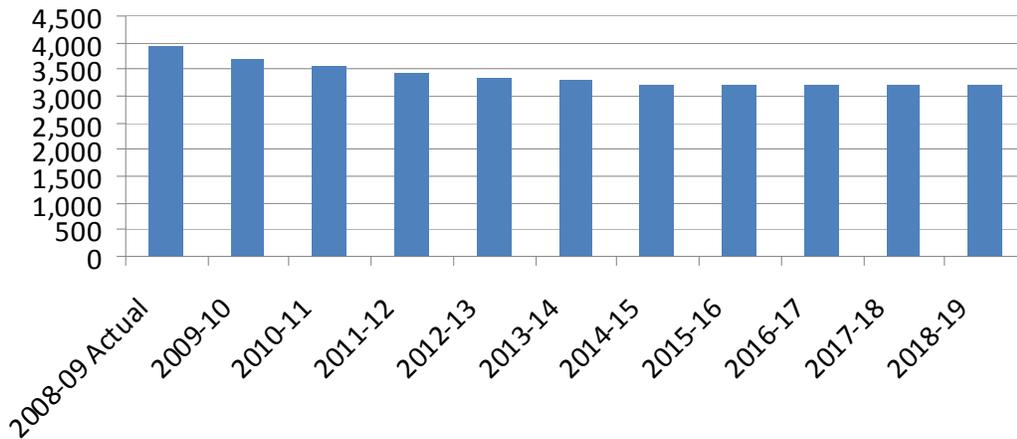
Source: DeJONG-HEALY

**City School District**  
**Master Planning Year Projected Enrollment**  
**Grade**

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
<b>Total</b>	<b>3,195</b>

Source: DeJONG-HEALY

**City School District**  
**Projected Enrollment**



## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

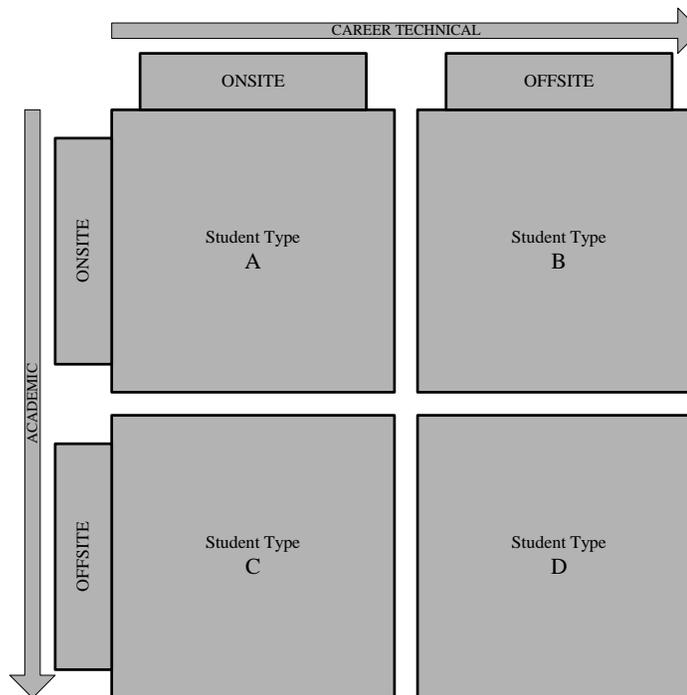
#### C. DETAILS OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS, continued

#### PLANNING, APPROVAL & FUNDING

##### 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

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

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

#### Develop Enrollment Study for a Career-Technical School, continued

An Enrollment Projections Report will generally include the following information:

##### **Historical Enrollment**

For example:

Over the past three years, student enrollment in the \_\_\_\_\_ Joint Vocational School District has decreased by 41 students in grades 11 and 12. The total enrollment for the **2008-09** school year was 303 11<sup>th</sup> and 12<sup>th</sup> grade students.

The following table and graph illustrate the 11-12-enrollment history from **2006-07 through 2008-09**.

_____ JVS 3-YEAR HISTORICAL ENROLLMENT BY GRADE			
Grade	06-07	07-08	08-09
11	168	196	174
12	111	137	128
<b>Total</b>	<b>279</b>	<b>333</b>	<b>303</b>

The report itemizes historic enrollment by grade and by program area. For example, grade 11 might be:

TOTAL 3-YEAR HISTORICAL CAREER-TECHNICAL SCHOOL ENROLLMENT [11 GRADE ONLY]				
Program	Subject Code	06-07	07-08	08-09
Administration/ Office Technology	14.0300	20	9	9
Agriculture/ I.E.	01.0300	14	12	9
Auto Technology	17.0302	15	19	24
Carpentry	17.1001	15	13	21
Cosmetology	17.2602	21	18	20
Criminal Justice	17.2802	10	13	9
Diversified Health Occupations	07.0998	11	21	21
Early Childhood Education & Care	09.0201	20	9	14
Graphics Occupations	17.1900	7	19	14
Machine Tool Operation	17.2303	14	19	14
Marketing	04.0800			
Welding & Cutting	17.2306	10	13	10
Source: _____				

PLANNING, APPROVAL & FUNDING

# OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

## CHAPTER 1: INTRODUCTION

### 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.

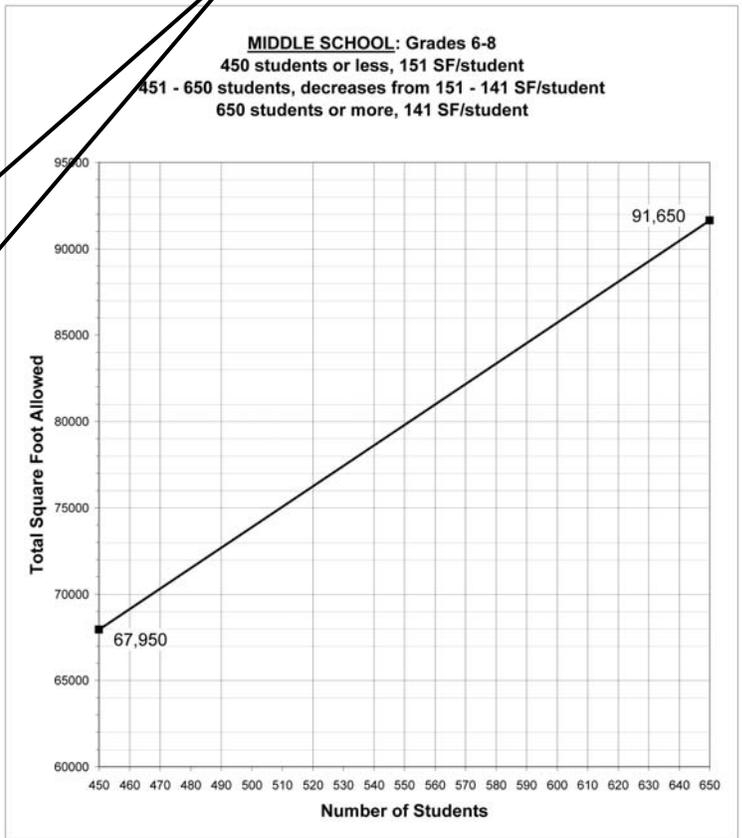
The square footage for each school is then multiplied by the allowable cost per square foot for that school level and school size (data found in Section 1200 of the Design Manual). All buildings in the district are aggregated to determine the overall budget for the Master Facilities Plan.

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

MIDDLE SCHOOLS  
SQUARE FOOT ALLOWANCE

CHAPTER 2: BRACKETING

Enter # of students	500
SF/student	147.75
Total SF for building	73,875



PLANNING, APPROVAL & FUNDING

# OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

## CHAPTER 1: INTRODUCTION

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

PLANNING, APPROVAL & FUNDING

#### 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.

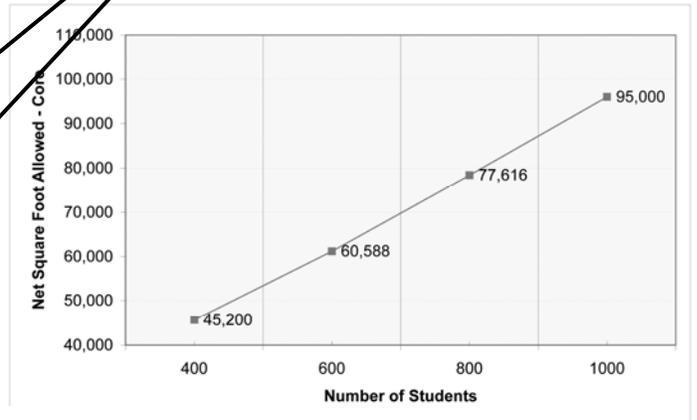
To determine the maximum gross core square footage for the Core Spaces enter the number of students.

CAREER-TECHNICAL SCHOOLS  
GROSS SQUARE FOOT MAXIMUM - CORE SPACES  
CHAPTER 2: BRACKETING

Enter # of Students	<input type="text" value="900"/>
SF/Student	95.90
Gross SF for Core Spaces	86,308

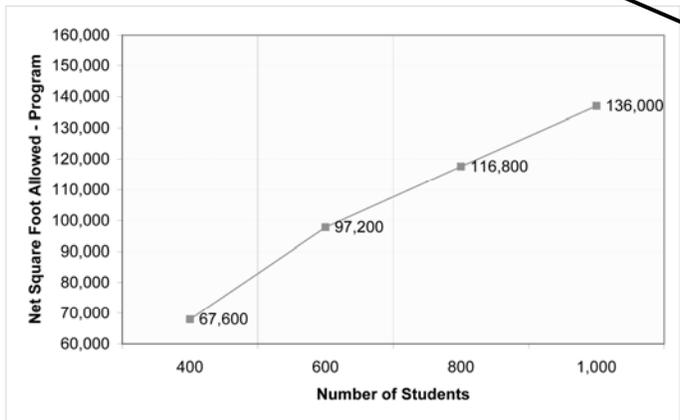
Career-Technical School	
400 students or less,	113 SF/student
1,000 students or more,	95 SF/student



CHAPTER 2: BRACKETING  
CAREER-TECHNICAL SCHOOLS  
GROSS SQUARE FOOT MAXIMUM - PROGRAM SPACES

Enter # of Students	<input type="text" value="900"/>
SF/Student	140.44
Gross SF for Program Spaces	126,400

Career-Technical School	
400 students or less,	169 SF/student
1000 students or more,	136 SF/student



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

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

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

#### PLANNING, APPROVAL & FUNDING

##### 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 use the highest enrollment in the preceding 3 years for 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.

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

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

**PLANNING, APPROVAL & FUNDING**

#### **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

## CHAPTER 1: INTRODUCTION

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

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

**PLANNING, APPROVAL & FUNDING**

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

Building	New Comprehensive HS
Program	New High
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
CEFP Rating	
Existing ft <sup>2</sup>	
Cost/ft <sup>2</sup> (DM)	
Cost to Replace	\$0.00
Cost to Renovate	
Reprogramming	\$0.00
Renovate/Replace	
Right Replacement	
Right Ratio	
Addition Required	No
<b>New ft<sup>2</sup></b>	
<b>Elementary (PK-5)</b>	
Projected Enrollment	
ft <sup>2</sup> /Student	
ft <sup>2</sup> Required	
<b>Middle (6-8)</b>	
Projected Enrollment	
ft <sup>2</sup> /Student	
ft <sup>2</sup> Required	
<b>High (9-12)</b>	
Projected Enrollment	541
ft <sup>2</sup> /Student	188.00
ft <sup>2</sup> Required	99,906
<b>Career Technical Core Space</b>	
Projected Enrollment	345
ft <sup>2</sup> /Student	96.04
ft <sup>2</sup> Required	33,133.8
Total ft <sup>2</sup> Required	122,939.8
ft <sup>2</sup> Existing	
Oversized ft <sup>2</sup>	
Less Oversized ft <sup>2</sup>	
CT ft <sup>2</sup> Existing	
CT ft <sup>2</sup> Not Programmed	
Less CT ft <sup>2</sup>	
Addition ft <sup>2</sup>	122,940
Cost per ft <sup>2</sup>	see below
<b>Total Addition Cost</b>	
<b>Cost to Rebuild</b>	
<b>Elementary (PK-5)</b>	
Total ft <sup>2</sup> Required	
Cost/ft <sup>2</sup> (DM)	
Cost to Rebuild	\$0.00
<b>Middle (6-8)</b>	
Total ft <sup>2</sup> Required	
Cost/ft <sup>2</sup> (DM)	
Cost to Rebuild	\$0.00
<b>High (9-12)</b>	
Total ft <sup>2</sup> Required	122,838.8
Cost/ft <sup>2</sup> (DM)	\$203.80
Cost to Rebuild	\$25,030,543.28
<b>Career Technical Program Space</b>	
CT Existing ft <sup>2</sup>	
CT New ft <sup>2</sup>	37,928.32
CT Total ft <sup>2</sup>	37,928
CT Program Total	\$7,240,190.00
Total Proposed ft <sup>2</sup>	180,888
Total to Rebuild	\$25,030,543.28
<b>Total to Rebuild All Buildings</b>	
Cost to Renovate	\$0.00
Total Addition Cost	
Total to Renovate/Add	\$0.00
Total Career Technical	\$7,240,190.88
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	\$0.00
Co-Funded Project	\$32,270,734.16
Total Project Cost	\$32,270,734.16

Master Plan Name New Comprehensive HS  
 Rank 3899  
 School District XYZ Local School District  
 School District IRN 49999  
 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	Grade Configurations
PK	59	
K	208	PK-12 2641 541 2100
1	221	PK-5 1400 0 1400
2	218	8 700 0 700
3	223	9-12 541 541 0
4	228	9 2100
5	244	6-12 1241
6	209	CT 345 345 0
7	254	
8	241	
9	213	
10	220	
11	46	
12	58	
CT Low Bay Comprehensive	238	
CT High Bay Comprehensive	107	
<b>Total</b>	<b>2886</b>	

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 preference in the Energy and Atmosphere category).

Enrollment projections summary

**OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS**

CHAPTER 1: INTRODUCTION

**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
<b>Program Type 1</b>													
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
<b>Program Type 6</b>													
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
<b>Building Services Spaces</b>													
		Existing Indoor SF							Proposed New Indoor SF			Cost(\$211.56)	Final SF
Mechanical Electrical 5%		0							1,435.70			\$303,736.69	1,435.70
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
<b>Building Gross Square Footage</b>													
		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
<b>POR Totals</b>													
		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
<b>Total</b>		<b>0</b>							<b>37,928.32</b>			<b>\$7,240,190.88</b>	<b>37,928</b>

POR Worksheet

PLANNING, APPROVAL & FUNDING

**OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS**  
**CHAPTER 1: INTRODUCTION**

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

<b>SF per Student</b>		<b>Number of Low Bay Students:</b>		238	
<b>POR SF/Student</b>	109.94	(not to exceed Maximum Allowable)	<b>Number of High Bay Students:</b>	107	
<b>Maximum Program SF/Student</b>	109.94	(Maximum Allowable)	<b>Number of High School Students:</b>	541	
<b>OSDM Bracketed SF/Student</b>	141.15		<b>Funded Programs Low Bay: 50:1</b>	4	
			<b>Funded Programs High Bay 30:1</b>	3	
			<b>Low Bay Programs Requiring Funds :</b>	4	
			<b>High Bay Programs Requiring Funds :</b>	3	
<b>Total POR SF</b>	37,928		<b>Total POR SF</b>	37,928	
<b>Maximum Program SF</b>	37,929		<b>Maximum Program SF</b>	37,929	
<b>OSDM Bracketed SF</b>	48,697		<b>OSDM Bracketed SF</b>	48,697	
<b>POR Planner data</b>					
<b>Cost Set: 2008</b>					
<b>Program Type 1</b>					
<b>14.0300 Administrative/Office Technology &lt; housed in new space</b>					
<b>Related Space</b>	<b>Funded Square Feet</b>	<b>Existing Square Feet</b>	<b>Proposed New Square Feet</b>	<b>Cost Per Square Foot</b>	<b>Total</b>
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
<b>Total:</b>	<b>1,520</b>	<b>0</b>	<b>1,200</b>		<b>\$250,668.00</b>
Reprogrammed SF:					
Comments:					
<b>14.0800 Business Management &lt; housed in new space</b>					
<b>Related Space</b>	<b>Funded Square Feet</b>	<b>Existing Square Feet</b>	<b>Proposed New Square Feet</b>	<b>Cost Per Square Foot</b>	<b>Total</b>
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
<b>Total:</b>	<b>1,520</b>	<b>0</b>	<b>1,200</b>		<b>\$282,504.00</b>
Reprogrammed SF:					
Comments:					
<b>14.0210 Information Support and Services &lt; housed in new space</b>					
<b>Related Space</b>	<b>Funded Square Feet</b>	<b>Existing Square Feet</b>	<b>Proposed New Square Feet</b>	<b>Cost Per Square Foot</b>	<b>Total</b>
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
<b>Total:</b>	<b>1,520</b>	<b>0</b>	<b>1,320</b>		<b>\$276,962.40</b>
Reprogrammed SF:					
Comments:					
<b>14.0240 Interactive Media &lt; housed in new space</b>					
<b>Related Space</b>	<b>Funded Square Feet</b>	<b>Existing Square Feet</b>	<b>Proposed New Square Feet</b>	<b>Cost Per Square Foot</b>	<b>Total</b>
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
<b>Total:</b>	<b>1,520</b>	<b>0</b>	<b>1,460</b>		<b>\$306,337.20</b>
Reprogrammed SF:					
Comments:					
<b>Program Type 6</b>					
<b>17.0301 Auto Collision Repair &lt; housed in new space</b>					
<b>Related Space</b>	<b>Funded Square Feet</b>	<b>Existing Square Feet</b>	<b>Proposed New Square Feet</b>	<b>Cost Per Square Foot</b>	<b>Total</b>
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

**OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS**  
 CHAPTER 1: INTRODUCTION

**(Program of Requirements, continued)**

**PLANNING, APPROVAL & FUNDING**

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	\$51,780.80
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
<b>Total:</b>	<b>7,608</b>	<b>0</b>	<b>7,608</b>		<b>\$1,459,062.24</b>
Reprogrammed SF:					
<b>Comments:</b>					
<b>17.0302 Auto Technology &lt; housed in new space</b>					
<b>Related Space</b>	<b>Funded Square Feet</b>	<b>Existing Square Feet</b>	<b>Proposed New Square Feet</b>	<b>Cost Per Square Foot</b>	<b>Total</b>
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
<b>Total:</b>	<b>9,068</b>	<b>0</b>	<b>9,068</b>		<b>\$1,578,013.36</b>
Reprogrammed SF:					
<b>Comments:</b>					
<b>17.2302 Precision Machining &lt; housed in new space</b>					
<b>Related Space</b>	<b>Funded Square Feet</b>	<b>Existing Square Feet</b>	<b>Proposed New Square Feet</b>	<b>Cost Per Square Foot</b>	<b>Total</b>
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
<b>Total:</b>	<b>6,858</b>	<b>0</b>	<b>6,858</b>		<b>\$1,137,262.14</b>
Reprogrammed SF:					
<b>Comments:</b>					

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

#### 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

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**Draft**

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

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:

	<u>Worth of Local Share</u>	
Step 4:	\$	<u>4,210,694</u>
minus Step 2:	\$	<u>-</u>
Total	\$	<u>4,210,694</u>

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

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

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

STATE	\$	<u>23,586,780</u>	79%
LOCAL	\$	<u>6,270,000</u>	21%
TOTAL	\$	<u>29,856,780</u>	

\*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%).

**OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS**

CHAPTER 1: INTRODUCTION

**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
<b>Draft</b>	
Step 1. Project Cost	\$ <u>32,721,546</u>
Step 2. Required percentage of the project costs equals (basic project costs x 25 percentile)**	25.00% \$ <u>8,180,387</u>
Step 3. Amount of Bond issue or Alternative Funding must be the greater of:	
a. <b>A required percentage of the project costs</b>	\$ <u>8,180,387</u>
b. Therefore, the district's share would be for	\$ <u>8,180,387</u>
STATE \$	<u>24,541,160</u> 75%
LOCAL \$	<u>8,180,387</u> 25%
TOTAL \$	<u>32,721,546</u>

(\*\*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**

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.**

**PLANNING, APPROVAL & FUNDING**

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

#### 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 by the school district 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 does the district enter into fee negotiations. OSFC must approve the DP's contract.

##### **CM Selection and Contract**

While the Architect is selected by the District, the selection of the Construction Management Firm is made by the OSFC with input from the District. 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 OSFC.

##### **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.

##### **Select Maintenance Plan Advisor (MPA)**

**The Maintenance Plan Advisor, employed directly by the District at the start of the project, will act as a change agent to help prepare the facility staff for the construction project and will assist in the development of the facility operations and maintenance plan, through the course of the project and post occupancy period.**

#### 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.**

# OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

## CHAPTER 1: INTRODUCTION

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

#### 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 it's stakeholders in developing/reviewing it's 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.

DESIGN

#### K-12 BRACKETING EXAMPLE

#### SUMMARY OF SPACES

#### PROGRAM AREA

Sample School District, SAMPLE MIDDLE SCHOOL  
ACADEMIC CORE SPACES  
M-AC

The following is an example of three sizes of middle schools. The examples are intended to assist in the development of the summary of spaces.

EXAMPLE Space	450 Students			600 Students			750 Students		
	Qty	SF	Area	Qty	SF	Area	Qty	SF	Area
M-AC-1 Middle School Classroom	15	900	13,500	18	900	16,200	24	900	21,600
M-AC-2 Project Laboratory	3	1,100	3,300	6	1,100	6,600	6	1,100	6,600
M-AC-3 Teacher Prep Area/Workroom	3	300	900	3	300	900	3	300	900
M-AC-4 Individual Restroom	3	50	150	3	50	150	3	50	150
M-AC-5 Instructional Material Storage	3	200	600	3	200	600	3	200	600
M-AC-6 Small Group Room	0	150	0	0	150	0	0	150	0
<b>Academic Core Total</b>			<b>18,450</b>			<b>24,450</b>			<b>36,000</b>

WORKSHEET Space	New SF			Existing SF			TOTAL SF		
	Qty	SF	Area	Qty	SF	Area	Qty	SF	Area
M-AC-1 Middle School Classroom	0	0	0	0	0	0	0	0	0
M-AC-2 Project Laboratory	0	1,100	0	0	0	0	0	1,100	0
M-AC-3 Teacher Prep Area/Workroom	0	300	0	0	0	0	0	300	0
M-AC-4 Individual Restroom	0	50	0	0	0	0	0	50	0
M-AC-5 Instructional Material Storage	0	200	0	0	0	0	0	200	0
M-AC-6 Small Group Room	0	150	0	0	0	0	0	150	0
<b>Academic Core Total</b>			<b>0</b>			<b>0</b>			<b>0</b>

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.

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.

#### CHAPTER 2: BRACKETING

Sample School District, SAMPLE MIDDLE SCHOOL  
SUMMARY OF SPACES

The following is an example of three sizes of middle schools. The examples are intended to assist in the development of the summary of spaces.

EXAMPLE	450 Students		600 Students		750 Students	
	Qty	SF	Qty	SF	Qty	SF
<b>Grade Configuration</b>						
Number of Students	450	450	600	600	750	750
Square Feet Per Student	151.00	151.00	151.00	151.00	151.00	151.00
<b>Total Gross Square Feet Funded</b>	<b>67,950</b>	<b>67,950</b>	<b>90,720</b>	<b>90,720</b>	<b>113,250</b>	<b>113,250</b>
<b>PROGRAM AREA</b>						
M-AC Academic Core Spaces	18,450	24,450	24,450	36,000	36,000	36,000
M-SE Special Education Spaces	1,750	2,250	2,250	2,250	2,250	2,250
M-AD Administrative Spaces	2,272	2,749	2,749	2,749	2,749	2,749
M-MC Media Center Spaces	3,756	4,473	4,473	4,473	4,473	4,473
M-VA Visual Arts Spaces	1,400	1,450	1,450	1,450	1,450	1,450
M-MJ Music Spaces	1,600	2,900	2,900	2,900	2,900	2,900
M-TE Technology Education Spaces	1,450	1,450	1,450	1,450	1,450	1,450
M-FCS Family and Consumer Science Spaces	0	1,200	1,200	1,200	1,200	1,200
M-PE Physical Education Spaces	9,300	10,325	11,100	11,100	11,100	11,100
M-SD Student Dining Spaces	4,150	4,250	4,250	4,250	4,250	4,250
M-FS Food Service Spaces	7,790	2,315	2,840	2,840	2,840	2,840
M-CU Custodial Spaces	500	400	500	500	500	500
M-BS Building Services	14,900	18,875	23,325	23,325	23,325	23,325
<b>Facility Total</b>	<b>67,217</b>	<b>77,229</b>	<b>85,270</b>	<b>85,270</b>	<b>85,270</b>	<b>85,270</b>
Construction Factor	0.11	0.11	0.11	0.11	0.11	0.11
<b>Gross Square Feet Developed</b>	<b>67,951</b>	<b>67,951</b>	<b>85,726</b>	<b>85,726</b>	<b>106,740</b>	<b>106,740</b>

WORKSHEET	New SF			Existing SF			TOTAL SF		
	Qty	SF	Area	Qty	SF	Area	Qty	SF	Area
Enter Grade Configuration									
Enter Student Capacity									
Square Feet Per Student from Page 2000-3									
<b>Total Gross Square Feet Funded</b>									
<b>SELECT ONE</b> <input type="radio"/> Single Story Building <input type="radio"/> Multi-story Building									
Plus Vertical Circulation (for Multi-story Buildings) Area Allowable									
<b>Total Adjusted POR Gross Square Footage</b>									
<b>PROGRAM AREA</b>									
M-AC Academic Core Spaces	0	0	0	0	0	0	0	0	0
M-SE Special Education Spaces	0	0	0	0	0	0	0	0	0
M-AD Administrative Spaces	0	0	0	0	0	0	0	0	0
M-MC Media Center Spaces	0	0	0	0	0	0	0	0	0
M-VA Visual Arts Spaces	0	0	0	0	0	0	0	0	0
M-MJ Music Spaces	0	0	0	0	0	0	0	0	0
M-TE Technology Education Spaces	0	0	0	0	0	0	0	0	0
M-FCS Family and Consumer Science Spaces	0	0	0	0	0	0	0	0	0
M-PE Physical Education Spaces	0	0	0	0	0	0	0	0	0
M-SD Student Dining Spaces	0	0	0	0	0	0	0	0	0
M-FS Food Service Spaces	0	0	0	0	0	0	0	0	0
M-CU Custodial Spaces	0	0	0	0	0	0	0	0	0
M-BS Building Services	0	0	0	0	0	0	0	0	0
<b>Facility Total</b>									
Construction Factor (11% multiplied by the facility total)	0.11	0	0	0	0	0	0	0	0
<b>Actual Gross Square Feet Developed</b>									
Minus existing Overlap Area from Master Plan									
<b>Adjusted Existing Area</b>									
<b>Total Adjusted Gross Square Footage Developed (without Overlap Areas)</b>									
Difference of SF developed from SF allowable									

NOTES:  
1 Existing Gross Square Feet taken from assessment report.  
2 Overlap Area also taken from assessment report.  
\* The Existing SF column is only used in projects where there are to be building additions.

# OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

## CHAPTER 1: INTRODUCTION

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

#### Develop Program of Requirements (POR), continued

**DESIGN**

#### 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  
SUMMARY OF SPACES EXAMPLE

CHAPTER 2: BRACKETING

The following is an example of four sizes of Career-Technical Schools. The examples are intended to assist in the development of the summary of spaces.

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	116,000	136,000
Total Gross SF Funded	112,800	157,788	194,416	231,000

Core Spaces				
CT-AC Academic Core	14,400	20,500	26,850	33,330
CT-SE Spec. Ed./Student Svc.	4,000	4,000	5,170	5,290
CT-AD Administration	3,020	3,900	4,900	6,160
CT-MC Media Center	2,820	4,120	4,890	6,040
CT-SD Student Dining	4,480	5,730	7,447	9,504
CT-FS Food Service	1,615	2,315	3,015	3,855
CT-CU Custodial	300	400	500	500
CT-GS General Services	3,091	4,228	5,110	6,376
<b>Net Core Space</b>	<b>33,726</b>	<b>45,193</b>	<b>57,882</b>	<b>71,056</b>
Mechanical/Electrical Space (6.9%)	2,327	3,118	3,994	4,903
Corridors (14%)	4,722	6,327	8,103	9,948
Total Core Space	40,775	54,638	69,979	85,906
Construction Factor (11%)	4,485	6,010	7,698	9,450
<b>Gross Core Space Developed</b>	<b>45,260</b>	<b>60,648</b>	<b>77,677</b>	<b>95,356</b>
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	4,020	2,310	4,020	4,020
CT-P3 Program Type 3	3,700	7,980	9,070	11,360
CT-P4 Program Type 4	8,355	14,465	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
<b>Net Program Space</b>	<b>50,550</b>	<b>73,146</b>	<b>87,782</b>	<b>102,076</b>
Mechanical/Electrical Space (5%)	2,528	3,657	4,389	5,104
Corridors (14%)	7,077	10,240	12,289	14,291
Total Program Space	60,155	87,044	104,461	121,470
Construction Factor (11%)	6,617	9,575	11,491	13,362
<b>Gross Program Space Developed</b>	<b>66,771</b>	<b>96,619</b>	<b>115,951</b>	<b>134,832</b>
Gross Program Space Co-Funded	67,500	97,200	116,800	136,000

<b>Total Gross SF Developed</b>	<b>112,031</b>	<b>157,267</b>	<b>193,628</b>	<b>230,188</b>
Total Gross SF Co-Funded	112,000	157,700	194,416	231,000
<b>Difference</b>	<b>769</b>	<b>521</b>	<b>788</b>	<b>812</b>

#### CAREER-TECHNICAL PROGRAM SPREADSHEET

*Ohio School Design Manual-CT*  
*Ohio School Facilities Commission* 2800 - 1 2009

School District Name, School Building Name  
LABORATORY AND SUPPORT SPACES  
CT-P2

CHAPTER 2: BRACKETING

WORKSHEET				
Laboratory Space		Quantity	SF	Area
<b>Animal Bioscience</b>	01.0150		1500	0
Biotechnology	07.4850		1500	0
<b>Biotechnology for Food, Plant, Animal Science</b>	01.2000		1500	0
Chemical Laboratory Assisting	17.2000		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
<b>Energy Science</b>	17.1600		1500	0
Exercise Sci/Sports&Rec Health Care	07.0410		1500	0
<b>Health Information Management Services</b>	07.4890	1	1500	1500
Health Support Pathway	07.4840		1500	0
Health Unit Coordinator	07.0913		1500	0
Home Health	07.0307		1500	0
Industrial Laboratory Assisting	17.2004		1500	0
Medical Laboratory Technology	07.0203		1500	0
Pharmacy Assisting	07.0912		1500	0
<b>Plant Bioscience</b>	01.0155		1500	0
Practical Nursing	07.0302		1500	0
Therapeutic Pathway	07.4830		1500	0
<b>Total Lab Spaces</b>		0		
<b>Related Space</b>				
CT-P2-2 Office			120	0
CT-P2-3 Storage			200	0
CT-P2-4 Changing Room			490	0
<b>Total Program Type 2</b>				1,500

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

### CHAPTER 1: INTRODUCTION

#### 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, 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. **The Project Team should determine if Model Bidder Criteria will be applied to the project.**

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

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#### 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.

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

CHAPTER 1: INTRODUCTION

### 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.

#### **Select Maintenance Plan Advisor (MPA)**

##### **Develop Maintenance Plan**

The District Maintenance Plan is normally prepared by a Maintenance Plan Advisor (MPA). Aided by a comprehensive web tool, the MPA 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.

#### **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.

OCCUPANCY

## OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS

### CHAPTER 1: INTRODUCTION

#### 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.

## **OVERVIEW OF THE PLANNING, DESIGN, AND CONSTRUCTION PROCESS**

CHAPTER 1: INTRODUCTION

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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 1: INTRODUCTION

### 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

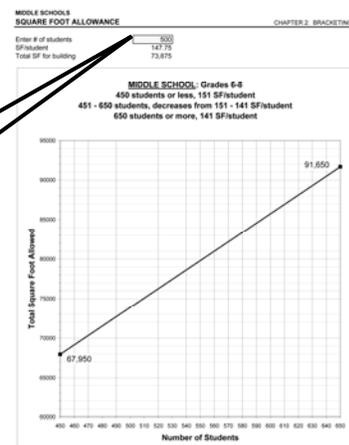
- The formula for determining the overall square footage of a school facility is:

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 to 10% 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 1/10<sup>th</sup> 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.***

**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.*

**EXECUTIVE SUMMARY**  
**DESIGN MANUAL ORGANIZATION**

**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  
SUMMARY OF SPACES EXAMPLE

CHAPTER 2: BRACKETING

The following is an example of four sizes of Career Technical Schools.  
The examples are intended to assist in the development of the summary of spaces.

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Mechanical/Electrical Space (5.9%)	2,321	3,118	3,994	4,993
Corridors (14%)	4,722	6,327	8,103	9,948
Total Core Space	40,775	54,638	69,979	86,009
Construction Factor (11%)	4,485	6,013	7,698	9,464
<b>Gross Core Space Developed</b>	<b>45,260</b>	<b>60,651</b>	<b>77,677</b>	<b>95,473</b>
Gross Core Space Co-Funded	45,200	60,588	77,616	95,000

Program Spaces				
CT-PT Program Type 1	4,660	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	7,980	9,010	11,360
CT-P4 Program Type 4	8,355	14,465	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	10,032
<b>Net Program Space</b>	<b>60,550</b>	<b>73,146</b>	<b>87,782</b>	<b>102,076</b>
Mechanical/Electrical Space (5%)	2,528	3,657	4,389	5,104
Corridors (14%)	7,077	10,249	12,289	14,281
Total Program Space	60,155	87,044	104,461	121,470
Construction Factor (11%)	6,617	9,573	11,491	13,363
<b>Gross Program Space Developed</b>	<b>66,772</b>	<b>96,618</b>	<b>115,951</b>	<b>134,833</b>
Gross Program Space Co-Funded	67,600	97,200	116,800	136,000

Total Gross SF Developed	112,031	157,267	193,628	230,310
Total Gross SF Co-Funded	112,800	157,788	194,416	231,000
Difference	769	521	788	690

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**EXECUTIVE SUMMARY**  
**DESIGN MANUAL ORGANIZATION**

CHAPTER 1: INTRODUCTION

**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	- <b>Safe Routes To Schools</b>	- <b>Soil Characteristics</b>
- Aesthetic Considerations	- <b>Safety</b>	- <b>Testing</b>
- Codes and Zoning	- <b>Site preparation</b>	- <b>Topography</b>
- Easements/Right-of-way	- <b>Site Size</b>	- <b>Vehicle Access</b>
- <b>Environmental Restrictions</b>	- <b>Site Utilities</b>	- <b>Walkability</b>
- Site design requirements detail design considerations and provide diagrams for important site elements, including:
 

- a. Vehicular circulation	- f. Sanitary sewerage	- l. Mechanical/electrical yard
- b. Pedestrian circulation	- g. Directional signage	- m. Landscaping
- c. Emergency vehicle access	- h. Physical education	- n. Site furnishings
- d. Bicycle circulation	- i. Playgrounds	- o. Exterior security provisions
- e. Storm drainage	- j. Fencing	
	- k. Lighting/ <b>Light Pollution</b>	
- 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**

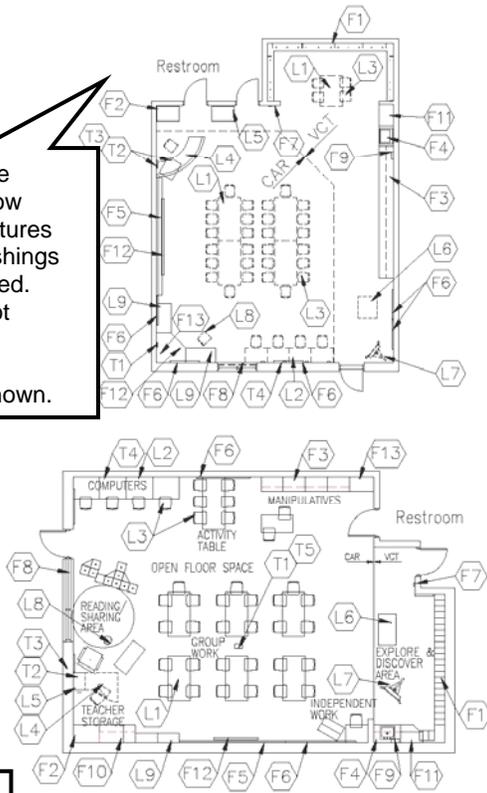
The information in this diagram is referred to as a *space plate*. There is a space plate for each room in each program area in each school level.

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

**PRE-K/KINDERGARTEN CLASSROOM  
E-AC-1**

CHAPTER 4: ELEMENTARY SCHOOL

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:**
- 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.

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.

- SPATIAL RELATIONSHIPS:**
- Near other pre-k/kindergarten classroom
  - 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

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:**
- Uniform lighting
  - Natural light opening equal to minimum 5% of floor area, with an operable vent
  - Environmental sound control – wall minimum STC 50 ceiling minimum CAC 35, NRC 0.70
  - Resilient and stain-resistant floor covering
  - Ergonomically appropriate furniture and equipment heights

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.

**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.

**EXECUTIVE SUMMARY  
DESIGN MANUAL ORGANIZATION**

**CHAPTER 1: INTRODUCTION**

**Chapter 4: Elementary 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:  
E=Elementary  
AC=Academic Core  
1=Space Plate #1

**PRE-K/KINDERGARTEN CLASSROOM  
E-AC-1**

**CHAPTER 4: ELEMENTARY SCHOOL**

	Spec. Ref.#	FEATURES <sup>1</sup> :	Spec. Ref.#
<b>FINISHES<sup>1</sup>:</b>		<b>Fixed Items:</b>	
Flooring:		F1 Open casework - student coats and personal items, ( <b>cubbies</b> ) with <b>shelf</b> above	123550
Combination carpet with vinyl composition tile	096816 096500	F2 3' of tall wardrobe w/file drawers, optional	123550
Optional: All vinyl composition tile, linoleum, <i>ET</i> , sheet vinyl, or rubber	096516	F3 15'-18' of base & wall cabinets	123550
Base:		F4 3' sink base cabinet	123550
Resilient base	096500	F5 12'-16' of chalk/marker board	101100
Ceiling:		F6 16'-20' of tack board or tackable wall surface or combination	101100
Suspended, acoustical	095113	F7 Pencil sharpener support	062000
Walls:		F8 Window with integral blinds	085113
Painted concrete masonry units	042000/099100	F9 Towel dispenser (optional)	102813
		F10 36"- 42" high storage cabinet	123550
		F11 3' of tall cabinets (could have tote trays, optional)	123550
		F12 Projection screen (optional)	115213
		F13 Technology support casework (could be mobile)	123550
		<b>Fire Suppression:</b>	
		Fire suppression system	211000
		<b>Plumbing:</b>	
		Sink with drinking fountain	224000
		Plumbing connections	224000/221116/221119
		<b>HVAC:</b>	
		Supply/return air system	Div. 23
		Independent temperature control	230923
		<b>Electrical:</b>	
		Fluorescent lighting	265100
		Illumination level: See Table 8600-4	
		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
		<b>Communications:</b>	
		T1 1 video port	271533/271543
		T2 1 voice port and phone	271513/273113
		T3 1 data port near teacher workstation	271513
		T4 4 data ports (minimum) for student use	271513
		Central sound system	275123
		Clock	275313
		Sound reinforcement system	275127
		T5 Overhead projector	274119
		<b>Electronic Safety and Security:</b>	
		Life safety devices per code	283111
Miscellaneous:			
N/A			

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 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)
  - Wastebasket
  - Pencil sharpener

**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.

**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.

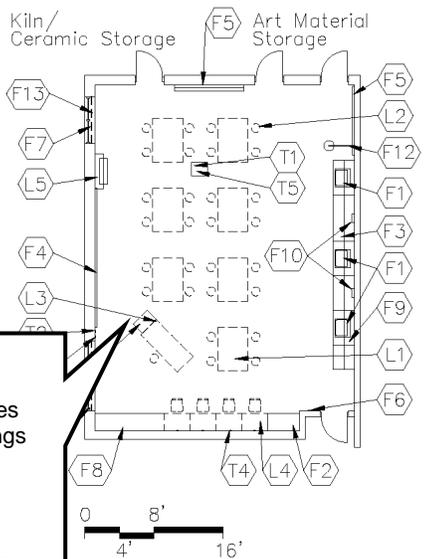
**Key Points**

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

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

CHAPTER 5: MIDDLE SCHOOL

ART ROOM  
M-VA-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:**

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

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.

**SPATIAL RELATIONSHIPS:**

- Near academic core classrooms
- Direct access to outdoors *or access through corridor*

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:**

- Uniform lighting
- Natural lighting opening equal to minimum 5% of floor area, with an operable vent
- Environmental sound control - wall minimum STC 50 ceiling minimum CAC 35, NRC 0.70
- Stain-resistant floor covering

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.

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.

**EXECUTIVE SUMMARY  
DESIGN MANUAL ORGANIZATION**

**CHAPTER 1: INTRODUCTION**

**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

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.

ART ROOM M-VA-1		CHAPTER 5: MIDDLE SCHOOL	
	Spec. Ref.#	FEATURES:	Spec. Ref.#
<b>FINISHES<sup>1</sup>:</b>			
<b>Flooring:</b>			
Vinyl composition tile, sealed concrete, ET, sheet vinyl, or rubber	096500 033000	<b>Fixed Items:</b>	
<b>Base:</b>		F1 3'-4' sink base cabinet, or several wash fountains	123550
Resilient base	096500	F2 3' of tall wardrobe with file drawers	123550
<b>Ceiling:</b>		F3 10'-12' of base cabinets	123550
Suspended, acoustical	095113	F4 12'-16' of tack board or tackable wall surface	101100
<b>Walls:</b>		F5 12'-16' of chalk/marker board	101100
Painted concrete masonry units	042000/099100	F6 Pencil sharpener support	062000
		F7 6'-10' of tall storage cabinets	123550
		F8 10'-12' of wall cabinets	123550
		F9 Towel dispenser (optional)	102813
		F10 Projection screen (optional)	115213
		F11 Technology support casework	123550
		F12 Emergency eyewash (recommended)	224000
		F13 Windows with integral blinds	085113
		<b>Fire Suppression:</b>	
		Fire suppression system	211000
		<b>Plumbing:</b>	
		Sinks with solids interceptor	224000
		Emergency eyewash connections	224500
		Plumbing connections	224000/221116/221119
		<b>HVAC:</b>	
		Supply/return air system	Div. 23
		Independent temperature control	230923
		Manually controlled general exhaust	Div. 23
		<b>Electrical:</b>	
		Fluorescent lighting	265100
		illumination level: See Table 8600-4	
		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
		<b>Communications:</b>	
		T1 1 video port	271533/271543
		T2 1 voice port and phone	271513/273113
		T3 1 data port near teacher workstation	271513
		T4 4 data ports (minimum) for student use	271513
		Clock	275313
		Central sound system	275123
		Sound reinforcement system	275127
		T5 Overhead projector	274119
		<b>Electronic Safety and Security:</b>	
		Life safety devices per code	283111

**NOTES:**  
1. Finishes/Features: Refer to Chapter 9 for specification references.

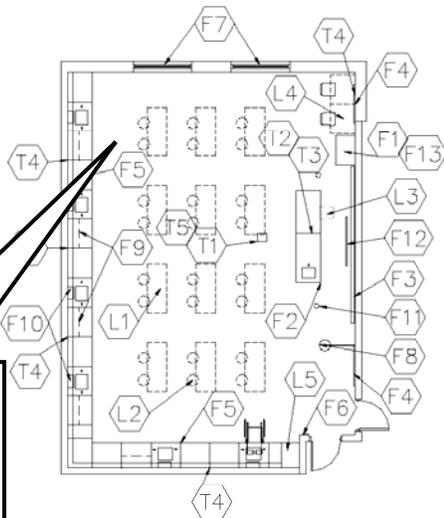
**Chapter 6: High School**

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**



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.

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:**

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

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.

**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

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:**

- Uniform lighting
- Natural light opening equal to minimum 5% of floor area, with an operable vent
- Environmental sound control - wall minimum STC 50 ceiling minimum CAC 35, NRC 0.70
- Higher than normal ventilation requirements
- Moisture- and stain-resistant finishes
- Chemical-resistant counter tops

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.

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.

**EXECUTIVE SUMMARY  
DESIGN MANUAL ORGANIZATION**

**CHAPTER 1: INTRODUCTION**

**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

<u>FINISHES<sup>1</sup>:</u>	Spec. Ref.#	<u>FEATURES<sup>1</sup>:</u>	Spec. Ref.#
<b>Flooring:</b>		<b>Fixed Items:</b>	
Vinyl composition tile, linoleum, rubber, <i>ET</i> , or sheet vinyl	096500	F1 3' of tall wardrobe with file drawers	123553
	096516	F2 Demonstration table/teacher desk	123553
		F3 10'-16' of chalk/marker board	101100
		F4 10'-16' of tack board	101100
		F5 40'-60' of lab casework with sinks	123553
<b>Base:</b>		F6 Pencil sharpener support	062000
Resilient base	096500	F7 Windows with integral blinds	085113
		F8 Emergency shower/eyewash	224000
<b>Ceiling:</b>		F9 18'-24' of wall cabinets	123553
Suspended, acoustical	095113	F10 Towel dispensers (optional)	102813
		F11 2 eye hooks for demonstrations(optional)	055000
<b>Walls:</b>		F12 Projection screen (optional)	115213
Painted concrete masonry units	042000/099100	F13 Technology support casework	123553
		<b>Fire Suppression:</b>	
		Fire suppression system	211000
		<b>Plumbing:</b>	
		Plumbing connections	224000/221116/221119
		Emergency shower/eyewash connections	224000
		Gas connections (optional)	226313
		Master shutoff for gas	226313
		Compressed air connections(optional)	221500
		<b>HVAC:</b>	
		Supply/return air system	Div. 23
		Independent temperature control	230923
		Manual exhaust	Div. 23
		<b>Electrical:</b>	
		Fluorescent lighting:	265100
		Illumination level: See Table 8600-4	
		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
		<b>Communications:</b>	
		T1 1 video port	271533/271543
		T2 1 voice port and phone	271513/273113
		T3 1 data port at demonstration table	271513
		T4 4 data ports (minimum) for student use	271513
		Clock	275313
		Central sound system	275123
		Sound reinforcement system	275127
		T5 Overhead projector	274119
		<b>Electronic Safety and Security:</b>	
		Life safety devices per code	283111

**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.

**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*.

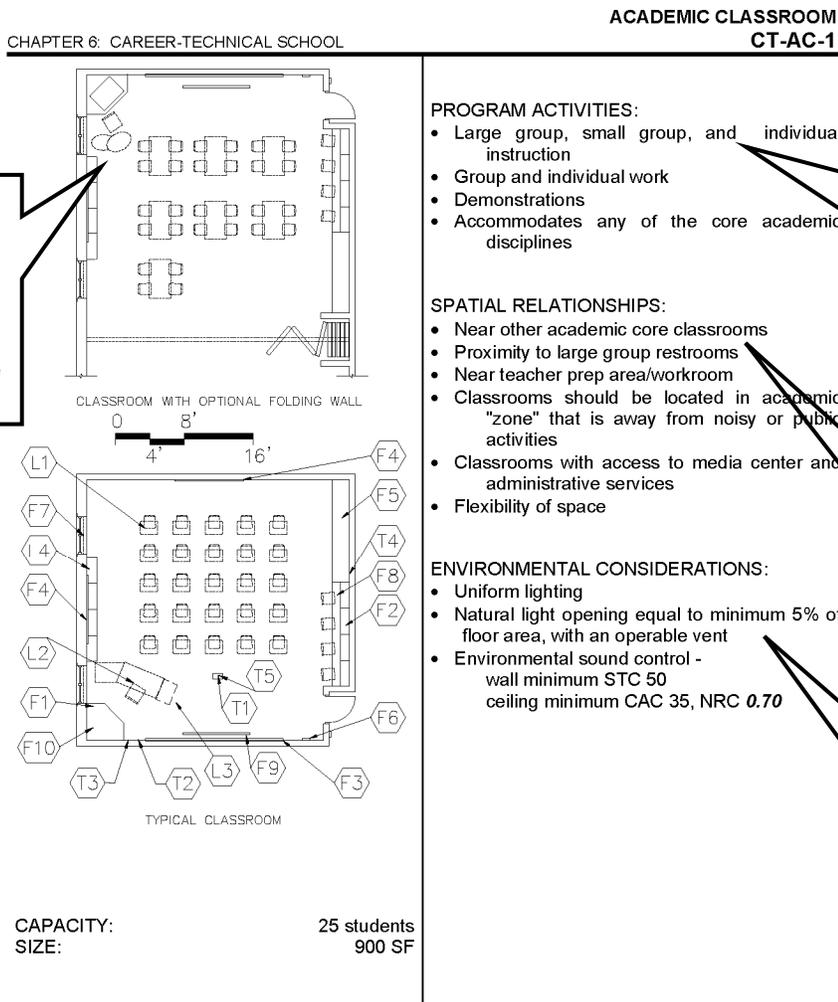
There is a space plate for each room in each program area and each program type.

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

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.

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.

**EXECUTIVE SUMMARY  
DESIGN MANUAL ORGANIZATION**

**CHAPTER 1: INTRODUCTION**

**Chapter 6: Career-Technical School**

**Key Points, continued**

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

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: CT=Career Tech AC=Academic Core 1=Space Plate #1

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.

ACADEMIC CLASSROOM CT-AC-1		CHAPTER 6: CAREER-TECHNICAL SCHOOL	
	Spec. Ref.#		Spec. Ref.#
<b>FINISHES<sup>1</sup>:</b>		<b>FEATURES<sup>1</sup>:</b>	
Flooring:		<b>Fixed Items:</b>	
Carpet	096816	F1 3' of tall wardrobe with file drawers	123550
Optional: Vinyl composition tile, linoleum, <i>ET</i> , sheet vinyl, or rubber	096516 096500	F2 Computer work surface (could be loose)	123550
Base:		F3 10'-16' of chalk/marker board	101100
Resilient base	096500	F4 10'-16' of tack board	101100
Ceiling:		F5 8'-12' of base & wall cabinets	123550
Suspended, acoustical	095113	F6 Pencil sharpener support	062000
Walls:		F7 Windows with integral blinds	085113
Painted concrete masonry units	042000/099100	F8 About 10' of wall cabinets	123550
		F9 Projection screen (optional)	115213
		F10 Technology support casework	123550
		<b>Fire Suppression:</b>	
		Fire suppression system	211000
		<b>Plumbing:</b>	
		N/A	
		<b>HVAC:</b>	
		Supply/return air system	Div. 23
		Independent temperature control	230923
		<b>Electrical:</b>	
		Fluorescent lighting:	265100
		Illumination level: See Table 8600-4	
		Multilevel switching	262726
		4 duplex receptacles	262726
		Double duplex receptacle adjacent to each data and video port	262726
		<b>Communications:</b>	
		T1 1 video port	271533/271543
		T2 1 voice port and phone	271513/273113
		T3 1 data port near teacher workstation	271513
		T4 4 data ports (minimum) for student use	271513
		Clock	275313
		Central sound system	275123
		Sound reinforcement system	275127
		T5 Overhead projector	274119
		<b>Electronic Safety and Security:</b>	
		Life safety devices per code	283111
		<b>Miscellaneous:</b>	
		M1 Operable partitions between classrooms are optional	102226

- 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.

## Chapter 6: Career-Technical School

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

CHAPTER 6: CAREER-TECHNICAL SCHOOL		ELECTRONICS AUTOMATION & ROBOTICS CT-P1-1	
<b>PROGRAM DESCRIPTION:</b>		<b>FEATURES<sup>1</sup>:</b>	Spec. Ref.#
<b>Electronics:</b> 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.		<b>Fixed Items:</b>	
		16' of chalk/marker board	101100
		8' of tack board	101100
		30' of base cabinets	123550
		30' of wall cabinets	123550
		12' of tall storage cabinets	123550
		Pencil sharpener support	062000
		Windows with integral blinds	085113
		Projection screen, 6'x8'	115213
<b>Automation &amp; Robotics:</b> 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).		<b>Fire Suppression:</b>	
		Fire suppression system	211000
<b>Program Type:</b> 1		<b>Plumbing:</b>	
		N/A	
<b>Size Requirements:</b> 1,800 SF Lab		<b>HVAC:</b>	
		Supply/return air system	Div. 23
		Independent temperature control	230923
<b>Lab Requirements:</b>		<b>Electrical:</b>	
		Fluorescent lighting, parabolic lenses:	265100
		Illumination level: See Table 8600-4	
		Multilevel switching	262726
		6 duplex receptacles	262726
		Double duplex receptacle adjacent to each data and video port	262726
<b>FINISHES:</b>		<b>Communications:</b>	
		1 video port	271533/271543
		1 voice port and phone	271513/273113
		1 data port near teacher workstation	271513
		26 data ports	271513
		Clock	275313
		Central sound system	275123
		Sound reinforcement system	275127
		Overhead projector	274119
<b>Flooring:</b>		<b>Electronic Safety and Security:</b>	
Carpet		Life safety devices per code	283111
Optional: vinyl composition tile, ET, sheet vinyl, or linoleum			
		<b>Miscellaneous:</b>	
		N/A	
<b>Base:</b>			
Resilient			
<b>Ceiling:</b>			
Suspended acoustical			
<b>Walls:</b>			
Painted concrete masonry units			
<b>LOOSE FURNISHINGS:</b>			
(12) Two-person work tables w/storage below			
(24) Computer workstation furniture & chairs			
(1) Teacher station & chair			
Wastebasket			
Pencil sharpener			

**NOTES:**

1. Finishes/Features: Refer to Chapter 9 for specification references.

## EXECUTIVE SUMMARY DESIGN MANUAL ORGANIZATION

## CHAPTER 1: INTRODUCTION

### 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.*

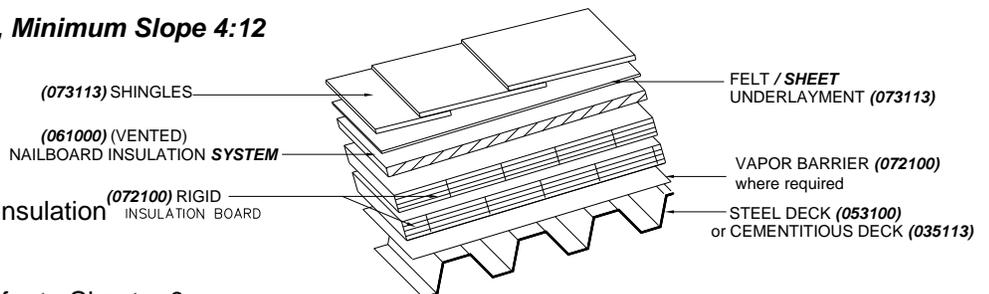
### Chapter 8: Systems and Materials

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

CHAPTER 9: SPECIFICATIONSFINISHES

SECTION 096816

SHEET CARPETING

GENERAL GUIDELINES

## 1.1 SECTION INCLUDES

- A. Qualitative requirements for carpet materials and accessories for a direct-glue down or preapplied adhesive installation of one of the following:
1. Tufted Broadloom

## 1.2 QUALITY ASSURANCE

- A. Carpet shall meet or exceed Carpet and Rug Institute's (CRI) Appearance Retention Rating of 3.5 ARR.
- B. Chemical Emission/Indoor Air Quality: All carpet specified must be in compliance with the Carpet and Rug Institute (CRI) "Green Label" 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. Sheet Carpet: 10 years (minimum).

(continued on next page)

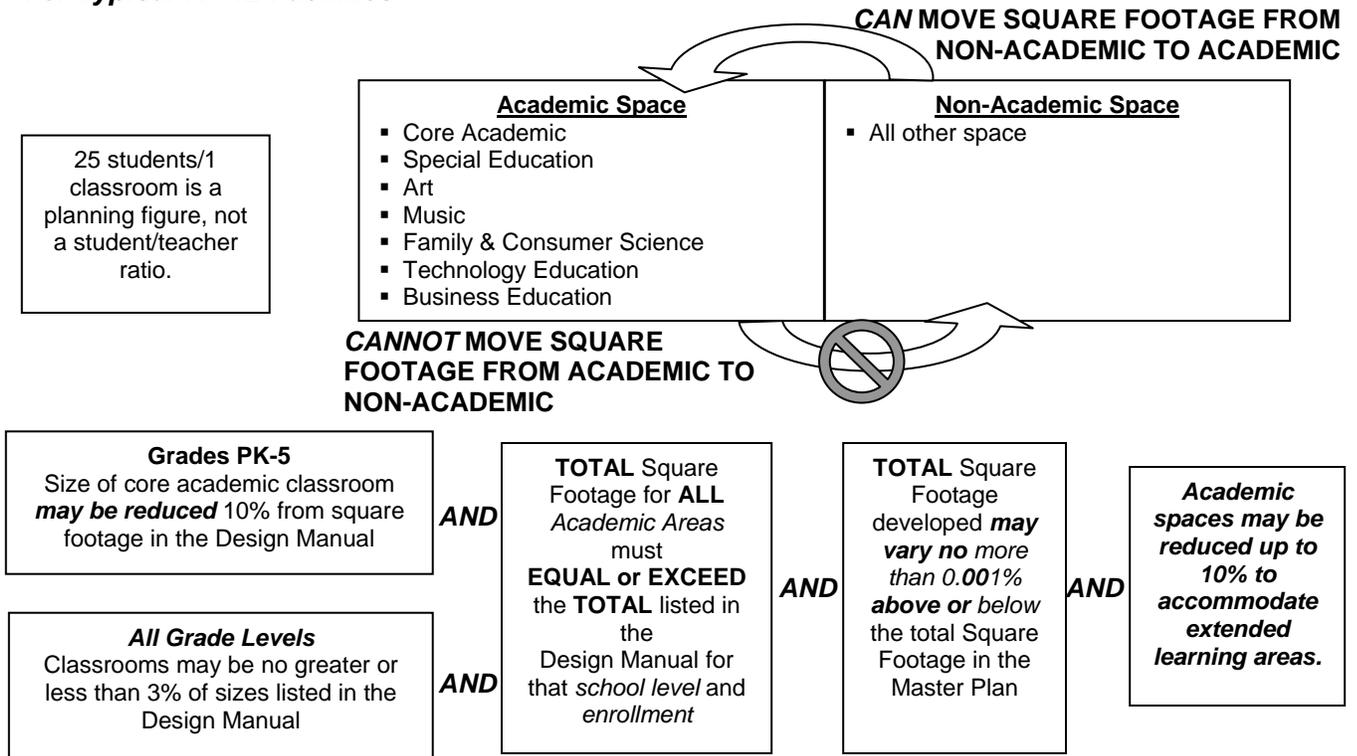
**Chapter 10: Miscellaneous**

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.***

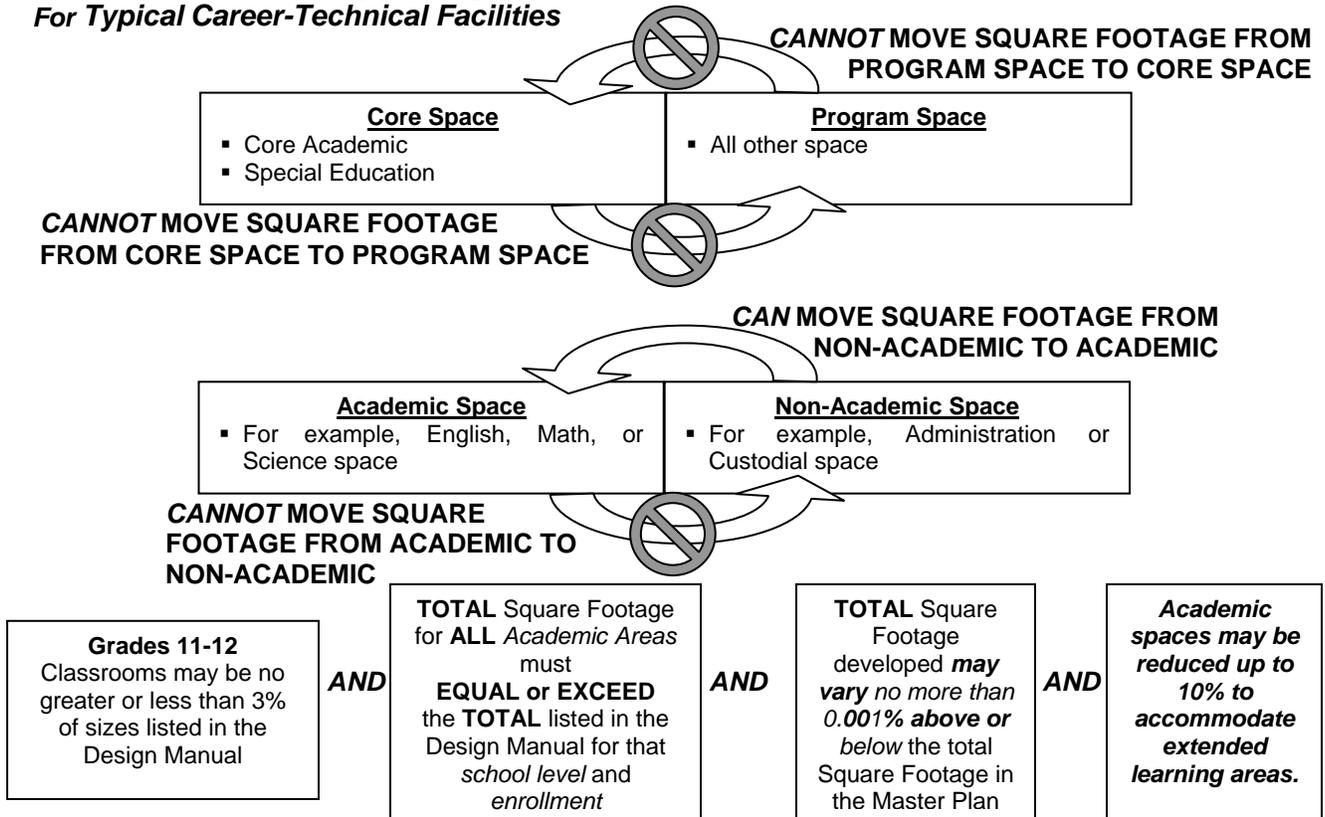
For Elementary Schools Chapter 10 suggests warm base, background colors such as light salmon, beiges, soft yellows or peaches on the walls to produce a calming environment. Deeply saturated bright hues on architectural elements should be avoided, since the colors will create too much stimulation. Similar 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

<b>Costs Included in the Project</b>	<p><b>Non-Construction Costs</b></p> <ul style="list-style-type: none"> <li>▪ Land Survey</li> <li>▪ Soils/Environmental Report</li> <li>▪ Agency Approval Fees</li> <li>▪ Construction Testing</li> <li>▪ Printing – Bid Documents</li> <li>▪ Advertising for Bids</li> <li>▪ Builder’s Risk Insurance</li> <li>▪ Design Professional Compensation</li> <li>▪ Construction Management Compensation</li> <li>▪ Non-construction Contingency may include Partnering/Mediation Services, Maintenance Plan Advisor Fees, and Commissioning Agent</li> </ul>
<p><b>Construction Costs</b></p> <ul style="list-style-type: none"> <li>▪ Site Costs</li> <li>▪ Building Costs</li> <li>▪ Furnishings (including playgrounds for elementary)</li> <li>▪ Technology infrastructure, telephone system, video distribution system, computer network system</li> <li>▪ Construction Contingency</li> </ul>	

**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

<b>Costs Included in the Project</b>	<p><b>Non-Construction Costs</b></p> <ul style="list-style-type: none"> <li>▪ Land Survey</li> <li>▪ Soils/Environmental Report</li> <li>▪ Agency Approval Fees</li> <li>▪ Construction Testing</li> <li>▪ Printing – Bid Documents</li> <li>▪ Advertising for Bids</li> <li>▪ Builder’s Risk Insurance</li> <li>▪ Design Professional Compensation</li> <li>▪ Construction Management Compensation</li> <li>▪ Non-construction Contingency may include Partnering/Mediation Services, Maintenance Plan Advisor Fees, and Commissioning Agent</li> </ul>
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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 (unless included in the allowed project square footage)
- 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 be 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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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
- 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

Specific curriculum pathways and specializations have been identified for each of the career fields shown above. 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.

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## A. Introduction

The Ohio Department of Education - Office for Exceptional Children *is responsible for the educational welfare of exceptional children throughout the state of Ohio. These agencies provide standards for serving students with disabilities that comply with the Ohio Revised Code, Individuals with Disabilities Education Act (IDEA) 2004 and the goals of No Child Left Behind Act of 2001. On July 1, 2008, the Operating Standards for Ohio Educational Agencies Serving Children with Disabilities (Operating Standards) became effective. “These standards provide a framework to ensure that all children receive a quality education tailored to their unique needs.” Additionally, these standards define a full continuum of services for students with disabilities in the “Least Restrictive Environment.”*

*The OSFC Design Manual provides square footage guidelines to comply with the educational program requirements illustrated in the operating standards.*

The Ohio Educational Management Information System (EMIS) provides *disability category identifiers and primary service* codes for students with disabilities to meet the Least Restrictive Environment requirement for all students *with disabilities*. These codes *can then be used by the district and design team to differentiate between* the type and number of spaces needed in each school to address the *unique* facility needs for *each type of* student with disabilities. *Example: if a student can be included in the regular classroom for the entire day, their primary service code would be 210021. For a student that spends most of the day in a self-contained classroom their code might be 210028. There are primary service codes, which are subject to change, for other types of students. Districts should refer to EMIS for forms and procedures for identifying students with disabilities.*

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 *exceptional* students, the facility requirements must provide the flexibility to address the changing demographics as well.

In addressing the requirement to provide the least restrictive environment for each student, accommodations must also be made for the mandated age span requirements established in the *Operating Standards* (48-60 months, depending on the disability).

Another factor that must be taken into consideration when determining space needs is based on research as well as common practice. A large majority of special needs students participate in a regular classroom setting with their “teacher of record” being the special education resource teacher. Typically, those students are scheduled in the regular classroom for activities for which they can benefit and then spend time in the Resource Room based on their IEP. Students are often in the Resource Room and the Core Classroom several times each day. Therefore, it is difficult to arbitrarily assume that each student in a building has only one “home base” in determining space needs.

*There are numerous factors to be considered when planning school facilities for students with disabilities. It is important to start planning for these students early in the process by identifying the programs and services, spaces, and staff that will be needed to ensure that their needs will be met through the design and construction of the facility.*

## EDUCATIONAL PROGRAMMING SPECIAL EDUCATION PROGRAM OVERVIEW

### B. OSFC Design Manual Square Footage Allocations

In order to accommodate *school districts* in meeting the *unique requirements of it's children with exceptional needs*, OSFC has provided spaces *that will include instructional and support services for all types of students with exceptional needs. The number and type of spaces is determined by the student's IEP and the number of children in each type of disability and as identified by their primary service code. Listed below are the pertinent spaces provided in the OSFC Design Manual:*

- Self-contained Classroom(s)
- Workroom /Conference Room
- Restroom/Shower
- Resource Rooms
- Small Self-contained Classroom
- **Guidance Services**
- **Health Clinic**
- **Other Support Spaces**

As each school district addresses their specific student requirements, the square footage allocated for classrooms may be utilized to address students *with exceptional needs* as well as *typical* education students. *In order to determine the number of spaces needed to serve these students, it is important for the district to identify the current exceptional student population and by reviewing trends in this population, project the future quantity and type of spaces needed to accommodate these students.*

The square footage and layout guidelines for *exceptional student* spaces *are shown* in the Elementary, Middle, and High School program areas.

**C. Service Provider Ratios for Delivery of Services**

*Shown below is a table summarizing the service provider ratios for delivery of services found in section 3301-51-09 "Delivery of Services" of the Operating Standards.*

<b>Disability</b>	<b>Grades K-8</b>	<b>Grades 9-12</b>	<b>Age Span</b>
Cognitive Disabilities	16 (12 at one time)	24 (16 at one time)	60 mos. (in 1 period)
Learning Disabilities	16 (12 at one time)	24 (12 at one time)	60 mos. (in 1 period)
Hearing, Visual, Orthopedic Impairments	10 (8 at one time)	10(8 at one time)	48 mos. (in 1 period)
Emotional Disturbances ( <i>Plan for Classroom Management &amp; Crisis intervention in operation.</i> If no plan, one FT paraprofessional)	12 (10 at one time)	12(10 at one time)	48 mos. (in 1 period)
Multiple Disabilities (plus one FT paraprofessional)	8	8	60 mos. (in 1 period)
Autism, deaf-blind, traumatic brain injury (plus one FT paraprofessional)	<b>6</b>	<b>6</b>	60 mos. (in 1 period)

<b>Related Services</b>	<b>K-12 # of Students</b>	<b>Preschool Students</b>
Adapted P.E.	100	100
Audiologist	100	75
Occupational Therapy	50	40
Mobility Instructor	50	40
Physical Therapist	50	40
Speech, language, Pathologist (1SLP for 2000 students)	80	50
School Psychologist (1 Psychologist per 2500 students)	125	75

*Information regarding Preschool aged children and additional information on delivery of services can be found in the most recent addition of the Operating Standards and the Ohio Revised Code section 3301-51.*

## EDUCATIONAL PROGRAMMING SPECIAL EDUCATION PROGRAM OVERVIEW

### D. Matrix For Use of Space By Disability

*The table below illustrates the various disabilities and instructional and support spaces provided by the OSFC Design Manual that would accommodate the activities associated with each disability. The table is not intended to limit the use of each space, only to suggest how spaces may be utilized.*

	Regular Classroom (900 SF)	Self-Contained CR (900 SF)	Restroom	Workroom/ Conference	Resource (900 SF)	Small Self-Contained Classroom (600 SF)
<b>Disability</b>						
Autism	●			●	●	●
Cognitive Disability (Mental Retardation)	●	●	●		●	●
Deaf-Blindness	●				●	●
Emotional Disturbance	●	●			●	●
Hearing Impairment	●				●	●
Multiple Disabilities	●	●	●		●	
Orthopedic Impairment	●			●	●	●
Specific Learning Disability	●				●	●
Speech Language Impairment	●			●		
Visual Impairment	●				●	●
Traumatic Brain Injury	●				●	●
<b>Support Services</b>						
Occupational Therapy				●	●	●
Physical Therapy				●	●	●

- Disabilities are based on the Operating Standards for **Ohio Educational Agencies Serving Children with Disabilities, current edition.**
- Other square footage that could be allocated to meet Special Education program needs includes:
  - Project Laboratory
  - Instructional Material Storage
  - Staff Dining
  - Small Group Rooms
  - Multi-Use Room
  - Teacher Prep Area/Workroom
  - In-School Suspension
  - Itinerant Personnel Offices

**E. Definition of Terms**

***Definitions of terms used in this document and in the discussion of exceptional children can be found in the current edition of the Operating Standards.***

**F. Additional Resources**

For additional information about ***planning for exceptional children*** there are some excellent resources to obtain. One can be obtained from the OSFC office entitled “Planning Your School Facilities Construction Project with Sensitivity to the Needs of Students with Disabilities.” The second document is the “Operating Standards for Ohio ***Educational Agencies*** Serving Children with Disabilities” from the Ohio Department of Education.

**G. Physical Therapy (PT) or Occupational Therapy (OT) Services Overview of Program**

Physical Therapy is designed to help restore and maintain useful movement or function. Some of the examples of physical therapy are:

- Stretching and range of motion exercises
- Exercises to develop trunk control and upper arm muscles
- Assistance in obtaining appropriate assistive equipment, including ambulatory aids, braces and wheelchairs, etc.
- Training in walking and appropriate use of assistive devices, such as ambulatory aids, braces, and wheelchairs, etc.
- Transfer training-how to get from one spot to another, such as from student chair to wheelchair or from wheelchair to car
- Training in how to fall safely in order to cause the least possible damage
- Patient and family education

(Source: MS Information Sourcebook, produced by the National MS Society <http://www.nationalmssociety.org/Sourcebook-pt.asp>)

**Connections Between Program Requirements and Physical Facilities**

The need for a specialized physical therapy space is based on the Individual Education Plan (IEP) of each student that is housed in the educational facility. The program information that is provided in the design manual is based on a physical therapy space that can accommodate the three fundamental requirements in a physical therapy area: exercise; treatment; and hydrotherapy. However, the space needs to support the individual needs of each student and must be flexible to accommodate all students within an educational facility who require physical therapy as an integral part of the services indicated in the IEP. Typically, in the school environment, a limited number of students require physical therapy and the space needs are much less structured as those indicated in this document. In order to determine the appropriate space requirements, it is essential that each District identify all students receiving PT services based on the historical, current and projected enrollment data.

The Exercise Area needs to be:

- Well lighted with flexible lighting (dimmer switches)
- Large enough to allow for unencumbered use of all rehabilitative exercise equipment including: treadmills, bicycles, wall mounted weights, mat tables (Including curtain tracks for privacy), and a reinforced wall of installation of stall bars

The Treatment Area should provide:

- Considerable patient privacy by use of curtains, cubicles or enclosed rooms.
- Flexible lighting (dimmer switches) for student comfort
- Equipment needs may include: massage tables; ultrasonics; thermotherapy (using wet or dry heat) and diathermy (dry heat treatment using short wave or microwave).

## EDUCATIONAL PROGRAMMING SPECIAL EDUCATION PROGRAM OVERVIEW

### CHAPTER 1: INTRODUCTION

Hydrotherapy is the use of water to treat injuries and disease where the water conducts heat and makes motion easier and less painful. If hydrotherapy space is provided, the wet areas require additional engineering to structurally accommodate Hubbard tanks (large tanks of heated moving water big enough to float the whole body) and overhead lifts. Special plumbing, especially for whirlpool baths, is required for mixing valves that control water temperature in the tubs. Floor drains are required and floor surfaces in all wet areas are of a nonskid surface. Hydrotherapy areas include: full baths, footbaths, whirlpool baths and hot and cold baths.

#### H. Physical Therapy (PT) or Occupational Therapy (OT) Services, continued

Even though there are three fundamental requirements for physical therapy, no absolute requirements for the type of space can be recommended since the program must be based on the individual needs of the students being housed in the facility. In the event there are a limited number of students requiring these services, (which is most often the case in most educational facilities), an open unobstructed space which allows for maximum flexibility which can be rearranged based on each student's needs is highly recommended. The use of hydrotherapy as defined in the paragraphs above, requires a more specialized space and would not be indicated in most student IEPs. There are other methods of providing hydrotherapy to students without the space requirement of full baths, whirlpools and other water requirements.

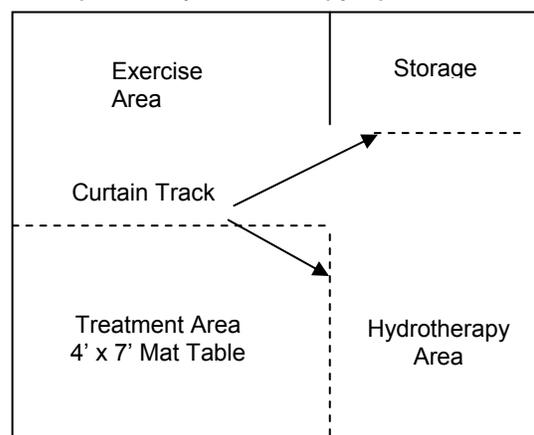
Other facility considerations for a physical therapy area need to be considered. One very important area is the need for storage for the variety of therapy equipment that is needed. Controlled ventilation much be considered since many of the treatment procedures require the use of dry or moist heat or active exercise, which raise body temperature. Air conditioning is also recommended for the therapy area. Often wall-mounted equipment is needed for some students and the recommendation is to line the walls with plywood or particleboard and then cover with the finish material of drywall, plaster or paneling. As has been indicated earlier in this section, the need for a specialized, dedicated physical therapy space is not required or recommended for most educational facilities housing a limited number of students requiring specialized physical therapy. The information included as a brief overview of the physical therapy program to provide an understanding of the requirements of the program to better assist the educators in determining appropriate space needs.

(Source: <http://www.schemmer.com/resource/mfrn/therapy.htm>)

#### Facility Considerations

- Ability to hang equipment from ceiling
- Dimmable lights
- Tile floor
- Access to water
- Large storage area for:
  - balance beam
  - balls
  - mats
  - small therapy equipment
  - scooter board
  - ramp
  - portable stairs
  - hanging equipment
  - braces
  - wheelchairs

#### Example of Physical Therapy Space



Occupational therapists who work with children are knowledgeable about stage of development and the appropriate milestones in a child's physical, mental, and behavioral development. For example, a child with delayed development may not show behaviors and abilities that are typical of the child's age. A child may have difficulty achieving independence in feeding, dressing, and using the bathroom; understanding relationships between people, objects, time and space; and development problem-solving and coping strategies.

Occupational Therapists can evaluate a child's level of performance, observe the child's environment, and develop a plan of treatment. They can develop age-appropriate self-care routines and habits and recommend adaptive equipment to facilitate the development of age-appropriate abilities.

Most often the space requirements for the OT program can be shared with the PT and/or the SLP because typically PT and OT are only part-time services in each building. Most often, the caseload is seen individually or in small groups with therapy consisting of hands-on activities. If on occasion larger space is needed, alternative arrangements can be made.

**EDUCATIONAL PROGRAMMING  
SPECIAL EDUCATION PROGRAM OVERVIEW**

**I. Additional Facility Considerations**

*The table on the following page illustrates items that should be considered for inclusion in the classroom and school facility when designing spaces for exceptional students.*

**Additional Facility Considerations for Special Needs Students Housed in Special Needs Classrooms**

Disability	Group 1 – Areas Inside the Classroom								Group 2 – Areas Outside the Classroom			
	Art Area	Quiet Area	OT/PT Area	Science Area	Floor Mat Area	Mirrors Floor to Ceiling	Mirror on the Wall	Life Skills Area	Changing Area	Restroom	Shower Area	Wheelchair Storage Area
Autism	X	X	X	X					X	X		
Cognitive Disability (Mental Retardation)	X	X	X	X	X			X	X	X	X	
Deaf-Blindness*	X		X	X			X	X				
Emotional Disturbance	X	X		X					X			
Hearing Impairment				X			X					
Multiple Disabilities*	X		X	X	X	X		X	X	X	X	X
Orthopedic Impairment	X		X	X					X	X		
Specific Learning Disability				X			X					
Speech Language Impairment*							X					
Visual Impairment												
Traumatic Brain Injury	X	X	X	X			X		X			

\* Acoustical treatment is critical in these areas

**A. OBJECTIVE****New K-12 and Career Technical Buildings and Additions**

The objective of this section is to establish a baseline "cost per square foot per student" for new school buildings to be constructed under the funding mechanism administered by the Ohio School Facilities Commission. It is the intent of the "Design Manual" and the corresponding costs to establish a standard level of quality to be used by all Ohio schools. Under the classroom facilities assistance program and other applicable programs, the costs are to be used for new buildings as well as additions to existing buildings. The costs do not apply to renovation of existing structures.

**Renovations**

A separate document entitled "Assessment Cost Guidelines" addresses the costs of renovations, and is included herein. Since the approach for the renovations costing differs somewhat from the approach on the new school buildings and additions, all assumptions regarding the assessment cost guidelines are included within the Assessment Cost Guidelines document.

**B. CONSIDERATIONS**

There are dozens of variables that affect the cost of construction. They vary in degree, in the ability to be quantified, and the potential effect they may have on a project. An opinion of probable cost is just that—an opinion based on the best information known at the time of bidding. This report considers many variables that may affect construction and utilizes a baseline for purposes of establishing an initial starting point. Regional factors are then applied based on the area where the building is to be constructed within the state.

In addition to the considerations for K-12 facilities, the development of all inclusive construction square foot numbers for the Career-Technical school is a challenging exercise. These challenges include:

- **Limited** historical data on projects is available nationally.
- Each program space cost is different and there are over 80 programs.
- Some spaces are atypical, and include features such as high bays and thickened slabs.
- Few Career-Technical schools in Ohio have done any building recently, again limiting the availability of historical data.

Regardless of the challenges, much time and effort was put into developing realistic costs through various methods. The processes followed are outlined in detail herein.

### C. NEW K-12 AND CAREER TECHNICAL APPROACH

1. Modification Factors: Because the information is intended to be used to establish budgets throughout Ohio, it is important to establish cost modification factors for various State regions relative to a baseline established in **Central Ohio** (100.0 Factor.) The regions established correspond with the 9 regions identified in the 1990 Ohio Public School Facility Study. These modification factors were applied to both the K-12 and the Career Technical sections of the Design Manual.
  
2. Variables:
  - a. An opinion of probable cost developed by an estimating professional is "an opinion of cost." There are a number of factors and variables that can significantly affect these costs. Unfortunately, many of these issues are out of the control of the estimator, Ohio School Facilities Commission, Design Professional, and school district.
  
  - b. In an effort to establish a baseline cost for **Central Ohio**, the following factors were identified:
    - .1 Projects are to be bid approximately 15 to 18 months after bond issue passage.
    - .2 Projects are to be bid in **the Central Ohio** market.
    - .3 Moderate bidding activity will be present during bidding.
    - .4 Projects **may or may not include** prevailing wage, as indicated by Ohio law.
    - .5 All materials from the standards will be "middle of the road" as indicated in the Design Manual.
    - .6 Foundations will be standard spread footings.
    - .7 In most instances, buildings are priced as single story. However, allowances have been included in the two large high school projects for elevators. It is understood that some buildings in various locations may require additional stories. An analysis has shown reduced site needs and costs counterbalance any potential increased costs for multiple stories.
    - .8 The site size will be adequate for staging and material storage in most cases. Certain sites may be smaller and require specific security and laydown requirements. In these instances, it appears that reduced sitework costs will counterbalance the specific costs for these items.
    - .9 The use of a construction manager with multi-prime bidding is contemplated. The number of packages may vary by construction manager and could also be affected by market conditions, labor and material availability, project location, etc.
    - .10 Typical subsoil conditions.
    - .11 Excludes impact on contractor pricing due to private sector activity.

In addition to these factors and the variations that can occur, other variables can significantly affect the costs and should be considered when analyzing these costs.

- Availability of qualified contractors and tradesmen.
- Availability of materials. Lead times on materials in the current marketplace are significant, and can lead to higher costs.
- Anticipated weather conditions during construction.
- Final site selected and usability of the site.
- Project deadlines. A more aggressive schedule in a tight labor and material marketplace can lead to higher costs.
- Construction activity in the private sector market place.
- Efficiency of design. Redesign, engineering and structural details can significantly affect costs.
- Fluctuation in material prices and wages.
- The capacity of the Design firm selected.
- Exact locale (labor rates, major material costs).
- Market activity at project location and throughout the State (how busy is the market at any given moment.)
- Final selected materials for each project.
- Bidder competitiveness.
- Method of construction procurement.
- Final scope of work.
- Time of year / schedule of proposed construction.
- Mechanical and electrical systems to be utilized.
- Material price fluctuations: including steel, lumber, copper, brick, casework, HVAC materials, etc.
- Workers compensation and other insurance and tax rate modifications.
- Union strength / marketplace versus the non-prevailing wage rates.

The application of these variables to a particular cost/SF will be difficult. However, it is strongly urged that this be done to increase the accuracy of the project cost estimate.

### 3. Career Technical Approach

#### a. Component Estimate

Because the Career-Technical sections contain over 80 different programs, with significant differences among programs, including the construction materials and types required for the programs, the following approach was taken on developing budgets for these buildings.

#### b. Specific Program Areas

- .1 Each program instructional space was evaluated separately and estimated as its own single entity. **Support spaces** also followed the same procedure, **based on the cost of the corresponding lab.**
- .2 By doing this, a standard list of components was identified that are common to all programs. For instance, each space has concrete masonry unit walls, ceilings, etc.

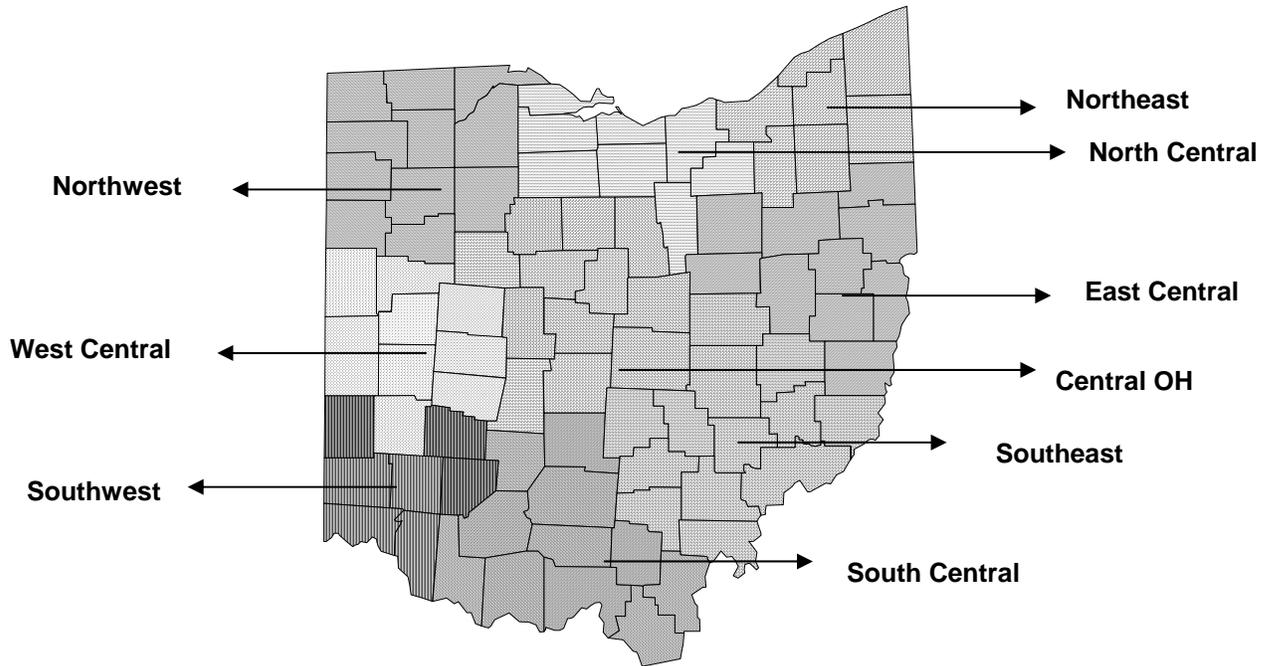
- .3 After the standard list of components for each program and associated space was estimated for cost, the items specific to an individual program were then budgeted. For instance, this could include items such as the “kennel” which is specific only to the Animal Science and Management program. Other examples of considerations applicable to specific programs included ceiling heights, additional HVAC or electrical requirements, etc.
  - .4 Furnishings were estimated for each specific program, and are included in the basic building cost.
  - .5 In addition, technology infrastructure was estimated for each specific program and is included in the basic building cost.
  - .6 A construction contingency is included that is a percentage of site costs, basic building construction costs, furnishings and technology.
  - .7 Non-construction costs are included as a percentage of the total of site, construction, furnishings, technology infrastructure and contingency.
  - .8 The final program area opinion of probable costs indicated includes site, building, non-construction costs and all contingencies.
- c. Core Areas
- .1 It was determined that the academic area costs will be the same as OSDM high school costs.
- d. General Comments specific to both Program Areas and Core Areas
- .1 Non-construction costs are calculated the same for both areas.
  - .2 The narrative and components of the Career-Technical sections were thoroughly reviewed and taken into consideration when establishing the costs for each system. The system costs were established using past project data and history. Where design guidelines were not yet completely identified, “middle of the road” costs were incorporated.
  - .3 Although no typical floor plans were available to use in quantifying the systems, proven design **best practices** were incorporated. Some examples include: ratio of exterior wall space to floor area, ratio of interior wall space to floor area and ratio of glazing to exterior wall area. These ratios do vary from one design to the next, but they generally fall into a fairly tight range. These ratios generally prove to be reliable when they are coupled with the programming and design approach of the Guidelines Developer.
  - .4 A general specifications outline for items included and assumptions made per particular category of construction was also developed.

4. Other Considerations for both K-12 and Career Technical
  - a. Non-Construction Costs
    - .1 Non-Construction costs are included as part of the overall, all inclusive, square foot costs. Items included in non-construction costs are as follows:
      - 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 includes
        - Partnering/Mediation Services
        - Maintenance Plan Advisor Fees
        - Commissioning Agent Fee
    - .2 ***USGBC LEED Fees for Registration are paid 100% by the OSFC.***
  - b. Square Foot Cost Inclusions
    - .1 Square foot costs presented on the matrix are all inclusive of all costs required to design and construct the building and include both construction and non-construction costs. The components of the “non-construction costs” are described above. The “construction costs” are described as follows and include the following major components:
      - Site ***Development*** Costs
      - Building Costs
      - Furnishings (including playgrounds for elementary)
      - Technology – see description below
      - Construction Contingency
  - c. Site ***Development*** Costs
    - .1 Site ***development*** costs are included in the square foot costs. A reasonable amount of cut and fill is assumed and overall site costs are based on the site described in the Design Manual. Many factors affect site work including cut/fill of soil, topography, location of adjacent utilities, tap-in fees, etc. Site costs do not include the cost to purchase land.
    - .2 The baseline square foot site ***development*** costs take into account standard tap fees and/or on-site water or wastewater treatment plants. However, since every site is unique, the overall allowed site costs should be used wisely by the professionals and the District, and care should be taken to select the most effective and efficient site that can be developed within the allowable cost.

- d. Technology
  - .1 Technology costs include cable tray in academic areas, and voice, video, and data outlets. Also included is a fully digital telephone system with telephones in the classrooms and offices, and an integrated voice mail system. Additionally, there will be a video distribution system with projectors in the classrooms and access to cable systems and some additional media resources. There will also be **wired and wireless** computer network system with data locations throughout and electronics, patch panels, and patch cables as required.
  
- e. Security
  - .1 Within the total project cost budget, an allowance based on gross building area shall be set aside for exterior and interior building security systems and protection and utilized most effectively for the project conditions. Refer to Chapter 8, Section 8600.

## D. RESULTS

The opinion of probable cost summary matrix for K-12 facilities and Career-Technical facilities and a diagram of the state showing the regions are included in this section.



**1-Southwest**

Butler  
Clermont  
Clinton  
Greene  
Hamilton  
Preble  
Warren

**2-West Central**

Auglaize  
Champaign  
Clark  
Darke  
Logan  
Mercer  
Miami  
Montgomery  
Shelby

**3-Northwest**

Allen  
Defiance  
Fulton  
Hancock  
Henry  
Lucas  
Paulding  
Putnam  
Van Wert  
Williams  
Wood

**4-North Central**

Ashland  
Huron  
Medina  
Sandusky  
Erie  
Lorain  
Ottawa  
Seneca  
Wayne

**5-South Central**

Adams  
Fayette  
Highland  
Lawrence  
Pike  
Scioto  
Brown  
Gallia  
Jackson  
Pickaway  
Ross

**6-Southeast**

Athens  
Fairfield  
Guernsey  
Hocking  
Meigs  
Monroe  
Morgan  
Muskingum  
Noble  
Perry  
Vinton  
Washington

**7-East Central**

Belmont  
Carroll  
Columbiana  
Coshocton  
Harrison  
Holmes  
Jefferson  
Mahoning  
Stark  
Tuscarawas

**8-Northeast**

Ashtabula  
Cuyahoga  
Geauga  
Lake  
Portage  
Summit  
Trumbull

**0-Central OH**

Crawford  
Delaware  
Franklin  
Hardin  
Knox  
Licking  
Madison  
Marion  
Morrow  
Richland  
Union  
Wyandot

**COST INFORMATION**

**CHAPTER 1: INTRODUCTION**

STATE OF OHIO SUMMARY OF NEW SCHOOL CONSTRUCTION "OPINION OF PROBABLE COSTS"  
 PER SQUARE FOOT OF FLOOR AREA  
 BASELINE; REGION 0 (CENTRAL OHIO)  
 Revised April 13, 2009 for 2009 Design Manual Update

Regions	REG. ADJ. FACTOR	ELEMENTARY SCHOOLS					MIDDLE SCHOOLS					HIGH SCHOOLS												
		350-400 Students 43,750 - 50,000 SF	401-600 Students 50,000 - 69,360 SF	601-850 Students 69,361 - 100,000 SF	666 Students and up 100,001 SF and up	350 - 450 Students 62,850 - 67,950 SF	451 - 650 Students 67,951 - 91,650 SF	651-709 Students 91,651-100,000 SF	710 Students and up 100,001 SF and up	350 - 598 Students 63,000 - 100,000 SF	599 - 800 Students 100,001 - 133,600 SF	801 - 1,200 Students 133,601 - 200,400 SF	1,201 Students and up 200,401 SF and up											
0 - CENTRAL OH	100.00	\$19.45	\$17.67	\$16.99	\$16.49	\$19.80	\$18.47	\$18.46	\$17.93	\$18.80	\$18.26	\$20.62	\$19.48	\$185.64	\$178.63	\$171.19	\$166.32	\$175.20	\$170.27	\$185.40	\$180.12	\$176.61	\$172.60	
Site		\$166.19	\$154.20	\$149.83	\$148.83	\$166.25	\$157.06	\$158.74	\$152.34	\$166.60	\$161.86	\$155.99	\$153.12	\$29.89	\$28.76	\$27.56	\$26.78	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
Building		\$185.64	\$178.63	\$171.19	\$166.32	\$186.05	\$175.53	\$175.20	\$170.27	\$185.40	\$180.12	\$176.61	\$172.60	Non - Const. Costs	\$29.89	\$28.76	\$27.56	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
TOTAL		\$215.53	\$207.39	\$198.75	\$193.10	\$216.00	\$203.79	\$203.41	\$197.68	\$215.25	\$209.12	\$205.04	\$200.39	Non - Const. Costs	\$29.89	\$28.76	\$27.56	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
GRAND TOTAL		\$213.42	\$205.35	\$196.79	\$191.20	\$213.87	\$201.79	\$201.41	\$195.75	\$213.15	\$207.07	\$203.04	\$198.43											
1 - SOUTH WEST	99.02	\$19.26	\$17.49	\$16.82	\$16.33	\$19.60	\$18.29	\$18.28	\$17.76	\$18.61	\$18.08	\$20.43	\$19.29	\$185.64	\$178.63	\$171.19	\$166.32	\$175.20	\$170.27	\$185.40	\$180.12	\$176.61	\$172.60	
Site		\$164.56	\$159.38	\$152.68	\$148.35	\$164.61	\$155.52	\$155.20	\$150.86	\$164.98	\$160.27	\$154.46	\$151.62	\$29.89	\$28.76	\$27.56	\$26.78	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
Building		\$183.82	\$176.87	\$169.50	\$164.68	\$184.21	\$173.48	\$173.48	\$168.62	\$183.59	\$178.35	\$174.89	\$170.91	Non - Const. Costs	\$29.89	\$28.76	\$27.56	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
TOTAL		\$213.42	\$205.35	\$196.79	\$191.20	\$213.87	\$201.79	\$201.41	\$195.75	\$213.15	\$207.07	\$203.04	\$198.43											
GRAND TOTAL		\$213.42	\$205.35	\$196.79	\$191.20	\$213.87	\$201.79	\$201.41	\$195.75	\$213.15	\$207.07	\$203.04	\$198.43											
2 - WEST CENTRAL	99.76	\$19.40	\$17.63	\$16.94	\$16.45	\$19.75	\$18.43	\$18.42	\$17.89	\$18.75	\$18.22	\$20.57	\$19.43	\$185.64	\$178.63	\$171.19	\$166.32	\$175.20	\$170.27	\$185.40	\$180.12	\$176.61	\$172.60	
Site		\$165.79	\$160.57	\$153.83	\$149.47	\$165.84	\$156.68	\$156.36	\$151.97	\$166.21	\$161.47	\$155.62	\$152.75	\$29.89	\$28.76	\$27.56	\$26.78	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
Building		\$185.19	\$178.20	\$170.77	\$165.92	\$185.59	\$175.11	\$174.78	\$169.85	\$184.96	\$179.69	\$176.19	\$172.18	Non - Const. Costs	\$29.89	\$28.76	\$27.56	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
TOTAL		\$215.01	\$206.89	\$198.26	\$192.64	\$215.47	\$203.30	\$202.92	\$197.20	\$214.74	\$208.62	\$204.55	\$199.90											
GRAND TOTAL		\$215.01	\$206.89	\$198.26	\$192.64	\$215.47	\$203.30	\$202.92	\$197.20	\$214.74	\$208.62	\$204.55	\$199.90											
3 - NORTHWEST	103.87	\$20.20	\$18.35	\$17.63	\$17.13	\$20.56	\$19.18	\$19.18	\$18.63	\$19.52	\$18.96	\$21.43	\$20.23	\$185.64	\$178.63	\$171.19	\$166.32	\$175.20	\$170.27	\$185.40	\$180.12	\$176.61	\$172.60	
Site		\$172.62	\$167.20	\$160.17	\$155.63	\$172.68	\$163.14	\$162.80	\$158.24	\$173.05	\$168.13	\$162.03	\$159.05	\$29.89	\$28.76	\$27.56	\$26.78	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
Building		\$192.82	\$185.55	\$177.80	\$172.76	\$193.24	\$182.32	\$181.98	\$176.87	\$192.57	\$187.09	\$183.46	\$179.28	Non - Const. Costs	\$29.89	\$28.76	\$27.56	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
TOTAL		\$223.87	\$215.42	\$206.43	\$200.58	\$224.35	\$211.67	\$211.28	\$205.34	\$223.58	\$212.21	\$208.15	\$208.15											
GRAND TOTAL		\$223.87	\$215.42	\$206.43	\$200.58	\$224.35	\$211.67	\$211.28	\$205.34	\$223.58	\$212.21	\$208.15	\$208.15											
4 - NORTH CENTRAL	102.35	\$19.91	\$18.08	\$17.37	\$16.88	\$20.26	\$18.91	\$18.91	\$18.36	\$19.24	\$18.69	\$21.11	\$19.94	\$185.64	\$178.63	\$171.19	\$166.32	\$175.20	\$170.27	\$185.40	\$180.12	\$176.61	\$172.60	
Site		\$170.10	\$164.74	\$157.82	\$153.34	\$170.16	\$160.76	\$160.41	\$155.93	\$170.52	\$165.66	\$159.66	\$156.72	\$29.89	\$28.76	\$27.56	\$26.78	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
Building		\$190.01	\$182.82	\$175.19	\$170.22	\$190.42	\$179.67	\$179.32	\$174.29	\$189.76	\$184.35	\$180.77	\$176.66	Non - Const. Costs	\$29.89	\$28.76	\$27.56	\$28.21	\$27.41	\$29.85	\$29.00	\$28.43	\$27.79	
TOTAL		\$220.80	\$212.26	\$203.40	\$197.63	\$221.07	\$208.59	\$208.19	\$202.34	\$220.31	\$214.03	\$209.87	\$205.10											
GRAND TOTAL		\$220.80	\$212.26	\$203.40	\$197.63	\$221.07	\$208.59	\$208.19	\$202.34	\$220.31	\$214.03	\$209.87	\$205.10											

4/24/2009

STATE OF OHIO SUMMARY OF NEW SCHOOL CONSTRUCTION "OPINION OF PROBABLE COSTS"  
 PER SQUARE FOOT OF FLOOR AREA  
 BASELINE: REGION 0 (CENTRAL OHIO)  
 Revised April 13, 2009 for 2009 Design Manual Update

Regions	REG. MODR Factor	ELEMENTARY SCHOOLS										MIDDLE SCHOOLS										HIGH SCHOOLS																											
		350-400 Students 43,750 - 50,000 SF	401 - 600 Students 50,000 - 69,300 SF	601-855 Students 69,361 - 100,000 SF	856 Students and up 100,001 SF and up	350 - 450 Students \$2,850 - 47,950 SF	451 - 650 Students 67,951 - 91,650 SF	651-709 Students \$1,651-100,000 SF	710 Students and up 100,001 SF and up	350 - 598 Students 63,000 - 100,000 SF	599 - 800 Students 100,001 - 133,600 SF	801 - 1,200 Students 133,601 - 200,400 SF	1,201 Students and up 200,401 SF and up																																				
6 - SOUTH CENTRAL	101.40	\$19.71	\$17.92	\$17.22	\$16.72	\$20.07	\$18.73	\$18.72	\$18.19	\$19.06	\$18.51	\$20.91	\$19.76	\$168.52	\$163.22	\$156.36	\$151.92	\$168.58	\$159.26	\$154.47	\$168.93	\$164.14	\$158.17	\$155.27	\$188.23	\$181.14	\$173.58	\$168.64	\$177.99	\$177.65	\$172.66	\$187.99	\$182.65	\$179.08	\$175.03	\$30.31	\$29.16	\$27.95	\$27.15	\$30.37	\$28.66	\$27.79	\$30.27	\$29.41	\$28.83	\$28.18			
TOTAL		\$218.54	\$210.30	\$201.53	\$195.79	\$219.02	\$206.65	\$206.25	\$200.45	\$218.26	\$212.06	\$207.91	\$203.21																																				
6 - SOUTHEAST	100.50	\$19.55	\$17.76	\$17.07	\$16.57	\$19.90	\$18.55	\$18.56	\$18.02	\$18.89	\$18.35	\$20.73	\$19.58	\$167.02	\$161.77	\$154.97	\$150.57	\$167.08	\$157.85	\$153.11	\$167.43	\$162.67	\$156.77	\$153.89																									
TOTAL		\$186.57	\$179.53	\$172.04	\$167.14	\$186.98	\$176.40	\$176.07	\$171.13	\$186.32	\$181.02	\$177.50	\$173.47																																				
7 - EAST CENTRAL	100.70	\$19.59	\$17.79	\$17.10	\$16.60	\$19.93	\$18.60	\$18.59	\$18.06	\$18.93	\$18.39	\$20.78	\$19.61	\$167.35	\$162.09	\$155.28	\$150.88	\$167.41	\$158.16	\$153.41	\$167.77	\$162.99	\$157.08	\$154.19																									
TOTAL		\$186.94	\$179.88	\$172.38	\$167.48	\$187.34	\$176.76	\$176.43	\$171.47	\$186.70	\$181.38	\$177.86	\$173.80																																				
8 - NORTHEAST	104.16	\$20.26	\$18.40	\$17.68	\$17.17	\$20.62	\$19.24	\$19.23	\$18.66	\$19.58	\$19.03	\$21.49	\$20.29	\$173.10	\$167.66	\$160.61	\$156.05	\$173.17	\$163.59	\$158.69	\$173.53	\$168.59	\$162.48	\$159.49																									
TOTAL		\$193.36	\$186.06	\$178.29	\$173.22	\$193.79	\$182.83	\$182.49	\$177.37	\$193.11	\$187.62	\$183.97	\$179.78																																				
GRAND TOTAL		\$224.48	\$216.02	\$207.00	\$201.11	\$224.99	\$212.27	\$211.87	\$205.92	\$224.20	\$217.83	\$213.58	\$208.73																																				

**EXPLANATION OF K – 12 CHART  
OPINION OF PROBABLE COST**

Regions	REG.	ELEMENTARY SCHOOLS			TYPE OF SCHOOL FACILITY
	MODIF. FACTOR	350-400 Students 43,750 - 50,000 SF	401 - 600 Students 50,001 - 69,360 SF	601 Students and up 69,361 SF and up	
<b>BASELINE</b>					
<b>0 – CENTRAL OH</b>	100.00				AVERAGE SITE COST PER SF
Site		\$19.45	\$17.67	\$16.99	
Building		\$166.19	\$160.96	\$154.20	
<b>TOTAL</b>		\$185.64	\$178.63	\$171.19	TOTAL BUILDING AND SITE COST PER SF
Non - Const. Costs		\$29.89	\$28.76	\$27.56	
<b>GRAND TOTAL</b>		\$215.53	\$207.39	\$198.75	
<b>1 – SOUTH WEST</b>	99.02				NON-CONSTRUCTION COST PER SF
Site		\$19.26	\$17.49	\$16.82	
Building		164.56	159.38	152.68	
<b>TOTAL</b>		\$183.82	\$176.87	\$169.50	TOTAL PROJECT COST IN DOLLARS PER SF
Non - Const. Costs		\$29.60	\$24.48	27.29	
<b>GRAND TOTAL</b>		\$213.42	\$205.35	\$196.79	

TOTAL PROJECT

**OPINION OF PROBABLE CONSTRUCTION COSTS**

**Construction Costs**

Site Cost		See Chart
Building Cost		See Chart
Building cost to include loose furnishings, technology, and security systems.		
Division of project budgets for these areas is to be determined by project team.		
Construction Contingency	(new)	5.0%
	(renovation)	7.0%

<u>Non-Construction Costs (% of Site/Building Cost)</u>	<u>NEW</u>	<u>RENOV</u>
Land Survey .....	0.08%	0.03%
Soils/Environmental Report .....	0.07%	0.10%
Agency Approval Fees .....	0.30%	0.15%
Construction Testing .....	0.50%	0.25%
Printing – Bid Documents .....	0.29%	0.27%
Advertising for Bids .....	0.02%	0.03%
Builder's Risk Insurance .....	0.22%	0.11%
Non-Construction Contingency		
Commissioning .....	<b>0.33%</b>	<b>0.42%</b>
Maintenance Plan Advisor/Consultant .....	0.07%	0.11%
Non-Construction Contingency .....	1.72%	1.32%

Design Professional Fee\*

Construction Management Fee\*

***USGBC LEED Fees for Registration are paid 100% by the OSFC.***

Note: A factor for inflation is intended to address the cost of inflation for the duration of the project.

\* The Non-Construction Costs includes a budget of 6.5% for new and 7.5% for renovations for the Design Professional Fee, and 6.0% for the Construction Management Fee.

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL  
OPINION OF PROBABLE COSTS FOR  
CORE AND PROGRAM AREAS FOR NEW SCHOOL/ADDITION CONSTRUCTION**

**“OVERALL PROJECT COST SUMMARY SHEET”**

**BASELINE IS REGION 0 (CENTRAL OHIO)  
Updated: 2006**

**Summary of Core Area and Program Costs**

**Core Spaces**

Total SF of all Core Spaces

Total SF	\$/SF	Total
0	\$0.00	\$0.00

This figure is calculated from the bracketing sheets for the Core and is the total Core SF.

This figure is taken from the “Core SF Cost Summary Sheet” for the particular size school.

This figure is calculated by using the total SF for each specific Program from the Program bracketing sheets.

**Program Spaces**

Total SF of all Program Spaces

0	\$0.00	\$0.00
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This figure is calculated by using the total cost of all Program Types from the Program bracketing sheets and dividing by the total square feet.

Factor is taken from Regional Factor sheet. Subtotal is multiplied by Regional Factor.

Subtotal		\$0.00
Regional Factor (insert from Regional Factor List)		1.0000
<b>Total Funded Amount</b>		\$0.00
Total Cost Per Square Foot		\$0.00

This amount is total funded amount and is a total of Core Program space funding.

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER TECHNICAL  
OPINION OF PROBABLE COSTS FOR  
FOR NEW SCHOOL / ADDITION CONSTRUCTION**

**"REGIONAL FACTORS"**

**BASELINE IS REGION 0 (Central Ohio)**

*Updated: 2009*

<u>Region</u>	<u>Approximate Location</u>	<u>2009 Final Regional Factor</u>
0	Central OH	1.0000
1	South West	0.9902
2	West Central	0.9976
3	North West	1.0387
4	North Central	1.0235
5	South Central	1.0140
6	South East	1.0050
7	East Central	1.0070
8	North East	1.0416

**Note: The above Regional Factors are to be used on the "Overall Project Cost Summary " Sheet when calculating total funding for a particular Career-Technical District.**

**COST INFORMATION**

**CHAPTER 1: INTRODUCTION**

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL SUPPLEMENT  
2009 OSDM Update - Career Tech**

SUBJECT CODE	PROGRAM TYPE 1	PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Const. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
14.0100	<u>Accounting</u>								
	Lab	1,200	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
	Related Office	120	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
14.0300	<u>Administrative and Professional Support</u>								
14.0310	<u>Legal Management and Support</u>								
14.0320	<u>Medical Management and Support</u>								
	Lab	1,200	\$ 19.38	\$ 150.31	\$ 8.48	\$ 178.17	\$ 28.69	\$ 206.86	-0.97%
	Related Office	120	\$ 19.38	\$ 150.31	\$ 8.48	\$ 178.17	\$ 28.69	\$ 206.86	-0.97%
	Related Storage	200	\$ 19.38	\$ 150.31	\$ 8.48	\$ 178.17	\$ 28.69	\$ 206.86	-0.97%
17.0400	<u>Aviation Occupations</u>								
	Lab	1,200	\$ 19.38	\$ 180.89	\$ 10.01	\$ 210.29	\$ 33.86	\$ 244.14	-0.97%
	Related Office	120	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	0.97%
	Related Storage	200	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
14.0800	<u>Business Management</u>								
	Lab	1,200	\$ 19.38	\$ 171.86	\$ 9.56	\$ 200.81	\$ 32.33	\$ 233.14	-0.97%
	Related Office	120	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
14.0210	<u>Information Support &amp; Services</u>								
14.0230	<u>Programming &amp; Software Development</u>								
14.0240	<u>Interactive Media</u>								
14.0220	<u>Network Systems</u>								
34.0005	<u>Visual Design and Imaging</u>								
	Lab	1,200	\$ 19.38	\$ 151.06	\$ 8.52	\$ 178.97	\$ 28.81	\$ 207.78	-0.97%
	Related Office	120	\$ 19.38	\$ 151.06	\$ 8.52	\$ 178.97	\$ 28.81	\$ 207.78	-0.97%
	Related Storage	200	\$ 19.38	\$ 151.06	\$ 8.52	\$ 178.97	\$ 28.81	\$ 207.78	-0.97%
07.9960	<u>Diversified Cooperative Health Occupations</u>								
	Lab	1,500	\$ 19.38	\$ 135.77	\$ 7.76	\$ 162.92	\$ 26.23	\$ 189.15	-0.97%
	Related Office	120	\$ 19.38	\$ 135.77	\$ 7.76	\$ 162.92	\$ 26.23	\$ 189.15	-0.97%
	Related Storage	200	\$ 19.38	\$ 135.77	\$ 7.76	\$ 162.92	\$ 26.23	\$ 189.15	-0.97%
17.0300	<u>Drafting Occupations</u>								
	Lab	1,500	\$ 19.38	\$ 148.53	\$ 8.40	\$ 176.31	\$ 28.39	\$ 204.70	-0.97%
	Related Office	120	\$ 19.38	\$ 148.53	\$ 8.40	\$ 176.31	\$ 28.39	\$ 204.70	-0.97%
	Related Storage	200	\$ 19.38	\$ 148.53	\$ 8.40	\$ 176.31	\$ 28.39	\$ 204.70	-0.97%
17.1503	<u>Electronics</u>								
17.0370	<u>Automation &amp; Robotics</u>								
	Lab	1,800	\$ 19.38	\$ 140.40	\$ 7.99	\$ 167.77	\$ 27.01	\$ 194.78	-0.97%
	Related Office	120	\$ 19.38	\$ 140.40	\$ 7.99	\$ 167.77	\$ 27.01	\$ 194.78	-0.97%
	Related Storage	200	\$ 19.38	\$ 140.40	\$ 7.99	\$ 167.77	\$ 27.01	\$ 194.78	-0.97%
04.0115	<u>Entertainment Marketing</u>								
	Lab	1,500	\$ 19.38	\$ 172.91	\$ 9.61	\$ 201.91	\$ 32.51	\$ 234.41	-0.97%
	Related Office	120	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
14.0110	<u>Financial Services</u>								
	Lab	1,200	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
	Related Office	120	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.32	\$ 8.64	\$ 181.34	\$ 29.20	\$ 210.53	-0.97%
17.1504	<u>Telecommunications</u>								
	Lab	1,200	\$ 19.38	\$ 150.31	\$ 8.48	\$ 178.17	\$ 28.69	\$ 206.86	-0.97%
	Related Office	120	\$ 19.38	\$ 150.31	\$ 8.48	\$ 178.17	\$ 28.69	\$ 206.86	-0.97%
	Related Storage	200	\$ 19.38	\$ 150.31	\$ 8.48	\$ 178.17	\$ 28.69	\$ 206.86	-0.97%
04.1118	<u>Hospitality and Tourism</u>								
33.0020	<u>Travel and Tourism</u>								
	Lab	1,200	\$ 19.38	\$ 152.64	\$ 8.60	\$ 180.63	\$ 29.08	\$ 209.71	-0.97%
	Related Office	120	\$ 19.38	\$ 152.64	\$ 8.60	\$ 180.63	\$ 29.08	\$ 209.71	-0.97%
	Related Storage	200	\$ 19.38	\$ 152.64	\$ 8.60	\$ 180.63	\$ 29.08	\$ 209.71	-0.97%

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL SUPPLEMENT  
2009 OSDM Update - Career Tech**

SUBJECT CODE	PROGRAM TYPE 2	PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Constr. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
07.0913 07.4890	<u>Health Unit Coordinator</u> <u>Health Information Management Services</u>								
	Lab	1,500	\$ 19.38	\$ 135.77	\$ 7.76	\$ 162.91	\$ 26.23	\$ 189.14	-0.97%
	Related Office	120	\$ 19.38	\$ 135.77	\$ 7.76	\$ 162.91	\$ 26.23	\$ 189.14	-0.97%
	Related Storage	200	\$ 19.38	\$ 135.77	\$ 7.76	\$ 162.91	\$ 26.23	\$ 189.14	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 135.77	\$ 7.76	\$ 162.91	\$ 26.23	\$ 189.14	-0.97%
07.0307 07.0906	<u>Home Health</u> <u>Community Health Aide</u>								
	Lab	1,500	\$ 19.38	\$ 139.68	\$ 7.95	\$ 167.02	\$ 26.89	\$ 193.91	-0.97%
	Related Office	120	\$ 19.38	\$ 139.68	\$ 7.95	\$ 167.02	\$ 26.89	\$ 193.91	-0.97%
	Related Storage	200	\$ 19.38	\$ 139.68	\$ 7.95	\$ 167.02	\$ 26.89	\$ 193.91	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 139.68	\$ 7.95	\$ 167.02	\$ 26.89	\$ 193.91	-0.97%
07.0103	<u>Dental Laboratory Technology</u>								
	Lab	1,500	\$ 19.38	\$ 168.93	\$ 9.42	\$ 197.73	\$ 31.84	\$ 229.57	-0.97%
	Related Office	120	\$ 19.38	\$ 168.93	\$ 9.42	\$ 197.73	\$ 31.84	\$ 229.57	-0.97%
	Related Storage	200	\$ 19.38	\$ 168.93	\$ 9.42	\$ 197.73	\$ 31.84	\$ 229.57	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 168.93	\$ 9.42	\$ 197.73	\$ 31.84	\$ 229.57	-0.97%
17.2811	<u>Emergency Medical Technician</u>								
	Lab	1,500	\$ 19.38	\$ 143.59	\$ 8.15	\$ 171.12	\$ 27.55	\$ 198.67	-0.97%
	Related Office	120	\$ 19.38	\$ 143.59	\$ 8.15	\$ 171.12	\$ 27.55	\$ 198.67	-0.97%
	Related Storage	200	\$ 19.38	\$ 143.59	\$ 8.15	\$ 171.12	\$ 27.55	\$ 198.67	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 143.59	\$ 8.15	\$ 171.12	\$ 27.55	\$ 198.67	-0.97%
07.0410	<u>ExerciseScience/Sports &amp; Recreation Health Care</u>								
	Lab	1,500	\$ 19.38	\$ 141.67	\$ 8.05	\$ 169.11	\$ 27.23	\$ 196.34	-0.97%
	Related Office	120	\$ 19.38	\$ 141.67	\$ 8.05	\$ 169.11	\$ 27.23	\$ 196.34	-0.97%
	Related Storage	200	\$ 19.38	\$ 141.67	\$ 8.05	\$ 169.11	\$ 27.23	\$ 196.34	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 141.67	\$ 8.05	\$ 169.11	\$ 27.23	\$ 196.34	-0.97%
17.2004 07.0203 17.2000 17.2815 01.0150 01.2000 01.0155	<u>Industrial Laboratory Assisting</u> <u>Medical Laboratory Technology</u> <u>Chemical Laboratory Assisting</u> <u>Criminal Science Technology</u> <u>Animal Bioscience</u> <u>Biotechnology for Food, Plant &amp; Animal Science</u> <u>Plant Bioscience</u>								
	Lab	1,500	\$ 19.38	\$ 166.09	\$ 9.27	\$ 194.75	\$ 31.35	\$ 226.10	-0.97%
	Related Office	120	\$ 19.38	\$ 166.09	\$ 9.27	\$ 194.75	\$ 31.35	\$ 226.10	-0.97%
	Related Storage	200	\$ 19.38	\$ 166.09	\$ 9.27	\$ 194.75	\$ 31.35	\$ 226.10	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 166.09	\$ 9.27	\$ 194.75	\$ 31.35	\$ 226.10	-0.97%
07.4850 07.0912 17.1600	<u>Biotechnology</u> <u>Pharmacy Assisting</u> <u>Energy Science</u>								
	Lab	1,500	\$ 19.38	\$ 171.37	\$ 9.54	\$ 200.29	\$ 32.25	\$ 232.53	-0.97%
	Related Office	120	\$ 19.38	\$ 171.37	\$ 9.54	\$ 200.29	\$ 32.25	\$ 232.53	-0.97%
	Related Storage	200	\$ 19.38	\$ 171.37	\$ 9.54	\$ 200.29	\$ 32.25	\$ 232.53	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 171.37	\$ 9.54	\$ 200.29	\$ 32.25	\$ 232.53	-0.97%
07.0302	<u>Practical Nursing</u>								
	Lab	1,500	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ 193.02	-0.97%
	Related Office	120	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ 193.02	-0.97%
	Related Storage	200	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ 193.02	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ 193.02	-0.97%
07.4840 07.4830	<u>Health Support Pathway</u> <u>Therapeutic Pathway</u>								
	Lab	1,500	\$ 19.38	\$ 139.68	\$ 7.95	\$ 167.02	\$ 26.89	\$ 193.91	-0.97%
	Related Office	120	\$ 19.38	\$ 139.68	\$ 7.95	\$ 167.02	\$ 26.89	\$ 193.91	-0.97%
	Related Storage	200	\$ 19.38	\$ 139.68	\$ 7.95	\$ 167.02	\$ 26.89	\$ 193.91	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 139.68	\$ 7.95	\$ 167.02	\$ 26.89	\$ 193.91	-0.97%

**COST INFORMATION**

**CHAPTER 1: INTRODUCTION**

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL SUPPLEMENT  
2009 OSDM Update - Career Tech**

SUBJECT CODE	PROGRAM TYPE 3	PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Constr. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
17.0700	<u>Commercial Art Occupations</u>								
	Lab	1,500	\$ 19.38	\$ 160.90	\$ 9.01	\$ 189.30	\$ 30.48	\$ 219.78	-0.97%
	Related Office	120	\$ 19.38	\$ 160.90	\$ 9.01	\$ 189.30	\$ 30.48	\$ 219.78	-0.97%
	Related Storage	200	\$ 19.38	\$ 160.90	\$ 9.01	\$ 189.30	\$ 30.48	\$ 219.78	-0.97%
	Darkroom	250	\$ 19.38	\$ 160.90	\$ 9.01	\$ 189.30	\$ 30.48	\$ 219.78	-0.97%
17.0900	<u>Commercial Photography</u>								
	Lab	1,500	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Office	120	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Print Darkroom	350	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Film Darkroom	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Film Loading Room	80	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
09.0201	<u>Early Childhood Education</u>								
	Lab	1,500	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Related Office	120	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Related Storage	200	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Observation	120	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Infants	700	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Kitchenette	350	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Work Room	150	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Toddler Restroom	60	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Reception	500	\$ 19.38	\$ 146.63	\$ 8.30	\$ 174.31	\$ 28.06	\$ 202.37	-0.97%
	Playground	1,300	\$ 19.38	\$ 71.76	\$ 4.56	\$ 95.70	\$ 15.41	\$ 111.11	-0.97%
17.1900	<u>Graphics Occupations</u>								
	Lab	2,400	\$ 19.38	\$ 123.56	\$ 7.15	\$ 150.09	\$ 24.16	\$ 174.26	-0.97%
	Related Office	120	\$ 19.38	\$ 123.56	\$ 7.15	\$ 150.09	\$ 24.16	\$ 174.26	-0.97%
	Related Storage	200	\$ 19.38	\$ 123.56	\$ 7.15	\$ 150.09	\$ 24.16	\$ 174.26	-0.97%
	Darkroom	250	\$ 19.38	\$ 123.56	\$ 7.15	\$ 150.09	\$ 24.16	\$ 174.26	-0.97%
17.0403	<u>Ground Operations</u>								
	Lab	1,500	\$ 19.38	\$ 134.47	\$ 7.69	\$ 161.55	\$ 26.01	\$ 187.56	-0.97%
	Related Office	120	\$ 19.38	\$ 134.47	\$ 7.69	\$ 161.55	\$ 26.01	\$ 187.56	-0.97%
	Related Storage	200	\$ 19.38	\$ 134.47	\$ 7.69	\$ 161.55	\$ 26.01	\$ 187.56	-0.97%
	Reference Room	150	\$ 19.38	\$ 134.47	\$ 7.69	\$ 161.55	\$ 26.01	\$ 187.56	-0.97%
09.0205	<u>Hotels and Resorts</u>								
33.0010	<u>Lodging</u>								
	Lab	1,500	\$ 19.38	\$ 141.33	\$ 8.04	\$ 168.75	\$ 27.17	\$ 195.92	-0.97%
	Related Office	120	\$ 19.38	\$ 141.33	\$ 8.04	\$ 168.75	\$ 27.17	\$ 195.92	-0.97%
	Related Storage	200	\$ 19.38	\$ 141.33	\$ 8.04	\$ 168.75	\$ 27.17	\$ 195.92	-0.97%
	Banquet Room	800	\$ 19.38	\$ 141.33	\$ 8.04	\$ 168.75	\$ 27.17	\$ 195.92	-0.97%
04.0820	<u>E-Commerce Marketing</u>								
	Lab	900	\$ 19.38	\$ 179.66	\$ 9.95	\$ 209.00	\$ 33.65	\$ 242.65	-0.97%
	Related Office	120	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Bookstore	800	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Display	100	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
04.0810	<u>Marketing Management and Research</u>								
	Lab	900	\$ 19.38	\$ 178.31	\$ 9.88	\$ 207.58	\$ 33.42	\$ 241.00	-0.97%
	Bookstore	800	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Display	100	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Office	120	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
04.0830	<u>Marketing Technology</u>								
04.0840	<u>Sports Marketing</u>								
04.0815	<u>Marketing Communications</u>								
	Lab	1,000	\$ 19.38	\$ 178.31	\$ 9.88	\$ 207.58	\$ 33.42	\$ 241.00	-0.97%
	Bookstore	800	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Display	100	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Office	120	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL SUPPLEMENT  
2009 OSDM Update - Career Tech**

SUBJECT CODE	PROGRAM TYPE 4	2008 PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency)	Total Non-Const. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
17.2802	<u>Cosmetology</u>								
	Lab	1,600	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Related Office	120	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Related Storage	200	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Dispensary	175	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Laundry Room	150	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Facial Room	200	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Manicure Room	200	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
	Customer Toilet	60	\$ 19.38	\$ 145.31	\$ 8.23	\$ 172.93	\$ 27.84	\$ 200.77	-0.97%
17.2802	<u>Criminal Justice</u>								
17.2810	<u>Career Paths for the Law Profession</u>								
	Lab	1,200	\$ 19.38	\$ 141.89	\$ 8.06	\$ 169.34	\$ 27.26	\$ 196.60	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 141.89	\$ 8.06	\$ 169.34	\$ 27.26	\$ 196.60	-0.97%
	Related Office	120	\$ 19.38	\$ 141.89	\$ 8.06	\$ 169.34	\$ 27.26	\$ 196.60	-0.97%
	Related Storage	200	\$ 19.38	\$ 141.89	\$ 8.06	\$ 169.34	\$ 27.26	\$ 196.60	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 141.89	\$ 8.06	\$ 169.34	\$ 27.26	\$ 196.60	-0.97%
	Weight Room	800	\$ 19.38	\$ 141.89	\$ 8.06	\$ 169.34	\$ 27.26	\$ 196.60	-0.97%
	Interrogation Room	150	\$ 19.38	\$ 141.89	\$ 8.06	\$ 169.34	\$ 27.26	\$ 196.60	-0.97%
09.0203	<u>Culinary Arts and Food Service Management</u>								
33.0005	<u>Culinary and Food Service Operations</u>								
	Lab	1,800	\$ 19.38	\$ 267.03	\$ 14.32	\$ 300.73	\$ 48.42	\$ 349.15	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Office	120	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Restaurant	1,500	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Dry Storage	150	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
07.0101	<u>Dental Assistant</u>								
	Lab	1,500	\$ 19.38	\$ 170.90	\$ 9.51	\$ 199.80	\$ 32.17	\$ 231.97	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Office	120	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	X-Ray Room	80	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Darkroom	80	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
07.0998	<u>Diversified Health Occupations</u>								
	Lab	1,200	\$ 19.38	\$ 170.51	\$ 9.49	\$ 199.39	\$ 32.10	\$ 231.49	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Office	120	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Exam Room	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
07.0904	<u>Medical Assistant</u>								
	Lab	1,200	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Related Office	120	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Related Storage	200	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Training Restroom	120	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Laundry Room	120	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
07.0303	<u>Nurse Assisting</u>								
07.1100	<u>Clinical Health Care Services</u>								
	Lab	1,200	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Related Office	120	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Related Storage	200	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Training Restroom	120	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Laundry Room	120	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%
	Exam Room	160	\$ 19.38	\$ 145.90	\$ 8.26	\$ 173.55	\$ 27.94	\$ 201.49	-0.97%

**COST INFORMATION**

**CHAPTER 1: INTRODUCTION**

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL SUPPLEMENT  
2009 OSDM Update - Career Tech**

SUBJECT	PROGRAM TYPE 4	2008 PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Const. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
07.0603	<u>Optomeric Occupations</u>								
	Lab	1,200	\$ 19.38	\$ 178.21	\$ 9.88	\$ 207.47	\$ 33.40	\$ 240.87	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Office	120	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Storage	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
	Exam Room	200	\$ 19.38	\$ 153.29	\$ 8.63	\$ 181.31	\$ 29.19	\$ 210.50	-0.97%
07.0984	<u>Patient Care Technician</u>								
	Lab	1,500	\$ 19.38	\$ 143.81	\$ 8.16	\$ 171.36	\$ 27.59	\$ 198.95	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 143.81	\$ 8.16	\$ 171.36	\$ 27.59	\$ 198.95	-0.97%
	Related Office	120	\$ 19.38	\$ 143.81	\$ 8.16	\$ 171.36	\$ 27.59	\$ 198.95	-0.97%
	Related Storage	200	\$ 19.38	\$ 143.81	\$ 8.16	\$ 171.36	\$ 27.59	\$ 198.95	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 143.81	\$ 8.16	\$ 171.36	\$ 27.59	\$ 198.95	-0.97%
	Training Restroom	120	\$ 19.38	\$ 143.81	\$ 8.16	\$ 171.36	\$ 27.59	\$ 198.95	-0.97%
	Laundry Room	120	\$ 19.38	\$ 143.81	\$ 8.16	\$ 171.36	\$ 27.59	\$ 198.95	-0.97%
07.4820	<u>Diagnostic Pathway</u>								
	Lab	1,200	\$ 19.38	\$ 138.90	\$ 7.91	\$ 166.20	\$ 26.76	\$ 192.96	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 138.90	\$ 7.91	\$ 166.20	\$ 26.76	\$ 192.96	-0.97%
	Related Office	120	\$ 19.38	\$ 138.90	\$ 7.91	\$ 166.20	\$ 26.76	\$ 192.96	-0.97%
	Related Storage	200	\$ 19.38	\$ 138.90	\$ 7.91	\$ 166.20	\$ 26.76	\$ 192.96	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 138.90	\$ 7.91	\$ 166.20	\$ 26.76	\$ 192.96	-0.97%
	Exam Room	200	\$ 19.38	\$ 138.90	\$ 7.91	\$ 166.20	\$ 26.76	\$ 192.96	-0.97%
01.0901	<u>Animal Science and Management (small animal)</u>								
	Lab	1,000	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Related Office	120	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Related Storage	200	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Pet Shop	1,200	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Clinic	350	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Grooming	350	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Animal Room	200	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Animal Room	600	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
	Kennel	250	\$ 19.38	\$ 154.83	\$ 8.71	\$ 182.92	\$ 29.45	\$ 212.37	-0.97%
07.0305	<u>Surgical Technology</u>								
	Lab	1,000	\$ 19.38	\$ 151.63	\$ 8.55	\$ 179.57	\$ 28.91	\$ 208.48	-0.97%
	Operating Room	800	\$ 19.38	\$ 151.63	\$ 8.55	\$ 179.57	\$ 28.91	\$ 208.48	-0.97%
	Instrument Room	700	\$ 19.38	\$ 151.63	\$ 8.55	\$ 179.57	\$ 28.91	\$ 208.48	-0.97%
	Scrub Room	500	\$ 19.38	\$ 151.63	\$ 8.55	\$ 179.57	\$ 28.91	\$ 208.48	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 151.63	\$ 8.55	\$ 179.57	\$ 28.91	\$ 208.48	-0.97%
	Related Office	120	\$ 19.38	\$ 151.63	\$ 8.55	\$ 179.57	\$ 28.91	\$ 208.48	-0.97%
	Related Storage	200	\$ 19.38	\$ 151.63	\$ 8.55	\$ 179.57	\$ 28.91	\$ 208.48	-0.97%
	Related Changing Room	450	\$ 19.38	\$ 151.63	\$ 8.55	\$ 179.57	\$ 28.91	\$ 208.48	-0.97%
17.2801	<u>Fire Fighter Training</u>								
	Lab	1,500	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Related Office	120	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Related Storage	200	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Related Changing Room	490	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Weight Room	800	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
04.0115	<u>Arts &amp; Communication - Media Pathway - Digital TV/Video/Journalism</u>								
34.0115	<u>Media Arts</u>								
	Lab	1,500	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Media Arts Control Room/Edit	450	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Vestibule	84	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Office	120	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Storage	200	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Changing Room	490	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
04.0115	<u>Arts &amp; Communication - Performance Pathway - Dance/Music/Theater</u>								
34.0020	<u>Performing Arts</u>								
	Lab	1,500	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Practice Room	150	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Related Classrooms	900	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Office	120	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Storage	200	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%
	Changing Room	490	\$ 19.38	\$ 152.19	\$ 8.58	\$ 180.15	\$ 29.00	\$ 209.16	-0.97%

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SUBJECT CODE	PROGRAM TYPE 5	2008 PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Const. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
01.0301	<u><i>Agribusiness and Production Systems</i></u>								
	Lab	4,500	\$ 19.38	\$ 148.81	\$ 8.41	\$ 176.61	\$ 28.43	\$ 205.04	-0.27%
	Related Classroom	900	\$ 19.38	\$ 148.81	\$ 8.41	\$ 176.61	\$ 28.43	\$ 205.04	-0.27%
	Related Office	120	\$ 19.38	\$ 148.81	\$ 8.41	\$ 176.61	\$ 28.43	\$ 205.04	-0.27%
	Related Storage	200	\$ 19.38	\$ 148.81	\$ 8.41	\$ 176.61	\$ 28.43	\$ 205.04	-0.27%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 148.81	\$ 8.41	\$ 176.61	\$ 28.43	\$ 205.04	-0.27%
	Related Restroom	68	\$ 19.38	\$ 148.81	\$ 8.41	\$ 176.61	\$ 28.43	\$ 205.04	-0.27%
	Related Tool Crib	550	\$ 19.38	\$ 148.81	\$ 8.41	\$ 176.61	\$ 28.43	\$ 205.04	-0.27%
	Related Reference Room	200	\$ 19.38	\$ 148.81	\$ 8.41	\$ 176.61	\$ 28.43	\$ 205.04	-0.27%
	Greenhouse	1,000	\$ 19.38	\$ 52.19	\$ 3.58	\$ 75.15	\$ 12.10	\$ 87.25	-0.97%
17.0200	<u><i>Appliance Repair</i></u>								
	Lab	1,800	\$ 19.38	\$ 144.37	\$ 8.19	\$ 171.94	\$ 27.68	\$ 199.62	0.22%
	Related Classroom	900	\$ 19.38	\$ 144.37	\$ 8.19	\$ 171.94	\$ 27.68	\$ 199.62	0.22%
	Related Office	120	\$ 19.38	\$ 144.37	\$ 8.19	\$ 171.94	\$ 27.68	\$ 199.62	0.22%
	Related Storage	200	\$ 19.38	\$ 144.37	\$ 8.19	\$ 171.94	\$ 27.68	\$ 199.62	0.22%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 144.37	\$ 8.19	\$ 171.94	\$ 27.68	\$ 199.62	0.22%
	Related Restroom	68	\$ 19.38	\$ 144.37	\$ 8.19	\$ 171.94	\$ 27.68	\$ 199.62	0.22%
	Related Tool Crib	550	\$ 19.38	\$ 144.37	\$ 8.19	\$ 171.94	\$ 27.68	\$ 199.62	0.22%
	Related Reference Room	200	\$ 19.38	\$ 144.37	\$ 8.19	\$ 171.94	\$ 27.68	\$ 199.62	0.22%
17.0303	<u><i>Auto Specialization</i></u>								
	Lab	3,500	\$ 19.38	\$ 137.13	\$ 7.83	\$ 164.34	\$ 26.46	\$ 190.79	-0.09%
	Related Classroom	900	\$ 19.38	\$ 137.13	\$ 7.83	\$ 164.34	\$ 26.46	\$ 190.79	-0.09%
	Related Office	120	\$ 19.38	\$ 137.13	\$ 7.83	\$ 164.34	\$ 26.46	\$ 190.79	-0.09%
	Related Storage	200	\$ 19.38	\$ 137.13	\$ 7.83	\$ 164.34	\$ 26.46	\$ 190.79	-0.09%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 137.13	\$ 7.83	\$ 164.34	\$ 26.46	\$ 190.79	-0.09%
	Related Restroom	68	\$ 19.38	\$ 137.13	\$ 7.83	\$ 164.34	\$ 26.46	\$ 190.79	-0.09%
	Related Tool Crib	550	\$ 19.38	\$ 137.13	\$ 7.83	\$ 164.34	\$ 26.46	\$ 190.79	-0.09%
	Related Reference Room	200	\$ 19.38	\$ 137.13	\$ 7.83	\$ 164.34	\$ 26.46	\$ 190.79	-0.09%
17.1011	<u><i>Building &amp; Property Maintenance</i></u>								
17.1017	<u><i>Building Technology</i></u>								
	Lab	3,000	\$ 19.38	\$ 148.61	\$ 8.40	\$ 176.39	\$ 28.40	\$ 204.79	-0.07%
	Related Classroom	900	\$ 19.38	\$ 148.61	\$ 8.40	\$ 176.39	\$ 28.40	\$ 204.79	-0.07%
	Related Office	120	\$ 19.38	\$ 148.61	\$ 8.40	\$ 176.39	\$ 28.40	\$ 204.79	-0.07%
	Related Storage	200	\$ 19.38	\$ 148.61	\$ 8.40	\$ 176.39	\$ 28.40	\$ 204.79	-0.07%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 148.61	\$ 8.40	\$ 176.39	\$ 28.40	\$ 204.79	-0.07%
	Related Restroom	68	\$ 19.38	\$ 148.61	\$ 8.40	\$ 176.39	\$ 28.40	\$ 204.79	-0.07%
	Related Tool Crib	550	\$ 19.38	\$ 148.61	\$ 8.40	\$ 176.39	\$ 28.40	\$ 204.79	-0.07%
	Related Reference Room	200	\$ 19.38	\$ 148.61	\$ 8.40	\$ 176.39	\$ 28.40	\$ 204.79	-0.07%
17.1100	<u><i>Custodial Services</i></u>								
	Lab	2,500	\$ 19.38	\$ 125.95	\$ 7.27	\$ 152.60	\$ 24.57	\$ 177.16	-0.97%
	Related Classroom	900	\$ 19.38	\$ 125.95	\$ 7.27	\$ 152.60	\$ 24.57	\$ 177.16	-0.97%
	Related Office	120	\$ 19.38	\$ 125.95	\$ 7.27	\$ 152.60	\$ 24.57	\$ 177.16	-0.97%
	Related Storage	200	\$ 19.38	\$ 125.95	\$ 7.27	\$ 152.60	\$ 24.57	\$ 177.16	-0.97%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 125.95	\$ 7.27	\$ 152.60	\$ 24.57	\$ 177.16	-0.97%
	Related Restroom	68	\$ 19.38	\$ 125.95	\$ 7.27	\$ 152.60	\$ 24.57	\$ 177.16	-0.97%
	Related Tool Crib	550	\$ 19.38	\$ 125.95	\$ 7.27	\$ 152.60	\$ 24.57	\$ 177.16	-0.97%
	Related Reference Room	200	\$ 19.38	\$ 125.95	\$ 7.27	\$ 152.60	\$ 24.57	\$ 177.16	-0.97%
04.1900	<u><i>Acquisition and Logistics</i></u>								
	Lab	3,000	\$ 19.38	\$ 126.13	\$ 7.28	\$ 152.79	\$ 24.60	\$ 177.39	-0.97%
	Related Classroom	900	\$ 19.38	\$ 126.13	\$ 7.28	\$ 152.79	\$ 24.60	\$ 177.39	-0.97%
	Related Office	120	\$ 19.38	\$ 126.13	\$ 7.28	\$ 152.79	\$ 24.60	\$ 177.39	-0.97%
	Related Storage	200	\$ 19.38	\$ 126.13	\$ 7.28	\$ 152.79	\$ 24.60	\$ 177.39	-0.97%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 126.13	\$ 7.28	\$ 152.79	\$ 24.60	\$ 177.39	-0.97%
	Related Restroom	68	\$ 19.38	\$ 126.13	\$ 7.28	\$ 152.79	\$ 24.60	\$ 177.39	-0.97%
	Related Tool Crib	550	\$ 19.38	\$ 126.13	\$ 7.28	\$ 152.79	\$ 24.60	\$ 177.39	-0.97%
	Related Reference Room	200	\$ 19.38	\$ 126.13	\$ 7.28	\$ 152.79	\$ 24.60	\$ 177.39	-0.97%
17.1002	<u><i>Electrical Trades</i></u>								
	Lab	3,000	\$ 19.38	\$ 128.90	\$ 7.41	\$ 155.70	\$ 25.07	\$ 180.77	0.05%
	Related Classroom	900	\$ 19.38	\$ 128.90	\$ 7.41	\$ 155.70	\$ 25.07	\$ 180.77	0.05%
	Related Office	120	\$ 19.38	\$ 128.90	\$ 7.41	\$ 155.70	\$ 25.07	\$ 180.77	0.05%
	Related Storage	200	\$ 19.38	\$ 128.90	\$ 7.41	\$ 155.70	\$ 25.07	\$ 180.77	0.05%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 128.90	\$ 7.41	\$ 155.70	\$ 25.07	\$ 180.77	0.05%
	Related Restroom	68	\$ 19.38	\$ 128.90	\$ 7.41	\$ 155.70	\$ 25.07	\$ 180.77	0.05%
	Related Tool Crib	550	\$ 19.38	\$ 128.90	\$ 7.41	\$ 155.70	\$ 25.07	\$ 180.77	0.05%
	Related Reference Room	200	\$ 19.38	\$ 128.90	\$ 7.41	\$ 155.70	\$ 25.07	\$ 180.77	0.05%

**COST INFORMATION**

**CHAPTER 1: INTRODUCTION**

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL SUPPLEMENT  
2009 OSDM Update - Career Tech**

SUBJECT	PROGRAM TYPE 5	2008 PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Const. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
17.0100	<u>Environmental Controls Technologies</u>								
	Lab	3,000	\$ 19.38	\$ 130.18	\$ 7.48	\$ 157.04	\$ 25.28	\$ 182.33	0.04%
	Related Classroom	900	\$ 19.38	\$ 130.18	\$ 7.48	\$ 157.04	\$ 25.28	\$ 182.33	0.04%
	Related Office	120	\$ 19.38	\$ 130.18	\$ 7.48	\$ 157.04	\$ 25.28	\$ 182.33	0.04%
	Related Storage	200	\$ 19.38	\$ 130.18	\$ 7.48	\$ 157.04	\$ 25.28	\$ 182.33	0.04%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 130.18	\$ 7.48	\$ 157.04	\$ 25.28	\$ 182.33	0.04%
	Related Restroom	68	\$ 19.38	\$ 130.18	\$ 7.48	\$ 157.04	\$ 25.28	\$ 182.33	0.04%
	Related Tool Crib	550	\$ 19.38	\$ 130.18	\$ 7.48	\$ 157.04	\$ 25.28	\$ 182.33	0.04%
	Related Reference Room	200	\$ 19.38	\$ 130.18	\$ 7.48	\$ 157.04	\$ 25.28	\$ 182.33	0.04%
17.1003	<u>Heavy Equipment Operations (Construction)</u>								
	Lab	4,500	\$ 19.38	\$ 121.55	\$ 7.05	\$ 147.98	\$ 23.83	\$ 171.81	-0.14%
	Related Classroom	900	\$ 19.38	\$ 121.55	\$ 7.05	\$ 147.98	\$ 23.83	\$ 171.81	-0.14%
	Related Office	120	\$ 19.38	\$ 121.55	\$ 7.05	\$ 147.98	\$ 23.83	\$ 171.81	-0.14%
	Related Storage	200	\$ 19.38	\$ 121.55	\$ 7.05	\$ 147.98	\$ 23.83	\$ 171.81	-0.14%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 121.55	\$ 7.05	\$ 147.98	\$ 23.83	\$ 171.81	-0.14%
	Related Restroom	68	\$ 19.38	\$ 121.55	\$ 7.05	\$ 147.98	\$ 23.83	\$ 171.81	-0.14%
	Related Tool Crib	550	\$ 19.38	\$ 121.55	\$ 7.05	\$ 147.98	\$ 23.83	\$ 171.81	-0.14%
	Related Reference Room	200	\$ 19.38	\$ 121.55	\$ 7.05	\$ 147.98	\$ 23.83	\$ 171.81	-0.14%
17.1012	<u>Integrated Systems Technology</u>								
	Lab	3,500	\$ 19.38	\$ 151.39	\$ 8.54	\$ 179.31	\$ 28.87	\$ 208.18	-0.16%
	Related Classroom	900	\$ 19.38	\$ 151.39	\$ 8.54	\$ 179.31	\$ 28.87	\$ 208.18	-0.16%
	Related Office	120	\$ 19.38	\$ 151.39	\$ 8.54	\$ 179.31	\$ 28.87	\$ 208.18	-0.16%
	Related Storage	200	\$ 19.38	\$ 151.39	\$ 8.54	\$ 179.31	\$ 28.87	\$ 208.18	-0.16%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 151.39	\$ 8.54	\$ 179.31	\$ 28.87	\$ 208.18	-0.16%
	Related Restroom	68	\$ 19.38	\$ 151.39	\$ 8.54	\$ 179.31	\$ 28.87	\$ 208.18	-0.16%
	Related Tool Crib	550	\$ 19.38	\$ 151.39	\$ 8.54	\$ 179.31	\$ 28.87	\$ 208.18	-0.16%
	Related Reference Room	200	\$ 19.38	\$ 151.39	\$ 8.54	\$ 179.31	\$ 28.87	\$ 208.18	-0.16%
17.2303	<u>Manufacturing Occupations</u>								
17.1300	<u>Manufacturing Design and Development</u>								
17.0360	<u>Manufacturing Operations</u>								
	Lab	4,500	\$ 19.38	\$ 121.95	\$ 7.07	\$ 148.40	\$ 23.89	\$ 172.29	-0.14%
	Related Classroom	900	\$ 19.38	\$ 121.95	\$ 7.07	\$ 148.40	\$ 23.89	\$ 172.29	-0.14%
	Related Office	120	\$ 19.38	\$ 121.95	\$ 7.07	\$ 148.40	\$ 23.89	\$ 172.29	-0.14%
	Related Storage	200	\$ 19.38	\$ 121.95	\$ 7.07	\$ 148.40	\$ 23.89	\$ 172.29	-0.14%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 121.95	\$ 7.07	\$ 148.40	\$ 23.89	\$ 172.29	-0.14%
	Related Restroom	68	\$ 19.38	\$ 121.95	\$ 7.07	\$ 148.40	\$ 23.89	\$ 172.29	-0.14%
	Related Tool Crib	550	\$ 19.38	\$ 121.95	\$ 7.07	\$ 148.40	\$ 23.89	\$ 172.29	-0.14%
	Related Reference Room	200	\$ 19.38	\$ 121.95	\$ 7.07	\$ 148.40	\$ 23.89	\$ 172.29	-0.14%
17.1004	<u>Brick, Block and Cement Masonry</u>								
	Lab	3,500	\$ 19.38	\$ 121.93	\$ 7.07	\$ 148.38	\$ 23.89	\$ 172.27	-0.97%
	Related Classroom	900	\$ 19.38	\$ 121.93	\$ 7.07	\$ 148.38	\$ 23.89	\$ 172.27	-0.97%
	Related Office	120	\$ 19.38	\$ 121.93	\$ 7.07	\$ 148.38	\$ 23.89	\$ 172.27	-0.97%
	Related Storage	200	\$ 19.38	\$ 121.93	\$ 7.07	\$ 148.38	\$ 23.89	\$ 172.27	-0.97%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 121.93	\$ 7.07	\$ 148.38	\$ 23.89	\$ 172.27	-0.97%
	Related Restroom	68	\$ 19.38	\$ 121.93	\$ 7.07	\$ 148.38	\$ 23.89	\$ 172.27	-0.97%
	Related Tool Crib	550	\$ 19.38	\$ 121.93	\$ 7.07	\$ 148.38	\$ 23.89	\$ 172.27	-0.97%
	Related Reference Room	200	\$ 19.38	\$ 121.93	\$ 7.07	\$ 148.38	\$ 23.89	\$ 172.27	-0.97%
01.0701	<u>Natural Resource Management</u>								
	Lab	3,000	\$ 19.38	\$ 147.74	\$ 8.36	\$ 175.48	\$ 28.25	\$ 203.73	-0.07%
	Related Classroom	900	\$ 19.38	\$ 147.74	\$ 8.36	\$ 175.48	\$ 28.25	\$ 203.73	-0.07%
	Related Office	120	\$ 19.38	\$ 147.74	\$ 8.36	\$ 175.48	\$ 28.25	\$ 203.73	-0.07%
	Related Storage	200	\$ 19.38	\$ 147.74	\$ 8.36	\$ 175.48	\$ 28.25	\$ 203.73	-0.07%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 147.74	\$ 8.36	\$ 175.48	\$ 28.25	\$ 203.73	-0.07%
	Related Restroom	68	\$ 19.38	\$ 147.74	\$ 8.36	\$ 175.48	\$ 28.25	\$ 203.73	-0.07%
	Related Tool Crib	550	\$ 19.38	\$ 147.74	\$ 8.36	\$ 175.48	\$ 28.25	\$ 203.73	-0.07%
	Related Reference Room	200	\$ 19.38	\$ 147.74	\$ 8.36	\$ 175.48	\$ 28.25	\$ 203.73	-0.07%
	Greenhouse	1,000	\$ 19.38	\$ 52.19	\$ 3.58	\$ 75.15	\$ 12.10	\$ 87.25	-0.97%
17.1005	<u>Interior Design and Application</u>								
	Lab	3,000	\$ 19.38	\$ 128.12	\$ 7.38	\$ 154.88	\$ 24.94	\$ 179.82	-0.97%
	Related Classroom	900	\$ 19.38	\$ 128.12	\$ 7.38	\$ 154.88	\$ 24.94	\$ 179.82	-0.97%
	Related Office	120	\$ 19.38	\$ 128.12	\$ 7.38	\$ 154.88	\$ 24.94	\$ 179.82	-0.97%
	Related Storage	200	\$ 19.38	\$ 128.12	\$ 7.38	\$ 154.88	\$ 24.94	\$ 179.82	-0.97%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 128.12	\$ 7.38	\$ 154.88	\$ 24.94	\$ 179.82	-0.97%
	Related Restroom	68	\$ 19.38	\$ 128.12	\$ 7.38	\$ 154.88	\$ 24.94	\$ 179.82	-0.97%
	Related Tool Crib	550	\$ 19.38	\$ 128.12	\$ 7.38	\$ 154.88	\$ 24.94	\$ 179.82	-0.97%
	Related Reference Room	200	\$ 19.38	\$ 128.12	\$ 7.38	\$ 154.88	\$ 24.94	\$ 179.82	-0.97%

**OHIO SCHOOL FACILITIES COMMISSION  
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2009 OSDM Update - Career Tech**

SUBJECT	PROGRAM TYPE 5	2008 PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Const. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
17.1007	<u>Plumbing &amp; Piping</u> Lab	<b>3,000</b>	\$ 19.38	\$ 133.91	\$ 7.66	\$ 160.96	\$ 25.91	\$ <b>186.87</b>	0.01%
	Related Classroom	900	\$ 19.38	\$ 133.91	\$ 7.66	\$ 160.96	\$ 25.91	\$ <b>186.87</b>	0.01%
	Related Office	120	\$ 19.38	\$ 133.91	\$ 7.66	\$ 160.96	\$ 25.91	\$ <b>186.87</b>	0.01%
	Related Storage	200	\$ 19.38	\$ 133.91	\$ 7.66	\$ 160.96	\$ 25.91	\$ <b>186.87</b>	0.01%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 133.91	\$ 7.66	\$ 160.96	\$ 25.91	\$ <b>186.87</b>	0.01%
	Related Restroom	68	\$ 19.38	\$ 133.91	\$ 7.66	\$ 160.96	\$ 25.91	\$ <b>186.87</b>	0.01%
	Related Tool Crib	560	\$ 19.38	\$ 133.91	\$ 7.66	\$ 160.96	\$ 25.91	\$ <b>186.87</b>	0.01%
	Related Reference Room	200	\$ 19.38	\$ 133.91	\$ 7.66	\$ 160.96	\$ 25.91	\$ <b>186.87</b>	0.01%
17.3100	<u>Power Equipment Technology</u> Lab	<b>3,500</b>	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ <b>193.02</b>	-0.10%
	Related Classroom	900	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ <b>193.02</b>	-0.10%
	Related Office	120	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ <b>193.02</b>	-0.10%
	Related Storage	200	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ <b>193.02</b>	-0.10%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ <b>193.02</b>	-0.10%
	Related Restroom	68	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ <b>193.02</b>	-0.10%
	Related Tool Crib	560	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ <b>193.02</b>	-0.10%
	Related Reference Room	200	\$ 19.38	\$ 138.95	\$ 7.92	\$ 166.25	\$ 26.77	\$ <b>193.02</b>	-0.10%
17.1402	<u>Power Transmission</u> Lab	<b>3,500</b>	\$ 19.38	\$ 132.04	\$ 7.57	\$ 159.00	\$ 25.60	\$ <b>184.60</b>	-0.06%
	Related Classroom	900	\$ 19.38	\$ 132.04	\$ 7.57	\$ 159.00	\$ 25.60	\$ <b>184.60</b>	-0.06%
	Related Office	120	\$ 19.38	\$ 132.04	\$ 7.57	\$ 159.00	\$ 25.60	\$ <b>184.60</b>	-0.06%
	Related Storage	200	\$ 19.38	\$ 132.04	\$ 7.57	\$ 159.00	\$ 25.60	\$ <b>184.60</b>	-0.06%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 132.04	\$ 7.57	\$ 159.00	\$ 25.60	\$ <b>184.60</b>	-0.06%
	Related Restroom	68	\$ 19.38	\$ 132.04	\$ 7.57	\$ 159.00	\$ 25.60	\$ <b>184.60</b>	-0.06%
	Related Tool Crib	560	\$ 19.38	\$ 132.04	\$ 7.57	\$ 159.00	\$ 25.60	\$ <b>184.60</b>	-0.06%
	Related Reference Room	200	\$ 19.38	\$ 132.04	\$ 7.57	\$ 159.00	\$ 25.60	\$ <b>184.60</b>	-0.06%
17.2306	<u>Welding &amp; Cutting</u> Lab	<b>3,500</b>	\$ 19.38	\$ 162.78	\$ 9.11	\$ 191.28	\$ 30.80	\$ <b>222.07</b>	-0.22%
	Related Classroom	900	\$ 19.38	\$ 162.78	\$ 9.11	\$ 191.28	\$ 30.80	\$ <b>222.07</b>	-0.22%
	Related Office	120	\$ 19.38	\$ 162.78	\$ 9.11	\$ 191.28	\$ 30.80	\$ <b>222.07</b>	-0.22%
	Related Storage	200	\$ 19.38	\$ 162.78	\$ 9.11	\$ 191.28	\$ 30.80	\$ <b>222.07</b>	-0.22%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 162.78	\$ 9.11	\$ 191.28	\$ 30.80	\$ <b>222.07</b>	-0.22%
	Related Restroom	68	\$ 19.38	\$ 162.78	\$ 9.11	\$ 191.28	\$ 30.80	\$ <b>222.07</b>	-0.22%
	Related Tool Crib	560	\$ 19.38	\$ 162.78	\$ 9.11	\$ 191.28	\$ 30.80	\$ <b>222.07</b>	-0.22%
	Related Reference Room	200	\$ 19.38	\$ 162.78	\$ 9.11	\$ 191.28	\$ 30.80	\$ <b>222.07</b>	-0.22%

**COST INFORMATION**

**CHAPTER 1: INTRODUCTION**

**OHIO SCHOOL FACILITIES COMMISSION  
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SUBJECT CODE	PROGRAM TYPE 6	PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Constr. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
01.0201	<u>Agriculture / Industrial Equipment</u>								
	Lab	5,000	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Related Classroom	900	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Related Office	120	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Related Storage	200	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Related Restroom	68	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Related Tool Crib	550	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Related Reference Room	200	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Engine Storage	1,000	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
	Flammable Storage	200	\$ 19.38	\$ 123.82	\$ 7.16	\$ 150.36	\$ 24.21	\$ 174.57	-0.27%
17.0301	<u>Auto Collision Repair</u>								
	Lab	5,000	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
	Related Classroom	900	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
	Related Office	120	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
	Related Storage	200	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
	Related Restroom	68	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
	Related Tool Crib	550	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
	Related Reference Room	200	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
	Auto Parts Storage	300	\$ 19.38	\$ 137.54	\$ 7.85	\$ 164.77	\$ 26.53	\$ 191.30	-0.25%
17.0302	<u>Auto Technology</u>								
	Lab	5,000	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Related Classroom	900	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Related Office	120	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Related Storage	200	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Related Restroom	68	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Related Tool Crib	550	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Related Reference Room	200	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Engine Storage	800	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Machine Room	900	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
	Flammable Material Storage	60	\$ 19.38	\$ 122.86	\$ 7.11	\$ 149.36	\$ 24.05	\$ 173.40	-0.36%
17.1001	<u>Carpentry</u>								
	Lab	4,000	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Related Classroom	900	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Related Office	120	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Related Storage	200	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Related Restroom	68	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Related Tool Crib	550	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Related Reference Room	200	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Finishing Room	500	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
	Material Storage	800	\$ 19.38	\$ 130.27	\$ 7.48	\$ 157.14	\$ 25.30	\$ 182.44	-0.27%
17.1807									
17.1808, 17.1809	<u>Engineering Technologies (Design, Process, Product/Service)</u>								
17.1810	<u>Engineering Technology</u>								
	Lab	1,500	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
	Related Classroom	900	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
	Related Office	120	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
	Related Storage	200	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
	Related Restroom	68	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
	Related Tool Crib	550	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
	Related Reference Room	200	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
	CADD Room	400	\$ 19.38	\$ 172.28	\$ 9.58	\$ 201.25	\$ 32.40	\$ 233.65	0.02%
01.1001	<u>Food Science and Technology</u>								
	Lab	2,000	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Related Classroom	900	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Related Office	120	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Related Storage	200	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Related Restroom	68	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Related Tool Crib	550	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Related Reference Room	200	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Freezer	400	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Cooler	400	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%
	Retail	400	\$ 19.38	\$ 129.41	\$ 7.44	\$ 156.23	\$ 25.15	\$ 181.39	-0.97%

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL SUPPLEMENT  
2009 OSDM Update - Career Tech**

SUBJECT	PROGRAM TYPE 6	PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non-Const. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
01.0601	<u>Horticulture</u> Lab	2,000	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Related Classroom	900	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Related Office	120	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Related Storage	200	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Related Restroom	68	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Related Tool Crib	550	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Related Reference Room	200	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Retail	400	\$ 19.38	\$ 132.55	\$ 7.60	\$ 159.53	\$ 25.68	\$ 185.21	-0.97%
	Greenhouse	3,000	\$ 19.38	\$ 52.19	\$ 3.58	\$ 75.15	\$ 12.10	\$ 87.25	-0.97%
17.1200	<u>Medium/Heavy Truck Technology</u> Lab	6,000	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Related Classroom	900	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Related Office	120	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Related Storage	200	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Related Restroom	68	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Related Tool Crib	550	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Related Reference Room	200	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Engine Storage	800	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Machine Room	900	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
	Flammable Material Storage	60	\$ 19.38	\$ 123.49	\$ 7.14	\$ 150.02	\$ 24.15	\$ 174.17	-0.41%
17.1806	<u>Construction - Management</u>								
17.1805	<u>Construction - Design/Build</u> Lab	3,000	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
	Related Classroom	900	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
	Related Office	120	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
	Related Storage	200	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
	Related Restroom	68	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
	Related Tool Crib	550	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
	Related Reference Room	200	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
	CADD Room	400	\$ 19.38	\$ 147.60	\$ 8.35	\$ 175.34	\$ 28.23	\$ 203.56	-0.13%
17.3601	<u>Wood Product Technologies</u> Lab	3,000	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Related Classroom	900	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Related Office	120	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Related Storage	200	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Related Restroom	68	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Related Tool Crib	550	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Related Reference Room	200	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Finishing Room	500	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
	Material Storage	800	\$ 19.38	\$ 141.79	\$ 8.06	\$ 169.24	\$ 27.25	\$ 196.48	-0.22%
17.2302	<u>Precision Machining</u> Lab	3,500	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	Related Classroom	900	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	Related Office	120	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	Related Storage	200	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	Related Restroom	68	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	Related Tool Crib	550	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	Related Reference Room	200	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	CNC Room	900	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%
	Inspection Room	150	\$ 19.38	\$ 116.50	\$ 6.79	\$ 142.68	\$ 22.97	\$ 165.65	-0.11%

## COST INFORMATION

## CHAPTER 1: INTRODUCTION

**OHIO SCHOOL FACILITIES COMMISSION  
CAREER-TECHNICAL SUPPLEMENT  
2009 OSDM Update - Career Tech**

PROGRAM TYPE 7	PROG SF	2009 Site Cost (\$/SF)	2009 Basic Building Cost (\$/SF) (incl. Furn. and Tech.)	Contingency (\$/SF based on 5% of + BBC)	Total Construction Cost (incl. site, bldg., contingency.)	Total Non- Constr. Costs (\$/SF based on 16.1% of Site +BBC + Cont.)	2009 Update Total Line Item Component Cost(\$/SF)	% Change From 2008 to 2009
<i>Aircraft Maintenance</i>								
Lab	13,000	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Related Classroom	900	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Related Office	120	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Related Storage	200	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Related Restroom	68	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Related Tool Crib	550	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Related Reference Room	200	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Cleaning Room	400	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Parts Storage	300	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
Hazardous Material Storage	60	\$ 19.38	\$ 150.45	\$ 8.49	\$ 178.33	\$ 28.71	\$ 207.04	-0.68%
<i>Animal Science and Management (Equine)</i>								
Lab	8,000	\$ 19.38	\$ 59.87	\$ 3.96	\$ 83.22	\$ 13.40	\$ 96.61	0.01%
Stables	6,800	\$ 19.38	\$ 70.01	\$ 4.47	\$ 93.87	\$ 15.11	\$ 108.98	-0.97%
Related Classroom	900	\$ 19.38	\$ 150.73	\$ 8.51	\$ 178.62	\$ 28.76	\$ 207.38	-0.52%
Related Office	120	\$ 19.38	\$ 150.73	\$ 8.51	\$ 178.62	\$ 28.76	\$ 207.38	-0.52%
Related Storage	200	\$ 19.38	\$ 150.73	\$ 8.51	\$ 178.62	\$ 28.76	\$ 207.38	-0.52%
Related Changing Room (one per type 5, 6 & 7)	270	\$ 19.38	\$ 150.73	\$ 8.51	\$ 178.62	\$ 28.76	\$ 207.38	-0.52%
Related Restroom	68	\$ 19.38	\$ 150.73	\$ 8.51	\$ 178.62	\$ 28.76	\$ 207.38	-0.52%
Related Tool Crib	550	\$ 19.38	\$ 150.73	\$ 8.51	\$ 178.62	\$ 28.76	\$ 207.38	-0.52%
Related Reference Room	200	\$ 19.38	\$ 150.73	\$ 8.51	\$ 178.62	\$ 28.76	\$ 207.38	-0.52%

**A. GENERAL DESIGN MANUAL DEFINITIONS**

<b>Auditeria</b>	A student dining area with characteristics of an auditorium: sound, acoustical treatment, lighting, etc.
<b>Composite</b>	Two or more play structures attached or functionally linked, to create one integral unit that provides more than one play activity. The term "modular play structure" is also used interchangeable with this term.
<b>Construction Factor</b>	The construction factor shown is the area of a building which is used for wall thickness, pipe chase, lockers, etc., in the wall.
<b>Distance Learning</b>	The process of transmitting and/or receiving instruction and demonstration via video and/or audio means.
<b>Modular Play Structure</b>	Two or more play structures attached or functionally linked, to create one integral unit that provides more than one play activity. The term "composite" is also used interchangeable with this term.
<b>ORFF</b>	Large instruments capable of being beat upon by children.
<b>Plan for</b>	The design is to accommodate the item. The item will be funded by the school district.
<b>Provide for</b>	The item is to be part of the project. The item will be funded by the Classroom Facilities Assistance Program.
<b>School District</b>	A general term applied to a legally constituted school entity which is governed by a Board of Education. They may include city, local, exempted village, and joint vocational school districts.

**DEFINITIONS****B. CAREER-TECHNICAL DEFINITIONS****Academies**

Many Career-Technical Schools and Comprehensive High Schools group similar cluster programs into units called Academies. An Academy may contain 75 to 100 students in a general area such as Arts & Communications, Health Services, Business and Management, , etc. These units may be the equivalent of three to five individual program types within the Career-Technical clusters. The Ohio School Facilities Commission Design Manual defines instructional spaces such as laboratory and related spaces in terms of individual programs since academies can vary in the combination of programs making up the academy.

**Career Clusters**

The Ohio Department of Education, Career-Technical and Adult Education Division has created career fields under which programs/coursework are organized into pathways or specializations of study. ODE defines career field as “a grouping of occupations and broad industries based on commonalities.” “The career field concept calls for balancing broad-based, career-technical education and the specialized training necessary for success in employment, further study and adaptation of an ever-changing economy.” The career fields are listed below. Additional information regarding the scope of each career field can be found on ODE’s website. They are shown here for definition purposes only and are not intended to directly relate to the seven program types found in the Program of Requirements.

**Agricultural and Environmental Systems**

**Arts and Communication**

**Business and Administrative Services**

**Construction Technologies**

**Education and Training**

**Engineering and Science Technologies**

**Finance**

**Government and Public Administration**

**Health Science**

**Hospitality and Tourism**

**Human Services**

**Information Technology**

**Law and Public Safety**

**Manufacturing Technologies**

**Marketing**

**Transportation Systems**

**Career-Technical Education**

Organized education programs that (a) offer a sequence of courses that provide individuals with the academic knowledge and skills the individuals need to prepare for further education and careers in current or emerging employment sectors; and (b) include competency-based applied learning that contributes to the academic knowledge higher-order reasoning and problem-solving skills, work attitudes, general employability skills, and occupational-specific skills of an individual.

**B. CAREER-TECHNICAL DEFINITIONS, continued**

<b>Career-Technical School Districts</b>	<p>Synonymous with Vocational Education and the term that is utilized within the Career-Technical sections when addressing vocational programming.</p> <p><i>Career-Technical Planning District (CT)</i> by the Department of Education as being responsible for the planning and provision of Career-Technical Education services to students within the district or group of districts.</p> <p><i>Compact CTPD</i> – a vocational educational planning district composed of a group of school districts which contract within the group to deliver Career-Technical Education. A “lead district” acts as the funding agent and usually offers the majority of the programs.</p> <p><i>Comprehensive CTPD</i> – a vocational education planning district composed of a single school district. The high school providing such service is a Comprehensive High School.</p> <p><i>Joint Career-Technical School District VEPD</i> – a School district formed by a group of city, local, or exempted village school districts to offer Career-Technical education to students of all of the participating districts.</p>
<b>Instructional Spaces</b>	<p>The Ohio School Facilities Commission Design Manual defines instructional spaces such as laboratory and related spaces in terms of individual programs since academies can vary in the combination of programs making up the academy. The space needed to house an academy is generally the combined totals for the individual programs within the academy. Some economy of space should be realized in areas such as related classrooms and perhaps office, storage, and specialized facilities. These decisions will need to be determined on a case-by-case basis.</p>
<b>Satellite Program</b>	<p>A program offered by a Career-Technical, comprehensive, or compact school at an off-site location which could include a member school, a business, or any other facility properly equipped to house the program.</p>
<b>Subject Codes</b>	<p>The term utilized by the Ohio Department of Education, Career-Technical and Adult Division, to classify the various programs which may be approved for operation within a school district.</p>
<b>VE-26</b>	<p>The vocational education form which must be submitted by a school district to the Ohio Department of Education in order to gain approval to offer and conduct a vocational program.</p>
<b>VE-26A</b>	<p>The adult education equivalent of the VE-26 form.</p>

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## ABBREVIATIONS

<b>AABC</b>	Associated Air Balance Council
<b>AAMA</b>	American Architectural Manufacturers Association
<b>AASHTO</b>	American Association of State Highway and Transportation Officials
<b>AATCC</b>	American Association of Textile Chemists and Colorists
<b>ABMA</b>	American Boiler Manufacturers Council
<b>AC</b>	Alternating Current
<b>ACI</b>	American Concrete Institute
<b>ADA</b>	American with Disabilities Act
<b>ADC</b>	American Diffusion Council
<b>ADDM</b>	Addendum Administration
<b>AGA</b>	American Gas Association
<b>AHA</b>	American Hardboard Association
<b>AIA</b>	American Institute of Architects
<b>AISC</b>	American Institute of Steel Construction, Inc.
<b>AISI</b>	American Iron and Steel Institute
<b>AITC</b>	American Institute of Timber Construction
<b>AMCA</b>	Air Movement and Control Association, Inc.
<b>ANSI</b>	American National Standards Institute
<b>AP</b>	Access Point
<b>APA</b>	American Plywood Association
<b>API</b>	American Petroleum Institute
<b>APP</b>	Atactic polypropylene
<b>ARI</b>	Air Condition and Refrigeration Institute
<b>ARMA</b>	Asphalt Roofing Manufacturers Association
<b>ASCE</b>	American Society of Civil Engineers
<b>ASHRAE</b>	American Society of Heating, Refrigerating and Air Conditioning Engineers
<b>ASLA</b>	American Society of Landscape Architects
<b>ASME</b>	American Society of Civil Engineers
<b>ASSE</b>	American Society of Sanitary Engineering
<b>ASTM</b>	American Society for Testing and Materials
<b>ATM</b>	Asynchronous Transfer Mode
<b>AWCI</b>	Association of the Wall and Ceiling Industries
<b>AWG</b>	American Wire Gauge
<b>AWI</b>	Architectural Woodwork Institute
<b>AWS</b>	American Welding Society
<b>AWWA</b>	American Waste Water Association
<b>AWWA</b>	American Water Work Association
<b>BHMA</b>	Builders Hardware Manufacturers Association
<b>bhp</b>	Brake Horsepower
<b>BIA</b>	Brick Institute of America
<b>BICSI</b>	Building Industry Consulting Services International
<b>CAC</b>	Ceiling Attenuation Class
<b>CADD</b>	Computer Aided Design Drafting
<b>Carrier HAP</b>	Carrier Hourly Analysis Program
<b>CAT-5e</b>	Category 5e
<b>CATV</b>	Community Antenna Television (Cable Television)
<b>ccd</b>	Charge Coupled Device
<b>CCTV</b>	Closed Circuit Television

**ABBREVIATIONS****ABBREVIATIONS**

<b>CD</b>	Construction Documents
<b>CD</b>	Compact Disk
<b>CDF</b>	Combined Distributing Frame
<b>CDS</b>	Customer Direct Service
<b>CFM</b>	Cubic Feet per Minute
<b>CFR</b>	Code of Federal Regulations
<b>CISCA</b>	Ceilings and Interior Systems Construction Association
<b>CISPI</b>	Cast Iron Soil Pipe Institute
<b>CL</b>	Lighting Contactor
<b>CM</b>	<b>Construction Manager</b>
<b>CMP</b>	Communications Plenum Cable
<b>CMU</b>	Concrete Masonry Unit
<b>COAX</b>	Coaxial Cable
<b>COE</b>	Corps of Engineers
<b>CPSC</b>	Consumer Product Safety Commission
<b>CPVC</b>	Chlorinated Polyvinyl Chloride
<b>CRI</b>	Carpet and Rug Institute
<b>CRI</b>	Color Rendering Index
<b>CRSI</b>	Concrete Reinforcing Steel Institute
<b>CS</b>	Commercial Standards
<b>CSE</b>	Central Switching Exchange
<b>CSI</b>	Construction Specification Institute
<b>CTI</b>	Cooling Tower Institute
<b>CX</b>	<b>Commissioning</b>
<b>DB</b>	Decibel
<b>DC</b>	Direct Current
<b>DD</b>	Design Development
<b>DDC</b>	Direct Digital Control
<b>DEMARC</b>	Demarcation
<b>DFT</b>	Dry Film Thickness
<b>Div.</b>	Division
<b>DNR</b>	Department of Natural Resources
<b>DOE</b>	Department of Energy
<b>DSL</b>	Digital Subscriber Line
<b>DVD</b>	Digital Versatile Disk
<b>DX</b>	Direct Expansion
<b>EIA</b>	Electronic Industries Association
<b>EIFS</b>	Exterior Insulation and Finish System
<b>EIMA</b>	EIFS Industry Members Association
<b>EIMA</b>	Exterior Insulation Manufacturer Association
<b>EIT</b>	Engineer in Training
<b>EJMA</b>	Expansion Joint Manufacturers Association, Inc.
<b>EF</b>	<b>Entrance Facilities</b>
<b>ELA</b>	<b>Extended Learning Area</b>
<b>EMT</b>	Electrical Metallic Tubing
<b>EPA</b>	Environmental Protection Agency or Effective Projected Area
<b>EPDM</b>	Ethylene Propylene Diene Monomers
<b>EPS</b>	Expanded Polystyrene
<b>ER</b>	<b>Main Control/Equipment Room</b>

**ABBREVIATIONS**

<b>ETL</b>	Electrical Testing Laboratories
<b>f<sub>c</sub></b>	Specified Compressive Strength (Concrete at the age of 28 days)
<b>FCAN</b>	Full Capacity Above Normal
<b>FCBN</b>	Full Capacity Below Normal
<b>FCC</b>	Federal Communications Commission
<b>FEMA</b>	Federal Emergency Management Agency
<b>FEP</b>	Front End Processor
<b>FF/FL</b>	Floor Flatness/Floor Levelness
<b>FGMA</b>	Flat Glass Marketing Association
<b>Flt-Fn</b>	Float Finish
<b>FM</b>	Factory Mutual
<b>FS</b>	Federal Specification
<b>Gb</b>	Gigabit (billion bits)
<b>Gbps</b>	Gigabits (billions of bits) per Second
<b>GC</b>	General Contractor
<b>GG</b>	Geogrid
<b>Gnd</b>	Ground
<b>gpm</b>	Gallon per Minute
<b>GRI</b>	Geosynthetic Research Institute
<b>Grt-CI-Fn</b>	Grout Clean Finish
<b>HCFC</b>	Hydrochlorofluorocarbons
<b>HDPE</b>	High Density Polyethylene
<b>HI</b>	Hydronics Institute
<b>HID</b>	High Intensity Discharge
<b>HPMA</b>	Hardwood Plywood Manufacturers Association
<b>HPVA</b>	Hardwood Plywood and Veneer Association
<b>HSS</b>	Hollow Structural Sections
<b>HUD/FHA</b>	U.S. Department of Housing and Urban Development/Federal Housing
<b>HVAC</b>	Heating, Ventilating, and Air Conditioning
<b>IAPMO</b>	International Association of Plumbing and Mechanical Officials
<b>ICEA</b>	Insulated Cable Engineers Association
<b>ID</b>	Inside Dimension
<b>IDF</b>	Intermediate Distribution Frame Closets
<b>IEEE</b>	Institute of Electrical and Electronics Engineers, Inc.
<b>IEP</b>	Individual Education Programs
<b>IES</b>	Illuminating Engineers Society
<b>IP</b>	Internet Protocol
<b>IPCEA</b>	Insulated Power Cable Engineers Association
<b>IR</b>	Infrared
<b>ISDN</b>	Integrated Services Digital Network
<b>ITL</b>	Independent Testing Laboratories
<b>IVDL</b>	Interactive Video Distance Learning
<b>kb</b>	Kilobit
<b>kB</b>	KiloByte
<b>kbps</b>	Kilo (thousand) bits per second
<b>L/H</b>	Length/Height
<b>LAN</b>	Local Area Network
<b>LEC</b>	Local Exchange Carrier (Now Service Provider [SP])
<b>LED</b>	Light Emitting Diode

**ABBREVIATIONS****ABBREVIATIONS**

LP	Liquid Petroleum
LP	Liquid Propane
MB	MegaByte
Mb	Megabit
MBA	Modified Bitumen APP
Mbps	Millions of bits per Second
MC	Main Cross-connect (aka Technology Control Center)
MERV	Minimum Efficiency Reporting Value
MFMA	Maple Flooring Manufacturers Association
MHz	Million Hertz (Cycles per Second)
MIA	Masonry Institute of America
MLMA	Metal Lath Manufacturer Association
mm	Multi-Mode
MSS	Manufacturers Standardization Society of the Valve and Fitting Industry
MW	Moderate Weather
NAB	National Association of Broadcasters
NAEB	National Association of Educational Broadcasters
NBC	National Building Code
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NDL	No Dollar Limit
NEBB	National Environmental Balancing Bureau
NEC	Nation Electric Code-Latest Edition
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NMC	National Mechanical Code
NPA	National Particleboard Association
NPC	National Plumbing Code
NRC	Noise Reduction Coefficient
NRCA	National Roofing Contractors Association
NsBrm-Fn	Non-slip Broom Finish
NSF	National Sanitation Foundation
NWWDA	National Wood Window and Door Association
OBC	Ohio Building Code
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
OSFC	Ohio School Facilities Commission
OSN	Ohio SchoolNet Commission
OSP	Outside Plant
OTDR	Optical Time Division Reflectometer
PA	<b>Project Administrator</b>
PABX	Private Automatic Branch Exchange
PC	Personal Computer
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PDCA	Painting and Decorating Contractors of America

## ABBREVIATIONS

<b>PDI</b>	Plumbing and Drainage Institute
<b>PID</b>	Proportional, Integral, Derivative
<b>PPM</b>	Parts per Million
<b>PRI</b>	Primary Rate Interface
<b>psi</b>	Pounds per Square Inch
<b>psig</b>	Pounds per Square Inch Gauge
<b>PSTN</b>	Public Switched Telephone Network
<b>PVC</b>	Polyvinyl Chloride
<b>PVC</b>	Permanent Virtual Circuit
<b>QoS</b>	Quality of Service
<b>RCDD</b>	Registered Communications Distribution Designer
<b>RF</b>	Radio Frequency
<b>RfFm-Fn</b>	Rough Formed Finish
<b>RFI</b>	Request for Information
<b>RIS</b>	Redwood Inspection Service
<b>RJ</b>	Residential Jack
<b>SACMU</b>	Sound Absorbing Concrete Masonry Unit
<b>SBS</b>	Styrene-Butadiene-Styrene
<b>SC</b>	Subscriber Connector (Fiber-Optic Connector)
<b>SCP</b>	System Control Processor
<b>SD</b>	Schematic Design
<b>SDI</b>	Steel Deck Institute
<b>SDI</b>	Steel Door Institute
<b>SF</b>	Square Feet
<b>SF</b>	Square Foot
<b>SJI</b>	Steel Joist Institute
<b>sm</b>	Single-Mode
<b>SMACNA</b>	Sheet Metal and Air Conditioning Contractors' National Association, Inc.
<b>SmFm-Fn</b>	Smooth Formed Finish
<b>SNMP</b>	Simple Network Management Protocol
<b>SP</b>	<b>Service Provider</b>
<b>SPL</b>	Sound Pressure Level
<b>SPRI</b>	Single Ply Roofing Institute
<b>ST</b>	Straight Tip (Fiber-Optic Connector)
<b>STC</b>	Sound Transmission Coefficient
<b>STI</b>	Steel Tank Institute
<b>SVC</b>	Switched Virtual Circuit
<b>SW</b>	Severe Weather
<b>SWP</b>	Standard Water Pressure
<b>TBB</b>	Telecommunications Bonding Backbone
<b>TC</b>	Telecommunications Closet (aka Telecommunications Room)
<b>TCA</b>	Tile Council of America
<b>TCC</b>	Technology Control Center (aka Main Cross-Connect)
<b>TCP/IP</b>	Transmission Control Protocol/Internet Protocol
<b>TDM</b>	Time Division Multiplexing
<b>TGB</b>	Telecommunications Grounding Busbar
<b>THHN</b>	Heat Resistant Thermoplastic Conductor
<b>THWN</b>	Moisture and Heat Resistant Thermoplastic Conductor
<b>TIA</b>	Telecommunications Industry Association

**ABBREVIATIONS****ABBREVIATIONS**

<b>TIS</b>	Traffic Impact Study
<b>TMGB</b>	Telecommunications Main Grounding Busbar
<b>TMS</b>	The Masonry Society
<b>TR</b>	Telecommunications Room (aka Telecommunications Closet)
<b>Tr-Fn</b>	Trowel Finish
<b>TV</b>	Television
<b>TWS</b>	Tackable Wall Surface
<b>UL</b>	Underwriters Laboratories
<b>UL</b>	Underwriter's Lab
<b>UPS</b>	Uninterruptible Power Supply
<b>UTP</b>	Unshielded Twisted Pair
<b>VAV</b>	Variable Air Volume
<b>VCP</b>	Visual Comfort Probability
<b>VCR</b>	Video Cassette Recorder
<b>VCT</b>	Vinyl Composition Tile
<b>VCTT</b>	Vinyl Cushion Tufted Textiles
<b>VET</b>	Vinyl Enhanced Tile
<b>VGA</b>	Video Graphic Array (800 x 640)
<b>VLAN</b>	Virtual Local Area Network
<b>VOC</b>	Volatile Organic Compound
<b>VoIP</b>	Voice over IP
<b>WAN</b>	Wide Area Network
<b>WLAN</b>	Wireless Local Area Network
<b>WSP</b>	Working Steam Pressure
<b>WWF</b>	Welded Wire Fabric
<b>WWPA</b>	Western Wood Products Association
<b>XGA</b>	Extended Graphic Array (1024 x 768)