Blueprint 2020

Phase 1 Architectural Program
Mays Landing Campus

Atlantic Cape Community College
Mays Landing, New Jersey

Prepared by:
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Moorestown, New Jersey

September 2, 2008

ATLANTIC CAPE
COMMUNITY COLLEGE

Introduction by the President

To the ACCC Community:

This programming document represents the shared vision of the ACCC college community and was developed with extensive input from a wide array of internal and external stakeholder groups (see Appendix No.2). I would like to acknowledge the efforts of all participants in this successful planning process.

Based on our published mission, Atlantic Cape Community College is committed to providing superior, comprehensive, student-centered, and accessible education. The facilities plan contained in this document is truly transformational. It will provide at the Mays Landing Campus an excellent learning environment, which is essential for fulfillment of the college's mission.

In 2005, my first year as ACCC president, the college's Board of Trustees approved a recommendation from me to initiate a comprehensive master facilities plan to include all three campuses. That facilities plan was then linked to the college's strategic plan. ACCC then engaged Kimball Associates to complete a comprehensive, program-based, research-driven facilities needs assessment. That study, completed in 2006, found that the Mays Landing Campus displayed the greatest challenge for facilities enhancement, specifically citing the following areas of need:

- Additional classroom space
- Upgrade of the sciences and computer technology labs through the construction of a STEM (science, technology, math, and engineering) building
- Construction of a Student Center
- Renovation of the gymnasium to support expanded athletic programs and to provide a fitness center for students & staff
- Creation of a new entranceway and extension of the loop road system

That facilities plan, under the title Blueprint for 2020: Building a Better Future for ACCC, was endorsed by the Board of Trustees in 2007. I then provided institutional leadership to design a capital formation plan to fund the project, with a construction cost of $36 million. That capital formation plan was finalized in May of this year with the approval of the Atlantic County Board of Chosen Freeholders to provide $18 million in matching funds, with the college providing the remaining $18 million from several external sources.

Through Blueprint 2020, ACCC reaffirms its stewardship commitment to provide a superior learning environment, which is vital to the success of our students. This plan will enhance ACCC's leadership role in support of educational, economic, technological, and cultural development of the college's service area, while fostering institutional efforts to fulfill our legacy of truly serving as the "community's college."

Sincerely,

Dr. Peter L. Mora
President

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Table of Contents

Executive Summary

This document is a schematic design level architectural program document for the first phase of implementation of the Blueprint 2020 Master Plan for the rejuvenation of the Mays Landing Campus of Atlantic Cape Community College. It is the first part of a combined architectural program and feasibility study for this first phase. The College has determined that the funds which will be available for these improvements cannot exceed $36 million and this is the primary restraint on the facilities to be provided now. In accord with this strategy, the improvements have been divided into 5 projects:

Project No. 1	Entry and Ring Road Improvements	$2.4 million
Project No. 2	STEM Building (including the Technology Studies Institute- TSI)	$17.8 million
Project No. 3	Building A, H, and K Renovations	$5.1 million
Project No. 4	Student Center & J/C Renovations	$8.8 million
Project No. 5A	Gymnasium Renovations	$2.0 million
Project No. 5B	Campus Wide Rehabilitation and TV Studio (partial funds)	$1.9 million
Total		$38.0 million[1]

Included in the above Projects costs is $1 million in anticipated Perkins Grant Funds which funds will be used to buy computers, smart boards and projection systems.[2] In addition, there is an anticipated $3 million in funds from the Economic Development Administration to establish the 9,420 GSF Technology Services Institute (TSI) within the STEM building (Project No. 2).

Prior to the start of any construction on the site, a Pinelands Permit for the entire Master Plan must be approved if a campus wide water management system is to be achieved – we believe the permit will be received by July 1, 2010, but it could be received a year earlier. All of the projects will be complete by October 1, 2014. The reader is reminded, however, that a Pinelands Permit may never be issued for any improvements and it is unlikely that the Master Plan of improvements as shown will be approved in its entirety. Likely issues with the Commission include the completion of the ring road, the configuration of the storm water management plan, the existence of threatened and endangered species and the delineation, intrusion into, or modifications of wetlands.

At the completion of these projects a large part of the vision for Blueprint 2020 will have been realized – a new STEM building with all new state-of-the-art science labs and computer labs; new nursing labs, additional computer equipped classrooms, a new student center, up-to-date dining facilities, and expanded arts facilities. These facilities will provide sufficient capacity for the College's needs through the year 2017/2020 and significantly up grade the quality and flexibility of these facilities. In addition, funds have been made available for the renovation of building E, the gymnasium, to provide a new health center, climate control, renovated locker rooms, and toilet facilities. Furthermore, the installation of a new TV studio and ancillary facilities is under consideration along with the renovation and renewal of various spaces campus wide.

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[1] This total includes $36 million original funding target and additional $2 million funding for the gymnasium improvements authorized by the board in September, 2008 This latter project may proceed without a Pinelands permit as it is all internal renovations.

[2] See Appendix #5 for a list of Perkins Grant Fund qualified technology improvements.

Introduction

This document is a schematic design level architectural program document for the first phase of implementation of the Blueprint 2020 Master Plan for the rejuvenation of the Mays Landing Campus of Atlantic Cape Community College. It is the first part of a combined architectural program and feasibility study for this first phase.

The program utilizes the results of the previously prepared Master Plan along with interviews with faculty and staff during programming workshops which took place in the early part of 2008. In addition to interviewing the individual academic departments, the workshops included all of the operational groups – facilities, food services, security, etc. to provide a complete picture of the needs of the College. Also, the programming team worked with the Global Decision Makers of the College to give direction and resolve uncertainties and conflicts. There was included in the process a meeting with outside interests including local employers and 2 of the 4 year Universities into which the College feeds students, Rowan and Stockton Universities. To determine academic program needs we have adopted fall 2007 enrollment and utilization as a baseline for alterations and improvements

The College has determined that the funds which will be available for these improvements cannot exceed $36 million and this is the primary restraint on the facilities to be provided. The timing of this funding and how it relates to the construction of the facilities is included as plate No. 2 in the section Strategy of Project Execution. A 17 Line Cost Evaluation and line-by-line analysis of each of the major program elements has been prepared. The reader is encouraged to review these in detail.

In accord with this strategy, the improvements have been divided into 5 projects:

Project No. 1	Entry and Ring Road Improvements	$2.4 million
Project No. 2	STEM Building	$17.8 million
Project No. 3	Building A, H, and K Renovations	$5.1 million
Project No. 4	Student Center & J/C Renovations	$8.8 million
Project No. 5A	Gymnasium Renovations	$2.0 million
Project No. 5B	Campus Wide Rehabilitation, TV Studio	$1.9 million (partial funds)
Total		$38.0 million

Included in the above calculation is $1 million in anticipated Perkins Grant Funds which will be used to buy computers, computer smart boards and projection systems.

Project No. 5A, The Gymnasium Renovation, has been funded by the Board in the amount of $2 million, which amount includes the renovation of the locker rooms, the addition of new toilet facilities, a new health center and the provision of air conditioning throughout the building.[3] The elements of Project #5B are not fully funded with the $1.9 million listed in the table above. The Gymnasium improvements and the TV Studio are

[3] The replacement of the air conditioning for the Office Suite & Lobby along with cosmetic renovations of the spaces (Project 3E-1 – see pg. 90) has not been included in this funding. For a complete description of the projects related to the Gym Renovations see pp. 87-98

fully described in this program document along with cost evaluations for each of them in the anticipation of possible additional funding. The campus wide renewal and rehabilitation projects in Project No. 5 have not been identified.

In addition, not all needs have been met with this round of improvements – Because of funds limitations the projected campus Services Building, the complete relocation of Testing to Building J, and the computers for 16 additional computer labs for English are among the projects which have been deferred until additional funds are available. It may be possible to start construction of these projects earlier if a Pinelands Permit is received early and funds are forthcoming more quickly than expected. Should this happen any additional funds remaining because of unrealized escalation should be retained as additional funding for Project #5 rather than increasing the scope of the project in question.

In the document the program elements have been analyzed from 2 directions – the individual departments with their present facilities and requested improvements and the facilities as part of a specific project. For the two most complicated programs, the STEM Building and the Student Center we have prepared space lists for the buildings in addition to the departmental programs.

For reference we have included attendance lists for the various workshop meetings, the measurement system utilized in the cost and area analyses, and other matter including the space program for the Campus Facilities Building, which building will not be built as part of this project because of funding availability.

The Priority Statement

The *Priority Statement* is a ranked list of the most important project *Objectives*; as such, the *Priority Statement* is a summary description of the primary means by which the design of the project is evaluated. It should be viewed as the answer to the question – "What are those few essential things that need to be accomplished to consider the project a success and what is the order of their importance?" Objectives without priorities are not as valuable a design tool as those that are ranked by importance. Ranking the *Objectives* gives both the designer and the client a tool to resolve conflicts. Normally this list contains between 4 and 10 items – about the limit of conscious manipulation by most design professionals. This list should be reviewed with the architect at the beginning of the design process for the building.

Expansion of the meaning of these *Objectives* are to be found in the following section *"Issues"*

Here is the approved *Priority Statement* for this project:

1. *Objective:* The program capital costs cannot exceed $36 million - the College has determined that this is the maximum funding available for these capital improvements.

2. *Objective:* Provide a design and construction schedule that is consistent with the stream of funds available.

3. *Objective:* To the extent possible follow the Master Plan primarily as regards program elements and secondarily as regards building placement and relationship to the larger site design proposals and improvements.

4. *Objective:* Provide energy efficient and "green" facilities – all new construction will be designed to achieve a Silver LEED Certification

5. Objective: Provide high quality design and construction materials consistent with the institutional setting and an expected building systems life of 50 years or more

6. *Objective:* Provide a new state-of-the-art STEM (Science, Technology, Engineering & Math) Building to relocate and update existing science facilities in Building A

7. *Objective*: Provide a new Student Center and updated or new dining facilities

8. *Objective:* Enhance the existing entry road and connect segments of the existing road system to provide a complete campus loop or if this is not possible improve traffic flow by other means

9. *Objective:* As funds allow, provide renovations to the Academic Complex, Buildings A, B, H, & K so as to provide for the renovation of vacated spaces and improvements to existing spaces to satisfy the objectives of the Master Plan and Program

Issues/Program Objectives and Concepts (General)

Introduction

To address issues in the context of the overall project, D/H&K utilizes the system *of Issues/Objectives/ Concepts*[4] to capture both quantitatively and qualitatively, the essence of the program. The list is not all inclusive - only those larger Issues which apply to this project and were discussed have been addressed; where issues and their resolution are confined to a single interest group they are discussed within the context of the space list for that project or interest. Where a *Concept* has been accepted by all and is included in the program quantitative data we have marked it with an asterisk; where an Issue is controversial or can be resolved only in design (or the feasibility study) it is listed in the section *Unresolved Issues*.

Issue: An abbreviation of the term *Design Issue*. A topic related to some aspect of design fulfillment. It is a statement, the answer to which will contribute to the fulfillment of the Mission Statement.

Objective: An abbreviation of the term *Program Objective*. *Objectives* define either quantitatively or qualitatively the result to be achieved by the final design and construction of what you are programming. An *Objective* addresses a single issue and defines the state of being to be achieved. There can be more than one *Objective* for each Issue. A collection of the highest priority *Objectives* becomes the *Priority Statement.*

Concept: An abbreviation of the term *Program Concept. Concepts* are the means to achieve the *Program Objectives*. They are less abstract than *Program Objectives* and more abstract than design concepts, which are specific and express how the *Program Concepts* are realized. There may be more than one *Program Concept* for each *Program Objective.*

[4] A detailed explanation of this system and the theory behind it is to be found in *Architectural Programming: Creative Techniques for Design Professionals*, Robert Kumlin, NY, McGraw-Hill, 1995. A copy of this book has been put on deposit with Terry Sampson.

Alphabetical List of Issues

For the convenience of the reader we have prefaced this section with a list of some of the important *Issues.* the issues and topics are sorted alphabetically along with the page number upon which they are addressed. The *Issues*, along with their relevant *Objectives* and *Concepts* follow this section. A list of the highest priority Objectives is duplicated in order of priority in the *Priority Statement* which statement precedes this section. Some of these issues are addressed in this section, other Issues are addressed in the section of the document to which they apply .

Topic page/reference

Issues/Program Objectives/Concepts (cont.)

Issue: For what period in time should we design the capacity of the various accommodations?

Objective: Design the facilities so they are adequate for some expansion and they are not filled to capacity upon initial occupancy.

Concept: Design the buildings for full occupancy in 2011 – this size will be adequate until 2017

Issue: What is the growth rate for the College as a whole and how does this affect the projections for the STEM building, the Campus Services Building, The Student Center, and the following renovations of the vacated spaces throughout the campus?

> Discussion: Approximately 90% of the student population of the college resides in Atlantic County and approximately 70% of all students are between the ages of 15 through 29[5]. If you assume that the distribution by age group and the overall historical participation rate of 1.82%[6] will continue as was recorded in the fall of 2004, there is generated an 8.2% growth in student population between 2007 and 2012 and another 1.8% growth by 2015 for a total growth of 10%. These projections are consistent with the growth of the high school population which will grow to 2012[7] and then level off.

Concept: Unless noted otherwise and in the absence of other data **utilize a default rate of growth** equal to the student growth rate **of 10%** for all educational and faculty facilities.

> Discussion: Assuming funds will be available, the completion of the STEM building will be by 3Q 2013 with occupancy in the fall of that year – allowing 10% or more growth from the requirements of the fall 07 semester will allow the building to fill to 98.2% capacity at occupancy (2013) and 100% in 2 years 2015. The Student Center and Ring Road Improvements are only affected by the growth rate at the margin and this factor can safely be accommodated if we simply round up any quantifiable data . The renovation of the instructional and office spaces vacated to the STEM building will also be designed for the population increase at the default rate unless otherwise adjusted[8].

Issue *:Computer Equipped Classrooms for English - Deficiency*
Objective: Provide student computer equipped classrooms for all 24 student cap English composition sections.

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[5] Pauline & Associates; *Strategic Review of Enrollments and Population*, op.cit. Chapter 1, Page 7 , Table 6 (excerpted from New Jersey Dept. of Labor & Workforce Development).
[6] Pauline & Associates; *Strategic Review of Enrollments and Population*, op.cit. Chapter 1, Page 5.
[7] Pauline & Associates; *Strategic Review of Enrollments and Population*, op.cit. Chapter 2, Page 10, Table.
[8] Note that the renovations will follow the new structures and construction will not start until the fall of 2013 after the STEM building is finished and occupied. This construction should about 9 months.

Discussion: There is a deficiency of 16 classrooms equipped with computers so as to satisfy the request of English to have all classrooms to be computer equipped – this assumption includes the 5 computer labs in building B although these labs are small and can only accommodate 22 students. There are only 5 existing labs in B and 3 new proposed CIS/English Labs in A providing 156 grid blocks and there is a combined need for 473 grid blocks. Calculating: (473-156)/19.5 = 16.2 existing classrooms which will need to be equipped with student computers. This is an issue as most of the existing classrooms are not of sufficient size to accommodate computers and tables for 24 students. The money for the computers, including the instructor A/V sets and computers for the classrooms are **not included** in the present budget or estimate. We estimate the cost for the conversion of 16 classrooms to be $1,192,000 (16 x 33 computers x $1500/computer = $792,000 and 16 x 25 for classroom A/V kits @$25,000 ea. = $400,000). This cost may be reduced if software is limited and computers are wireless

Concept: Provide all new classrooms as 24 station computer equipped CIS/English Computer Labs and convert 16 existing classrooms to CIS/English Computer Labs

Concept: Since both CIS and English require computers at each student station and both have a cap of 24 students utilize the spaces for both departments so the labs in building B are more fully utilized.

Concept: Since most of the existing classroom spaces are to small to accommodate anything but tablet arm chairs (but some may accommodate the individual combined chair/desk student station) in lieu of tables consider the use of lap top computers brought into the classroom on a 24 computer portable rack and the use of a wireless system to provide the connections to the internet. Wireless will be more than sufficient for word processing and these rooms could be scheduled for English composition only.

Issue: Construction Management /Full time Administration

Objective: provide sufficient management of construction to insure quality control

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Concept: Provide a full time Construction Manager for the duration of the project.
Concept: Provide a full time construction administrator for the construction phase of the project

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Discussion: The College's present facility staff is not sufficient to provide the full time representation which is often required to maintain good construction for a publicly bid project. Therefore, there may be a need to provide such services from a third party. The architect will usually provide these services for an increased fee, the College can hire a person as an employee of the College, or a construction management firm may to do this as an abbreviated service. The latter may make sense as there are years of construction required for all of these projects[9].

[9] We are not, however, recommending full Construction Management services which services include a presence from the beginning of the project. We are recommending that a General Contractor be engaged for each of the projects rather than bidding them to separate subcontractors. The size and complexity of these projects do not warrant the College paying the additional fee for these services which would average 3% of the construction cost of the project – considerably more than the fee for a full time construction administrator.

A Construction Manager may also make some sense for these projects, however, because of the complex relocation requirements and the many stakeholders at the College.

The problem, as always is finding the right person with the talents and skills for this particular project – in regard the construction manager - political, management, construction process, and complex activities manipulation skills would be more valuable than a deep knowledge of construction techniques or particulars.

Resolution: The College has determined that a full time representative will be required during the construction phases of all the major projects. It has been determined by the Consultant that two representatives will be required at times because of the overlap of the construction schedules. The strategy, need for 2 representatives, and cost for these services is fully developed in Appendix #6. In addition, the fee is included in each of the *Project Cost Evaluations* and included in Appendix #7, the fee spreadsheet for lines 9 of the *Project Cost Evaluation*.

Issue – Flexibility of Instructional Space

Objective – Increase the utilization of instructional spaces to achieve maximum possible use considering scheduling constraints

> Discussion: For flexibility of scheduling which results in maximum utilization of instructional space it is best to be able to configure and equip a classroom for multiple uses. One of the common problems which ACCC shares is the size of the classrooms are too small for flexibility of arrangement of furniture. Regarding use by various departments ACCC has enough mass to be able to dedicate certain classrooms to certain departments and still insure maximum possible utilization. Examples of highly specialized spaces with present low utilization include the microbiology lab and chemistry labs. It is too much to expect that any given classroom or lab will have a utilization more than 15% higher than the nationwide average – Classroom and computer lab/classroom Maximum 80% and Lab Maximum 65%

Concept: allow both CISM and English to utilize 24 person computer labs

Concept: have one chemistry lab also serve as a microbiology lab

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Issue – Pinelands Permit & Water Management

Objective: Have a Pinelands Permit by the Time Construction Starts

> Discussion; Since the Mays Landing campus is wholly in the Pinelands a permit must be received for any construction. This can take up to two years; the College has engaged a civil engineering firm to secure this permit.
>
> Prior to the start of any construction on the site, a Pinelands Permit for the entire Master Plan must be approved if a campus wide water management system is to be achieved – we believe the permit will be received by July 1, 2010, but it could be received a year

earlier. Based on the receipt of the permit the ring road improvements are scheduled to start on July 1, 2010; the STEM Building is scheduled to begin construction on October 1, 2011. All of the projects will be complete by October 1, 2014. The reader is reminded, however, that a Pinelands Permit may never be issued for any improvements and it is unlikely that the Master Plan of improvements as shown will be approved in its entirety. Likely issues with the Commission include the completion of the ring road, the configuration of the storm water management plan, Threatened and endangered species, and the delineation of, intrusion into or modifications of wetlands.

At the time of issue of the final program document on 8/12/08 the College has engaged consultants to perform a threatened and endangered species evaluation[10], wetlands determination and survey, and storm water management design

Concept: Although the permit could be applied for on a project by project basis the College has determined that they should apply for a permit for the entire development as shown on the Master Plan. This is the only approach that makes sense for two reasons: 1) the permitting process only happens once and every project is not delayed and does not have to go through the process and 2) the most economical strategy for water management is to do it for the whole campus – this avoids creating little ponds or pits for each building scattered around campus. It was thought that any water retention structures would be constructed so they could be expanded as a part of each building project.

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[10] The T&E (threatened and endangered species) study may take a year or more depending on the findings as some of the species may have to go through a one year or more seasonal cycle to complete the study.

Strategy of Execution

Facilities Construction Strategy & Sequence
Plate No. 1 – Proposed Overall Improvements Map.
Plate No. 2 – Project and Funding Time Schedule Chart

Facilities Construction Strategy & Sequence

The master plan envisions a great number of individual projects and improvements. This program, however, only includes those selected by the College for initial execution and for which it is reasonable to assume funds may be available within a reasonable period of time; as these projects reach completion, the next series of projects should be selected for programming and then execution. The projects included in this initial phase include:

1. Project No. 1 - Improvements to the Entry, Ring Road, and other Related Improvements
2. Project No. 2 - A new Science (STEM) Building
3. Project No. 3 – Renovations to Buildings A, B, H, and K Buildings
4. Project No. 4 - A new Student Recreation Center and Renovations to Building J
5. Project No. 5 – General College Renewal & Rehabilitation, Gym & TV Studio

The strategy of building on the site is based on both construction sequencing and availability of funds – the College cannot begin construction on an individual project until all construction funds are in hand.

Plate No. 1 – Proposed Overall Improvements Map illustrates the location of all improvements to be executed for this initial phase

Plate No. 2 – Project & Funding Time Schedule Chart illustrates the dates and activities for funding, design, and construction for the projects.The reader is advised to have the schedule chart in hand as this section is reviewed.

Construction cannot start until a Pinelands Permit is secured The College has retained a civil engineer to secure pinelands permitting for all of the improvements in the master plan. These permits could be in place as early as November 2008 or as late as March of 2010; it is most likely that the permits will be in place by July 2009 – this is the basis for the schedule and strategy. It is imperative that a comprehensive storm water management plan be a part of this work and that the design requirements be in place by the time the design for the site work for the student services and STEM building are completed.

The proposed Strategy/Sequence of Execution on site is as follows:

Project No. 1 - Improvements to the Entry & Ring Road

The configuration of this road differs slightly from that suggested in the Master Plan – it has been changed to be more cost effective in achieving the goals set out in the master plan and to allow for the passage of storm water to the existing pond. The details of this initial project are to be found in the Chapter devoted to Project No. 1. The construction of

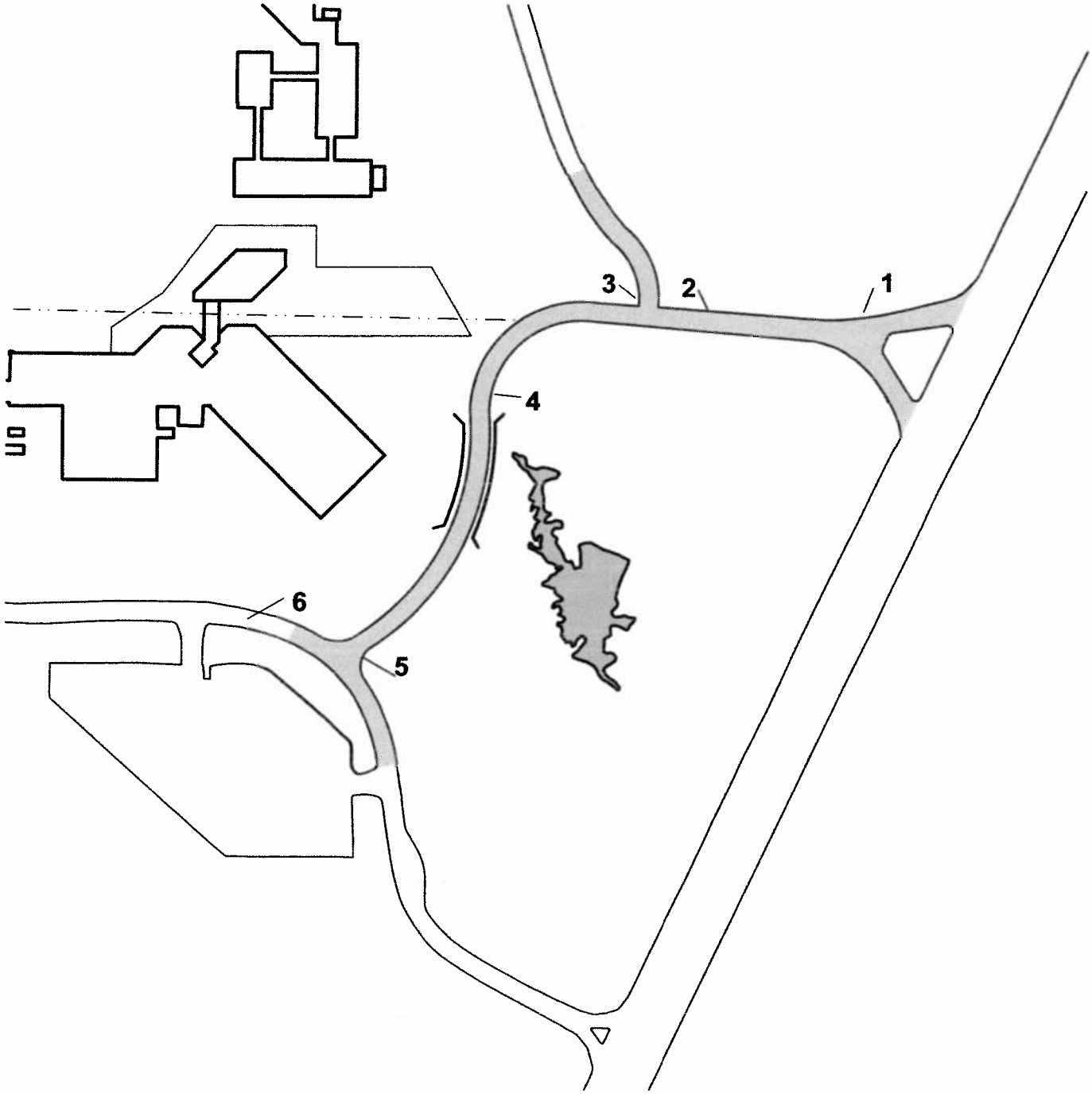


PLATE 1-1
ROAD IMPROVEMENTS

10 50 100 200

SCALE:1"=200'-0"

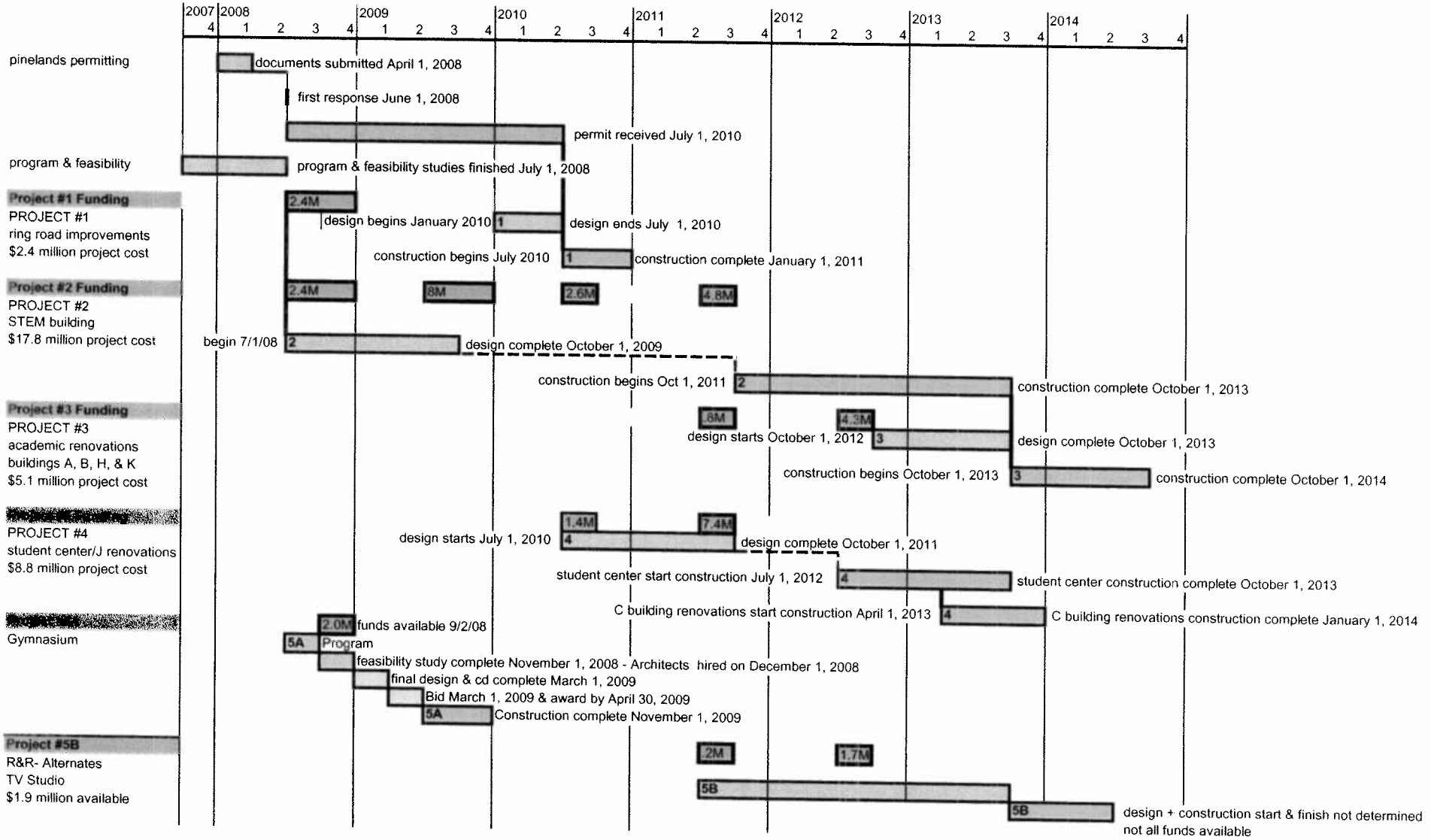
NORTH →

Plate No. 2

Schedule & Funding (revised 9/2/08)

Blueprint 20-20 Initial Projects - Design & Construction

Atlantic Cape Community College
Cape May Campus



the road segments will need to be sequenced so as not to interrupt access to the College. In addition, as part of this project, the facilities trailer will be moved, the loading dock relocated, and the local road will be modified to allow truck access to the new loading dock.

Project No. 2 – A new Science (STEM) Building

1. Build the STEM Building
   Now that the Student Recreation Center and Food Service is remaining adjacent to J and C Building, the STEM building can be erected without demolition of the Boiler Plant and without disturbing traffic patterns while under construction. It should be noted that to keep the science labs in building A operational the chemical storage building must remain until the Science Building is occupied. The design should work around this and the construction contract allow the landscape development to be completed after the storage building and the small greenhouse is demolished .[11].
2. Finish the landscaping and water retention structures (if required) between A building and the new STEM building.
3. Occupy new STEM Building, vacating portions of Building A

Project No. 3 – Renovate buildings A, B, H, & K

1. Demolish & Renovate vacated and non vacated portions of existing building A, providing new A&P labs, math classrooms, CIS/English classrooms and other spaces (see Plate 3-1). This project will need to be done over a summer for the center section – the south section interiors (nursing labs) could be constructed while school was in session (but it would be best if the corridor doors and vending area were in place prior to the beginning of construction).
2. Occupy A&P labs, Math Classrooms, CIS Classrooms and Departmental Office – center section of building.
3. Finish and Occupy south section of Building A, Vacating all nursing spaces except office spaces in Building H.
4. Renovate and furnish rooms H110 and H119 to be 32 person math/computer labs and convert present nursing lab storage in room H109 to a two person office
5. There are no renovations planned for building B, although, if funds were available some of the larger classrooms could be converted to 24 student CIS/English computer labs by the addition of student computers
6. Convert K133 to another art studio – this could be done while classes are in session as it mostly a demolition and conversion project in an empty enclosed space.

Project No. 4 - Student Recreation Center/J Building/C Building Renovations

1. Build the New Student Center

[11] It would be desirable to have in place an overall strategy for water retention/detention as part of the Pinelands Approval at this time. Hopefully, this strategy will allow sequenced execution so retention does not have to be built for all the proposed campus improvements. The site improvements and water retention strategy will need to be part of the construction documentation for the Science Building so as to secure a permit for construction and occupancy – it is assumed that water retention for the Campus Services Building could be local or interim because of its small footprint.

2. Relocate Student Life Center to new building
3. Renovate Building J /C dining and food service (summer construction)
4. Relocate testing to J in space vacated by Student Life Center.

Project No. 5 Campus Wide Renewal, Gym, and TV Studio

This project includes two principal projects and general rehabilitation which could be sequenced into the schedule when funds are available. The Gym, Building E is not dependent on the sequencing of other projects and could be designed and executed at any time. The TV Studio can only be executed after the nursing educational spaces move to Building A, Oct 1, 2014. Other renewal projects have not yet been identified and may or may not have timing contingent on other projects

Issues

Issues related to the Strategy of Execution include the renovation of the food service in the same location while providing continuous service and keeping building A occupied while the renovations are taking place. The timing of the Gym, the feasibility and desirability of the TV Studio, and the identification of the R&R projects are all issues which need to be resolved. All of these and other issues are fully treated in the section Issues/Program Objectives and Concepts.

Campus Wide Facilities

Introduction

This section is devoted to those components of the College that apply to the facilities as a whole. We have included the analysis of the need for labs and classrooms campus wide as part of this section. Other components include the issues of faculty offices, IT and AV technology, Facility Design Standards, and accessibility

Projections of Campus Wide Classroom and Computer Lab Needs

Introduction:
As part of the expanded scope of this program which included the analysis of facilities and programs throughout the campus, we performed analysis of the needs for computer labs and classrooms. The study included a tabulation of the existing utilization and the additions that will be provided as a result of this program compared against the requests of the departments. This analysis answers the question of how many traditional classrooms and computer labs need to be included for the College campus wide.

Calculating both the existing and required number of classrooms and computer labs:

Item	number	gridblocks@65%utilization
Existing Classrooms & Labs	38	741
Proposed	41	799.5[12]

Classrooms (part of the total classroom/lab count of 41 required)

The general strategy that is to be used is to build the New Science Building and then convert the spaces vacated by science in building A into classrooms with student computers, math labs, and nursing related labs. In addition, classrooms throughout the College may be vacated for other uses based on other program requirements of adjacency, etc. The New Science Building is the only building of the current building program that will provide new instructional spaces – other existing buildings will provide renovated spaces.

Here is the process utilized and the results of the needs analysis:

Process

1. Determined the number and utilization of existing classrooms
2. Determined which spaces in the College and primarily in building A will be vacated and determine how many classrooms may be accommodated.
3. Determined which classrooms need to be relocated because of other program needs

[12] This number of sections and classrooms represent an 8% growth rate – slightly less than projected. However, the existing classrooms are only used at 60% or 574.5 grid blocks for daytime use the proposed 799.5 grid blocks will generate 225 grid blocks more – a 39% increase over the existing. As we provide more flexible use and desirable classrooms we should begin to approach the typical and targeted 65% utilization from the present 60% average.

4. Determined the need for classrooms by 2015
5. Determined classroom requirements of the new STEM building.

Development
Existing Facilities used as classrooms and computer labs[13] in all buildings but not including specialized teaching spaces such as nursing, art studios, kitchens, etc. are tabulated in the table, *Classroom & Computer Lab Justification* on page 21. Here is a summary of these results

- There are 32[14] general purpose classrooms campus wide and these classrooms accommodate 574.5 grid blocks of time, generating an overall utilization of 60%
- Average utilization for higher education classrooms nationwide is 65% - overall the present utilization of generic classrooms at the Mays Landing Campus is slightly less than the national average.
- Expansion of the need for classroom space between fall of 2007 and 2015 is estimated to be at about 12% or slightly more than the County growth rate[15]
- It has been requested by the English Department that all English Classes be given in computer equipped rooms. With the exception of English 104, Introduction to Literature, with a 30 student cap, all English classes are now and are requested to be of 24 student capacity or less. CIS has also requested 24 student computer labs Therefore, we have created a computer lab for 24 which we have designated the *CIS/English Computer Lab*; these rooms can be scheduled for either department for flexibility (although there may be some preferences related to the software loaded on the computers – all else would be the same).
- The alterations to building A will provide 2 – 32 student computer labs and 3- 24 student CIS/English Composition Computer Labs
- The program for the new STEM building will provide 3- 32 person computer labs..

Lecture Spaces (part of the total classroom/lab count of 41)

We have classified three classroom spaces on the campus as lecture spaces – A110 (92 seats), A146 (46 seats), H119 (40 seats), and M129 (80 seats) – all of them have capacity in excess of 32 student seats which is the capacity of the largest typical generic classroom. None of them, however, are utilized more than 32 students at the present time. We have been told by Science and Math that they will, in the future, teach combined sections of 48and 72 requiring larger lecture halls. Nursing has asked for a 72 person (3 section) lecture hall.

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[13] Where "computer labs" are defined as educational spaces in which each student station has a CPU and monitor.
[14] Two of these classrooms are outfitted as computer labs –total of generic computer labs & classrooms together is 38 now.
[15] The growth rate of most programs will track the population growth of the economy at 10%. Higher growth rates are expected to occur in Business Administration, Criminal Justice, and remedial English; lower rates of growth are anticipated for Paralegal and Hospitality. The growth of nursing is not included as these are not included in the typical classrooms (but see biology labs growth for growth in this area. The growth proposed is difficult to project with any accuracy because of all of the variables but we estimate it should not deviate more than 1-2% plus or minus at the outside.

M129 is heavily utilized and has no additional time blocks available but none of the classes in this room have a current enrollment over 30. We are proposing that A110 be eliminated as part of the renovations of A building (there are no classes with enrollments over 24 presently using this room). Therefore, if present practices persist, there is no need for this size room. If nursing does not need the third lab in A building we are proposing to add either a 1-76 person lecture hall with theater type seating & tablet arms or a 1- 48 seat stepped lecture hall with benches to the program. These 2 spaces would give you the equivalent of 3 x 19.5 or 2 x 19.5 or at maximum 58.5 – 24 student schedule blocks for the 76 student combined lectures for science, nursing, and math. Please note that this additional lecture hall is not included in the calculations of the proposed classroom provision of 41 rooms.

We would suggest that the 49 person stepped lecture configuration be selected and that the present classes in M129 be scheduled in A Building and all requirements for over 48 students (including nursing) be accommodated in M129.

Classroom and Computer Lab Tabulation by Building

building	existing classroom	existing computer lab	proposed classroom	proposed computer lab	notes
A building	12	2	9	5	
B	11	5	11	5	no change
C	1	0	1	0	no change
D	1	0	1	0	no change
H	1	0	0	2	2 new math clrms
J	3	0	3	0	no change
K	0	1	0	0	K133 to art studio
M	1	0	1	0	no change
Q	0	0	0	0	no change
STEM	0	0	0	3	3 new math labs
Total	30	8	26	15	
tot labs & clrms	**existing**	**38**	**proposed**	**41**	

c:documents 2007/07010/classroom & computer lab justiciation 5-12-08

Computer Laboratories for 24 Students (part of the total classroom/lab count of 41)

There are 6 dedicated computer equipped spaces that are used for teaching classes. Five of these are in building B and one is in building K. Our analysis based on the data contained in the following table, inspection of enrollment data, inspection of the physical site, and interviews with CISM has reached the following conclusions:

- The class size of 24, although recommended by the department, seems small and may be related to the capabilities of existing rooms rather than pedagogical needs.
- With the exception of K133 which is of adequate size, all the rooms in B are too small for the population of 24 after you add in tables for the computers[16]
- The rooms are underutilized at 32% - they should be 45% minimum and 55% maximum. If the rooms were utilized to 45% capacity, this would allow 180 x .45 = 81 grid blocks rather than the 58 used now, allowing for a 68% increase in utilization. This is more than enough for any expansion of the CISM curriculum.[17]
- The underutilized capacity of these rooms cannot be used for 32 person math labs as the room size is too small.
- The geothermal mechanical system is designed to take advantage of the heat loads from the computers – converting them into classrooms would be a problem in terms of the efficiency of the system. This reinforces the conclusion that they should remain.
- Note in the table that we have converted many of the required educational spaces to Computer/Math Labs – we have almost doubled the number of student computer equipped teaching spaces from 8 to 15 to accommodate the English Composition Classes

Therefore, we have programmed these labs to stay as they are until a later phase of development when the 5 labs in B building should be converted into 4 larger labs in the same location; K133 will be converted to an Art Studio and the Graphic Arts Studio will utilize H110, on e of the new computer labs

Calculating that the need for CIS/English Computer Labs seating 24 students is satisfied as follows:

CIS in the fall of 2007 required 116 daytime grid blocks, English (not including ENG 104) required 314 daytime grid blocks for a total of 430 grid blocks. Assuming a 10% increase by 2015/2020 results in a total requirement for 473 grid blocks. Assuming 65% efficiency results in a need for 473/19.5 = 24.25 say 24 CIS/English Computer Labs. The present 5 labs in B are too small for 24 and list 22 students as the maximum capacity in the fall 2007 schedule. Assuming these labs will be O.K., however, for English results in a total of 8 labs (5 in B and 3 new labs in A). Assuming 65% efficiency, 8 x 19.5 = 156 available

[16] The existing rooms in B are about 500 square feet. At 24 students the size should be somewhere between 725 to 850 sq. ft. depending on the arrangement of tables – the requested layout by the department would require 850 sq. ft. for 24 students. If these rooms were renovated the now 6 rooms should be made 5 – the front to back would be tight but workable.

[17] Even if the 5 rooms in B were converted to 4 this at 45% efficiency would generate 67.5 grid blocks of capacity – 9.5 grid blocks more than existing, allowing a 16% increase in capacity – this should be sufficient until 2015.

grid blocks. **This indicates a deficiency** of classrooms equipped with computers of (473-156)/19.5 = **16.2 existing classrooms which will need to be equipped with student computers.** This is an issue as most of the existing classrooms are not of sufficient size to accommodate computers and tables for 24 students. The money for the computers, including the instructor A/V sets and computers for the classrooms are not included in the present budget or estimate. This issue is further described in the Issues section of this document.

Computer Labs for 32 Students (part of the total classroom/lab count of 41)

Calculating that the need for computer labs is satisfied as follows:

Math in the fall of 2007 required 116 grid blocks, and all of these are requested by the department to be in computer available math labs of 32 students. Assuming a 10% growth until 2015/2020 generates a need for 127.6 available grid blocks In addition, since we are proposing that for flexibility and optimum use K133, the graphic arts lab also use one of the math labs, we must add in the 10 - 2007 grid blocks x 1.1 = an additional 11 grid blocks for a **total required of 138.6 daytime grid blocks required**. Assuming classroom efficiency of 65%, the proposed 7 computer labs (3 in STEM, 2 in A, and 2 in H) will accommodate 7 x 19.5 = **136.5 grid blocks provided**. Calculating efficiency – 7rooms x 30 blocks/room available daytime /138.6 = **66% efficiency**. With all new fully equipped computer labs this efficiency @ 1% over the average of 65% should be easily achievable.

Faculty and Adjunct Faculty Offices/Facilities

Meetings were held with both the full time faculty and representatives of the adjunct faculty. Issues included two person vs. one person offices for the full time faculty and the concept of utilizing the same size office for adjuncts (at a ratio of 8-12 adjuncts/office) to achieve flexibility of conversion. The existing offices are mostly 2 person offices reflecting the current policy of the College.

The existing adjunct facilities in building A are inadequate and need to be improved and/or expanded. Many of the adjuncts seemed to prefer being together in one large multiple person space rather than scattered in many locations.

Here are some of the issues and resolutions related to the topic of Faculty offices:

Issue: *Single person or two person office?*

Issue: *Provide departmental office suites for science/math and other discipline?*

Objective: Provide faculty offices with privacy and amenities comparable to other institutions so that the College is able to recruit and retain the highest quality faculty.

Concept:* Provide offices with operable windows

Concept:* Provide mostly single person offices on an exterior wall with a window but allow some two person offices for more junior faculty (perhaps without a window) and for department chairs (if required) but with a window,

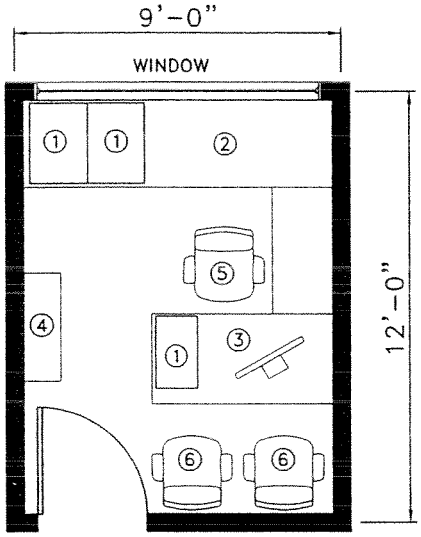
Concept*: for flexibility make all offices the same size for the same type to enhance flexibility and simplify furnishing.

Issue: *Location of Faculty Offices?*

Discussion: There are a number of choices – 1. scatter randomly, 2. adjacent to instructor's labs and classrooms, 3. grouped by discipline or department and 4. group department chairs together with balance of faculty located as 1 – 3 above. Presently on the Mays Landing Campus faculty offices are randomly scattered with a few offices for senior faculty related more or less to the classrooms or laboratories in which they teach; few of these offices have outside windows.

Objective: relate offices to campus facilities and each other to maximize student accessibility, promote creative interaction between disciplines and individual faculty members.

Concept*: Create a departmental suite as a "home base" - locate faculty offices in departmental suites with the Chairman and one or two adjunct/spare offices for flexibility. For added flexibility put all of the offices in a row and (for smaller departments) combine two departments in a single suite. Ideally, one of the departments would be stable or shrinking and the other would be growing allowing flexibility for growth.



LEGEND

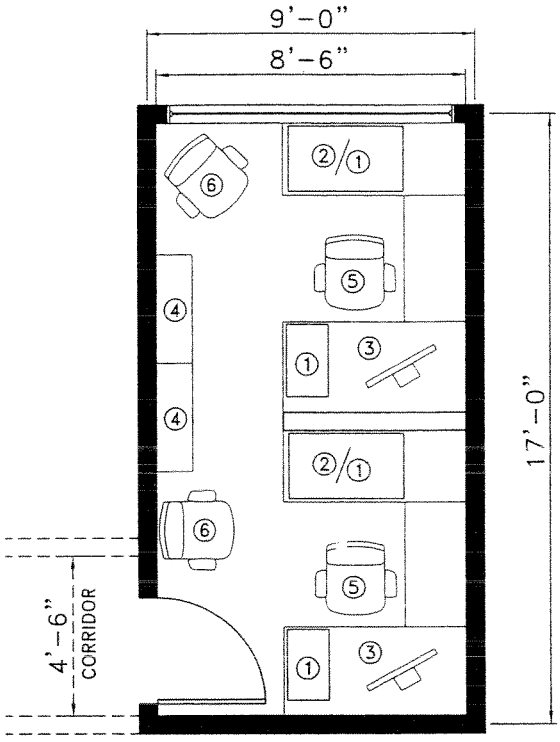
① UNDERCOUNTER FILE CABINET
② WORKTOP
③ DESK WITH RETURN
④ BOOKCASE
⑤ FACULTY CHAIR
⑥ SIDE CHAIR

SINGLE PERSON FACULTY OFFICE 97.75 SF.

1 5 10 20

SCALE: 3/16"=1'-0"

PLATE 3



TWO PERSON
FACULTY OFFICE
145 SF.

1 5 10 20

SCALE: 3/16"=1'-0"

PLATE 4

Concept*: Include in the departmental suite a small reception/seating area for students taking makeup tests or waiting and visitors. Provide a station for a student worker or departmental administrative assistant. In addition, there would be a storage closet for each department and a small coffee/food service counter.

Concept*: Provide in each departmental suite a seminar room for 18. This room could be used for teaching but could also be utilized for departmental meetings, student clubs related to the department and other functions. The room would be controlled by the department and released to other departments for classes when available.

Discussion: Informal polls of the faculty during the interviews indicated a preference for a single person office although one faculty member indicated that she would prefer a two person office for safety reasons. The College now has a two person standard for offices and at the Cape May Campus, the most recent building with offices, two person offices were designed. Most institutes of higher education provide single person offices, especially for senior faculty. It was agreed that if two person offices were provided as a standard that conference rooms sufficient in size for 3-4 people would be provided in a ratio of approximately 1 for every 5 to 7 offices.

Cost is an issue related to the single person vs. two person office – the single person office costs more. To put this issue in quantifiable perspective, D/H&K has done a comparative study that indicates that housing faculty in single person offices will cost approximately $15,000.00/ faculty member comparing the offices only. If an additional conference room at a ratio of 1/5 offices is added the difference becomes $10,000.00/faculty member[18].

Resolution: The College has determined that two person offices are preferable. In regards to the proposed departmental office suites, this concept has been superceded by existing conditions – most of the scattered offices on the campus will remain as they are and the College has determined that relocating offices to departmental suites is not a cost effective utilization of funds.. There will be 10 new 2 person faculty offices and 1 convertible adjunct office in the STEM building for the Science and Math Department. These offices will accommodate almost all of the present 21 full time faculty members (or all if one of them occupies ½ of the adjunct office). The 18 person seminar room has been omitted due to lack of funds and replaced with offices deleted in the building A renovations.

IT and AV Technology

The Campus Technology Advisory Committee has issued reccommendations on 9/24/07, which recommendations are attached to this document as Appendix #3. The report advises, among other things, that every building on the campus should be equipped for wireless access using the example of the Cape May Campus. A summary of the IT/AV technology which will be included in every building that is new or renovated

[18] Based on contemporary unit pricing of doors, hardware etc: increased exterior wall is estimated at $50/sf premium over interior wall and square foot cost at $300/sf.

is as follows. These recommendations by the architect are included in the Cost Evaluations for each project

- The STEM building, The new Student Center and renovated dining in Building C, and Building A. will be wireless accessible throughout. Each instructional space and all public spaces will have transmitters
- In the lounges of the new Student Center, there will be, in addition to the wireless provisions, ports for power and data plug ins for portable laptop computers.
- New or renovated instructional rooms will all be equipped with computer generated projection systems or a smart board utilizing a Sympodium or Crestron system which systems are connected to the campus wide network. The selected system will be standard and typical for all instructional spaces for ease and flexibility of use by the instructors.
- All computer labs will have hard wired CPUs at each student station and wired into the campus network.
- In selected rooms wireless student response systems will be installed for evaluation.

Facility and Design Standards

The following design standards should be consistent throughout all capital improvements on the campus:

Janitor's Closet
Provide one closet for every 15,000 to 20,000 sq. ft. or a minimum of one/floor. The closet should be approximately 6' x 6' and have a mop basin and floor space for a 4'x2' cart, dust mop, and bucket.; provide one or two shelves. In addition to the above provide an additional closet on the first floor of each building of the same size for larger cleaning equipment. Do not include any electrical or IT panels or equipment in these closets.

Toilets
Provide the same quality and accessories as provided on the Cape May Branch Campus

Carpets
In all public spaces where carpet is specified provide a carpet tile system

Roofing
All flat roofs should be either coal tar or SBS modified with a 25 year warranty. New roofs are required to have a 14"/ft. slope; existing roofs where renovated should have the same.[19]

Architectural
Provide high quality detailing and systems that reflect the expected 50 year+ life of an Institutional building. Flashing should be metal and preferably stainless steel,

[19] Under the existing code existing roofs may have an 1/8"/ft. slope; if possible, the architect should use tapered insulation to achieve a ¼"/ft. slope to avoid ponding.

foundations should be concrete and not CMU, etc.

MEP
Systems shall be of high quality and suitable for institutional use and include the following features:

- Provide stand alone heating and cooling so that each building is independent; system, however, could be plugged into central hot and chilled water loop.
- Provide dehumidification – provide hot water and condensing boiler for year round performance
- Provide new boilers the same as Cape May
- Provide individual temperature control for each instructional space and each office (for the latter explore the use of software solutions and/or perimeter radiation systems)
- Roof top mechanical units are acceptable providing accessibility is easy.
- Mechanical systems need to be as simple as possible for operation and servicing
- In labs provide floor drains under safety showers and high energy control systems on fume hoods
- New capital projects will match or be compatible with the campus wide BMS control system.
- Lighting fixtures – use as few different types and lamps as possible to minimize stocking problems.

Construction Process
- Budget for fees should include 3rd party commissioning for all infrastructure, electrical, data, HVAC, and controls. (this has been provided in the cost evaluations)
- Air balancing should be a separate direct contract with the College (included in the cost evaluation on line 9)
- Provide in the fee budget the time for a full time project administrator during construction (see details of this including a discussion of need and costs in appendix #6)
-

Energy Conservation & Sustainability
- As part of the green campus initiative, all new buildings are to be designed for LEED silver certification and the registration is to be completed as part of the design and construction process.
- Alternative energy sources will be investigated for each project as part of the design process.

Accessibility

Ease of access for the physically handicapped and other disadvantaged should be improved as part of the construction of new capital improvements. Particular issues included the presence of closed doors in corridors and tight and difficult entries into the toilets. It was determined that the following specific actions would be taken for all new construction or renovations to existing building features:

- Omit all doors in corridors – if the doors are required by code for fire barriers, they should be designed on hold open latches so they are open during normal building operations
- Omit all entry doors to multiple station toilet rooms – design them with semi-circular open entries much as the toilets in high traffic areas such as airports and bus terminals.
- Make all facilities fully handicapped compliant
- Where practicable omit steep 1:12 ramps and substitute more gradual slopes.

Security

Security is always a critical issue on campus – there were no recommendations in the Master Plan related to security. Some of the features that should be considered for incorporation in all the proposed facilities include the following:

- The line of security will be the individual building envelopes with penetration at exterior doors. There will be no fencing or security perimeter around the campus or the individual buildings
- There will be fixed and zoom security TV cameras at all entrances, both inside and outside. There will be fixed security cameras in the corridors of the STEM building and the Student Center and Dining area of building C. All interior cameras will be visible and in transparent vandal proof security domes.
- The security system should be stand alone and totally networked and tied into the security building from each new or renovated building. Alternatively the security system could be a separated and secure component of the existing BMS system and fiber optic backbone which has the capacity to support the system
- There will be emergency phones in each corridor with the maximum distance to a phone of 150 feet.
- There will be emergency phones in each instructional space
- There will be a phone at each elevator and non-emergency help phones scattered around the buildings.
- Dr. Dennis Forman Road to Cologne Avenue should be improved so that there is an emergency escape route from the campus if the highway is closed as a result of a catastrophe (this is not included in the present project #1).
- Lighting at the exterior of each building should provide a level of .5 fc minimum for the extent of the site improvements related to the building as recommended in the Master Plan.
- Security had requested a 2 station security office in the student center (this is not included in the present program or budget and has been omitted by the Global Decision Makers)
- Security has requested a guard station at the entry road to monitor and direct incoming traffic (this issue has not been addressed in this program and should be addressed as the entry road develops).
- The College is presently formulating a security plan for all 3 campuses which may have additional or modified recommendations to be implemented as part of any new capital construction.

Summary Space Lists and Narratives by Department

Introduction

This section provides a list of existing and requested program requirements through both a space list and a narrative. Some of the requested requirements are not met within the proposed strategy of execution for the first phase of implementation. The reader should examine the individual building improvement narratives and drawings for what is actually proposed for implementation.

The Space lists included are the following:

Arts/Humanities
Business
Computer Information Systems
English
English as a Second Language/Modern Languages
Mathematics/Science (includes justifications for science labs)
Nursing/Allied Health/Physical Education
Social Science
Student Services (includes only program for student center and dining)
Campus Services[20]

[20] Campus services which include shipping & receiving, facilities, security, archives and records storage and the print shop have been programmed in a separate building called "the Campus Services Building" This building will be implemented (or not) only in the future because these facilities are not high on the priorities list of the College and funds are limited. The facility is not included in this section but included as Appendix # 4 for utilization at some future date.

Arts/Humanities

This Department includes Fine Arts, Dance, Communications, Government,/History, Humanities, Music, Philosophy, Religion, Journalism, and Theatre. There are 7 full time faculty and 55 adjuncts.

Disciplines that are growing include Fine Arts @7-10%/year and Communications @ 25%/year (more if the TV Studio is implemented). All of the other disciplines are projected to remain steady state until 2017; no departments are shrinking. All of the courses are taught in typical classrooms without computers except for dance and fine arts which are in specialty studio space. Theatre is not acting at the College and the theater is almost never used for the theater classes.

A public speaking classroom is requested, but the requirements for this space are very similar to a typical classroom except that the first row of seats would be removed in a 24 student classroom to shrink the population to 20.The present 10 sections would generate 20 grid blocks which would indicate that a classroom could be dedicated to this function if scheduling would allow 65% daytime utilization (20 blocks a week).

Regarding the specialty studios, there are no changes envisioned for the Dance Studio but the Fine Arts studios are short of storage and space – the ceramics studio with an 18 student cap should double in size and its storage should triple in size (the kiln is O.K.).

The fine arts studio was requested to double in size and this has been accommodated as part of the Project #3 improvements by converting K133 to a new studio and moving graphic arts to H110 after it is vacated by Nursing.

The additional storage requested for the fine arts studios is not possible given the present budget – we are suggesting that any storage needs for the new studio be incorporated within the studio until funds become available for new storage. Since the offices for the department are scattered, not changing, and, other than the fine arts all other facilities are to remain the same, we are presenting a space list only for the fine arts studios:

space name	Existing Spaces			Proposed space			notes
	total no.	n.s.a.	total	no. req.	n.s.a.	total	
Instructional & Research							
Fine Arts Studio	1	900	900	2	900	1800	storage within new studio
Studio Storage	1	120	120	1	120	120	no change
Ceramics Studio	1	500	500	1	500	500	no change
Studio Storage	1	216	216	1	216	216	no change
Lounge	1	450	450	1	450	450	no change
total departmental net area			2186			**3086**	
tare area @40%			**3643**			**5143**	

Department - Arts & Humanities Fine Arts Studios
Summary Space List - Existing and Requested

Business Studies

The Business Studies Department has 9 full time faculty members, including the chair and presently 40-44 adjuncts. Growth in the department includes business administration @ 5%/year, criminal justice @ 5-7%/year and accounting @ 1-2%/year; hospitality management and paralegal, the remaining 2 departments, are steady state.

Almost all of the courses are given in traditional classrooms, but these are too small for the requested 30 student populations[21] – larger classrooms are needed both for the population and the flexibility of arrangements requested. The department has a long list of specific requests for classrooms but most of these requirements will be satisfied by the present design intent for new classrooms – all new instructional spaces will be similar to Cape May. There were a few additional requests - carpeted classrooms; tables and chairs on casters for easy arrangement; chalkboards wall to wall; student doors at the back of the room; 2 shared printers in the computer labs; student response systems

Accounting 150 and 162 need computer labs but these could be housed in the proposed CIMS/English Computer Labs as the cap on these courses is 22 – in fall of 2007 only one section of each course was offered.

Two specialty needs were identified - a forensics lab which was requested for a population of 30 and front desk operations setup for Hospitality management. The chemistry labs will be available for the forensics lab courses – chemistry is a big part of the skills set required for this career. With these facilities the course content could be improved. Note that the labs will be only for 24 and that storage in the lab will be needed for the forensics students (most forensics labs will be given in the evening and this will create greater utilization for the chemistry labs).

There are no new traditional classrooms included in this phase of implementation and no improvements to the facilities being planned with the exception of the forensics lab (we are recommending that forensics be given in a Chemistry Lab and its cirricula expanded to use the facilities). The needs of this department and others reinforces the need for computer equipped classrooms. Therefore, the College should make every effort to allocate funds for the addition of classroom AV and student computers in existing classrooms; with the preference being for larger capacity rooms (up to 32).

No space list is included for this department as no changes are being made in their facilities as part of this program and their instructional spaces are included in the general classroom population tabulated elsewhere. The overall growth of the department is close to the 10% default rate proposed and will therefore have no additional effect on the number of classrooms required to 2017/2020.

[21] Although some business studies courses are capped at 24 students, the greater majority are presently capped at 30 or 32. Therefore, the preferred classroom would be the math lab with a population of 32 and not the 24 student computer equipped classroom used by CISM and requested by English.

Computer Information Systems

The CISM Department has 9 full time faculty and 25-30 adjuncts. CISM 125, Introduction to Computers, is a required course for many majors and in the Fall of 2007 had 51 sections (of a total of 83 for the entire department)t, which sections all had a cap of 22. Growth in the department has been erratic in response to outsourcing[22] in 2000-2003 but has been steady at 80 – 100 sections since 2005 and is expected to continue at this level until 2015/2020 barring outside influences in demand which are not now foreseeable. A continuing influence which may have already deceased demand is the increasing familiarity of students with computers at an early age which familiarity may allow a greater part of the population to test out of the introductory course.

There are only 4 instructional computer labs available - B124, B126, B132, and K133 – the latter is also used for graphics instruction by Arts and Humanities. These labs are too small for the populations and should be increased in size. The computer labs are presently underutilized and should be adequate for the future. The request by English to share these labs should allow greater utilization of these spaces.

There is an open computer lab in the library for about 100 – this seems adequate for most of the year except near the end of the semester when they are inadequate.

All computer labs should have smartboards[23] and the population required is 24 students maximum.

In the present first phase implementation of the master plan no improvements are contemplated for building B. In building A, three new Computer Labs for 24 are proposed and these could be scheduled for CISM sections. There will be no changes in faculty offices or locations. It may be possible in the future to combine the existing labs in B building with adjacent classrooms to achieve less crowded conditions – this is not contemplated for this phase of implementation.

The reader interested in the configuration of the computer labs should review Plate No. 3A-4 in the STEM building program. A complete discussion of the computer labs along with a tabulation of grid blocks (2007) and justification is to be found in *Projections of Campus Wide Classroom and Computer Lab Needs.*

No space tabulation of this department is required as the computer labs are included in the general population of required labs and no modification of the departmental or faculty offices is contemplated for the first phase of implementation.

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[22] The "outsourcing" that occurred then was the result of the proliferation of small computer schools and corporate in-house training .

[23] The "smartboard", recommended by Otto Hernandez, the CIS chair, just barely works in the existing computer labs because of the small size of the room and crowded conditions. If the room increases in size for new construction the smart board will not work (it is too small) and the CISM Department should consider a projection system and desktop computer control for the instructor.

Issues related to the computer labs include the English Department's request to have all compositional classes in computer labs. This cannot be realized with this implementation and the requirement will put pressure on all the computer lab instructional spaces.

English

The English Department has 13 full time faculty, 10 of them in Mays Landing; there are about 60 adjuncts now which the department intends to reduce to 50[24]. Forty of the adjuncts are at Mays Landing. If the department offices were to be relocated they would like to be adjacent to History, Philosophy, and Social Science. If a departmental suite were created, the Department would like to have a small library area (about 20 lineal feet of bookshelves 7' high) and a separate secretary for the department because of its size

About 50% of the instructional need in English is developmental and remedial (English 070 and 080). The remedial courses are capped at 15-18 and composition courses at 20.

The requests for instructional technology at the instructor's station would be fulfilled by the recommended technology system which is being furnished for all new and renovated instructional space. Acoustical privacy issues discussed could be corrected in new construction or renovations.

Regarding instructional space there is also a need to make the compositional classrooms for English 101 and 102 flexible classrooms with tables and chairs and large enough so the furniture can be arranged to create 4 person groups. There is a need for student stations with computers for all of these composition classes[25]

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[24] There are, however, at the present time no plans to increase the full time faculty of this department.

[25] This request, if fulfilled, will result in a shortfall of 16 computer equipped classrooms (the classrooms are available but the equipment is not). For a discussion of this issue, see *Projections of Campus Wide Classroom and Computer Lab Needs*. The need to make these computer labs flexible also creates many problems if they are to be interchangeable with CISM and the computers are hard wired. There are few classrooms existing on campus now that are large enough for this conversion. The band width for simple word processing, however, is small enough so that the computers could be laptop or desktop and the system made wireless as the preferred alternative- this would solve the flexibility (but not the size) problem and there would be plenty of sections to fill dedicated classrooms equipped in this matter – they would, however, not be interchangeable with CISM labs in this configuration.

English as a Second Language/Modern Languages

The Department has 6 fulltime faculty including the chair and 22 adjuncts. The student load for this Department is not growing in Mays Landing. The department will remain steady state until 2017/20 except for the advanced levels which are increasing. All courses are taught in 8 week blocks. Some of the courses are taught by distance learning – H116 is new and adequate albeit very large for the requirements of this department; D131 is also a distance learning facility but the equipment is antiquated.

Regarding instructional space, there is only one specialty space within the department, B137, the language lab which has just been renovated and has a cap of 18. There was an expressed desire to have access to the computer lab K133 for 1 hour/week. There is an existing tutoring/writing center at the LAC which could be expanded to take care of the increasing need of the advanced level students. The balance of the instruction could take place in standard classrooms – these could be the smaller ones, however, because of the cap on the courses.

Since all of the classrooms are already tabulated in the general classroom population and there will be no improvements or relocation of the faculty offices as part of this implementation we are not presenting a last of specific program elements for this department.

Mathematics/Science

There are 24 full time faculty and approximately 80 adjuncts, each of whom teach an average 2 courses.

The disciplines within the departments are growing at various rates: Physics @1.5% (but should shrink as it is no longer required for many majors); Chemistry @4%/year; biology @1.5% (but will increase if 3rd nursing class is realized); Microbiology and Anthropology @1.5%; and Math @3%/year. Environmental science, a new initiative, will probably grow at least 5%/year because of anticipated demand.

The proposed room layouts on Plates 2-1 through 2-6 illustrate the requested layouts for the various laboratories. The Anatomy & Physiology (A&P) Labs are to be located in Building A along with 2-32 student Computer/Math Labs. In general, the technology and layouts for the science labs similar to that at Cape May would be satisfactory.

Missing from the program implementation is the 16 person open lab for A&P students – the future space reserved for this is now shown as a CIS/English Computer Lab in building A. This open lab could be provided, however, by scheduling one or all of the 3 A & P labs for open lab work when they were not being used for instruction. The A&P lab service area could be manned continuously for checkout by students of models from all 3 labs.

Following this page is a tabulation of the requests for faculty offices and other amenities, including departmental suite amenities. Due to budget restriction, however, all faculty except 20 will remain in existing offices and there is no plan to implement the departmental suite concept with scattered offices. However, in Math & Science the great majority of full time math and science faculty will be able to relocate to the new building.

The reader is encouraged to review the program for Project No. 2, the STEM building, and the narrative and plans for Building A for details of the facilities that are being furnished as part of this initial implementation. The reader should also review *Projections of Campus Wide Classroom and Computer Lab Needs* for the justification and proposed utilization of the science and math labs.

Summary Space List Science & Mathematics

The space list for this department shows both the existing and what is proposed for the new. Differences between the proposed and the requested include the elimination of the open A & P Lab (students can use the 3rd A&P instructional lab), a new greenhouse and an observatory. An additional computer/math lab was added to the program to allow all math classes to be taught in this type of lab.

space name	Existing Spaces			Proposed space			notes
	total no.	n.s.a.	total	no. req.	n.s.a.	total	
Departmental Offices							
Faculty Offices (full time)	12	135	1620	14	135	1890	note 1
Adjunct Office	1	300	300	1	300	300	no change note 2
Instructional & Research							
Anatomy & Physiology Lab	2	0	0	3	1200	3600	24 student stations ea. room
A & P student open lab	0	0	0	0	0	0	delete use new A&P lab as avail.
A & P storage/checkout	0	0	0	1	874	874	with work/study attendant
Biology Laboratory	2	900	1800	1	1215	1215	24 student stations (SS) ea. room
Forensics Laboratory	0	0	0	0	1080	0	will use chemistry lab
Electronics Laboratory	2	900	1800	0	0	0	
MicrobiologyChemistry Laboratory	1	616	616	1	1200	1200	24SS ea. note 3.
Physics/Environmental Sci. Lab	1	940	940	1	1452	1452	24SS ea.
physics/earth science storage	0	0	0	1	128	128	assume 8 x 16
Organic Chemistry Laboratory	1	930	930	1	1200	1200	24SS each.
balance room	1	150	150	1	150	150	
Anthropology Earth Science Lab	1	832	832	1	1452	1452	24SS ea.
Preparation & Storage	2	1600	3200	2	1100	2200	note 4
Chemical Storage	1	300	300	1	200	200	
Math Laboratory	1	576	576	2	960	1920	32SS ea.
Science Lecture	0	0	0	2	1240	2480	48SS ea.
Science Lecture	1	1000	1000	1	2000	2000	72SS ea.
Greenhouse	2	1800	3600	1	1800	1800	reutilize existing lg. greenhouse
Observatory	0		0	1	0	0	on the roof note 5
total departmental net area			17664			**24061**	
gross area @60% efficiency			**29440**			**40102**	

Note 1 - all of the faculty will remain in existing offices except that 7 offices have been eliminated in the renovations to Building A nine offices are being added in the new STEM building to allow for adjuncts or increase in full time faculty.

Note 2 - there are 80 adjuncts in this department, with an average of 6 credit hours each. If one or two new offices in the STEM building are used for adjuncts at occupancy, each office would have 2 desks each of which serve 10 adjuncts (assume 1/2 or 40 adjuncts will use the adjunct bullpen in this building and not office in the department.

Note 3 - Increase microbiology is directly related to nursing; the addition of the LPN cirriculum is also included.

Note 4 - one for biology and one for chemistry/physics/ anthro/forensics -provide only one lab manager office and 2 workstations in each preparation area

Note 5 - there is proposed in the new STEM building a rooftop platform for portable telescopes; the elevator will go to the roof.

Justification of Science Laboratory Requirements

Anthropology, Physics, Environmental and Earth Science Labs

Existing Labs are A152 and A154

Existing daytime utilization (M-F; 8:00 AM to 5:00 PM)

# Space	sections/wk	grid blocks/wk.	Util.%[26]
A154 Anthropology Laboratory	6	12	40%[27]
A152 Physics Laboratory	7	9	26%
Totals	13	21	35%

Average utilization for higher education labs nationwide is 45% - overall the present Utilization of the anthropology & physics labs at the Mays Landing Campus is slightly less than that.

The programs supported are growing at the default rate of 10% by the year 2012 – there is only one new program, environmental sciences, which program is yet to be initiated, that would have an effect on the projected need.

There is sufficient capacity in 2 rooms for another 5 grid blocks at 45% efficiency. This would indicate a growth capacity of 5/21 or 24%. This was judged to be sufficient to accommodate the additional requirements and growth of the proposed environmental science program

Assuming the 24% growth is sufficient **the requirement by the year 2012 would be satisfied by 2 laboratories.** One of these laboratories would serve physics and the proposed environmental science program and the other would serve Anthropology and Earth Science

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Other features of these laboratories:

1. Provide a separate storage room for anthropology for models and specimens.
2. Provide a public display area for anthropology specimens.
3. Provide a separate storage room adjacent to lab for physics equipment.
4. Provide a separate storage room adjacent to lab for earth sciences.
5. Provide a sink and wash up area in each lab – no other casework is required in these laboratories.

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[26] There are 30 Grid blocks/week available each week for each lab.

[27] Utilization is for lab use only; there are in addition 5 grid blocks used for lecture because of the shortage of classrooms making the actual utilization of this room 57%. When the new STEM building is complete there will be additional classrooms to satisfy this need.

6. No plumbing at the student stations is required
7. Labs would have 6- 4 place tables[28]
8. Provide power and data outlets for each student station.

Biology Labs

Existing Biology Labs are A-151, A155, and A163

Existing daytime utilization (M-F; 8:00 AM to 5:00 PM)

# Space	sections/wk	grid blocks/wk.	Util.%[29]	
A151 Microbiology Lab	2	4	13%	
A155 Biology Laboratory	10	20	66%	all BIOL120 &121
A163 Biology Laboratory	7	14	46%	
Totals	19	38	42%	

Average utilization for higher education labs nationwide is 45% - overall the present Utilization of the labs at the Mays Landing Campus is close to but slightly below this range because of the limited capacity (16 students) of A151 and its specialized use.

Question: A110 has 6 biology lecture sections single grid block during the day M-F and 6 grid block sessions at other times. The room seems to be heavily utilized in the AM but underutilized in the PM. Are any lecture only sections given in the biology labs which could be relocated to a new and improved lecture hall of 75?
Answer (1/8/08): no lecture sections are presently given in any of the Biology labs

Question: Is there a lab configuration that will work for all or most of the biology labs? And – if not – which labs are specialty labs?
Answer (1/8/08): all biology labs can be the same except Microbiology which will need sinks at each student station.[30] All other labs will have students at 4 place tables or 6 place tables at stool height and do not require plumbing.[31]

What effect will an increase of the nursing program have on the Biology Labs?
Discussion: The nursing curriculum now requires the following courses:

BIOL120	Human Anatomy & Physiology	4 credit hours
BIOL 121	Human Anatomy & Physiology II	4 credit hours
BIOL 203	Microbiology	4 credit hours

Assuming the class size increase is 20-24 students and the labs are all similar, generates a need for 6 sections or12 grid blocks/a week by the second year for Anatomy & Physiology. The existing lab utilization of A155 at 66% is too high, however, for flexible

[28] John Stratton is currently evaluating the layout of these labs and will make a recommendation.
[29] There are 30 Grid blocks/week available each week for each lab.
[30] The College will verify whether a shared large sink or individual cup sinks are preferable
[31] The College will determine whether 4-6 place tables or 6-4 place tables are preferable.

scheduling. Combining the grid blocks for Anatomy and Physiology only, yields a need for 20 + 1 + 16 = 37 grid blocks. This yields 3 A&P/Biology labs @ 13 grid blocks/week or 43% utilization which is close to the nationwide average.

Conclusion: at least one additional lab will need to be in the program just to satisfy growth of support for existing programs[32]. Assuming the nursing program is to be expanded by another 20 students (or the LPN program absorbed) an additional lab should be added for anatomy and physiology. Each laboratory will add up to 7 sections or 14 grid blocks of instruction capacity.

The final biology lab count agreed upon (1/8/08) is as follows:

3- dedicated Anatomy & Physiology Labs for 24 students
1 – general biology lab for 24 students
1 – Anatomy & Physiology Open Lab for 16 students(omitted in favor of 24 person computer lab)
1 – Microbiology Lab for 24 students[33]
1- Anatomy & Physiology Models & Equipment Storage Room

Other features of the Biology Labs (from 1/8/08 follow up interviews):

1. A&P labs would have 3- 4 ft. wide x 7 foot tall x 18" deep storage cabinets.
2. All biology labs would have double pan wash utility sinks for washing dissecting pans and equipment
3. Provide a folding counter for 12 students for testing.[34]
4. Casework around the perimeter of the room is not needed.
5. Biology labs at Cape May work fine and should be a model for these labs (except lab table size – they are 8 station tables in Cape May).
6. Students will utilize lap top computers in biology labs – provide power and data access ports for each student station.

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[32] "Lab" courses are required for 5 majors, a "science" course for 4 majors, and a "biology course " for education and child development. All of these majors are expected to grow at the default rate of 10% by 2012 except for Corrections and Criminal Justice both of which have a requirement for CRIM 204, Forensic Science – these programs are expected to grow faster than the default rate because of increasing requirements for local police qualifications. Forensic Science should be taught in either a biology or chemistry lab.

[33] Will also be used as a chemistry lab for other courses

[34] Now testing is done in the labs with 12 students at the benches and 12 students at counters to achieve cheating separation. The College should consider testing in the lecture halls to avoid this complication

Chemistry Labs - Existing Chemistry Labs are A118 and A159

Existing daytime utilization (M-F; 8:00 AM to 5:00 PM)

# Space	sections/wk	grid blocks/wk.	Util.%[35]
A118 Chemistry Laboratory	2	4	13%
A159 Chemistry Laboratory	4	8	26%
Totals	6	12	20%

Average utilization for higher education labs nationwide is 45% - overall the present utilization of the chemistry labs at the Mays Landing Campus is less than ½ of that.. The programs supported are expected to grow at twice the default rate of 10% by the year 2012, generating a growth rate of 20%.Therefore the requirement by the year 2012 would be satisfied by 12 + 2.4 or 14.4 grid blocks.

This requirement could be satisfied by 1 + chemistry lab with a utilization of 14.4/30 or 48%. It was determined that we would provide 2 chemistry labs as the 48% utilization would be too difficult to schedule. The second chemistry lab would also serve microbiology.

In the meeting with the outside interests, both Stockton & Rowan said that it was absolutely imperative that the students transferring had completed organic chemistry by the conclusion of their second year. Organic Chemistry requires a fume hood for every student because of the noxious fumes.

Recommendation: provide one chemistry lab outfitted as an Organic Chemistry Lab; this would be the primary lab for Chemistry. A second Chemistry and Microbiology Lab would suffice for both the chemistry overflow and Microbiology[36]. If forensic science, CRIM204, could be taught in this lab it would increase the utilization of the chemistry labs and allow better content for the student – most forensic jobs require a chemistry degree or similar qualifications

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Other decisions related to the Chemistry labs at the follow-up interview on 1/8/08 include the following:

1. Layout of labs should be similar to Cape May: 4 - 8 student stand up benches with balance shelf at the end; storage space will be different from Cape May.
2. Provide a 150 sf equipment room off of one or both chemistry labs.
3. The organic chemistry lab should have 12-2 station 6 foot long hoods
4. Provide space for 2- 6'-0" wide 2 station fume hoods in the Chemistry/Microbiology Lab with space to add a third.

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[35] There are 30 Grid blocks/week available each week for each lab.

[36] Biology with its support for the nursing curriculum may increase beyond the projections for these labs – having a lab that could work for both disciplines would offer a great deal of flexibility in scheduling.

Nursing/Allied Health/Physical Education

The Departmental requests include both office and instructional space. For this implementation, there will be no revisions to the existing offices and no new offices or administrative space added[35] – the offices will remain in their same location in Building H. The instructional spaces have been relocated to Building AThe nursing and Anatomy & Physiology labs provided in Building A will allow the addition of a 3rd nursing class.

The layout as shown on Plate No. 3A-3 is what was requested, the layout on Plate No. 3A-2 lays out the labs in Building A in almost exactly the same configuration. There is an issue as to whether the program will be expanded for another class – if it is not one of the nursing labs will be omitted and changed to a lecture hall[36].

The allied health and computer course blocks for nursing are included in the general classroom and computer lab count and are not included here as part of the program.

space name	Existing Spaces			Proposed space			notes
	total no.	n.s.a.	total	no. req.	n.s.a.	total	
Departmental Offices							
Faculty Offices (full time - nursing)	8	varies	540	10	varies	675	head count +2 from exist. (note 3)
Clinical field specialists	0	0	0	1	60	0	adjuncts now 14; note 1
Faculty Offices (ft-allied health)	2	varies	135	2	varies	135	no change
Faculty Offices (ft-LPN)	0	0	0	2	135	270	no additional offices
Adjuncts LPN program	0	0	0	1	108	0	one office two desks
Waiting Area	0	0	0	1	75	0	not provided
Student Worker	0	0	0	1	50	0	not provided
Kitchenette	0	0	0	1	64	0	not shared
Active Storage	0	0	0	1	100	0	administrative active storage
Instructional & Research							
nursing lab	1	900	900	3	1232	3696	note 1
existing open space multipurpose	1	3280	3280				existing becomes TV studio
observation/debriefing evaluation	0	0	0	2	367	734	next to testing w/one way glass
storage rooms	0	0	0	2	367	734	note 2
Science Lecture	0		0	1	2000	0	will share 80 person science lecture
Allied health classroom	1			1	1000	0	general purpose for 35; now 5 sect/wk
nursing computer lab				1	1000	0	general purpose for 36
total departmental net area			4855			**6244**	
tare area @40%			**8092**			**10407**	note 4

Note 1 - each lab contains 8 instructional bed/stations of the 24 total beds 8 will be testing with observation size as a typical faculty office but has 2 desks each of which serve 10 adjuncts (assume 1/2 or 40 adjuncts will use the adjunct bullpen in this building and not office in the department.
Note 2 - Storage room will include lateral files - one room will will contain lab manager office adjacent to labs.
Note 3 - there will be two additional offices for nursing faculty made available in building A when Science vacates

Department - Nursing
Summary Space List

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[35] We have indicated in the proposed space tabulation the requests for office space but since none is to be provided we have totaled the spaces as "0".

[36] The requested lecture room for 80 is not part of the present program except that if the expansion of the nursing program is not implemented there is space for a 48 or 76 seat lecture hall in building A. It is proposed that this lecture hall be constructed in the 48 student configuration as M129 with a capacity of 80 already exists on the campus and is presently scheduled for no more than 30 students – this space could be used for the nursing combined lectures. The 48 student lecture room with tables gives the students more room to spread out. The two possible configurations for this lecture space are shown in plates nos. 3A-5 and 3A-6; the insertion into building A of the 76 person lecture is illustrated on Plate 3A-2 Alternate. Either one will fit in the space allocated.

LAC/Library

When the location of the Student Center was changed, this eliminated the need to reconfigure D building and have it connect to the student center to the west as proposed in the Master Plan. The principal effect of Phase 1 of the implementation of the Master Plan will now be the relocation of some of the testing spaces now in building D to building J. Eventually the whole of testing will move to J vacating portions of the west wing of building D and allowing it to be converted completely to academic functions. It has been determined that by the time all of testing has been relocated that the space will be more than adequate for tutoring's needs and will relieve the pressure for spaces required by special tutoring needs for the handicapped and disadvantaged.

The changing of the master plan relocating the Student Center to the north end of the campus will eliminate the proposed through passage of the west wing which will improve the utilization of the facility. In addition, the Master Plan proposed passage through the library from the proposed Campus Walk to the east did not consider that the library was on lower and multiple levels and was therefore not practical – this initiative should be abandoned.

There are no funds available for either tutoring or testing as part of this first phase implementation. In addition, there will be no renovations to building D as a part of this program and we have therefore not prepared a space list. As testing relocates wholly or in part to J then improvements will be needed to these spaces.

Social Science

The department expects no increase in faculty[37] or enrollment to 2017. The department requested that their offices be grouped together. They also requested computers that work and adequate support for the equipment. Soundproofing of the classrooms is also an issue with this department.

The requirements for a 35 person computer lab are difficult to quantify as we do not know the courses for which it is intended and therefore do not know the grid blocks that will be required. We will have to assume, however, at this juncture that a 32 person math lab would suffice to serve this purpose and that since the math labs proposed are already 66% scheduled during the day we will need to assume that his will be an unmet need until more large classrooms are equipped with computers.

We assume that the balance of the instructional spaces for this department are ordinary classrooms and are already accounted for in the general classroom population.

The proposed improvements for this implementation do not include any of the special requested spaces for this department. The College should, however, try to group the faculty offices together as part of any relocation of faculty of other departments

space name	Existing Spaces			Proposed space			notes
	total no.	n.s.a.	total	no. req.	n.s.a.	total	
Departmental Offices							
Faculty Offices (full time)	6	145	870	6	145	870	11 faculty now
adjunct office	0	0	0	0	0	0	note 1
Department seminar room	0	0	0	1	120	0	not provided in new
Active Storage	0	0	0	1	100	0	not provided in new
Instructional & Research							
Social Science Lab	?	0	0	1	1200	0	not provided in new
Computer lab	?	0	0	1	900	0	request 35 students note 3
Child Development Care Lab	0		0	1	1200	0	will get kids from daycare; note 2
total departmental net area			870			**870**	
tare area @40%			**1450**			**1450**	

Note 1 - there are 35 adjuncts in the department no additional provisions are being made for these
Note 2 - it is now likely that the day care facility will be closed so some other source will need to be found
Note 3 - there is a campuswide shortage of computers for students in instructional spaces to meet all of the requested needs. The greatest quantity were requested by English for compositional courses. The problem of classroom size may be helped by using laptops and wireless connections. For a discussion of this, the reader should review the discussion under issues.

Department - Social Science
Summary Space List - Existing and Requested

[37] Although there is no increase in teaching hours anticipated, some of the adjuncts may be replaced in the future by full time faculty.

Student Services

Student Services includes Admissions, Advisement & Counseling, Registration, Testing, Student Development, Student Life and other non-academic services related to the student. The department is presently located in Building J on the first floor with elements of the testing function in the building D. One of the prime movers for the strategy of phasing and implementation for phase 1 was to consolidate the testing with the balance of student services in J building. A student Center was to be integrated in this area and food service is also to be improved.

The present strategy is different from the master plan which proposed all of student services and dining relocated to a new building at the south side of the campus. This strategy was not deemed cost effective, however, as all of the existing food service facilities would need to be abandoned and the all new project would have cost in excess of $15 million. For a full discussion of this issue please refer to Project #4 New Student Center for details of the proposed improvements and the rationale for the relocation.

As a result of this strategy, however, when the existing student life center is relocated to the new student center, this space will be turned over to testing with little or no modification. This should be the first step in the eventual consolidation of Student Services on the First Floor of J Building.

We are not presenting a space list for this department or the bursar's office as there will be no change during this implementation, the space requirements are not much modified from the existing, and there is likely to be much change in the program requirements by the time any improvements are implemented; however, a space list for the student center improvements and dining is to be found under Project #4.

There are, however, two strategies are being considered should funds be available;

- Enclose the portico at the northeast entry to J building to allow space for expansion
- Clear the admissions function out of the west lobby and provide an additional entry on the southwest side.

Campus Services

Campus Services includes the Facilities Group, Security, Shipping & Receiving, Print Shop, Central Stores and Archives.

The program for Campus Services was originally conceived to be a separate building which would house all of the services now existing on the west side of the campus in scattered facilities. One of the reasons for this project was to clear the entry to the campus from the west parking lot of conflicting elements and services which would interrupt pedestrian traffic. In addition, the nature of the security building and the doublewide trailer housing Facilities needed to be replaced. One of the greenhouses and the chemical storage facility along with a collection of other temporary and ephemeral material would be demolished or moved for aesthetic reasons.

Because of budget limitations, none of these initiatives will be funded at this time. The following is a list of the planned initiatives as part of the implementation of the first phase.

- The existing security building will remain – it interferes with nothing and is out of the way
- The facilities doublewide trailer will be relocated near the existing grounds maintenance structure as part of Project #1
- The chemical storage building will be demolished (it will be replaced in the STEM building)[40]
- The small greenhouse will be demolished
- The large greenhouse will remain (albeit it would be better relocated to the roof of the STEM building if funds were available)
- All other temporary and incidental structures and fixtures will be removed on the south side of building A to make room for new landscaping and entry which will be part of the new STEM building.
- As part of Project #1 the existing loading dock will remain but it will be taken out of operation and the entry road removed. Deliveries will now be made on the south side of the boiler house and a new lift platform will be required for off-loading semi trailers and other long haul trucks with high beds.
- Funding for these initiatives will come either from the various project funds or from the general rehabilitation funding allowance.

Because none of these campus service facilities will be centralized we have decided to include the entire space program and analysis for a new Campus Services Building as Appendix #4 in a complete package for future reference and/or implementation. The cost of this structure was estimated at $4.16 million if construction began in late 2009.

[40] The chemical storage building may have been constructed with grant money. The College will need to investigate the terms of the grant to confirm it can be demolished

Project No.1 – Entry Road and Ring Road Improvements

Introduction:

The proposed configuration of the improvements is illustrated on Plate No. 1-1; it is different than the master plan in some details but, we believe, achieves the same objectives at a lower cost and with significantly less disturbance to the site which should ease the Pinelands Permitting process. The configuration of this road differs slightly from that suggested in the Master Plan – it has been changed to be more cost effective in achieving the goals set out in the master plan. The entry road is widened and aligned exactly with the proposed campus walk as envisioned in the master plan. We are, however, recommending that the "T" intersection with the ring road be realigned to create a simple intersection and ease flow to the east upon entry.

In addition to the additions to the road system at the north end of the campus some additional improvements are to be completed as part of this Project:

1. Move the double wide facilities trailer to annex it to the east side of the present maintenance building. The scope of work will include the extension of the fiber optic data system and additional power to the new location. Plumbing connections will be required along with some minimal site improvements.
2. Demolish the existing approach to the loading dock and fill the depression so that the grade is level with the existing dock. The overhead door and concrete dock will remain; provide new topsoil and landscaping.
3. At the south side of the boiler plant provide a pit and recessed adjustable platform in front of the existing overhead door. The platform shall be fully mechanized and capable of a 48" high extension above grade. Provide drainage of the pit and underground power and control to station adjacent to the door. Provide 2 way speaker/buzzer system to the interior of the building and a security camera at the door.
4. Enlarge the corners of the adjacent roads to allow approach and exiting turns by tractor/trailer rigs.
5. Landscape repairs throughout and trees and lighting at the entry road

The crucial connection, completing the loop road on the north side of the campus, is a must and this is retained and connects the two existing segments of the road. In addition, we are suggesting for economy that the road not be realigned on the east side of parking lot designated P4 on the Master Plan, but allowed to remain in its present alignment. Some features are shown on the accompanying diagram, Plate 1-1:

1. revised entry to line up with new road alignment.[41]
2. revised entry road to line up with campus walk axis
3. new "T" intersection
4. new ring road including bridge or culverts for storm water drainage to the pond
5. new "T" intersection
6. existing road remains (propose not relocating as shown on the Master Plan)

[41] The double road and parkway shown on the Master Plan, although more impressive, may be more difficult to sell to the Pinelands Commission

Project No. 2 – STEM Building
(Science, Technology, Engineering & Mathematics)

Introduction

The STEM (Science, Technology, Engineering & Math) Building which includes the 9,420 GSF Technology Studies Institute (TSI) is the centerpiece of the Blueprint 20-20 master plan first phase of implementation. The program for the building contains all the science labs of the college excepting the Anatomy & Physiology Labs which are located in building A. In addition to the labs themselves there are supporting spaces, storage, and 3 math/computer labs for 32 students each. There are 10 – 2 person faculty offices along with an adjunct office and conference room – these offices will house most of the full time faculty for science and mathematics – 7 of these offices replace existing offices relocated from building A.

The building is planned to be located on the south side of the main campus quadrangle between the library, Building D, and the Boiler Plant (see Plate No. 1). This is the same location suggested in the Master Plan. The building is proposed to be 2 stories in height so as to minimize the footprint and allow open spaces between the boiler plant and the library for paths and landscape. As part of the improvements for this building and as envisioned by the master plan, the small greenhouse, chemical storage, and ancillary structures will be demolished in order to create a better entry to the campus from the west parking lot The large greenhouse will remain for cost savings but might be demolished depending on the entry configuration and the availability of funds.

Issues/Program Objectives and Concepts

Issue: Replacement of Antiquated Existing Facilities

Objective: Provide State of the Art Science and Math Laboratories and Ancillary Space

Objective: Provide a more welcoming and enlarged entry to the west parking lot

Concept: Provide a two story structure to minimize footprint and avoid conflicts and modifications to the Boiler Plant and Building D

Concept: Provide a structure with the principal elevations facing north and south for maximum sun control and energy conservation.

Concept: Use the building to provide a gateway from the south campus parking lots – this gateway will supplement the proposed campus walk to the east as a main thoroughfare to the central quadrangle.

Issue: As the campus expands, the walking distance for food service increases and the service becomes time wasting and inconvenient.

Objective: Provide food service that is convenient to the south end of the campus to avoid excessive travel

Concept: Provide a small food service facility on the ground floor lobby of the new STEM building[42]

Issue: The STEM building should be student friendly

Objective: Create a pleasant and welcoming entry from the west and south parking lots

Concept: Provide a modestly spacious lobby with a welcome desk on the highest traffic route manned by a student worker to give directions, answer questions, and welcome people to the building.

Concept: Design the lobby as a walk through space for the second north to south main path to the quadrangle[43], this would expand the traffic through the building and allow the satellite food service and student welcome desk to service traffic coming from the south parking lot.

Unresolved Issues

There are no unresolved issues related to the STEM building ; the issue of the present cost evaluation of $17.8 million related to the originally proposed $16 million is merely a shifting of cost from one project to another – this is discussed in the strategy section; the overall projects costs remain at the $36 million requested and available for funding. The cost shifting allows the art department to gain a new studio in an existing space, K133, rather than a new structure which strategy is more cost effective.

---

[42] This facility would be more of a "grab and go" coffee/drink kiosk which would catch the students and faculty as they arrive on campus from the south and west parking lots. In addition this facility would provide limited food and drink services during the day for all buildings on the south end of the campus. These kinds of satellite facilities are now quite common in college and university buildings and are usually quite successful in increasing sales. They are also a welcome convenience for the customers who now don't need to walk across campus to get a cup of fresh coffee or a snack.

[43] This would allow the existing path to continue through the building rather than to the outside as is suggested in the Master Plan. If this is not done the building site will block this path or cause it to be rerouted.

Summary Space List- STEM Building

space name	Existing Spaces			Proposed space			notes
	total no.	n.s.a.	total	no. req.	n.s.a.	total	
General							
Adjunct Faculty				0	400	0	omitted- see adjunct office below
Science & Mathematics Dept.							
Departmental Offices							
Faculty Offices (full time)	12	135	1620	**10**	**145**	1450	note 1, two person offices
Adjunct Office	1	300	300	**1**	**145**	145	note 2, in two person office
Secretarial	0	0	0	0	0	0	not in this building
Waiting Area	0	0	0	0	75	75	
Student Worker	0	0	0	0	50	50	
Department seminar room	0	0	0	0	700	0	substitued for 4 faculty offices
Conference rooms	0	0	0	1	145	145	note 7
Kitchenette	0	0	0	0	0	0	not in this building
Active Storage	0	0	0	1	100	100	
Instructional & Research							
Anatomy & Physiology Lab	1	900	900	0	**1215**	0	in renovated A building
A & P student open lab	0	0	0	0	621	0	**16 station** in renovated A building
A & P storage/checkout	0	0	0	0	320	0	in renovated A building
Organic Chemistry Laboratory	1	900	900	1	**1470**	**1470**	24 student stations; note 5
equipment room	1	150	150	1	150	150	
Chemistry/Microbiology Laboratory	1	616	616	1	1200	1200	24SS ea. note 3.
Physics Laboratory	1	940	940	1	**1452**	**1452**	24SS ea.share w/environ.science
physics storage	0	0	0	1	128	128	assume 8 x 16
environmental science storage	0	0	0	1	128	128	assume 8 x 16
Biology Laboratory	2	930	1860	1	1215	1215	24SS ea., same as A&P lab
Anthropology Laboratory	1	832	832	1	**1452**	**1452**	24SS ea.share with earth science
anthropology storage	0	0	0	1	128	128	assume 8 x 16
earth science storage	0	0	0	1	128	128	assume 8 x 16
Preparation & Storage	2	1600	3200	2	1100	2200	note 4, reduced from 3200
Chemical Storage	1	300	300	1	300	300	
Math Laboratory	1	576	576	3	**960**	**2880**	32SS ea.
Science Lecture	0	0	0	0	0	0	48SS ea, deleted from program
Science Lecture	1	1000	1000	0	0	0	72SS ea.relocate to bldg. A
Greenhouse	2	1800	3600	0	450	0	use existing
Observatory	0		0	0	250	0	viewing platform on roof
Arts & Humanities							
TV Studio	0	0	0	0	0	0	in building H
TV faculty Office				0	0	0	in building H
total departmental net area			16794			**14796**	
tare area @40%			**27990**			**24660**	note 6

Note 1 - the number of faculty now is 11 math, 10 science, 3 lab prep; f.t faculty increase of 20% projected for this department in response to 10% population growth and 10% reflecting the desire to reduce adjunct instruction generates 5 add f.t. faculty for a total faculty count of 27 + 3 in the prep area generates a requirement for 14 - 2 person offices + 3 stations in the lab area All existing faculty are housed in offices throughout the campus with most of science offices being in building A. 3 of the offices are for additions to faculty & 7 new offices replace the existing ones omitted in building A by the revised layout.

Note 2 - there are 80 adjuncts in this department, with an average of 2 sections or 6 credit hours each. There will be no new adjunct facilities in this building.

Note 3 - Increase in this course is directly related to nursing; the addition of the LPN cirriculum is also included.

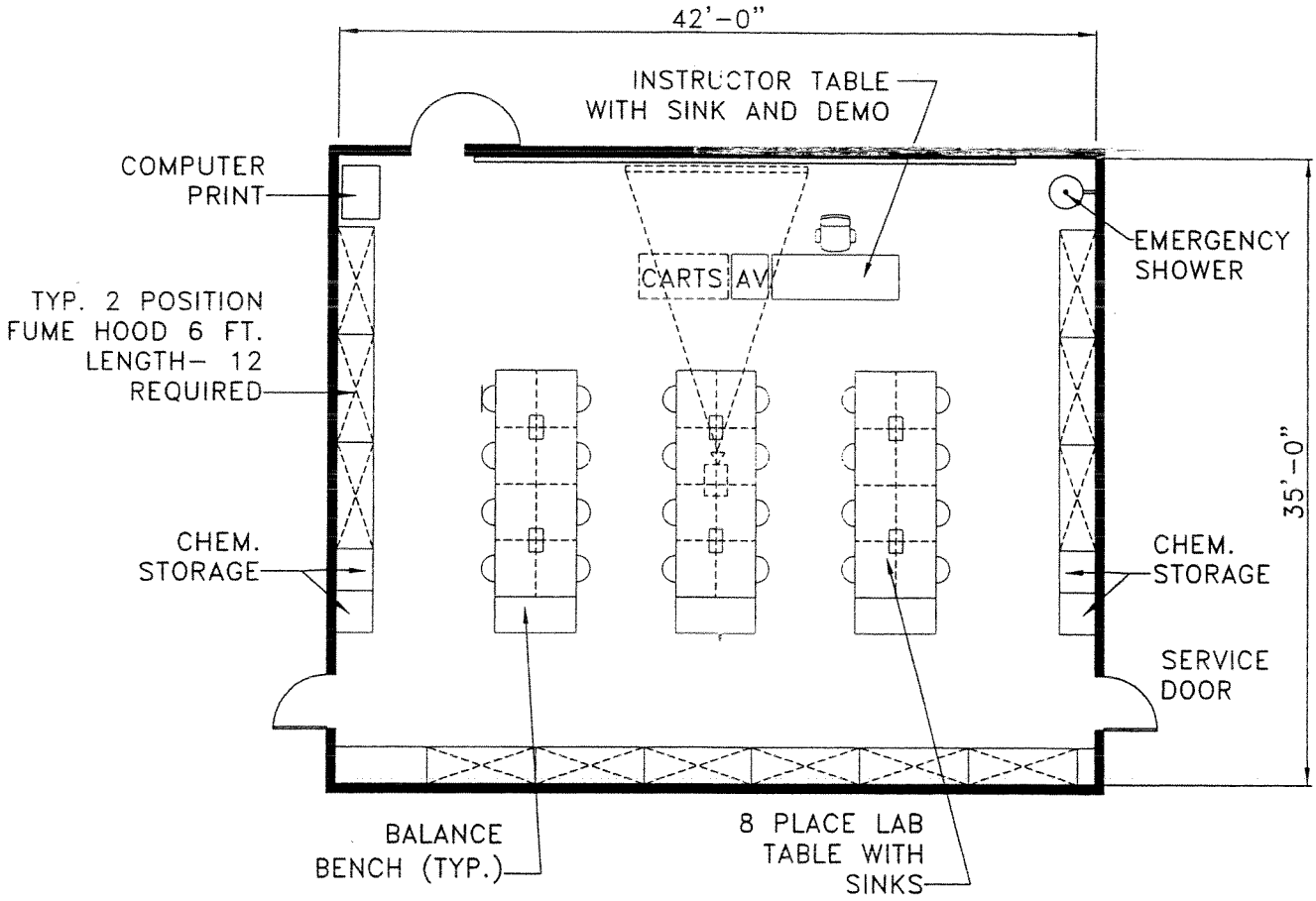
Note 4 - one for biology and one for chemistry/physics/ anthro/forensics -provide only one lab manager office and 2 workstations in each preparation area

Note 5 - Chemistry is growing at twice the default 12% rate or 24% to 2015. Even at this rate one Chemistry Lab @ 45% utiliztion will suffice this reduction proposes that the microbiology lab be designed as a combined chem/micro lab as the requirements are similar and the utilization for microbiology is also low.

Note 6 - this is reduced from initial requests tabulated at 31,095 NSF and 56,536 GSF. The tare area (net/gross ratio) has not been adjusted and may not allow the inclusion of much additional space for informal gathering spaces ("learning lounges") as suggested in the master plan.

Note 7 - the conference rooms are required for private conferences because all faculty offices are 2 person; they are sized larger than needed at the same size as a faculty office for flexibility.

Figure 2-1
Summary Space List - STEM Building

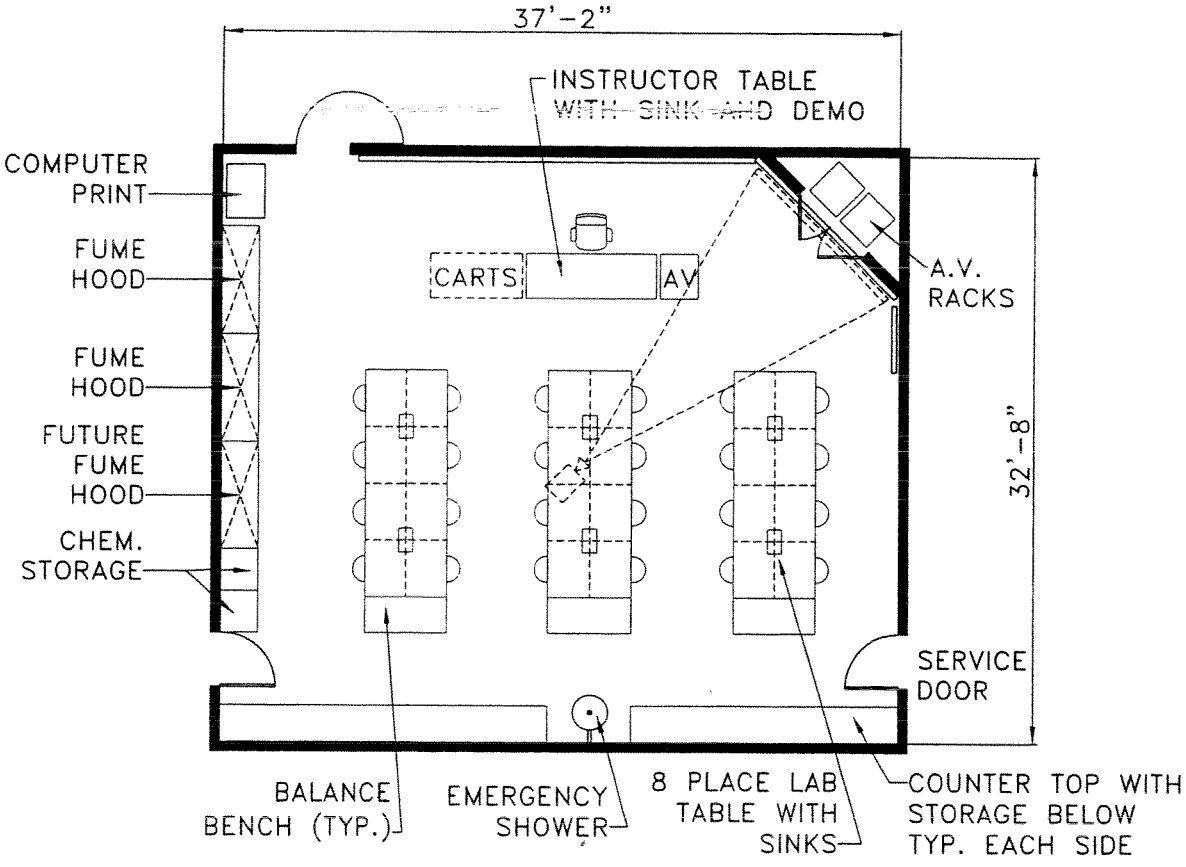


ORGANIC CHEMISTRY LAB
1470 SF.
24 STUDENT STATIONS

1 5 10 20

SCALE: 3/32"=1'-0"

PLATE 2-1

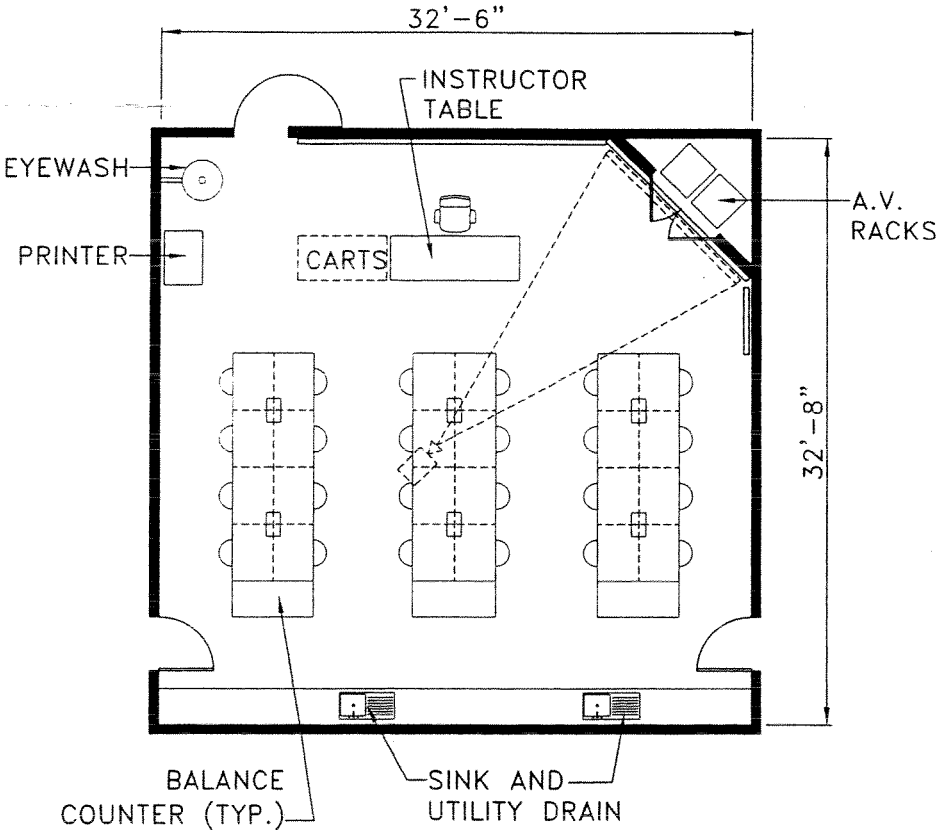


CHEMISTRY/MICROBIOLOGY LAB
1200 SF.
24 STUDENT STATIONS

1 5 10 20

SCALE: 3/32"=1'-0"

PLATE 2-2

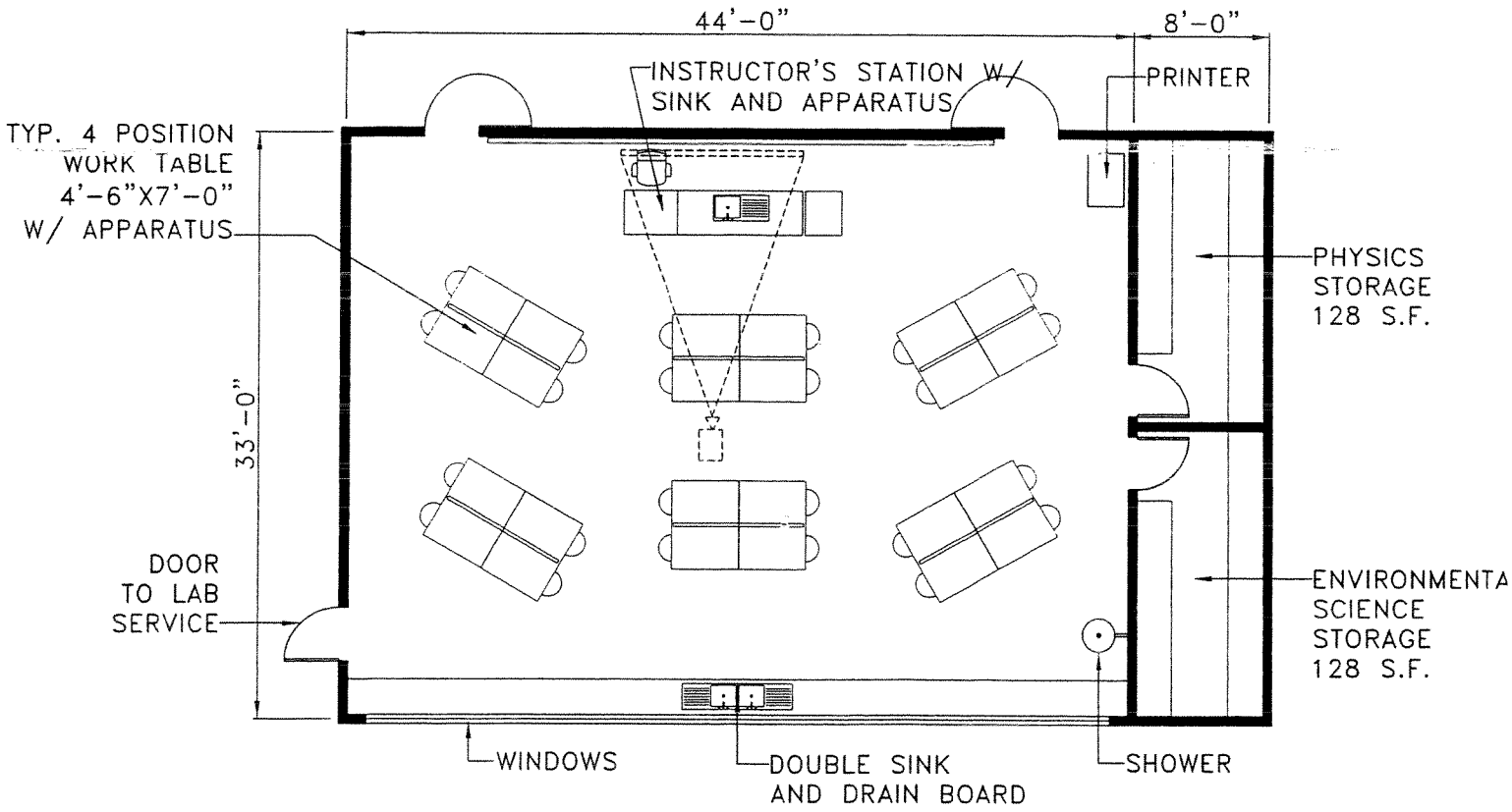


MICROBIOLOGY/BIOLOGY LABORATORY
1062 SF
24 STUDENT STATIONS

1 5 10 20

SCALE: 3/32"=1'-0"

PLATE 2-3

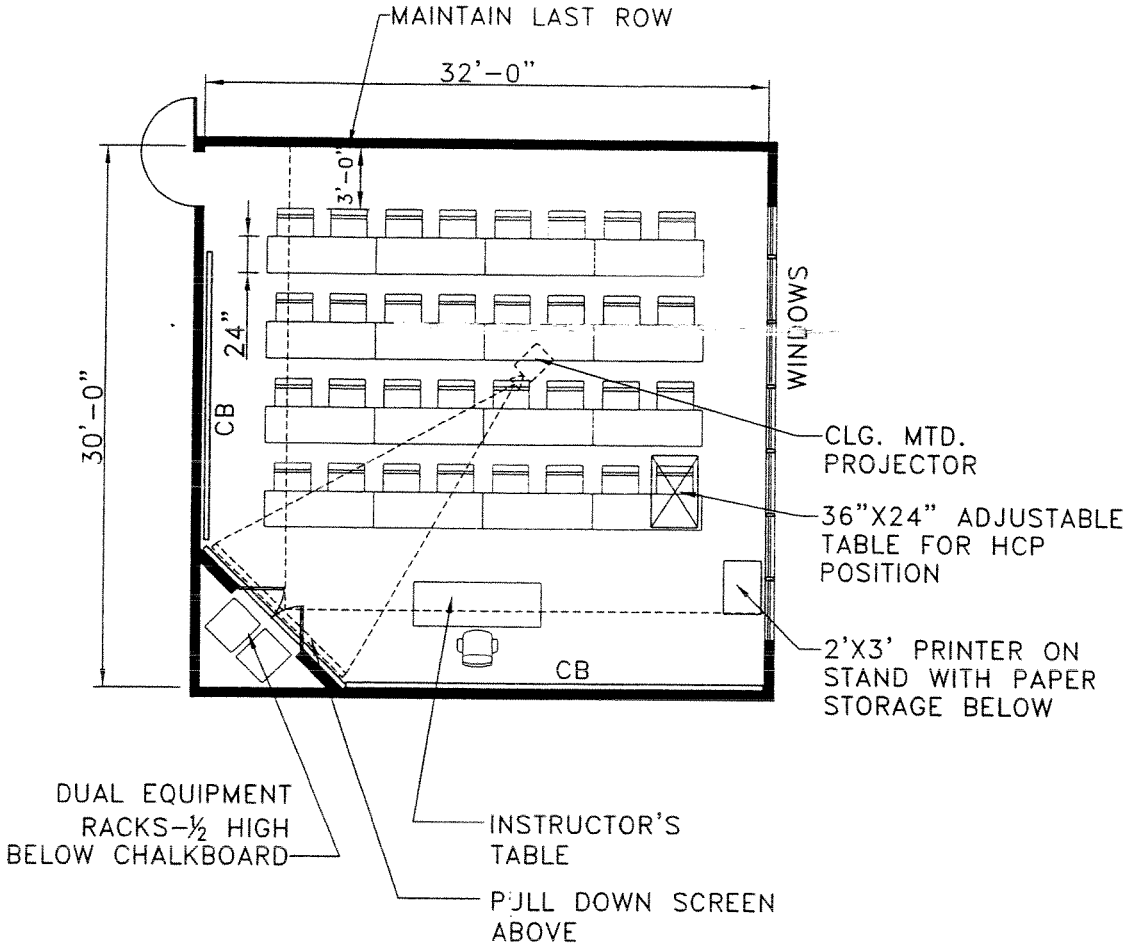


PHYSICS/ENVIRONMENTAL SCIENCE LABORATORY
24 STUDENT STATIONS
1452 SF (LAB ONLY)

1 5 10 20

SCALE: $\frac{3}{32}$"=1'-0"

PLATE 2-4

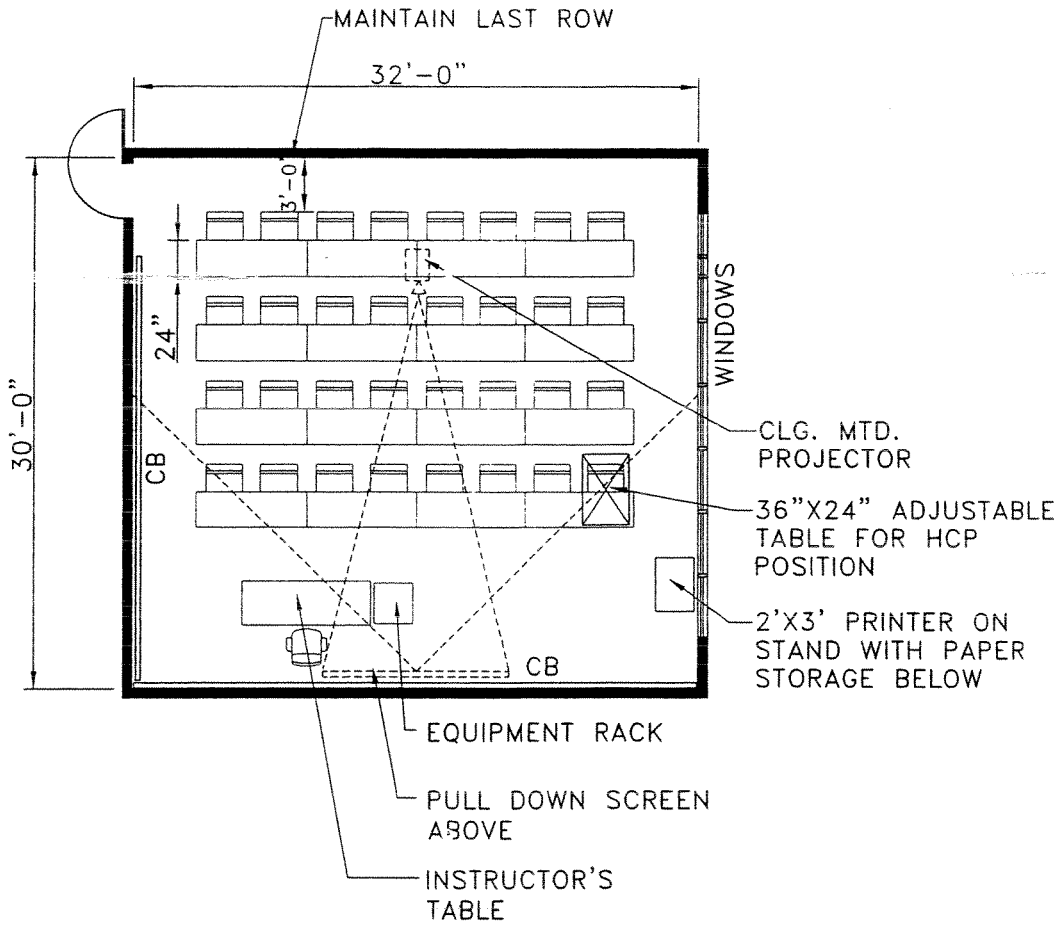


ALTERNATE NO.1
MATH/COMPUTER LAB
SEATS 32
960 SF

1 5 10 20

SCALE: 3/32"=1'-0"

PLATE 2-5



ALTERNATE NO.2
MATH/COMPUTER LAB
SEATS 32
960 SF

1 5 10 20

SCALE: 3/32"=1'-0"

PLATE 2-6

Facilities Detailed Configuration and Justification

The following generic diagrams for the proposed instructional spaces follow – the mathematics labs are similar to what will be in the renovated building A:

Plate No. 2-1 Organic Chemistry Lab
Plate No. 2-2 Chemistry/Microbiology Lab
Plate No. 2-3 Biology/ Microbiology Lab
Plate No. 2-4 Physics/Environmental Science Lab
Note that Anthropology/ Earth Science is the same
Plate No. 2-5 Mathematics Lab Type 1 Layout – 32 student stations
Plate No. 2-6 Mathematics Lab Type 2 Layout – 32 student stations

The two versions of the mathematics labs explore the difference between the concept of the diagonal screen in the corner (same as Cape May) or a more traditional approach with the screen or smart board in the center of the room. The diagonal corner utilizes un needed space, brings the corner chalk board closer to the students, allows the instructor to remain in the center of the instructional space, and gets the audio visual equipment racks out of the space. This concept is also utilized in some of the suggested lab diagrams. The consultant is arranging a meeting at the Cape May Campus with the faculty to determine their preferences.

prepared 1/29/08 revised 5/12/08
PROGRAM COST EVALUATION
17 LINE SUMMARY TABULATION - requested/adjusted - does not include TV studio

Project #2

New STEM Building - $17.82 million budget/24,660 sf gross area

Construction Cost

1	Building Cost (**24,660** sq.ft. x $ 399.10 /sf)	$	9,841,806.00	note 1
1a	Demolition of buildings R & F	$	-	site has been shifted
1b	Affirmative action training	$	49,209.03	
2	Site Development	$	-	included in line 1
3	Equipment			included in line 1
4	Cost Premiums and Reductions (3%of lines 1)	$	295,254.18	LEED silver premium @3%
5	Contingency on Construction, Lines 1 through 4	$	-	note 2
6	Construction Cost Today (sum of lines 1 through 5)	$	10,186,269.21	$411/sf
7	Escalation (to midpoint of construction) (32.7% x line 6) **construction begins Oct 1, 2011**	$	3,330,910.03	note 3
8	Total Costruction Cost (line 6 + line 7)	**$**	**13,517,179.24**	$545/sf

Other Costs/ Project Costs

9	Fees, survey, testing, commissioning, etc.	$	2,382,400.00	see Appendix #7 for breakdown
10	Off Site Improvements and Land Cost	$	-	
11	Owner Equipment/Furnishings/Special Systems	$	812,000.00	see analysis for breakdown
12	Miscellaneous	$	100,000.00	
13	Contingency (on other costs, lines 9 - 12) @10%	$	329,440.00	
14	Other Costs (sum of lines 9 through 13)	$	3,623,840.00	
15	Project Cost (sum of lines 8 and 14)	$	17,141,019.24	$682/sf
16	Owner's Contingency(for line 8 during construction)	$	675,858.96	at 5%
17	Total Project Cost Evaluation (sum of lines 15 & 16)	**$**	**17,816,878.20**	$711/sf

note 1 - see appendix for cost modeling by Faithful & Gould for this number
note 2 - in F & G cost modeling 10%design and 3% construction - included in line 1
note 3 - to midpoint of construction 10/1/12

17 Line Program Cost Evaluation
Line by Line Contents & Assumptions

STEM Building (24,660 sf)

Following is a line-by-line breakdown of the 17 Line Cost Evaluation. In addition to a general description, which is given first, there are specific breakdowns of the line contents for this particular program.

Line 1: Building

General: This is a cost per square foot of the model you are utilizing, multiplied by the number of square feet in the proposed project. Line 1 usually includes the following items; convention separates building cost from site cost at a line five feet from the exterior of the building

- Special Systems
  Conduit and wire management systems* for telecommunications
  Cabling for Telecommunications*
  Conduit and wire management systems for security systems*
  Cabling for security systems*
  Conduit and wire management systems* for computer systems
  Cabling for computer systems*
- Architectural, Structural, Mechanical, Electrical, Plumbing, Emergency and Life Safety Systems Control Systems, Elevators and Lifts
- Taxes on labor and materials
- Permit costs
- Labor and material bonds and completion bonds
- Equipment hookup
- Attic stock

The special systems listed above and marked with an asterisk (*) are a grey area; sometimes they are in the building cost; convention normally excludes them from the contract and places them as part of the project cost on either lines 11 or 12. In addition to the costs above, it is most useful to put any construction manager's fee in the building cost rather than on line 9. This is because the construction manager (CM) normally replaces the general contractor and awards subcontracts separately, replacing the general contractor's fee and markup with their fee. Most often historical costs will be compiled to include the CM cost as part of the construction cost. If the CM was acting as a consultant only with a separate general contractor, the fee could be excluded from the historical cost.

This Building Program
All of the items included in this number are listed above. For this project a full time construction administrator will be utilized and the cost of this service is to be found in line

9 – a discussion of this service and breakdown of the costs is to be found in Appendix # 6. A complete breakdown of all the fees for this project is to be found in Appendix #7.

Regarding the balance of the items - in this particular instance we have estimated the base building cost on line 1 to be **$399.10/sq, ft.** The cost of the IT/telephone cabling and servers/equipment is not included in this line and is to be found under line 11 along with the AV systems. We have chosen to place AV systems under line 11 as the cost of these systems has been broken down as a lump sum for each instructional space.

Line 1a: Demolition of Buildings R & F

This version of the cost evaluation assumes that the building will be shifted on the site to a location where the demolition of buildings R & F is not required. There is no allowance for either repairs or alteration of these buildings in this estimate.

Line 2: Site

General: This is an evaluation of the present cost of the proposed site improvements, often a combination of cost per acre for various functions (grading, parking, landscaping, etc.) added to the best estimate of utilities. Utilization of a rule of thumb (a percentage of the building cost) as related to similar projects or the model can work as a last resort when combined with a premium analysis.
Usually includes all development from a line five feet outside the building to the property line or, for the large site, the agreed contract limit line. Site costs include required utility connections at the property line:

- Site demolition, landscape, paving, grading, site lighting and electrical, utilities and utility structures, drainage structures and storm water systems, retention ponds, septic fields and sanitary structures, and other physical improvements
- Taxes on labor and materials
  In addition, environmental restrictions and requirements may require extensive modification of the subsoil (due to contaminants). Protection of features such as wetlands, natural habitat etc. can often add significant premiums to the project cost. These potentially fatal flaws are addressed in the cost evaluation workbook

This Building Program: All of the site elements are included in line 1

Line 3: Equipment

General This equipment normally defined as fixed equipment which will be purchased and installed as part of the general contract. Does not include portable equipment, disposables, consumables, or maintenance equipment:

- Prefabricated storage and shelf units
- Built-in cooler, refrigerator/constant temperature rooms

- Laboratory benches
- Fume hoods, biosafety cabinets, and exhaust hoods
- Kitchen and food service equipment
- Conveyor equipment
- Lockers
- Dust collectors, dust collection and disposal
- Auto lifts and garage equipment
- Installation of owner purchased equipment
- Library equipment and shelving
- Washers, sterilizers, laundry equipment, and fixed hospital equipment
- Built-in safes, vaults, and bank equipment
- Audiovisual (AV) equipment and theatrical equipment (except that many of the AV terminal devices are often included in line eleven)

This Building Program: All of these elements are included in line 1 except AV which is included in line 11.

Line 4: Premiums/Reductions

General: This line item identifies any special conditions, which will tend to make this building more or less economical than a typical building of this type. The identification, tabulation and evaluation of these data has been done in a cost analysis workbook developed by D/H&K The premiums/reductions are divided into 7 categories: Site, Off-site Utilities and Improvements, Building Program, Construction Operations, Construction Market, Client, and Time. Here are the identified additional premiums/reductions:

This Building Program: The amount on line 4 includes the cost of the building components required to achieve a Silver LEED rating. We have estimated this as 3% of line 1. We have not identified any other premiums/reductions at this time. Candidates include storm water retention/water disposal structures but these are dependent on the approach required by the Pinelands Permit.

Line 5: Contingency on Construction

General: This a contingency to allow for scope changes during the development of the project – it quantifies our subjective perceptions on how much we know now about the scope of the project. At the programming phase there are three variables – complexity and uniqueness of the project; amount and reliability of cost focused information, and the amount of experience the owner and consultant can bring to the table

This Project: This is included in line 1 and is 3% for construction and 10% for design; please see the Faithful and Gould Conceptual Cost Model in the Appendix for more detail.

Line 6: Construction Cost Today

Self-explanatory

Line 7: Escalation

This is a determination of the anticipated cost increases over time. It is normally calculated to the mid-point of construction. **For this project**, the rate of escalation has been determined by the cost estimator as 32.7 % more than the cost on 4Q 2007 (start construction 10/1/2011)

Line 8: Total Construction Cost

This is the evaluation of what the construction cost will be when the project is complete. It is a prediction of the bid price plus the cost of changes (not including the owner's additions to the project scope) during construction. The cost of changes is normally assumed to be 3 to 5% percent of the bid cost for new construction, but could be considerably more for remodeling and retrofit work. It should be noted that the next project cost determination, the schematic design budget estimate, usually defines this figure differently as the cost at the bid table.

Other Costs/Project Costs

Normally the costs below line 8, the total construction cost are of no concern to the programming team and are completed by the client. For many programs the information below line 8 is extremely confidential. The reason for the inclusion of the material below line 8 is to be sure the client has included adequate funding for the project

Line 9: Fees

General: Includes all design and consulting services necessary to bid and/or build the facility. It does not usually include construction management fees unless the construction manager is acting on a consulting or inspection services only basis and, in addition, there is a general contractor.

- Architectural/Engineering*
- Legal
- Survey*
- Materials Testing* – including concrete, steel, fireproofing, etc. and MEP system test and balance
- Building Commissioning*
- Geological testing and report*
- Cost consultant*
- FFE design & construction*
- Programming consultant
- Specialty consultants (asbestos, acoustic*, audio-visual*, IT*, vibration, kitchen. theatrical, lighting*, environmental, commissioning*, LEED*, etc.)
- Financial

This Project: All of the consultants we expect to be required for this project are marked with an asterisk on the list above. The architect may choose to add a lighting and landscape consultant to his team but these consultants are usually included within the architect's basic fee. Included in the fee cost is the cost for full time project representation during construction. A discussion of this service and breakdown of the costs is to be found in Appendix # 6. A complete breakdown of all the fees for this project is to be found in Appendix #7.

Line 10: Off Site Improvements/Land Cost

General: This would include all utilities and road improvements required by the local municipality. Often there are trade-offs required to obtain permits such as the deeding of easements or rights-of way, the building of public facilities, land for neighborhood schools or parks, etc. The cost of these improvements should be included in the project cost by the client to get a true picture of the project cost.

This Building Program: there are no costs in this category

Line 11: Owner Equipment/Furnishings/Special Systems

General: This category of cost should be compared with Line 1, just to be positive some things do not slip through a crack. This category normally includes the following items:

- Computer equipment*/Office equipment
- Connection and installation of portable and semi-portable equipment*
- Disposables and consumables
- Portable Equipment (electrical plug or utility quick disconnect)
- Owner purchased process, research, or factory equipment
- Furniture and furniture installation including open office partition systems and their wiring from a permanent electrical and data outlet*
- File cabinets (even if built-in)*
- Furnishings and loose accessories
- Indoor plants and containers
- Artwork
- Semi-portable equipment (copy machines, telex, or FAX)
- Printing or reproduction equipment
- Portable dishwasher, small ware, flatware, trays, and portable cooking and storage equipment
- Portable laboratory and library equipment
- Books
- Audio Visual/ Classroom Technology*
- Security system, telecommunication system, and data system wiring, including terminal devices *
- Devices that serve dedicated non-building equipment even though permanently attached; examples would include machine controllers and regulators, electrical current modification devices etc.

- Trash collection equipment including compactors, collection bins and containers

This Project: The items included in this project are marked with an asterisk. Components (all escalated to midpoint of construction 10/1/12) of this number include furnishings @ $284K, computers @ $180K, audio visual/ classroom technology – 8 sets @25K each = $200K @ , wiring and conduit for security and IT @$4.50/sf.x 24660 sf = $111K x 1.327 escalation = 148k .. Total of 812K, @10/1/12 cost (mid point of construction).

Line 12: Miscellaneous

General: this line item normally includes soft costs related to the project; the amounts vary widely and are often dependent on how the owner calculates direct and indirect costs.

- Owner's insurance
- Owner's administrative costs
- Builders Risk Insurance
- Training of operations personnel
- Interim and final financing
- Utility cost after permanent connection
- Moving and relocation costs

This Building Program: we have allowed $100,000 for these items in the cost estimate; most of it is for insurance costs and moving costs. The University should review these items and costs attached to them – some of these items may not be included in a building budget as a matter of policy and there may be other items, which are not listed.

Lines 13 through 17: Totaling the Results

General: The operations to total up the estimated project cost are self-explanatory with the exception of line 16 which is the contingency on the construction cost. In the proposed format, this line item is composed of two elements: 1) The first component of this amount should be the amount of money that the clients wish to have in their pockets as they walk away from the bid table; it is used to pay for errors, conflicts and omissions on the architect's and engineer's documents, unforeseen site conditions, and minor changes or additions by the client. For new construction this should be in the 3-5 percent range, for renovation it should be no less than 7 percent and for extremely old buildings with vague documentation it may be appropriate at 15 percent or more and, 2) a contingency for any nagging doubts that cannot be quantified, the extra cushion when the project has an absolute and fixed cost limit, accommodation of a volatile construction market, or the accommodation of a mandatory contingency policy.

This Building Program: We have assumed line 16 to be 5% of the building cost to allow for the fixed cost limit, errors and omissions, existing underground conditions, and unexpected discoveries.

Project No. 3 – Renovations to Buildings A, B, H, & K

Introduction

This project includes all of the academic improvements for this implementation other than the new STEM building. The principal component is Building A which will be substantially altered after the existing labs are vacated. Building H[44] will have 2 new computer labs in the spaces vacated by nursing – nursing instructional spaces will move to building A. In building K room K133, the present graphics lab, will be converted to a second art studio – the graphics lab will move to H110.There will be no renovations in Building B.

The schedule for these renovations is detailed in the section Strategy of Execution, the proposed costs for these renovations totals $5.133 million, including an allowance of $18,000 to convert K133 to an art studio.

Buildings A and H have been broken down with a complete cost evaluation which is to be found following the narrative and plates for each of these projects. Since the renovations to K133 are an allowance, no breakdown is offered or necessary.

Building A

The principal component of Project #3 is the renovation of Building A which renovates the spaces left by the relocation of science labs and offices to the new STEM building. The principal strategy is to leave the offices and classrooms on the south and east perimeter and while leaving the corridors unaltered renovate the center section and south section of the building.

The center section of the building which will contain all of the A&P labs and classrooms will need to be renovated during a single summer so as not to disrupt classes. The south section which contains the nursing labs can be renovated while classes are in session – the design strategy is to locate all of the nursing labs in the south section of the building and the existing nursing labs in H can be operational until they are finished. After the Nursing Labs are relocated the TV studio and the 2 math labs in building H will be installed.

The nursing labs are designed to accommodate an expansion for an entire additional class of 24 based on either increasing enrollment or accepting the LPN program from the vocational school. The problem is that, although there may be enough qualified candidates there may not be enough instructors to teach the program. If it is decided not to expand the program then one of the nursing labs can be converted to a lecture room (see Plate No. 3A-2). It may also be worthwhile to investigate the conversion of one of the A&P labs to a large classroom.

---

[44] The funded project for building H is two computer labs and the conversion of nursing storage into a 2 person office. Project No. 5 adds the TV Studio

The assumptions related to the renovations include the utilization of the existing mechanical system air handling units and trunk ducts but replacing the individual runouts to the rooms. The lab exhaust fans would remain to exhaust the A & P labs for dissection work. There will be no structural renovations required with the proposed plan.

Following are the plates of the existing and proposed layouts of the building followed by the 17 line Cost Evaluation and a line by line analysis.

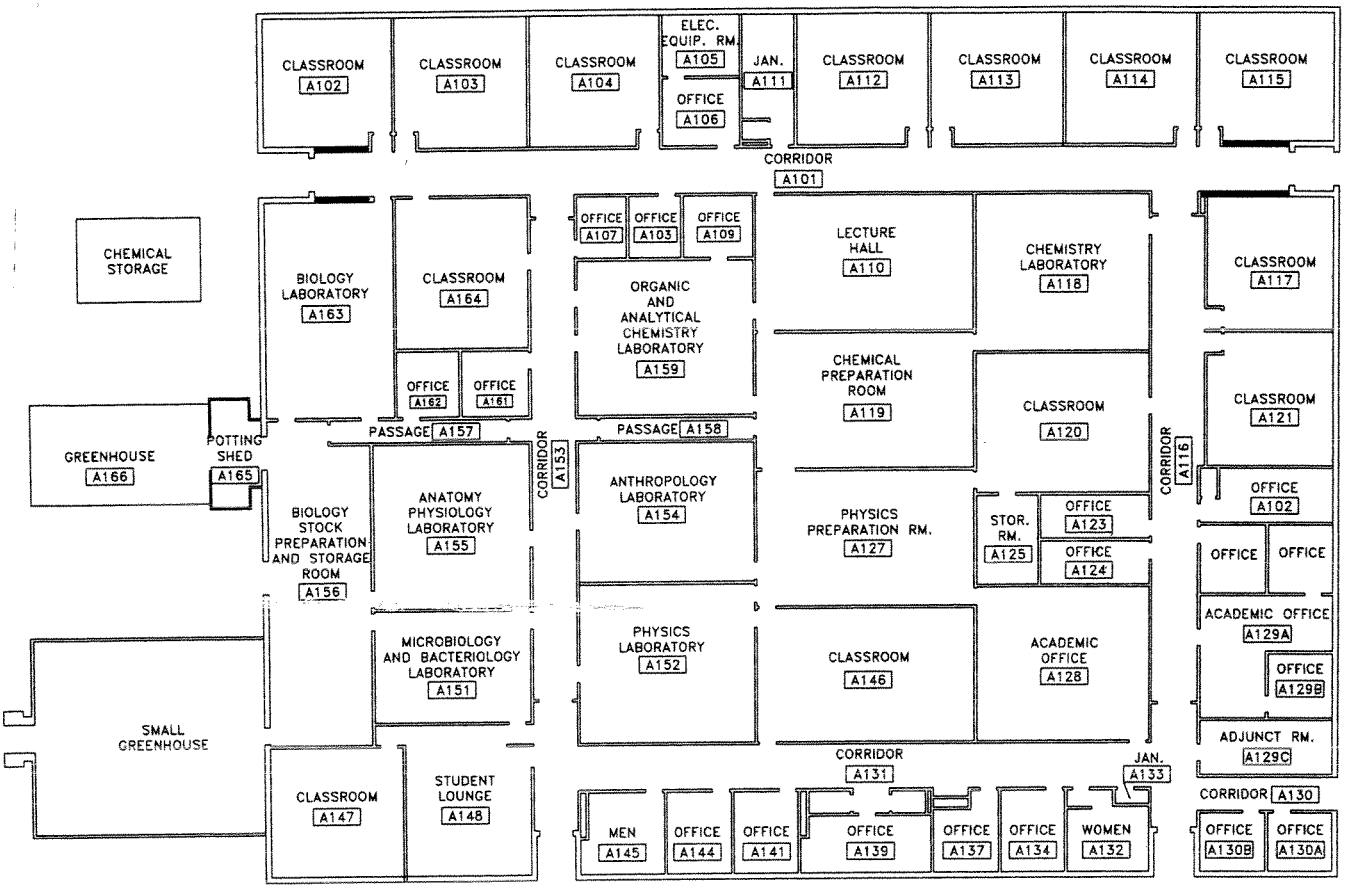


PLATE 3A-1
BUILDING A EXISTING

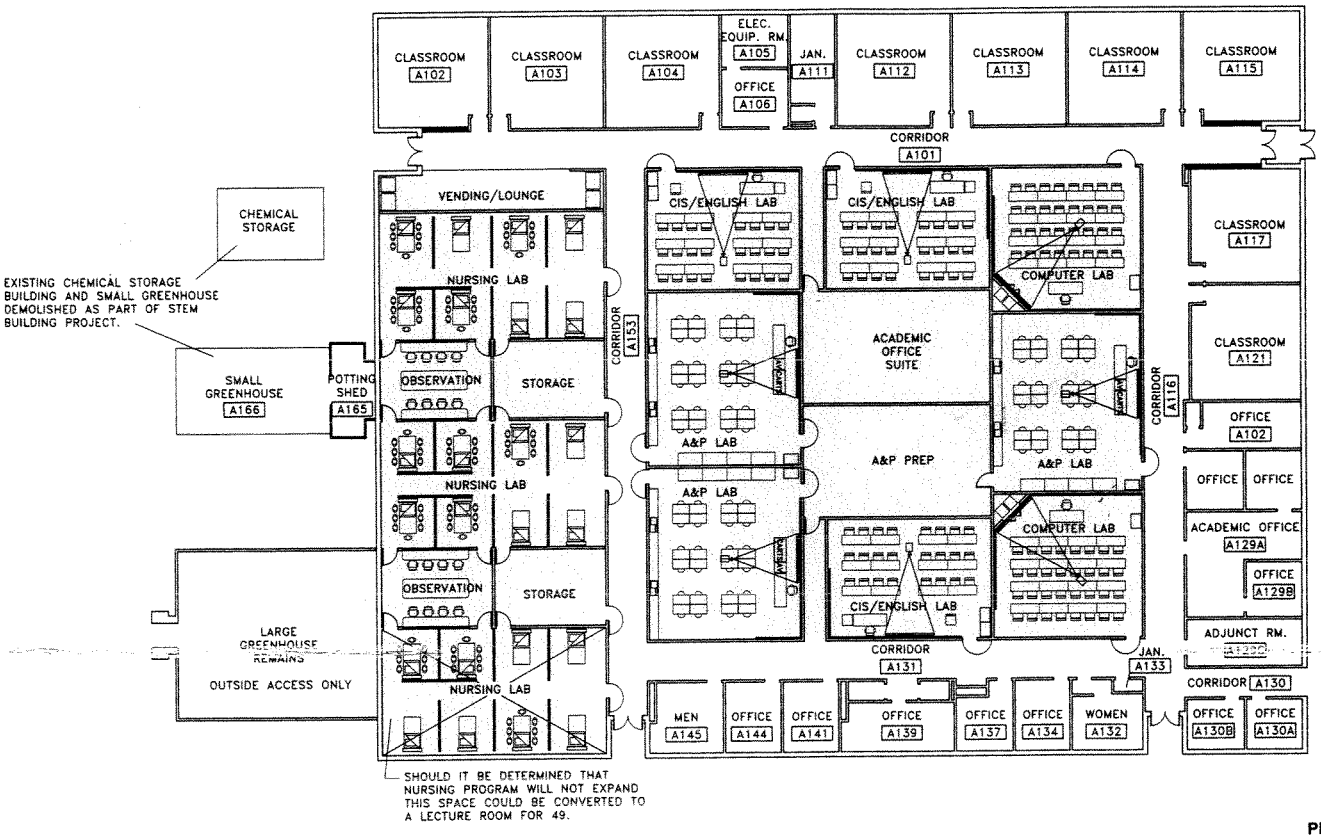


PLATE 3A-2
BUILDING A RENOVATION

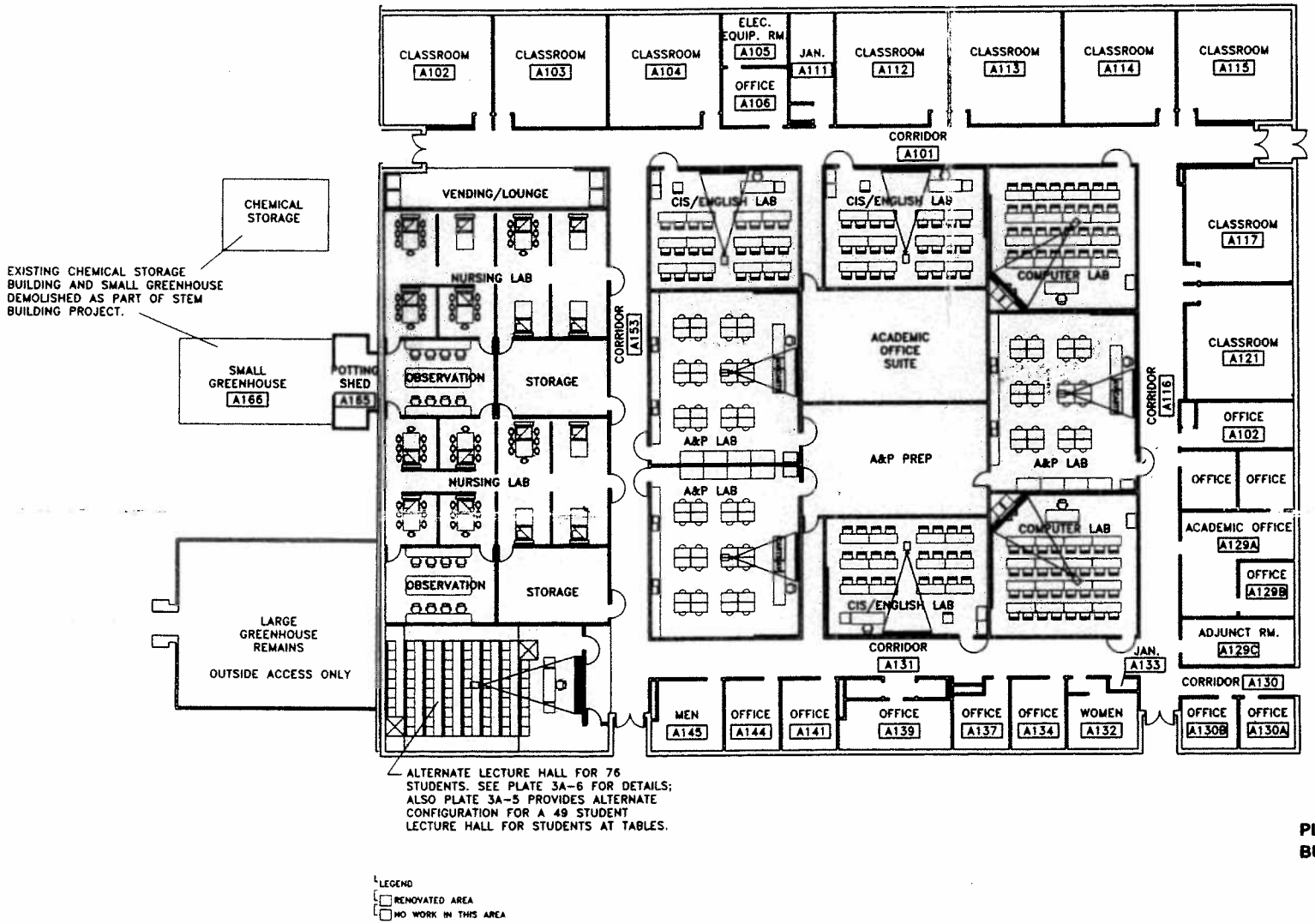
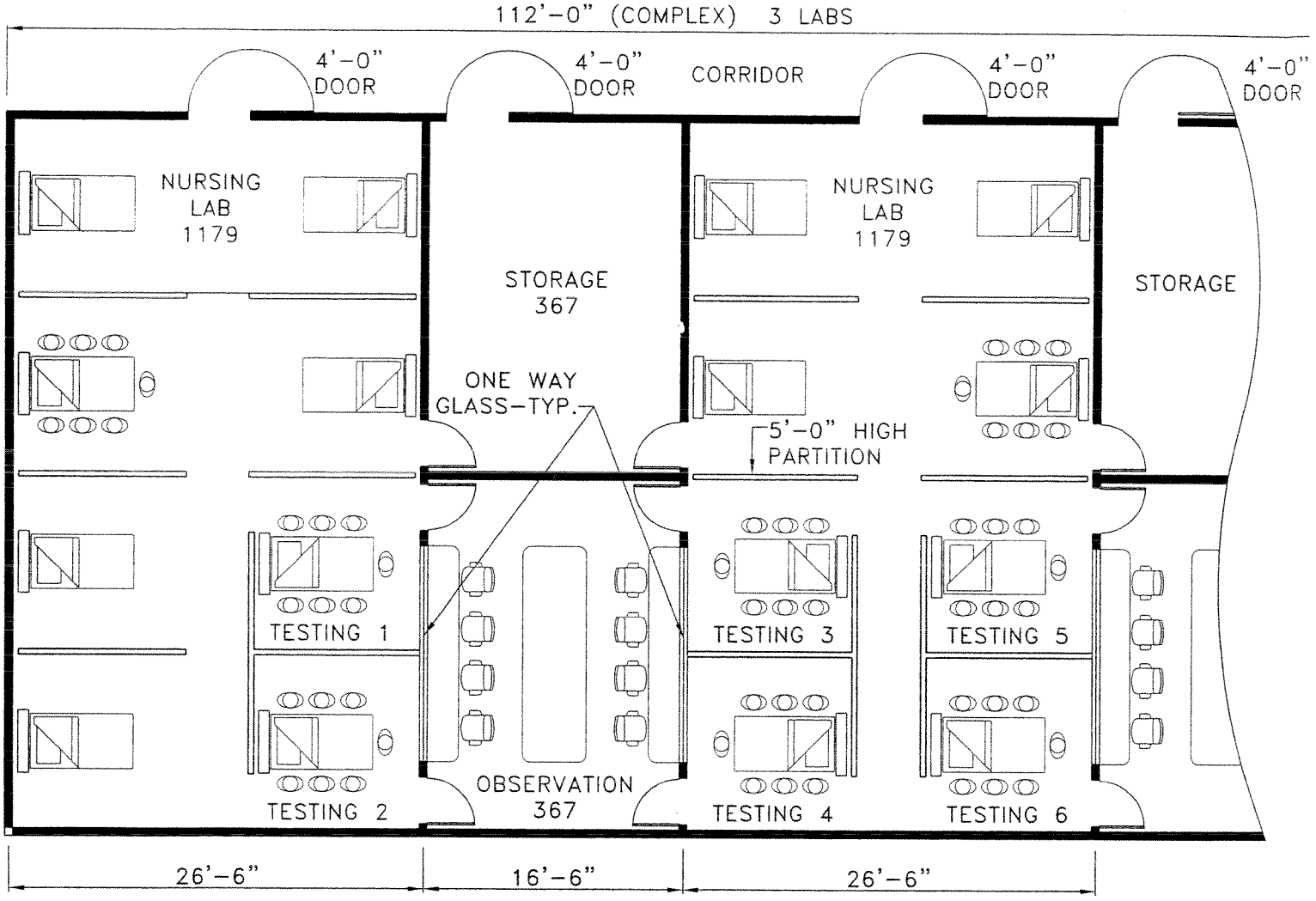


PLATE 3A-2 ALTERNATE BUILDING A RENOVATIONS

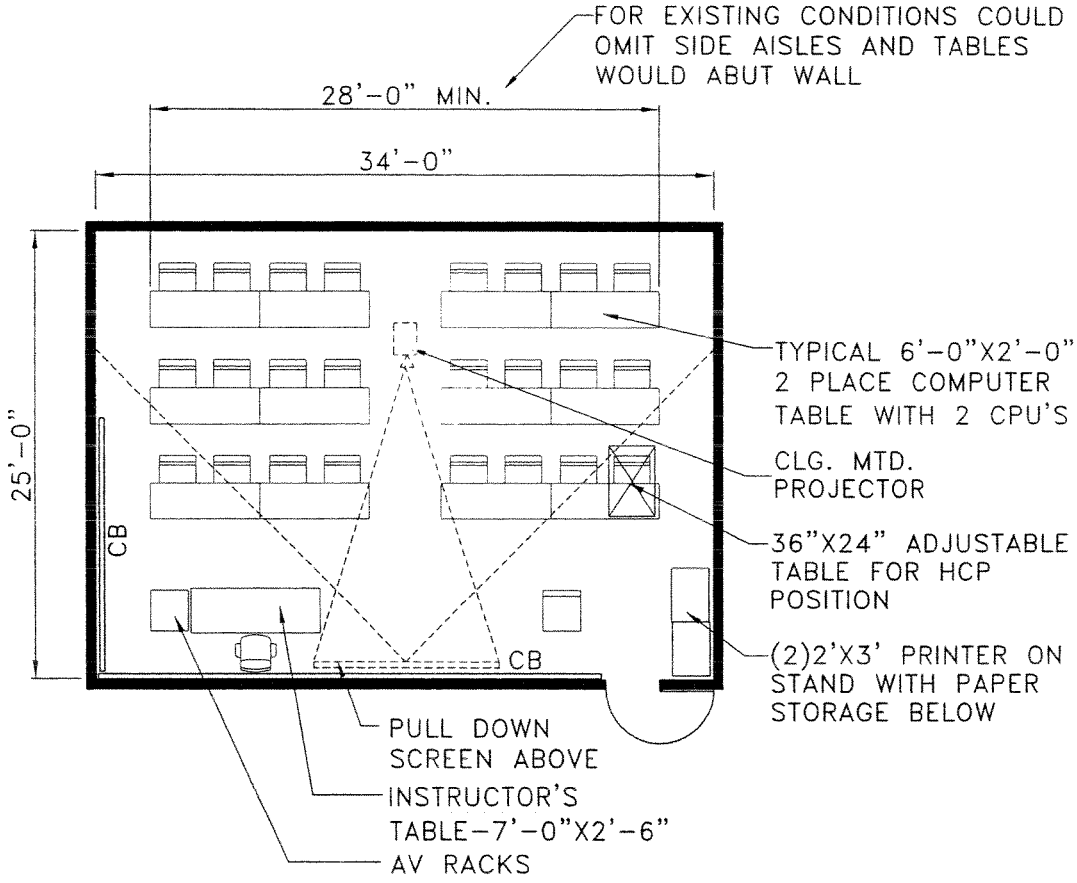


NURSING LAB COMPLEX
3 LABS@ 1179SF +STORAGE/OBSERVATION
5006SF TOTAL

1 5 10 20

SCALE: 3/32"=1'-0"

PLATE 3A-3



CIS/ENGLISH COMPOSITION
COMPUTER LAB
24 STUDENT STATIONS
850SF

1 5 10 20

SCALE: $\frac{3}{32}$"=1'-0"

PLATE 3A-4

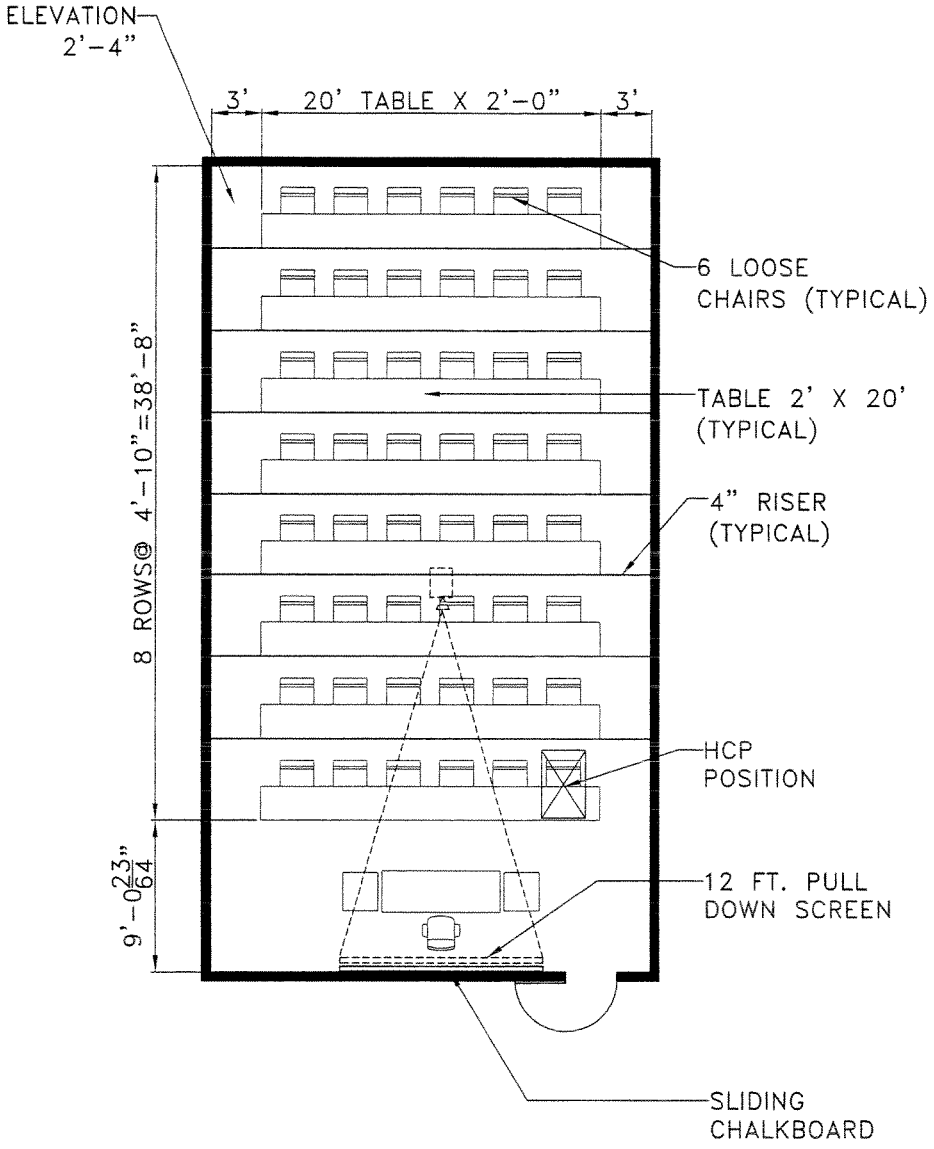
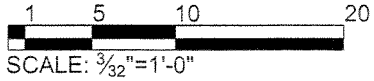


PLATE 3A-5

BUILDING A LECTURE HALL
ALTERNATE NO.1
47 STUDENTS AT TABLES WITH LOOSE CHAIRS
1 HANDICAPPED ACCESSIBLE STATION



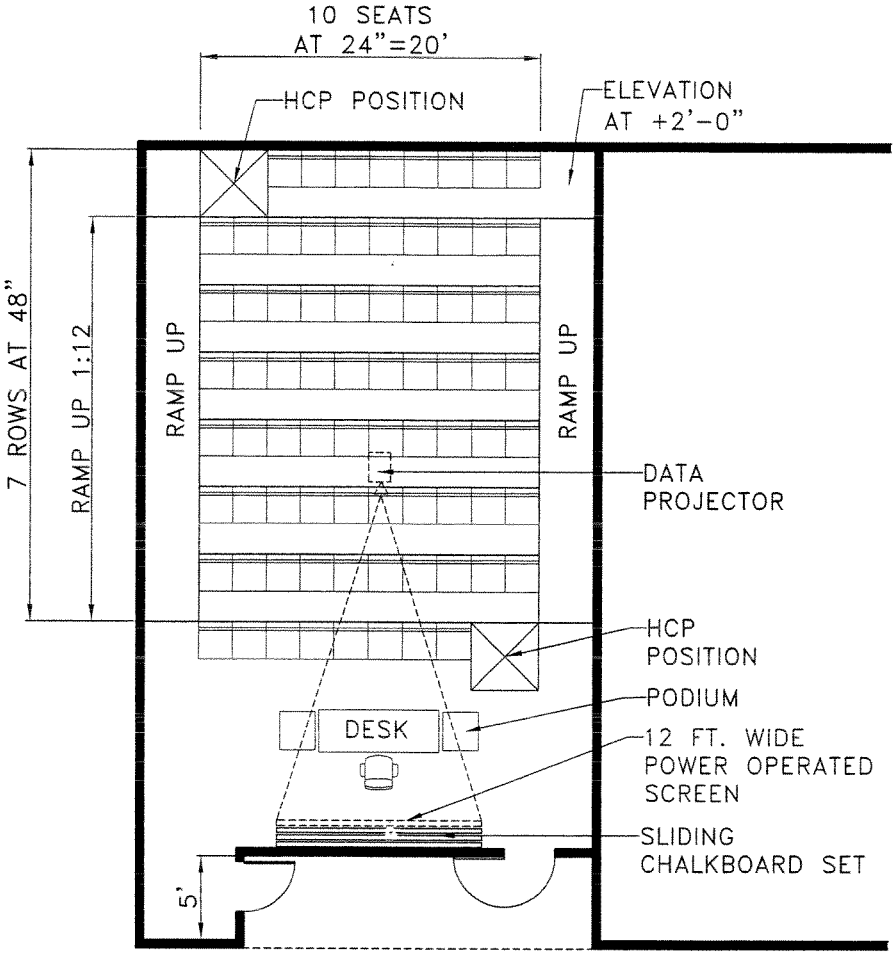


PLATE 3A-6

BUILDING A LECTURE HALL
ALTERNATE NO.2
76 STUDENT STATIONS
THEATER SEATING WITH TABLET ARMS
2 HANDICAPPED ACCESSIBLE STATIONS

1 5 10 20

SCALE: $\frac{3}{32}$"=1'-0"

prepared 1/29/08 revised 5/12/08
PROGRAM COST EVALUATION
17 LINE SUMMARY TABULATION

Renovations to Building A

Construction Cost

1	Building Cost (16,204sf x $100/sf)	$	1,620,400.00	no exterior renovations, note 1
1a	Demolition Cost (16,204 x $6.00/sf)	$	97,224.00	interior demolition only
1b	Affirmative Action Training	$	8,588.12	
2	Site Development	$	-	no site development this project
3	Equipment			built in - included in line 1
4	Cost Premiums and Reductions (none)	$	-	
5	Contingency on Construction, Lines 1 through 4	$	223,291.12	contingency @ 13%
6	Construction Cost Today (sum of lines 1 through 5)	$	1,949,503.24	
7	Escalation (to midpoint of construction 4/1/2014)			note 3
	(38.75% x line 6)	$	755,432.51	
8	Total Costruction Cost (line 6 + line 7)	$	2,704,935.75	

Other Costs/ Project Costs

9	Fees	$	546,000.00	see breakdown in Appendix #7
10	Off Site Improvements and Land Cost	$	-	none
11	Owner Equipment/Furnishings/Special Systems	$	1,049,000.00	escalated 38.75%
12	Miscellaneous	$	10,000.00	
13	Contingency (on other costs, lines 9 - 12) @10%	$	160,500.00	
14	Other Costs (sum of lines 9 through 13)	$	1,765,500.00	
15	Project Cost (sum of lines 8 and 14)	$	4,470,435.75	
16	Owner's Contingency(for line 8 during construction)	$	270,493.57	12% contingency
17	Total Project Cost (sum of lines 15 & 16)	**$**	**4,740,929.32**	

note 1 - see appendix for cost modeling by Faithful & Gould for this number
note 2 - in F & G cost modeling 10%design and 3% construction - included in line 1

c: documents 2007/07010/17 line summary cost evaluation renovations to building A version 5-12-08

17 Line Program Cost Evaluation
Line by Line Contents & Assumptions

Building A Renovations – (16,204 sf)

Following is a line-by-line breakdown of the 17 Line Cost Evaluation. In addition to a general description, which is given first, there are specific breakdowns of the line contents for this particular program.

Line 1: Building

General: This is a cost per square foot of the model you are utilizing, multiplied by the number of square feet in the proposed project. Line 1 usually includes the following items; convention separates building cost from site cost at a line five feet from the exterior of the building

- Special Systems
  - Conduit and wire management systems* for telecommunications
  - Cabling for Telecommunications*
  - Conduit and wire management systems for security systems*
  - Cabling for security systems*
  - Conduit and wire management systems* for computer systems
  - Cabling for computer systems*
- Architectural, Structural, Mechanical, Electrical, Plumbing, Emergency And Life Safety Systems Control Systems, Elevators and Lifts
- Taxes on labor and materials
- Permit costs
- Labor and material bonds and completion bonds
- Equipment hookup
- Attic stock

The special systems listed above and marked with an asterisk (*) are a grey area; sometimes they are in the building cost; convention normally excludes them from the contract and places them as part of the project cost on either lines 11 or 12. In addition to the costs above, it is most useful to put any construction manager's fee in the building cost rather than on line 9. This is because the construction manager (CM) normally replaces the general contractor and awards subcontracts separately, replacing the general contractor's fee and markup with their fee. Most often historical costs will be compiled to include the CM cost as part of the construction cost. If the CM was acting as a consultant only with a separate general contractor, the fee could be excluded from the historical cost.

This Building Program
All of the items included in this number are listed above. For this project a full time construction administrator will be utilized and the cost of this service is to be found in line 9 – a discussion of this service and breakdown of the costs is to be found in Appendix # 6. A complete breakdown of all the fees for this project is to be found in Appendix #7.

In this particular instance we have estimated the base building cost on line 1 to be $100/sq, ft for construction and $6/sq.ft. for demolition. The cost of the IT/telephone cabling and servers/equipment is not included in this line and is to be found under line 11.

Line 2: Site

General: This is an evaluation of the present cost of the proposed site improvements, often a combination of cost per acre for various functions (grading, parking, landscaping, etc.) added to the best estimate of utilities. Utilization of a rule of thumb (a percentage of the building cost) as related to similar projects or the model can work as a last resort when combined with a premium analysis.
Usually includes all development from a line five feet outside the building to the property line or, for the large site, the agreed contract limit line. Site costs include required utility connections at the property line:

- Site demolition, landscape, paving, grading, site lighting and electrical, utilities and utility structures, drainage structures and storm water systems, retention ponds, septic fields and sanitary structures, and other physical improvements
- Taxes on labor and materials
  In addition, environmental restrictions and requirements may require extensive modification of the subsoil (due to contaminants). Protection of features such as wetlands, natural habitat etc. can often add significant premiums to the project cost. These potentially fatal flaws are addressed in the cost evaluation workbook

This Building Program: There is no site development component to this project.

Line 3: Equipment

General This equipment normally defined as fixed equipment which will be purchased and installed as part of the general contract. Does not include portable equipment, disposables, consumables, or maintenance equipment:

- Prefabricated storage and shelf units
- Built-in cooler, refrigerator/constant temperature rooms
- Laboratory benches
- Fume hoods, biosafety cabinets, and exhaust hoods
- Kitchen and food service equipment
- Conveyor equipment
- Lockers
- Dust collectors, dust collection and disposal
- Auto lifts and garage equipment

- Installation of owner purchased equipment
- Library equipment and shelving
- Washers, sterilizers, laundry equipment, and fixed hospital equipment
- Built-in safes, vaults, and bank equipment
- Audiovisual (AV) equipment and theatrical equipment (except that many of the AV terminal devices are often included in line eleven)

This Building Program: All of these elements are included in line 1

Line 4: Premiums/Reductions

General: This line item identifies any special conditions, which will tend to make this building more or less economical than a typical building of this type. The identification, tabulation and evaluation of these data has been done in a cost analysis workbook developed by D/H&K The premiums/reductions are divided into 7 categories: Site, Off-site Utilities and Improvements, Building Program, Construction Operations, Construction Market, Client, and Time. Here are the identified additional premiums/reductions:

This Building Program: The amount on line 4 includes the cost of the building components required to achieve a Silver LEED rating. We have estimated this as 3% of line 1. We have not identified any other premiums/reductions at this time.

Line 5: Contingency on Construction

General: This a contingency to allow for scope changes during the development of the project – it quantifies our subjective perceptions on how much we know now about the scope of the project. At the programming phase there are three variables – complexity and uniqueness of the project; amount and reliability of cost focused information, and the amount of experience the owner and consultant can bring to the table

This Project: This is included in line 1 and is 5% for construction and 10% for design for a total of 15%.

Line 6: Construction Cost Today

Self-explanatory

Line 7: Escalation

This is a determination of the anticipated cost increases over time. It is normally calculated to the mid-point of construction. **For this project**, the rate of escalation has been determined by the project cost estimator as 6%/annum or 38.75% to 4/1/2014, the midpoint of construction, more than the cost on 4Q 2007

Line 8: Total Construction Cost

This is the evaluation of what the construction cost will be when the project is complete. It is a prediction of the bid price plus the cost of changes (not including the owner's additions to the project scope) during construction. The cost of changes is normally assumed to be 3 percent of the bid cost for new construction, but could be considerably more for remodeling and retrofit work. It should be noted that the next project cost determination, the schematic design budget estimate, usually defines this figure differently as the cost at the bid table.

Other Costs/Project Costs

Normally the costs below line 8, the total construction cost are of no concern to the programming team and are completed by the client. For many programs the information below line 8 is extremely confidential. The reason for the inclusion of the material below line 8 is to be sure the client has included adequate funding for the project

Line 9: Fees

General: Includes all design and consulting services necessary to bid and/or build the facility. It does not usually include construction management fees unless the construction manager is acting on a consulting or inspection services only basis and, in addition, there is a general contractor.

- Architectural/Engineering*
- Legal
- Survey
- Materials Testing* – including concrete, steel, fireproofing, etc. and MEP system test and balance
- Building Commissioning*
- Geological testing and report
- Cost consultant*
- FFE design & construction*
- Programming consultant
- Specialty consultants (asbestos, acoustic, audio-visual*, IT*, vibration, kitchen. theatrical, lighting, environmental, commissioning*, LEED*, etc.)
- Financial

This Project: All of the consultants we expect to be required for this project are marked with an asterisk on the list above. An asbestos consultant may be needed to determine presence and remediate if necessary (we believe, however, all asbestos remediation has been completed in this building). The architect may choose to add a lighting consultant to his team but these consultants are usually included within the architect's basic fee. Included in the fee cost is the cost for full time project representation during construction. A discussion of this service and breakdown of the costs is to be found in Appendix # 6. A complete breakdown of all the fees for this project is to be found in Appendix #7.

Line 10: Off Site Improvements/Land Cost

General: This would include all utilities and road improvements required by the local municipality. Often there are trade-offs required to obtain permits such as the deeding of easements or rights-of way, the building of public facilities, land for neighborhood schools or parks, etc. The cost of these improvements should be included in the project cost by the client to get a true picture of the project cost.

This Building Program: there are no costs in this category

Line 11: Owner Equipment/Furnishings/Special Systems

General: This category of cost should be compared with Line 1, just to be positive some things do not slip through a crack. This category normally includes the following items:

- Computer equipment/Office equipment*
- Connection and installation of portable and semi-portable equipment*
- Disposables and consumables
- Portable Equipment (electrical plug or utility quick disconnect)*
- Owner purchased process, research, or factory equipment
- Furniture and furniture installation including open office partition systems and their wiring from a permanent electrical and data outlet*
- File cabinets (even if built-in)
- Furnishings and loose accessories
- Indoor plants and containers
- Artwork
- Semi-portable equipment (copy machines, telex, or FAX)
- Printing or reproduction equipment
- Portable dishwasher, small ware, flatware, trays, and portable cooking and storage equipment
- Portable laboratory and library equipment
- Books
- Audio Visual/ Classroom Technology*
- Security system, telecommunication system, and data system wiring, including terminal devices *
- Devices that serve dedicated non-building equipment even though permanently attached; examples would include machine controllers and regulators, electrical current modification devices etc.
- Trash collection equipment including compactors, collection bins and containers*

This Project: The items included in this project are marked with an asterisk. Components of this line item as shown here include escalation to 4/1/2014 - furnishings @ $520K, computers @$239K, and wiring and conduit for security and IT @ $4.00/sf. x 16,204 x 1.39 = $90K, 8 classroom AV sets @$25K/set = 200K, for a **total of 1,049K** (to line 11)

Line 12: Miscellaneous

General: this line item normally includes soft costs related to the project; the amounts vary widely and are often dependent on how the owner calculates direct and indirect costs.

- Owner's insurance
- Owner's administrative costs
- Builders Risk Insurance
- Training of operations personnel
- Interim and final financing
- Utility cost after permanent connection
- Moving and relocation costs

This Building Program: we have allowed $10,000 for these items in the cost estimate; most of it is for insurance costs and moving costs (there will be little moving except for administrative space – all other items are assumed new and installed). The University should review these items and costs attached to them – some of these items may not be included in a building budget as a matter of policy and there may be other items, which are not listed.

Lines 13 through 17: Totaling the Results

General: The operations to total up the estimated project cost are self-explanatory with the exception of line 16 which is the contingency on the construction cost. In the proposed format, this line item is composed of two elements: 1) The first component of this amount should be the amount of money that the clients wish to have in their pockets as they walk away from the bid table; it is used to pay for errors, conflicts and omissions on the architect's and engineer's documents, unforeseen site conditions, and minor changes or additions by the client. For new construction this should be in the 3-5 percent range, for renovation it should be no less than 7 percent and for extremely old buildings with vague documentation it may be appropriate at 15 percent or more and, 2) a contingency for any nagging doubts that cannot be quantified, the extra cushion when the project has an absolute and fixed cost limit, accommodation of a volatile construction market, or the accommodation of a mandatory contingency policy.

This Building Program: We have assumed line 16 to be 10% of the building cost to allow for errors and omissions, existing underground conditions, and unexpected discoveries.

Project No. 3 continued

Building B

There will be renovations to Building B because of the lack of funds. If funds can be made available, building B is the likely candidate to upgrade some of the larger classrooms to CIS/English Computer Labs to make up the 16 computer lab shortage to accommodate these programs

Building H

The renovations to Building H will include the conversion of the existing nursing lab (H110) and a classroom (H119) to 2 - 32 student computer labs. IN addition, the nursing storage, room H109 will be converted to a two person office - there will be no further improvements in building H. For cost evaluation purposes is assumed that the existing mechanical, electrical and IT systems have the capacity and configuration to support the modifications – this assumption will need to be verified

Following is a 17 line Cost Evaluation of the renovations to this facility followed by a line by line narrative.

prepared 1/29/08 revised 7/7/08, issued w/final 8/12/08
PROGRAM COST EVALUATION
17 LINE SUMMARY TABULATION

Renovations to Building H

Construction Cost

1	Office renovations (190sf x $25/sf - minimum improv.)	$	4,750.00	
1a	Computer Labs (1800 sf x $25/sf - minimum improv.)	$	45,000.00	
1b	Demolition Cost (1,990sf x $2.00/sf)	$	3,980.00	interior demolition only
1c	Affirmative Action Training	$	268.65	at 1/2 of 1% construction cost
2	Site Development	$	-	no site development this project
3	Equipment	$	-	see line 11 for equipment
4	Cost Premiums and Reductions (none)	$	-	not LEED certified
5	Contingency on Construction, Lines 1 through 4	$	6,984.90	contingency @ 13%
6	Construction Cost Today (sum of lines 1 through 5)	$	56,233.55	
7	Escalation (to midpoint of construction 4/1/2014) (38.75% x line 6)	$	21,790.50	
8	Total Costruction Cost (line 6 + line 7)	$	78,024.05	

Other Costs/ Project Costs

9	Fees	$	42,000.00	may be less if combined
10	Off Site Improvements and Land Cost	$	-	none
11	Owner Equipment/Furnishings/Special Systems	$	223,000.00	note 1, escalated 38.75%
12	Miscellaneous	$	3,000.00	
13	Contingency (on other costs, lines 9 - 12) @10%	$	26,800.00	
14	Other Costs (sum of lines 9 through 13)	$	294,800.00	
15	Project Cost (sum of lines 8 and 14)	$	372,824.05	
16	Owner's Contingency(for line 8 during construction)	$	7,802.41	12% contingency
17	Total Project Cost (sum of lines 15 & 16)	**$**	**380,626.46**	note 2

note 1 - 2 computer labs and 1- 2 person office
note 2 - of this, $149,000 is Perkins Grant qualified technology for reimbursement not escalated

c: documents 2007/07010/17 line summary cost evaluation renovations to building H version increased 8-12-08

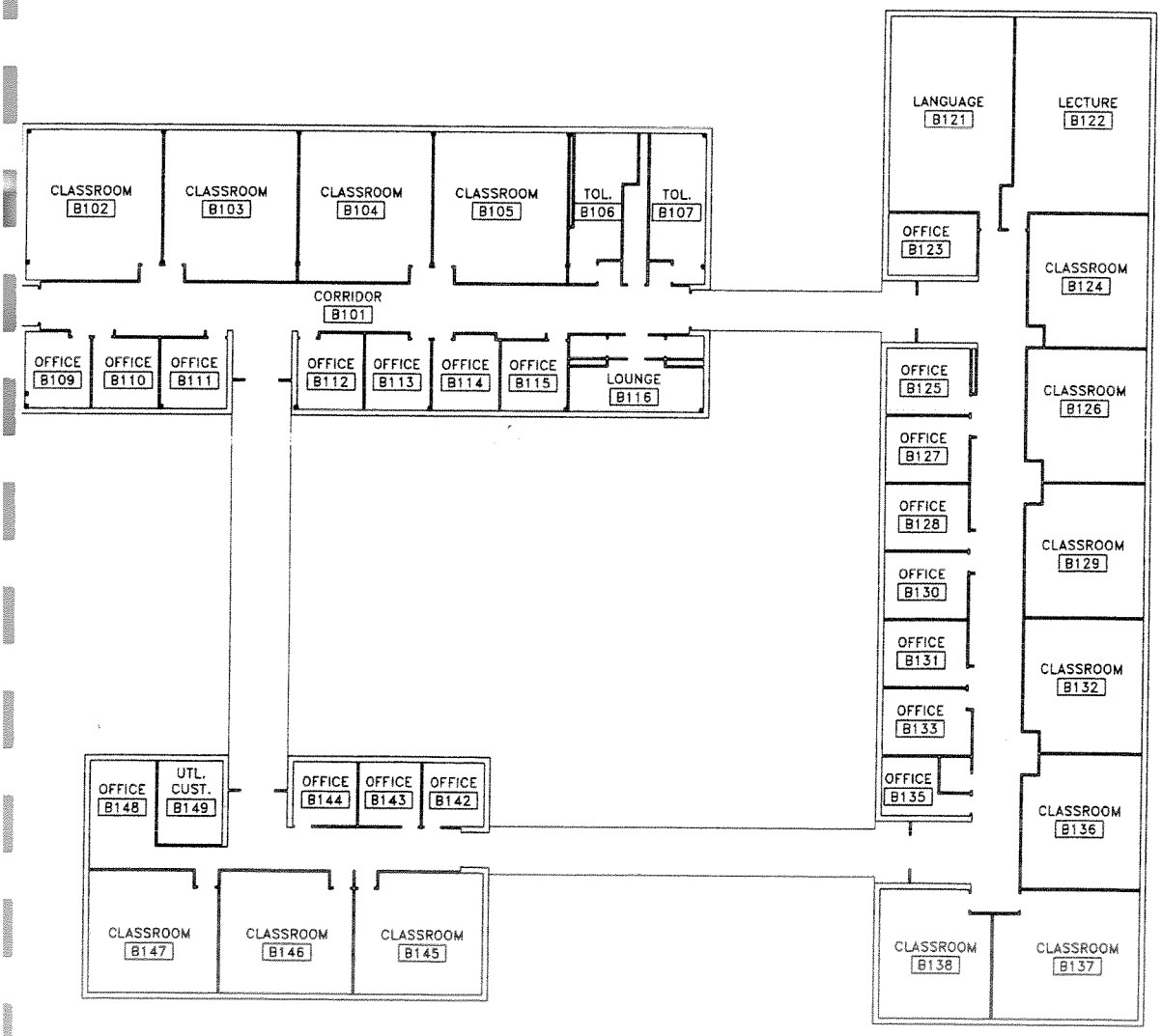


PLATE 3B-1
BUILDING B EXISTIN

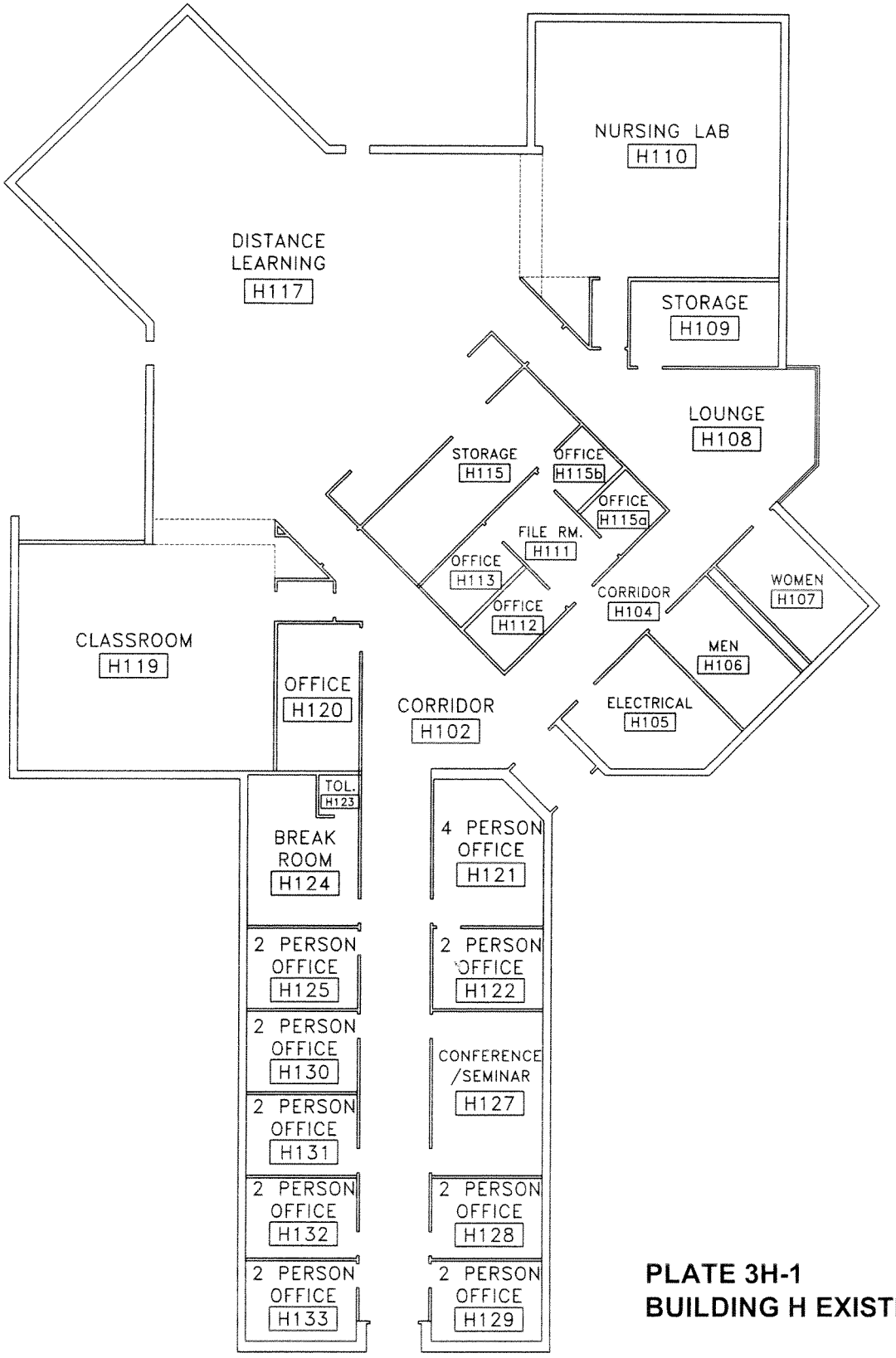


PLATE 3H-1
BUILDING H EXISTING

1 5 10 20
SCALE:1"=20'-0"

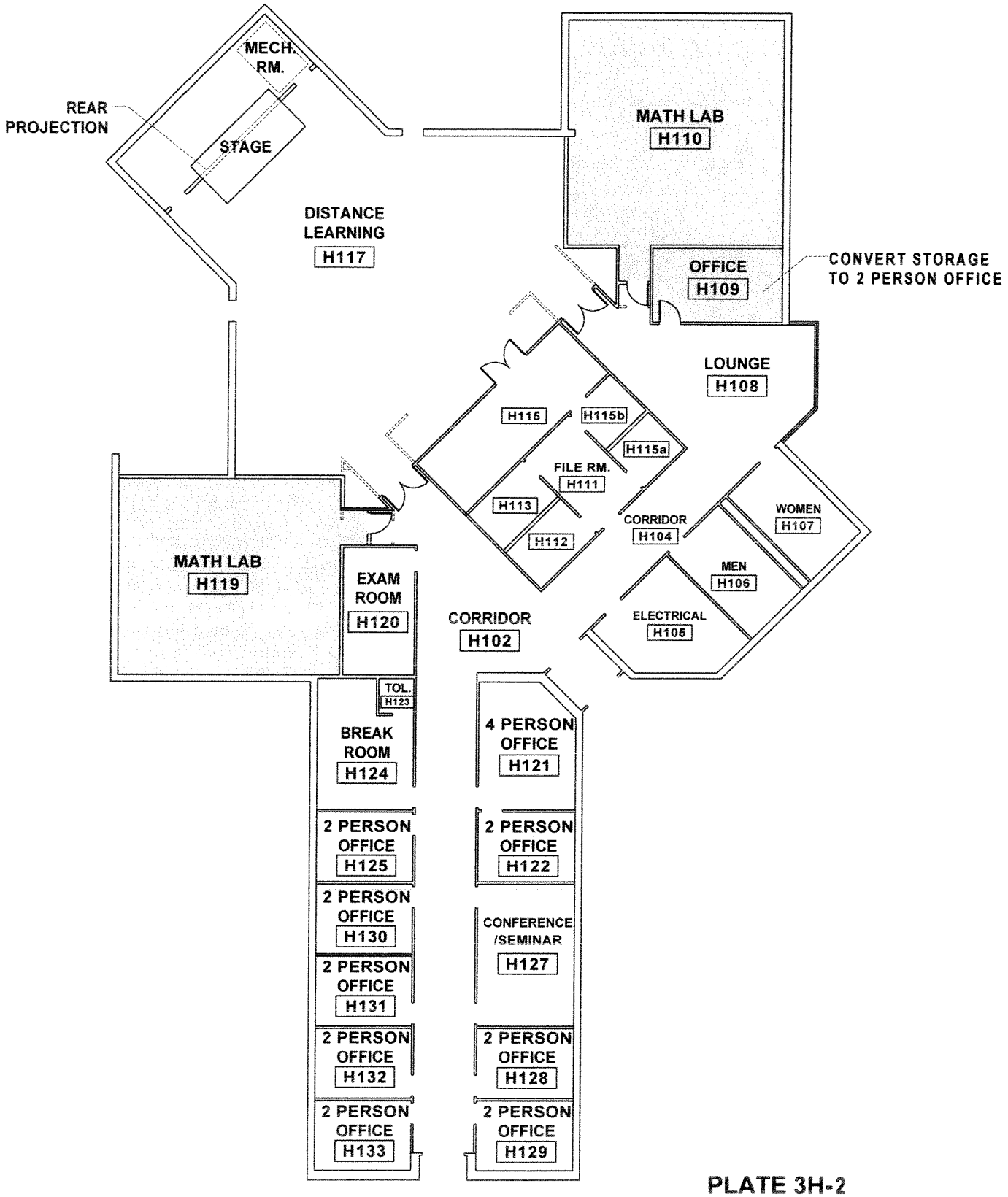


PLATE 3H-2
BUILDING H RENOVTIONS

1 5 10 20

SCALE:1"=20'-0"

NORTH

17 Line Program Cost Evaluation
Line by Line Contents & Assumptions

Building H Renovations – (1,800 sf Computer Labs)

The scope of renovations for building H is confined to the conversion of two rooms (H110 and H119) to computer labs and the conversion of the nursing lab preparation room (H109) to a two person office. Following is a line-by-line breakdown of the 17 Line Cost Evaluation. In addition to a general description, which is given first, there are specific breakdowns of the line contents for this particular program.

Line 1: Building

General: This is a cost per square foot of the model you are utilizing, multiplied by the number of square feet in the proposed project. Line 1 usually includes the following items; convention separates building cost from site cost at a line five feet from the exterior of the building

- Special Systems
  - Conduit and wire management systems* for telecommunications
  - Cabling for Telecommunications*
  - Conduit and wire management systems for security systems*
  - Cabling for security systems*
  - Conduit and wire management systems* for computer systems
  - Cabling for computer systems*
- Architectural, Structural, Mechanical, Electrical, Plumbing, & Fire Safety
- Emergency and Life Safety Systems Control Systems, Elevators and Lifts
- Taxes on labor and materials
- Permit costs
- Labor and material bonds and completion bonds
- Equipment hookup
- Attic stock

The special systems listed above and marked with an asterisk (*) are a grey area; sometimes they are in the building cost; convention normally excludes them from the contract and places them as part of the project cost on either lines 11 or 12. In addition to the costs above, it is most useful to put any construction manager's fee in the building cost rather than on line 9. This is because the construction manager (CM) normally replaces the general contractor and awards subcontracts separately, replacing the general contractor's fee and markup with their fee. Indeed, many general contractors now have adopted the appellation of "construction manager" and offer their services for a fixed fee generally equivalent to the previously common general contractor's markup. Most often historical costs will be compiled to include the CM cost as part of the construction cost; if you are using a specific building as a model, however, it is best to ask if a CM was utilized and where the fee is in the data that you are using. If the CM was acting as a consultant only with a separate general contractor, the fee could be

excluded from the historical cost. If this project will utilize a CM in a similar and separate consultant capacity, the fee should be added to line nine rather than being included in line one.

This Building Program
All of the items included in this number are listed above. In this particular instance we have estimated the base building cost on line 1 for the Computer Labs @$30.00/sq. ft. for renovation and $3.00/sq.ft. for demolition. These costs are based on the following assumptions: 1) for the Computer Labs there is only minor demolition taking place, 2) other than the need for some new interior partitions, both the conversion of the lab prep room (H109) to an office and the Computer Lab renovations are mostly cosmetic, including a new ceiling, lighting, floor finishes, and some floor channeling of the concrete slabs for power and data – the largest cost for these rooms is the furnishings and equipment found in line 11. The cost of the IT/AV cabling/servers/equipment is also not included in this line and is to be found under line 11.

Line 2: Site

General: This is an evaluation of the present cost of the proposed site improvements, often a combination of cost per acre for various functions (grading, parking, landscaping, etc.) added to the best estimate of utilities. Utilization of a rule of thumb (a percentage of the building cost) as related to similar projects or the model can work as a last resort when combined with a premium analysis.
Usually includes all development from a line five feet outside the building to the property line or, for the large site, the agreed contract limit line. Site costs include required utility connections at the property line:

- Site demolition, landscape, paving, grading, site lighting and electrical, utilities and utility structures, drainage structures and storm water systems, retention ponds, septic fields and sanitary structures, and other physical improvements
- Taxes on labor and materials
  In addition, environmental restrictions and requirements may require extensive modification of the subsoil (due to contaminants). Protection of features such as wetlands, natural habitat etc. can often add significant premiums to the project cost. These potentially fatal flaws are addressed in the cost evaluation workbook

This Building Program: There is no site development component to this project.

Line 3: Equipment

General This equipment normally defined as fixed equipment which will be purchased and installed as part of the general contract. Does not include portable equipment, disposables, consumables, or maintenance equipment:

- Prefabricated storage and shelf units
- Built-in cooler, refrigerator/constant temperature rooms

- Laboratory benches
- Fume hoods, biosafety cabinets, and exhaust hoods
- Kitchen and food service equipment
- Conveyor equipment
- Lockers
- Dust collectors, dust collection and disposal
- Auto lifts and garage equipment
- Installation of owner purchased equipment
- Library equipment and shelving
- Washers, sterilizers, laundry equipment, and fixed hospital equipment
- Built-in safes, vaults, and bank equipment
- Audiovisual (AV) equipment and theatrical equipment (except that many of the AV terminal devices are often included in line eleven)

This Building Program: None of these elements are included in these renovations on this line – the A/V systems cost is on line 11

Line 4: Premiums/Reductions

General: This line item identifies any special conditions, which will tend to make this building more or less economical than a typical building of this type. The identification, tabulation and evaluation of these data has been done in a cost analysis workbook developed by D/H&K The premiums/reductions are divided into 7 categories: Site, Off-site Utilities and Improvements, Building Program, Construction Operations, Construction Market, Client, and Time. Here are the identified additional premiums/reductions:

This Building Program: We have not identified any premiums/reductions at this time.

Line 5: Contingency on Construction

General: This a contingency to allow for scope changes during the development of the project – it quantifies our subjective perceptions on how much we know now about the scope of the project. At the programming phase there are three variables – complexity and uniqueness of the project; amount and reliability of cost focused information, and the amount of experience the owner and consultant can bring to the table

This Project: This is included in line 1 and is 3% for construction and 10% for design for a total of 13%.

Line 6: Construction Cost Today

Self-explanatory

Line 7: Escalation

This is a determination of the anticipated cost increases over time. It is normally calculated to the mid-point of construction. **For this project**, the rate of escalation has been determined by the project cost estimator as 6 %/annum or 38.75% to 4/1/2014, the midpoint of construction, more than the cost on 4Q 2007

Line 8: Total Construction Cost

This is the evaluation of what the construction cost will be when the project is complete. It is a prediction of the bid price plus the cost of changes (not including the owner's additions to the project scope) during construction. The cost of changes is normally assumed to be 3 percent of the bid cost for new construction, but could be considerably more for remodeling and retrofit work. It should be noted that the next project cost determination, the schematic design budget estimate, usually defines this figure differently as the cost at the bid table.

Other Costs/Project Costs

Normally the costs below line 8, the total construction cost are of no concern to the programming team and are completed by the client. For many programs the information below line 8 is extremely confidential. The reason for the inclusion of the material below line 8 is to be sure the client has included adequate funding for the project

Line 9: Fees

General: Includes all design and consulting services necessary to bid and/or build the facility. It does not usually include construction management fees unless the construction manager is acting on a consulting or inspection services only basis and, in addition, there is a general contractor.

- Architectural/Engineering*
- Legal
- Survey
- Materials Testing – including concrete, steel, fireproofing, etc. and MEP system test and balance
- Building Commissioning
- Geological testing and report
- Cost consultant
- FFE design & construction*
- Programming consultant
- Specialty consultants (asbestos, acoustic, audio-visual*, IT*, vibration, kitchen. theatrical, lighting, environmental, commissioning, LEED, , etc..)
- Financial

This Project: Since this project is restricted the addition of some new interior partitions and the cosmetic refurbishing of these spaces along with new lighting, equipmen, and furniture, the only spoecial consultants required are AV and IT. The mechanical system serving these two spaces may need some refurbishing and alteration of controls, etc. but the cost of these services are included in the architects fee above. Note that we have

assumed that the additional heat load for these two spaces caused by the additional computers can be handled by the existing system and we have not included the replacement of the mechanical system for these two rooms as part of the cost. During the feasibility phase we will make a further investigation to determine the viability of this assumption. The fee amount assumes that this project will be awarded with the improvements in building A, E, and K as a single contract – otherwise the fee amount would be higher.

Line 10: Off Site Improvements/Land Cost

General: This would include all utilities and road improvements required by the local municipality. Often there are trade-offs required to obtain permits such as the deeding of easements or rights-of way, the building of public facilities, land for neighborhood schools or parks, etc. The cost of these improvements should be included in the project cost by the client to get a true picture of the project cost.

This Building Program: there are no costs in this category

Line 11: Owner Equipment/Furnishings/Special Systems

General: This category of cost should be compared with Line 1, just to be positive some things do not slip through a crack. This category normally includes the following items:

- Computer equipment/Office equipment*
- Connection and installation of portable and semi-portable equipment*
- Disposables and consumables
- Portable Equipment (electrical plug or utility quick disconnect)*
- Owner purchased process, research, or factory equipment
- Furniture and furniture installation including open office partition systems and their wiring from a permanent electrical and data outlet*
- File cabinets (even if built-in)
- Furnishings and loose accessories
- Indoor plants and containers
- Artwork
- Semi-portable equipment (copy machines, telex, or FAX)
- Printing or reproduction equipment
- Portable dishwasher, small ware, flatware, trays, and portable cooking and storage equipment
- Portable laboratory and library equipment
- Books
- Audio Visual/ Classroom Technology*
- Security system, telecommunication system, and data system wiring, including terminal devices *
- Devices that serve dedicated non-building equipment even though permanently attached; examples would include machine controllers and regulators, electrical current modification devices etc.

- Trash collection equipment including compactors, collection bins and containers*

This Project: The items included in this project are marked with an asterisk. Components of this number include escalation to 4/1/2014. furnishings @ $72 K (office at 4K), 68 computers @ $1500 = $90K, AV for the 2 computer labs @$50k, and wiring and conduit for security, IT @ $4.00/sf. x 1990 sf x 1.38 = $11K, **Total $223K** to line 11.

Line 12: Miscellaneous

General: this line item normally includes soft costs related to the project; the amounts vary widely and are often dependent on how the owner calculates direct and indirect costs.

- Owner's insurance
- Owner's administrative costs
- Builders Risk Insurance
- Training of operations personnel
- Interim and final financing
- Utility cost after permanent connection
- Moving and relocation costs

This Building Program: we have allowed $1,500 for these items in the cost estimate; most of it is for insurance costs and moving costs (there will be little moving except for the office since all lab furnishings are new). The University should review these items and costs attached to them – some of these items may not be included in a building budget as a matter of policy and there may be other items, which are not listed.

Lines 13 through 17: Totaling the Results

General: The operations to total up the estimated project cost are self-explanatory with the exception of line 16 which is the contingency on the construction cost. In the proposed format, this line item is composed of two elements: 1) The first component of this amount should be the amount of money that the clients wish to have in their pockets as they walk away from the bid table; it is used to pay for errors, conflicts and omissions on the architect's and engineer's documents, unforeseen site conditions, and minor changes or additions by the client. For new construction this should be in the 3-5 percent range, for renovation it should be no less than 7 percent and for extremely old buildings with vague documentation it may be appropriate at 15 percent or more and, 2) a contingency for any nagging doubts that cannot be quantified, the extra cushion when the project has an absolute and fixed cost limit, accommodation of a volatile construction market, or the accommodation of a mandatory contingency policy.

This Building Program: We have assumed line 16 to be 12% of the building cost to allow for errors and omissions, existing conditions, and unexpected discoveries.

Building K

Renovations will be confined to converting the existing graphics lab, K133 to a second multi-use art studio. The graphic arts studio will relocate to H110. This renovation does not, however, address all of the requests of the Art Department – they requested expansion of storage space and also a doubling of the ceramics studio. These projects have not been funded. We are proposing that the storage for the new art studio be in the studio until additional storage can be accommodated.

Following are plans of the existing building and the location of the proposed renovations

Unresolved Issues Project No. 3

Issue: Determination of the need for the expansion of the nursing program - if it is decided that the third class is not required then one of the nursing labs will be converted to a lecture facility and one of the A&P labs may be converted to a classroom or left in place as an open lab.

Issue: Cost of seating in lecture facility needs to be included if it is decided that the nursing program should not be expanded. (note that the cost of the beds and equipment in a lab is close enough to the cost of the seats at this level of detail). Not determined if the College will utilize the 48 or 72 seat design for the lecture hall.

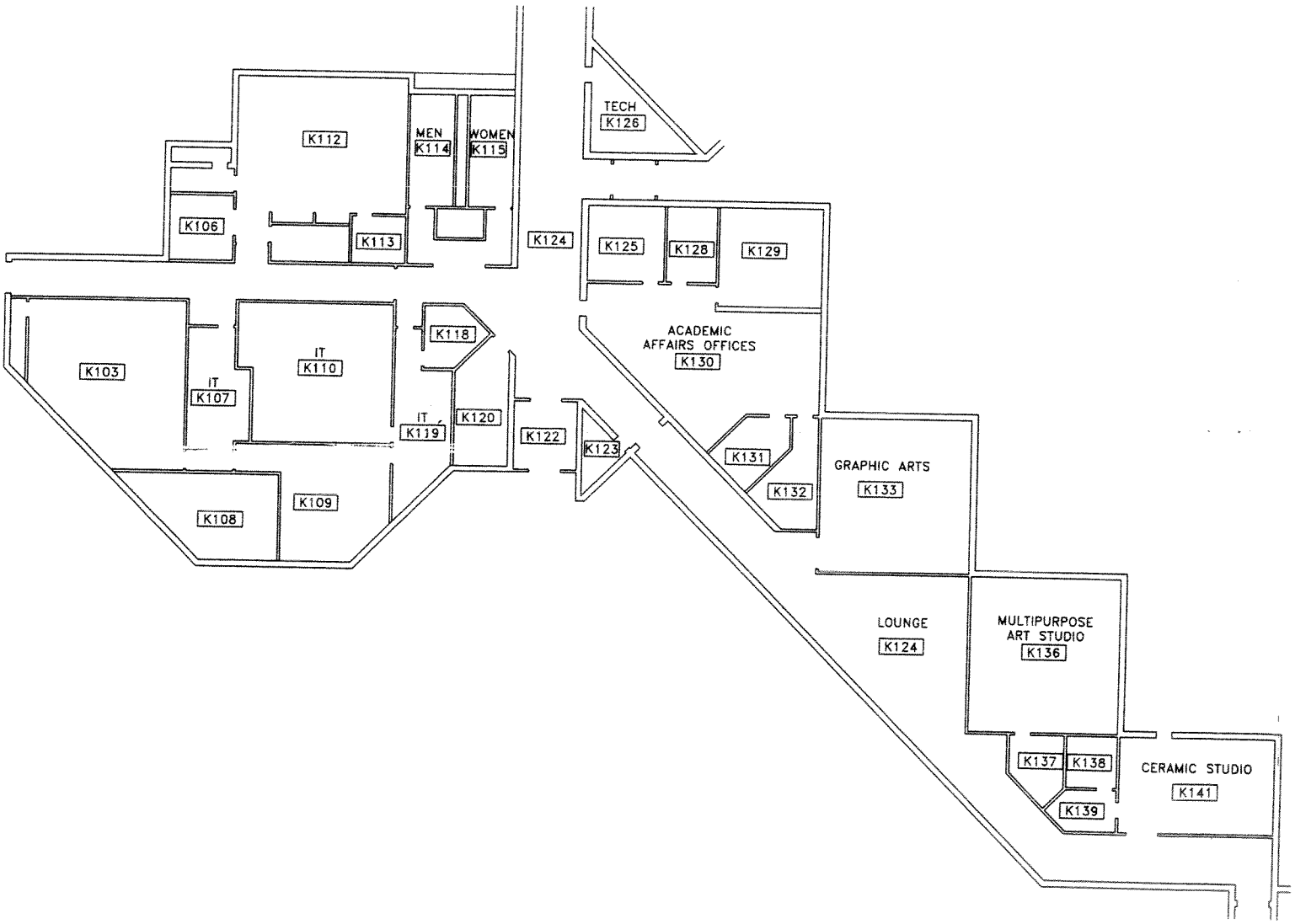


PLATE 3K-1
BUILDING K EXISTING

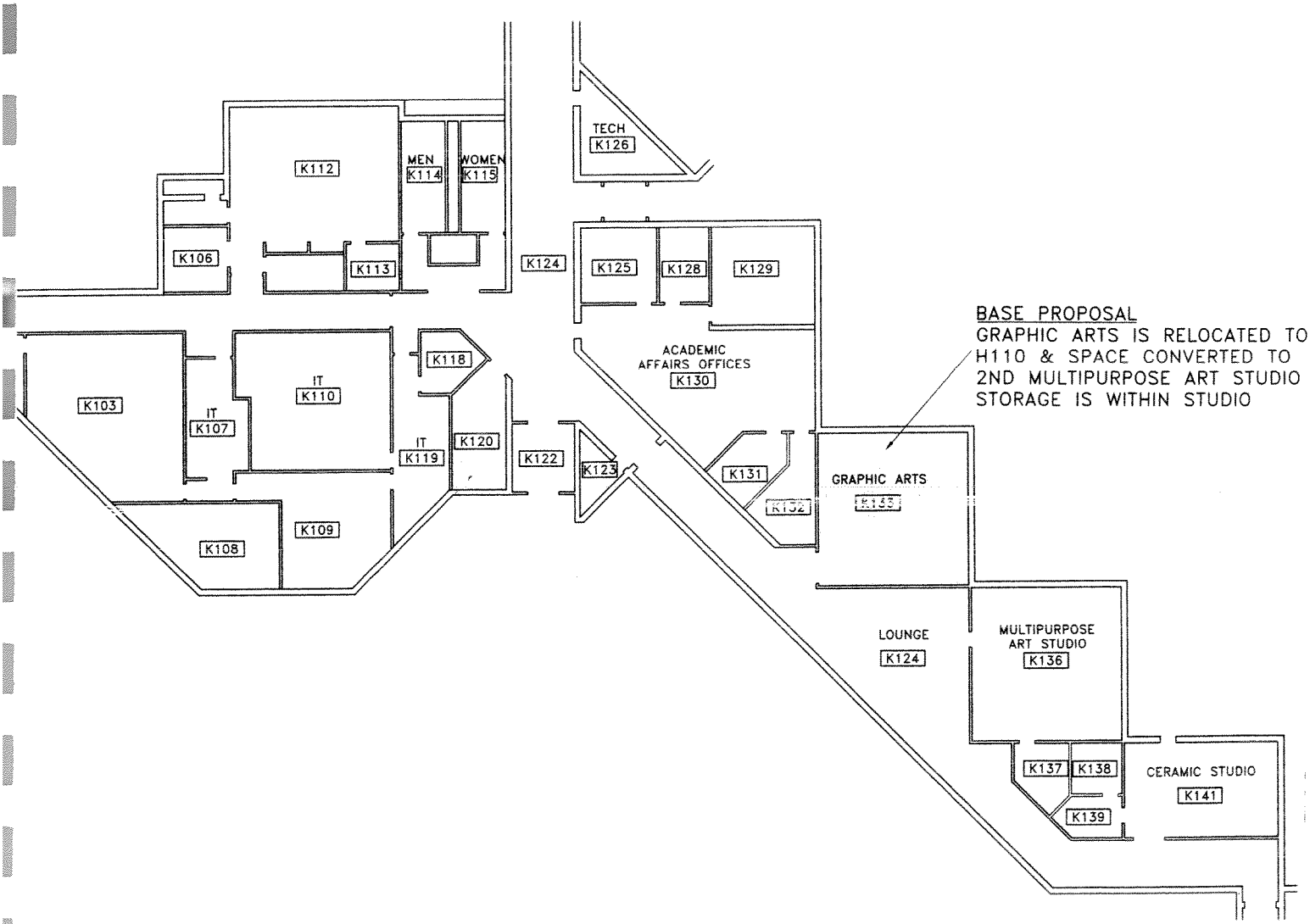


PLATE 3K-2
BUILDING K RENOVATIONS

Project No. 4 - Student Center & Renovations to Buildings J/C

Introduction

Project No. 4 is comprised of two components – a new structure housing the student recreation elements of the program and renovations to the existing food services located in Building C. The projected cost of this project is estimated at $8,870,611.62.

This project is different in scope and location than proposed in the Master Plan. These changes have been made for the following reasons:

- The cost of recreating the dining area in a new structure is cost prohibitive and not the most cost effective method for achieving the intended results
- The location proposed in the master plan for an all new facility would require the proposed STEM building to be integrated with the existing boiler plant and cost more.
- Providing the required food services delivery and garbage pickup in the center of the campus would be difficult to accomplish and present a continuing eyesore (loading dock operations, garbage containers and receptacles, continuing deliveries by large and small trucks, etc.) – the proposed retention of the dining in its present location would utilize the facilities in place which are on the periphery of the campus, not on major pedestrian walkways, and out of the way.
- The proposed location of the new structure addition would allow the expansion of the existing geothermal system for building B which expansion would be both economical in first and operational cost and help achieve the LEED silver rating.
- The placement of the new student center in a structure visible from the entry to the campus and anchoring the north end of the new campus walk would provide an immediate realization of the principal components of the master plan. Designed properly, this proposal would be an attractive architectural feature (see Plate 4-1 for a proposed design approach – this will be developed in more detail as part of the feasibility study)

Renovations to the food service area are focused on general rehabilitation of the interiors and implementation of a scramble food service design with preparation at point of service in lieu of the present single line operation. The existing teaching kitchen in this area has been removed because of low utilization and the additional space requirements for the scramble service. In addition, the terrace on the exterior will be expanded to allow more exterior seating.

Renovations to the food service area are limited to interior renovations which can be accomplished for an allowance of $900,000.00 or $113/sf. no major structural renovations are contemplated and it is assumed that the primary existing mechanical equipment and main trunk ductwork will be retained supplemented by new branch duct runouts. It is assumed that the basic electrical service will not need to be increased. In addition to the renovations we have allowed $437,000.00 for the new food service equipment which will be needed to implement the new scramble food service design.

A new fully equipped Cyber Café is included as part of the new student center – there will be 20 student stations with laptop computers connected to the campus network – these sorts of facilities are very popular with the students..

With the new stain resistant fabrics and the utilization of stain resistant floor finishes and carpet tiles it is now possible to allow students to carry food with them to all locations in the student center. This privilege now makes the center a more friendly and useful space and should result in higher food sales. It is contemplated that this will be a self policing amenity monitored by the student government which privileges may be withdrawn if continuous cleanup is not accomplished by the students.

In building J, the existing student life center will be vacated and turned over to testing so as to consolidate all student services in the same building. There are, however, no funds in the project to provide renovations to this space

Issues/Program Objectives and Concepts

Issue: Many students arrive at the campus just for their classes and leave immediately – this limits their educational experiences and opportunities and gives the College the feel of a commuter campus.

Objective : Provide a student facility that enhances student recruitment, makes the students more comfortable and prompts them to stay around the campus – this "hanging out" will leads to better interaction with the faculty and other students which interaction enhances learning and the educational experience.

Concept: Design the new student center as a student operated and focused facility so the students feel comfortable and more freely interact with their peers.

Concept: Provide a welcome desk in the new student center manned by students so visitors and students alike get the student perspective on information and the new student or student visitor feels comfortable in the building.

Concept: Provide amenities that students really like such as TV lounges, a large HD screen computer lounge or two with the latest gaming software available, ping pong tables, a cyber café with network connected computers, and small lounge areas for conversation and groups meeting provided with hard wire ports for laptop computers.

Concept: provide flexible spaces that can be cleared of furniture for events (also provide storage for furniture so it can be relocated)

Issue: The present food service and dining is antiquated and institutional in character resulting in an unpleasant experience and a low level of sales

Objective: Provide a new and updated food service that will generate a pleasant experience and increase sales

Concept: renovate the space to provide a new scramble type food service including the latest concepts of point of service food preparation and providing varieties of menus and ethnic foods to enhance sales.

Concept: renovate the dining area with new finishes and furniture and possibly adding skylights to make the interior more pleasant.

Concept: allow the consumption of food to extend to the student center cyber café and lounges to enhance food sales and promote the utilization of these spaces.

Concept: extend and expand the outdoor dining area and provide tables with umbrellas to provide a sidewalk café along the new campus walk[45]

Issue: As the campus expands, the walking distance for food service increases and the service becomes time wasting and inconvenient.

Objective: Provide food service that is convenient to the south end of the campus to avoid excessive travel

Concept: Provide a small food service facility on the ground floor lobby of the new STEM building[46]

Issue: Construction Sequence – the existing dining room, food service, and kitchens in Buildings C/J will be renovated in place yet they need to be operation the entire time; how can this be accomplished?

Objective: Provide food service that is continuous and seamless while the project is under construction.

This issue was not addressed during the Workshop interviews and the following concepts are wholly those of the architect – the concepts may be combined or modified and their sole purpose is to stimulate ideas, finalize a strategy and include it in the program document.

Concept: Have the entire renovation occur during the summer session; the vacated student life center could serve as a temporary food service facility but would not serve hot food.

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[45] Project #12 of the master plan envisioned such an area adjacent to Building B to allow food service to happen at the north end of the campus after the food service was removed from the present location. The present location and the provision of limited food service in the STEM building accomplishes this at a much reduced cost.

[46] This facility would be more of a "grab and go" coffee/drink kiosk which would catch the students and faculty as they arrive on campus from the south and west parking lots. In addition this facility would provide limited food and drink services during the day for all buildings on the south end of the campus. These kinds of satellite facilities are now quite common in college and university buildings and are usually quite successful in increasing sales. They are also a welcome convenience for the customers who now don't need to walk across campus to get a cup of fresh coffee or a snack.

Concept: Renovate the food service in 2-3 phases or parts with a partition between; do the continuity parts on weekends or overtime.

Concept: Use the Culinary Arts dining facility for the dining room (and food service and prep?) while the new dining area and food service is being renovated.

Concept: Use the new student life center first floor as a dining area and the old student life center or part of the existing food service for the food service.- work would be done over the summer.

Concept: Suspend all food service preparation except snacks and vending while the renovations to the food service are taking place. The old student life center could be a big vending machine and snack counter operation.

Concept: Prepare all hot food, salads, etc. off site and bring to a campus location.

Concept: Do the work over 2 successive summers – service and kitchens one summer, dining the next.

Concept: Provide portable trailers for food service (these are commercially available) adjacent to a permanent or temporary dining area. If this were during the summer only, the dining could be outside dining.

Concept: Utilize Kitchen No. 9 or a Culinary Arts Kitchen to prepare hot food and bring it on carts to a food service location.

Unresolved Issues

1. Omission of the Teaching Kitchen
2. Continuity of Food Service and Cash Flow/Contract of Vendor if Interrupted
3. Health Code Issues Related to Temporary Food Service

Following this section is the summary space, plan diagrams of the proposed improvements, and the program cost evaluation along with a line-by-line analysis of the cost

Summary Space List Student Center

space name	Existing Spaces			Proposed space			notes
	total no.	n.s.a.	total	no. req.	n.s.a.	total	
Food Service							
dining area	1	3500		1	3230	3230	seats 190 @17sf/person
faculty dining	1	550		1	700	700	existing - seats 40
food service	1	600		1	1650	1650	note 1, new is scramble service
kitchen (stations)	1	900		1	400	400	some at stations
baked goods kiosk	0	0		0	35	0	not required this location
office		0		1	120	120	
refrigerators/freezers		0		2	75	150	
dry storage		365		1	100	365	same as existing
dish and pot wash		0		1	150	150	existing is paper
receiving & weighing		0		1	100	100	includes small holding area
total		5915				**6865**	existing space available
South lobby renovations				**1**	**1060**	**1060**	
Bookstore		3263		**0**	**3263**	**0**	no change
Student Recreation		3270					
lounges open area				2	700	1400	multiple areas seating 30 -40 total
radio station				1	120	120	
cyber café	0	0		1	500	500	seats 20 @ 25 sf/person
student newspaper				1	320	320	
student government				1	320	320	
fitness center				0	650	0	add to gym building
assistant director				1	150	150	
staff				3	80	240	in cubicles 7 x 7
tv lounges				2	300	600	on circulation path
student welcome desk				1	150	150	
lobby reception area				1	350	350	not including circulation
student recreation				1	968	968	note 3
electronic games room				1	175	175	
total		3270				**5293**	
total gross sq. ft. a 65% effficiency						**8143**	gross area includes entry lobby
Exterior Facilities							
outside dining				1	476	476	patio seats 28 at 4-place tables
smokers patio				1	100	100	isolated from other facilities
enclosed service yard				1	0	0	use existing

note 1 - includes grill, deli, salad/soup desserts/snacks and beverage/coffee stations; 2 cashiers
note 2 - included are 4 ping pong tables (22 x34 = 750 sf) pool tables have been omitted

prepared 1/29/08 revised (5/12/08)

PROGRAM COST EVALUATION

17 LINE SUMMARY TABULATION

New Student Center

Construction Cost

1	New Student Recreation (8,143 sq.ft. x $ 416 /sf)	$	3,387,488.00	note 1
	Building J Lobby & Dining Renovations	$	900,000.00	note 4
2	Site Development	$	25,000.00	allow for outdoor dining
3	Equipment			included in line 1
4	Cost Premiums and Reductions (3%of lines 1)	$	101,624.00	LEED Silver (new const.only)
5	Contingency on Construction, Lines 1 through 4	$	-	note 2
6	Construction Cost Today (sum of lines 1 through 5)	$	4,414,112.00	
7	Escalation (to midpoint of construction)			note 3
	(38.75% x line 6) start construction 7/1/12	$	1,710,468.40	escalate to 2Q2013 midpoint
8	Total Costruction Cost (line 6 + line 7)	$	6,124,580.40	

Other Costs/ Project Costs

9	Fees	$	1,418,002.00	breakdown in appendix# 7
10	Off Site Improvements and Land Cost	$	-	
11	Owner Equipment/Furnishings/Special Systems	$	780,000.00	escalated 38.75%
12	Miscellaneous	$	20,000.00	
13	Contingency (on other costs, lines 9 - 12) @10%	$	221,800.20	
14	Other Costs (sum of lines 9 through 13)	$	2,439,802.20	
15	Project Cost (sum of lines 8 and 14)	$	8,564,382.60	
16	Owner's Contingency(for line 8 during construction)	$	306,229.02	
17	Total Project Cost (sum of lines 15 & 16)	**$**	**8,870,611.62**	

note 1 Because of glazed lobby, small platform size and large envelope ratio we have added $50/sf to original $356/sf of Hanscomb initial estimate - this will be verified during the feasibility study phase.

note 2 - in F & G cost modeling 10%design and 3% construction - included in line 1

note 3 - to midpoint of construction 2Q 2013

note 4 - 7925 sf @ $113/sf maximum allowance for renovations to building J

17 Line Program Cost Evaluation
Line by Line Contents & Assumptions

Building E Renovations – (Gym Renovations & Fitness Center)

Following is a line-by-line breakdown of the 17 Line Cost Evaluation. In addition to a general description, which is given first, there are specific breakdowns of the line contents for this particular program.

Line 1: Building

General: This is a cost per square foot of the model you are utilizing, multiplied by the number of square feet in the proposed project. Line 1 usually includes the following items; convention separates building cost from site cost at a line five feet from the exterior of the building

- Special Systems
  - Conduit and wire management systems* for telecommunications
  - Cabling for Telecommunications*
  - Conduit and wire management systems for security systems*
  - Cabling for security systems*
  - Conduit and wire management systems* for computer systems
  - Cabling for computer systems*
- Architectural, Structural, Mechanical, Electrical, Plumbing, & Fire Safety
- Emergency and Life Safety Systems Control Systems, Elevators and Lifts
- Taxes on labor and materials
- Permit costs
- Labor and material bonds and completion bonds
- Equipment hookup
- Attic stock

The special systems listed above and marked with an asterisk (*) are a grey area; sometimes they are in the building cost; convention normally excludes them from the contract and places them as part of the project cost on either lines 11 or 12. In addition to the costs above, it is most useful to put any construction manager's fee in the building cost rather than on line 9. This is because the construction manager (CM) normally replaces the general contractor and awards subcontracts separately, replacing the general contractor's fee and markup with their fee. Indeed, many general contractors now have adopted the appellation of "construction manager" and offer their services for a fixed fee generally equivalent to the previously common general contractor's markup. Most often historical costs will be compiled to include the CM cost as part of the construction cost; if you are using a specific building as a model, however, it is best to ask if a CM was utilized and where the fee is in the data that you are using. If the CM was acting as a consultant only with a separate general contractor, the fee could be excluded from the historical cost. If this project will utilize a CM in a similar and separate

consultant capacity, the fee should be added to line nine rather than being included in line one.

This Building Program
All of the items included in this number are listed above. In this particular instance we have estimated the base building cost on line 1 to be in 3 parts – Project #5E-1, the fitness center and the air conditioning of the gymnasium; Project #5E-2, the locker room area renovation; Project #5E-3, the replacement of the air conditioning and minor cosmetic improvements of the north office wing.

5E-1 - For the fitness center we have included both construction and demolition. This would include the skylights and the new windows to the exterior and interior and black interlocking rubber matts for the final floor finish. We have included the cost of the mechanical mezzanine structure (including new footings) and the new mechanical system. The equipment cost for 6 exercise machines (treadmill, walking, stair climbing, etc.) and a set of weight training equipment/machines is also included in the cost.

5E-2 - We have provided an allowance for the locker room renovations which includes $88,000 for a new roof top mounted mechanical unit and distribution The toilets must have additional fixtures and be made handicapped accessible[49] and new fixtures may need to be added we have assumed the replacement of the lavatories in place and the addition of new toilets and/or urinals

5E-3 - We have provided an allowance for minimum cosmetic improvements and $118,000 to replace the air conditioning; there is a demolition allowance included.

The cost breakdowns for construction of each of these projects can be found in the Appendix.

Line 2: Site

General: This is an evaluation of the present cost of the proposed site improvements, often a combination of cost per acre for various functions (grading, parking, landscaping, etc.) added to the best estimate of utilities. Utilization of a rule of thumb (a percentage of the building cost) as related to similar projects or the model can work as a last resort when combined with a premium analysis.
Usually includes all development from a line five feet outside the building to the property line or, for the large site, the agreed contract limit line. Site costs include required utility connections at the property line:

- Site demolition, landscape, paving, grading, site lighting and electrical, utilities and utility structures, drainage structures and storm water systems,

[49] It is assumed that the code official will require you to comply with the new increases for assembly occupancies and, in addition, allow for the population of the new bleachers. It is assumed that a second toilet room for each sex will be situated along the corridor and these new toilets will make up the required difference and provide for the handicapped. If the code official does not require new toilets, this cost can be saved albeit at the cost of long lines for the women's toilets during spectator events.

retention ponds, septic fields and sanitary structures, and other physical improvements

- Taxes on labor and materials

In addition, environmental restrictions and requirements may require extensive modification of the subsoil (due to contaminants). Protection of features such as wetlands, natural habitat etc. can often add significant premiums to the project cost. These potentially fatal flaws are addressed in the cost evaluation workbook

This Building Program: There is no site development component to this project.

Line 3: Equipment

General This equipment normally defined as fixed equipment which will be purchased and installed as part of the general contract. Does not include portable equipment, disposables, consumables, or maintenance equipment:

- Prefabricated storage and shelf units
- Built-in cooler, refrigerator/constant temperature rooms
- Laboratory benches
- Fume hoods, biosafety cabinets, and exhaust hoods
- Kitchen and food service equipment
- Conveyor equipment
- Lockers
- Dust collectors, dust collection and disposal
- Auto lifts and garage equipment
- Installation of owner purchased equipment
- Library equipment and shelving
- Washers, sterilizers, laundry equipment, and fixed hospital equipment
- Built-in safes, vaults, and bank equipment
- Audiovisual (AV) equipment and theatrical equipment (except that many of the AV terminal devices are often included in line eleven)

This Building Program: All of these elements are included in line except for the equipment in the fitness room which is found on line 11

Line 4: Premiums/Reductions

General: This line item identifies any special conditions, which will tend to make this building more or less economical than a typical building of this type. The identification, tabulation and evaluation of these data has been done in a cost analysis workbook developed by D/H&K The premiums/reductions are divided into 7 categories: Site, Off-site Utilities and Improvements, Building Program, Construction Operations, Construction Market, Client, and Time. Here are the identified additional premiums/reductions:

This Building Program: The amount on line 4 recognizes that we are not requiring a LEED rating for this building and no other premiums or reductions are required.

Line 5: Contingency on Construction

General: This a contingency to allow for scope changes during the development of the project – it quantifies our subjective perceptions on how much we know now about the scope of the project. At the programming phase there are three variables – complexity and uniqueness of the project; amount and reliability of cost focused information, and the amount of experience the owner and consultant can bring to the table

This Project: This is included in line 1 and is 3% for construction and 10% for design for a total of 13%.

Line 6: Construction Cost Today

Self-explanatory

Line 7: Escalation

This is a determination of the anticipated cost increases over time. It is normally calculated to the mid-point of construction. **For this project**, the rate of escalation has been determined by the project cost estimator as 6 %/annum or 38.75% to 4/1/2014, the midpoint of construction, more than the cost on 4Q 2007[50]

Line 8: Total Construction Cost

This is the evaluation of what the construction cost will be when the project is complete. It is a prediction of the bid price plus the cost of changes (not including the owner's additions to the project scope) during construction. The cost of changes is normally assumed to be 3 percent of the bid cost for new construction, but could be considerably more for remodeling and retrofit work. It should be noted that the next project cost determination, the schematic design budget estimate, usually defines this figure differently as the cost at the bid table.

Other Costs/Project Costs

Normally the costs below line 8, the total construction cost are of no concern to the programming team and are completed by the client. For many programs the information below line 8 is extremely confidential. The reason for the inclusion of the material below line 8 is to be sure the client has included adequate funding for the project

Line 9: Fees

[50] The construction of the gymnasium improvements have been accelerated from the original time schedule and will now be complete in February of 2010. The additional escalation amounts for the later construction schedule were retained in the present budget on line 7 as additional contingency.

General: Includes all design and consulting services necessary to bid and/or build the facility. It does not usually include construction management fees unless the construction manager is acting on a consulting or inspection services only basis and, in addition, there is a general contractor.

- Architectural/Engineering*
- Legal
- Survey
- Materials Testing* – including concrete, steel, fireproofing, etc. and MEP system test and balance
- Building Commissioning*
- Geological testing and report
- Cost consultant*
- FFE design & construction*
- Programming consultant
- Specialty consultants (asbestos, acoustic*, audio-visual*, IT*, vibration, kitchen. theatrical, lighting, environmental, commissioning*, LEED*, TV Studio*, etc..)
- Financial

This Project: All of the consultants we expect to be required for this project are marked with an asterisk on the list above. An asbestos consultant may be needed to determine presence and remediate if necessary (we believe all asbestos remediation has been completed in this building). The cost of the construction superintendent is included in the cost of building A.

Line 10: Off Site Improvements/Land Cost

General: This would include all utilities and road improvements required by the local municipality. Often there are trade-offs required to obtain permits such as the deeding of easements or rights-of way, the building of public facilities, land for neighborhood schools or parks, etc. The cost of these improvements should be included in the project cost by the client to get a true picture of the project cost.

This Building Program: there are no costs in this category

Line 11: Owner Equipment/Furnishings/Special Systems

General: This category of cost should be compared with Line 1, just to be positive some things do not slip through a crack. This category normally includes the following items:

- Computer equipment/Office equipment
- Connection and installation of portable and semi-portable equipment*
- Disposables and consumables
- Portable Equipment (electrical plug or utility quick disconnect)*
- Owner purchased process, research, or factory equipment

- Furniture and furniture installation including open office partition systems and their wiring from a permanent electrical and data outlet
- File cabinets (even if built-in)
- Furnishings and loose accessories
- Indoor plants and containers
- Artwork
- Semi-portable equipment (copy machines, telex, or FAX)
- Printing or reproduction equipment
- Portable dishwasher, small ware, flatware, trays, and portable cooking and storage equipment
- Portable laboratory and library equipment
- Books
- Audio Visual/ Classroom Technology
- Security system, telecommunication system, and data system wiring, including terminal devices
- Devices that serve dedicated non-building equipment even though permanently attached; examples would include machine controllers and regulators, electrical current modification devices etc.
- Trash collection equipment including compactors, collection bins and containers

This Project: The items included in these projects include the gym equipment in Project #3E-1 (8 machines @ $3,000 each = $24,000 and $24,000 for weightlifting and training machines x 1.38 escalation =$ 66,000) and minimal allowances for equipment for Project #3E-2.

Line 12: Miscellaneous

General: this line item normally includes soft costs related to the project; the amounts vary widely and are often dependent on how the owner calculates direct and indirect costs.

- Owner's insurance
- Owner's administrative costs
- Builders Risk Insurance
- Training of operations personnel
- Interim and final financing
- Utility cost after permanent connection
- Moving and relocation costs

This Building Program: we have allowed money for these items in the cost estimate; most of it is for insurance costs and moving costs (there will be little moving except for the office area since all is new equipment). The College should review these items and costs attached to them – some of these items may not be included in a building budget as a matter of policy and there may be other items, which are not listed.

Lines 13 through 17: Totaling the Results

General: The operations to total up the estimated project cost are self-explanatory with the exception of line 16 which is the contingency on the construction cost. In the proposed format, this line item is composed of two elements: 1) The first component of this amount should be the amount of money that the clients wish to have in their pockets as they walk away from the bid table; it is used to pay for errors, conflicts and omissions on the architect's and engineer's documents, unforeseen site conditions, and minor changes or additions by the client. For new construction this should be in the 3-5 percent range, for renovation it should be no less than 7 percent and for extremely old buildings with vague documentation it may be appropriate at 15 percent or more and, 2) a contingency for any nagging doubts that cannot be quantified, the extra cushion when the project has an absolute and fixed cost limit, accommodation of a volatile construction market, or the accommodation of a mandatory contingency policy.

This Building Program: We have assumed line 16 to be 12% of the building cost to allow for errors and omissions, existing underground conditions, and unexpected discoveries.

Building H - Alternate TV Studio

Introduction & Strategy

Building H will house the TV studio as part of the alternate facilities in Project #5.Two - 32 student computer labs will have already be added to the building as part of project #3 - there will be no further improvements in building H (see plate no. 5H-1 for the existing conditions, plate no. 5H-2 for the proposed location of the TV Studio, and plate 5H-3 for the program layout diagram illustrating the extent and arrangement of spaces – the layout shown on this diagram will need to be altered to fit within the Building H envelope. The high space in the now distance learning center in H is the only ideal space on campus to house the TV studio because of the height requirements of the facility.

The design and cost assumptions related to these improvements include the addition of a completely new mechanical system and electrical service because of the high energy demands and specific acoustical performance requirements of this facility.

Following is a 17 line Cost Evaluation of the renovations to this facility followed by a line by line narrative.

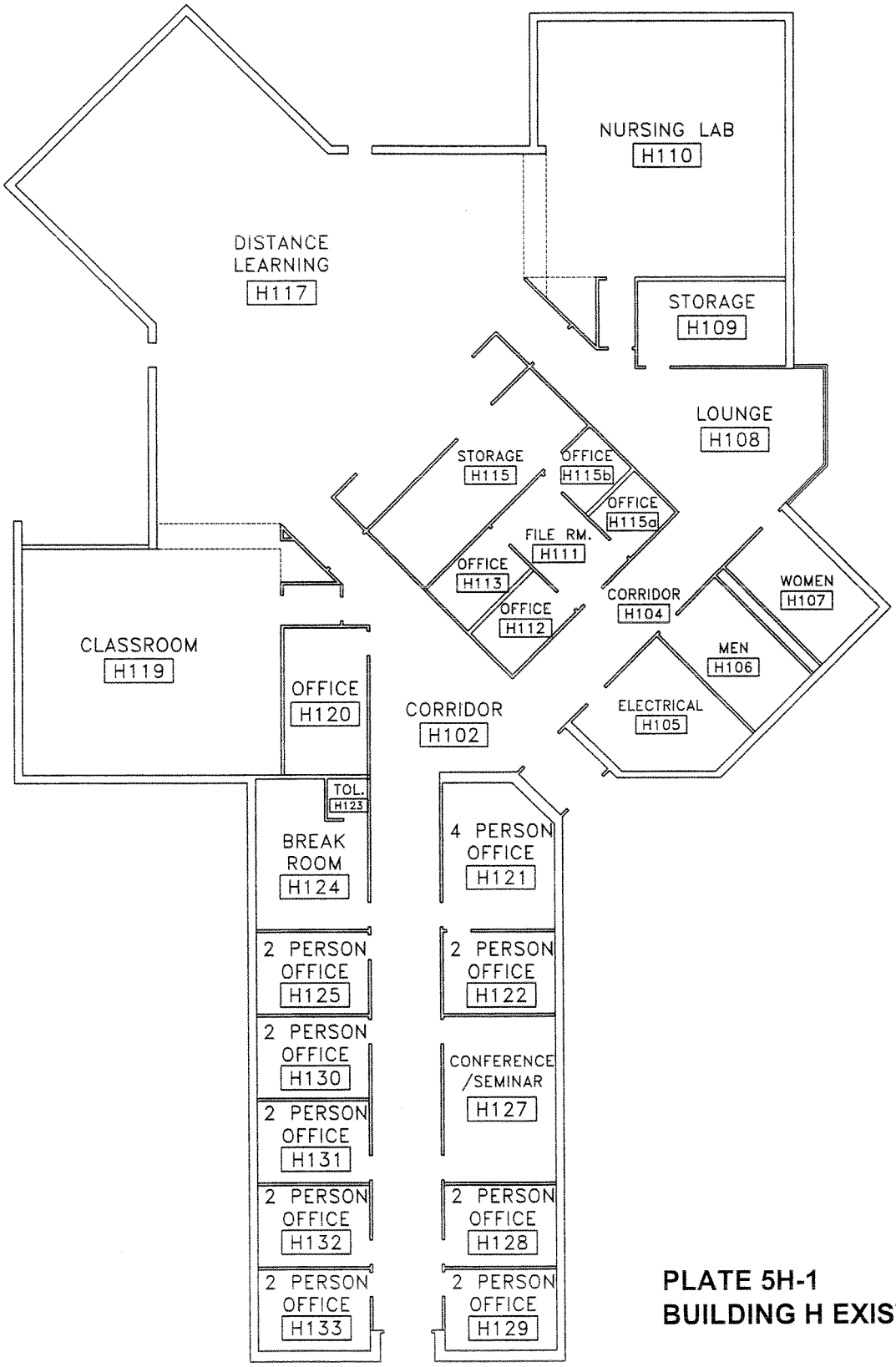

PLATE 5H-1
BUILDING H EXISTING

1 5 10 20
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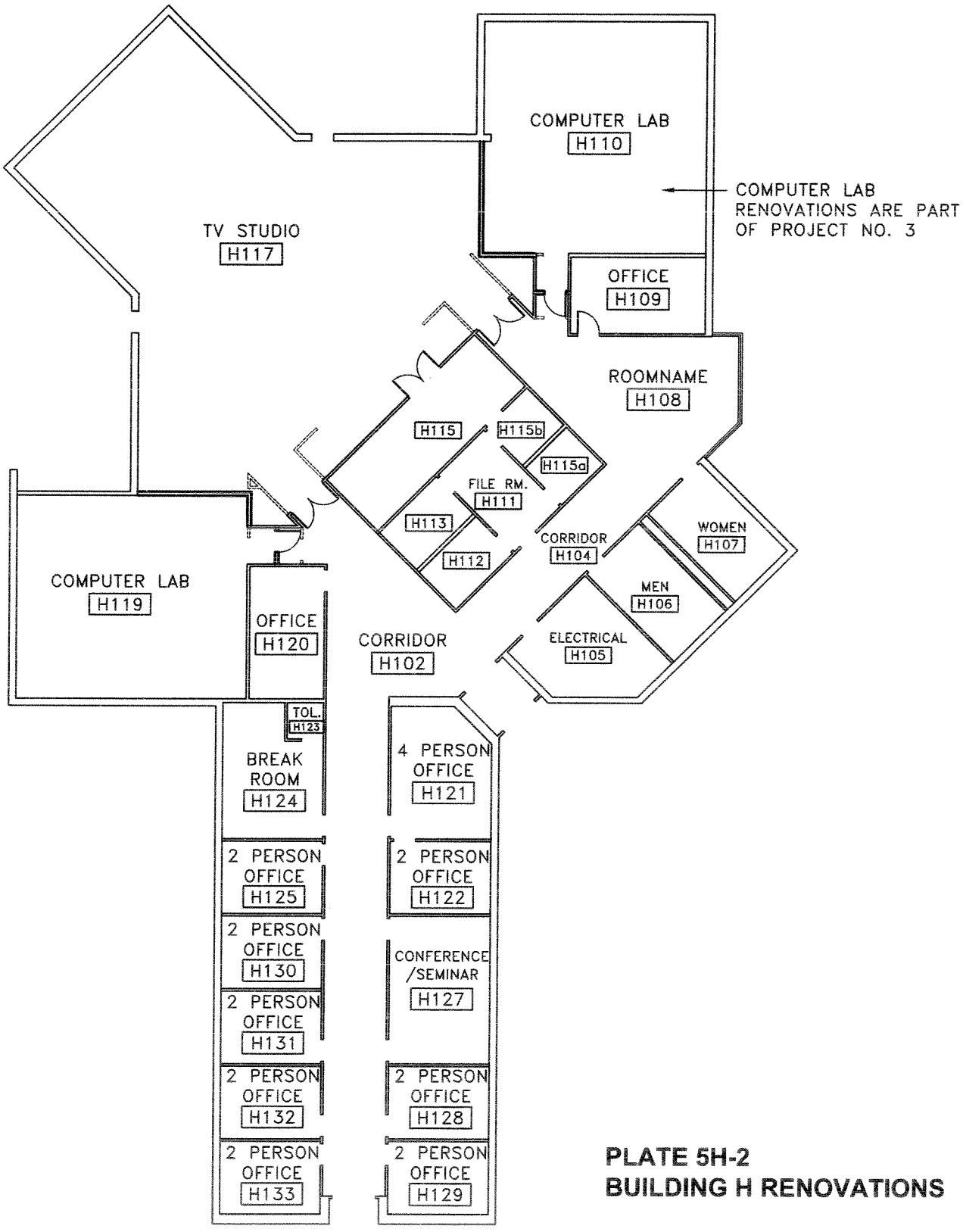

PLATE 5H-2
BUILDING H RENOVATIONS

1 5 10 20
SCALE:1"=20'-0"

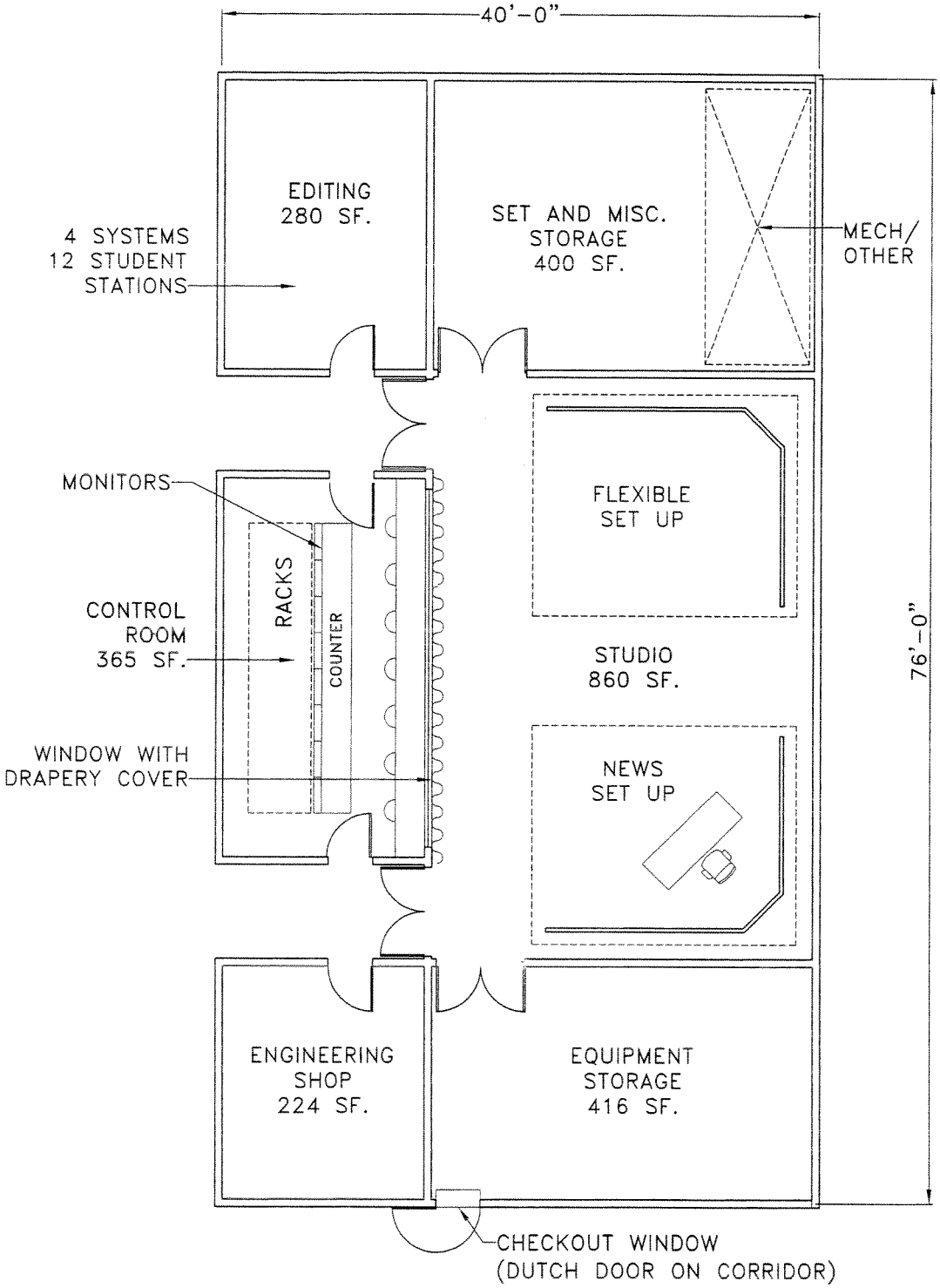

PLATE 5H-3
TELEVISION STUDIO
PROGRAM DIAGRAM

1 5 10 20

SCALE: 3/32"=1'-0"

8/12/08 issue with final program
PROGRAM COST EVALUATION
17 LINE SUMMARY TABULATION

Renovations to Building H - Project #5 TV Studio

Construction Cost

1	TV Studio Cost (3280x $200/sf)	$	656,000.00	no exterior renovations
1a	Demolition Cost (5,080 x $3.00/sf)	$	15,240.00	interior demolition only
1b	Affirmative Action Training	$	3,356.20	at 1/2 of 1% construction cost
2	Site Development	$	-	no site development this project
3	Equipment	$	1,250,000.00	minimum built- in equipment
4	Cost Premiums and Reductions (none)	$	-	not LEED certified
5	Contingency on Construction, Lines 1 through 4	$	87,697.51	contingency @ 13%
6	Construction Cost Today (sum of lines 1 through 5)	$	2,012,293.71	
7	Escalation (to midpoint of construction 4/1/2014) (38.75% x line 6)	$	779,763.81	note 1
8	Total Costruction Cost (line 6 + line 7)	$	2,792,057.52	

Other Costs/ Project Costs

9	Fees	$	262,300.00	see appendix for breakdown
10	Off Site Improvements and Land Cost	$	-	none
11	Owner Equipment/Furnishings/Special Systems	$	301,000.00	escalated note 2
12	Miscellaneous	$	3,000.00	
13	Contingency (on other costs, lines 9 - 12) @10%	$	56,630.00	
14	Other Costs (sum of lines 9 through 13)	$	622,930.00	
15	Project Cost (sum of lines 8 and 14)	$	3,414,987.52	
16	Owner's Contingency(for line 8 during construction)	$	279,205.75	12% contingency
17	Total Project Cost (sum of lines 15 & 16)	**$**	**3,694,193.27**	

note 1 - the escalation is arbitrary as it is not known when the project will be funded, however, the TV studio cannot be constructed until nursing is moved over to building A

note 2 - the total for both fixed and movable equipment for this complex will be a minimum of $1.5 million. Combining line 3 and line 11 generates this amount; The equipment is escalated only slightly to recognize that the price for technology decreases over time. The cost for the equipment could be doubled or tripled if additional sophistication is required.

c: documents 2007/07010/17 line summary cost evaluation renovations to building H version 5-12-08

17 Line Program Cost Evaluation
Line by Line Contents & Assumptions

Building H Renovations – (3,280 sf TV Studio)

Following is a line-by-line breakdown of the 17 Line Cost Evaluation. In addition to a general description, which is given first, there are specific breakdowns of the line contents for this particular program. The two computer labs in this building are part of project #3.

Line 1: Building

General: This is a cost per square foot of the model you are utilizing, multiplied by the number of square feet in the proposed project. Line 1 usually includes the following items; convention separates building cost from site cost at a line five feet from the exterior of the building

- Special Systems
  - Conduit and wire management systems* for telecommunications
  - Cabling for Telecommunications*
  - Conduit and wire management systems for security systems*
  - Cabling for security systems*
  - Conduit and wire management systems* for computer systems
  - Cabling for computer systems*
- Architectural, Structural, Mechanical, Electrical, Plumbing, & Fire Safety
- Emergency and Life Safety Systems Control Systems, Elevators and Lifts
- Taxes on labor and materials
- Permit costs
- Labor and material bonds and completion bonds
- Equipment hookup
- Attic stock

The special systems listed above and marked with an asterisk (*) are a grey area; sometimes they are in the building cost; convention normally excludes them from the contract and places them as part of the project cost on either lines 11 or 12. In addition to the costs above, it is most useful to put any construction manager's fee in the building cost rather than on line 9. This is because the construction manager (CM) normally replaces the general contractor and awards subcontracts separately, replacing the general contractor's fee and markup with their fee. Indeed, many general contractors now have adopted the appellation of "construction manager" and offer their services for a fixed fee generally equivalent to the previously common general contractor's markup. Most often historical costs will be compiled to include the CM cost as part of the construction cost; if you are using a specific building as a model, however, it is best to ask if a CM was utilized and where the fee is in the data that you are using. If the CM was acting as a consultant only with a separate general contractor, the fee could be excluded from the historical cost. If this project will utilize a CM in a similar and separate

consultant capacity, the fee should be added to line nine rather than being included in line one.

This Building Program
All of the items included in this number are listed above. In this particular instance we have estimated the base building cost on line 1 for the TV Studio to be $250/sq, ft for construction and $3/sq.ft. for demolition. These costs are based on the following assumptions: 1) for the TV Studio there is only minor demolition taking place, 2) an entire new mechanical and electrical system will need to be provided for the TV studio space because of the low noise requirements and the high heat load generated by the equipment. The cost of the IT/telephone cabling and servers/equipment is not included in this line and is to be found under line 11.

Line 2: Site

General: This is an evaluation of the present cost of the proposed site improvements, often a combination of cost per acre for various functions (grading, parking, landscaping, etc.) added to the best estimate of utilities. Utilization of a rule of thumb (a percentage of the building cost) as related to similar projects or the model can work as a last resort when combined with a premium analysis.
Usually includes all development from a line five feet outside the building to the property line or, for the large site, the agreed contract limit line. Site costs include required utility connections at the property line:

- Site demolition, landscape, paving, grading, site lighting and electrical, utilities and utility structures, drainage structures and storm water systems, retention ponds, septic fields and sanitary structures, and other physical improvements
- Taxes on labor and materials
  In addition, environmental restrictions and requirements may require extensive modification of the subsoil (due to contaminants). Protection of features such as wetlands, natural habitat etc. can often add significant premiums to the project cost. These potentially fatal flaws are addressed in the cost evaluation workbook

This Building Program: There is no site development component to this project.

Line 3: Equipment

General This equipment normally defined as fixed equipment which will be purchased and installed as part of the general contract. Does not include portable equipment, disposables, consumables, or maintenance equipment:

- Prefabricated storage and shelf units
- Built-in cooler, refrigerator/constant temperature rooms
- Laboratory benches
- Fume hoods, biosafety cabinets, and exhaust hoods
- Kitchen and food service equipment

- Conveyor equipment
- Lockers
- Dust collectors, dust collection and disposal
- Auto lifts and garage equipment
- Installation of owner purchased equipment
- Library equipment and shelving
- Washers, sterilizers, laundry equipment, and fixed hospital equipment
- Built-in safes, vaults, and bank equipment
- Audiovisual (AV) equipment and theatrical equipment (except that many of the AV terminal devices are often included in line eleven)

This Building Program: All of these elements are included in line 1

Line 4: Premiums/Reductions

General: This line item identifies any special conditions, which will tend to make this building more or less economical than a typical building of this type. The identification, tabulation and evaluation of these data has been done in a cost analysis workbook developed by D/H&K The premiums/reductions are divided into 7 categories: Site, Off-site Utilities and Improvements, Building Program, Construction Operations, Construction Market, Client, and Time. Here are the identified additional premiums/reductions:

This Building Program: The amount on line 4 includes the cost of the building components required to achieve a Silver LEED rating. We have estimated this as 3% of line 1. We have not identified any other premiums/reductions at this time.

Line 5: Contingency on Construction

General: This a contingency to allow for scope changes during the development of the project – it quantifies our subjective perceptions on how much we know now about the scope of the project. At the programming phase there are three variables – complexity and uniqueness of the project; amount and reliability of cost focused information, and the amount of experience the owner and consultant can bring to the table

This Project: This is included in line 1 and is 3% for construction and 10% for design for a total of 13%.

Line 6: Construction Cost Today

Self-explanatory

Line 7: Escalation

This is a determination of the anticipated cost increases over time. It is normally calculated to the mid-point of construction. **For this project**, the rate of escalation has been determined by the project cost estimator as 6 %/annum or 38.75% assuming that

4/1/2014 will be the midpoint of construction, more than the cost on 4Q 2007. Should the project be executed in a different time frame the cost evaluation will need to be adjusted.

Line 8: Total Construction Cost

This is the evaluation of what the construction cost will be when the project is complete. It is a prediction of the bid price plus the cost of changes (not including the owner's additions to the project scope) during construction. The cost of changes is normally assumed to be 3 percent of the bid cost for new construction, but could be considerably more for remodeling and retrofit work. It should be noted that the next project cost determination, the schematic design budget estimate, usually defines this figure differently as the cost at the bid table.

Other Costs/Project Costs

Normally the costs below line 8, the total construction cost are of no concern to the programming team and are completed by the client. For many programs the information below line 8 is extremely confidential. The reason for the inclusion of the material below line 8 is to be sure the client has included adequate funding for the project

Line 9: Fees

General: Includes all design and consulting services necessary to bid and/or build the facility. It does not usually include construction management fees unless the construction manager is acting on a consulting or inspection services only basis and, in addition, there is a general contractor.

- Architectural/Engineering*
- Legal
- Survey
- Materials Testing* – including concrete, steel, fireproofing, etc. and MEP system test and balance
- Building Commissioning*
- Geological testing and report
- Cost consultant*
- FFE design & construction*
- Programming consultant
- Specialty consultants (asbestos, acoustic*, audio-visual*, IT*, vibration, kitchen. theatrical, lighting*, environmental, commissioning*, LEED*, TV Studio*, etc..)
- Financial

This Project: All of the consultants we expect to be required for this project are marked with an asterisk on the list above. An asbestos consultant may be needed to determine presence and remediate if necessary (we believe all asbestos remediation has been completed in this building). The architect may choose to add a lighting consultant to his team but these consultants are usually included within the architect's basic fee.

Line 10: Off Site Improvements/Land Cost

General: This would include all utilities and road improvements required by the local municipality. Often there are trade-offs required to obtain permits such as the deeding of easements or rights-of way, the building of public facilities, land for neighborhood schools or parks, etc. The cost of these improvements should be included in the project cost by the client to get a true picture of the project cost.

This Building Program: there are no costs in this category

Line 11: Owner Equipment/Furnishings/Special Systems

General: This category of cost should be compared with Line 1, just to be positive some things do not slip through a crack. This category normally includes the following items:

- Computer equipment/Office equipment*
- Connection and installation of portable and semi-portable equipment*
- Disposables and consumables
- Portable Equipment (electrical plug or utility quick disconnect)*
- Owner purchased process, research, or factory equipment
- Furniture and furniture installation including open office partition systems and their wiring from a permanent electrical and data outlet*
- File cabinets (even if built-in)
- Furnishings and loose accessories
- Indoor plants and containers
- Artwork
- Semi-portable equipment (copy machines, telex, or FAX)
- Printing or reproduction equipment
- Portable dishwasher, small ware, flatware, trays, and portable cooking and storage equipment
- Portable laboratory and library equipment
- TV Studio Lighting & Equipment*
- Audio Visual/ Classroom Technology*
- Security system, telecommunication system, and data system wiring, including terminal devices *
- Devices that serve dedicated non-building equipment even though permanently attached; examples would include machine controllers and regulators, electrical current modification devices etc.
- Trash collection equipment including compactors, collection bins and containers*

This Project: The items included in this project are marked with an asterisk. Components of this number include escalation to 4/1/2014. furnishings @ $25 K,12 computers @ $1500 = $18K, wiring and conduit for security, IT @ $4.00/sf. x 3,280 sf x 1.38 = $18K, and $240K for loose equipment in the TV studio (includes 2 digital cameras @30K ea., 4 editing stations @ $25K ea. and $141K for control room equipment); it

should be noted that there is an additional $1,250,000 for fixed equipment in line 3 which brings the total to $1.5 million which is at the low end in cost for TV studio equipment. **Total $301K** to line 11.

Line 12: Miscellaneous

General: this line item normally includes soft costs related to the project; the amounts vary widely and are often dependent on how the owner calculates direct and indirect costs.

- Owner's insurance
- Owner's administrative costs
- Builders Risk Insurance
- Training of operations personnel
- Interim and final financing
- Utility cost after permanent connection
- Moving and relocation costs

This Building Program: we have allowed $3,000 for these items in the cost estimate; most of it is for insurance costs and moving costs (there will be little moving since all is new equipment). The University should review these items and costs attached to them – some of these items may not be included in a building budget as a matter of policy and there may be other items, which are not listed.

Lines 13 through 17: Totaling the Results

General: The operations to total up the estimated project cost are self-explanatory with the exception of line 16 which is the contingency on the construction cost. In the proposed format, this line item is composed of two elements: 1) The first component of this amount should be the amount of money that the clients wish to have in their pockets as they walk away from the bid table; it is used to pay for errors, conflicts and omissions on the architect's and engineer's documents, unforeseen site conditions, and minor changes or additions by the client. For new construction this should be in the 3-5 percent range, for renovation it should be no less than 7 percent and for extremely old buildings with vague documentation it may be appropriate at 15 percent or more and, 2) a contingency for any nagging doubts that cannot be quantified, the extra cushion when the project has an absolute and fixed cost limit, accommodation of a volatile construction market, or the accommodation of a mandatory contingency policy.

This Building Program: We have assumed line 16 to be 12% of the building cost to allow for errors and omissions, existing underground conditions, and unexpected discoveries.

Appendices

1. Space Tabulation Language – Chapter 4, NCES 92-165, Post Secondary Education Facilities Inventory & Classification Manual
2. Campus Services Building Program
3. Campus Technology Advisory Committee Strategic Plan
4. Lists of Attendees at the Program Workshop Interviews
5. Tabulation of Computers & AV Tech Kits for Perkins Grants
6. Strategy & Costs Related to Full Time Construction Administration
7. Spread sheets for FEES, Lines 9 of the Cost Evaluations

Appendix No. 1

Space Tabulation Language

The space tabulation lists and other references to area and the definitions of area for this document are to be found in Chapters 2 and 4, NCES 92-165, Post Secondary Education Facilities Inventory & Classification Manual.

This manual, published by the U.S. Department of Education, Office of Educational Research and Improvement for the National Center for Education Statistics is the standard for measuring and classifying higher education spaces for statistical purposes in the United States.

Page 8 and 9, *Definitions of Area*, and pages 27 through 32, *Building Definitions and Data Elements*, are reproduced here for the reader's convenience.

POSTSECONDARY EDUCATION FACILITIES INVENTORY

AND

CLASSIFICATION MANUAL

REVISED AND REPRINTED APRIL 1994

WORKING GROUP
ON
POSTSECONDARY
PHYSICAL FACILITIES

ROSLYN KORB
NATIONAL CENTER FOR EDUCATION STATISTICS

2. Hospitals not owned by the institution, except for any space in the hospital leased or controlled by the institution.

3. Public schools not owned by the institution, but used for practice teaching.

4. Federal contract research centers identified by the Federal Office of Management and Budget (OMB).

Other Plant Assets. For management purposes, institutions are encouraged to inventory all physical plant assets. Examples of such assets not encompassed in the definition of a "building" include: uncovered swimming pools, athletic tracks, bleachers and additional playing fields that otherwise do not qualify as gross area. Institutions are also encouraged to itemize the infrastructure components. Examples include utility distribution systems (heating, cooling, power, water, and waste disposal) and support facilities which provide access or safety related services (roads, campus lighting, etc.). Additionally, institutions may wish to maintain inventory data on land holdings, capital equipment, and movable equipment.

Building Measurement Terms

In a building inventory, it is important to be able to determine the amount of space that can be assigned to people or programs. However, buildings necessarily contain other types of space as well. Technical definitions and examples of types of space are given in Chapter 4.

The amount of space that can be used for programs is known as the *Assignable Area*.[3] The Assignable Area of a room is the area measured within the interior walls of the room. Total Assignable Area of a building or in an inventory is the sum of the space allocated to the ten major room use categories: classrooms, laboratories, offices, study areas, special use space, general use areas, support rooms, health care, residential, and unclassified space. These categories are further identified below.

Assignable Area = Sum of the Ten Major Room Use Categories of Assignable Space

There are various kinds of other spaces within a building that are essential but which are not assigned directly to support programs. *Building Service Area* is the sum of all areas of a building used to support its cleaning and public hygiene functions. *Circulation Area* is the sum of all areas required for physical access to floors or subdivisions of space within the building, whether directly bounded by partitions or not. *Mechanical Area* is that area of a building designed to house mechanical equipment and utility services, and shaft areas. The sum of Building Service Area, Circulation Area, and Mechanical Area is known as the *Nonassignable Area* of a building.

---

[3]This is also conventionally referred to as Net Assignable Area or Net Assignable Square Feet (NASF).

Nonassignable Area = *Building Service* + *Circulation* + *Mechanical Areas*

The aggregate interior area of a building, known as the *Net Usable Area*, is the sum of Assignable Area and Nonassignable Area.

Net Usable Area = *Assignable Area* + *Nonassignable Area*

It is also important to know that the *Gross Area* of a building is the floor area of a structure within the *outside* faces of the exterior walls. This value is either physically measured or scaled from as-built drawings.

The difference between the exterior or Gross Area and the interior or Net Usable Area is the *Structural Area*, the floor area upon which the exterior and interior walls sit and the unusable areas in attics and basements. Structural area may be calculated as the difference between the net usable area and the gross area of a building.

Structural Area = *Gross Area - Net Usable Area*

CHAPTER 4

BUILDING DEFINITIONS AND DATA ELEMENTS

This chapter provides the technical definitions, measurement procedures, and coding structures for building data elements. The interrelationships between these components of building area are illustrated by the conceptual framework in Figure 1. The technical definitions and codes for the room use categories are found in Chapter 5.

Definitions Of Building Areas[7]

The definitions and procedures provided in this chapter are intended to clarify and provide guidelines for the most commonly used types of data to be collected and compiled on buildings. These guidelines are based on the definitions and standards established during the 1960s for the Federal Construction Council and published by the National Academy of Sciences. The Federal Construction Council standards were intended for use by federal agencies, but they have been widely adopted and used by colleges and universities.

The definitions and guidelines in this chapter attempt to clarify and update some of the earlier standards by providing additional guidance on how to interpret and apply measurement procedures. The guidelines also are intended to establish a common standard for the minimum amount of data to be included in a building inventory in order to provide a database that is usable for both intra-institutional and inter-institutional purposes. *Institutions are not precluded by these guidelines from collecting additional building data or from including other types of structures in their facilities inventory.*

1. **Gross Area**

   A. *Definition:* The sum of all areas on all floors of a building included within the outside faces of its exterior walls, including floor penetration areas, however insignificant, for circulation and shaft areas that connect one floor to another.

   B. *Basis for Measurement:* Gross area is computed by physically measuring or scaling measurements from the outside faces of exterior walls, disregarding cornices, pilasters, buttresses, etc., which extend beyond the wall faces. Exclude areas having less than a six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met. (See the sections in Chapter 2 on buildings to be included in the inventory.)

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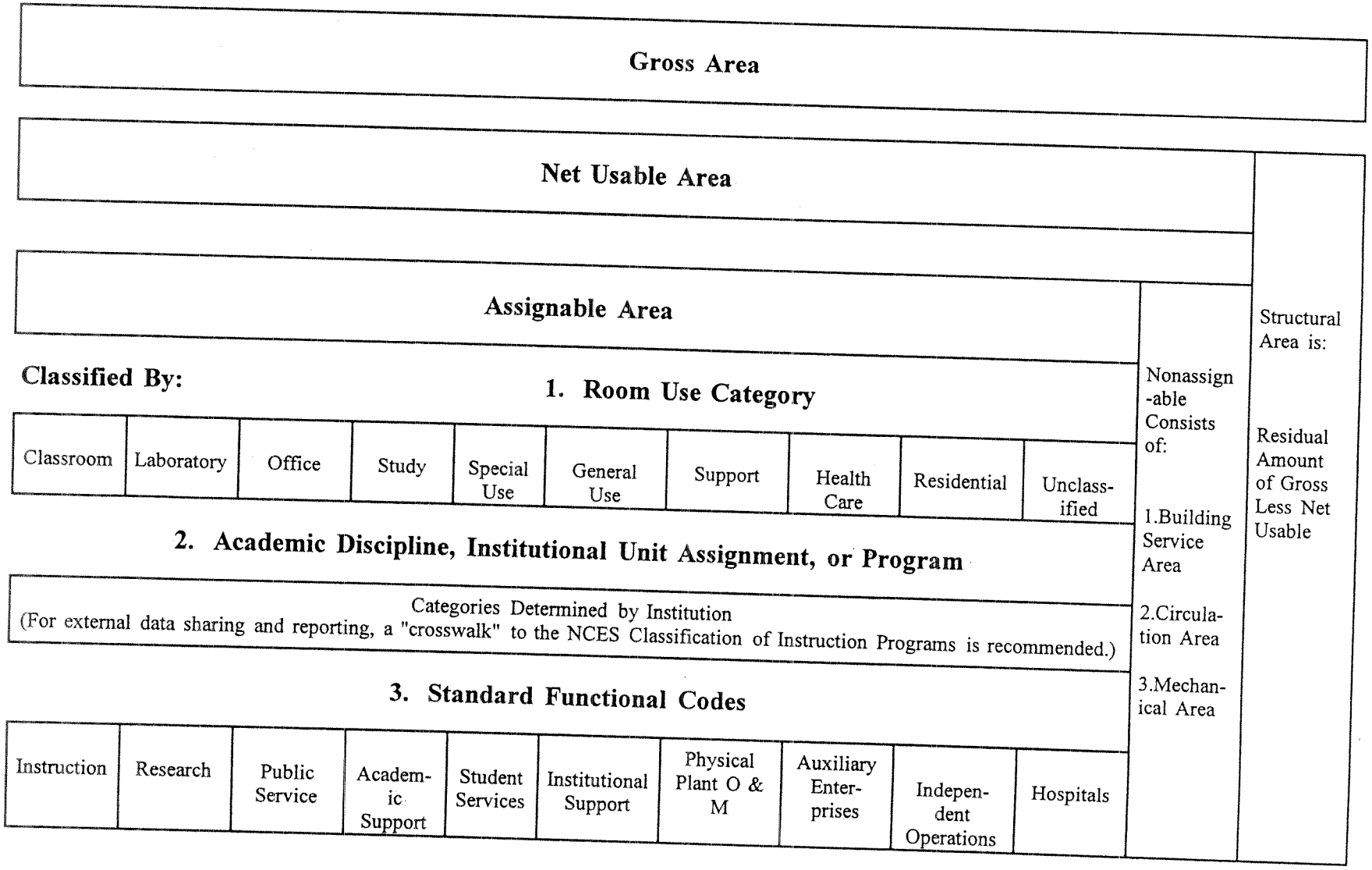
[7]Source: Federal Construction Council Technical Report No. 50 (Publication 1235), *Classification of Building Areas*, National Academy of Sciences, Building Research Advisory Board.

FIGURE 1: Conceptual Framework for Analyzing Building Space



Measured in terms of gross square feet (GSF),

Gross Area = Net Usable Area + Structural Space.

C. *Description:* In addition to all the internal floored spaces obviously covered above, gross area should include the following: excavated basement areas; mezzanines, penthouses, and attics; garages; enclosed porches, inner or outer balconies whether walled or not, if they are utilized for operational functions; and corridors whether walled or not, provided they are within the outside face lines of the building, to the extent of the roof drip line. The footprints of stairways, elevator shafts, and ducts (examples of building infrastructure) are to be counted as gross area on each floor through which they pass.

D. *Limitations:* Exclude open areas such as parking lots, playing fields, courts, and light wells, or portions of upper floors eliminated by rooms or lobbies that rise above single-floor ceiling height.

E. *Exception:* Include top, unroofed floor of parking structures where parking is available. (See the section on Parking Structures at the end of this chapter.)

2. **Assignable Area (Net Assignable Square Feet — NASF)**

A. *Definition:* The sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant or specific use.

B. *Basis for Measurement:* Assignable area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met. (See the section, Buildings To Be Included, in Chapter 2.)

Measured in terms of assignable square feet (ASF),

Assignable Area = Sum of Area Designated by the Ten Assignable Major Room Use Categories.

C. *Description:* Included should be space subdivisions of the ten major room use categories for assignable space — classrooms, labs, offices, study facilities, special use, general use, support, health care, residential and unclassified—that are used to accomplish the institution's mission.

D. *Limitations:* Deductions should not be made for necessary building columns and projections. Areas defined as building service, circulation, mechanical, and structural should not be included.

3. **Nonassignable Area**

A. *Definition:* The sum of all areas on all floors of a building not available for assignment to an occupant or for specific use, but necessary for the general operation of a building.

B. *Basis for Measurement:* Nonassignable Area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Excludes areas having less than six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met.

Measured in terms of area,

Nonassignable Area = Sum of the Area Designated by the Three Nonassignable Room Use Categories.

C. *Description:* Included should be space subdivisions of the three nonassignable room use categories—building service, circulation and mechanical—that are used to support the building's general operation.

D. *Limitations:* Deductions should not be made for necessary building columns and projections. Areas defined as assignable should not be included.

4. **Building Service Area**

A. *Definition:* The sum of all areas on all floors of a building used for custodial supplies, sink rooms, janitorial closets, and for public rest rooms. (NOTE: Building service area includes all areas previously classified as custodial area. Building service area also includes public rest rooms that were previously classified as mechanical area. Building Service Area does not include assignable areas (e.g., areas classified as 730-Central Storage and 870-Central Supplies are not part of Building Service Area).

B. *Basis for Measurement:* Building service area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form boundaries of the designated areas. Exclude areas having less than a six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met.

C. *Description:* Included should be janitor closets or similarly small cleanup spaces, maintenance material storage areas, trashrooms exclusively devoted to the storage of nonhazardous waste created by the building occupants as a whole, and public toilets.

D. *Limitations:* Deductions should not be made for necessary building columns and minor projections. Areas defined as central physical plant shop areas, or special purpose storage or maintenance rooms, such as linen closets and housekeeping rooms in residence halls, should not be included. Does not include private rest rooms.

5. **Circulation Area**

A. *Definition:* The sum of all areas on all floors of a building required for physical access to some subdivision of space, whether physically bounded by partitions or not.

B. *Basis for Measurement:* Circulation area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met.

C. *Description:* Included should be, but is not limited to, public corridors, fire towers, elevator lobbies, tunnels, bridges, and each floor's footprint of elevator shafts, escalators and stairways. Receiving areas, such as loading docks, should be treated as circulation space. Any part of a loading dock that is not covered is to be excluded from both circulation area and the gross building area. A loading dock which is also used for central storage should be regarded as assignable area and coded as central storage (730). Also included are corridors, whether walled or not, provided they are within the outside facelines of the buildings to the extent of the roof drop line.

D. *Limitations:* Deductions should not be made for necessary building columns and minor projections. When determining corridor areas, only spaces required for public access should be included. Restricted access private circulation aisles used only for circulation within an organizational unit's suite of rooms, auditoria, or other working areas should not be included.

6. **Mechanical Area**

A. *Definition:* The sum of all areas on all floors of a building designed to house mechanical equipment, utility services, and shaft areas.

B. *Basis for Measurement:* Mechanical area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than six-foot, six-inch clear ceiling height unless the criteria of a separate structure are met.

C. *Description:* Included should be mechanical areas such as central utility plants, boiler rooms, mechanical and electrical equipment rooms, fuel rooms, meter and communications closets, and each floor's footprint of air ducts, pipe shafts, mechanical service shafts, service chutes, and stacks.

D. *Limitations:* Deductions should not be made for necessary building columns and projections. Areas designated as private toilets are not included.

7. **Net Usable Area**

A. *Definition:* The sum of all areas on all floors of a building either assigned to, or available for assignment to, an occupant or specific use, or necessary for the general operation of a building.

B. *Basis for Measurement:* Net usable area is computed by summing the assignable area and the nonassignable area.

Measured in terms of net usable square feet (NUSF),

Net Usable Area = Assignable Area + Nonassignable Area.

C. *Description:* Included should be space subdivisions of the ten assignable major room use categories and the three nonassignable space categories.

D. *Limitations:* Deductions should not be made for necessary building columns and projections. Areas defined as structural should not be included.

8. **Structural Area**[8]

A. *Definition:* The sum of all areas on all floors of a building that cannot be occupied or put to use because of structural building features.

B. *Basis for Measurement:* Precise computation by direct measurement is not possible under these definitions. It is determined by calculating the difference between the measured gross area and the measured net usable area.

Measured in terms of area,

Structural Area = Gross Area - Net Usable Area.

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[8]Referred to as "construction area" in TR-50.

Appendix No. 2

Lists of Attendees at the Program Workshop Interviews

Listed below are the faculty and staff who attended the workshop meetings in November and December of 2007. In addition, we have added the attendees for the final Global Decision Maker's Meeting on 7/8/08. All personnel are Atlantic Cape Community College except where noted otherwise:

Strategy Meeting – 11/17/07

Ryan Losinno	D/H&K Architects
Robert Kumlin	D/H&K Architects
Art Wexler	
Louis Montefusco	
Ron McArthur	
Mark Streckenbein	

Academic Initiation Meeting – 11/28/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Mark Streckenbein	
Joe Rossi	
Bobby Royal	
Dorothea Dunayer	
Alison Blizzard	
Douglas Hedges	
Art Wexler	
Brittany Williams	
John Feldbauer	
Richard Perniciaro	
Louis Montefusco	
Carmen Royal	
Patricia Gentile	
Terry Sampson	
Kelly McClay	

Facilities - 11/29/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Tom Hughes	
Terry Sampson	
Mark Streckenbein	
Louis Montefusco	

Business Studies - 11/30/07

Robert Kumlin	D/H&K Architects
Daniel Thoren	
Ron McArthur	

Academy Culinary arts - 11/30/07

Robert Kumlin	D/H&K Architects
Bruce R. johns	
Connie LaMonaca	
Annmarie Chelins	

Arts and Humanities - 12/3/07

Robert Kumlin	D/H&K Architects
Cheryl Knowles-Harrigan	
Augie Nigro	
Ron McArthur	
Keith Forrest	
Rita Michalenko	

Enrollment Cluster Initiation Meeting - 12/4/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Carmen Royal	
Geryle Edwards	
Nancy Porfido	
Christine Gambora	
Aline Bennett	
Chris Hackett	
Tom Borucki	
Lisa Civens	
Louis Montefusco	
Linda McLeod	
John Mohr	
Linda DeSands	
Heather L. Peterson	
Paula Davis	

ESL - 12/5/07

Robert Kumlin	D/H&K Architects
Christina Saveage	
Ron McArthur	

Instructional Technology – 12/5/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Nick Ganaway	
Ron McArthur	

English – 12/6/07

Robert Kumlin	D/H&K Architects
Denise Coulter	
Ron McArthur	

Science & Math - 12/7/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
James Sacchinelli	
Marcia Kleinz	
Ron McArthur	
Godfrey Barlett	
Terri-Lynn Hamby	
John Stratton	
Barbara Heard	
Luis Motefusco	

Business Service – 12/7/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Kathy Landau	
Cathie Skinner	

Adjunct Development/FAS – 12/7/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
John Perry	
Ron McArthur	
Joe Cirigliano	
Avon Chapman	
Connie Walton	
Charlotte Frederick	

Security - 12/10/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Dr. Joseph Rossi	
Bill Keener	

CSI/Computer Science - 12/10/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Otto Hernandez	
Ron McArthur	
Louis Montefusco	

Social Sciences - 12/11/07

Robert Kumlin	D/H&K Architects
Ron McArthur	
Pat Kubaska	

Student Recreation - 12/12/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Chris Hackett	
Nancy Porfido	
Carmen Royal	
Kevin Doughty	
Hakeem Torian	
Aline Bennett	
Tom Borucki	
Ben Dailey	
Stephen Jennings	

Enrollment, Admissions, Testing Services – 12/12/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Heather L. Peterson	
Carmen Royal	
Chris Gamboa	
Linda DeSantis	

Food Services/Bookstore – 12/12/07

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Terry Sampson	
Cathi Adair	
Martha Lemcke	

Nursing - 12/13/07

Robert Kumlin	D/H&K Architects
Gerry Michelfelder	
Barbara Mottola	
Carol Mohrfeld	

Library/LAC/Tutoring - 12/14/07

Robert Kumlin	D/H&K Architects
Patrice Leatherberry	
Grant Wilinski	

STEM Planning Workshop - 2/20/2008

Robert Kumlin	D/H&K Architects
Jay Harper	Dean LAS, Rowan University
Luis E. Montefusco	
Ronald C. McArthur	
Peter Mora	
Richard Perniciaro	
Fred Snyder	University Relations – FAA, William J. Hughes Tech Center
Dennis Weiss	Dean Natural Sciences & Mathematics – The Richard Stockton College
Stanley Wirpsza	Architect, FAA, William J. Hughes Technical Center

Tech Team Meeting – 3/26/08

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Cathie Skinner	
Terry Sampson	
Richard Perniciaro	
Louis Montefusco	
Keith Forrest	
Louis Montefusco	

Global Decision Makers Meeting - 7/8/08

Robert Kumlin	D/H&K Architects
Ryan Losinno	D/H&K Architects
Louis Montefusco	
Paula Pitcher	
Ron McArthur	
Peter Mora	
Brittany Williams	
Cathie Skinner	
Carmen Royal	
Terry Sampson	
Bobby Royal	
Joe Rossi	
Mark Streckenbein	

Appendix No. 3

Campus Technology Advisory Committee Strategic Plan

Campus Technology Advisory Committee
Strategic Plan

September 24, 2007

Introduction

Atlantic Cape Community College has a well deserved reputation of being a leader in academic technology in the State of New Jersey. Much of this is an outgrowth of the college's commitment to distance education delivered through the Internet. The current numbers indicated that approximately 20% of the classes are delivered online. The computing networks on campus have impacted every aspect of college life. The student information system, the financial resource system, and the human resource system define much of how we do our daily business.

The reliance on technology comes at a price. Systems are continually in flux and new versions of old systems are continually coming to the marketplace. Students of this generation are much more technologically literate than previous generations and they have come to expect that their college experience will continue that trend to prepare them for the careers of the future. Faculty and staff must have access to the latest technological advances and must be able to utilize them in their offices and classrooms.

Atlantic Cape Community college has lost its competitive advantage. When on-line classes were being developed, the concept was new and different. ACCC was on the forefront of innovation and was commended for its vision of Internet based instruction. The initial fire needs to be reignited. Other institutions, both public and for profit, are continually entering the market and ACCC is no longer in a unique position. The faculty report states that delays "...have now resulted in students having out-of –date, inadequate, or no access to mainstream, industry-standard technology experiences in their ACCC classes."

The core purpose of the institution has been identified as to "foster student learning." To achieve this, an appropriate technology strategy must be conceived and implemented. That is the goal of this group.

Membership:

Dr. Ronald McArthur-Dean of Instruction
Sherwood Taylor-Institute for Service Excellence
Dr. Rich Perniciaro – Dean, Administration, Planning and Research
Heather Peterson- Registrar
Pat Kubaska – Instructional Technology
John Feldbauer – Director, PC Services
Otto Hernandez – CIS faculty
Cathie Skinner – Dean, Finance

Vision Statement

The Technology Advisory Group provides recommendations to the college president in order to prioritize requests for technological advancements to assist in the process of teaching and learning.

Current Activities

A college-wide committee, chaired by Mr. Hedges, is currently in the process of sending out RFP to replace the existing MIS. Support for the existing software will cease in a few years. One primary concern expressed by users is to ensure no loss of functionality and integration of the SIS, FRS, and HRS activities. The replacement for the current version of WebCT has been identified and will be an upgrade to the existing program.

Specific Recommendations from users groups

The advisory group has identified the following concerns and recommendations:

Ultimately, every college building should be set up for wireless communications using the example of the Cape May campus. The preliminary targets on the main campus would include the K Building Lounge, the Student Life Center and the Cafeteria. In the Worthington Center the preliminary sites would be the Science Lab in the HPI, the Cafeteria, the Student Life Center and the LAC. It is the assumption of the group that the future STEM Building will include appropriate wireless technology.

ITV upgrades should be made to the Worthington Center and the D-131. The model used for H-116 is a good example of the goal.

The computer labs at the HPI need to be purchased and installed. The staff identifies the need for 21 flat screen monitors for room 104, 25 PCs plus a printer for room 105, a printer for room 103, 2 PCs and a simulation camera for room 108, a flat screen monitor and 13 wireless laptops for the Science Lab. Total estimated cost of $57,000.

Hire a data base administrator with MCSE (Microsoft Certified Systems Engineer) and MCDBA (Microsoft Certified Data Base Administrator) certification for the Instructional Technology Department. Use of the Venus Server has grown beyond the capability of the department with no person fully capable of maintaining its functions. In addition, the migration to the WebCT 6.1 is a challenging process that requires an additional server to operate. This person would have functional responsibility for the WebCT 6.1 (server) and the SQL (database server) and the Venus Server operations.

Establish a college-wide office and classroom computer replacement process that assures renewal on a regular basis.

A less pressing issue, but one that needs to be addressed, is the planning for the transition of the operating system from XP to VISTA. Although Mr. Hernandez indicated that there seems to be no immediate need to do so on the application level, the college needs to plan for it in FY 2009. There are indications that there are still problems with the VISTA operating system and the transition from XP should be done cautiously. A July 4, 2007 article from ZDNet.co.uk supports this contention.

Appendix No. 4

Campus Services Building Program

D/H&K
ARCHITECTS

February 1, 2008
Atlantic Cape Community College
Mays Landing Campus
Programming Phase 1
Interim Draft Review – Global Decision Makers

Campus Services Building

Campus Services Building

Date prepared: 12/19/07 (revised 1/21/08)

space name	Existing Spaces			Proposed space			notes
	total no.	n.s.a.	total	no. req.	n.s.a.	total	
Facilities Group	1	800					gross area, actual net area is slightly less
director's office	1			1	180	180	
assistant director's office	1			2	120	240	
secretary/reception	1			1	450	450	2 stations, 3 visitor seats
file room/plan storage	0			1	280	280	include work table and plotter
conference room	1			1	280	280	could share with security
storage	0			1	60	60	
total		**800**				**1490**	
Security Group	1	320					gross area, actual net area is slightly less
director's office				1	180	180	
shared sargeant's office				1	300	300	2 desks in cubicles behind counter
service counter				1	200	200	includes service desk and seating
reception/video surveillance				1	175	175	open office work station
total		**320**				**855**	
Shipping & Receiving							
truck dock	1	680		1	625	625	2bays; note1
dual charging station	0	0		1	100	100	at dock - for forklift & hand truck
recycle storage	0	0		1	25	25	stacks of cardboard - by dock
mail room	0	0		1	320	320	off dock sorting room; note 2
short term holding	1	560		1	400	400	room for 15 4x4 pallets & access
work room	1	100		1	120	120	incl. printer, fax, 1- 4 drwr. File
business manager office	1	100		1	100	100	
clerical stations				3	60	180	in cubicles one large room
total		**1440**				**1870**	
Print Shop							
print shop	1	**672**		1	1300	**1300**	double existing/ provide public window
Central Stores							
Bulk Storage	1	1500		1	**800**	**800**	4 pallets-accessible by fork lift, note 7
Secure Storage	1	240		1	375	375	note 3
Maintenance/custodial supplies	1	144		1	400	400	size to be verified by college
total		**1884**				**1575**	
Archives							
storage room	1	1440		1	1440	1600	note 4
work station	0			1	100	100	for archives storage manager
public access room	0			1	80	80	microfilm reader and computer
total		**1440**				**1780**	
Shared Facilities							
shower/changing room	0			1	75	75	
break/lunch room	0			1	220	220	note 5
locker area	0			1	100	100	daily coat storage not individual lkrs
totals						**395**	
Exterior facilities							
golf cart charging shelter	0			1	0	0	under overhead cover - note 6
total departmental net area		5884				7965	
Total (tare area @28%)		**8172**				**11063**	

Note 1 - will be enclosed dock from back of truck - provide weather shrouds and one leveler. Also provide ramp to grade and outside people door
Note 2 - includes space for mail machine and mail cart holding
Note 3 - includes 20 shelving units 4x7x2 and a small boxing area with work table and shelf
Note 4 - material is in bankers boxes on metal shelving units stacked 7 high (generates .70 sf/box) - we assumed 2057 boxes (college will verify) in addition to 160 sf short term storage in the new facility
Note 5 - includes table for 6, refrigerator, microwavecounter top and cabinet storage
note 6 - not included in area for estimating - is estimated under site improvements.
note 7 - the requested amount of 160 sf was increased to more closely reflect the existing area

prepared 1/29/08 revised (none)
PROGRAM COST EVALUATION
17 LINE SUMMARY TABULATION - requested/adjusted - includes TV studio

Campus Services Building

Construction Cost

1	Building Cost (11,063 sq.ft. x $ 255.63 /sf)	$	2,828,803.00	note 1
2	Site Development	$	200,000.00	
3	Equipment			included in line 1
4	Cost Premiums and Reductions (3%of lines 1)	$	84,864.09	
5	Contingency on Construction, Lines 1 through 4	$	-	note 2
6	Construction Cost Today (sum of lines 1 through 5)	$	3,113,667.09	
7	Escalation (to midpoint of construction)			note 3
	(9.34% x line 6)	$	290,816.51	
8	Total Costruction Cost (line 6 + line 7)	**$**	**3,404,483.60**	

Other Costs/ Project Costs

9	Fees	$	352,850.00
10	Off Site Improvements and Land Cost	$	-
11	Owner Equipment/Furnishings/Special Systems	$	162,000.00
12	Miscellaneous	$	20,000.00
13	Contingency (on other costs, lines 9 - 12) @10%	$	53,485.00
14	Other Costs (sum of lines 9 through 13)	$	588,335.00
15	Project Cost (sum of lines 8 and 14)	$	3,992,818.60
16	Owner's Contingency(for line 8 during construction)	$	153,201.76
17	Total Project Cost (sum of lines 15 & 16)	**$**	**4,146,020.36**

note 1 - see appendix for cost modeling by Faithful & Gould for this number
note 2 - in F & G cost modeling 10%design and 3% construction - included in line 1
note 3 - to midpoint of construction 2Q 2010

17 Line Program Cost Evaluation
Line by Line Contents & Assumptions (initial issue 2/1/08)

Campus Services Building – (11,063 sf)

Following is a line-by-line breakdown of the 17 Line Cost Evaluation. In addition to a general description, which is given first, there are specific breakdowns of the line contents for this particular program.

Line 1: Building

General: This is a cost per square foot of the model you are utilizing, multiplied by the number of square feet in the proposed project. Line 1 usually includes the following items; convention separates building cost from site cost at a line five feet from the exterior of the building

- Special Systems
  Conduit and wire management systems* for telecommunications
  Cabling for Telecommunications*
  Conduit and wire management systems for security systems*
  Cabling for security systems*
  Conduit and wire management systems* for computer systems
  Cabling for computer systems*
- Architectural, Structural, Mechanical, Electrical, Plumbing, Emergency and Life Safety Systems Control Systems, Elevators and Lifts
- Taxes on labor and materials
- Permit costs
- Labor and material bonds and completion bonds
- Equipment hookup
- Attic stock

The special systems listed above and marked with an asterisk (*) are a grey area; sometimes they are in the building cost; convention normally excludes them from the contract and places them as part of the project cost on either lines 11 or 12. In addition to the costs above, it is most useful to put any construction manager's fee in the building cost rather than on line 9. This is because the construction manager (CM) normally replaces the general contractor and awards subcontracts separately, replacing the general contractor's fee and markup with their fee. Indeed, many general contractors now have adopted the appellation of "construction manager" and offer their services for a fixed fee generally equivalent to the previously common general contractor's markup. Most often historical costs will be compiled to include the CM cost as part of the construction cost; if you are using a specific building as a model, however, it is best to ask if a CM was utilized and where the fee is in the data that you are using. If the CM was acting as a consultant only with a separate general contractor, the fee could be excluded from the historical cost. If this project will utilize a CM in a similar and separate consultant capacity, the fee should be added to line nine rather than being included in line one.

This Building Program
All of the items included in this number are listed above. In this particular instance we have estimated the base building cost on line 1 to be **$255.63/sq, ft**. The cost of the IT/telephone cabling and servers/equipment is not included in this line and is to be found under line 11.

Line 2: Site

General: This is an evaluation of the present cost of the proposed site improvements, often a combination of cost per acre for various functions (grading, parking, landscaping, etc.) added to the best estimate of utilities. Utilization of a rule of thumb (a percentage of the building cost) as related to similar projects or the model can work as a last resort when combined with a premium analysis.
Usually includes all development from a line five feet outside the building to the property line or, for the large site, the agreed contract limit line. Site costs include required utility connections at the property line:

- Site demolition, landscape, paving, grading, site lighting and electrical, utilities and utility structures, drainage structures and storm water systems, retention ponds, septic fields and sanitary structures, and other physical improvements
- Taxes on labor and materials
  In addition, environmental restrictions and requirements may require extensive modification of the subsoil (due to contaminants). Protection of features such as wetlands, natural habitat etc. can often add significant premiums to the project cost. These potentially fatal flaws are addressed in the cost evaluation workbook

This Building Program: All of the site elements are included in line 1 except for the service road extension – 30 ft. wide with lighting (425' x $400/lf = $170,000); paved truck approach apron and parking for 10 cars ($30,000); gravel yard and fencing and pedestrian sidewalk are included in line 1.

Line 3: Equipment

General This equipment normally defined as fixed equipment which will be purchased and installed as part of the general contract. Does not include portable equipment, disposables, consumables, or maintenance equipment:

- Prefabricated storage and shelf units
- Built-in cooler, refrigerator/constant temperature rooms
- Laboratory benches
- Fume hoods, biosafety cabinets, and exhaust hoods
- Kitchen and food service equipment
- Conveyor equipment
- Lockers
- Dust collectors, dust collection and disposal
- Auto lifts and garage equipment
- Installation of owner purchased equipment
- Library equipment and shelving
- Washers, sterilizers, laundry equipment, and fixed hospital equipment
- Built-in safes, vaults, and bank equipment
- Audiovisual (AV) equipment and theatrical equipment (except that many of the AV terminal devices are often included in line eleven)

This Building Program: All of these elements are included in line 1

Line 4: Premiums/Reductions

General: This line item identifies any special conditions, which will tend to make this building more or less economical than a typical building of this type. The identification, tabulation and evaluation of these data has been done in a cost analysis workbook developed by D/H&K The premiums/reductions are divided into 7 categories: Site, Off-site Utilities and Improvements, Building Program, Construction Operations, Construction Market, Client, and Time. Here are the identified additional premiums/reductions:

This Building Program: The amount on line 4 includes the cost of the building components required to achieve a Silver LEED rating. We have estimated this as 3% of line 1. We have not identified any other premiums/reductions at this time. Candidates for additional cost include storm water retention/water disposal structures but these are dependent on the approach required by the Pinelands Permit.

Line 5: Contingency on Construction

General: This a contingency to allow for scope changes during the development of the project – it quantifies our subjective perceptions on how much we know now about the scope of the project. At the programming phase there are three variables – complexity and uniqueness of the project; amount and reliability of cost focused information, and the amount of experience the owner and consultant can bring to the table

This Project: This is included in line 1 and is 3% for construction and 10% for design; please see the Faithful and Gould Conceptual Cost Model in the Appendix for more detail.

Line 6: Construction Cost Today

Self-explanatory

Line 7: Escalation

This is a determination of the anticipated cost increases over time. It is normally calculated to the mid-point of construction. **For this project**, the rate of escalation has been determined by the project cost estimator as 9.34 % (2Q09) more than the cost on 4Q 2007

Line 8: Total Construction Cost

This is the evaluation of what the construction cost will be when the project is complete. It is a prediction of the bid price plus the cost of changes (not including the owner's additions to the project scope) during construction. The cost of changes is normally assumed to be 3 percent of the bid cost for new construction, but could be considerably more for remodeling and retrofit work. It should be noted that the next project cost determination, the schematic design budget estimate, usually defines this figure differently as the cost at the bid table.

Other Costs/Project Costs

Normally the costs below line 8, the total construction cost are of no concern to the programming team and are completed by the client. For many programs the information below line 8 is extremely confidential. The reason for the inclusion of the material below line 8 is to be sure the client has included adequate funding for the project

Line 9: Fees

General: Includes all design and consulting services necessary to bid and/or build the facility. It does not usually include construction management fees unless the construction manager is acting on a consulting or inspection services only basis and, in addition, there is a general contractor.

- Architectural/Engineering*
- Legal
- Survey*
- Materials Testing* – including concrete, steel, fireproofing, etc. and MEP system test and balance
- Building Commissioning*
- Geological testing and report*
- Cost consultant*
- FFE design & construction*
- Programming consultant*
- Specialty consultants (asbestos, acoustic, audio-visual, IT*, vibration, kitchen. theatrical, lighting, environmental, commissioning*, LEED*, etc.)
- Financial

This Project: All of the consultants we expect to be required for this project are marked with an asterisk on the list above. An asbestos consultant may be needed to determine presence and remediate if necessary. The architect may choose to add a lighting and landscape consultant to his team but these consultants are usually included within the architect's basic fee.

Line 10: Off Site Improvements/Land Cost

General: This would include all utilities and road improvements required by the local municipality. Often there are trade-offs required to obtain permits such as the deeding of easements or rights-of way, the building of public facilities, land for neighborhood schools or parks, etc. The cost of these improvements should be included in the project cost by the client to get a true picture of the project cost.

This Building Program: there are no costs in this category

Line 11: Owner Equipment/Furnishings/Special Systems

General: This category of cost should be compared with Line 1, just to be positive some things do not slip through a crack. This category normally includes the following items:

- Computer equipment/Office equipment*
- Connection and installation of portable and semi-portable equipment*
- Disposables and consumables
- Portable Equipment (electrical plug or utility quick disconnect)*
- Owner purchased process, research, or factory equipment

- Furniture and furniture installation including open office partition systems and their wiring from a permanent electrical and data outlet*
- File cabinets (even if built-in)
- Furnishings and loose accessories
- Indoor plants and containers
- Artwork
- Semi-portable equipment (copy machines, telex, or FAX)
- Printing or reproduction equipment
- Portable dishwasher, small ware, flatware, trays, and portable cooking and storage equipment
- Portable laboratory and library equipment
- Books
- Audio Visual/ Classroom Technology*
- Security system, telecommunication system, and data system wiring, including terminal devices *
- Devices that serve dedicated non-building equipment even though permanently attached; examples would include machine controllers and regulators, electrical current modification devices etc.
- Trash collection equipment including compactors, collection bins and containers*

This Project: The items included in this project are marked with an asterisk. Components of this number include furnishings @ $110K, computers @$13K, and wiring and conduit for security and IT @ $3.50/sf. x 11,063 = $39K.

Line 12: Miscellaneous

General: this line item normally includes soft costs related to the project; the amounts vary widely and are often dependent on how the owner calculates direct and indirect costs.

- Owner's insurance
- Owner's administrative costs
- Builders Risk Insurance
- Training of operations personnel
- Interim and final financing
- Utility cost after permanent connection
- Moving and relocation costs

This Building Program: we have allowed $20,000 for these items in the cost estimate; most of it is for insurance costs and moving costs. The University should review these items and costs attached to them – some of these items may not be included in a building budget as a matter of policy and there may be other items, which are not listed.

Lines 13 through 17: Totaling the Results

General: The operations to total up the estimated project cost are self-explanatory with the exception of line 16 which is the contingency on the construction cost. In the proposed format, this line item is composed of two elements: 1) The first component of this amount should be the amount of money that the clients wish to have in their pockets as they walk away from the bid table; it is used to pay for errors, conflicts and omissions on the architect's and engineer's

documents, unforeseen site conditions, and minor changes or additions by the client. For new construction this should be in the 3-5 percent range, for renovation it should be no less than 7 percent and for extremely old buildings with vague documentation it may be appropriate at 15 percent or more and, 2) a contingency for any nagging doubts that cannot be quantified, the extra cushion when the project has an absolute and fixed cost limit, accommodation of a volatile construction market, or the accommodation of a mandatory contingency policy.

This Building Program: We have assumed line 16 to be 4.5% of the building cost to allow for errors and omissions, existing underground conditions, and unexpected discoveries.

C: documents 2007/07010/schematic program document/Program cost evaluation linebyline Campus Services 1-30-08

ATLANTIC CAPE COMMUNITY COLLEGE
CAMPUS SERVICES BUILDING
VINELAND, NEW JERSEY
CONCEPTUAL COST MODEL

FAITHFUL+GOULD

COST SUMMARY

New Construction GSF: 11,063

#	Description	Sub-Total $	Total $	$/SF	% of Total
1.00	Foundations		91,069	8.23	4.17%
2.00	Basement Construction		52,564	4.75	2.41%
3.00	Superstructure		263,787	23.84	12.08%
4.00	Exterior Closure		391,084	35.35	17.91%
5.00	Roofing		90,827	8.21	4.16%
6.00	Interior Construction		140,573	12.71	6.44%
7.00	Staircases		-	-	0.00%
8.00	Interior Finishes		103,069	9.32	4.72%
9.00	Conveying Systems		-	-	0.00%
10.00	Plumbing		84,727	7.66	3.88%
11.00	HVAC		313,837	28.37	14.37%
12.00	Fire Protection		46,959	4.24	2.15%
13.00	Electrical		253,762	22.94	11.62%
14.00	Equipment		101,000	9.13	4.63%
15.00	Furnishings		11,063	1.00	0.51%
16.00	Special Construction		-	-	0.00%
17.00	Selective Building Demolition		-	-	0.00%
18.00	Site Preparations		76,703	6.93	3.51%
19.00	Site Improvements		71,496	6.46	3.27%
20.00	Site Utilities		57,156	5.17	2.62%
21.00	General Requirements		33,716	3.05	1.54%
	Sub-Total Direct Cost		**$ 2,183,395**	**$197.36**	**100%**
	Design Contingency	10.00%	$ 218,339		
	TOTAL DIRECT COST		**$ 2,401,734**	**$217.10**	
	Construction Contingency	3.00%	$ 72,052		
	Subtotal		**$ 2,473,786**		
	General Contractor's General Condition's	8.00%	$ 197,903		
	Subtotal		**$ 2,671,689**		
	CM's Insurance	1.50%	$ 40,075		
	Subtotal		**$ 2,711,764**		
	Bonding	1.25%	$ 33,897		
	Subtotal		**$ 2,745,662**		
	GC/CM's Fee	3.00%	$ 82,370		
	Subtotal		**$ 2,828,031**		
	TOTAL CONSTRUCTION COST		**$ 2,828,031**	**$255.63**	
	Escalation, Const Mid Point 2Q '09	9.34%	$ 264,260		
	Subtotal		$ 3,092,292		
	TOTAL CONSTRUCTION COST W/ESCALATION		**$ 3,092,292**	**$279.52**	

Appendix No. 5

Tabulation of Computers & AV Tech Kits for Perkins Grant Funds

Tabulation of computers and technical kits for Perkins Grants

First issue 4/16/08 (draft program)

By Building	computers	classrooms	notes
Project #2 STEM building	120	8	computers include 3 math labs
Project #3 A building	159	8	
H Building	66	2	not include TV studio equipment
K building	1	0	
B building	0	0	
Project #4 C/J building	32	0	includes 20 computers for cyber café'
Total	378	18	
cost computers	378 x $1500 =	$567,000	note 1
cost classroom A-V kits	18 x $25,000 =	$450,000	note 2
total cost allowable (Perkins Grants)		$1,017,000	
total cost budgeted in schedule		$1,000,000	

note 1 the College presently pays $1400/station; we have used $1500 to accommodate escalation - (computer prices stay the same over time as technology improves)

note 2 the prices of these A-V kits stay the same over time (projector & smart board cost the same)

Appendix No. 6

Strategy & Costs Related to Full Time Construction Administration

Issue: The College does not have adequate personnel to administer these projects during construction, yet there needs to occur continuous site presence to assure quality of construction and coordination of the College's administrative and operational needs related to construction.

Objective: Provide additional services to fulfill this need as required

Concept: The College has determined that they would require a full time construction administrator for projects #2, #3, and #4/5/6 and wishes to include the cost of these services in the cost evaluation for each of these projects.

Discussion: Although it is the intent of the College to award the contract for each of the projects to a General Contractor, the full time administrator(s) are required because the projects will involve separate contracts for materials testing, commissioning, IT, AV, furnishings, and owner purchased equipment.

There are a number of ways these services could be provided – here are the likely candidates:

1. Hire as a college employee (an) individual(s) to perform the services
2. Engage a Construction management firm to provide the services
3. Have the Architect provide these services as additional services
4. Have Atlantic County provide the personnel through a County Services agreement.

The scope of services required will be as follows:

1. **For Projects #2 and #3, the STEM Building and renovations to A, H, and K (the academic complex) one full time representative will be required. The term of this project representative will be 3 years and 6 months** – 3 months before construction begins on STEM (approximately July 1, 2011) to review the construction documents, and assist in the preparation of bidding documents and approximately 3 months after the completion of the academic complex (December 31, 2014) for project closeout, punch lists, furniture installation, relocation coordination, etc.)[51]
2. **A second full time representative will be required for projects #4 & #5**, the new student center, renovations to building J/C, renovations to the Gym and miscellaneous improvements. **The term of this project representative will be 2 years and 3 months.** These services will also start 3 months before construction begins (April 1, 2012) and conclude 3 months after (July 1, 2014)

[51] Project #2, Stem and #3 may be awarded as 2 separate contracts – this has no effect on these calculations as the amount of additional work could be handled by the same administrator- the cost evaluations for these projects are separated in the text. In addition, for the Architect strategy the times of engagement will be reduced to the actual construction time.

The costs of these services are difficult to calculate exactly as the primary costs are the salaries of the individuals and these fluctuate more according to need and availability than to inflation or the passage of time. If there is lots of construction going on the cost will be higher. For all salaries, we have assumed a salary of $85,000/year today's cost and escalated the salary at 6% compounded to equal the recommended construction cost escalation – we believe this is modestly conservative. Here are the estimated costs for these services for each of the strategies above:

Strategy #1: Hire as a college employee an individual(s) to perform the services

Project #2/3: The benefits markup for the employee is about 30% and the escalation to midpoint of construction for both projects is 36.7% - (85K x 1.3)(3.5)(1.367) = 528.7K In addition, we estimate that ½ time secretarial support will be required for the duration of the project (35Kx.5)(1.3)(3.5)(1.367) = 109K. In addition there will be equipment and utility costs – allow 20K[52]. **Total cost estimated: $657,700.00**

Project#4/5: The escalation to midpoint for all projects is (2Q13) or 38.7% - (85Kx1.3)(2.25)(1.387)= 344.8K. In addition, we estimate that ½ time secretarial support will be required for the duration of the project (35Kx.5)(1.3)(2.25)(1.387) = 54.6 K In addition there will be equipment and utility costs – allow 15K additional (secretarial help may be the same person for both projects). **Total costs estimated: $414,400.00**

Strategy #2: Engage a Construction management firm to provide the services

Project#2/3 will have a full time representative for the duration of the project (3 years) and for 2 months at either end and ½ time for the 3rd month before and after. The Construction Manager will require $20K for preconstruction services, and $30K for post substantial completion services and $20K/month for the full time administrator, equipment and secretarial support: (36 x 20) + 50 = 770K **Total costs estimated: $770,000**

Project#4/5 will have a full time representative for the duration of the project (2.25 years) and for 2 months before and after. The Construction Manager will require $20K for preconstruction services, and $20K for post substantial completion services and $20K/month for the full time administrator, equipment and secretarial support: (27 x 20) + 40 = **Total costs estimated: $580,000**

Strategy #3: Have the Architect provide these services as additional services.

Project #2/3 will have a full time representative on the site for the duration of the project (3 years) the representative will not be required one month before the project and one month after substantial completion. The cost of the

[52] There are no office space costs as both projects will require the general contractor to provide a trailer for the on-site representative.

representative will be 85K x 2.0 markup for benefits/administration and office support. To reduce the cost we assume that ¼ of the representatives time will be spent on coordination, shop drawings and other tasks that are considered part of the architect's construction administration services; therefore the salary will be reduced by 25% to compensate for this.Approximately ½ time of secretarial support will be required. Calculating: (85x2.0)(3.17)(1.367)(.75) = 552.5K for the administrator and (35x2.3)(3.08) (1.367)(.5 half time) = $169.5K for secretarial support. **Total cost is $722,000.00**

Project #4/5 will have a full time representative on the site for the duration of the project (2 years) the representative will be required one month full time before the project and one month after substantial completion. The cost of the representative will be 85K x 2.0 markup for benefits/administration and office support. To reduce the cost we assume that ¼ of the representatives time will be spent on coordination, shop drawings and other tasks that are considered part of the architect's construction administration services; therefore the salary will be reduced by 25% to compensate for this. Approximately ½ time of secretarial support will be required. Calculating: (85x2.0 markup)(2.2 years)(1.387 escalation)(.75 full time) = 389 K for the administrator and (35x2.3)[53](2.08) (1.387)(.5 half time) = $116K for secretarial support. **Total cost is $505,000.00**

Strategy #4: Have Atlantic County provide the personnel through a County Services agreement.The cost and markups for this type of agreement is not known but will probably be close to that of the construction manager.

To determine the cost evaluation line item cost for these services we have taken the average cost for all three strategies; we have then distributed these costs **(bold numbers)** by project to the various cost evaluations.

Strategy	Cost 000 Project 2/3	Project 2	Project 3	Project 4/5
College empl.	658	466	192	414
CM	770	547	223	580
Architect	722	513	209	505
County	-	-	-	-
Average	717	**509**	**208**	**500**

[53] The overhead rate has been increased to allow that the secretary is housed in the architect's office.

Appendix No. 7

Spread sheets for FEES, Lines 9 of the Cost Evaluations

By Projects:

Project No. 1	Ring Road (breakdown not required or presented)
Project No. 2	STEM Building
Project No. 3	A Building H Building (computer labs only)
Project No. 4	Student Center & Renovations to C/J Buildings
Project No. 5	E Building (breakdown not required or presented) H Building (TV Studio)

Facility Program Phase 1
Building A Renovations

Spread Sheet for Fees - **Line 9 Cost Evaluation**

PROJECT #2 - STEM Building

$13.5 million construction cost; $17 million project cost; mid point const. 3Q 2012
escalation @ 32.7%

A/E fees basic services	$	1,215,000.00	9% construction cost
A/E fees additional services			
LEED Certification	$	334,000.00	1.9% of construction cost (silver)
IT design contract	$	21,000.00	15% of IT costs
AV design contract	$	20,000.00	10% of cost
Furnishings	$	28,400.00	10% of furnishings cost
Lighting	$	-	included in A/E basic fee
Acoustical	$	-	not required
Asbestos Removal	$	-	not required
Kitchen Design	$	-	
Laboratory Cosultant	$	-	included in A/E basic fee
Materials testing	$	65,000.00	
Survey	$	18,000.00	
Commissioning	$	90,000.00	
Full time CA	$	509,000.00	see appendix for breakdown
Geological Testing	$	12,000.00	
Cost Consultant	$	25,000.00	
Mechanical test & balance	$	45,000.00	
Total	**$**	**2,382,400.00**	

C:documents 2007/07010/fees line 9 cost evaluations 5-12-08

Issued with draft program 5/12/08; revised 8-12-08
Facility Program Phase 1
Building A Renovations

Spread Sheet for Fees - **Line 9 Cost Evaluation**

PROJECT #3 - Renovations to Building A (academic complex)

A/E fees basic services	$	325,000.00	12% construction cost
A/E fees additional services			
LEED Certification	$	-	not certified
IT design contract	$	9,000.00	15% of IT
AV design contract	$	20,000.00	10% of AV
Furnishings	$	52,000.00	10% of furnishings estimate
Lighting	$	-	in architectural
Acoustical	$	-	only in TV studio (see below)
Asbestos Removal	$	-	not required
Kitchen Design	$	-	not required
Laboratory Consultant	$	-	in A/E basic services
TV studio design consultant	$	-	in project #5
Materials testing	$	-	allowance (renovations only)
Survey	$	-	not required
Commissioning	$	30,000.00	
Full time CA	$	208,000.00	see appendix for breakdown
Geological Testing	$	-	not required
Cost Consultant	$	15,000.00	
Mechanical test & balance	$	25,000.00	
Total	**$**	**684,000.00**	note 1

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Facility Program Phase 1
Building A Renovations

Spread Sheet for Fees - **Line 9 Cost Evaluation**

PROJECT #3 - Renovations Building H

A/E fees basic services	18000	
A/E fees additional services		
LEED Certification	0	not LEED rated
LEED design premiun	0	not LEED rated
IT design contract	3100	
AV design contract	5000	
Furnishings	7200	
Lighting	0	
Acoustical	0	
Asbestos Removal	0	
Kitchen Design	0	
Laboratory Cosultant	0	
Materials testing	0	
Survey	0	
Commissioning	2000	
Full time CA	0	included in building A
Geological Testing	0	
Cost Consultant	2000	
Mechanical test & balance	4700	
Total	42000	

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Facility Program Phase 1
Building A Renovations

Spread Sheet for Fees - **Line 9 Cost Evaluation**

PROJECT #4 - Student Center & Renovations to Buildings C/J

$6.16 million construction cost; $8.61 million project cost;mid point const. 2Q 2013 escalation @ 38.75%

A/E fees basic services	$	554,500.00	9% construction cost
A/E fees additional services			
LEED Certification	$	92,502.00	1.9% of const. cost (silver)note 1
IT design contract	$	7,500.00	15% of IT cost
AV design contract	$	15,000.00	
Furnishings	$	24,500.00	10% of furniture cost
Lighting	$	-	included in A/E fee
Acoustical	$	9,000.00	dining & public spaces only
Asbestos Removal	$	7,000.00	survey only of C/J
Kitchen Design	$	43,000.00	10% equipment cost
Laboratory Consultant			
Materials testing	$	45,000.00	
Survey	$	15,000.00	
Commissioning	$	50,000.00	
Full time CA	$	500,000.00	see appendix breakdown
Geological Testing	$	10,000.00	
Cost Consultant	$	15,000.00	
Mechanical test & balance	$	30,000.00	
Total	**$**	**1,418,002.00**	

note 1 the calculation for the design premium is based on new construction only which is 79% of the construction cost or $4.87 million

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Facility Program Phase 1
Building A Renovations

Spread Sheet for Fees - **Line 9 Cost Evaluation**

PROJECT #5 - Building H - TV Studio

A/E fees basic services	90000	
A/E fees additional services		
LEED Certification	0	not LEED rated
LEED design premiun	0	not LEED rated
IT design contract	3100	
AV design contract	3000	
Furnishings	1200	
Lighting	0	
Acoustical	0	
Asbestos Removal	0	
Kitchen Design	0	
Laboratory Cosultant	0	
TV Studio Design	150000	
Materials testing	0	
Survey	0	
Commissioning	5000	
Full time CA	0	included in other buildings
Geological Testing	0	
Cost Consultant	4000	
Mechanical test & balance	6000	
Total	262300	