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III. SIGNATURE SHEET

1. Educational Specifications contained in this document have been developed in accordance with the statutory requirements of the State University System of Florida as outlined in paragraph 4 of Standard Practice 00-0000-3-04-13:

ROBERT W. GRIFFITH, R.A., A.U.A.
DIRECTOR OF PLANNING
REAL ESTATE DEVELOPMENT AND PLANNING

Date: 11/13/05

2. This document is hereby recommended by the appointed University Building Program Committee:

GAUTAM SEN
ASSOCIATE DEAN, COLLEGE OF ART & SCIENCES

Date: 11/21/08

3. Information Technology and Communications Resource Specifications contained in this document have been developed in conformance with the requirements of Chapter 282, Florida Statues, and University standard practices:

MIN YAO
VICE PRESIDENT & CIO
UNIVERSITY TECHNOLOGY SERVICES

Date: 12/3/08

4. This document is hereby approved and recommended by Real Estate Development and Planning.

JOHN CAL
ASSOCIATE VICE PRESIDENT
FACILITIES MANAGEMENT

Date: 11/17/08

5. This document is hereby approved by the Division of Business and Finance.

VIVIAN SANCHEZ
CFO & SENIOR VICE PRESIDENT
DIVISION OF BUSINESS & FINANCE

Date: 12/23/08

6. This document is hereby approved by the Office of the Provost - Academic Affairs

RONALD M. BERKMAN
EXECUTIVE VICE PRESIDENT & PROVOST

Date: 12/23/08

7. This document is hereby approved and recommended by the University.

MODESTO A. (MITCH) MAIDIQUE
PRESIDENT, FLORIDA INTERNATIONAL UNIVERSITY

Date: 12/24/08
III. SIGNATURE SHEET (continued)

FACILITY PROGRAM COMMITTEE

This building program represents the University’s requirements for the development of the Science/Graduate Classroom building. It is a comprehensive effort of the members of the Building Program Committee who have each contributed, by drawing from their expertise and respective responsibilities, the essential information required by the architects and engineers to conceptualize and develop the project. This committee will monitor the development of the design and assist the design Architects/Engineers and Landscape Architects by refining details and clarifying any ambiguities herein in a manner consistent with this program. Coordination of program requirements (compatibility, standards, finishes, utility connections, equipment, etc.) and scheduling throughout the duration of the project will be maintained by the University’s Facilities Construction Department.

The members of the Program Committee are:

Chairperson: Gautam Sen, Associate Dean, College of Arts & Sciences

Members:
Alejandro Barbieri, Assistant Professor, Biology
Bernard Gerstman, Professor, Physics/Senate Research Council
Andres Gil, Associate Vice President, Office of Research
Gloria Jacomino, Director, Academic Space Management
Kathleen (Kelly) Rein, Associate Professor, Chemistry
Jennifer Mwaisela-Rose, Associate Vice President, Risk Management & EHS
Joe Leigh Simpson, Executive Associate Dean of Academic Affairs, College of Medicine

Ex-Officio:
Associate Vice President, Planning & Institutional Effectiveness
Assistant Vice President Business & Finance / Facilities Management
Associate Director, Facilities Management/Operations
Vice Provost & CIO, Information Resource Management
Chairperson, Faculty Senate
Ad Hoc Building and Environmental Committee
Associate Director, Facilities Management/Utilities
Director, Auxiliary Services
Director, Purchasing
Director, Facilities Planning
Director, Facilities Operations Analysis
Director, Facilities Management, Minor Projects and Construction
Senior Project Manager

Outline Program compiled by:
Jose A. Rodriguez, RA
Director, Facilities Operations Analysis
IV. INTRODUCTION

To support growing enrollments and expanding science programs, Florida International University is in need of considerable science specific classroom, laboratory and offices at University Park. Many of these classes are being taught in classrooms that cannot meet the demand placed on the University by the student and professional markets.

This facility will provide a home for Graduate level classes that are more technology dependent than many of the undergraduate counter parts. The vision for many of our graduate programs can be described as premier providers of graduate professional education and research in both a national and international environment. It is because of that vision that we are planning to incorporate an interdisciplinary sciences classroom building into our building inventory.

The Science Classroom Complex (SCC) is to be designed to provide flexible laboratory space serving multi-disciplinary research programs which may include Arts and Sciences, Engineering, Informatics, the College of Medicine, the Robert Stempel School of Public Health, and the College of Nursing and Health Sciences.

The complexity, significance and importance of the development of the Academic Health Sciences Center represent a critical phase in the growth of the University. As depicted in the Master Plan of the Academic Health Sciences Center, the SCC constitutes a critical and integral component in the development of the Center.

The design team selected for this commission will be responsible for the development of a building program for the project, the design and development of contract documents, bidding, and construction administration services related to the project where the construction delivery method shall be Construction Management at Risk.

In recognition of the University’s commitment to sustainability practices and the inherent complexity of this building type, this Project will be designed and built to meet the USGBC’s LEED-NC “Certified” rating level at a minimum.

The size of the SCC is projected at approximately 121,000 gross square feet. The schedule envisions construction commencing in 2010 with completion in Spring 2012. The construction budget, inclusive of site work costs, is expressed in as approximately $35.3M at the time of writing of this program.
V. ACADEMIC PLAN

The SCC will provide the needed Classrooms required for the teaching of Science in specialized environments. The University has been the recipient of several large grants having a science education outreach component contributing to the increased demand for our science classroom inventory.

The building program calls for five critical elements to serve as the foundation for the design of this facility:

- Provide top-rated graduate teaching/instructional environments where technology is seamlessly interwoven into a “hands-on” learning experience.
- Foster collaborative interdisciplinary interaction, education, and research within disciplines and between departments. Create opportunities for structured as well as unstructured collaboration.
- Provide state-of-the-art laboratory and research space.
- Optimize the efficient use of laboratory and research areas integrating flexibility of these spaces permitting groups to expand and contract as needed.
- Provide cutting-edge core facilities capable of supporting present and future research trends and needs.

The SCC will feature components of specialized design capable of addressing the needs of new and existing graduate programs as well as research centers by multiple disciplines and graduate academic administrative offices. It shall support the work of research faculty and research teams including doctoral and master graduate students in the biomedical sciences.

The expectations call for an open architecture in the research laboratory setting. A consistent laboratory module readily adaptable with minimal movement of equipment is sought. Flexibility in the configuration and space allocation of cross-disciplinary teams is paramount. Amongst the labs contemplated in this facility are electron microscopy, with the associated complexity, isolation, and sensitivity to vibration.

Facilitating both structured and casual opportunities for interaction between faculty, research teams and graduate students is an essential attribute which the design must achieve.
VI. SPACE NEEDS ASSESSMENT

The SCC will house science specific instructional classrooms of various sizes and lecture halls. Teaching of the sciences has changed dramatically from a knowledge transfer mode to a more hands on approach. In response, this facility will also house discipline specific Teaching labs.

It is anticipated that research will be conducted by multidisciplinary teams under oversight of the Office of Sponsored Research Administration (OSRA). Upperclassmen and graduate students are an integral part of the research team as is research a fundamental part of their education. Study areas will complement the laboratories. This facility will include wet bench space for researchers as well as research support space. An open lab modular bay architecture is anticipated for the wet bench space to enable maximum flexibility in PI space assignment. Shared equipment and core support areas supporting open cluster groupings shall be centrally located. Special purpose spaces supporting high definition imaging and simulations, a small animal Vivarium, and Bio-Safety Level 3 facilities are included in the program.

The building will also house offices and computer space for faculty. Building support functions will also be included as Student Academic and Campus Support Services.

Many graduate programs are interdisciplinary in nature with student teams as an important part of the teaching pedagogy. Graduate study space must also be planned for. The facility will provide Technology centers where these teams can work, practice, and develop new ways to transfer knowledge.

Recognizing the future needs of the Academic Health Sciences Center (AHSC) the University envisions that the SCC will serve as a cornerstone for servicing common needs of future facilities which may include the Colleges of Arts & Sciences, Medicine, Nursing and Health Sciences, the Robert Stempel School of Public Health, the Florida Department of Health and an Ambulatory Medical Educational Center. A Data Center will be a fundamental part of the complex’s communication infrastructure providing the technology backbone for the AHSC. Research and Graduate education will employ different types of teaching methods. Simulations, 3D imaging, case study, teleconferencing and team teaching are a few of the many different teaching modalities. This facility will include rooms with these requirements.

Chem-Store, Scientific Receiving and Stock Room area will provide regulatory compliant management of scientific materials, equipment, and chemicals (including but not limited to flammable and hazardous chemical, biological and radiological materials). It will serve as the transit point for the receipt, temporary storage, tracking, distribution, and/or transfer to hazardous materials haulers for the Academic Health Sciences Center of such supplies and equipment. This area will require special construction provisions including service vehicle access, loading dock, security, emergency power and dedicated A/C support.
VII. ANALYSIS OF IMPACT ON MASTER PLAN

This project is included in the "Educational Plant Survey" recommendations of May 2006 and the 2000 – 2010 Campus Master Plan update.

In establishing an Academic Health Sciences Center (AHSC), the University commissioned Perkins and Will to develop a master plan in 2007-2008 outlining the major program growth for this sector over a five, ten and twenty year span. The plan envisions integrating the University’s College of Medicine, College of Nursing and Health Sciences, the Robert Stempel School of Public Health as well as the Florida Department of Health and an Ambulatory Medical Educational Center into more than a mere collection of buildings. The concept governing the AHSC is to develop a coherent and identifiable precinct which will enable the personal and highly interactive relationship between the individual educational, research and clinical components. As such, it defines buildings and spaces which foster integration and interaction amongst the users as well as with the academic campus and community.

FIU’s is seeking an integrated inter-disciplinary approach to education, training, research, and health care on campus and extending into the community. Through partnerships with local health care providers FIU seeks to be improving the quality and access to health care while providing educational opportunities to the region’s diverse population.
VIII. SITE ANALYSIS

The satellite image of the campus precinct, as it exists today, depicts the existing fabric and context of the proposed site. The critical adjacencies for the building's programs focus on required connectivity to other facilities. There will be a dynamic relationship between this building and the existing Chemistry/Physics Building (09CP) to the South, the new College of Nursing and Health Sciences (CNHS), and the existing Health & Life Sciences I & II complex housing the nascent College of Medicine.

The project will require a covered walkway connection to the existing Chemistry Physics building to the south and a fifth floor bridge connection linking the research labs at the College of Nursing to the adjacent OE buildings in a secured proposed loading and deliveries courtyard. Thus, all support traffic will be consolidated to this area.

The displayed site plan represents the proposed project boundaries in context with existing conditions and initial proposed development within the Academic Health Sciences Center. All construction work will be staged and scheduled to maintain safe and orderly campus operations, inclusive of vehicular traffic and pedestrian access to existing facilities.

The proposed building site for this new complex is a pivotal location adjacent to the new
College of Nursing and Health Sciences (CNHS) scheduled for completion November 2009.

Concurrent with this project, the University will be building a new Parking Garage No 5 to the north of the site. It is anticipated that construction will also commence during this time on the Department of Health complex. A new satellite chiller plant which will serve the AHSC complex will be built to the west of the existing Red Parking Garage (PG4), located immediately northwest of this site. Included in the planning stages at this time is an Ambulatory Care Clinic which will have a significant positive impact on the development of the new College of Medicine.

The project will be significant addition to the fabric of the University. It will be the “second building component” of the AHSC following the CNHS. As such, the university seeks to impart a consistency to the fabric and identity of the AHSC. The site selected will be a predominant entry point serving to channel pedestrian traffic entering from the parking garages to what is envisioned as an enclave with the CNHS bounded by the existing Chemistry/Physics Building. The complexity of the building program will require and challenge the designer to articulate and differentiate between open access lecture and classrooms and research / vivarium facilities while at the same time defining a welcoming entry point to the complex.

The selected firm will be required to give careful analysis and consideration not only to the programmatic needs of the building but to the adjacencies, circulation, access points, service corridors and interactions with adjoining facilities. The project will have a significant impact on existing pedestrian flows between the garage(s) and the campus during and after construction. Construction access to and staging areas servicing this construction site will represent a significant challenge to the design/construction team.

Existing desirable trees will be root pruned and relocated on campus prior to commencement of construction activities. Soil investigations on soil conditions, bearing capacity and percolation rates shall be determined by geotechnical engineer be retained by the selected firm. Soil borings shall further water table elevation and other site drainage criteria.
## IX. PROGRAM AREA

### Preliminary Outline of Program Spaces

<table>
<thead>
<tr>
<th>Spaces Types</th>
<th>Qty</th>
<th>Stations</th>
<th>Total</th>
<th>SF/Stations</th>
<th>NASF / Space</th>
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<td>120</td>
<td>15</td>
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<td><strong>TEACHING LABS</strong></td>
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<td></td>
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<td></td>
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<td>Fixed Station Teaching labs (Chemistry Biology Physics) &amp; Core Facilities</td>
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<td>24</td>
<td>120</td>
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<td>Open Station (Research) / Graduate Teaching Lab</td>
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<td>8</td>
<td>8</td>
<td>2,500</td>
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<td>Bridge connection to CNHS 5th level Research floor</td>
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<td>P3 Lab (Bio-Safety Level III lab)</td>
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<td>1,200</td>
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<td><strong>OFFICE / STUDY</strong></td>
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<td>Offices</td>
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<td>32</td>
<td>120</td>
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<td>10</td>
<td>150</td>
<td>1,500</td>
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<td>Conference rooms</td>
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<td>20</td>
<td>80</td>
<td>25</td>
<td>2,000</td>
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<td>Café and vending</td>
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<td>20</td>
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<td>15</td>
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<td>Student Gathering spaces</td>
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<td>Student Study Rooms w/ cubicles</td>
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<td>20</td>
<td>20</td>
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<tr>
<td>Graduate Study Spaces</td>
<td>4</td>
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<td>160</td>
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<td><strong>OTHER ASSIGNABLE</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Scientific Receiving/Supplies</td>
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<td></td>
<td>2,000</td>
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<tr>
<td>Haz/Mat</td>
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<td>3,000</td>
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<tr>
<td>Storage</td>
<td>25</td>
<td>25</td>
<td>250</td>
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<tr>
<td>Data Center (Server room)</td>
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<td>1,000</td>
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<td>Campus Support Services / Other Assignable</td>
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<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>75,341</strong></td>
</tr>
</tbody>
</table>

NASF (Net Assignable Square Feet)
The preliminary space outline, approximately 121,000 GSF, provides a generalized view of the proposed program space for the facility. This listing will be subject to further review, refinement and reconciliation against the Project Budget with the selected A/E team during the programming phase.

Net Assignable Areas are to be calculated using “inside to inside” surface measurements, (not center line dimensions).
X. UTILITIES IMPACT ANALYSIS

The Project Budget includes all site development associated with normal utility extensions and hook-ups, grading, walkways, service yard, landscape drainage system, bike rack (covered) area, plant materials, screen walls, outdoor work areas, lighting, and landscape furnishings (benches, tables with chairs, trash containers, etc.).

During the Programming Phase of the Project, the design team shall examine the potential impact of this project on existing infrastructures and services. It is the intent of the University to build a new Satellite Chiller Plant, sewer lift station, sanitary force main, domestic water supply upgrades to be built concurrently with this project. As such, an equitable portion of the underground chilled water distribution lines attributable to this project will be installed under this budget. The University has further coordinated the impact of this growth with the local utility company, Florida Power & Light. It is anticipated power can be delivered through the existing infrastructure to a new pad mounted transformer to be located on site.

The preliminary project budget includes approximately $2,295,000 dedicated to site development, campus infrastructure and extraordinary costs as follows:

**Sanitary Sewer System:** A new sanitary lift station and force main to be funded by PECO Infrastructure Funds under another project will provide service to this building and the AHSC. This project’s budget will cover a new gravity line to a location TBD.

**Water Distribution:** 12” water main extension and associated WASAD permit costs

**Electrical Service:** FPL to extend the high voltage underground service to a new pad mounted FPL transformer.

**Chilled Water System:** Chilled water capacity shall be provided by the proposed new satellite chiller plant. The project shall bear the costs of connection to the loop.

**Telecommunications:** Two new communication pull boxes and communication underground duct bank: 6 – 4” PVC connecting to existing banks

**Storm Water System:** Catch basins with exfiltration trench shall be provided at the new loading dock area, service drive, and all plaza and adjacent green areas due to poor percolation characteristics of site.

**Extraordinary Costs:** Compliance with HWV Hurricane Zone requirements as required by Florida Building Code for wind load requirements to the building envelope with consideration for enhancements (code+) to assure continuity of operations.

**Code + Features:** All roof top equipment and fume hood exhaust stacks shall be protected by perimeter shielding. All glazed assemblies shall be designed to larger missile impact criteria regardless of height. Emergency Generator shall be enclosed and designed to carry all critical research equipment loads, air handling equipment and selected air cooled chillers necessary to preserve research specimens.
<table>
<thead>
<tr>
<th>Projected Demand:</th>
<th>TBD by A/E team during programming phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected Consumption/year</td>
<td>TBD by A/E team during programming phase</td>
</tr>
<tr>
<td>Projected Consumption/year</td>
<td>TBD by A/E team during programming phase</td>
</tr>
</tbody>
</table>
XI. INFORMATION/COMMUNICATION RESOURCE REQUIREMENTS

Refer to Telecommunications Wiring Standards appendix “C”. General equipment/furniture requirements are noted in section IX - Program Area Summary, Functional Description of space Details. Detailed computer hardwire requirements and network linkage relationships will be established in the Furniture/Equipment expenditure plan which should be developed following completion of design development. The FIU Telecommunications wiring standards are designed to accommodate a maximum degree of flexibility in the arrangement of data and voice communications systems. Wiring and cabling as well as data / voice outlets are specified by space type and should accommodate all normal operations as identified in this program.
FLORIDA INTERNATIONAL UNIVERSITY
BUILDING STANDARDS
REVISED AS OF AUGUST 2007

APPENDIX "C" - STANDARDS FOR TELECOMMUNICATIONS FACILITIES

The purpose of this standard is to provide for the planning and installation of telecommunications facilities in new buildings and major renovations. This standard has been developed with little knowledge of the telecommunications equipment that subsequently will be installed. Therefore, the definitions included herewith are for generic telecommunications facilities that will support a multitude of rapidly changing telecommunications technologies in a multi-vendor and variable end user environment.

This standard recognizes three fundamental concepts related to telecommunications and buildings:

(1) Buildings are dynamic. Renovation, remodeling and upgrading are more the rule than exception. This standard takes into account that change will occur.

(2) Building telecommunications systems and media are dynamic. As time passes both telecommunications equipment and media change considerably. This standard recognizes this fact and the facilities prescribed herein are capable of supporting a vast array of telecommunications systems and media.

(3) Telecommunications is more than telephones. Telecommunications is inclusive of a variety of building systems including data systems, environmental control, security, audio, television, sensing, alarms and much more.

Above all, this standard recognizes a fact of fundamental importance: if a building is to be properly designed, built and provisioned for telecommunications systems, it is imperative that the telecommunications design be incorporated during the architectural design phase.

The FIU/UTS Infrastructure Department developed this document in accordance with industry specifications. It is the standard by which the University defines the physical facilities required for the provisioning of telecommunications systems for new buildings and major renovations to existing buildings. These specifications take into account the physical facilities such as the size and provisioning of telecommunications rooms, cable distance limitations, vertical and horizontal cabling considerations, number and size of conduits and numbers and types of information outlets. The general cabling requirements are not addressed; however, the "Telecommunications Wiring Specifications" which are produced after consultation with the building occupants include the detailed procedures and specifications for the wiring and installation of telecommunications systems for campus buildings. The "Telecommunications Wiring Specifications" are provided to FIU Facilities Management 90 days after completion of the project design phase.
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1.0 GENERAL

2.0 CABLE PATHWAYS
   2.1 INFORMATION OUTLETS C - 3
   2.2 CONDUIT C - 5
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   3.1 DESCRIPTION/DEFINITION C - 7

4.0 OUTSIDE PLANT C - 10
   4.1 DEFINITION DESCRIPTION C - 10
   4.2 MANHOLES C - 11

DRAWINGS
1.0 GENERAL

1.1 RESPONSIBILITY - It is the responsibility of the project architect/engineer to ensure the inclusion of the standards for building telecommunications facilities into the design and construction documents for new and major renovation projects.

1.2 REFERENCES - In addition to the specifications included herewith the architect/engineer is encouraged to refer to the following publications for guidance during the design of the communications infrastructure:


Electronic Industries Association, Telecommunications Industry Association (EIA/TIA) Building Telecommunications Wiring Standards.

NFPA's National Electric Code (NEC).

FIU/UTS Infrastructure Department.

1.3 COORDINATION - Prior to the start of any telecommunications related work, the contractor shall contact the UTS/Infrastructure Department to coordinate the installation.

2.0 CABLE PATHWAYS

2.1 INFORMATION OUTLETS

2.1.1 REQUIREMENTS - Specific requirements for information outlets for each room and each project must be coordinated with the building occupants at the onset of the design phase of major renovations and new construction projects. The architect/engineer for major renovation and new construction projects is cautioned that the Building Program for the project includes requirements, but may not be all-inclusive regarding communication facilities. Therefore, the project architect/engineer must work closely with the building occupant and the FIU/UTS Infrastructure Department to minimize the need for revisions and changes after the completion of the design phase.

2.1.2 FLOOR MOUNTED - The use of floor mounted information outlets is strongly discouraged as it does not allow for flexibility in furniture layout and inhibits future changes to the telecommunications system.

2.1.3 ELECTRICAL BOXES - Locations for information outlets must be equipped with a 4 in. X 4 in. X 2.5-in. electrical box equipped with a mudring sized for the installation of a standard duplex outlet.

2.1.4 MOUNTING HEIGHT - Electrical boxes installed for information outlets must be placed at the same level as the adjacent duplex electrical receptacles or at least fifteen (15) inches above the finished floor.

2.1.4.1 Electrical boxes installed for information outlets located above counters...
equipped with a splash back must be placed at 6 in. above the top of the counter. (Measure to the center of the outlet.)

2.1.4.2 Electrical boxes installed for information outlets located above counters not equipped with a splash back must be placed at 12 in. above the top of the counter. (Measure to the center of the outlet.)

2.1.5 FACULTY/ADMINISTRATIVE OFFICES must have a minimum of one (1) information outlet per designated occupant, however two (2) are recommended for furniture relocation of additional staff.

2.1.6 CLERICAL/STAFF OFFICES shall have a minimum of one (1) information outlet per designated occupant plus one (1) information outlet for every two (2) additional occupants.

2.1.7 SECRETARY/ADMINISTRATIVE ASSISTANT OFFICES shall have a minimum of one information outlet per designated occupant plus two (2) outlets per office or two (2) extra outlets per five (5) people.

2.1.8 CLASSROOM/LECTURE HALLS/Auditoriums shall have a minimum of one (1) to four (4) information outlets depending on occupancy size:

<table>
<thead>
<tr>
<th>Classroom Size (Student Occupancy)</th>
<th>Minimum Number of Outlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50</td>
<td>1</td>
</tr>
<tr>
<td>51-100</td>
<td>2</td>
</tr>
<tr>
<td>101-200</td>
<td>3</td>
</tr>
<tr>
<td>201 or more</td>
<td>4</td>
</tr>
</tbody>
</table>

2.1.8.1 The recommended location priority relationship for the information outlets must be: chalkboard/dry eraser board, lectern, projection booth/rear wall and remaining sides.

2.1.9 GRADUATE STUDENT OFFICES shall have a minimum of one (1) information outlet per designated occupant.

2.1.10 LABORATORIES shall have a minimum of one (1) information outlet per room; actual number may be more depending on function and occupant requirements.

2.1.11 CONFERENCE ROOMS shall have a minimum of one (1) information outlet per room. Rooms with more than 500 ft² shall have a minimum of two (2) information outlets installed.

2.1.12 STORAGE AREAS shall have a minimum of one (1) information outlet for rooms over 500 ft² and one (1) additional outlet for each additional 2000 ft².

2.2 CONDUITS

2.2.1 A 1 inch EMT conduit must be installed from each information outlet electrical box
and "stubbed" up above the ceiling level to cable tray. (Please see attached drawing, Fig. 2.2.1-A)

2.2.2 If fixed ceilings are installed cable trays cannot be used and conduit from information outlets must be "homerun" to the telecommunications room or cable tray.

2.2.3 The open ends of conduits and/or sleeves must be equipped with bushings to avoid damage to cable sheaths and must be readily accessible and not concealed within walls.

2.2.4 Telecommunications rooms contain the vertical cable riser space. Conduits and/or sleeves must be used to interconnect telecommunications rooms. The open ends of conduits and/or sleeves must be located a maximum of 3 in. from the wall and extend a minimum of 1 in. above the finished floor.

2.2.5 REQUIRED NUMBER - The minimum number of conduits, and/or sleeves interconnecting the telecommunications rooms must be determined as follows:

<table>
<thead>
<tr>
<th>Building Total (Square Footage)</th>
<th>Quantity of Conduits</th>
<th>Size of Conduit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 50,000 ft²</td>
<td>3</td>
<td>4&quot;</td>
</tr>
<tr>
<td>50,001 ft² to 100,000 ft²</td>
<td>4</td>
<td>4&quot;</td>
</tr>
<tr>
<td>100,001 ft² to 300,000 ft²</td>
<td>5-8</td>
<td>4&quot;</td>
</tr>
<tr>
<td>300,001 ft² to 500,000 ft²</td>
<td>9-12</td>
<td>4&quot;</td>
</tr>
</tbody>
</table>

2.2.6 PULL BOXES - A pull box must be installed in sections of conduit longer than 100 ft. or containing more than two 90-degree bends or if there is a reverse bend in the run.

2.2.7 Minimum requirements for installed conduit, such as support, end protection, and continuity, are found in appropriate electrical codes.

2.2.8 The inside radius of a bend in conduit must be at least 6 times the internal diameter. When the conduit size is greater than 2 in. the inside radius must be at least 10 times the internal diameter of the conduit.

2.2.9 PULL CORDS - All conduits must have a fish tape or pull cord, rated for 200 lbs. of pull force, and installed end-to-end.

2.2.10 ELEVATOR – A ¾" conduit must be installed from each elevator equipment room to the nearest telecommunication room or cable tray.

2.2.11 EMS – A ¾" conduit must be installed from each mechanical room “homerun” back to the nearest telecommunication room or cable tray.

2.2.12 FIREALARM - A ¾" conduit must be installed from the fire alarm panel to the nearest telecommunication room or cable tray.

Note: (1) Under no circumstances will flexible metallic conduit be used for any telecommunication wiring.

(2) Under no circumstances will any conduits be “daisy-chained"
2.3 CABLE TRAYS

2.3.1 Cable trays are rigid structures for the containment of telecommunications cables.

2.3.2 GROUNDING - Cable trays must be installed and grounded in accordance with the National Electric Code (NEC) and local requirements. (Please see attached drawing, Fig. 2.3.2-A)

2.3.3 TYPE - Cable trays must be of the 12-in. ladder type, equivalent to Wiremold, Part No. A060612, unless otherwise specified by the UTS Project Manager.

2.3.4 Cable trays must be installed above false ceilings and run down hallways and corridors providing a pathway for telecommunications cable from the information outlets to the respective telecommunications closet.

2.3.5 Cable tray installation must be coordinated with all work of other trades to avoid any interference. Cable trays must be installed such that they are not obstructed by other trades equipment, i.e. air conditioning ducts, electrical conduit etc. Cable trays must be easily accessible for the installation of cables and, future changes to telecommunications systems.

2.3.6 A minimum of 3-in. clear vertical space must be available between the top of the ceiling tiles and the bottom of the cable tray. A minimum of 12 in of clear horizontal space on each side of the cable tray must be available. Also, minimum of 6 in of clearance must be available between the top of the cable tray and any other utilities.

2.3.7 Under no circumstances, shall any other utilities pass within the distances specified in 2.3.6.

2.3.8 To avoid electromagnetic interference, all cable pathways must provide clearances of at least:

- 4 ft. from large motors or transformers.
- 1 ft from conduit and cables used for electrical power distribution.
- 5 in. from fluorescent lighting. Pathways should cross perpendicular to fluorescent lighting and electrical power cables or conduits.

3.0 TELECOMMUNICATIONS ROOMS

3.1 DESCRIPTION/DEFINITION

3.1.1 Telecommunications rooms must be dedicated to the telecommunications function and related support facilities. Telecommunications rooms must not be shared with
janitorial facilities or other trades especially with electrical installations other than those required for telecommunications systems.

3.1.2 Telecommunications room refers to any room where telecommunications facilities terminate and telecommunications system equipment is housed.

3.1.3 The term building Intermediate Cross Connect (IC) is used to indicate the telecommunications room where the campus backbone facilities enter the building.

3.1.4 The term Telecommunications Rooms (TR) is used to designate the telecommunications room required for the distribution of facilities to adjoining floors and areas exceeding distance limitations.

3.1.5 NUMBER OF ROOMS. There must be a minimum of one telecommunications room per floor and centrally located in the building, unless otherwise specified by the UTS Project Manager. Additional telecommunications rooms must be provided when:

(1) The floor area to be served exceeds 10,000 ft², or
(2) The horizontal distribution distance to the workstation exceeds 295 ft.

3.1.6 SIZING OF ROOMS. Telecommunications rooms must be sized as follows:

<table>
<thead>
<tr>
<th>Serving Area (net bldg. ft²)</th>
<th>Room Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000 ft²</td>
<td>10 ft. X 11 ft.</td>
</tr>
<tr>
<td>8,000 ft²</td>
<td>10 ft. X 9 ft.</td>
</tr>
<tr>
<td>5,000 ft² - less</td>
<td>10 ft. X 7 ft.</td>
</tr>
</tbody>
</table>

10 ft. X 7 ft. is the minimum size for telecommunications rooms.

3.1.7 Telecommunications rooms must be stacked vertically to provide for the installation of telecommunications facilities between floors. Telecommunications rooms must be interconnected as specified in section 2.2.5.

3.1.8 BACKBOARDS – All four walls must be covered with rigidly fixed 3/4 in. x 4 ft. X 8 ft. A-C plywood, preferably void free, capable of supporting attached equipment and painted with black fire retardant paint.

3.1.9 LIGHTING - Lighting must be a minimum of 50-ft. candles measured 3 ft. above the finished floor, mounted 8.5 ft. minimum above finished floor.

3.1.10 CEILINGS - False ceilings are not allowed in any Telecommunication Room.

3.1.11 DOORS - The door must be a minimum of 36 in. wide and 80 in. high, without doorsill, hinged to open outward and fitted with a lock.

3.1.12 KEYING - Access to all telecommunication rooms will be through one uniform master
key system. Facilities Management will establish the lock type to be used.

3.1.13 TREATMENT - Floors, walls, and ceiling must be treated to eliminate dust. Floors must be covered with VCT tiles.

3.1.14 ELECTRICAL REQUIREMENTS - Two dedicated 30 A, 110 or 208 V AC electrical outlets (L5-30R/120, L6-30R/208), each on separate circuits, must be provided for equipment power, unless otherwise specified by UTS Project Manager. In addition, a third 20A, 110 V AC circuit shall feed duplex outlets, which must be placed at 6 ft. intervals around the perimeter wall, at a height of 18 in above the floor. If emergency power (generator) is available, dedicated outlets must be connected to the emergency power system. Dedicated circuit outlets must be readily identifiable by using a different color outlet.

3.1.15 GROUNDING - Each telecommunications room must have direct attachment to the closest point in the building’s electrical service grounding electrode system. A Number 6 AWG solid conductor cable must be placed between the ground source and a bus bar of the type: Chatsworth Products, Inc. part number 13622-010 or equivalent.

3.1.16 SLEEVES/CONDUIT - Sleeves or conduit passing through the telecommunications room floor should be adjacent to the door with a minimum of 1 in. exposed above the finished floor. Sleeves and conduit must be no more than 3 in. away from the wall. Sleeves and conduit shall not be left open except during cable installation and must be properly fire stopped per the applicable codes.

3.1.17 FIRE PROTECTION - Fire protection of the telecommunications rooms, if required, must be provided as per applicable code. All conduits and cable trays penetrating any Telecommunications Rooms must be properly sealed with the appropriate fire stopping material, as per NEC and local fire codes.

If used, fire sprinklers shall not be water based. An optional gaseous system must be used.

3.1.18 AIR CONDITIONING - HVAC must be provided on a 24 hours per-day, 365-days-per-year basis. If the building system cannot assure continuous operation for large equipment applications, a stand-alone unit must be provided for the equipment room.

3.1.19 TEMPERATURE - The temperature and humidity must be controlled to provide continuous operating ranges of 64 degrees F to 75 degrees F with 30% to 55% relative humidity.

3.1.20 COLLOCATION OF OTHER TRADES - No water, sewer etc. pipes must be placed within or pass through the telecommunications rooms.

3.1.21 PLENUM AIR SPACE - All Telecommunications Rooms must be completely separated from Plenum air space in accordance with NEC and BICSI standards. (Please see 1.2 reference)

3.1.22 LOCATION OF ROOM - All Telecommunications rooms must be accessible
4.0 OUTSIDE PLANT

4.1 DEFINITION DESCRIPTION

4.1.1 All new building construction planning must provide for connection of the building to the campus communications infrastructure.

4.1.2 CONDUIT SIZE - All direct buried conduits used to connect to the University Telecommunications infrastructure must be 4" PVC, Schedule 40.

4.1.3 NUMBER REQUIRED - The minimum number of conduits connecting the building IC to the campus MC must be at least four four-inch (4 - 4") conduits. Note: More entrance conduits might be needed depending on the size and utilization of the building.

4.1.4 DEPTH - The top of the conduit bank must be buried at least 30 inches below the ground surface and separated from other service structures as required for fiber optical cable under EIA/TIA specifications.

Separation of telecommunications conduits from other utilities shall meet the following guidelines:

<table>
<thead>
<tr>
<th>Structure</th>
<th>Minimum Separation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power or other conduit</td>
<td>3 inches in concrete</td>
</tr>
<tr>
<td></td>
<td>4 inches in masonry</td>
</tr>
<tr>
<td></td>
<td>12 inches in earth</td>
</tr>
<tr>
<td>Pipes (gas, oil, water)</td>
<td>6 inches when crossing pipe</td>
</tr>
<tr>
<td></td>
<td>12 inches when parallel to pipe</td>
</tr>
<tr>
<td>Power conduit terminated on poles</td>
<td>Separate poles, if possible.</td>
</tr>
<tr>
<td></td>
<td>If on same pole, 180 degree separation</td>
</tr>
<tr>
<td></td>
<td>Preferable, but not less than 90 degrees.</td>
</tr>
<tr>
<td>Railroads</td>
<td>At a crossing: 5 feet below top of the rail.</td>
</tr>
<tr>
<td></td>
<td>Terminating on poles: 12 feet from the nearest rail, except 7 feet at sidings.</td>
</tr>
</tbody>
</table>

The conduits must be placed in accordance with the requirements specified in the FIU building manual. In particular, bidders must pay special attention to the Telecommunications requirements specified in Appendix C.
4.1.5 DUCT BANK PROTECTION - Conduit must be encased in concrete when:

(1) Minimum conduit depth of 30 inches cannot be attained.
(2) Conduits pass under roads, driveways, or railroad tracks.
(3) Bend points are subject to movement.

Note: A detectable warning tape must be placed 18 inches above all duct banks (detectable: containing metallic tracings).

4.1.6 SLOPE - Underground conduit must be installed such that a slope exits at all points of the run to allow drainage and prevent the accumulation of water. A drain slope of no less than .125 in. per foot is desirable.

4.2 MANHOLES (MAINTENANCE HOLES)

4.2.1 DESCRIPTION - A manhole (maintenance hole) is used to pull in and splice cables in an underground, concealed manner. Manholes must be equipped with a sump, corrosion resistant pulling iron, cable racks, and manhole ladders. Concrete used for manholes must be of at least 3500 lb./in² strength. All manholes must be properly grounded as required by BICSI.  (Please refer to 1.2)

4.2.2 SIZE - Manholes must be sized at 6-ft. width X 12-ft. length X 7-ft. height, unless specified by the UTS Project Manager. All manholes must be equipped with a round ring and cover, clearly labeled "TELECOM" or "TELEPHONE".  (Please see attached drawing, Fig. 4.2.2-A)

4.2.3 WHERE REQUIRED - Manholes must be placed when the conduit section length exceeds 500 ft, whenever a cable splice will be required, when bends exceed a total of 180 degrees or two bends, or the section length of conduit requires the pulling in of cable in two segments.

4.2.4 HANDHOLES are not an acceptable alternative to manholes described in section 4.2.1, 4.2.2. Handholes can only be used in place of manholes after consultation with and receipt of written approval from the UTS/Infrastructure Department.  (Please see attached drawing, Fig. 4.2.4-A)

4.2.5 PULL POINTS - Wherever distances between manholes exceeds 200 feet or there are more than two 90 degree bends in the conduit run, a 4’ x 4’ x 4’ pull box must be placed. The number of conduits going in and out of the pull box shall not exceed six.  Under no circumstances shall a pull box replace a manhole.  (Please see attached drawing, Fig. 4.2.5-A)

4.2.6 POSITIONING OF CONDUITS IN MANHOLE - Conduits entering a manhole shall do so only through the manhole walls designed for conduit penetration. Under no circumstances shall the structural integrity of the manhole be compromised.

Note: Conduits being added to a manhole must be placed as deep as possible in order to accommodate future expansion of ductbanks and guarantee maximum utilization of the manhole.
WALL STUB-UP DETAIL

FIGURE 2.2.1-A

Wall Stub-Up Detail
### Figure 2.3.2 - A

Cable Tray Conduit Grounding Detail

- **Detail A:**
  - Center Spine Cable Tray

- **Detail B:**
  - Perspective View of Cable Tray

**Conduit Bushing w/Grounding Lug**

**B-Line 92N-1158 - Conduit Size**

**#4 Copper Ground Strap**
XII. CODES AND STANDARDS - BUILDING STANDARDS

A. This building will conform to the following applicable building standards: In case of conflict, the strictest requirements will govern. Written approvals will be obtained when required from the State of Florida Fire Marshall, Miami-Dade Water and Sewer Department, Miami-Dade County Health Department, Florida Department of Environmental Protection (DEP), Miami-Dade County General Services Administration (Elevator Section), and DEP’s National Pollution Discharge Elimination System (NPDES) Permit.

1. All construction shall comply with the 2004 edition of the Florida Building Code inclusive of:
   b. All provisions of the High Velocity Hurricane Zone shall be considered as a minimum standard of care which may be exceeded on a project-by-project basis as directed by the University
   c. Florida Building Code-Test Protocols for High Velocity Hurricane Zone (2006 Revision)
   e. Florida Building Code-Gas and Plumbing (2006 Editions)
   f. National Electric Code (As referenced in Chapter 27 of the Florida Building Code)

   In all cases the date of Building Permit Application determines applicable code(s).

2. Statewide Impact Codes.
   a. All referenced standards listed in Chapter 35 of the Florida Building Code.
   c. Florida Accessibility Code (Chapter 11 of the Florida Building Code)
   d. HRS (Health and Rehabilitative Services Codes)
   e. South Florida Water Management District Standards
   f. Department of Education Space Criteria Code, State Requirements for Educational Facilities (latest edition)
   g. Department of Transportation
   h. Corps of Engineers
   i. Department of Natural Resources
   j. Florida Department of Environmental Protection
   k. Phase I and Phase II NPDES Stormwater Management Program
   l. Miami-Dade County Water and Sewer Department

3. New or Revised Legislation
   a. Threshold law s.553.77, F.S.
   b. Building Code and reinforcement s.553.71, F.S.
   c. High hazard occupancy new definition s.633.021, F.S.
   d. Fire Marshall inspection s.633.085, F.S.
   e. Fire Marshall authority to order vacating of building s. 633.121, F.S.
   f. Master Planning (Comprehensive Capital Facilities Planning and Budget Process) amending s.255.25 and 255.29.
   g. Trench Safety Act CS/SB 2626 which adopts OSHA excavation safety standards.
   h. Compliance with Florida Statutes on Xeriscape and native plant usage.

B. It is the express intent of this program to acknowledge this building as a continuum relating the existing and future developments on this campus, as outlined in the University Campus Master Plan, through the selection of design, materials, and systems utilized. Comprehensive systematizing of
the campus complex provides energy and construction cost efficiencies and maintenance and repair savings by reducing replacement parts inventories and simplifying service needs, aesthetic cohesiveness, and overall life cycle cost savings based on existing plant experience.

C. Design of this building and infrastructure must be closely coordinated with plans of the existing structures, systems development, campus utilities development, and University Campus Master Plan for building development and landscape development.

D. The Architect/Engineer is responsible, as part of the basic services requirements, for the compliance of the construction documents with all codes until the date the project is released for bidding.
XII. CODES AND STANDARDS - ARCHITECTURAL PARAMETERS

It is the intent of this program to define building standards and specifications which will ensure environmental sensitivity, construction materials quality, construction system efficiency, adherence to building codes and standards, and awareness of university requirements to ensure functionality, ease of maintenance, energy efficiency, and cohesiveness to the existing campus mega structure.

Planning of this building will include review and updating of the University’s Building Standards. Review of this document will be coordinated with the University’s Facilities Construction staff. This document sets forth standards for construction materials, interior and exterior finishes, paving surfaces, common building elements, accent materials, utilities, environmental and building systems, landscaping, and other design guidelines which are appropriate for this campus. The current FIU Building standards are to be followed unless specific deviations are coordinated with and agreed to, in writing, by the Facilities Construction Department.

In the development of conceptual design, careful consideration must be given to the following items:

1. Building design should be functional and take advantage of prevailing breezes and the subtropical climate. Natural ventilation should be developed wherever practical and desirable based on initial costs, operating costs, energy conservation, and the degree of environmental control required in various functional areas. Building design should eliminate the need for excessive mechanical controls through the use of such design parameters as building orientation, sun control, breezeways, operable windows, insulating exterior materials, etc.

2. Careful consideration must be given to alternative means of accommodating level changes. The nature of the functions housed in this facility requires that most of them be directly and conveniently accessible. Design should attempt to maximize vertical accessibility to all floors in this building. Concepts to be explored include ramped walkways, exterior multi-level design and terracing. Where stairs are used, they must be prominent, inviting, and readily accessible.

3. The building will be designed for functional flexibility.

4. The A/E’s documented monitoring of overall project costs, as well as costs of specific design elements will be reviewed with the Facilities Development Department. Construction cost control is understood to be a major developmental objective.

5. Together with planning for user convenience, organize and arrange departments into building/floor zones and provide accessibility for changes in mechanical and electrical services and for maintenance access requirements. Consider future economies in special revisions, and plan to affect economies in operations of mechanical systems.

6. In order to affect maximum flexibility, the building should be designed around a public circulation core which includes all required public access areas and all building services. This core would provide the vertical circulation, and contain all non-residential functions in a sound-isolated envelope which would aid in maintaining acoustical levels in the residential and non-residential areas. All non-academic and classroom areas should have direct access to the public circulation core.

7. Interior finishes should be responsive to the traffic levels to which they will be subjected with recognition of the permanence of the facility and a desire for low maintenance. Hard or resilient floor
surfaces will be specified for high volume, public traffic areas. Specific room areas should be carpeted with strong, tight weave fibers, and easily replaceable colors, easy cleaning and/or repair. Wall surfaces in public traffic areas should anticipate wear and abuse due to student traffic volumes; use low VOC washable latex paints.

8. Furnishings and equipment, interior finishes, and color selections shall adhere to University Standards and be coordinated with the Facilities Construction Project Manager in design stages of project development prior to implementation. Materials samples and color will require university approval prior to design development.

9. Large glass areas which may cause sun and weather problems peculiar to South Florida should be avoided, but daylight illumination should be present, if possible, on all floors for psychological reasons. Uses of shaded or screened glass windows to permit views of the campus are encouraged. All exposed glazing must be provided with storm wind protection shutters which are manually operable or impact resistant glazing.

10. Vending areas including all utility services (electrical, plumbing, floor drains, etc.) shall be provided in conditioned space.

11. Provide at least one corridor alcove per floor in office areas to accommodate waste paper recycling bins. Bins should be highly visible to encourage usage without obstructing normal circulation patterns.

12. Provide alcove with electric service within clerical office area to accommodate photocopy machines, if a separate and independent photocopy room is not identified.

13. There shall be one custodial work room for each 18,000 square feet or less of floor space. All space within the building should be reachable from one of these work rooms without negotiating any stairways. Each work room should be at least 80 net square feet with an 8' minimum dimension and a 36" minimum out-swinging door. Each room shall include a wall hung slop sink extending 14" from wall, 20" wide, and 11" deep; it shall be cast iron exterior and porcelain interior with a metal guard rim and an outlet trap. There shall be a 3" diameter floor drain in front of the sink to catch spillage. No telephone panels, electrical panels, alarm system panels, or pipe chases are to be included in these rooms.

14. The A/E will include in the project design, fabrication, and installation of an informational graphics and signage system in accordance with University standards to be coordinated through the Facilities Construction Department.

15. Roofing construction details will be designed in accordance with the latest edition of the National Roofing Contractors Association Construction Details publication. A reference copy is available in the University Facilities Management Department. Slope roofs ¼" per foot for positive directional drainage.

16. At construction completion inspection, provide the following to the University:
   a. Complete set of reproducible “As Built” drawings.
   b. Operating manuals on all types of equipment used in the building.
   c. List of all Contractors, Subcontractors, and their suppliers of materials and equipment.
   d. Three copies of cut sheets on all door hardware, window hardware, keying schedule, and all interior and exterior mechanical, electrical, fixed equipment, and plumbing installed in the
building, will be provided in loose leaf binders.

e. One copy of all "as-built" construction drawings (site and floor plans) in electronic medium, compatible with AutoCAD systems located in University Facilities Management offices.

f. 10% of each type and color of: ceiling tile, carpet, vinyl tile, and ceramic tile.

g. One gallon of each color paint and five gallons of primary color paint.

17. Door hardware shall be specified to be an electronic locking system (ELS) matching and compatible with the FIU building standard. The system shall be coordinated with the University Key Bank and approved by the Facilities Management department.

18. All service kitchenettes should be provided with exhaust fan to the exterior of the building.

19. All fluorescent lighting should have an electronic ballast and energy efficient bulbs.

20. Acoustical ceiling tile system should be 2’ X 2’ grid easily removable for maintenance access.

21. Provisions should be made for one air conditioned voice/data communication (telephone) equipment room on each building floor level, each with area of not less that 4’x8’ with a door not less than 3’ wide for equipment access, and a 125 Volt 20 Amp electrical power outlet.

22. The first floor elevation shall meet a minimum of +10.00 feet (NGVD).

23. Asbestos and lead-based Paint Survey, operations & Maintenance, and Abatement:

   a. Rules of the Florida Department of Labor and Employment Security
   b. Requirements of Sections 255.551-565 and Chapter 469, Florida Statutes
   c. Rules of the Florida Department of Environmental protection.
   d. Regulations of OSHA and the Environmental Protection Agency
   e. Licensing regulations of Asbestos Consultants, the Florida Department of Business and professional Regulation.
   f. Lead-based paint minimum abatement standards of the Department of Housing and Urban Development and current state of the art procedures to protect university personnel, students and visitors.

24. The new SCC will adhere to the design criteria guidelines set forth within the Academic Health Sciences Master Plan.

It is intended that this program will generate an overall facility that will be attractive, dignified, easy to maintain, economically staffed and operated, and functionally and aesthetically satisfying to the majority of persons who see and use it. These ends can probably be best achieved through a plan that is devoted to flexible use of space with appropriate materials, light, and color, as opposed to a plan centered upon a particular architectural style, symmetry, or other nonfunctional planning considerations.
XII. CODES AND STANDARDS - BARRIER FREE DESIGN

Florida International University is required to provide all architectural features to permit accessibility for the physically challenged. The University is bound by the Florida Accessibility Code (Chapter 11 of the Florida Building Code).

Of particular interest in these regulations will be provisions for physically disabled students and staff in the following areas:

1. Wheelchair, crutches, and braces restrictions to mobility, including during construction phase activities as it relates to facilitating site access to other adjacent facilities which may be impacted by construction activity.

2. Building access: entrance door thresholds, closers and handles, interior and exterior multi-level transitions by means of ramps, stairs, elevators, or escalators, emergency exits from all levels for the physically disabled, and hallway and corridor clearances.

3. Design criteria for public service areas, such as, restrooms (with doors), drinking fountains, telephones, etc.
   a. Visual fire alarm signals in all public toilet rooms.
   b. Door levers approved for handicap use in all major rooms. Coordinate locations with Facilities Development.
   c. Handicap drinking fountains.
   d. Handicap water closets, urinals, lavatories and mirrors in all public restrooms.
   e. Handicap parking stalls minimum 12’ x 20’ plus 5’ x 20’.
   f. Braille numbers on elevator doors, cabs, and public room identification plaques.

4. Design criteria for residential facilities. Five percent (5%) of all units shall be designed to provide the additional special accessibility features.
   a. Accessible route.
   b. Clear width maneuvering space(s).
   c. Doors and doorways designed to allow passage into and within all sleeping rooms, suites and units.
   d. All controls shall comply with accessibility requirements.
   e. Accessibility of all spaces within the unit.
   f. Clear floor space(s) for approach to cabinets, counters, sinks and appliances.
   g. Visual Alarms, Notification Devices, and Telephones shall be provided and shall comply with referenced code requirements.
XII. CODES AND STANDARDS - SITE DEVELOPMENT AND CAMPUS INTEGRATION

Site and building planning and design will conform to the current Campus Master Plan Update, October 2003. In the development of the conceptual designs, careful consideration must be given to the following items:

1. Site design will be coordinated with all physical facilities existing and/or currently planned for the campus. The Campus Master Plan outlines all facilities, existing or planned. Site boundaries for this project are outlined in this building program.

2. Pedestrian circulation systems between the proposed buildings must be integrated into the design which will preferably provide weather-protected connections. Perimeter walkways, exterior courtyards, and plaza areas should be designed to visually relate to the other campus adjacent buildings.

3. The service road and/or yard will be constructed according to the Dade County standards for vehicular blacktop surfaces; additional road and service yard requirements include planting, landscaping, irrigation system, lighting, signage, and graphics.

4. In engineering design and construction, particular care must be exercised for positive storm water drainage and disposal. This requirement will be strictly enforced by the University.

5. In design planning and construction staging, consideration should be given to disruption of the existing entrance road to ensure orderly traffic flow.

6. Energy efficient exterior lighting is required for service road and/or yard, site, and building. Because of the heavy use of the facility at night, particular care should be taken in the design of exterior lighting for vandal resistance, security, and aesthetics. Lighting of the service yard should be controlled by clock timers with electric photo cells. Investigate use of lighting color differences to differentiate exterior functions, i.e., service road and/or yard vs. pedestrian walkway.

7. All site utilities will be provided underground from the nearest existing primary services (power, telephone, and sanitary sewer and water distribution systems). Communications and control systems will be provided as extensions of the campus underground network to and/or from existing and future adjacent buildings to engage with central terminal (control) equipment.

8. Site design should be developed to take full advantage of South Florida's subtropical climate including the use of Xeriphytic concepts. Landscaping should be used to articulate exterior areas, provide shade for outdoor use, and provide natural buffer between zones of conflicting use and future development.

9. Particular care should be taken to provide attractive site boundaries, and building vistas from surrounding campus areas. Native landscape materials which are capable of withstanding the sun and wind conditions found in South Florida should be used. Irrigation systems for all landscaped areas are required, except where the Xeriphytic concepts are used.
XII CODES AND STANDARDS - SITE DEVELOPMENT AND CAMPUS INTEGRATION (continued)

10. The A/E will exercise particular care in designing storm drainage for the site and walkways. Topographic site plans must specifically illustrate existing and established grades for drainage. Site construction must comply with contract documents. "As-builts" of the drainage system will be reviewed in the field at Substantial Completion of the project. All components of the construction exposed to weather will have positive drainage to a storm-water drainage system or equivalent (planters, grassed areas, etc.). Scuppers or roof runoffs will not occur over pedestrian walks or terraces. Primary circulation paths will require trench drains to ensure against storm-water accumulation during heavy rainstorms. The A/E will provide a comprehensive storm-water drainage plan for the building, connecting walkways, all weather-exposed stairways, and site, as a part of the Design Development stage.

11. Exterior handrails will be of a non-corrosive material and will not overheat when exposed to the sun.

12. Roadway and walkway post lights should be located at least 4 feet from the edge of roadway/walkway. All roadway, walkway, and exterior building lights should be controlled by photo-cell.
XII. CODES AND STANDARDS - ENVIRONMENTAL SYSTEMS

Mechanical and electrical systems should be designed to afford maximum energy efficiency and operating economy. Mechanical systems should be designed in as efficient a manner as possible in order that these systems not preclude vital space essential to the building's main purpose. Particular attention should be paid to the following:

1. Zone controls of air-conditioning to permit emphasis to selected areas; alleviating total operation when necessary, particularly as relates to exhaust hoods when applicable. Design systems which maintain air movements for humidity control. Control equipment will be pneumatic coupled to an electronic energy management system compatible with existing EMS in other campus facilities.

2. Zoned lighting controls to allow for selective control of all overhead lighting, lower ambient light levels and increase task lighting. Flexibility to adjust lighting levels as needed for particular functions. Specifically as they deal with light quality, aesthetic illumination, intensity for general and task lighting, and energy efficiency for cost savings.

3. The building mechanical and electrical system should be designed to allow incremental expansion as future needs require additions and alterations and should follow guidelines indicated in the Master Plan Update. Mechanical and Electrical systems to be designed for excess capacity of 10%.

4. All HVAC Systems must be designed and specified with special consideration for sound transmission and quiet operation. Appropriate air duct velocity and vibration isolation must be designed and field verified during construction. Air handlers should be remote from office space and enclosed by sound resistant partitions. Air handlers servicing units to be accessible for maintenance/repairs from common areas (corridors)

This building should be designed to function for short time periods with limited power consumption and without the use of air-conditioning. Due to the research nature of this facility, critical labs and equipment will require emergency power operation for a minimum 72 hour operation before refueling will be required (at full load).

Features listed above - such as natural ventilation, sun control, zoned environmental controls - should be coupled with overall building design considerations such as sitting to take advantage of prevailing winds, window design to accommodate breezes, and minimize head build-up, etc. In order to service the building economically and preserve the architectural plans for flexibility, the following mechanical systems for the building should be incorporated:

a. Central utility core with minimum distribution distances.

b. Accessible vertical and horizontal chases where flexibility is required.

c. Provisions for changing power and telephone distribution.

d. Accessible mechanical rooms housing no other functions.

e. Maintenance staff should not have to enter student spaces. Provide access to utilities from common areas. Provide space to remove coils and filters for HVAC indicating graphically on plans projected footprint of removed coils.
XII. CODES AND STANDARDS - ENVIRONMENTAL SYSTEMS (continued)

5. Basic systems:
   a. Heat/air-conditioning distribution and control. Design criteria to be 76 degrees Fahrenheit with 50% relative humidity.
   b. Lighting fixtures with local controls and central monitoring and disconnect control panel.
   c. Automatically starting battery powered emergency lighting and U.P.S. system back-up for communications/computers.
   d. Smoke detection and fire alarm with central annunciator panel at or near the front desk/main entrance. The fire alarm system should be an addressable system, not a zone system.
   e. For specific criteria for systems standards, refer to Florida International University Building Standards.
   f. Electric power reserve will be 150% greater than initial demand. The electrical distribution system will also be designed and constructed to accommodate this reserve.
   g. Water - gas fire central hot water and cold water with sufficient shut-off valves as required by residential and programs and/or maintenance functions. Hose bibs inside and outside of the building as required.
   h. Sanitary waste system - as required by applicable codes.
   i. Storm drainage - positive drainage from room entrances and all exterior areas.
   j. Gas lines, properly tested, with shut-off valves as required; add 30% reserve over initial building demand.
   k. Hydraulic elevator - combination service and passenger-type with electrical eye equipped doors; self-lowering and automatic open doors in accordance with fire codes. It must also comply with applicable ADA requirements.
   l. Clocks - battery emergency powered.
   m. Inter-campus and public telephone system. Two phone service source.
   n. Irrigation - Central.
   o. Exterior building lighting - Energy efficient and vandal resistant.
   p. Exterior door card security system.
   q. Energy management systems in compliance with the Master Plan Update guidelines (Control in Central Utility Plant).
   r. Security alarm system connected to the campus Public Safety Department.
   s. Fire alarm system connected to the campus Public Safety Department.
   t. Provide automatic fire sprinkler system as required by code.

6. Central controls for this facility connected to the Central Utility Plant should be provided for the following:
   a. Exterior lighting
   b. Environmental systems (HVAC)

7. Reserve utilities capacity for power and gas, water and sewer, and communications are to be provided.

8. Provisions should be made for one telephone equipment room (air-conditioned if it is to be used in conjunction with computer terminals) on each building level each with area of not less that 4’ x 8’ with a door not less than 3’ wide for equipment access, and a 125 Volt 20 Amp electrical power outlet.
XII CODES AND STANDARDS - FURNITURE STANDARDS AND EQUIPMENT

In order to facilitate the design of the specific functional areas, lists will be compiled during the programming and schematic phase of the project indicating the anticipated equipment needs of each. These lists shall be included in the detailed description of each area and may include items which will not be purchased under the projects Capital Outlay Furniture and Equipment budget; however, their inclusion in the design will be required for efficient space planning by the Architect and Engineers.

It is also important to recognize that some of the office equipment presently utilized in other buildings on campus may be re-utilized if, after inventory, they are deemed to be in satisfactory condition for relocation.

Installation for all fixed equipment, built-in shelving, counters, and any equipment requiring hookup other than electrical convenience outlet will be included in the construction cost and bid documents. Institutional quality equipment and premium grade casework shall be provided.

All movable equipment and furnishings will only be included in the equipment and furniture design layouts, indicated as "not-in-contract". All movable equipment will be furnished by the University and funded from the Furniture and Equipment budget; see Project Budget.

All special equipment will be specified to be on contract for servicing. A complete set of "as-built" drawings from manufacturers and installers is required. The A/E and Construction Manager will field demonstrate and discuss maintenance procedures with appropriate personnel from the department of Facilities Management upon Substantial Completion of the construction.
XIII. PROJECT SCHEDULE

Mutual coordination between the A/E and the University will be required to resolve questions of scheduling, compatibility, finishes, environmental systems, connections, etc. Scheduling of these meetings and establishment of dates for this coordination will be the task of the University's Office of Facilities Planning. Among those items which will require coordination are the following: Pre-design Informational conferences, Design Submissions and Presentations, Project Reviews, Evaluations and Approvals by the Board of Trustees. Final Document Approvals, Bidding Dates and Procedures, Award of Contracts and Construction Start, Pre-construction and Periodic Construction Conferences, Construction Interfacing with University Operations, Disruption of Services for Utility Connections, Substantial and Final Completion Inspections, and Guarantee Expiration Inspection.

Milestone dates (which may be subject to change as required by the University) for this project are noted below anticipating approximately 12 months for design and 18 months for construction.

<table>
<thead>
<tr>
<th>Milestone (Completion Dates)</th>
<th>Projected Completion Date</th>
<th>Duration (Cal. Da.)</th>
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<tbody>
<tr>
<td>Program Committee Meeting</td>
<td>Wed Feb 13 2008</td>
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<td>Outline Program</td>
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<td>F.A.W. Adv't. Posted</td>
<td>Fri Feb 22 2008</td>
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<td>A/E Qualifications Deadline</td>
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<td>Shortlist Meeting</td>
<td>Mon Apr 07 2008</td>
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<td>A/E Presentation &amp; Interviews (Subject to Confirmation)</td>
<td>Wed Jan 14 2009</td>
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<td>Selection Notice</td>
<td>Mon Jan 19 2009</td>
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<tr>
<td>Negotiations &amp; Contract Award</td>
<td>Tue Feb 03 2009</td>
<td>15</td>
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<td>A/E Notice to Proceed</td>
<td>Tue Feb 10 2009</td>
<td>7</td>
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<tr>
<td>Programming</td>
<td>Mon May 11 2009</td>
<td>90</td>
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<tr>
<td>FIU review</td>
<td>Mon Jun 01 2009</td>
<td>21</td>
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<td>Conceptual Schematics</td>
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<td>FIU review</td>
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<td>Design Development Documents</td>
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<td>Building Permit</td>
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<td>Bid Date/Issuance of GMP</td>
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<tr>
<td>Award Date/Notice to Proceed</td>
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<td>Construction Start</td>
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<td>Substantial Completion</td>
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<tr>
<td>Furniture/Equipment Installation</td>
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<tr>
<td>Occupancy</td>
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<tr>
<td>Closeout Documentation (after Subs.Comp)</td>
<td>Fri May 18 2012</td>
<td>45</td>
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XIV. PROGRAM FUNDS

The planning, construction, and equipment funding source is projected as follows:

<table>
<thead>
<tr>
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<tr>
<td>876 SCIENCE CLASSROOM COMPLEX</td>
<td>$9,000,000</td>
<td>$29,000,000</td>
<td>$12,000,000</td>
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<td>$50,000,000</td>
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### XV. PROJECT BUDGET SUMMARY

The summary schedule of values provides an outline of costs included within each category for Building Construction, Site Costs, as well as Other Project Costs (soft costs) for the project.

#### SCHEDULE OF PROJECT COMPONENTS

<table>
<thead>
<tr>
<th>Building Costs</th>
<th>Estimates</th>
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<tbody>
<tr>
<td><strong>1. a. Construction Cost (Building)</strong></td>
<td>$32,364,810</td>
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<tr>
<td><strong>Site Costs</strong></td>
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<tr>
<td>b. Environmental Impacts/Mitigation</td>
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<tr>
<td>c. Site Preparation</td>
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<tr>
<td>d. Landscape/Irrigation</td>
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<tr>
<td>e. Plaza/Walks</td>
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<tr>
<td>f. Roadway Improvements</td>
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<td>g. Parking spaces</td>
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<tr>
<td>h. Telecommunication</td>
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<tr>
<td>i. Electrical Service</td>
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<tr>
<td>j. Water Distribution</td>
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<tr>
<td>k. Sanitary Sewer System</td>
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<tr>
<td>l. Chilled Water System</td>
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<tr>
<td>m. Storm Water System</td>
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<tr>
<td>n. Energy Efficient Equipment</td>
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<td><strong>Total Site Construction Costs (SCC)</strong></td>
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<td><strong>Total Construction Cost (TCC)</strong></td>
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<td><strong>Other Project Costs</strong></td>
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<td><strong>2. Other Project Costs</strong></td>
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<tr>
<td>a. Land/existing facility acquisition</td>
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<tr>
<td>b. Professional Fees</td>
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<td>Programming</td>
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<tr>
<td>Media/Technology Consultant</td>
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<td>CM Fees</td>
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<td>c. Fire Marshall Fees</td>
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<td>d. Inspection Services</td>
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<tr>
<td>e. Planning Consultant</td>
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<tr>
<td>f. Surveys &amp; Tests</td>
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<tr>
<td>g. Permit/Impact/Environmental Fees</td>
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<tr>
<td>LEED Comm. Agent + Other fees</td>
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<tr>
<td>h. Artwork</td>
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<tr>
<td>i. Moveable Furnishings &amp; Equipment</td>
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<tr>
<td>j. Project Contingency</td>
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<tr>
<td>k. Project Administration</td>
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<tr>
<td><strong>Total - Other Project Costs</strong></td>
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### Projected Total Costs

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<tr>
<th>Budget Reconciliation</th>
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<tbody>
<tr>
<td><strong>Total Project Appropriation (TPA)</strong></td>
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<tr>
<td><strong>Variance to Budget</strong></td>
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