FLORIDA STATE UNIVERSITY

Facility Program

for

Free Electron Laser Buildings (FS-268)

October 2009

Prepared by:
The Facilities Department

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III. Signature Sheet

In accordance with the provisions of the standard practice, the following signatures have been obtained as evidence of the required University approvals.

Dr. Kirby W. Kemper
Vice President for Research

Signature signifies approval of the facility program by the Vice President for Research.

Michael Barrett
Associate Vice President / CIO
Office of Technology Integration

10/19/2009

Signature signifies that all OTI program requirements have been met.

10/26/09

Dennis Bailey
Associate Vice President for Facilities

Signature verifies that this planning document has been developed in accordance with the standard practice for the development of facility programs.

for

T. K. Wetherell
President

Signature signifies the President's approval of this facility program.

IV. Introduction

A. Project Background

The National High Magnetic Field Laboratory (NHMFL) is only facility of its kind in the United States. The laboratory contains the largest and highest-powered magnet laboratory in the world, headquartered in a sprawling 330,000-square-foot complex at the Southwest Campus of Florida State University in Tallahassee. The lab also is part of a greater network that includes sites at the Los Alamos National Laboratory in New Mexico and the University of Florida in Gainesville. Together these three institutions operate the lab, collaborating in a unique, interdisciplinary way to advance basic science, engineering and technology in the 21st century.

Established by the National Science Foundation (NSF) in 1990, the lab is a national resource open to both curious visitors and world-renowned scientists. Centralizing the country's greatest magnet-related tools, resources and expertise is not only efficient and cost-effective, but also encourages fruitful, collaborative research at the highest level. Every year, more than 900 visiting scientists and engineers from across the world conduct experiments using our state-of-the-art equipment.

These magnets produce tremendous magnetic fields, prized by researchers who use them to study a wide range of materials and processes. NHMFL's most powerful magnets produce fields more than a million times stronger than the Earth's magnetic field. Results of experiments under such conditions give scientists important insights that pave the way for advances in physics, biology, bioengineering, chemistry, geochemistry, biochemistry, materials science and engineering.

High magnetic fields play a critical role in developing new materials that affect nearly every modern technology. Electric lights, computers, motors, plastics, high-speed trains and Magnetic Resonance Imaging (MRI) all came about after researchers learned more about materials and living structures through magnet-related research. The vast scope of work currently underway at the lab includes the study of new superconductors with the potential to revolutionize how power is stored and delivered; a search for new medicines; and analysis of petroleum samples that could lead to better oil extraction. (from website www.nhmfl.gov)

In 2004, the NHMFL launched a strategic planning initiative to address growing scientific opportunities for high magnetic field research developing a very successful renewal proposal built around five science drivers:

- quantum phenomena in materials properties;
- naturally-occurring complex mixtures like biofluids and petroleum;
- the structure, dynamics and function of macromolecules;
- magnetic resonance for materials chemistry
- materials for magnets.

In response to user requests to address the first four science drivers by enhancing the NHMFL's optical facilities, the first of five annual "Big Light" workshops was convened. The clear consensus was that a high-intensity light source would add enormous value to the already unique facilities at the NHMFL, provided it bridged the notorious 'terahertz-gap' separating the gigahertz (GHz) electronics and infrared (IR) optics regions of the electromagnetic spectrum. It was also clear that a source based on Free Electron Laser (FEL) technology was required because it offers brightness, time-resolution, coherence, and is the only tunable source able to cover the entire frequency range necessary for the variety of proposed experiments.

B. Project Description

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With funding from the NSF and input from FEL experts, physicists, chemists and biologists from around the world, "Big Light" will offer unique measurement capabilities: three co-located narrow-band tunable sources with *overlapping* frequency ranges spanning the full terahertz-to-Infrared (THIR) region of the electromagnetic spectrum [0.3 to 120 terahertz (THz)]; an overlapping, co-located broadband THz source (0.1 – 3 THz); ultra-fast (1 picosecond) light pulses with a 10 megahertz repetition rate; ultra-high brightness (10^6 times brighter than previous generation synchrotrons); and, finally, automatic time-synchronization of near-IR, mid-IR and THz pulses, with < 20 femtosecond jitter for multi-color, pump-probe experiments. Thus, "Big Light" represents an internationally-leading, state-of-the-art light source in its own right. Most importantly, however, "Big Light" will advance virtually all science drivers relevant to the NHMFL's user programs by co-locating uniquely intense quasi-continuous magnetic fields—a tunable and reversible thermodynamic parameter—with a uniquely flexible source of intense THIR radiation for studying excitations and dynamics in materials.

This project will provide a building to house the FEL with Laboratory and Offices above. In addition, a Cryogenics building will also be provided which will house the necessary cryogenics plant needed to operate the superconducting radiofrequency components of the electron beam accelerator which drives the FEL.

C. Goals and Objectives

1. Place "Big Light" at a university and user facility maximizing its impact for science and technology training and education, including:

   a) New Materials

   Through nanoscale phase separation; infrared nano-scopy; nanomagnets; qubits;

b) Energy

Through tracking ions in fuel cells and unpaired electrons in catalysts; taking catalysis and solid-state chemistry off the thermal pathway via photo-excitation and selective bond-breaking;

c) Security

Through petroleum independence; quantum information; threat detection/tracking;

d) Environment

Through electron transfer; energy storage and dynamics of macromolecules; vibration-mode imaging; analyzing disease markers and drug development; and, of particular importance;

e) Biochemistry

Through electron transfer; energy storage and dynamics of macromolecules; vibration-mode imaging; analyzing disease markers and drug development; and, of particular importance,

f) Technical Education

Will be provided in increasingly critical areas of scientific facility operations, cryogenics, accelerator physics and magnet technologies.

D. Project Delivery

The project will be administered using the Design-Build (D/B) project delivery system. This process provides a single point of responsibility for design and construction and can accelerate the project design and construction schedule resulting in savings in overhead and general conditions costs to benefit the project program.

E. Design-Build Team's Scope of Work

The Design-Build (D/B) team shall be responsible for providing all architectural and engineering services required for this project. Any additional consulting services, which may be necessary, will be provided by the D/B team.

The D/B team's scope of work is well defined in the D/B agreement, which includes a complete list of requirements and responsibilities. The D/B team shall

be required to provide all services listed in the D/B contract for this project. The following is a brief summary of this anticipated scope of services.

1. Program Review:

   The D/B team shall be responsible for reviewing this facility program and becoming thoroughly familiar with its content. Following the review of this program and prior to the commencement of the design phase, the D/B team shall be invited to meet with representatives of the Facilities Department as well as the Building Committee to discuss program requirements, project schedule, design constraints, and the like.

2. Site Analysis and Design

   The D/B team shall be responsible for becoming thoroughly familiar with the specific project site and the campus around it. This understanding shall include a thorough appreciation and comprehension of the project site including but not limited to, all natural features, vegetation, surrounding facilities, utility systems, vehicular/pedestrian/bicycle circulation patterns, and so on. It is expected that the D/B team shall be responsible for preparing and submitting a detailed site analysis of the existing conditions. Recommendations for mitigating any adverse effects created by this project are also expected. Additionally, there are a number of stormwater and allocation issues regarding the Southwest Campus that were not fully resolved as part of the recent adoption of the Campus Master Plan.

   This portion of the southwest campus is embedded within Innovation Park, therefore for consistency and compatibility the park's design guidelines should be adhered to. Prior to the commencement of the design phase, the D/B team shall consult with the Facilities Department to review specific site requirements and issues.

3. Design Reviews

   The D/B team shall advise the project team on issues relating to construction feasibility and cost effectiveness. These issues include, but are not limited to site use and improvements, construction staging, selection of materials, building systems, availability of materials, material procurement times, the relative feasibility of construction methods, cost factors for design and material alternatives, preliminary budgets and possible economies.

4. Architectural Design

The D/B team shall be responsible for the preparation of all phases of architectural design, commencing with schematic design and continuing through the development and submittal of completed construction documents. As with the design of all major capital projects, the University desires to utilize the services of a D/B team that is knowledgeable and proficient in the design and construction of similar facilities. In the case of this particular project, this type of experience should include projects involving the construction of research facilities in a university environment. In this regard, the selected D/B team shall be expected to provide all architectural services necessary for this type of project.

The current version of the Florida State University Design Guidelines and Specifications will be adhered to for this project. (They may be viewed at http://www.fpc.fsu.edu/guidelines.html) Any variance from these guidelines must be approved by the Facilities Department.

5. Engineering Design:

The D/B team shall be responsible for the preparation of all engineering design, commencing with schematic design and continuing through the development and submittal of completed construction bid documents. In general, engineering design shall include all civil, structural, mechanical, electrical, plumbing, and telecommunication/data disciplines necessary to complete the project. At this time it does not appear that any extraordinary engineering consulting services are required in order to complete this project; however, should they be deemed necessary the D/B team shall be responsible for obtaining such assistance.

6. Specialty Consultant:

Some specialty consultants may be utilized in the design of this facility (buildings). If it is determined that the services of a specialty consultant is needed, then the selection of such consultants shall be done following the selection of the D/B team. The use of all specialty consultants, their proposed scope of work, and their fee shall be approved by the Facilities Department. Also, it should be noted that specialty consultants will be provided outside of this contract for design of the scientific equipment such as the laser and cryogenics.

7. Project Delivery and Construction Administration:

   The D/B team shall provide all required construction administration and inspection services in accordance with all University and State requirements, including the following:

   a) Provide quality control of work in progress to the extent that the D/B team can certify the work is being accomplished in strict compliance with the contract documents. Due to the nature of this project, it is expected that the services of a qualified roofing inspector and perhaps a threshold inspector shall be employed.

   b) Provide for the inspection of completed work and certify without qualification that the work has been completed in accordance with the contract documents.

   c) Recommend an acceptable construction schedule that minimizes the impact of related construction noises, disruptions, and inconveniences on the occupants of adjacent facilities. Work schedules shall be closely developed and coordinated with the Facilities Department.

8. Construction Services

The following is a more detailed list of services that shall be provided by the D/B team during the construction phase

   a) Construction

   In accordance with University policy, the D/B team shall not self-perform work without written permission from the Facilities Department. The D/B team shall manage, schedule and coordinate the work of trade contractors, and coordinate them with the activities and responsibilities of the University and the D/B team. The D/B team shall provide and maintain a competent, full-time staff to direct the work and assure quality control of the construction. The composition of this staff shall be consistent with that presented at the oral interview phase of the selection process. The University must approve all changes in the staffing of the D/B team.

   The D/B team shall conduct on-going reviews of the adequacy of trade contractors' personnel, equipment and materials and act promptly when these are found to be inadequate. Furthermore the D/B team shall provide cost control reports that revise and refine

the approved construction budget. The University shall be promptly notified of any deviation between actual and budgeted costs.

The D/B team shall initiate, maintain and supervise effective safety programs in accordance with Occupational Safety and Health Administration (OSHA) requirements. In addition, the D/B team shall conduct weekly progress meetings with the construction team to review and coordinate progress. In order to ensure a safe jobsite, the D/B team shall provide for adequate project security.

b) Construction Administration

The D/B team shall administer the construction phase in accordance with the requirements outlined in the University Conditions of the Contract. On-site organization, line of authority, paperwork procedures and procedures for monitoring progress of the work shall be established in accordance with the D/B agreement, University rules and regulations, and good construction practice. To report these activities, the D/B team shall provide monthly progress reports.

During the construction phase, the University will contract with a separate architect to review the D/B team's pay requests change orders, and selected submittals as well as determine that the work is being completed in accordance with the approved plans and specifications.

9. Project Schedule

The D/B Team should submit a detailed project schedule and provide frequent/periodic updates and identify critical dates, material deliveries, etc. The D/B team shall advise the project team on issues relating to construction feasibility and cost effectiveness. These issues include, but are not limited to site use and improvements, construction staging, selection of materials, building systems, availability of materials, material procurement times, the relative feasibility of construction methods, cost factors for design and material alternatives, preliminary budgets and possible economies.

10. Other Services

A number of other services shall be provided by the D/B team. These services include the separation of work into subcontracts,

materials purchasing schedules, analysis of labor required, development of bidding packages, assistance with Minority Business Enterprise (MBE) goals, bidder pre-qualifications and monthly construction team meetings.

11. Cost Control:

During the design of this project, it is essential that the University be continuously informed of construction costs. The D/B team is strongly encouraged to provide recommendations for reasonable cost savings whenever possible.

The D/B team shall provide continuing support to the project team during the design process confirming that the project can be constructed within the budget. Detailed cost information will be submitted with reports at each design phase.

The D/B team shall consider the option of packaging the work into multiple phases (e.g., site work, demolition, and new construction phases) if it is jointly determined that the interest of the project are better served through this approach.

12. Governmental Interaction:

The recent Campus Development Agreement executed by the City of Tallahassee and the FSU Board of Trustees covers projects developed on the Main Campus. The Board of Trustees approved the Campus Master Plan last year. The University executed an update of the development agreement with the City of Tallahassee earlier this year. The amount of local inspection and jurisdiction is therefore expected to be minimal. The D/B team shall be responsible for assisting the University in reporting the impacts of the project to the City of Tallahassee. Additionally, this project may require an environmental review by the Florida Department of Environmental Protection (FDEP), especially for compliance with State statutes and regulations involving the handling and treatment of stormwater.

V. Academic Plan

A. Include a statement that the proposed academic program is consistent with the current adopted State University System of Florida Master Plan.

This project primarily entails the construction of a new research facility on the Southwest Campus of the Florida State University. Therefore, this item is not considered relevant to this project.

B. Include the date and program numbers of all relevant academic program reviews. Explain how the proposed facility program meets the recommendations of the most recent academic program review.

This item is not considered relevant to this project.

C. List the recommendations of the review consultant.

This item is similarly not considered relevant to this project.

D. If the proposed academic program is inconsistent with the current adopted SUS Master Plan explain how the program meets the recommendations of the review consultant or justify any inconsistency.

There are no academic programs to be conducted in this building; therefore this item is not considered relevant to this project.

VI. Space Needs Assessment

A. Describe the facilities problem in terms of current and future facility deficiencies; describe the proposed solution and what solutions were considered.

A high-intensity light source would add enormous value to the already unique facilities at the National High Magnetic Field Laboratory (NHMFL), provided it bridged the notorious 'terahertz-gap' separating the gigahertz (GHz) electronics and infrared (IR) optics regions of the electromagnetic spectrum. It is also clear that a source based on Free Electron Laser (FEL) technology is required because it offers brightness, time-resolution, coherence, and is the only tunable source able to cover the entire frequency range necessary for the variety of proposed experiments.

Construction of a fourth-generation light source ("Big Light") at the NHMFL is proposed in order to provide photons resonant with the energy and time scales typically encountered in materials research at high magnetic fields.

B. If a new facility is proposed, provide reasons why other alternatives were not chosen and why a new facility is the best solution.

Worldwide, only two other user facilities (Rossendorf, Germany and FELIX in the Netherlands) presently combine high magnetic fields with modern FEL light sources. However, both offer only pulsed magnetic fields, precluding most of the scientific program which is envisioned with "Big Light'. Neither Rossendorf nor FELIX, nor any other FEL world-wide, features "Big Light's" tunability over the entire Terahertz-to-Infrared (THIR) regime with multi-color and pump-probe capabilities. "Big Light" is optimized for the THIR frequency band, offering higher power and more flexibility than is possible with the low-frequency tail of an X-ray light source.

Construction of "Big Light" at the NHMFL is more economical than building a high-magnetic-field facility at an existing Terahertz (THz) light source and it will immediately couple "Big Light" to a multi- and inter-disciplinary user program spanning condensed matter physics, materials science, solid-state chemistry, biochemistry and biology. Placing "Big Light" at a university and user facility maximizes its impact for science and technology training and education.

C. Provide quantitative analysis indicating how the proposed amounts and types of space were arrived at using requirements of programs to be housed.

The spaces were sized according to the State Requirements for Educational Facilities (SREF) and the User Group's recommendation. In other instances, areas of space are based on industry standards as well as the user group's best

judgment. This type of information is explained in much greater detail in the Program Area section of this document.

The footprint and size of the proposed building is directly related to the physical design configuration of this unique laser housed on the basement level. Laboratory spaces and building entry are built on the first floor and offices on the second floor.

D. Describe any differences between the project survey recommendations for the project.

As this is a Research Foundation funded project, the FEL building was not presented in the Educational Plant Survey for consideration. Therefore, this item is not considered applicable.

VII. Consistency with Adopted Campus Master Plan and Associated Campus Development Agreement

In June 2008, the University's Board of Trustees adopted the most recent update of the Campus Master Plan for the Florida State University. Like the versions that preceded it, this update reaffirmed a series of long range planning goals that include provisions for housing improvements, land expansion, future facilities development, major vehicular and pedestrian circulation improvements, and expansion of the central utility systems to name a few.

This update of the Campus Master Plan also included, for the first time, a master plan for the Florida State University's Southwest Campus. This campus, located approximately one mile southwest of the Main Campus, is home to the FAMU-FSU College of Engineering, the Seminole Golf Course and Club, Alumni Village, WFSU (Broadcast Center), the new Intramural Rec Sportsplex, and several other University operations.

Though not technically part of the Southwest Campus, Innovation Park lies adjacent and is bordered on two sides by the University. Additionally, there are several parcels of land located within the boundaries of Innovation Park that the Florida State University has chosen to incorporate into the Campus Master Plan. The most significant of these parcels are those that comprise the National High Magnetic Field Laboratory (NHMFL) site. This facility and the land that it sits on are prominently featured in the adopted FSU Campus Master Plan. Depicted in the Campus Master Plan as well are several future expansions of the NHMFL including the expansion for the Free Electron Laser Lab (FEL) and Cryogenics Building.

These future phases of the NHMFL were also included in the negotiations that the Florida State University conducted with the City of Tallahassee with regards to its Campus Development Agreement. During those negotiations, it was determined that these future phases were "concurrent" in that all the traditional concurrency needs were satisfied, with one exception. City staff contended that the Campus Master Plan did not provide sufficient information concerning the impacts that the University's future development would have on the stormwater systems that serve the Southwest Campus and its surroundings. Therefore, in the Campus Development Agreement, the Florida State University agreed to conduct a more detailed stormwater analysis to determine what impacts this project, as well as all the other projects planned for the Southwest Campus, will have. That study has not yet begun. It is expected that it will take at least six months to complete and review. Therefore, the Design-Build (D/B) team shall discuss this particular issue with FSU staff at the commencement of the advanced programming phase to learn about the status of this study.

The FSU Campus Master Plan provides some suggestions as to how the FEL Laboratory could be laid out. However, this layout is very preliminary in nature and should not be construed as a directive on the project design. In fact, the D/B team will be responsible for conducting a thorough site analysis and conceptual site layout for this phase and, in doing so, should look ahead to other proposed NHMFL expansions to ensure site compatibility and harmony.

In preparing such a plan, the D/B team shall consult with staff from both the Facilities Department and the NHMFL. It is also essential that the D/B team become thoroughly familiar with the Florida State University's future development plans for the entire Southwest Campus to ensure that this project does not conflict with other projects or planning initiative contained in the master plan. Becoming thoroughly familiar with the Florida State University Campus Master Plan is one good way to start this familiarization; however, the D/B team shall be expected to meet with Facility Planning staff once their review of the Campus Master Plan is complete to answer any questions or receive any updates.

VIII. Site Analysis

A. General

The proposed site for the Free Electron Laser (FEL) Building is located adjacent to the National High Magnetic Field Laboratory (NHMFL) within the Southwest Campus of the Florida State University, near Innovation Park, and within the city limits of Tallahassee. A Site Vicinity Map and a Project Location Map are provided in the Appendix of this document.

The NHMFL parcel includes the Operations and Magnetic Development (OP/MD) Building, the General Sciences Building and the Nuclear Magnetic Resonance (NMR) Building with their respective parking facilities. At the site there are also cooling towers, two chilled water storage tanks and a drainage pond. The proposed site is located behind the OP/MD Building in an area that currently is partially covered with dense vegetation.

The road connectors to the project site are West Paul Dirac Drive to the Northwest and East Paul Dirac Drive to the Northeast.

The Design-Build (D/B) team shall have access to all existing documentation concerning the physical characteristics of this portion of the campus. The following description provides a summary outline of the physical conditions of the building site.

B. Project Site

1. Site Topography and Soil Conditions

According to the contours indicated on the Tallahassee-Leon County Global Information System (GIS) map, the project site does not realize a major difference in elevation. The site sits at the 70 ft Above Mean Sea Level (AMSL) line and slopes uniformly a couple of feet to the north and south. See Site Topography Map provided at the Appendix.

According to the US Department of Agriculture soils survey for Leon County, this site is categorized as No. 33 - Orangeburg fine sandy loam with 2 to 5 percent slopes; Orangeburg and similar soils 80% and minor components 20%. Mean annual precipitation of 59 to 67 inches. Mean annual air temperature of 64 to 72 degrees and frost-free period of 223 to 253 days.

At the time of this programming effort there has been no sub-surface soil testing performed in conjunction with this project. Because this project involves the construction of a new facility, the D/B team shall be responsible for the completion of all necessary surveys and soil tests.

2. Site Water Table, Flood Hazard and Stormwater Drainage Requirements

According to the Federal Emergency Management Agency (FEMA) Flood Zone/Maps and the latest U.S. Geological Survey information, the site is not designated as an area that experiences significant flooding. The 100-year flood plain is to the West of the site surrounding the drainage pond. The proposed impervious area will be greater than the existing, due to the undeveloped character of the land. The D/B team is challenged to study alternatives to handle stormwater issues in an efficient manner.

3. Parking, Vehicular, Pedestrian and Bicycle Circulation

This site has a couple points of potential vehicular access from East Paul Dirac Drive and potentially from West Paul Dirac Drive. Care must be taken to include the two chilled water storage tanks in the planning of the vehicular access to the building and its parking and service facilities.

The D/B team shall be responsible for assisting the University in maintaining the integrity of all pedestrian, bicycle and vehicular circulation routes around the project site during the construction process.

4. Site Vegetation

The site is partially a cleared area that currently serves as service entrance to the back of the existing buildings. There are a few large mature oak trees at the site area and in close proximity. The area northwest, towards East Paul Dirac Drive has a dense buffer with large pine trees and underbrush vegetation. See Vegetation Map provided at the Appendix.

5. Archaeological History

According to The Florida State University policy, the D/B team shall solicit the State Division of Historical Resources to review the property in accordance with Florida Statutes Section 267.061 The consultant shall meet and review the assessment effort with Historical Resources' staff.

6. Location of Exist. Utilities & Proximity of Utilities to Project Site

The City of Tallahassee is the service provider for municipal services in this area (potable water, sanitary sewer, gas, solid waste and electricity). The D/B team shall be responsible for examining the condition and capacity of the various utility systems that will serve this facility and make recommendations for all necessary improvements to these systems. Generally speaking, these recommendations shall focus on the two

primary areas of concern; first, the condition of the existing distribution system, and second, the capacity of the distribution system and its ability to serve the project. In addition the D/B team shall be responsible for including all the specific project requirements of piped nitrogen, compressed air, cooling water and electrical as indicated.

7. Architectural significance of structures on site and the proximity and significance of structures on adjacent sites which will have an impact on the project.

The most significant building in Innovation Park and the FSU Southwest campus area is the NHMFL located directly south of the proposed building site. Further to the south is the metal clad building complex of the FAMU-FSU College of Engineering. To the East is the newly completed brick building of the Materials Research Building and the two, brick clad and nearly identical prototype research buildings dedicated to research and associated functions.

Prior to commencement of the design phase, the D/B team shall obtain the latest copy of the University's Architectural Design Guidelines and Landscape Design Guidelines for incorporation into the design of this project. The D/B team shall utilize these guidelines where appropriate and discuss any exceptions with the Facilities Department. Understandably, as this project has a very specific function and, being removed from the Main Campus, there is more latitude for interpretation and change.

8. Any unusual site condition which may impact the cost or design of the project.

Karst features (sinkholes) are present in the surrounding lands and may be present on the proposed site, but are currently undetected. The Leon County GIS map series indicates a band of Karst features that are know to exist on the Seminole Golf Course and elsewhere within Innovation Park and the FSU Southwest Campus. Karst features were an issue when constructing the research buildings on Levy Avenue.

9. Direction of prevailing winds:

In the summer, the prevailing winds are from the south-southeast. In the winter, the prevailing winds are from the north and south. It is not expected that prevailing winds shall have a significant impact on the design of this facility. The D/B team shall, however, be sensitive to the downstream effects of any mechanical exhaust from all research facilities around the project site.

IX. Program Area

This project involves the construction of a three story building to house a Free Electron Laser along with its associated labs and offices. An additional Cryogenics building will also be provided as part of this project. This section of the facilities program outlines the project's program needs as well as the subtle, but significant project issues, a resolution of which is necessary to make this a successful project.

The program information contained in this particular section is divided into two areas. The first part of this section contains a summary of specific spatial and design requirements for the various spaces that will be included in the building. A "Space Summary" located in the Appendix lists the various spaces required, the number of similar spaces, and square footage in a straightforward manner. A further detailed explanation of each type of space is provided in the "Room Data Matrix" also included in the Appendix.

The second part of this section contains information regarding important building design problems as well as site and schedule issues, all which need to be addressed in the design phase. These issues cover a wide range of topics and are presented to assist the Design-Build (D/B) team in understanding the obvious and not-so-obvious problems that must be solved with this project. The D/B team is expected to become thoroughly familiar with the program requirements described in this section. Prior to the commencement of either the design or preconstruction services phase, the D/B team shall have the opportunity to discuss these requirements with the construction project manager and representatives of the building committee and the University's Office of Research and researchers and staff of the National High Magnetic Field Laboratory.

A. Specific Program Requirements

This section identifies the traditional requirements for the various spaces in the new facility including an enumeration of the number of similar spaces, their size and, where not obvious, their environmental requirements.

The Space Summary that is presented in the Appendix lists the spaces that are to be included in the design of this project. This summary quantitatively describes the spatial needs of the project, as they are presently known. These figures are presented and totaled in tabular form. Included in this summary is a breakdown of the total programmed net assignable and gross square footage by space type. This information is presented to assist in documenting this project's impact on the University's overall space inventory. It should be noted that this project was not presented for approval during the University's most recent Educational Plant Survey. Where appropriate, square footages have been based upon space and occupant design criteria found in the 2008 Space Requirements for Educational Facilities (SREF) standards.

It is entirely possible, if not probable, that there may be a slight variation in square footage numbers as the design is pursued. Any deviation from this baseline program information must be approved by the Building Committee.

The Space Summary represents only a partial image of this project's spatial needs. While it is critical to know the number, size and types of space, it is equally important to understand the environmental and relationship needs of the spaces and their organization. To assist in the presentation of this information, a "Room Data Matrix" has been included in the Appendix of this document. These forms describe the individual spaces in terms of the activities that occur within them and their relationship to other spaces. Additionally, these forms also prescribe environmental needs such as acoustic, indoor climate, architectural finishes, communications, lighting, and accessibility.

The D/B team is expected to become thoroughly familiar with the spatial information for this project. Prior to the commencement of the design phase, the D/B team shall have the opportunity to meet with representatives of the Facilities Department and the Building Committee to answer any questions and discuss any apparent revisions.

1. Free Electron Laser (FEL) Building

   a) Basement Level - Laser Vault

   The laser will be housed in a concrete vault with floor at or below grade. The walls will consist of 2-feet thick solid concrete and portions of the facility above grade will be covered with an earth berm. The dimensions of the vault will be dictated by the function of the laser for which it is housed, with a 196 ft. by 54 ft. (outside dimension) floor plate likely. The laser itself will be similar to one at the Department of Energy's Thomas Jefferson National Accelerator Facility (TJNAF or JLab) in Newport News, Virginia. In fact, it is likely that staff at Thomas Jefferson Lab will be retained to design the laser for this project. Do not contact JLab at this time; John Kynoch of NHMFL in Tallahassee is your user group contact. The laser for this project will provide a wide range of light frequencies, and may produce radiation that is harmful. In order to receive and remove equipment a ramp to the lower level with a removable concrete entryway will be provide.

   b) First Level – Laboratories

The first floor above the basement will contain several dedicated labs, user/student cubicles and a break/meeting room. The main entrance as well as an entry lobby will be on this floor. A covered loading dock will be needed.

c) Second Level - Offices

Individual offices will be provided on this uppermost level.

2. Cryogenics Building

This nearly 8,000 gsf building is a separate free-standing building and is not part of the FEL building. It is composed of two rooms on one level: the Cryo Plant Control Room and the Cryo Plant Main Room, each with a roll-up door to the exterior

B. Design Issues and Opportunities

In addition to the space needs described above, there are several major design issues that must be addressed in this project. These issues are briefly explained below. It is expected that the D/B team shall take into serious consideration each of these issues and assist in the development and incorporation of acceptable and meaningful solutions in the project design.

1. Site and Master Planning Issues

The location of the FEL needs to be in close proximity to the existing NHMFL construction and be connected by a covered walkway. While the FEL building is expected to be in reasonably close proximity to the existing NHMFL, the separation should be sufficient to avoid interference from the high magnetic fields routinely produced at the lab. The Cryogenics building will be separate from the FEL building and does not need a covered walkway.

2. Parking, Vehicular, Bicycle, and Pedestrian Circulation

This project is expected to make appropriate yet modest improvements to vehicular and bicycle parking. Enhancements to the bicycle and pedestrian circulation system may be provided if design solution warrants this for efficient, safe and convenient operation of the facility.

The D/B team is responsible for assisting the University in maintaining the integrity of all pedestrian and vehicular circulation routes around the project site during the construction process. Sidewalk closures should be

in accordance with the FDOT standard: "Pedestrian Control for Closure of Sidewalks" (Index No. 660 of 2008 FDOT Design

This project is expected to make appropriate yet modest improvements to vehicular and bicycle parking. Enhancements to the bicycle and pedestrian circulation system may be provided if design solution warrants this for efficient, safe and convenient operation of the facility.

The D/B shall be responsible for assisting the University in maintaining the integrity of all pedestrian and vehicular circulation routes around the project site during the construction process. Sidewalk closures should be in accordance with the FDOT standard: "Pedestrian Control for Closure of Sidewalks" (Index No. 660 of 2008 FDOT Design Standards)

3. Loading and Service Access

The existing service drive accessed from the northern portion of the site is expected to serve both the FEL and Cryogenics building. It is possible the design may warrant shifting or modifying portions of the service drive in order to accommodate these new buildings. The Cryogenics Building will require service access at each of the roll-up doors. The FEL requires a covered loading dock as well as and equipment delivery pit. The equipment delivery pit will have a removable roof, so equipment may be lowered into it before transferring elsewhere within the FEL building.

Service access to this facility will need to be made in an unobtrusive, yet convenient manner. Past experience has shown that, in some instances, providing adequate service access to a building has not been granted a sufficiently high level of importance during the design phase. Hence, service access becomes a design afterthought. This project shall not be one of those instances. Coordinating and combining service access with other areas of the facility is an obvious consideration.

4. Landscaping

Irrigation and landscaping commensurate with the existing NHMFL facilities will be provided. Currently wastewater from the cooling towers is used for irrigation.

A sensitive and well-conceived landscape plan is an important component of this project. It is expected that landscaping will be used to screen service areas; soften building masses; provide shade in seating areas, drives and pedestrian pathways; and to organize and define exterior space.

As this is quite a large-scale project many attractive mature trees may be lost. There are many trees, however, that may be preserved, particularly along the perimeter of the proposed site.

It is generally assumed that the scope of this project shall not be compromised as a result of any existing vegetation and that, where necessary, trees or shrubs will be removed (or relocated) to accommodate the construction of the project. The D/B team shall make the Facilities Department aware of any such situation.

5. Visual Clutter / Aesthetics

As with many construction projects, there are a certain number of building system components that are typically visible on the exterior of the building or elsewhere on a project site. Near the vicinity of the proposed new construction is an existing storage facility that with consultation of the user group should be either be screened or demolished and rebuilt at another location. Other components often found on projects that may or may not be applicable to this project are devices such as backflow preventers, condenser units, and cooling towers, usually detract from the building's design if not appropriately handled. Additionally, they can become unattractive nuisances. The D/B team therefore shall exercise special care to ensure that these types of devices do not impact or detract from the project's appearance.

Where appropriate, the D/B team shall carefully plan for either the obscure placement of such items or the construction of some type of visual screen to hide them. There are several means by which this can be achieved. Ideally, the offending device can be incorporated into a project's design in such a manner that it is not conspicuous. Other types of concealment, such as screening walls or landscaping, should be utilized where appropriate. It is essential however that all methods of concealment comply with applicable codes.

6. Hazardous Materials and Abatement

The D/B team shall be responsible for reviewing and complying with all applicable portions of the University document entitled "*Procedures to Identify and Manage Environmental Issues During Demolition Renovation and New Construction Projects at Florida State University*" dated October 16, 1996.

7. Accessibility

The laws, statutes and codes that govern the design and construction of this facility requires it meet all applicable standards for accessibility, not

only to the building, but also within the building as well. It is important that the D/B team understand that accessibility should not be considered as an afterthought, but rather an important programmatic requirement, deserving of as much attention as any other project need.

The University, as well as provisions of the Americans with Disabilities Act (ADA), maintains a position that any disabled student or building user should be provided the same opportunities and access to facilities and functions typical to the experience of the student body, visitors and other users. This includes participation in all other shared and semi-public activities offered. Public common use areas and the spaces shall be fully accessible.

Accessible parking spaces should be provided in close proximity to the building. Public drinking fountains and telephones, where offered to students, visitors and other building users shall be accessible. Accessible countertops and knee space in the required quantity should be provided in break rooms.

Compliant signage needs to be provided throughout the interior. Compliant visual and audio alarms with the fire/smoke detection system shall be provided throughout. It is not anticipated Areas of Rescue Assistance will be required since the building will be completely sprinklered.

The main entrance shall be fully accessible and have a power-assisted door. The requisite number of accessible secondary entrances as required by code and ADA should be provided. Any inaccessible (to the disabled) points of entry shall have signage directing persons with disabilities to the closest points of accessible entry around the building perimeter. All elevators shall be ADA compliant.

8. Security

As with all construction projects undertaken by the University, security, both in terms of personal safety and the protection of private and state property, is a very important issue. The D/B team shall consider this issue in all matters of design with special consideration given to any exterior improvements that might compromise the safety of occupants or persons walking nearby.

The D/B team shall consider a range of design strategies that promote both the safety of the users and protect personal and State property. Such means should include, at a minimum, enhanced exterior lighting, security phones, and a facility design that minimizes areas where crime can be committed. The issue of safety in the design of this facility shall be given

considerable weight. Additionally, fostering a strong sense of community inherently becomes a crime deterrent.

There shall be a balance of safety and convenience when determining number and location of access points into the facility. To prevent illegal or inappropriate access, the D/B team shall discuss specific requirement for the installation of a card access system both into the building and perhaps in specific areas within the building. The design of such a system shall be incorporated into the scope of this project.

Because of threats to personal safety, the University has installed a "Blue Light" security phone system throughout the Main and Southwest Campus. The D/B team, representatives of the NHMFL, the Technology Service and Support (formerly the Office of Telecommunications) and the Florida State University Police Department shall meet during the design phase to discuss the need to either add new units or relocate existing units. New or improved units shall be included in the scope of this project.

9. Project Schedule / Delivery

It is essential that the D/B team understands and appreciates the sensitive nature of this project's schedule. As a one-of-kind, cutting edge research facility, completion of this facility in a timely manner is essential.

The University does not expect this project to be completed until 2013. That expectation should provide a sufficient period of time for the completion of the design and construction phases as well as the time necessary for NHMFL staff to prepare the new building for occupancy. In order to achieve this goal, the programming, design and construction work associated with this project has been choreographed to provide the best in the time frame indicated.

The University does not believe that a project of this size and magnitude could be finished by 2013 without haste and therefore paying a significant premium and risking the preparation of a faulty design. On the other hand, the University does not want to discourage the D/B team from suggesting means by which the project could be finished earlier, precipitating the initiation of new research experiments.

These timetables speak to the core of the scheduling issue. It will be the responsibility of the D/B team to advise the University of the possibility of accelerated design/construction phases and the responsibility of the NHMFL and the Office of Research to determine the benefits to be gained by such measures.

Whether an adjusted project schedule is feasible or not is yet to be determined. Regardless of whatever timetable is chosen, the University contends that the project can be totally completed and ready for occupancy in 2013. At a minimum, the D/B team shall make recommendations that ensure this expected completion date is met. If the work is not completed by the date stipulated in the contract documents, then, depending upon the circumstances, the University shall assess liquidated damages. Additional scheduling information can be found in the Project Schedule section of this document.

10. Sustainability and LEED Certification

FSU and NHMFL intend to obtain LEED (Leadership in Energy and Environmental Design) certification for this new facility as part of its commitment to sustainable practice as well as providing enhancement and quality to academic programs. The design guidelines require the "Certified" level as a minimum but at the same time requires the design professional strive toward "Silver" level where practical. Commissioning is a prerequisite to LEED certification and is a line item in this project's budget.

11. Breathe Easy Zone

The University has adopted a policy allowing each department or building to establish "Breathe Easy" Zones where smoking is not permitted for a distance of up to 50 feet around the perimeter of buildings. As part of this project the D/B team shall design a "Designated Smoking Area" outside of the "Breathe Easy" Zone. The Designated Smoking area must be accessible to persons with disabilities. This will satisfy the LEED prerequisite for Environmental Tobacco Smoke (ETS) Control.

X. Utilities Impact Analysis

The City of Tallahassee is the service provider for municipal services in this area (potable water, sanitary sewer, gas, solid waste and electricity). All existing utilities are anticipated to be adequate to serve the facilities. All utility connections are to be coordinated with the City through the FSU Utilities Office. Although this project is now part of the adopted Campus Master Plan and included in the Development Agreement with the City of Tallahassee, there may be some utility related fees. The Design-Build (D/B) team shall assist in the identification of appropriate utility impact fees to be paid by this project.

A. Stormwater

The proposed impervious area will be greater than the existing, due to the undeveloped character of the land. It is expected that the proposed surface parking lots will collect storm water in a series of pipes and inlets and will convey this water, and the water falling upon the proposed site within an on-site stormwater facility.

B. Domestic Water and Sanitary Sewer

The City has agreed that they have an obligation to provide water and sewer services to this site. It is presumed that the connections will be made somewhere along E. Paul Dirac Drive. The exact location will have to be determined after conferring with the City.

C. Chilled Water and Natural Gas

As this facility will be at the Southwest Campus, there will be no availability of chilled water and steam from a central system. Therefore, it is anticipated that either an air cooled chiller or a water cooled chiller with cooling tower will be required. Heating can be provided by either natural gas or electric. A life cycle cost analysis is required and is to be used to evaluate the various heating and cooling options

The City has natural gas available to serve the site. However, the City will only pay for the cost of any needed service extensions that do not exceed the estimated revenue for a seven-year period. The City also requires a year-round load. Natural gas domestic water heating would qualify for the year-round load. However, the University energy policy discourages the use of hot water for lavatories in public restrooms Therefore, unless there is another need for domestic hot water, this cannot be used to meet the year round load requirement. The project mechanical engineer, in conjunction with the University Utilities Department, will need to meet with the City to discuss the anticipated natural gas needs.

D. Electrical

The estimated electrical demand load for the FEL project is not expected to exceed 5 MVA. This value must be verified when final plans are completed. It is recommended that service be from the City of Tallahassee's substation #31 (also serves the NHMFL complex) as a separate feeder. This action will require coordination with the City through FSU's Utilities Section during initial phases of design.

Note: At the time when the expected demand is determined, a joint meeting will be held with NHMFL Director of Facilities and the FSU Director of Utilities to discuss how to best to feed the load.

At this time University Staff recommends a separate feed from the substation so as not to use the increased capacity that was recently installed.

E. Telecommunications

It is recommended that communications infrastructure and services be linked to the existing OP/MD Bldg and/or Wing A/B, whichever is most applicable. Depending upon site conditions and design criteria, this link could be made via either above ground conduits and/or underground duct bank properly sized to accommodate initial communication services and future growth. Within the FEL facility special consideration should be given to wired and wireless network communications infrastructure. These considerations would include service capacities, pathway placement, media selection and other critical infrastructure systems characteristics. The design professional should coordinate all security, emergency blue light, elevator phones, voice, video, data and telephone work with Technology Service and Support (formerly the Office of Telecommunications).

XI. Information / Communication Resource Requirements

The need to provide adequate and appropriate information and communication resources for this facility is not unlike that of other types of University facilities. The majority of the building will be wired for data and communication. The need for connectivity in other spaces in the building is documented in the individual space descriptions. During the early stages of the design phase, the Design-Build (D/B) team shall work with the NHMFL and the Office of Research to determine final specific telecommunication needs for the building occupants.

Generally speaking, the term "Information Technology Resources" shall include the hardware, software, services, supplies, personnel, facility resources, maintenance, and training involved in the function of data processing. Examples of Information Technology Resources are computer hardware, and peripheral equipment, such as personal computers, mini-computers, file servers, printers, scanners, front-end processors, etc.

Similarly, the term "Communications" shall include the hardware, software, services, personnel, facilities and training involved in the transmission, emission, and reception of signs, signals, writings, images, and sounds of intelligence of any nature by wire, radio, or other electromagnetic systems. Examples of "Communications Resources" are wiring of the facility for voice, data, and video; connections within/between buildings, and campus networks; backbones; electronic classrooms; communications/data jacks in rooms; satellite up-links and down-links; communications closets; television; security systems; and radio transmission facilities equipment.

Standard guidelines and specifications have been developed and adopted by the University to assist the D/B team in the design of this project. Technology Service and Support (formerly the Office of Telecommunications) has developed a document entitled "Florida State University Telecommunications Infrastructure Standard" which can be accessed via the following web address:

http://www.fpc.fsu.edu/DGS-2008_appendixA.pdf

The D/B team shall be expected to become thoroughly familiar with the contents of this specification and shall plan for the design of all telecommunication systems according to this specification. The University's Technology Service and Support must approve any departures from this standard specification.

The University's Office of Technology Integration/ Infrastructure (OTI) is generally responsible for the installation, operation and maintenance of these networks. See the exhibit located in the Appendix of this document.

Technology Service and Support has the responsibility of closely overseeing design, development and approval of telecommunications systems. The Facilities Department along with Technology Service and Support will review design documents in several

phases of completion to assure their compliance to local and national standards and codes. During the design phase, these reviews typically occur at the conclusion of the Design Development, 50% Construction Document, 100% Construction Document milestones.

The actual installation of Information Technology Resources and Communications shall either be done by the Office of Technology Integration/Infrastructure and Technology Service and Support or under their close supervision.

As evidenced by the approval signature on this document's Signature Sheet, the University's Information Resource Manager has assisted in both the development and review for final approval of this program document for compliance with the requirements for the development of facility programs.

In closing, it is worth repeating that the D/B team shall work closely with the Facilities Department, the Office of Technology Integration/Infrastructure, Technology Service and Support, the Building Committee and other appropriate University departments during the design and construction phases to ensure that all information and communication systems are fully understood, designed, and installed in accordance with all appropriate standards.

XII. Codes and Standards

Over the past few years, there have been substantial changes to the regulatory system that controls university development. The restructuring of the higher education governance system, the adoption of a statewide building code, the evolution of a University Board of Trustees and the advent of a University-wide permitting office are just a few examples of such changes because many of these changes are very recent, it is difficult to fully predict or evaluate how campus construction and the systems that oversee it will be impacted.

The vast majority of all capital construction projects completed at the Florida State University, regardless of whether they fall within the category of either a major or minor project are administered by the Facilities Department. All construction activities that occur on the Florida State University campus are tightly regulated by a series of existing and new statutes, standard policies and procedures. The responsibility for ensuring that the completion of this project meets these requirements has been assigned to the Facilities Department; that portion of the process remains unchanged.

The following is a general enumeration of the statutes, policies and procedures that the Design-Build (D/B) team shall follow in developing this project. This list may not be entirely complete nor does it absolve the D/B team from any legal or contractual responsibilities. It should also be noted that the D/B team shall ensure that the design documents comply with all codes until the date the project is permitted for construction as part of the basic service requirements. The D/B team shall also ensure that all codes utilized during the design process shall be the most currently adopted.

A. Florida Statutes

The D/B team shall ensure that the design and construction of this project meets all of the appropriate and applicable sections of the following Statutes

- Chapter 163 Intergovernmental Programs
- Chapter 255 Public Property & Publicly Owned Buildings
- Chapter 287 Procurement of Personal Property and Services
- Chapter 553 Building Construction Standards
- Chapter 663 Fire Prevention and Control
- Chapter 1000-10013 K-20 Education Code

B. Codes and Standards

The D/B team shall also ensure that the design and construction of this project meets all of the appropriate and applicable sections of the following codes and standards:

- Florida Department of Environmental Protection
- Department of Education's Space Standards, State Requirements for Educational Facilities

- Florida Elevator Safety Code, Department of Business and Professional Regulation
- Rules of the Department of Business and Professional Regulation
- Rules and Regulations of the Division of Health
- Rules of the Florida Agency for Workforce Innovation and Florida Department of Financial Services
- Florida Lifestyles Energy Evaluation Technique
- Rules of the Area Water Management District
- Environmental Protection Agency
- Federal "Americans with Disabilities Act" (ADAAG Guidelines)
- Fair Housing Accessibility Guidelines
- Florida Fire Prevention Code
- ASHRAE Standard 62-1989,
- Appropriate ANSI regulations
- Appropriate OSHA standards during construction,
- Florida State University "Architectural Design Guidelines" and "Landscape Design Guidelines" and all other applicable university guidelines.
- Policy & Procedure No. OP-B-11-D1, Administration of A/E Agreements.
- Policy & Procedure No. OP-B-11-D2, Administration of CM Agreements.
- Policy & Procedure No. OP-B-11-E, Establishment of Construction Contract Time & Liquidated Damages.
- Policy & Procedure No. OP-B-11-F, Construction Change Orders and Construction Change Directives.
- Any other regulatory codes or standards that apply to this type of project.

The D/B team shall also be responsible for following the requirements of the development agreement between the City of Tallahassee and the University concerning growth management issues.

It is worth noting again that the Florida State University Building Code Administration Section, a unit of the University's Environmental Health and Safety Department, ensures that all new building construction, additions, alterations, repairs, remodeling or demolitions and all installations of building systems meet Florida Building Code requirements including all electrical, plumbing, mechanical, gas, gas fuel, fire prevention, energy conservation, accessibility, stormwater and flood plain management requirements. This office supervises, directs and enforces the permitting, plans examination and inspection program in all University buildings. When the Building Code Administrator is satisfied that all code requirements have been met, a certificate of occupancy will be issued.

It is the responsibility of the D/B team and the University's construction project manager to ensure that all plans review and construction inspection requirements are met. It is highly recommended that at the commencement of this project, the D/B team meet with the University's Building Code Administrator to discuss the project and any possible code issues, schedules for plans review, and other administrative procedures.

XIII. Project Schedule

The proposed schedule for this project is listed below in tabular form. It is expected that the Design-Build (D/B) team shall review this schedule and make recommendations for adjustment. Refinements to this schedule must be made in consultation with the D/B team, the Facilities Department and the Building Committee.

Projects involving new research facilities are particularly sensitive to design and construction schedules for several reasons. First, in undertaking a major new construction project, the Office of Research and the NHMFL are making a commitment to researchers that the project will be completed and ready for use by a certain date. Ideally, these types of projects are completed in sufficient time to allow for the Office of Research and NHMFL staff the opportunity to prepare a building for occupancy. For instance, this process usually involves the delivery, assembly and installation of all furnishings and equipment; a task that is not performed by the D/B team but by department staff and special equipment installers.

The date of completion therefore, is a very important milestone. If it is not reached, it could compromise the University's commitment to use the new research facility. Of course, if the D/B team is able to devise methods or strategies of accelerating the design or construction phases, then that advancement of the completion date provides the Office of Research and NHMFL more time to make the building ready for occupancy.

The second reason for concern about the schedule involves the simple reality that the passage of time reduces the value of money. In order to maximize the effective use of the funds that are committed to this project, its timely expenditure is critical. Any delays in completing the project have the potential of increasing the cost of the project. Any increase in costs will more than likely have the effect of reducing the scope of work.

It is for these and other reasons that the D/B team must understand the critical nature of the project schedule. Again, both are encouraged to make reasonable recommendations to meet the project scheduled or to accelerate the completion date.

The schedule that is listed below is conservative and assumes a rather straightforward approach to both the design and construction phases. It does not necessarily reflect the potential savings in time that can be realized by using strategies such as the implementation of early bid packages (especially with regards to the development of the site), the purchase of long-lead items, accelerated design schedules, and the like. It is recognized however that there are practical limitations to the use of these and similar strategies and that the risk and rewards of each must be analyzed. It is not unreasonable however to assume that, at a minimum, the D/B team should be able to meet the schedule listed below. Again, D/B team is encouraged to make reasonable recommendations to meet the project schedule or to accelerate the completion date.

Project Schedule

2009

October	Facilities program expected to be completed and approved.
October	Florida Administrative Weekly advertisement published.
December	Design-Build proposals due.
December	Shortlist selection.

2010

January	Design-Build interviews.
February	Design-Build award approved.
February	Notice to Proceed with design issued.

2011

February	Notice to Proceed with Construction

2013

January	Substantial completion expected.
February	Final completion expected
April	Project set up complete; building ready for occupancy

XIV. Program Funds

This project shall be accomplished using University Funds. A breakdown of these sources and amounts is shown below.

Source	**Amount**
University Funds	$ 26,000,000
Total	**$ 26,000,000**

A summary of the project costs is shown in the following section. Based upon the scope of work described in this facilities program, a breakdown of those project costs is as follows:

	Funds Required
Planning	$ 1,773,000
Construction	$ 21,527,521
Equipment	$ 2,699,479
Total	**$ 26,000,000**

XV. Project Budget Summary

A. Introduction

The Project Budget Summary that follows includes a breakdown of all project costs including administrative, construction, construction related, site development, and furnishings and equipment costs. The Design-Build team shall be responsible for verifying these estimated costs and making recommendations for adjustments, where necessary. The following is a brief explanation of the various budgetary components that were considered in the development of this Summary.

B. Budget Items

1. Construction Components (Basic Construction Cost)

Construction Cost: The cost of the building itself is predicated in large part upon the recent costs provided by local Tallahassee construction projects of a similar category as well as current market climate.

Site Development and Improvements: An allowance has been identified in the project Budget Summary to provide for general site development costs that may be incurred by this project, including site preparation, relocation or extension of any required utility lines, grading, and landscaping.

* Telecommunications Outside Plant:

Outside Plant Pathway: This includes manholes with multiple 4" conduits encased in concrete then routed into the building or between multiple buildings.

Outside Plant Content (Wiring): This item includes all the specialized wiring within the Outside Plant conduit system. Typically it includes copper cabling and fiber optic cabling required to receive services to the building.

2. Other Project Components (Other Project Costs)

Like most capital projects, the cost of completing this project includes a variety of construction related costs. These are briefly described as follows:

Professional Fees: An estimate of professional fees for the Design-Build team has been included and is based upon the standard fee curve used by the University. These fees would cover items normally associated with the basic services portion of the project. The amount shown is for the professional services as well as providing for a small design contingency. The services of a specialty design consultant may be required on this project in respect to the building scope of this project. (Fees for the scientific equipment design, mainly laser and cryogenics are outside the scope of the project and associated budged forming this facility program)

Pre-Construction Manager: Funds have been reserved to provide preconstruction services that will be accomplished by the Design-Build team. These fees are based upon a percentage of the construction and site development costs.

Fire Marshal Fees: Per standard University practice, funds have been reserved to cover the cost of plans review by the State Fire Marshal's Office.

Inspection Services: Funds have been reserved to cover the number of inspection services that are required on this project, including the following:

Commissioning + LEED: 1% of the total basic construction cost has been set aside for documentation and commissioning related to items needed for LEED certification.

Construction Review Architect: Fees for an independent architect to review the construction process as the owner's agent. Services will be contracted separately (outside of D/B contract).

Threshold Inspection: Depending upon the final height of the structure, the services of a threshold inspector may be required; therefore, funds have been reserved for this purpose.

Roof Inspection: Funds have likewise been reserved for the services of the required roof inspector.

Plan Review/Inspections: Funds have been reserved to cover the cost of plans review and inspections by the University's Building Code Official.

Insurance Consult.: Per University standard practice, funds have been reserved to fulfill the requirements for the Owner Provided Insurance (OPI) consultant.

Surveys and Tests: Funds have been reserved for the accomplishment of various surveys, sampling, monitoring and tests that will be required to complete the project. This includes but is not limited to topography, geotechnical investigation, material testing, test and balance, asbestos and lead issues.

Artwork: The requirement for artwork is not applicable since non-appropriated funds are being used to construct this project.

Infrastructure Assessment: A 2% infrastructure allowance has been included to cover the University's Infrastructure Assessment.

Furnishings/ Equipment: A percentage of the total basic construction costs has been set aside as an allowance for the acquisition of non-fixed furnishings and equipment for this project. This estimate was based on a detailed schedule of furnishings/equipment requirements.

* Telecommunications Inside Plant

Inside Wiring: The necessary voice, video and data cabling needed to provide services throughout the building. It includes copper and fiber optic vertical

and horizontal wiring, elevator phone wiring, CAT 5E data wiring and all necessary hardware in the telecommunication rooms.

Instruments: The required telephone instruments needed to supply a typical office environment with simple single line, hands free instruments and the cost of a few emergency blue lights and some entrance phones.

Security: The required access system (doors/swipes) and/or security systems.

Network Computer Equipment: Routers, hubs, wireless access points, and batter back and other computer equipment as required.

Core Network Equipment: Shared cost of a core router chassis, battery back-up and a 1 Gbps fiber optic transport port.

Chiller Charge: An allowance has been set aside for the acquisition of another chiller to provide additional cooling capacity.

Project Contingency: A project contingency has been established as a percentage of construction costs to cover unforeseen conditions and impacts to the project.

*Telecommunications: Site Development Costs + Other Projects Costs

An allowance has been provided, with guidance from the Technology Service and Support (formerly the Office of Telecommunications or OTC), for the communications portion of this budget and includes: voice, video, data, infrastructure and networking. This allowance is broken down into seven (7) parts that when implemented encompass a completely finished FSU standards compliant infrastructure. The first two parts are related to Outside Plant costs and are included in the "Site Development Costs" of the Budget. The last five parts are related to the Inside Plant costs and are included in "Other Project Components". All are identified with their names, a brief explanation, and the responsible FSU Department delineated below. This estimate may also include the cost of providing any additional stations for the University's "Blue Light" trail around the building.

Budget Summary

PROJECT DESCRIPTION:

Facility/Space Type	Net Area (NASF)	Gross Area (GSF)	Unit Cost (Cost/GSF)	Total Cost
Laser Vault Floor	10,392	10,392	520	5,403,840
Laboratory Floor	7,129	10,600	425	4,505,000
Office Floor	7,067	10,600	250	2,650,000
Cryogenics	5,607	7,850	480	3,768,000
TOTALS	**30,195**	**39,442**		**16,326,840**

	Planning	Construction	Equipment	Total
SCHEDULE OF PROJECT COMPONENTS				
1. Construction Components (Basic Construction Cost)				
a. Construction Cost (from above)		16,326,840		16,326,840
b. Site Development and Improvements		1,632,684		1,632,684
c. Telecommunications - Outside Plant (OSP)				
OSP Pathway		21,000		20,000
OSP Content (Wiring)		16,000		16,000
(1) Total Basic Construction Costs		**17,996,524**		**17,996,524**
2. Other Project Components (Other Project Costs)				
a.Land/existing facility acquisition		0		0
b.Professional Fees (D/B)				
Basic Services (Group B)	960,000			960,000
Design Contingency (10% Bas.Serv.)	96,000			96,000
Specialty Consultant	200,000			200,000
c.Preconstruction Services (1%)	180,000			180,000
d.Fire Marshal Fees (.0025)	45,000			45,000
e.Inspection Services				
Commissioning + LEED	180,000			180,000
Construction Review Architect		100,000		100,000
Threshold Inspection		35,000		35,000
Roof Inspection		20,000		20,000
Plans Review/Inspection	56,000			56,000
f.Insurance Consultant (.0006)	11,000			11,000
g.Surveys & Tests				0
Surveys: Topography	20,000			20,000
Geotechnical Investigation	20,000			20,000
Stormwater Compliance	5,000			5,000
Testing and Lab Analysis during Construction		100,000		100,000
h.Permit/Impact/Environmental Fees		6,000		6,000
i.Artwork (.005)		0		0
j.Moveable Furnishings & Equipment			2,699,479	2,699,479
l.Telecommunications				0
Inside Wiring		70,000		70,000
Instruments		16,000		16,000
Security		35,000		35,000
Network Computer Equipment		60,000		60,000
Core Network Equipment		6,500		6,500
m. Infrastructure Assessment (2%)		360,000		360,000
n. New Chiller + Cooling Tower		1,400,000		1,400,000
o. Project Contingency 7.35%		1,322,497		1,322,497
(2) Total - Other Project Costs	**1,773,000**	**3,530,997**	**2,699,479**	**8,003,476**
ALL COSTS (1) + (2)	**1,773,000**	**21,527,521**	**2,699,479**	**$26,000,000**

XVI. Appendix

The following exhibits represent additional information relating to the planning and design of this project. They are included for information purposes only; questions relating to their content should be addressed to the construction project manager. The following is a brief description of each exhibit.

Exhibit 1: **Site Vicinity Map**
This map shows the location of the proposed site on the Southwest Campus of Florida State University.

Exhibit 2: **Project Location Map**
The Project Location Map contained in this Exhibit illustrates the location of the project site.

Exhibit 3: **Space Summary**
This Exhibit contains a copy of the proposed Space Summary for this project.

Exhibit 4: **Floor Plans**
This Exhibit contains potential floor plans ideas that reference the next exhibit.

Exhibit 5: **Room Specifications**
This Exhibit provides details of room features, referencing the room number from the potential floor plan ideas in exhibit 4.

Exhibit 6: **Topography**
This Exhibit contains illustrations that identify the existing topography from Tallahassee-Leon County GIS documentation.

Exhibit 7: **Vegetation map**
This Exhibit contains illustrations that identify the existing vegetation.

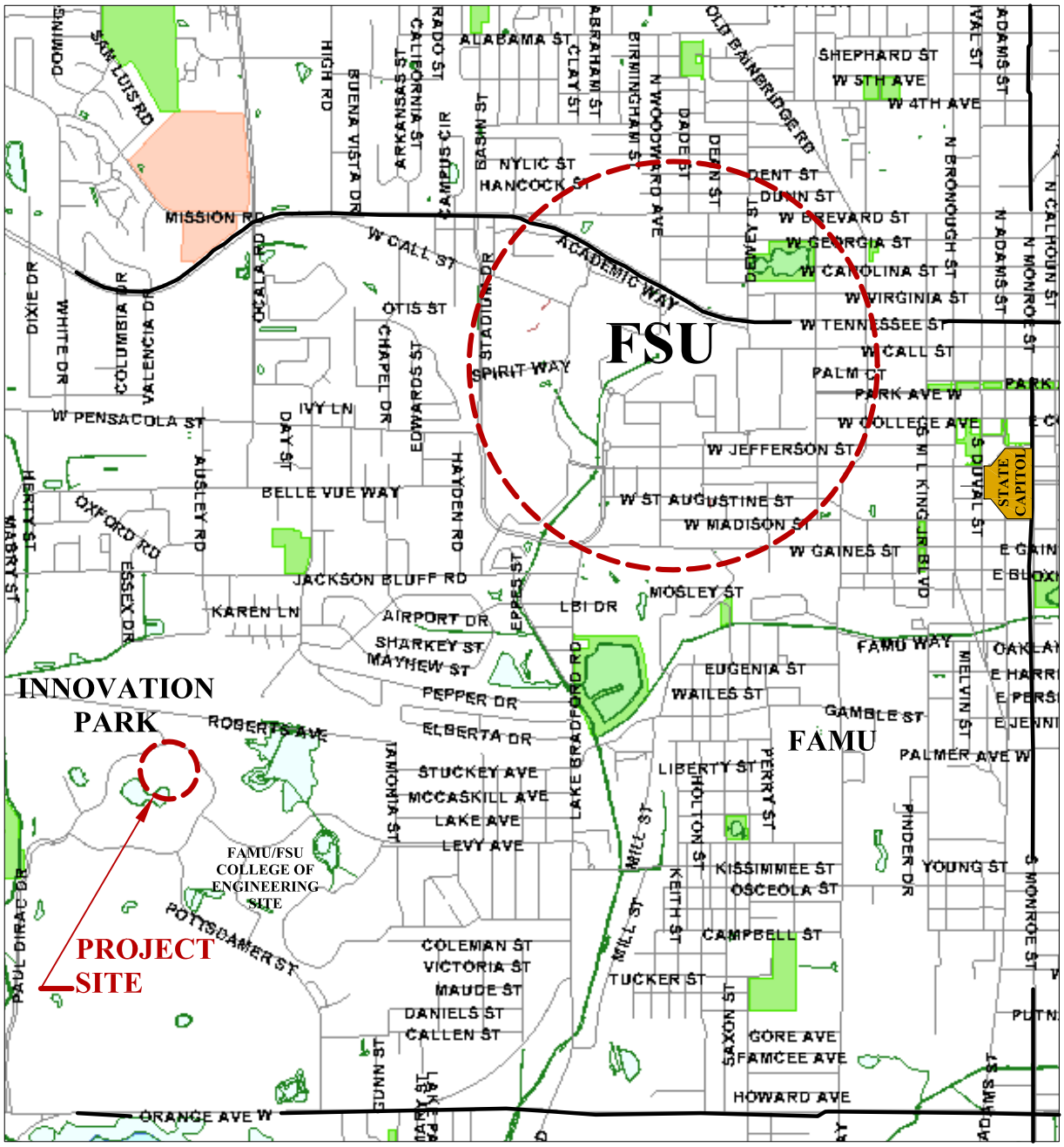
Exhibit 8: **Site Photographs**
This Exhibit contains photographs of the proposed site and its surrounding.

Exhibit 9: **Pedestrian Control for Closure of Sidewalks**
This Exhibit contains Index No. 660, of 2008 FDOT Design Standards

Exhibit 1

Site Vicinity Map

This map shows the location of the proposed site on the Southwest Campus of Florida State University.



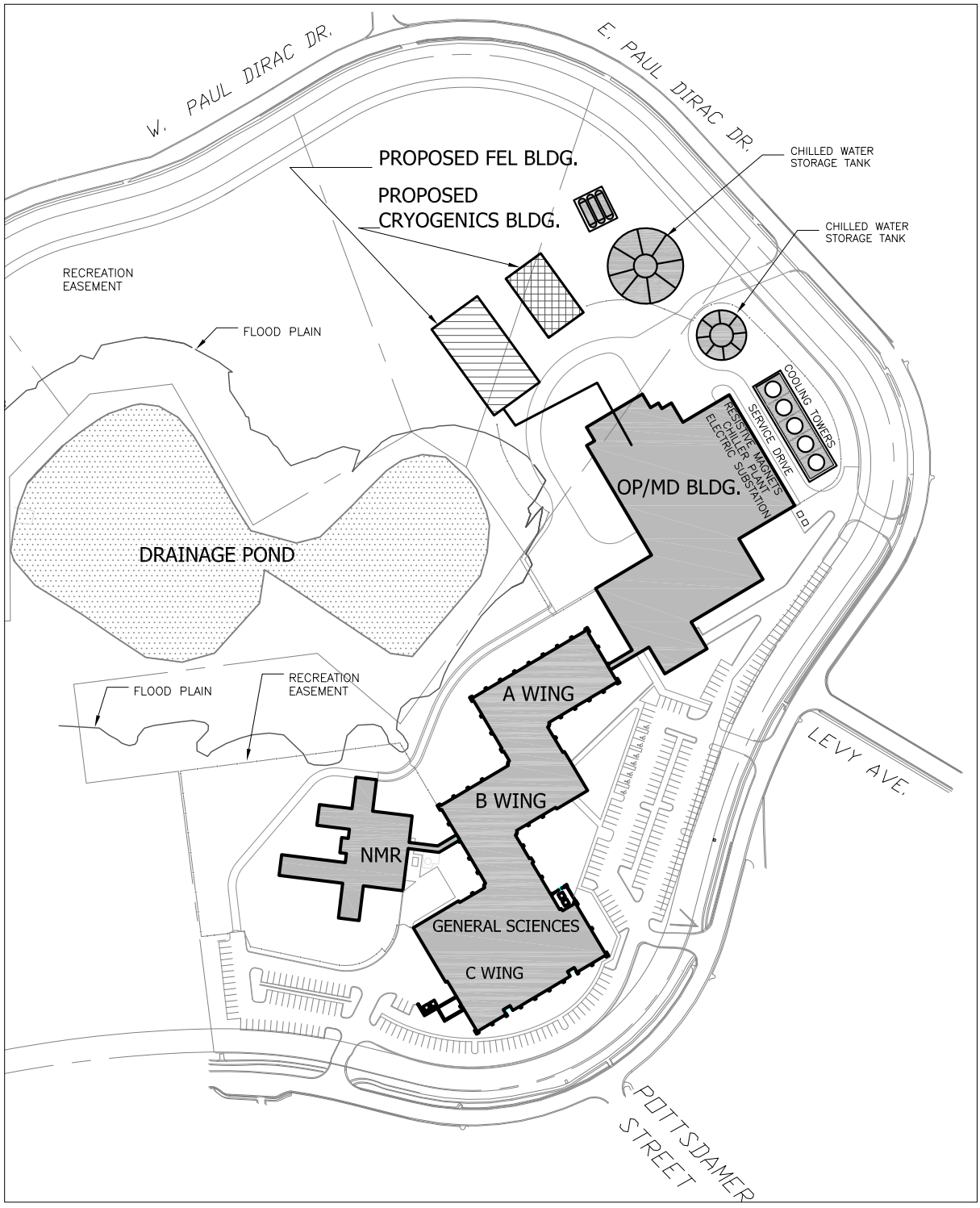
Site Vicinity Map

Exhibit 1

Exhibit 2:

Project Location Map

The Project Location Map contained in this Exhibit illustrates the location of the project site.



Project Location Map

Exhibit 2

Exhibit 3:

Space Summary

This Exhibit contains a copy of the proposed Space Summary for this project.

Space Summary of FEL and Cryogenics Building

FEL BUILDING

Laser Vault--Basement / Ground Level	Number of Similar Spaces	NSF per Similar Space	TOTAL NSF	Net to Gross Multiplier	GSF
Laser Vault + Vault Equipment Room*	1	7,260	7,260	1.00	7,260
Lobby/Freight Elevator/Stair	1	690	690	1.00	690
Vestibule / Laser Sand Trap	1	862	862	1.00	862
Equipment Delivery Pit	1	880	880	1.00	880
Alternate Stairs / Sand Trap	1	700	700	1.00	700
Subtotal			**10,392**		**10,392**
Laser Laboratory--First Floor					
Labs 1-5	5	560	2,800	1.50	4,200
Entry Lobby	1	939	939	1.40	1,315
Control Room	1	470	470	1.50	705
Optical Control Room	1	240	240	1.50	360
User / Student Cubicle	1	750	750	1.50	1,125
Break / Meeting Room	1	530	530	1.50	795
RF Equipment Room	1	960	960	1.50	1,440
Drive Laser Room	1	440	440	1.50	660
Subtotal			**7,129**		**10,600**
Office Floor--Second Floor					
Small Offices	12	135	1,620	1.50	2,430
Medium Size Office	2	170	340	1.50	510
Large Size Office	2	200	400	1.50	600
Conference Room	1	490	490	1.50	735
Break Room	1	200	200	1.50	300
Entry / Reception-Admin. / Cubicles	1	4,016.5	4,017	1.50	6,025
Subtotal			**7,067**		**10,600**

CRYOGENICS BUILDING

Ground Floor	Number of Similar Spaces	NSF per Similar Space	TOTAL NSF	Net to Gross Multiplier	GSF
Cryogenics	1	5,607	5,607	1.40	7,850
Subtotal			**5,607**		**7,850**
Total Square Footage			**30,195**		**39,441**

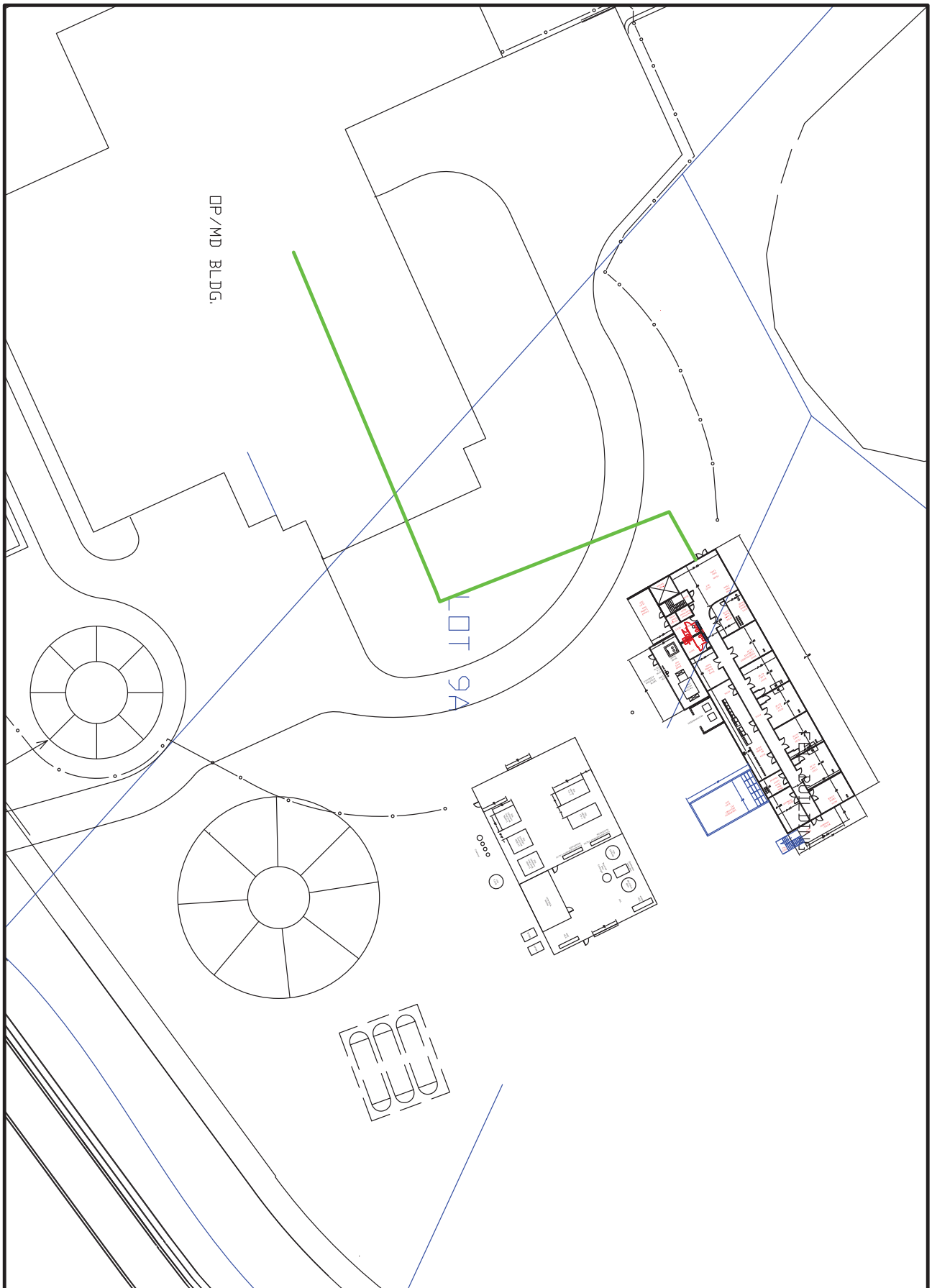
NOTE: ***165 feet x 44 feet outside to outside dimension of 2 feet thick walls;***

Vault Equipment Rm. (inside Laser Vault) = 124 nsf (9.3 ft. x 13.3 ft.)

Exhibit 4

Floor Plans

This exhibit contains potential floor plan ideas, site plan and building cross-section.



SHEET NO.	A1
SCALE:	
APPROVAL:	
DATE:	04-23-2009
DRAWN BY:	J. KYNOCH

PROJECT:

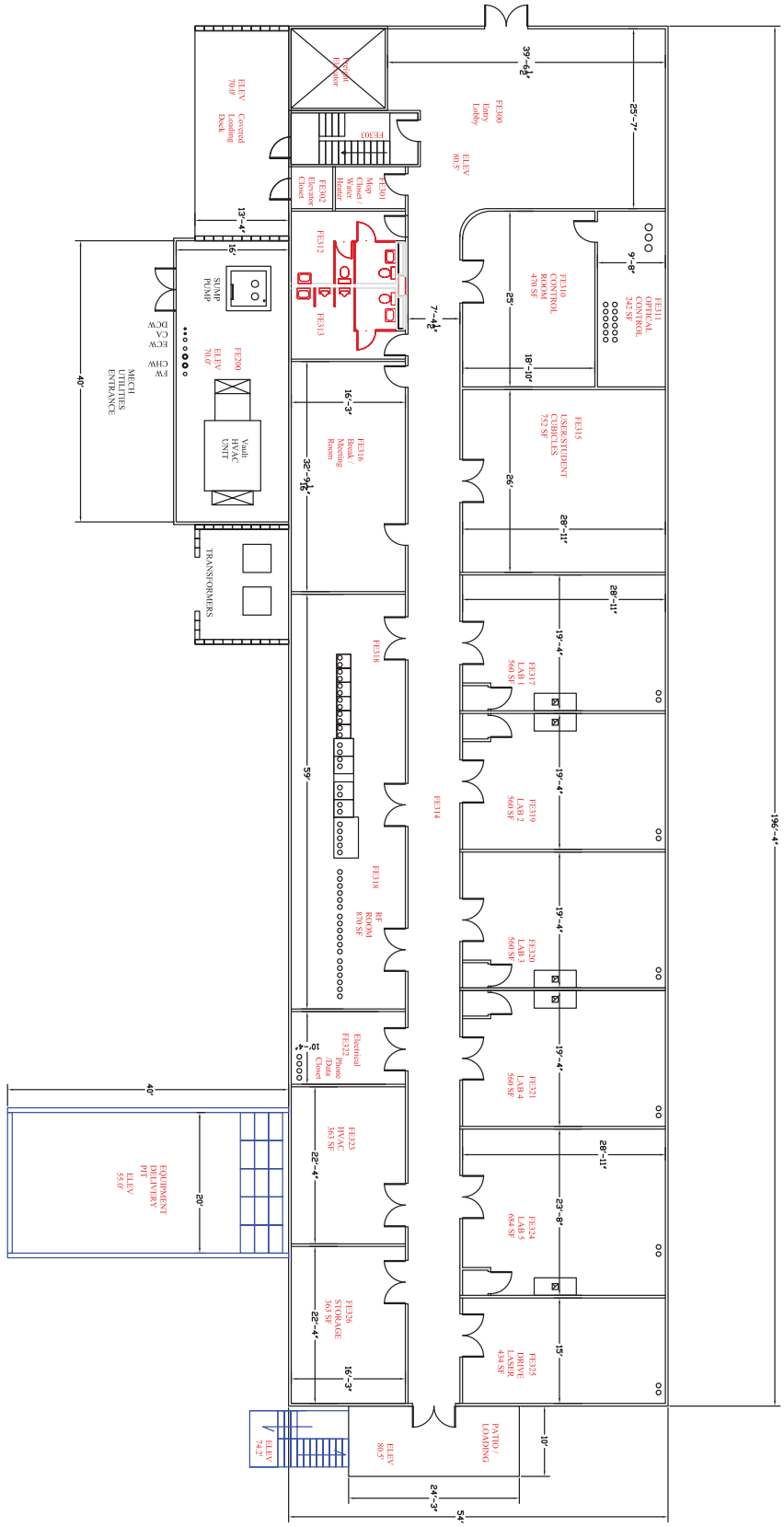
NHMFL FREE ELECTRON LASER

SHEET TITLE:

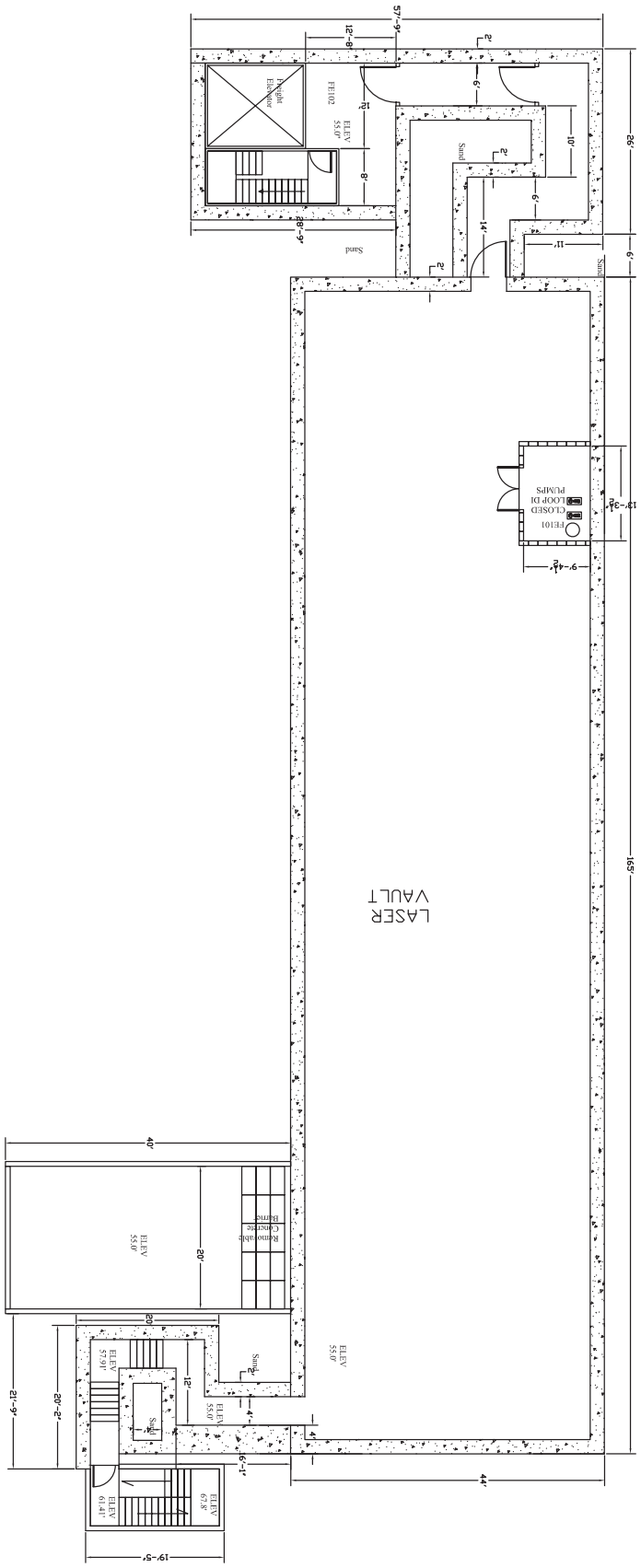
SITE PLAN

NATIONAL HIGH MAGNETIC FIELD LABORATORY
FACILITIES DEPARTMENT
1800 E. PAUL DIRAC DR.
TALLAHASSEE, FL 32310

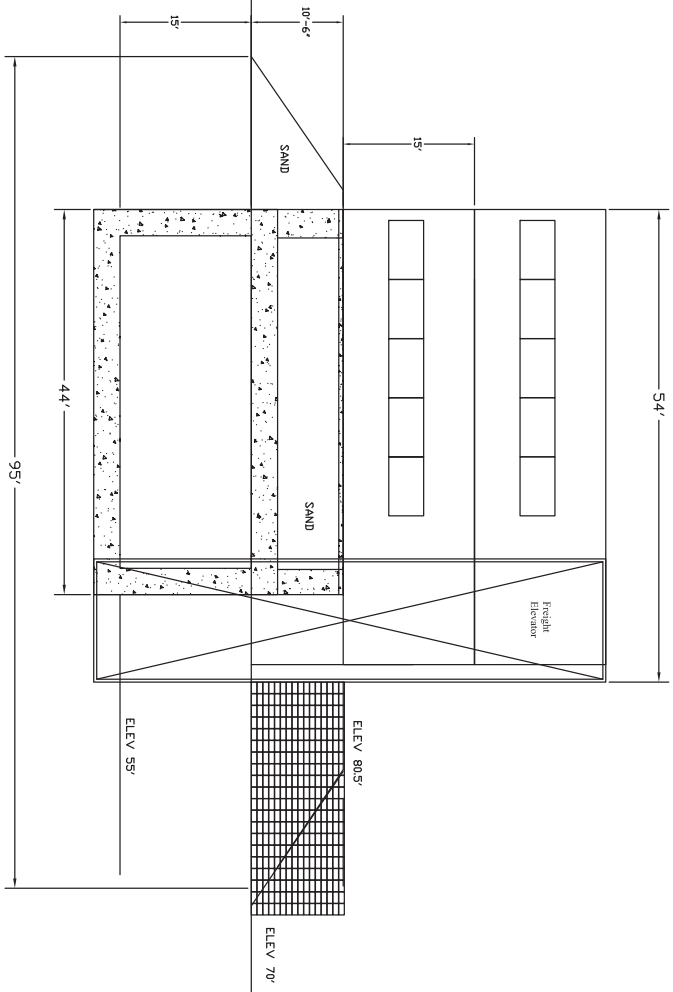
REV#	DATE	DESCRIPTION
1		
2		
3		



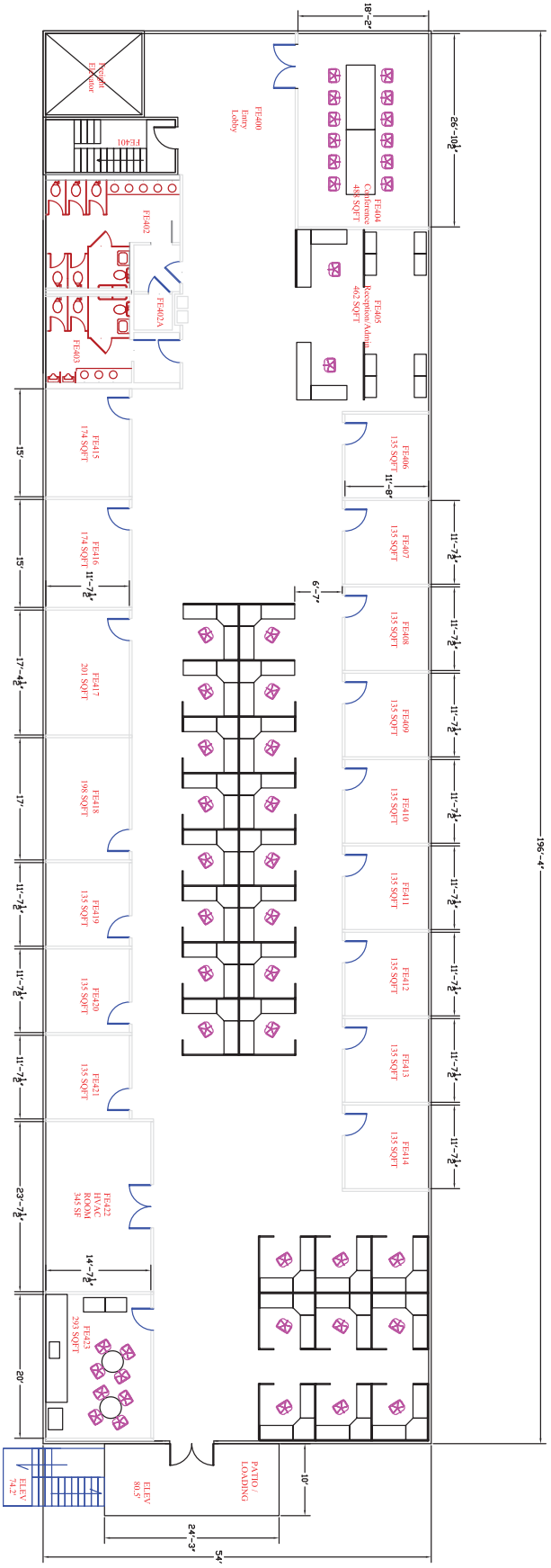
SHEET NO. A2	PROJECT: NHMFLFREE ELECTRON LASER	NATIONAL HIGH MAGNETIC FIELD LABORATORY FACILITIES DEPARTMENT 1800 E. PAUL DIRAC DR. TALLAHASSEE, FL 32310	
SCALE:	SHEET TITLE: LASER LABORATORY FLOOR PLAN	REV# DATE DESCRIPTION 1 2 3	
APPROVAL:			
DATE: 3/10/2009			
DRAWN BY: J. KYNOCH			



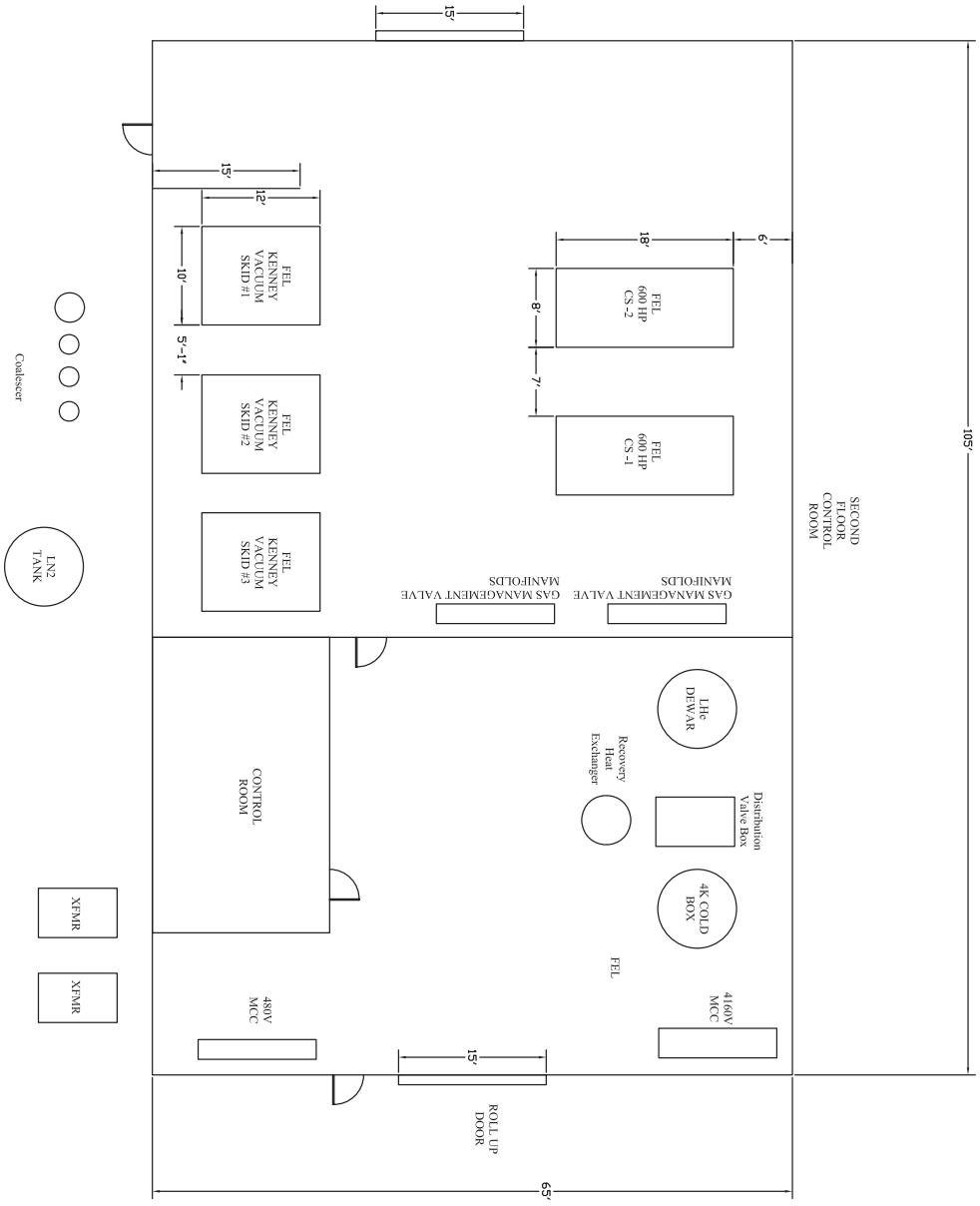
SHEET NO. A3	SCALE:	APPROVAL:	DATE: 03-10-2009
DRAWN BY: J. KYNOCH	PROJECT: NHMFLFREE ELECTRON LASER	NATIONAL HIGH MAGNETIC FIELD LABORATORY FACILITIES DEPARTMENT 1800 E. PAUL DIRAC DR. TALLAHASSEE, FL 32310	
	SHEET TITLE: LASER VAULT FLOOR PLAN	REV# DATE DESCRIPTION 1 2 3	



SHEET NO. A4	PROJECT: NHMFLFREE ELECTRON LASER	NATIONAL HIGH MAGNETIC FIELD LABORATORY FACILITIES DEPARTMENT 1800 E. PAUL DIRAC DR. TALLAHASSEE, FL 32310	
SCALE:	SHEET TITLE: FEL BUILDING ELEVATION	REV# DATE DESCRIPTION 1 2 3	
APPROVAL:			
DATE: 03-10-2009			
DRAWN BY: J. KYNOCH			



SHEET NO. A5	PROJECT: NHMFLFREE ELECTRON LASER	NATIONAL HIGH MAGNETIC FIELD LABORATORY FACILITIES DEPARTMENT 1800 E. PAUL DIRAC DR. TALLAHASSEE, FL 32310	
SCALE:	SHEET TITLE: TOP FLOOR OFFICES FLOOR PLAN	REV# DATE DESCRIPTION 1 2 3	
APPROVAL:			
DATE: 03-13-2009			
DRAWN BY: J. KYNOCH			



SHEET NO. A6	PROJECT: NHMFLFREE ELECTRON LASER	NATIONAL HIGH MAGNETIC FIELD LABORATORY FACILITIES DEPARTMENT 1800 E. PAUL DIRAC DR. TALLAHASSEE, FL 32310	
SCALE:	SHEET TITLE: CRYOGENICS ROOM FLOOR PLAN	REV# DATE DESCRIPTION 1 2 3	
APPROVAL:			
DATE: 04-23-2009			
DRAWN BY: J. KYNOCH			

Exhibit 5:

Room Specifications

This Exhibit provides details of room features, referencing the room number from the potential floor plan ideas in Exhibit 4.

ARCHITECTURAL											
ROOM #	ROOM DESCRIPTION	Width FT	Length FT	Area SQFT	Celing Ht FT	Wall Material	Celing	Doors	Door Size	Windows	Flooring
FE300	Entry Lobby	25.6	39.5	1011	13	Mtl Stud, Sheetrock	Open	Glass, Br Al Frame	Dbl 3-0 7-0	Along Both Ext Walls	VCT
FE301	Mop Closet / Water Heater	7.7	6	46	13	Mtl Stud, Sheetrock	Open	Int S. Wood, Metal Frame	3-0 6-8	None	Epoxy Floor Paint
FE302	Elevator Closet	6.3	6.3	40	13	Block	Open	Int S. Wood, Metal Frame	3-0 6-8	None	Epoxy Floor Paint
FE310	Control Room	25	18.8	470	8	Mtl Stud, Sheetrock	Acoustical Grid	Glass, Br Al Frame	DBL 3-0 7-0	To Hallway	VCT
FE311	Optical Control	9.7	25	243	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	None	VCT
FE312	Womens Restroom	14.3	10	143	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	None	VCT
FE313	Men's Restroom	14.3	10	143	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	None	VCT
FE314	HALL	170	7.3	1241	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	DBL 3-0 7-0	None	VCT
FE315	User / Student Cubicle	26	28.9	751	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	DBL 3-0 7-0	Along Ext Walls	VCT
FE316	Break / Meeting Room	32.8	16.25	533	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	DBL 3-0 7-0	Along Ext Walls	VCT
FE317	Lab 1	19.3	28.9	558	13	Mtl Stud, Sheetrock	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE318	RF Equipment Room	59	16.25	959	13	Mtl Stud, Sheetrock	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE319	Lab 2	19.3	28.9	558	13	Mtl Stud, Sheetrock	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE320	Lab 3	19.3	28.9	558	13	Mtl Stud, Sheetrock	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE321	Lab 4	19.3	28.9	558	13	Mtl Stud, Sheetrock	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE322	Electrical / Phone/ Data	16.3	10.3	168	13	Mtl Stud, Sheetrock	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	None
FE323	HVAC Room	16.3	22.3	363	13	Block	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE324	Lab 5	19.3	28.9	558	13	Mtl Stud, Sheetrock	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE325	Drive Laser Room	21.3	15	320	13	Mtl Stud, Sheetrock	Open	Int S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE326	Storage	16.3	22.3	363	13	Mtl Stud, Sheetrock	Open	S. Wood, Metal Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE200	Vault HVAC Room	16	40	640	15	Metal Curtain Wall	Open	Ext Steel / Steel Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE100	Laser Vault	44	165	7260	15	Conctete - 2' thick	Open	Ext Steel / Steel Frame	5-0 70 4-0 7-0	None	Epoxy Floor Paint
FE101	Vault Equipment Room	9.3	13.3	124	15	Block	Open	Ext Steel / Steel Frame	DBL 3-0 7-0	None	Epoxy Floor Paint
FE102	Vault Entrance Vestibule	12.7	20	254	13	Conctete	Open	Ext Steel / Steel Frame	3-0 6-8	None	VCT

ARCHITECTURAL											
ROOM	ROOM	Width	Length	Area	Celing Ht	Wall Material	Celing	Doors	Door Size	Windows	Flooring
#	DESCRIPTION	FT	FT	SQFT	FT						
FE400	Entry Lobby	Varies	Varies	860	8	Mtl Stud, Sheetrock	Acoustical Grid	NA		Along Ext Walls	VCT
FE401	Stairwell	7.3	18	131	8	Block	Acoustical Grid	FR ; S. Wood, Metal Frame	3-0 6-8	None	Concrete Sealer
FE402	Womens Restroom	15.5	18.6	288	8	Block	Acoustical Grid	Int S. Wood, Metal Frame	3-0 6-8	None	VCT
FE402A	Mop Closet / Water Heater	5	5.3	27	8	Mtl Stud, Sheetrock	Acoustical Grid	Int S. Wood, Metal Frame	3-0 6-8	None	VCT
FE403	Men's Restroom	12	11.9	143	8	Block	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	None	VCT
FE404	Conference Room	26.9	18.2	490	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE405	Reception/Admin	25.25	18.5	467	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE406	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame		Along Ext Walls	Carpet
FE407	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE408	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE409	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE410	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE411	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE412	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE413	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE414	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE415	Office	15	11.6	174	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE416	Office	15	11.6	174	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE417	Office	17.3	11.6	201	8	Mtl Stud, Sheetrock	Acoustical Grid	Int S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE418	Office	17	11.6	197	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE419	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE420	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE421	Office	11.7	11.6	136	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	Carpet
FE422	HVAC Room	23.6	14.6	344.56	13	Block	Open	S. Wood, Metal Frame	Dbl 3-0 7-0	None	None
FE423	Break Room	20	14.6	292	8	Mtl Stud, Sheetrock	Acoustical Grid	S. Wood, Metal Frame	3-0 6-8	Along Ext Walls	VCT
FE424	Cubicle/Hall Area	Varies	Varies	4510	8	Mtl Stud, Sheetrock	Acoustical Grid	NA		Along Ext Walls	Carpet

HVAC											
		Area	AIR FLOW	EXHAUST	HOOD	Occupants	Equipment Load		TEMP CNTRL	Humidity	THERMSTAT
		SQFT	CFM						F	%	CONTROL
FE300	Entry Lobby	1011							73 +/- 2F	30-70	Y
FE301	Mop Closet / Water Heater	46				0			None	Non Condense	N
FE302	Elevator Closet	40				0			None	Non Condense	N
FE310	Control Room	470				3	Computers		73 +/- 2F	30-70	Y
FE311	Optical Control	243							73 +/- 2F	30-70	N
FE312	Womens Restroom	143		Y		3			73 +/- 2F	30-70	Y
FE313	Men's Restroom	143		Y		3			73 +/- 2F	30-70	N
FE314	HALL	1241							73 +/- 2F	30-70	N
FE315	User / Student Cubicle	751				8	Computers		73 +/- 2F	30-70	Y
FE316	Break / Meeting Room	533		Y		10	Kitchen		73 +/- 2F	30-70	Y
FE317	Lab 1	558		Y	Y	4	Computers/ Power Supply		73 +/- 1F	30-70	Y
FE318	RF Equipment Room	959		Y		2	Power Supply		73 +/- 2F	30-70	Y
FE319	Lab 2	558		Y	Y	4	Computers/ Power Supply		73 +/- 1F	30-70	Y
FE320	Lab 3	558		Y	Y	4	Computers/ Power Supply		73 +/- 1F	30-70	Y
FE321	Lab 4	558		Y	Y	4	Computers/ Power Supply		73 +/- 1F	30-70	Y
FE322	Electrical / Phone/ Data	168				0	Electrical		73 +/- 2F	30-70	N
FE323	HVAC Room	363				0					
FE324	Lab 5	558		Y	Y	4	Computers/ Power Supply		73 +/- 1F	30-70	Y
FE325	Drive Laser Room	320				4	Computers/ Power Supply		73 +/- 2F	30-70	Y
FE326	Storage	363		Y	N	2	Computers/ Power Supply		73 +/- 2F	30-70	Y
FE200	Vault HVAC Room	640									
FE100	Laser Vault	7260				10	EquipCooling / Power		73 +/- 1F	30-70	Y
FE101	Vault Equipment Room	124					EquipCooling / Power		73 +/- 2F	30-70	N
FE102	Vault Entrance Vestibule	254							73 +/- 2F	30-70	Y

PLUMBING											
		DCW / DHW	Compr Air	N2 Gas	DI Water	Helium Rec	A.W.Sewer	S.Sewer	CH Water	COND Water	DI Water
FE300	Entry Lobby	N /N	N	N	N	N	N	NONE	N	N	
FE301	Mop Closet / Water Heater	Y/Y	N	N	N	N	N	FIXTURES/ FLOOR DR	N	N	
FE302	Elevator Closet	N /N	N	N	N	N	N	NONE	N	N	
FE310	Control Room	N /N	N	N	N	N	N	FLOOR DR	N	N	
FE311	Optical Control	N /N	Y	Y	N	N	N	FLOOR DR	N	N	
FE312	Womens Restroom	Y/Y	N	N	N	N	N	FIXTURES/ FLOOR DR	N	N	
FE313	Men's Restroom	Y/Y	N	N	N	N	N	FIXTURES/ FLOOR DR	N	N	
FE314	HALL	N /N	N	N	N	N	N	FLOOR DR	N	N	
FE315	User / Student Cubicle	N /N	N	N	N	N	N	FLOOR DR	N	N	
FE316	Break / Meeting Room	Y/Y	N	N	N	N	N	FLOOR DR	N	N	
FE317	Lab 1	Y/Y	Y	Y	N	Y	N	FIXTURES/ FLOOR DR	10 gpm	N	
FE318	RF Equipment Room	N /N	Y	Y/10CFM	N	N	N	FLOOR DR	N	N	300 gpm
FE319	Lab 2	Y/Y	Y	Y	N	Y	N	FIXTURES/ FLOOR DR	10 gpm	N	
FE320	Lab 3	Y/Y	Y	Y	N	Y	N	FIXTURES/ FLOOR DR	10 gpm	N	
FE321	Lab 4	Y/Y	Y	Y	N	Y	N	FIXTURES/ FLOOR DR	10 gpm	N	
FE322	Electrical / Phone/ Data	N /N	N	N	N	N	N	NONE	N	N	
FE323	HVAC Room	N /N	N	N	N	N	N	FLOOR DR	10 gpm	N	
FE324	Lab 5										
FE325	Drive Laser Room	N /N	N	N	N	N	N	FLOOR DR	N	N	
FE326	Storage	N /N	N	N	N	N	N	FLOOR DR	N	N	
FE200	Vault HVAC Room										
FE200	Vault HVAC Room	N /N	N	N	N	N	N	FLOOR DR	100 gpm	N	
FE100	Laser Vault	N /N	N	Y/30CFM	N	N	N	FLOOR DR	150 gpm	200 gpm	
FE101	Vault Equipment Room	N /N	N	N	N	N	N	FLOOR DR	N	50 gpm	
FE102	Vault Entrance Vestibule	N /N	N	N	N	N	N	FLOOR DR	N	N	

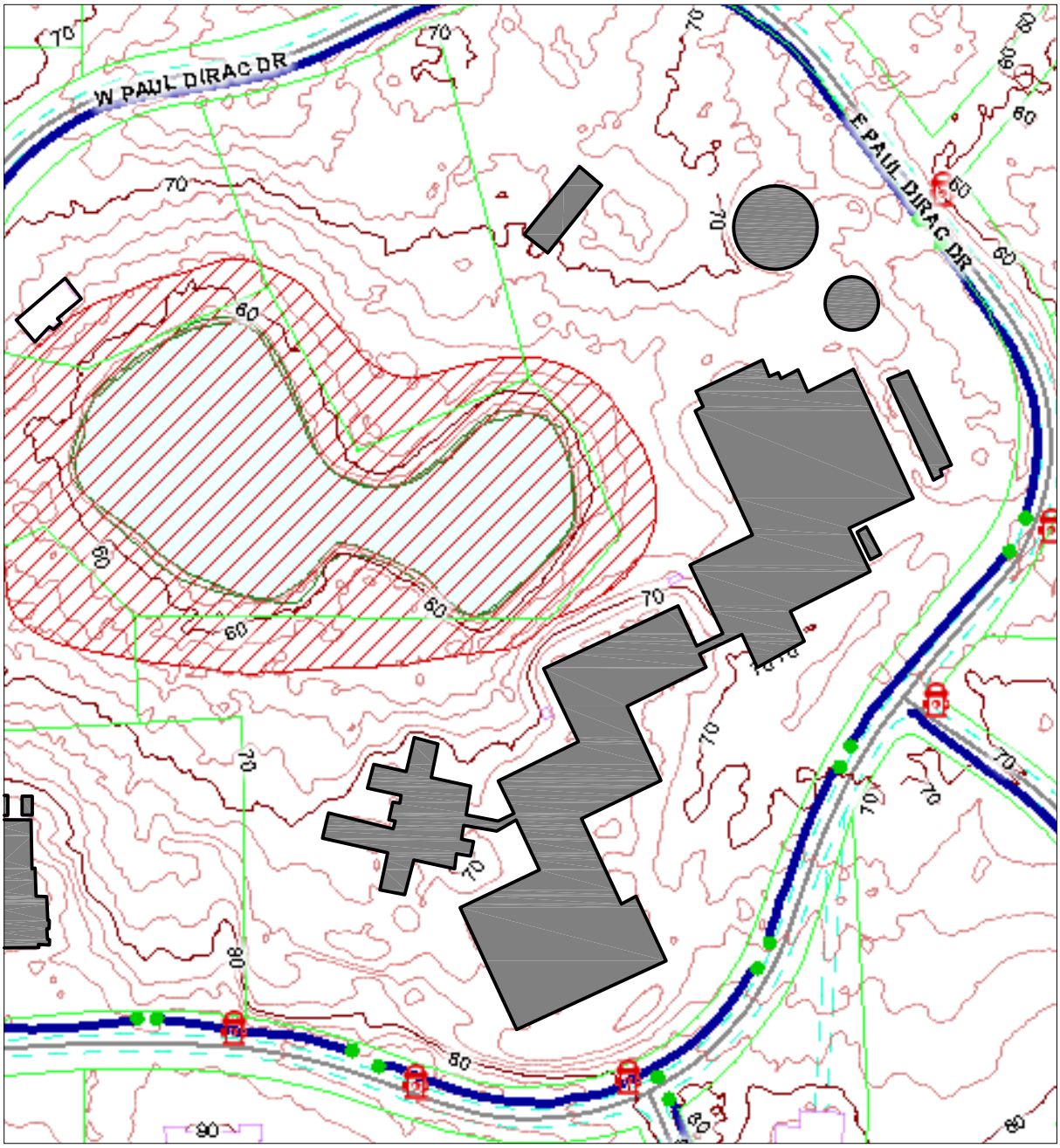
ELECTRICAL											
		Area	LIGHTING	LIGHTING	110V	220V	480V	Phone	Internet	Camera	Control Conduit
		SQFT		CONTROL		1 PH	3 PH				# 8" PVC
FE300	Entry Lobby	1011	Architectural	SWITCH, OCCUPANCY	Sing Duplex inter wall	N		Y	Y	Y	0
FE301	Mop Closet / Water Heater	46	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex	1x 20A		N	N	N	0
FE302	Elevator Closet	40	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex on each wall	Y		N	N	N	0
FE310	Control Room	470	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex on each wall	N		Y	Y	Y	0
FE311	Optical Control	243	Fluorescent, Flush, Lay in	SWITCH, OCCUPANCY	Single Duplex on each wall	3x30A		Y	Y	N	15
FE312	Womens Restroom	143	Fluorescent, Flush, Lay in	Switch	Single Duplex on each wall	N		N	N	N	0
FE313	Men's Restroom	143	Flourescent, Flush, Lay in	Switch	Single Duplex on each wall	N		N	N	N	0
FE314	HALL	1241	Flourescent, Flush, Lay in	SWITCH, OCCUPANCY	Single Duplex on each wall	N		Y	Y	N	0
FE315	User / Student Cubicle	751	Flourescent, Flush, Lay in	SWITCH, OCCUPANCY	Quad Outlet on each wall	N		Y	Y	Y	2
FE316	Break / Meeting Room	533	Flourescent, Flush, Lay in	SWITCH, OCCUPANCY	Single Duplex on each wall	1x 20A		Y	Y	N	0
FE317	Lab 1	558	Fluorescent, Exposed F Fixture	Switch	Quad Outlet on each wall	2x 30A	60	Y	Y	Y	2
FE318	RF Equipment Room	959	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	16 Outlet on each wall	3x30A	1000	Y	Y	N	43
FE319	Lab 2	558	Flourescent, Exposed F Fixture	Switch	Quad Outlet on each wall	2x 30A	60	Y	Y	Y	2
FE320	Lab 3	558	Flourescent, Exposed F Fixture	Switch	Quad Outlet on each wall	2x 30A	60	Y	Y	Y	2
FE321	Lab 4	558	Fluorescent, Exposed F Fixture	Switch	Quad Outlet on each wall	2x 30A	60	Y	Y	Y	2
FE322	Electrical / Phone/ Data	168	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex on each wall	N		Y	Y	N	8
FE323	HVAC Room	363	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex on each wall	N		N	N	N	0
FE324	Lab 5	558	Fluorescent, Exposed F Fixture	Switch	Quad Outlet on each wall	2x 30A	60	Y	Y	Y	2
FE325	Drive Laser Room	320	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex on each wall	2x 30A	60	Y	Y	N	2
FE326	Storage	363	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Quad Outlet on each wall			Y	Y	N	3

FE200	Vault HVAC Room	640	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex on each wall	N	15	N	N	N	0
FE100	Laser Vault	7260	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Quad Outlet 10' on each wall	6x30A	60	Y	Y	Y	
FE101	Vault Equipment Room	124	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex on each wall	N		N	N	Y	
FE102	Vault Entrance Vestibule	254	Fluorescent, Exposed F Fixture	SWITCH, OCCUPANCY	Single Duplex on each wall	N		N	N	N	
						700	1435				83

Exhibit 6:

Topography

This Exhibit contains illustrations that identify the existing topography from the Tallahassee-Leon County GIS documentation.



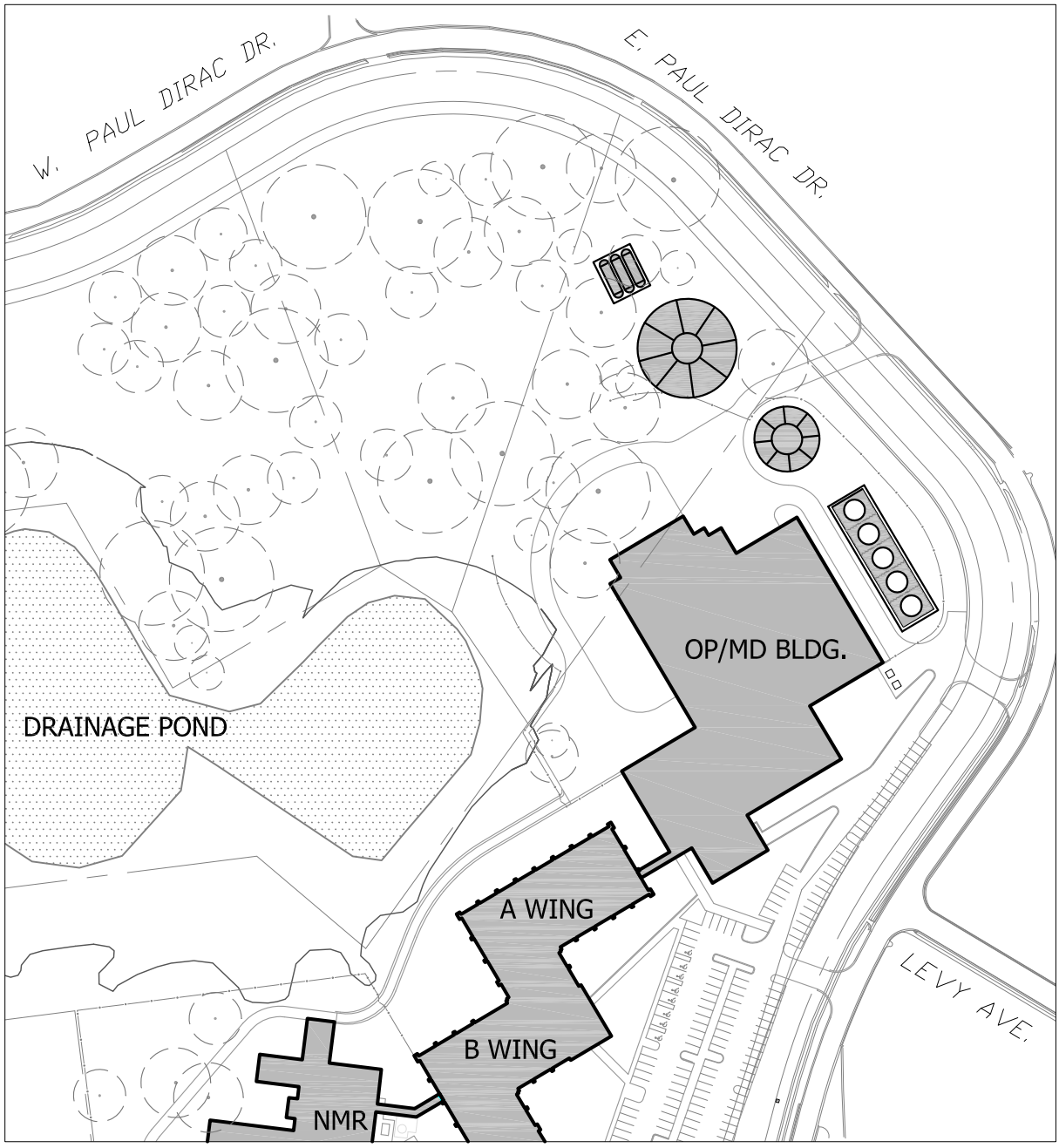
Topographic Map

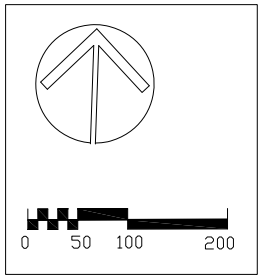
Exhibit 6

Exhibit 7

Vegetation Map

This exhibit contains illustrations identifying existing vegetation.





Vegetation Map

Exhibit 7

Exhibit 8

Site Photographs

This exhibit contains photographs of the existing site.

Parking and Service Entrance on E. Paul Dirac Dr., just north of Levy Avenue. Metal structure to left is the OPMD Building, structure to right contains cooling towers. Blue tile wall in foreground screens electrical equipment and service.

Main Receiving and Service Drive, currently the northernmost access along E. Paul Dirac Drive.

Looking northwest toward proposed site of new construction. The larger existing chilled water storage tank is to the right.

Another view looking northwest toward the proposed site. The existing service drive leading to eceiving is in the foreground.

Looking southeast from the proposed site. Service drive to receiving is in the middle ground. In the background to the left are the cooling towers and to the right is the OP/MD building.

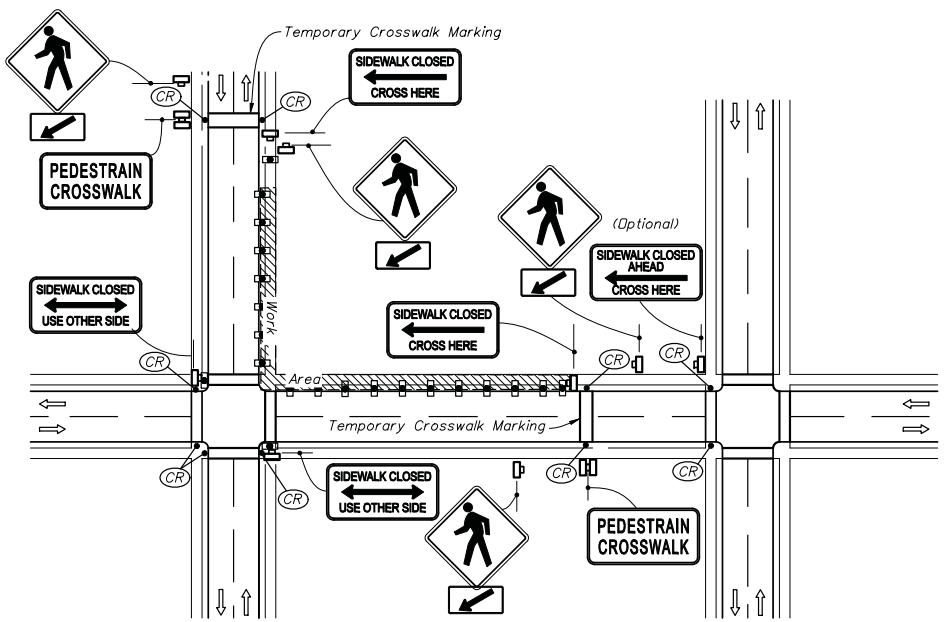
Looking southeast toward the proposed site. Large chilled water tank is to the left in the background behind the white storage tanks.

Existing metal storage shed located southwest of the proposed building site.

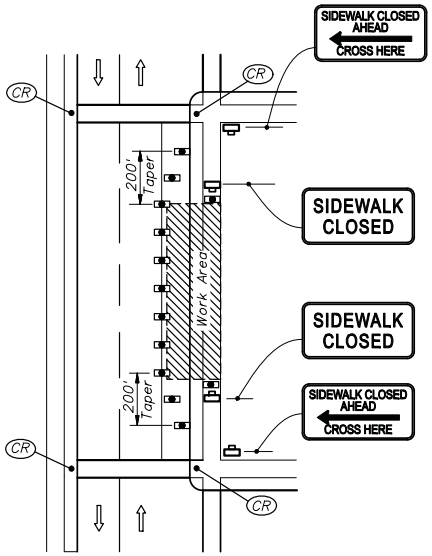
Exhibit 9

Pedestrian Control for Closure of Sidewalks

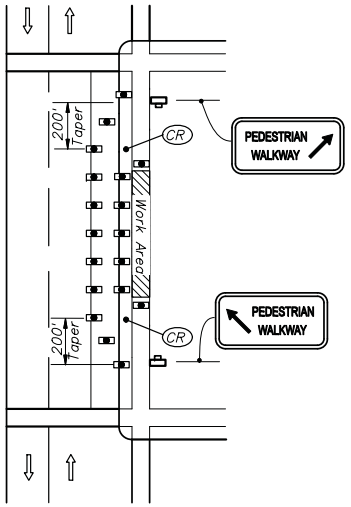
This exhibit contains Index No. 660 of 2008 FDOT Design Standards.



CORNER SIDEWALK CLOSURE
WITH TEMPORARY CROSSWALKS



MID-BLOCK SIDEWALK
CLOSURE



MID-BLOCK SIDEWALK CLOSURE
WITH TEMPORARY WALKWAY

SYMBOLS

- Work Area
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only). *(Tubular Markers May Be Used During Daylight Only. Cones May Be Used - See Index No. 600.)*
- Work Zone Sign
- (CR) Required Locations For Either Temporary Or Permanent Curb Ramps.
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. Only the signs controlling pedestrian flows are shown. Other work zone signs will be needed to control traffic on the streets.
2. For spacing of traffic control devices and general TCZ requirements refer to Index No. 600. Maximum spacing between barricades, vertical panels, drums or tubular markers shall not be greater than 25'.
3. Street lighting should be considered.
4. For nighttime closures use Type A flashing warning lights on barricades supporting signs and closing sidewalks. Use Type C steady-burn lights on channelizing devices separating the work area from vehicular traffic.
5. Pedestrian traffic signal display controlling closed crosswalks shall be covered or deactivated.
6. Post Mounted Signs located near or adjacent to a sidewalk shall have a 7' minimum clearance from the bottom of sign to the sidewalk.
7. When construction activities involve sidewalks on both sides of the street, efforts should be made to stage the construction so that both sidewalks are not out of service at the same time.
8. In the event that sidewalks on both sides of the street are closed, pedestrians shall be guided around the construction zone.
9. Temporary walkways shall be a minimum of 4' wide with a maximum 0.02 cross slope and a maximum 0.05 running slope between ramps. Temporary walkways less than 5' in width shall provide for a 5' x 5' passing space at intervals not to exceed 200'. Temporary ramps shall meet the requirements for curb ramps specified in Index No. 304, General Notes 1 through 7. Temporary walkway surfaces and ramps shall be stable, firm, slip resistant, and kept free of any obstructions and hazards such as holes, debris, mud, construction equipment, stored materials, etc.
10. Temporary ramps and temporary crosswalk markings shall be removed with reopening of the sidewalk, unless otherwise noted in the plans. All work and materials associated with constructing temporary curb ramps and temporary crosswalk markings, removal and disposal of temporary curb ramps and temporary crosswalk markings, and restoration to original conditon shall be paid for as Maintenance of Traffic, Lump Sum.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT WORKERS OR THEIR ACTIVITIES ENCROACH ON THE SIDEWALK FOR A PERIOD OF MORE THAN 60 MINUTES.