The Florida State University
Facility Program

for

Interdisciplinary Research and Commercialization Building on the Southwest Campus (IRCB)

FS-275

January 2015

Prepared by:

The Facilities Department
Facilities Planning and Space Management Section

Executive Summary

As part of Florida State University's well publicized Path to the Top 25 initiative, the University intends to hire 70-100 tenure-track faculty members in the STEM disciplines over the next five years. A large proportion of these new hires will be in the physical sciences, engineering, and related areas. Although FSU can absorb some of the initial hires within its existing buildings, there is not capacity to accommodate all of these anticipated hires. There is also a pressing need for core facilities to support existing and anticipated future research in these areas. At the same time, space for interdisciplinary research is severely limited at FSU. Most research space lies within buildings designated for departments and/or colleges, which does not easily facilitate the cross collaborations many researchers with colleagues in other departments, centers, and institutes.

Protection and commercialization of discoveries and inventions of our faculty and research staff have become a major institutional imperative. Our faculty members are becoming increasingly sophisticated about these issues and in particular, the development of "spin-off" companies based on the intellectual property developed in their labs. A major impediment is the shortage of wet lab incubator space for these endeavors.

In order to accommodate interdisciplinary research and provide wet lab incubator facilities, the space and components within a building of this type need to be flexible so it is easily and quickly reconfigurable as research needs change over time. The building should also have sufficient surplus capacity in its systems to meet this need. One visible result of this emerging need for interdisciplinary, cutting edge research space is the number of remarkable new buildings being built at universities and other institutions across the country and around the world.

Florida State University's Southwest Campus is already home to the National High Magnetic Field Laboratory, the Applied Superconductivity Center, the Aero-Propulsion, Mechatronics, & Energy Center, the Center for Advanced Power Systems and the High Performance Materials Institute. Furthermore, the FAMU-FSU College of Engineering is located nearby. By taking advantage of these remarkable adjacencies of physical science and engineering expertise, the new building will capitalize on the critical mass of researchers and research space housed on the SW Campus. The proposed IRCB represents a new model for the facilitating research at FSU by providing flexible space that is not administratively linked to any particular academic department, center, or institute. Rather, it will provide a venue for research collaborations that is dynamic and adaptable to the changing needs of researchers and the broader community.

The proposed funding model combines FSU and State funding to realize this building. With a total projected cost of $85M, $75M will be for direct project costs and $10M will be for the specialized tools that are needed for this building. $45M will be provided by private sources (FSU Research Foundation) and $40M will be provided by the State.

The tentative schedule for the project is as follows. Programming and design will begin March 2015 with 100% construction documents complete by May 2016. Construction will begin May 2016 with final completion scheduled for May 2018 and move-in by August 2018. Tool installation and hookup will take place immediately after occupancy.

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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.

1. 2/17/15
Ross Ellington
Associate Vice President for Research
Building Committee Chair

Signature signifies the Building Committee's approval of this facility program

2. 2/9/15
Michael Barrett
Associate Vice President and Chief Information Officer
Information Technology Services (ITS)

Signature signifies that all ITS program requirements have been met.

3.
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.

4.
John Thrasher
President

Signature signifies the President's approval of this facility program

IV. Introduction

This introduction provides a general overview of the proposed new Interdisciplinary Research and Commercialization Building (IRCB) on the FSU Southwest Campus, including descriptive information about the building, the site, the proposed project delivery system and the designer's scope of work. Additional information about each of these topics can be found elsewhere in this program.

A. Project Background

As part of Florida State University's well publicized Path to the Top 25 initiative, FSU expects to hire 50-70 new research faculty members in the STEM disciplines over the course of the next five years. A large proportion of these new hires will be in the physical sciences, engineering, and related areas. Although the FSU campus and its buildings have the capacity to absorb some of the initial hires within its existing buildings, there is not sufficient space to house all of these anticipated hires. In addition, there is a need for certain core facilities to support existing and anticipated future research in the physical sciences. At the same time, space for interdisciplinary research is severely restricted on the FSU campus. Most research space is contained within buildings designated for departments and/or colleges. This space does not necessarily facilitate the cross collaborations many researchers currently engage in with their colleagues in other departments and even at other universities. This interdisciplinary research is often based upon the pursuit of a particular grant-funded project, for a given period of time. Researchers come together from different departments, work on a defined research goal, and disperse at the end of the project to pursue other research objectives and interests.

The space and components within a building of this type need to be flexible so it is easily and quickly reconfigurable to accommodate different research needs over the lifespan of the building. The new building will need to have surplus capacity in its building systems (power, mechanical, piping, data, communications, etc.) to carry it through its intended lifespan. At the same time, interdisciplinary buildings such as these often require relatively fixed, common core facilities that provide platforms utilized by multiple researchers both within the building and outside of it. One visible result of this emerging need for interdisciplinary, cutting edge research space is the number of remarkable, new buildings at universities and other institutions across the country and around the world, which have been built in the past decade.

The proposed Interdisciplinary Research and Commercialization Building on the Southwest Campus represents a new model for the facilitating research at Florida State. The proposed building will be a building dedicated strictly to research, in particular, research in the physical sciences and engineering. The building will not be home to any particular department or institute.

FSU's Southwest Campus is home to the National High Magnetic Field Laboratory, the Applied Superconductivity Center (ASC), the FSU/FAMU Herbert Morgan College of Engineering, the Aero-Propulsion, Megatronics, & Energy Center (AME), the Center for Advanced Power Systems (CAPS), the Materials Research (MRC), and other research facilities. Located adjacent to and within Innovation Park, North Florida's hub for world class research and emerging technology, and approximately 1.5 miles southwest of the

FSU main campus, the Southwest Campus is home to approximately 1,500,000 net square feet of research facilities. This project is expected to be constructed on a 7.58 acre parcel at the southeast corner of Levy Avenue and Engineer Drive on the Southwest Campus. The site has a city of Tallahassee power line easement on the east and south sides as well as a storm water detention facility on the north side of the property, leaving about 3.7 net acres of developable property. The site is bounded by undeveloped FSU property on the east and south sides and the respective roadways on the west and north sides. Facing the property across Levy Avenue are the FSU Research Buildings A and B and to the west lies the AME Building.

B. Project Description

This facility program describes a new research facility that will not be home to any particular department, institute, or college. It is intended to house faculty in the physical sciences under FSU's STEM hiring initiative as well as grant-funded collaborative research groups seeking use of the core facilities housed in the building. This hiring initiative, begun in 2013, is expected to bring 50-70 new faculty members to FSU in the next 5 years. Although some of these researchers are being temporarily accommodated in existing buildings (this lab space is often sub-optimal in terms of quality and in some cases) it places researchers in less than ideal locations, remote from their colleagues and departments.

Physical science encompasses research in disciplines such as chemistry, physics, biomedical engineering, chemical engineering, and other areas. It has both a theoretical component as well as an applied side. It explores materials and their characteristics at from the small (nano) scale up to much larger devices. The work at the nanoscale often necessitates the use of clean room facilities, designed to house special tools and equipment that facilitate this research.

In addition to the research labs and support space associated with those labs, there will be office space for the researchers, post-doctoral fellows, and graduate students as well as space for undergraduates working in these labs. There will also be offices for the technical support staff and the administrative staff needed in this building. Conference rooms of various sizes will be provided throughout the building as well as collaboration spaces.

The site selected at the FSU SW Campus is located at the corner of Levy Avenue and Engineer Drive. Positioned opposite Research Buildings A and B, the new building will serve as a gateway to the SW campus, being the first, most visible building one sees as they approach Innovation Park via Levy Avenue. In addition to its visual prominence, the building will set a new standard of a more urban, pedestrian-friendly campus. Unlike many of the buildings on the SW Campus, the IRCB will be placed closer to the road, making it more accessible to pedestrians, cyclists, and modalities. Parking and service access will be placed behind the building to create a more urban physical presence. Positioning the building closer to the road will also provide more space for future development when the building needs to be expanded at a later date.

The gross building square footage is expected to be 125,000 gsf. This will include 50 lab modules, consisting of computational, dry, damp, and wet labs housed on the upper floors of the building. The shared common core facilities will include a 5,242 nsf clean room and a 5,280 nsf imaging/characterization suite, on the first floor of the building.

C. Goals and Objectives

The building committee for the Interdisciplinary Research and Commercialization Building at the Southwest Campus has identified the following goals for its new facility:

1. Create a research-centered facility with state-of-the-art research labs.

2. Create an environment to facilitate collaboration and research amongst different disciplines.

3. Provide needed space for STEM hires in the physical sciences and engineering.

4. Create a physical layout that provides flexibility to accommodate future uncertainties.

5. Provide shared core facilities for research in the physical sciences and engineering, including a clean room and characterization suite, outfitted with appropriate tools and equipment.

6. Provide opportunities for training the next generation of scientists, including post-doctoral fellows, graduate, and undergraduate students.

7. Make a gateway building worthy of this prominent building site.

8. Provide incubator space for the development of "spin-off" companies based on the University's intellectual property.

D. Project Delivery

At this point in time, the University contends that its interest is best served if the project is administered using the construction management (CM) project delivery system. This contention is based upon a series of factors, including the fact that this delivery system provides the best opportunity to complete the project in a timely manner. An accelerated design/construction schedule not only maximizes the effectiveness of the project funds, but also provides the best chance of having this project completed in time. Additionally, there are high expectations the preconstruction services provided by the CM will solve several constructability issues. As with all capital projects, the University reserves the right to reconsider the use of this delivery system if it is determined that an alternate system is more suitable or advantageous.

E. Design Professional's Scope of Work

Due to the size and the fact this facility will house physical sciences and engineering labs, steps should be taken to ensure LEED (Leadership in Energy and Environmental Design) related advanced technologies and concepts are thoroughly evaluated. While it may be appropriate for other projects to value engineer out advanced technologies, after evaluating cost versus benefit, this project may choose to embrace these instead. The design professional shall be responsible for providing all architectural and engineering

services required for this project, including pursuit of LEED certification. Any additional consulting services, which may be necessary, will be provided by the design professional.

The design professional's scope of work is well defined in the A/E agreement, which includes a complete list of requirements and responsibilities. The design professional shall be required to provide all services listed in the A/E contract for this project. The following is a brief summary of this anticipated scope of services.

1. Program Review

   The design professional 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 design professional shall be invited to meet with representatives of the building committee to discuss program requirements, project schedule, design constraints, and other considerations.

2. Site Analysis and Design

   The design professional shall be responsible for becoming thoroughly familiar with the specific project site and the remaining parts of campus around it. This understanding shall include a thorough appreciation and comprehension of the entire project site including, but not limited to, all natural features, vegetation, surrounding facilities, utility systems, vehicular/pedestrian/bicycle/transit circulation patterns, and so on. It is expected that the design professional 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.

   Prior to the commencement of the design phase, the design professional shall consult with the Facilities Department to review specific site requirements and issues.

3. Architectural Design

   The design professional 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 design professionals who are knowledgeable and proficient in the design and construction of similar facilities. At this time it does not appear that any extraordinary architectural consulting services are required in order to complete this project; however, should they be deemed necessary, the design professional shall be responsible for obtaining such assistance.

Adherence to the current version of the Florida State University Design Guidelines and Specifications is expected for this project. (The Guidelines may be viewed at: Design Guidelines and Specifications http://www.facilities.fsu.edu/FDC/Guidelines.php). Any variance from these guidelines must be approved by the Facilities Department.

4. Engineering Design

The design professional shall be responsible for the preparation of all engineering design, commencing with schematic design and continuing through the development and submittal of completed construction 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 design professional shall be responsible for obtaining such assistance.

5. Cost Control

During the design of this project, it is essential that the University be kept informed as to estimates of probable construction costs. Accordingly, the design professional shall provide with each submittal an estimate of all construction costs. If it becomes evident that the cost of construction exceeds the available budget, then the design professional shall work with University to resolve all cost over-runs. The design professional is strongly encouraged to provide recommendations for cost savings whenever possible.

6. Project Delivery and Construction Administration

As mentioned earlier, the University proposes that this project be administered using the construction management delivery system. The University shall utilize its standard practice for the selection of the construction management firm. The design professional may be asked to assist the University in the selection of this firm.

The design professional shall provide all required construction administration and inspection services in accordance with all University and State requirements, including the following:

a) Assist in the solicitation and review of all Guaranteed Maximum Price (GMP) proposals and provide recommendations of award to the University.

b) Provide contract administrative services.

c) Provide inspection of work in progress to the extent that the design professional can certify the work is being accomplished in strict compliance with the contract documents. Services of a qualified roofing inspector may be employed.

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

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

7. 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 update to the Campus Master Plan on June, 2008 and was amended on September 2009 and then again in June 2011. The University executed an update of the development agreement with the City of Tallahassee on April 11, 2012. 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 during the construction process.

8. Building Code Administration

The University's Building Code Administration Section shall provide plans review and construction inspection services for this project. An allowance has been provided for this purpose in the Project Budget Summary.

F. Construction Manager's Scope of Work

The construction manager's scope of work is well defined in the "Agreement Between Owner and Construction Manager" contract, which includes a complete list of requirements and responsibilities. The construction manager shall be required to provide all services listed in the construction management contract for this project. The following is a brief summary of this anticipated scope of services.

Generally speaking, the construction manager is required to provide pre-construction services that support the project team with regard to construction feasibility, cost and schedule. At an appropriate time, the University shall solicit from the construction manager a Guaranteed Maximum Price (GMP) proposal that shall be reviewed by the

University and the design professional. If accepted by the University, the GMP shall become part of the construction management agreement. Upon issuance of a notice to proceed, the construction manager shall proceed to construct the project according to the approved construction documents.

1. Pre-Construction Services
   The following is a more detailed list of services that shall be provided by the construction manager during the construction phase.

   a) Program Review

      In much the same manner as the design professional, the construction manager shall be similarly responsible for reviewing this facility program document and becoming thoroughly familiar with its content. Following the review of this program, the construction manager shall likewise be invited to meet with representatives of the Facilities Department and the Building Committee to discuss program requirements, project schedule, design constraints, and the like.

   b) Cost Estimating Services

      The construction manager shall provide continuing support to the project team during the design process confirming that the project can be constructed within the budget. This support includes a budget confirmation letter at the conceptual schematics phase and reports, including detailed cost estimates, at the advanced schematics phase, design development phase, and the 50% construction documents phase.

      Due to this project's schedule, the construction manager may be asked to submit a GMP proposal based upon a set of construction documents that is something less than 100% complete. The date of this solicitation shall be determined with input of the design professional and the construction manager.

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

   c) Design Reviews

      The construction manager 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.

d) Project Schedule

The construction manager 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 cost saving measures.

e) Other Services

The construction management agreement lists a number of other services that shall be provided by the construction manager. These services include the separation of work into subcontracts, materials purchasing schedules, analysis of labor required, development of bidding packages, compliance with MBE requirements, bidder pre-qualifications, and monthly construction team meetings.

2. Construction Services

The following is a more detailed list of services that shall be provided by the construction manager during the construction phase:

a) Construction

In accordance with University policy, the construction manager shall not self-perform work. The construction manager shall manage, schedule, and coordinate the work of trade contractors, and coordinate them with the activities and responsibilities of the University and the design professional. The construction manager 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 shall approve all changes in the staffing of the construction management team.

The construction manager shall conduct on-going reviews of the adequacy of trade contractor's personnel, equipment, and materials and act promptly when these are found to be inadequate. Furthermore, the construction manager 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 construction manager shall initiate, maintain, and supervise effective safety programs in accordance with OSHA requirements. In addition, the construction manager shall conduct weekly progress meetings with the construction team to review and coordinate progress. In order to ensure a safe jobsite, the construction manager shall provide for adequate project security.

b) Construction Administration

The construction manager 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 construction management agreement, University rules and regulations, and good construction practice. To report these activities, the construction manager shall provide monthly progress reports.

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.

Construction of the Interdisciplinary Research and Commercialization Building (IRCB) at the FSU Southwest Campus will not directly involve any academic programs. However, graduate and undergraduate students will have the opportunity conduct research in the building under the supervision of the researchers housed therein. With the inclusion of certain core facilities, students will have opportunities to work with certain tools and instruments using techniques that are unique to the FSU campus.

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

Construction of the IRCB at the FSU Southwest Campus will not directly involve any academic programs.

C. List the recommendations of the review consultant.

Not applicable.

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.

Construction of the IRCB is consistent with the State University System Master Plan.

VI. Space Needs Assessment

A. Describe the space needs in terms of present or projected deficiencies and the proposed solution, as well as alternative solutions that were considered, such as rescheduling of classes, remodeling of existing space, jointly using facilities on or off campus, and leasing of space.

This proposed project is a demonstration of Florida State University's commitment of creating a campus environment that is conducive to superior research and creative activities. The IRCB will increase the amount of research space available for the physical sciences and engineering faculty at FSU. By being interdisciplinary space, it will allow collaborating researchers from different departments to collocate in the same building.

Laboratory space in the building will be flexible and readily reconfigurable over time as the people in the building and their needs change. This will involve the use of open bench space throughout much of the building along mobile lab casework and overhead utilities.

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

None of the campus buildings currently being used are large enough or have the appropriate laboratories necessary for the research envisioned for this building. The construction of the IRCB will set the standard for new research buildings on the FSU SW campus. Because of the University's stringent construction standards, the new building will realize a reduction of overall utility and maintenance costs relative to buildings of similar types on the campus.

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 2007 version of the State Requirements for Educational Facilities and specific input from various faculty members. The types of spaces were determined by needs expressed by the FSU Office of Research.

D. Describe any difference between the project and survey recommendations for the project.

Not applicable.

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

On June 2008, the University's Board of Trustees adopted the most recent update of the Campus Master Plan for the Florida State University, as well as subsequent amendments in 2009 and 2011. 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, the WFSU Broadcast Center, The intramural Recreation Sportsplex, and several other University operations. Since 2008, the University has completed two minor amendments of the master plan, both of which are reflected in the currently adopted version. Additionally, the University is in the process of preparing another minor amendment, which will be discussed below.

Though not technically part of the Southwest Campus, Innovation Park lies adjacent to 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 had chosen to incorporate into the Campus Master Plan. Some of these have been annexed since the last time the University amended the adopted Campus Master Plan. The most significant of the parcels that are University controlled are those that comprise the National High Magnetic Field Laboratory (NHMFL) site, though there are several nearby properties that house other important University research activities, including AME, MRB, and Research Buildings A and B. These parcels of land previously not shown in the Campus Master Plan and future development associated with them are contained in a minor master plan amendment that is currently being prepared. It is expected that this minor amendment will be presented to the University's Board of Trustees in March 2015. Previously shown projects that are intended for future development have not changed; that is, for the Southwest Campus, the minor amendment addresses primarily two new major projects, the development of the Interdisciplinary Research and Commercialization Building (IRCB) project and the decommissioning of Alumni Village.

Following the expected approval by the University's Board of Trustees, the University will then seek to amend the Campus Development Agreement with the City of Tallahassee, which likewise covers previously shown projects in the adopted Campus Master Plan. Any negotiations necessary to make this Agreement concurrent with a newly modified master plan will need to be accomplished since Florida law requires that any campus master plan and associated campus development agreement be in harmony with one another. If one is modified, so must the other be modified as well.

All projects currently shown in the adopted Campus Master Plan have likewise been deemed to be "concurrent" with local land development regulations. The IRCB project and the Alumni Village decommissioning will have to be reviewed and analyzed to

determine whether there are any adverse impacts on municipally provided services and if deemed necessary, then a calculation of the University's fair share cost to mitigate any such impacts will need to be done. At this point, it is difficult to predict whether any such cost will be assigned to the University for either project. The design professional for the IRCB project may be asked to assist the University in any discussions with the City of Tallahassee concerning this project and any adverse impacts on local systems.

The Campus Development Agreement that was previously negotiated and executed by both Florida State University and the City of Tallahassee cover both the Main and Southwest Campuses. At the time of execution, there was insufficient information to adequately determine the impacts of the University development on the local/regional stormwater systems that serve the Southwest Campus. The University agreed to conduct a more in-depth study of these impacts and that study has now been completed. It is important for the design professionals selected for the IRCB project to be aware of this study and the need to quantify, capture, and treat any stormwater that is generated by this project. More information about this will be provided at the commencement of the design phase.

VIII. Site Analysis

A. General

The site chosen for the Interdisciplinary Research and Commercialization Building (IRCB) is located at 2001 Levy Avenue and is part of the Innovation Park complex, Lot 4 Block B (Tax ID# 410327 B0040). Overall site area is 7.58 acres and will be subject to the development standards of the approved Innovation Park Planned Unit Development (PUD). The approved Innovation Park PUD limits the impervious for this site to 50% of the site area.

The proposed site improvements will exceed this maximum. The condition of maximum impervious area is primarily dictated by the design of the master stormwater facilities. Innovation Park and the City of Tallahassee would like to encourage clustered development within Innovation Park. This desire would imply a willingness to consider increased areas of imperviousness and possibly a transfer of allowable impervious area from undeveloped to developing sites.

B. Project Site

1. Site Topography and Soil Conditions

   The topography of the site ranges from 60’ North American Vertical Datum of 1988 (NAVD88) at the NE corner of the site sloping upward in a gradual grade to 86’ NAVD88 at the SW corner of the site, yielding a 26’ differential.

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

   The Levy Avenue site is located within the Alumni Village Watershed which is part of the Lake Munson Drainage Basin.

   The FSU Southwest Campus is currently operating under a master stormwater plan approved by the City of Tallahassee that divides the region into eleven (11) stormwater management basins. The proposed IRCB site, 2001 Levy Ave, falls within the Innovation Park - East Basin of Basin 8.

   According to the Tallahassee-Leon County GIS Natural Features Map (I-Maps) the proposed site is not in a Federal Emergency Management Agency (FEMA) Floodway Special Hazard Area (100 year).

   Stormwater facilities are located onsite along the eastern property boundary within the City of Tallahassee overhead electrical easement. The existing stormwater facility accommodates retention for the 25 year to 100 year storm event for the southeastern corner of Innovation Park. The facility drains across Levy Drive and discharges into Innovation Park's eastern stormwater facility.

The development of the Levy Avenue site considers elimination of a portion of the existing stormwater facility located onsite. As a result, the Levy site must include the construction of replacement capacity of the facility to be eliminated.

As previously stated, the Levy Avenue site drains to the eastern Innovation Park pond. Consideration should be given to making offsite improvements for conveyance and stormwater capacity. It may be possible to consider transfer of stormwater capacity from the Paul Dirac site or utilization of a portion of that site for a replacement facility. Conveyance from the Levy Park site would need to be evaluated downstream to accommodate increased unattenuated flows. An in-depth stormwater analysis will need to be performed in conjunction with the City of Tallahassee to assure viable alternatives to the existing stormwater conveyance system.

3. Transit, Parking, Vehicular, Bicycle, and Pedestrian Circulation

The IN Innovation line of the Seminole Express bus service runs from FSU's main campus to Innovation Park Monday through Thursday, from 7 am to 7 pm, and on Friday from 7 am to 5 pm. All Seminole Express buses are equipped with bike racks.

The Tallahassee StarMetro public transportation bus Dogwood "D" line encompasses the Thomasville Road area to Innovation Park. The D line runs from 6 am to 8 pm Monday through Friday and stops at the bus shelter at the intersection of Paul Dirac Drive and Levy Avenue every 40 minutes. It also runs on Saturday from 8 am to 7 pm every 40 minutes. The Live Oak line runs eastbound every 40 minutes along Paul Dirac and Pottsdamer Streets from 6 am to 7 pm Monday through Friday. It also runs on Saturdays eastbound every 45 minutes from 7 am to 6 pm along Iamonia and Levy Avenues. The Route 4 line runs westbound along Levy Avenue to Iamonia on Sundays every 35 minutes from 12 to 6 pm and nights and every 60 minutes from 8 to 10 pm.

Parking within Innovation Park is guided by a Planned Unit Development (PUD) plan. PUD parking requirements for research and development uses are:

Two (2) cars per 250 sf up to 20,000 sf
Two (2) cars per 2,000 sf from 20,001 to 40,000 sf
Two (2) cars per 4,000 sf from 40,001+ sf

The site falls with the City of Tallahassee's Multimodal Transportation District (MMTD). As such, the MMTD Code may provide new opportunities to either reduce or consolidate parking within Innovation Park.

Clear paths for vehicular, bicycle, and pedestrian circulation are defined along Engineer Drive and Levy Avenue, roads that bound the west and north edges of the site respectively. Additional bicycle racks should be provided as part of the project.

Onsite parking may be reduced if the user can demonstrate reduced demand. The existing MMTD supports reduced and shared parking while designing to encourage pedestrian and bicycle traffic. Although parking is allowed within the utility easement, placement of poles and guy wires severely restrict utilization. Offsite parking should be considered for this site, if possible.

4. Site Vegetation

There are two areas of trees on the site, a small grouping at a central point within the site, and a larger grouping in the southern edge of the site. Several large trees are present on site which should be evaluated by a certified arborist and considered for preservation.

5. Archaeological History

University documentation indicates that there are no archaeological sites within the immediate confines of the project site. Per the University's "Professional Services Guide," the design professional shall be responsible for petitioning, on behalf of the University, the Florida Department of State Division of Historical Resources for an assessment of the proposed site to verify this determination of historical or cultural resources.

6. Location of Existing Utilities and Proximity of Utilities to Project Site

a. Steam - NA
b. Potable Water - Provided by City of Tallahassee. Existing 8" PVC water main located within Levy Avenue to the north of this site.
c. Chilled Water - NA
d. Sanitary Sewer - Provided by City of Tallahassee. Existing 8" PVC sanitary sewer main located within Levy Avenue just west of the Levy Avenue and Engineering Drive intersection, approximately 265' from the northwest corner of this site. Building elevation will be a critical design element in order to maintain a gravity outfall to the existing force main.
e. Storm - Stormwater is provided via capacity within the Innovation Park Stormwater Management Facility and will drain to the facility via the stormwater conveyance system. Treatment and rate control will need to be provided for any improvements to the site as well as any disturbance of the existing stormwater system already in place.
f. Natural Gas - Provided by City of Tallahassee. Existing gas service is provided via gas main located within the Levy Avenue right-of-way to the north of this site.
g. Power - Provided by City of Tallahassee. Electric power is provided to this site via multiple locations.
h. Telecommunications - An existing fiber optic box and telecom box are located at the northwest corner of this site.

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

   Electrical Easement - The site contains two (2) City of Tallahassee power line easements: one 100' easement along the southern boundary of the site (O.R. Book 430, Page 262) and one 150' easement along the eastern boundary of the site (O.R. Book 430, Page 262). These easements contain a series of large transmission lines which cannot be impacted or relocated. Parking is allowed within these easements but is severely restricted by the transmission line poles and guy wires.

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

   According to subsurface reconnaissance of the Levy Site, which included Electric Resistivity Imaging; Microgravity Survey; and Ground Penetrating Radar, there are five (5) identified anomalous features at the site. Based on the geophysical survey and report interpretation, approximately 35% of the survey line segments at the Levy Site identified anomalous features that may be karst (sinkhole) related. Such features are not necessarily problematic, just different.

   According to geotechnical engineer's subsurface soil exploration, extremely soft or very loose to loose zones of variable thicknesses were encountered in two of the six test borings performed within their limited subsurface exploration. These conditions are problematic and generally indicate an increased probability of future surface collapses.

   The geotechnical engineer concludes that there is a "High" risk for development of a sinkhole at the Levy Site, which can also be said of the Mag Lab building site, the FAMU-FSU College of Engineering, much of the Seminole Golf Course, the Morcom Aquatics Center, and numerous other buildings in the vicinity. These types of subsurface challenges do not preclude development, but will possibly increase the cost of development if subsurface improvement is needed.

   Additional borings will be needed during the design phase of the project to characterize the conditions beneath the proposed building footprint. The design phase exploration may reveal that subsurface remediation, such as deep pressure grouting is necessary depending on thicknesses of very soft zones and/or size of cavities. Deep foundations such as auger-cast piles or drilled shafts may also be necessary depending on loading conditions.

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 the south. It is not expected that prevailing winds shall have a significant impact on the design of this facility. The design professional shall, however, be sensitive to downstream effects of any mechanical exhaust, which may be vented from this facility.

IX. Program Area

A. Specific Program Requirements

This section identifies the traditional requirements for the various spaces and rooms in the Interdisciplinary Research and Commercialization Building (IRCB), including an enumeration of the number of similar spaces, their size, and where not obvious, their environmental requirements.

1. Space Summary

   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 square footage by space type (Room Use Code). The Room Use Code 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 2007 Space Requirements for Educational Facilities (SREF) standards.

   Again, the figures contained in this summary are not based upon a completed design. As with most types of program information, the design professional shall consider the delineation of space within the building as a framework for design. The Building Committee must approve any deviation from this baseline program information, such as room sizes.

2. "Room or Space" Data Sheets

   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 series of Space Data Sheets have 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 design professional is expected to become thoroughly familiar with the spatial information for this project. Prior to the commencement of the design phase, the design professional 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.

B. Design Issues and Opportunities

In addition to the space needs mentioned 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 design professional shall take into serious consideration each of these issues and assist in the development and incorporation of solutions into the project design.

The space and components within a building of this type need to be flexible in order to be easily and quickly reconfigurable to accommodate different research needs over the lifespan of the building. The new building will need to have excess capacity in its building systems (power, mechanical, piping, data, communications, etc.) to carry it through its intended lifespan. In addition to assignable research laboratory and office space, shared research core facilities will be planned and may include a cleanroom and imaging/characterization facilities.

1. Its Users

   The program was developed based on a flexible and adaptable module for no known users. The IRCB will be loaded with some existing key faculty and will house many new faculty members focused in materials and energy research. Space for 24 faculty and 198 bench positions of various professional backgrounds will be housed in the new IRCB.

2. Signature Building

   The IRCB will be located on a prominent site (Levy Avenue and Engineer Drive) forming a gateway to FSU's research campus.

3. Relationship to Adjacent Buildings / Facilities

   The IRCB will hold the corner of Levy Avenue and Engineering Drive directly opposite Research Foundation B to the north and Aero-Propulsion Mechatronics and Energy Building (AME) to the west. A City of Tallahassee (COT) Power line easement runs through the east and south edges of the site.

4. Site and Street Level Improvements

   a. Site and Pedestrian Improvements

      The site is currently a clean green field site with a cluster of mature trees located centrally and forming a border along the south edge of the site. The sloping site offers the design professional both challenges and opportunities as the project develops. A holding pond on the northeast corner of the site may be able to be manipulated and studied as part of an overall stormwater management plan for the southwest campus. Pedestrian pathways will be extended onto the site from north, east, south and west approach. Parking

for building occupants and visitors will be needed with separate sidewalks and pathways. Primary pedestrian approach will be from the northwest with secondary approaches from the west and southwest. There are no facilities to the east currently.

b. Service, Outdoor Material Storage, Vehicular Access, Vehicular Parking, and Bicycle Parking

Loading and maintenance service would ideally enter the site on the east to avoid pedestrian and service conflicts. The loading dock will need to be designed to accommodate both tractor trailer deliveries and box truck deliveries. Trash/recycle containers will also be accommodated at the loading dock. Below is the loading area criteria identified with the Building Committee.

- Provide entrance and egress, as well as turning radius, for tractor-trailer units of 80+ feet in total length. Please review the following website: http://onlinemanuals.txdot.gov/txdotmanuals/rdw/minimum_designs_truck_bus_turns.htm
- Dock height is typically 4'.
- Presumably the dock will be nearly flush, with curtain door entering hangar. The hangar is the interior staging area for loading and unloading, as well as large equipment assembly.
- Plan for tractor-trailer units of 102-in. in total width –15 to 18 ft. for proper maneuvering.
- Trailer bottom clearance is 8 inches, entry drive ramps must be designed to avoid high-centering.
- The dock must be level for the trailer at the stop point (52+ feet).
- The dock must be well lighted.
- Provide for drainage.
- Provide a hose bib connection at dock.
- Provide striping on ramp for safe backing, and bumpers on the dock end for safe parking.
- Provide a dock leveler of adequate dimensions and weight capacity.
- Provide stairs from the ramp to dock height.
- Provide for overall loading dock width of 14-ft. and length of 28-ft.
- Provide 9-ft. wide and 10-ft. height doors accessing the interior hangar. Could be roll-up steel curtain/shutter.

Dedicated parking spaces for mail and/or FedEx deliveries are better suited to be near main building entries. Outdoor material storage is not anticipated; however an on-grade mechanical yard will need to be located for building utilities including chilled water, emergency power generation, and bulk cryogen-gas storage. Occupant and guest vehicles will approach from Levy Avenue from the easterly and westerly direction and may enter

the site along Engineering Drive. Approximately 225-250 parking spaces will be required for the IRCB and will need to be verified by the design professional. LEED Requirement: Provide secure bike racks or storage for 5% of peak building occupants.

c. Trees and Landscape

The University recognizes that trees are living organisms and therefore have life expectancies like all of us. The design professional, therefore, should balance the need to preserve trees with the appropriate site design. If the removal of trees becomes necessary, then that should be the design professional's recommendation to the University. In such an event, then the project shall seek to plant appropriate new trees in locations where they can flourish and provide enjoyment for generations to come. Existing trees will need to be protected where trees are to remain. Mature specimen trees need to be evaluated by the Landscape Architect and corresponding protection/maintenance plans included in the project.

A sensitive and a well-conceived landscape plan is an important component of this project. Recommendations for irrigation and landscaping to achieve a cohesive and pleasing plan should be part 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.

d. Visual Clutter

Building system components that are typically visible on the exterior of a building or elsewhere on a project site shall be designed and coordinated so that these elements do not detract from the projects overall appearance. These components, which include (but are not limited to) devices such as backflow preventers, cameras, beacons, transformers, switchgear, condenser units, and waste dumpsters, usually detract from a building's design if not appropriately handled.

e. Exterior Building Signage

Exterior building signage shall include freestanding wayfinding signs, wayfinding plaques, and metal letters attached to the building and shall be consistent with the University's signage standard and, if applicable, the Innovation Park Signage Standard, and shall be implemented as part of this project. The design professional shall provide drawings indicating lettering, symbols and accessible route map (when needed) for review by the Facilities Planning Section. Additionally, when an accessible route map is needed, the design professional is responsible for creating the artwork necessary for the printing/signage company to create a decal. The Facilities Planning Section will review drawings for content and style

consistencies prior to manufacturing of signs. This project is expected to fund all signage associated with this project. The Facilities Sign Shop shall construct and install the freestanding wayfinding signs and wayfinding plaques. The design professional shall consider in elevations studies how letters on the building will appear both for the opening day and if the facility is named differently at some future date.

5. Health, Safety, Security and Sustainability

a. 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 design professional shall consider this issue in all matters of design, with special consideration given to any exterior improvements that might compromise the safety of the occupants or persons walking nearby. A range of strategies should be considered by the design professional, but at a minimum, enhanced exterior lighting, security phones, and a facility design that minimizes areas where crime can be committed.

Given the sensitive nature of research and environmental, health, and safety concerns, controlled access will extend to the interior of the building. The design professional will be responsible for identifying those areas where controlled access is required internally. Controlled access systems are to be integrated with University Standards.

b. LEED (Leadership in Energy & Environmental Design) Certification

Florida State University is committed to stewardship of the environment through the promotion of sustainable practices. Green buildings, especially on a university campus, can serve as living laboratories that highlight the application and intersection of science, technology, and sustainability.

All new construction and renovation projects with budgets of $2 million or more shall seek Leadership in Energy and Environmental Design (LEED) certification from the U.S. Green Building Council (USGBC).

Documentation shall incorporate a current version of LEED and shall target a minimum level of LEED Silver. Project teams are further encouraged to explore the feasibility of achieving a higher level of LEED certification and/or the ability to meet the 2030 Challenge for reduction of carbon emissions.

Prior to the commencement of the Schematic Design phase, the design professional shall meet with the Facilities Department to determine a specific certification strategy. Historic data from previously certified FSU

projects should be reviewed and utilized to determine new project boundaries, while preserving those of previous projects. In some cases, previously developed data may be available for use in certifying new projects. Also, note that Facilities Department can provide information and trends related to the achievement of many prerequisites and potential credits.

Building commissioning (a prerequisite to LEED certification) shall follow all minimum requirements specified by the USGBC and shall also comply with the University's standard commissioning process as defined in the FSU Design Guidelines. The FSU Design Guidelines include a scope document intended to structure the work of the Commissioning Agent and ensure that all critical equipment and processes are reviewed for compliance with the University's requirements. The need for Enhanced Commissioning or Building Envelope Commissioning shall be reviewed during the initial LEED strategy meeting. These services will be implemented at the University's discretion.

For projects whose characteristics fail to meet the minimum project requirements for LEED certification, the design professional shall submit a letter documenting the conditions which preclude certification. To the extent possible, sustainable practices shall continue to be employed in the development of a non-certified project.

c. Timeless Building

This proposed facility is expected to serve the University for decades. In order to accommodate changes that may occur in the future, the design professional shall design the facility with as much flexibility as possible, without compromising the intended immediate function. Consideration should be given so that decades from now, this building may be remodeled to serve the needs of future scientists.

6. Housekeeping and Building Services

Housekeeping of this facility will need to be discussed during program verification and the design. Needs to be considered include room for paper storage, and general storage for mop buckets and a wet/dry vacuum. Custodial closets are required to have shelves, deep sinks and hot and cold running water. For the toilet rooms, floor mounted partitions are not acceptable. Please discuss with building committee and Facilities Building Services regarding who will supply restroom accessories and waste containers.

7. Accessibility

The laws, statutes, and codes that govern the design and construction of this facility require it meet all applicable standards for accessibility throughout the entire facility. It is important that the design professional 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 on any of its campuses should be provided the same opportunities and access to facilities and functions typical to the experience of the student body. This includes access to fellow students and participation in all public activities offered.

The design professional shall consider accessibility, in all forms, as a basic design issue and integrate necessary elements into the overall project to ensure that all areas of IRCB are accessible in accordance with all applicable statutes and codes.

The design professional shall be aware of the varying needs and abilities of all individuals and whenever practical and feasible shall incorporate universal design principles. For example, although not mandated by code, the University has made it a standard practice to utilize features such as automatic door opening devices at the primary entrances as a means of integrating accessibility requirements into building designs. Another example would be to use a gently sloping walk, when space allows, accommodating all users in lieu of providing a separate stair and ramp. These are practical considerations that increase and ensure accessibility. The design professional shall consider and implement others.

Toilet and locker facilities shall be made fully accessible. Public drinking fountains and telephones shall be accessible. Tables, desks, computer workstations, reception desks and all features used by the public shall address accessibility.

It is important to realize that the design professional’s responsibility for providing accessibility to this project does not begin at the building itself; rather, this project should connect and mesh with the evolving campus-wide accessible interconnected route network of sidewalks, transit stops, vehicle drop offs and parking.

It is essential that the existing accessible routes be maintained during the course of construction and in areas where it interfaces directly with this project be upgraded as needed. If a sidewalk must be blocked then it must be properly noticed with beeping barricades and direct access to legitimate crosswalks must be provided.

The design professional shall consult with the University's Office of Disabled Student Services and the Building Committee during the design phase to determine what additional special considerations, if any, should be incorporated into the project.

8. Wireless, Computer Technology, Computer/IT Space

New conference rooms will utilize the latest recommended campus standards. Wireless is expected in common areas, classrooms and laboratories. Please see Division 16 of the Design Guidelines and Specifications website: https://www.facilities.fsu.edu/FDC/Guidelines.php

9. Artwork

As this new facility is expected to utilize state appropriated funding, participation in the Art in State Buildings (ASB) Program is a requirement. The program requires that up to .5% of the construction appropriation be set aside to acquire artwork for permanent display in, on, or around the facility. The Division of Cultural Affairs of the Florida Department of State ensures that the selection process is followed as per Florida Administration Code 1T-1.033 in accordance with 255.043, F.S.

To the maximum extent feasible or practical the Building Committee would like to be involved in this process. The design of the artwork should be complementary to the new facility design and disciplines of study within.

10. Project Schedule / Delivery

The procurement of all design and construction services shall be administered in accordance with the University's guidelines.

It is essential that the design professional and the construction manager understand and appreciate the sensitive nature of the project's schedule. However, the design professional and the construction manager are strongly encouraged to make reasonable recommendations to accelerate the design and construction phases to better ensure that an acceptable schedule can be met.

X. Utilities Impact Analysis

The following is a brief utility analysis for the proposed Interdisciplinary Research and Commercialization Building (IRCB) project. All necessary utility improvements must be approved by the Facilities Utilities Section, the ITS Network Infrastructure Section, and the Facilities Design and Construction Section prior to the commencement of design.

The design professional 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 design professional shall be responsible for acquiring and verifying the locations and capacity of all University and City maintained utilities which serve the project site.

A. Chilled Water

Not applicable.

B. Steam

Not applicable.

C. Potable Water and Sanitary Sewer

Potable Water is provided by the City of Tallahassee. There is an existing 8" PVC water main located within Levy Avenue to the north of this site.

Sanitary Sewer is provided by the City of Tallahassee. There is an existing 8" PVC sanitary sewer main located within Levy Avenue just west of the Levy Avenue and Engineer Drive intersection, approximately 265' from the northwest corner of this site. The building elevation will be a critical design element in order to maintain a gravity outfall to the existing force main.

D. Irrigation Water

Programmatic requirements for irrigation systems in this project are not known at this time. However, if it is determined that an irrigation system is to be included, it shall be connected to an independent irrigation meter and not connected to the building potable water system.

E. Stormwater

Stormwater is provided via capacity within the Innovation Park Stormwater Management Facility, and will drain to the facility via the stormwater conveyance system. Treatment and rate control will need to be provided for any improvements to the site as well as any disturbance of the existing stormwater system already in place.

F. Natural Gas

Natural gas service is provided by the City of Tallahassee. An existing gas main is located within the Levy Avenue right-of-way to the north of this site.

G. Well Water

At the present time, well water service is not expected to be a requirement of this project.

H. Electrical (Power):

Power is provided by the City of Tallahassee. The utility company will provide transformers and cabling to transformers located in the service drive area of the new building. Two transformers are anticipated to provide redundancy. The project will provide primary conduits routed underground from property line to the new service transformers; size and number of conduits are to be determined.

I. Electrical (Lighting):

Site lighting shall be provided around the facility in keeping with both Innovation Park and FSU standards. The existing site has several light poles along Levy Avenue.

J. Telecommunications

Telecommunications - An existing fiber optic box and telecommunication box are located at the northwest corner of the site.

XI. Information/Communication Resource Requirement

The need to provide adequate and appropriate information and communication resources for the Interdisciplinary Research and Commercialization (IRCB) Building is essential to its daily functions. Technology features should be maximized as far as the budget will allow. If the budget does not allow for certain features to be placed now, then empty conduit (pathway) should be installed to incorporate future technology. Not only anticipated needs, but unanticipated needs should be accounted for as well. For example if LCD projectors or digital signage at the conference rooms cannot be purchased now, pathway should be installed now in anticipation of acquiring this technology in the future. Empty conduit “home-runs” should be located at strategic locations in anticipation of future need. Wireless should be incorporated now into the facility, to the maximum extent allowed by the budget, however, not at the expense of deleting wire pathway. The network lines shall be provided in an open trough (re-configurable) fashion whenever feasible.

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 computers, file servers, printers, scanners, 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 design professional in the design of this project. The Office of Telecommunications (Now known as Office of Information Technology Services) developed a document entitled "Florida State University Telecommunications Infrastructure Standard" which can be accessed via the following web address:

http://www.fpc.fsu.edu/guidelines.html

The design professional shall be expected to become thoroughly familiar with the contents of this specification and shall plan for the design of all telecommunication systems accordingly. The University’s Office of Information Technology Services (ITS) must approve any departures from this standard specification.

The University's Office of Information Technology Services (ITS) is generally responsible for the installation, operation and maintenance of these networks.

ITS Network & Communication Technologies have the responsibility of closely overseeing design, development and approval of telecommunications systems. The Facilities Department along with ITS Network & Communication Technologies 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 Schematic, Design Development, 50% Construction Document and 100% Construction Document milestones.

The actual installation of Information Technology Resources and Communications shall be performed by ITS Network & Communication Technologies or under their close supervision.

As evidenced by the approval signature of this document's Signature Sheet, the University's Chief Information Officer for ITS 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.

Conference rooms, multi-purpose rooms, seminar rooms, and rooms providing a similar function, and applicable university standards shall be applied to these. The Office of Information Technology Services (ITS) shall review Conference/Seminar rooms in the design and construction phases for compliance with the Technology Enhanced Classrooms Initiative.

In closing, it is worth repeating that the design professional shall work closely with the Facilities Department, ITS Network & Communication Technologies, the Building Committee and other appropriate University departments from the early stages of design through the 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, the advent of a University-wide permitting office are just a few examples of such changes. Since 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 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 practices, and policies. 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, standard practices and policies that the design professional shall follow in developing this project. This list may not be entirely complete nor does it absolve the design professional from any legal or contractual responsibilities. It should also be noted that the design professional 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 design professional shall also ensure that all codes utilized during the design process shall be the most currently adopted.

A. Florida Statutes

The design professional 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
- Chapter 489 Construction Contracting

B. Codes and Standards

The design professional 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 Building Code
- 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.
- Any other regulatory codes or standards that apply to this type of project.

The design professional 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 plans examination, permitting and inspection certification program in all University buildings only. When the Building Code Administrator is satisfied that all requirements have been met, a certificate will be issued that allows completed buildings to be occupied.

It is the responsibility of the design professional 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 design professional 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 the completion of this project is listed below in tabular form and highlights the more important milestone events expected to be achieved during the course of this project.

The date of completion is a very important milestone. Secondly, the simple reality is that the passage of time reduces the value of money. In order to maximize the effective use of funds that are committed to this project, their timely expenditure is critical.

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, 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 to assume that, at a minimum, the design professional and construction manager should be able to meet the schedule indicated. The project team is encouraged to make reasonable recommendations to meet the project schedule or to accelerate the completion date.

Project Schedule

Dec. 2014	Facilities program expected to be completed and approved. Architect/Engineer (A/E) selection expected to begin.
Feb. 2015	A/E selection expected to be completed. Design contract negotiated and executed. Notice to Proceed issued to commence the advanced programming phase.
May 2015	Commence Design.
July 2015	Construction Manager (CM) selection expected to begin.
Oct. 2015	CM selection expected to be completed. Contract for Preconstruction Services expected to be negotiated and executed. Notice to Proceed issued to commence preconstruction phase.
Feb. 2016	Guaranteed Maximum Price (GMP) proposal solicited and received from CM. Design phase expected to be completed, 100% Construction Documents submitted and reviewed, including review by the Office of the State Fire Marshall. Permits issued.
May 2016	GMP proposal accepted. Construction contract executed. Notice to Proceed issued to commence construction phase. Site and foundation work begins.
May 2018	Substantial Completion of IRCB expected.
Aug. 2018	Final Completion expected.

XIV. Program Funds

This project has the potential to be funded from a variety of funding sources, some of which likely will involve appropriated funds. For example, the planning funds appropriated by the Florida Legislature last year were derived from lottery revenues. Traditionally, academic projects on university campuses have been developed utilizing PECO funds. More recently, the availability and reliance on that funding mechanism has been marginalized as State revenues have declined. This creates, therefore, a sense of uncertainty as to how the construction activities and the furnishings/equipment acquisitions will be funded. For now, the University is still looking towards the Legislature and the possible resurgence of PECO, General Revenue, or other state appropriated funds to sustain this project. The following is a listing of the various funding requests that the University has made to date.

Funding Requests:

Year	Source	Amount
FY 2015-2016	PECO or Other State Appropriated Funds	$ 3,000,000
FY 2016-2017	PECO or Other State Appropriated Funds	$35,000,000
FY 2017-2018	PECO or Other State Appropriated Funds	$ 3,000,000

The above chart indicates the anticipated state funding of $41,000,000. As this amount is only a portion of the funding necessary to build this facility, the shortfall will be made up from a contribution from the FSU Research Foundation. The Research Foundation is planning to contribute $44M in funding to support the project over the next 4 years.

The proposed breakdown of this funding into the major project categories is as follows:

Planning	$3,800,000
Construction	$64,000,000
Furnishings/Equipment	$17,200,000
TOTAL	**$85,000,000**

The breakdown of costs within each specific project category can be found in the Project Budget Summary.

XV. Project Budget Summary

A. General

This project's estimated Project Budget Summary can be found on the following page and includes a breakdown of all project costs necessary for the design and construction phases. The design professional and construction manager shall be responsible for verifying this estimate and making recommendations for adjustments, where necessary.

All costs outlined in the Project Budget Summary are based upon a two-phase sequence commencing in May 2016. Any delay beyond this start date or disruptions in funding may affect the project cost. An escalation factor of 2% per year is included in each phase of the project. The following is a brief explanation of the various budgetary components that were considered in the development of this Summary.

B. Schedule of Project Components

1. Construction Components (Basic Construction Cost)

    a. Construction Cost (from above)

        The cost of the building itself is taken directly from an extensive study provided by a contracted architect.

    b. Site preparation / demolition

        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 some site preparation, relocation or extension of any required utility lines, grading, hardscaping and landscaping.

    c. Environmental Mitigation (Asbestos and Lead Abatement)

        Not applicable

    d. Landscape and Irrigation

        An allowance has been provided to allow for these items.

    e. Walks

        An allowance has been provided to allow for this item.

f. Parking and Drives

An allowance has been provided to allow for these items.

g. Service Access

An allowance has been provided to allow for this item.

h. Road Rerouting

Not applicable

i. Telecommunications – Outside Plant (OSP)

- Outside Plant Pathway: This includes manholes with multiple 4-inch 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.

j. Electrical Service

An allowance has been provided to allow for these items.

k. Water Distribution and Fire line

An allowance has been provided to allow for these items.

l. Storm / Sanitary Sewer System

An allowance has been provided to allow for these items.

m. Chilled Water/Steam Line

Not applicable.

2. Other Project Components (Other Project Costs)

a. Land/existing facility acquisition

Not applicable.

b. Professional Fees

- *Advanced Programming:* This program is preliminary in nature and an allowance has been set aside to cover the cost of providing advanced programming for this project.
- *Basic Services:* An estimate of professional fees for the design professional team has been included and is based upon the standard fee curve used by the University. These fees cover items normally associated with the basic services portion of the project.
- *Design Contingency:* A small design contingency has also been included. The University does not believe that the services of any specialty design consultants are required on this project.

c. Asbestos/Lead Survey/Design

Not applicable.

d. Preconstruction Services

Funds have been reserved to provide preconstruction services rendered by the construction manager. These fees are based upon a percentage of the construction and site development costs.

e. Fire Marshal Fees

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

f. Inspection Services

Funds have been reserved to cover the number of inspection services that are required on this project:

- *Commissioning + LEED:* An allowance has been set aside for documentation and commissioning related items needed for LEED certification.
- *Site Representative:* Because of the size and scope of this project, an allowance has been made for the services of a full-time, on-site clerk of the works.
- *Threshold Inspection:* Depending upon the design solution, 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/Inspection:* Funds have been reserved to cover the cost of plans review and inspections by the University's Building Code Official.

g. Insurance Consultant

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

h. Surveys & 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, testing during construction, materials testing, and HVAC test and balance.

i. Asbestos/Lead/Abatement Monitoring

Not applicable.

j. Permit/Impact/Environmental Fees

Funds have been reserved for here to handle possible permit, impact and environmental fees.

k. Furnishings and 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.

l. Special Equipment and Hookup

Funds have been reserved to provide for special equipment associated with the cleanroom and imaging suites as well as the hookup of the tools.

m. 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 battery back-up and other computer equipment as required.
- *Core Network Equipment:* Shared costs of a core router chassis, batter back-up and a 1 Gbps fiber optic transport port.

n. Classroom Technology

Not applicable.

o. Moving / Relocation Expenses

This is an allowance to cover moving expenses of the groups affected by this project.

p. Artwork

The requirement for artwork is applicable since appropriated funds are being used to construct this project. The state requires 0.5% of the building (under roof) structure construction costs (up to $100,000) to be set aside for the procurement of artwork.

q. Infrastructure Assessment

Funds have been reserved to cover this project's contribution to meet the University's infrastructure needs.

r. Project Contingency

A project contingency has been established to cover unforeseen conditions and impacts to the project.

	Budget Summary for IRCB					
Room Use Codes	**Facility/Space Type**	**Net Area (NSF)**	**Net to Gross Multiplier**	**Gross Area (GSF)**	**Unit Cost (Cost/GSF)**	**Total Cost**
200	Research Lab	33,165	1.81	60,095	420	25,232,595
200	Cleanroom/CVD	6,562	1.81	11,890	707	8,404,741
200	Imaging/Characterization Lab	5,280	1.81	9,567	472	4,518,730
300	Office/Conf. Room	21,000	1.81	38,052	308	11,724,720
700	Building Support	3,015	1.81	5,463	296	1,614,779
	TOTALS	**69,022**	**1.81**	**125,068**	**412**	**51,495,565**
SCHEDULE OF PROJECT COMPONENTS						
1. Construction Components (Basic Construction Cost)			**Planning**	**Construction**	**Equipment**	**Total**
a. Construction Cost (from above)				51,495,565		51,495,565
b. Site Preparation / Demolition				100,000		100,000
c. Environmental Mitigation (Asbestos & Lead Abate.)				0		0
d. Landscape and Irrigation				150,000		150,000
e. Walks				200,000		200,000
f. Parking and Drives				300,000		300,000
g. Service Access				100,000		100,000
h. Road Rerouting				0		0
i. Telecommunications - Outside Plant (OSP)						0
Pathway				50,000		50,000
Content (Wiring)				25,000		25,000
j. Electrical Service				160,000		160,000
k. Water Distribution & Fire Line				50,000		50,000
l. Storm / Sanitary Sewer System				120,000		120,000
m. Chilled Water/Steam System				0		0
(1) Total Basic Construction Costs			**0**	**52,750,565**	**0**	**52,750,565**
6.16% Escalation				**3,249,435**		**3,249,435**
(1a) Total Basic Construction Costs w/ Escalation			**0**	**56,000,000**	**0**	**56,000,000**

2. Other Project Components (Other Project Costs)	Planning	Construction	Equipment	Total
a. Land/existing facility acquisition				0
b. Professional Fees				0
Advanced Programming	50,000			50,000
Basic Services (Group A)	2,500,000			2,500,000
Design Contingency (10% Basic Services)	250,000			250,000
c. Asbestos/Lead Survey/Design				0
d. Preconstruction Services .71%	400,000			400,000
e. Fire Marshal Fees (.0025)	140,000			140,000
f. Inspection Services				0
Commissioning + LEED (1%)		560,000		560,000
Site Representative		50,000		50,000
Threshold Inspection		50,000		50,000
Roof Inspection		25,000		25,000
Plans Review/Inspection (.3%)	170,000			170,000
g. Insurance Consultant (.0006)	35,000			35,000
h. Surveys & Tests				0
Topographic Survey	0			0
Geotechnical Investigation	25,000			25,000
Testing During Construction	20,000			20,000
HVAC Testing/Balancing	100,000			100,000
j. Permit/Impact/Environmental Fees	25,000			25,000
k. Furnishings & Equipment			7,000,000	7,000,000
l. Special Equipment and Hookup			10,000,000	10,000,000
m. Telecommunications				0
Inside Wiring		222,000		222,000
Instruments		49,000		49,000
Security		111,000		111,000
Network Computer Equipment		189,000		189,000
Core Network Equipment		6,500		6,500
n. Classroom Technology	0			0
o. Moving / Relocation Expenses			200,000	200,000
p. Artwork		100,000		100,000
q. Infrastructure Assessment (2%)		1,120,000		1,120,000
r. Project Contingency (10%)	85,000	5,517,500		5,602,500
(2) Total - Other Project Costs	**3,800,000**	**8,000,000**	**17,200,000**	**29,000,000**
ALL COSTS (1) + (2)	**3,800,000**	**64,000,000**	**17,200,000**	**85,000,000**

XVI. Appendix

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

Exhibit 1 **Project Site Location Map**

This Exhibit includes the current site location on the SW campus.

Exhibit 2 **Boundary and Topographic Survey**

This exhibit shows the site's topographic features, boundaries, utilities, and vegetation.

Exhibit 3 **Space Summary**

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

Exhibit 4 **Site Photographs**

This exhibit contains photographs of the proposed site and its surroundings.

Exhibit 5 **Room and Data Sheets**

This exhibit contains individual room or space data sheets.

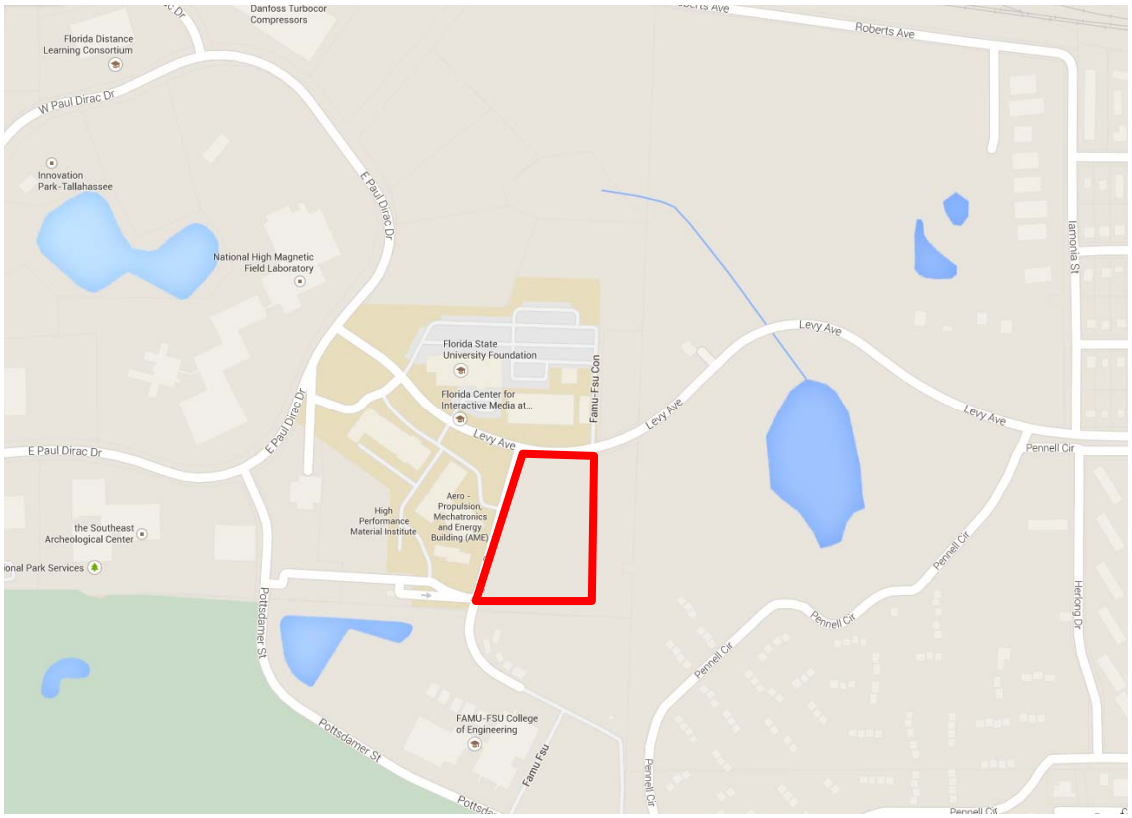

Exhibit 1 – Project Site Location Map

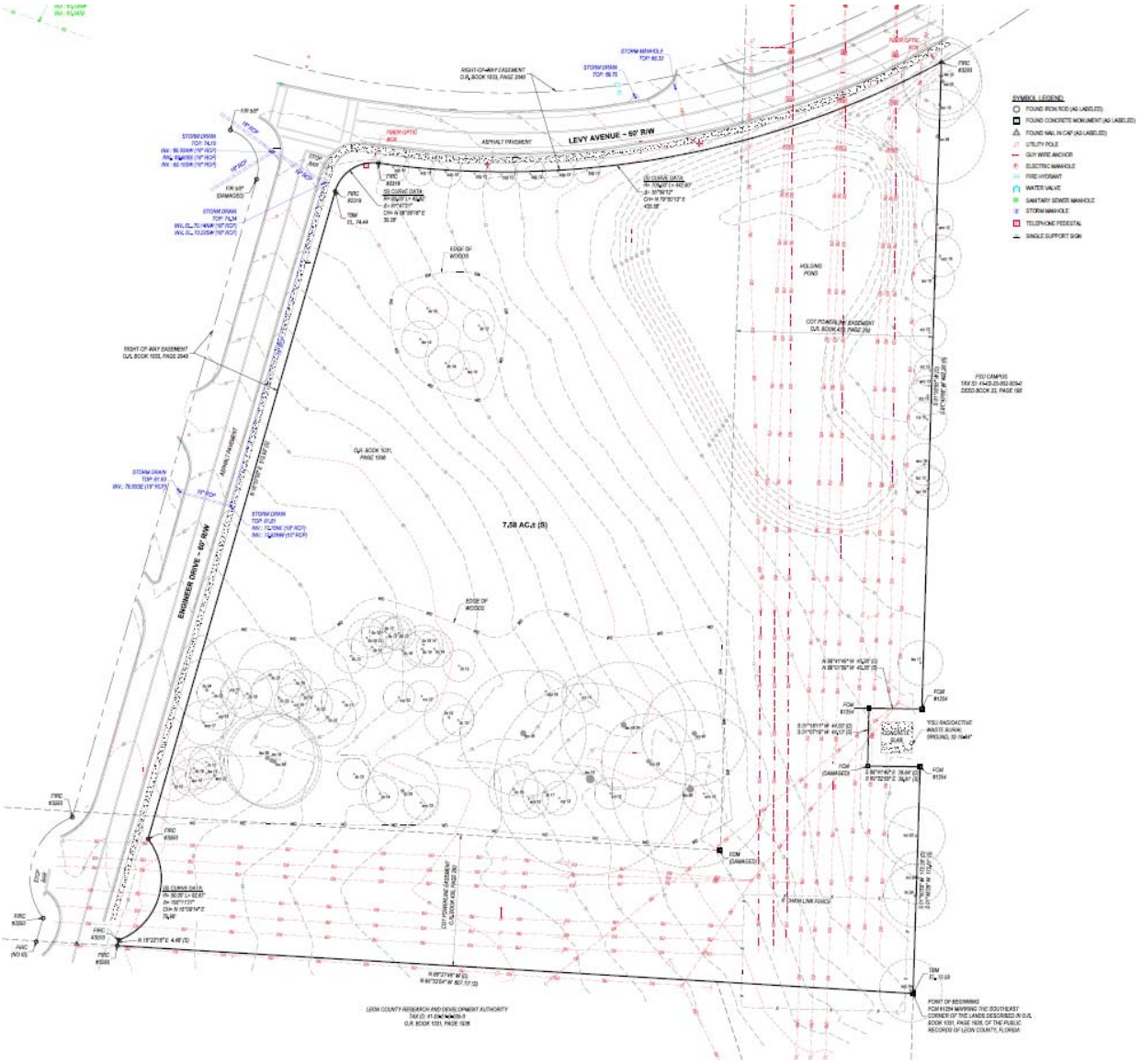

Exhibit 2 – Boundary and Topographic Survey

Exhibit 3 – Space Summary

IRCB Space Summary

Total Build Out

Space Number	Room Use Code	Space Name	Seats	NSF / Seat	NASF	Quantity of Rooms or Spaces	Total Net Area	Gross Factor	Total Gross Area
		Assembly Spaces: Shared per floor or building; or Dedicated to Specific Unit;							
		Gathering Rooms: Conference, Seminar, Meeting, Library, Lounge and Breakroom							
A-11.1	350	Small Conference Room	10	25	250	**5**	1,250	1.81	2,265
A-11.2	350	Large Conference Room	20	25	500	**3**	1,500	1.81	2,718
A-11.3	315	Break	20	25	500	**2**	1,000	1.81	1,812
A-11.4	315	Collaboration	6	25	150	**9**	1,350	1.81	2,446
A-11.5	315	Reception/Mail	0	0	320	**1**	320	1.81	580
A-11.6	W05	Lobby	0	0	1,320	**1**	1,320	1.81	2,392
		Subtotal for Meeting Rooms					**6,740**		**12,213**
		IRCB Administrative Needs:							
		Faculty, Staff, & Administration Offices							
A-10.1	311	Faculty Office	1	160	160	**24**	3,840	1.81	6,958
A-10.2	312	Post Doc Office	1	80	80	**26**	2,080	1.81	3,769
A-10.3	313	Graduate Student/U.G. Write-up	1	40	40	**138**	5,520	1.81	10,002
A-10.4	314	Manager/Engineer	1	120	120	**2**	240	1.81	435
A-10.5	314	Admin. Support Assistant	1	80	80	**3**	240	1.81	435
A-10.6	314	Clerical	1	40	40	**2**	80	1.81	145
A-10.7	314	Technical (Research Staff)	1	100	100	**12**	1,200	1.81	2,174

A-10.8	314	EH&S	1	100	100	**1**	100	1.81	181
A-10.9	314	Visitor	1	160	160	**6**	960	1.81	1,740
		Subtotal for Admin. Staff & Ancillary Offices					**14,260**		**25,839**
		Computational Research							
		Research							
C-20.1	250	Computational Research Lab	8	82.5	660	**2**	1,320	1.81	2,392
		Subtotal for Computational Research					**1,320**		**2,392**
		Chemistry/Chemical Engineering							
		Research							
Ch-30.2	251	Heavy Chemistry	6	110	660	**10**	6,600	1.81	11,959
Ch-30.3	251	Light Chemistry	6	110	660	**10**	6,600	1.81	11,959
Ch-30.4	251	Glove Box	6	110	660	**1**	660	1.81	1,196
Ch-30.5	251	Laser/Spectroscopy	6	110	660	**1**	660	1.81	1,196
Ch-31.1	255	Research/Non-Class Lab Service	3	110	330	**1**	330	1.81	598
Ch-31.2	255	Chemical Storage	3	110	330	**1**	330	1.81	598
Ch-31.3	255	Analytical Instrument	3	110	330	**1**	330	1.81	598
Ch-31.4	255	Crystal Growth	3	110	330	**1**	330	1.81	598
		Subtotal for Chemistry/Chemical Engineering Research					**15,840**		**28,702**
		Biomedical Engineering							
		Research							
BME-40.2	252	Biomedical Engineering	6	110	660	**6**	3,960	1.81	7,176
BME-41.1	255	Flex Lab	6	110	660	**1**	660	1.81	1,196
BME-41.2	255	Cold Room	2	82.5	165	**1**	165	1.81	299
BME-41.3	255	Glass Wash/Autoclave	0	0	330	**1**	330	1.81	598
BME-41.4	255	Chemical Storage	0	0	165	**1**	165	1.81	299
BME-41.5	256	Tissue Culture	3	110	330	**3**	990	1.81	1,794

BME-41.6	257	Microscopy	2	82.5	165	**2**	330	1.81	598
BME-41.7	258	Equipment	0	0	165	**5**	825	1.81	1,495
BME-41.8	259	Bioanalysis	3	110	330	**1**	330	1.81	598
BME-41.9	259	Recombinant Protein Culture	3	110	330	**1**	330	1.81	598
		Subtotal for Biomedical Engineering Research					**8,085**		**14,650**
		Device Prototyping							
		Research							
DP-50.2	253	Prototyping	6	110	660	**2**	1,320	1.81	2,392
DP-50.3	253	Dry Lab - CM Optics	6	110	660	**2**	1,320	1.81	2,392
DP-50.4	253	Clean Lab - Class 10,000	6	110	660	**2**	1,320	1.81	2,392
DP-50.5	254	Dry Lab - Electronics/Assembly	6	110	660	**6**	3,960	1.81	7,176
		Subtotal for Device Prototyping					**7,920**		**14,351**
		Subtotal for Research					**33,165**		**60,095**
		Platform							
		Cleanroom							
CR-60.1	270	Pre-Gown			200	**1**	200	1.81	362
CR-60.2	270	Gowning			200	**2**	400	1.81	725
CR-60.3	270	Deposition/Etch Class 1,000			472	**2**	944	1.81	1,711
CR-60.4	270	Lithography Class 100			284	**1**	284	1.81	515
CR-60.5	270	EBL/Fib Class 100			156	**1**	156	1.81	283
CR-60.6	270	Chase			435	**3**	1,305	1.81	2,365
CR-60.7	270	Clean Aisle			528	**1**	528	1.81	957
CR-60.8	270	Dirty Aisle/Parts Clean			534	**1**	534	1.81	968
CR-61.1	270	Tool Move-in wipe down			175	**1**	175	1.81	317
CR-61.2	760	Hazardous Material Storage			278	**2**	556	1.81	1,007

CR-61.3	760	Emergency Response Team			160	**1**	160	1.81	290
		Subtotal for Cleanroom					**5,242**		**9,499**
		Material Synthesis							
MS-62.1	270	Chemical Vapor Deposition	6	110	660	**2**	1,320	1.81	2,392
		Subtotal for Material Synthesis					**1,320**		**2,392**
		Imaging							
I-63.1	259	Characterization - Imaging	6	110	660	**4**	2,640	1.81	4,784
I-63.2	259	Characterization - MS/GC	6	110	660	**4**	2,640	1.81	4,784
		Subtotal for Imaging					**5,280**		**9,567**
		Subtotal for Platform					**11,842**		**21,458**
		Building Support							
x-70.1	255	Cylinder Storage			165	**2**	330	1.81	598
x-70.2	730	Central Storage			330	**1**	330	1.81	598
x-70.3	x01	Custodial Supply Closet			50	**3**	150	1.81	272
x-70.4	x02	Housekeeping Storage			225	**1**	225	1.81	408
x-70.5	x04	Loading Dock			1980	**1**	1,980	1.81	3,588
		Subtotal for Building Support					**3,015**		**5,463**
		GRAND TOTAL					**69,022**		**125,068**

Exhibit 4 – Site Photographs

Northwest corner of site: Levy Avenue and Engineer Drive, facing southeast

Northwest corner of site: Levy Avenue and Engineer Drive, facing south

Site from Levy Avenue, facing south

Northeast corner of site from Levy Avenue: Utility right-of-way and detention pond, facing south

Northeast corner of site from Levy Avenue: Utility right-of-way and detention pond, facing southwest

Site from Levy Avenue, facing south. AME Building in background.

Exhibit 5 - Room and Data Sheets

20.1 COMPUTATIONAL

Department:	COMPUTATIONAL	Faculty Rep.:		# of Occupants:	8
Function:	Theory/Computation	Room Type:	Lab	# Bench Positions:	8 @ 83
Adjacencies		Room Number:	C-20.1	Area:	660 SF

Architectural

Floor Material:	Carpet
Base Material:	Rubber Base
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	3'-0"x 8'-0"

Casework

LF of Bench:	22
LF of Shelving:	132
LF of Desktop:	
Bench Height:	30"
Benchtop Material:	Laminate
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	-
Shelving Material:	Wood
Desktop Material:	-
Notes:	

Furnishings

Window Treatment:	Shades
Projection Screen:	NA
Desks:	8
Chairs:	8
Tables:	NA
File Cabinets:	8
White Boards:	2 (Mobile)
Tack Boards:	8
Notes:	Mobile Glass Marker

Plumbing

Sink Material:	NA	
Pure Water:	N	N
Hot/ Cold Water:	N	
Floor Drain:	N	
Hose Bib	N	
Waste:	NA	
Eyewash:	N	
Em. Shower:	N	
House Vacuum:	N	inHg
ReseachVacuum:	N	inHg
House Gases:		
Compressed Air:	N	NA
Natural gas:	N	NA
CO_2:	N	psi
N_2:	N	psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	4 ach	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	50 fpm	
Pressure:	Neutral	
Temperature:	S: 72	W:72
Temp Stability:	+/- 2	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:	NA	
CO_2Sensor:	N	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	
	(460)	
Em. Power:		N
UPS:		N
Grounding:		Isolated
Notes:		

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	Y
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	8
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	Dimmable/Zoned
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	Y Prox
Explosion relief:	
Process Cooling:	
Steam:	NA
Acoustic:	NC 45
Vibration:	VCA
Shielding:	NA
Dust Control:	NA
Other:	

30.2 HEAVY CHEMISTRY

Department:	CHEM/CHEM ENG	Faculty Rep.:	-	# of Occupants:	6
Function:	Synth. Chem Research	Room Type:	Lab	# Bench Positions:	6 @ 110
Adjacencies		Room Number:	Ch-30.2	Area:	660 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	6'-0"x8'-0"

Casework

LF of Bench:	54
LF of Shelving:	126
LF of Desktop:	NA
Bench Height:	37" Adjustable
Benchtop Material:	Expoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	N/A
Notes:	

Furnishings

Window Treatment:	Shades @ Exterior Wall
Projection Screen:	NA
Desks:	NA
Chairs:	4 Stools
Tables:	NA
File Cabinets:	NA
White Boards:	Glass
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y	
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	Y	29 inHg
House Gases:		
Compressed Air:	Y	40 scfm psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Y / 40	psi
Lab Gas 2:	Y / 40	psi
Lab Gas 3:		psi
Lab Gas 4:	-	psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	(1) Multi Purp. Dry Chem

HVAC

Recirc. Allowed:	N	
Total Air Changes:	28	
Fresh Air Changes:	100%	
Air Velocity (Supply):	fpm	
Air Velocity (Return):	fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/-2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	Yes	
Supply Air Filtration:	No	
CO_2Sensor:	No	
Notes:	See below	

Electrical

Power:	(110/120)	Y
	(208)	1 PH and 3 PH
	(460)	NA
Em. Power:		Freezers 2/Module
UPS:		
Grounding:		
Notes:		

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	1
# Data Outlets:	8
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	BSC/INC/FRZR
Notes:	

Special Requirements

Lights:	LED pendants 80% up - 20% down
Visual:	
Structural:	VCA
Design Floor Load:	125 PSI
Security:	100
Explosion relief:	
Process Cooling:	Y
Steam:	
Acoustic:	NC45
Vibration:	VCA mi/sec
Shielding:	N
Dust Control:	N
Other:	

General:

Min. ach @ Setback Mode, 4 Hoods w/ Sash Closed

30.3 LIGHT CHEMISTRY

Department:	CHEM/CHEM ENG	Faculty Rep.:	-	# of Occupants:	6
Function:	Synthesis Research	Room Type:	Lab	# Bench Positions:	6 @ 110
Adjacencies	Heavy Chemistry	Room Number:	Ch-30.3	Area:	660 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	6'-0"x8'-0"

Casework

LF of Bench:	54
LF of Shelving:	144
LF of Desktop:	NA
Bench Height:	37" Adjustable
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Shades
Projection Screen:	NA
Desks:	NA
Chairs:	4 Stools
Tables:	NA
File Cabinets:	NA
White Boards:	(1) Glass
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y	-
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	N	inHg
House Gases:		
Compressed Air:	Y	80 psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:	Special gas as required	

Fire protection

System:	Water
Detection:	Ordinary Wet Pipe
Notes:	

HVAC

Recirc. Allowed:	N	
Total Air Changes:	22	
Fresh Air Changes:	100%	
Air Velocity (Supply):	fpm	
Air Velocity (Return):	fpm	
Pressure:	Negative	
Temperature:	S: 72	W:72
Temp Stability:	+/-2	
Relative Humidity:	S: 50%	W:
Local Exhausts:	Y - 100 cfm	
Supply Air Filtration:	As Needed	
CO_2Sensor:	Y	
Notes:	See below	

Electrical

Power: (110/120)	
(208)	1 PH and 3 PH
(460)	NA
Em. Power:	Y-2
UPS:	N
Grounding:	NA
Notes:	

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	4
Network:	Wired/Wireless
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	NC-45
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

General:

6 ach min for set back mode with 3 hoods + sash in closed position

30.4 GLOVEBOX (INORGANIC)

Department:	CHEM/CHEM ENG	Faculty Rep.:	-	# of Occupants:	6
Function:	Synthesis Research	Room Type:	Lab	# Bench Positions:	6 @ 110
Adjacencies	Heavy Chemistry	Room Number:	Ch-30.4	Area:	660 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	6'-0" x 8'-0"

Casework

LF of Bench:	28
LF of Shelving:	60
LF of Desktop:	NA
Bench Height:	37"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Shades
Projection Screen:	NA
Desks:	NA
Chairs:	
Tables:	NA
File Cabinets:	NA
White Boards:	(1) Glass
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y	-
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	Y	29 inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	N	
Total Air Changes:	14	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72	W:72
Temp Stability:	+/- 2	
Relative Humidity:	S: 50%	W:
Local Exhausts:	Y	
Supply Air Filtration:	As needed	
CO_2Sensor:	Y	
Notes:	See below	

Electrical

Power:	(110/120)	
	(208)	1 PH and 3 PH
	(460)	NA
Em. Power:		Y-2
UPS:		NA
Grounding:		NA
Notes:		

Lighting

General Illumination:	70
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	1
# Data Outlets:	4
Network:	Wired/Wireless
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	NC-45
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

General:

6 ach min forv setback mode with 3 hoods + sash in closed position

30.5 LASER SPECTROSCOPY

Department:	CHEM/CHEM ENG	Faculty Rep.:	-	# of Occupants:	6
Function:	Laser spec/optics research	Room Type:	Lab	# Bench Positions:	6 @ 110
Adjacencies		Room Number:	Ch30.5	Area:	660 SF

Architectural

Floor Material:	ESD
Base Material:	Rubber
Walls Material:	GWB/CMU/Acoustics
Wall Finish:	Paint
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	3'-0"/8'-0"

Casework

LF of Bench:	24
LF of Shelving:	72
LF of Desktop:	16
Bench Height:	37" Adjacent
Benchtop Material:	Epoxy
Base Cabinets Material:	Metal/Wood
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Black out
Projection Screen:	NA
Desks:	-
Chairs:	4 Stools
Tables:	
File Cabinets:	
White Boards:	(1) Glass
Tack Boards:	
Notes:	

Plumbing

Sink Material:	NA	
Pure Water:	NA	
Hot/ Cold Water:	NA	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab (awn)	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	As req'd	inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Ar	40 psi
Lab Gas 2:	He	40 psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1 , 0.15/1500

HVAC

Recirc. Allowed:	Y (Cooling)	
Total Air Changes:	7	
Fresh Air Changes:	100%	
Air Velocity (Supply):	>50 fpm	
Air Velocity (Return):	>100 fpm	
Pressure:	Positive	
Temperature:	S: 72°F	W:72°F
Temp Stability:	+/-2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:	Y	
CO_2Sensor:	N	
Notes:	Temp/humid tol +/- 1°C	

Electrical

Power: (110/120)	
(208)	1 PH and 3 PH
(460)	NA
Em. Power:	Y
UPS:	Y (By owner)
Grounding:	Y (Isolated)
Notes:	

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	N
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	1
# Data Outlets:	4
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	Y Low 0^2
Notes:	

Special Requirements

Lights:	LED
Visual:	
Structural:	
Design Floor Load:	125 psi
Security:	Y Prox
Explosion relief:	N
Process Cooling:	Y
Steam:	N
Acoustic:	NC20
Vibration:	VCD
Shielding:	EMI greater or equal to 0.1 MG + RF
Dust Control:	Y
Other:	

31.2 CHEMISTRY STORAGE

Department:	BME	Faculty Rep.:	-	# of Occupants:	0
Function:	Storage	Room Type:	Lab Support	# Bench Positions:	0 @
Adjacencies	Pump corridor	Room Number:	Ch-31.2	Area:	165 SF

Architectural

Floor Material:	Sealed Concrete
Base Material:	Rubber
Walls Material:	GWB
Wall Finish:	Paint/Acoustic
Ceiling Material:	Open
Ceiling Height:	16'-0" clear
Door Size:	6'-0"/3'-0"

Casework

LF of Bench:	24
LF of Shelving:	72
LF of Desktop:	0
Bench Height:	37" Adjustable
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood
Wall Cabinets Material:	NA
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Blackout
Projection Screen:	NA
Desks:	
Chairs:	
Tables:	
File Cabinets:	
White Boards:	Y
Tack Boards:	
Notes:	

Plumbing

Sink Material:	NA	
Pure Water:	NA	NA
Hot/ Cold Water:	N	NA
Floor Drain:	N	
Hose Bib	N	
Waste:	N	
Eyewash:	N	
Em. Shower:	N	
House Vacuum:	Y	20 inHg
ReseachVacuum:	Y	20 Torr
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	Y	80 -180 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	
Detection:	
Notes:	

HVAC

Recirc. Allowed:	Y Dedicated	
Total Air Changes:	6	
Fresh Air Changes:	100%	
Air Velocity (Supply):	fpm	
Air Velocity (Return):	fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W:72°F
Temp Stability:	+/-2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:	N	
CO_2Sensor:		
Notes:	See below	

Electrical

Power: (110/120) (208) (460)	1 PH and 3 PH 20A, 30A
Em. Power:	Y
UPS:	Y (By owner)
Grounding:	Y (Isolated)
Notes:	

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	4
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	Low oxygen sensors high and low
Notes:	

Special Requirements

Lights:	Remote Ballast / Drivers
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	Card Access
Explosion relief:	N
Process Cooling:	Y
Steam:	N
Acoustic:	NC-40
Vibration:	VCE
Shielding:	Possible
Dust Control:	Y
Other:	

General:

O2 depletion, HVAC purge mode, Cryogen release

31.3 ANALYTICAL INSTRUMENT

Department:	CHEM/CHEM ENG	Faculty Rep.:	-	# of Occupants:	6
Function:	Analyt Research	Room Type:	Lab Support	# Bench Positions:	6 @ 110
Adjacencies	Synthesis Labs	Room Number:	Ch-31.3	Area:	660 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	6'-0" x 8'-0"

Casework

LF of Bench:	72
LF of Shelving:	108
LF of Desktop:	
Bench Height:	37"
Benchtop Material:	NA
Base Cabinets Material:	Wood
Wall Cabinets Material:	Wood
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	NA
Projection Screen:	NA
Desks:	NA
Chairs:	6 Stools
Tables:	NA
File Cabinets:	NA
White Boards:	Y (2)
Tack Boards:	N
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y	
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	NA	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	Y	29 inHg
House Gases:		
Compressed Air:	N	NA
Natural gas:	N	NA
CO_2:	N	NA
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:		
Lab Gas 2:		
Lab Gas 3:		
Lab Gas 4:		
Notes:	Local Val. Pumps	

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	7	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72	W:72
Temp Stability:	+/- 2	
Relative Humidity:	S: 50%	W:
Local Exhausts:	No	
Supply Air Filtration:	As needed	
CO_2Sensor:	Y	
Notes:	See below	

Electrical

Power: (110/120) (208) (460)	1 PH AND 3 PH
Em. Power:	Y-2
UPS:	N
Grounding:	Isolated
Notes:	

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	1
# Data Outlets:	9
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	NC40
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

General:

Active chilled beam on fc as req. for cooling load

31.4 CRYSTAL GROWTH

Department:	CHEM/CHEM ENG	Faculty Rep.:	-	# of Occupants:	6
Function:	Crystal Growth	Room Type:	Lab Support	# Bench Positions:	6 @ 110
Adjacencies	Synthesis Research	Room Number:	Ch-31.4	Area:	330 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	8'-0"
Door Size:	6'-0"

Casework

LF of Bench:	15
LF of Shelving:	45
LF of Desktop:	
Bench Height:	37"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	No windows
Projection Screen:	NA
Desks:	NA
Chairs:	
Tables:	Y
File Cabinets:	NA
White Boards:	Y
Tack Boards:	N
Notes:	

Plumbing

Sink Material:	NA	
Pure Water:	N	Y
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab at Hoods	
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19inHg
ReseachVacuum:		inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Ar	40 psi
Lab Gas 2:	He	40 psi
Lab Gas 3:		psi
Lab Gas 4:	-	psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	6	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:		
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:		
Supply Air Filtration:	As needed	
CO_2Sensor:	Yes	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	
Em. Power:		
UPS:		Y
Grounding:		Dedicated grounding bar
Notes:		

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	6
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	Y
Steam:	-
Acoustic:	NC5
Vibration:	VCD
Shielding:	N
Dust Control:	N
Other:	

40.2 BIOMEDICAL ENGINEERING

Department:	BME	Faculty Rep.:	-	# of Occupants:	6
Function:	Biomedical Research	Room Type:	Lab	# Bench Positions:	6 @ 110
Adjacencies	Tissue Culture, Autoclave	Room Number:	BME-40.2	Area:	660 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	3'-0" x 8'-0"

Casework

LF of Bench:	60
LF of Shelving:	180
LF of Desktop:	NA
Bench Height:	37" Adjustable
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Metal/Glass
Shelving Material:	Metal
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Shades
Projection Screen:	NA
Desks:	NA
Chairs:	6 Stools
Tables:	NA
File Cabinets:	NA
White Boards:	Glass
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y 18 MEG OHM	
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	As reqd	inHg
House Gases:		
Compressed Air:	Y	40 scfm psi
Natural gas:	N	
CO_2:	Y	40 psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Y / CO2	40 psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:	-	psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	No	
Total Air Changes:	7 Minimum	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	Yes	
Supply Air Filtration:	No	
CO_2Sensor:	No	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y 1 PH AND 3 PH
	(460)	
Em. Power:		Y Freezers 2/ Module
UPS:		
Grounding:		
Notes:		

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	Y
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	6
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	BSC/INC/FRZR (By owner)
Notes:	

Special Requirements

Lights:	LED pendants 80% up - 20% down
Visual:	
Structural:	VCB
Design Floor Load:	100 psi
Security:	Card Access
Explosion relief:	N
Process Cooling:	N
Steam:	
Acoustic:	NC40
Vibration:	1000 VCB mi/sec
Shielding:	N
Dust Control:	N
Other:	

40.2A ALCOVE - TISSUE CULTURE

Department:	BME	Faculty Rep.:	-	# of Occupants:	1
Function:	Tissue Culture	Room Type:	Lab Support	# Bench Positions:	0 @
Adjacencies	Bio Engineering	Room Number:	BME-40.2	Area:	110 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACP
Ceiling Height:	9'-6"
Door Size:	3'-0"/8'-0"

Casework

LF of Bench:	10
LF of Shelving:	21
LF of Desktop:	
Bench Height:	37"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	
Shelving Material:	1" Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	NA
Projection Screen:	NA
Desks:	NA
Chairs:	NA
Tables:	NA
File Cabinets:	NA
White Boards:	NA
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	CAP II, 1 MEG OHM	
Hot/ Cold Water:	Y	
Floor Drain:	Y	
Hose Bib		
Waste:		
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19 inHg
ReseachVacuum:	N	inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	
CO_2:	Y	80 psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	N	
Total Air Changes:	6	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:	As Needed	
CO_2Sensor:	N	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	
Em. Power:		Y
UPS:		
Grounding:		
Notes:		

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Single
Task Lights:	N
Notes:	

Communications

# Phone Outlets:	0.000
# Data Outlets:	2
Network:	
Paging System:	N
Clock:	
Monitors/ Alarms:	
	BSC/INC
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	NC5
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

40.2B ALCOVE - MICROSCOPY

Department:	BME	Faculty Rep.:	-	# of Occupants:	1
Function:	Optical/Fluorescence	Room Type:	Lab Support	# Bench Positions:	0 @
Adjacencies	Bio Engineering	Room Number:	BME-40.2	Area:	110 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	9'-0"
Door Size:	3'-0"x8'-0"

Casework

LF of Bench:	20
LF of Shelving:	60
LF of Desktop:	
Bench Height:	30"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	
Notes:	

Furnishings

Window Treatment:	NA
Projection Screen:	NA
Desks:	NA
Chairs:	1 Stool
Tables:	NA
File Cabinets:	NA
White Boards:	NA
Tack Boards:	NA
Notes:	Optics Table (NIC)

Plumbing

Sink Material:	N	
Pure Water:	N	
Hot/ Cold Water:	N	
Floor Drain:	NA	
Hose Bib	NA	
Waste:	NA	
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19 inHg
ReseachVacuum:		inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	
CO_2:	Y	40 psi
N_2:	N	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi

Notes:

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	4-6	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/-2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:		
CO_2Sensor:		
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	
Em. Power:		N
UPS:		N
Grounding:		N
Notes:		

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Y
Task Lights:	Y - under shelf
Notes:	

Communications

# Phone Outlets:	0.000
# Data Outlets:	2
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	

Notes:

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	
Vibration:	VCB - mi/sec
Shielding:	
Dust Control:	
Other:	

40.2C ALCOVE - EQUIPMENT

Department:	BME	Faculty Rep.:	-	# of Occupants:	0
Function:	Equipment Storage	Room Type:	Lab Support	# Bench Positions:	0 @
Adjacencies	Bio Engineering	Room Number:	BME-40.2	Area:	110 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACP
Ceiling Height:	9'-6"
Door Size:	5'-0"/8'-0"

Casework

LF of Bench:	
LF of Shelving:	
LF of Desktop:	
Bench Height:	NA
Benchtop Material:	NA
Base Cabinets Material:	NA
Wall Cabinets Material:	NA
Shelving Material:	NA
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	NA
Projection Screen:	NA
Desks:	NA
Chairs:	NA
Tables:	NA
File Cabinets:	NA
White Boards:	NA
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	NA	
Pure Water:	NA	NA
Hot/ Cold Water:	NA	
Floor Drain:	NA	
Hose Bib	NA	
Waste:	NA	
Eyewash:	NA	
Em. Shower:	NA	
House Vacuum:		-
ReseachVacuum:		inHg
House Gases:		
Compressed Air:	NA	psi
Natural gas:	NA	psi
CO_2:	NA	psi
N_2:	NA	psi
Process Gases:		
Lab Gas 1:	NA	psi
Lab Gas 2:	NA	psi
Lab Gas 3:		psi
Lab Gas 4:	-	psi
Notes:		

Fire protection

System:	Ordinary
Detection:	Y
Notes:	

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	6	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Neutral	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/-2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:	N	
CO_2Sensor:	Y	
Notes:	Alh Req'd for cooling load.	

Electrical

Power:	(110/120)	Y (6)
	(208)	Y (4)
	(460)	Y 480V
Em. Power:		
UPS:		
Grounding:		
Notes:		

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	N
Dimming Sensors:	N
Switching:	Y
Task Lights:	Y
Notes:	

Communications

# Phone Outlets:	0.000
# Data Outlets:	0.000
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	Recessed
Visual:	
Structural:	
Design Floor Load:	
Security:	
Explosion relief:	
Process Cooling:	Loop for freezer cooling
Steam:	-
Acoustic:	NC40
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

40.2 D ALCOVE - GEL

Department:	BME	Faculty Rep.:	-	# of Occupants:	1
Function:	Gel Alcove	Room Type:	Lab Support	# Bench Positions:	0 @ 110
Adjacencies	Bio Engineering	Room Number:	BME-40.2	Area:	110 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACP
Ceiling Height:	9'-6"
Door Size:	5'-0"x8'-0"

Casework

LF of Bench:	20
LF of Shelving:	60
LF of Desktop:	
Bench Height:	37"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	1" Wood
Desktop Material:	N/A
Notes:	3 Tier shelving

Furnishings

Window Treatment:	
Projection Screen:	NA
Desks:	NA
Chairs:	NA
Tables:	NA
File Cabinets:	NA
White Boards:	NA
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	CAP 11,1 MEG OHM	
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Acid/Lab	
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19 inHg
ReseachVacuum:	inHg	inHg
House Gases:		
Compressed Air:	Y	40psi
Natural gas:	N	1-2 psi
CO_2:	Y - Local	60-85 psi
N_2:	NA	psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:	-	psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	N	
Total Air Changes:	6	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	Y 100 cfm	
Supply Air Filtration:	As needed	
CO_2Sensor:	Yes	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	
Em. Power:		Y - 1 per Alcove
UPS:		N
Grounding:		NA
Notes:		

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Y
Task Lights:	Y
Notes:	

Communications

# Phone Outlets:	0.000
# Data Outlets:	2
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

41.1 FLEX LAB

Department:	BME	Faculty Rep.:	-	# of Occupants:	6
Function:	Various	Room Type:	Lab Support	# Bench Positions:	6 @ 110
Adjacencies	Bio Engineering	Room Number:	BME-41.1	Area:	660 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	6'-0"/8'-0"

Casework

LF of Bench:	75
LF of Shelving:	54
LF of Desktop:	0
Bench Height:	37"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	No Windows
Projection Screen:	NA
Desks:	NA
Chairs:	4 Stools
Tables:	Y
File Cabinets:	NA
White Boards:	Y (2)
Tack Boards:	N
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y	CAP11
Hot/ Cold Water:	Y	NA
Floor Drain:	NA	
Hose Bib	NA	
Waste:	LAB	
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19inHg
ReseachVacuum:		inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:		psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	No	
Total Air Changes:	7	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/-2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	Y	
Supply Air Filtration:	As needed	
CO_2Sensor:	Yes	
Notes:		

Electrical

Power: (110/120) (208) (460)	1 PH and 3 PH
Em. Power:	Yes
UPS:	Yes
Grounding:	NA
Notes:	

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	6
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	Y
Steam:	NC40
Acoustic:	
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

41.2 COLD ROOM

Department:	BME	Faculty Rep.:	-	# of Occupants:	2
Function:	Low Temp Work	Room Type:	Lab Support	# Bench Positions:	0 @ 0
Adjacencies	Bio Engineering	Room Number:	BME-41.2	Area:	165 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	Alum
Wall Finish:	Painted/Acoustic
Ceiling Material:	By MFR
Ceiling Height:	8'-0" Clear
Door Size:	3'-6"/8'-0"

Casework

LF of Bench:	14
LF of Shelving:	42
LF of Desktop:	0
Bench Height:	37" Adjustable
Benchtop Material:	Stainless Steel
Base Cabinets Material:	NA
Wall Cabinets Material:	NA
Shelving Material:	Stainless Steel
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Heat Trace
Projection Screen:	NA
Desks:	
Chairs:	4 Stools
Tables:	
File Cabinets:	
White Boards:	
Tack Boards:	
Notes:	

Plumbing

Sink Material:	Stainless Steel	
Pure Water:	NA	NA
Hot/ Cold Water:	CW	NA
Floor Drain:	N	
Hose Bib	N	
Waste:	LAB	
Eyewash:	N	
Em. Shower:	N	
House Vacuum:	Y	19 inHg
ReseachVacuum:	N	
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	N	
Process Gases:		
Lab Gas 1:	Y	psi
Lab Gas 2:	Y	psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Dry Pipe/Preaction
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	2	
Fresh Air Changes:	20%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	50 fpm	
Pressure:	Negative	
Temperature:	S: 40°F	W:40°F
Temp Stability:	+/- 1°F	
Relative Humidity:	S: 25%	W:25%
Local Exhausts:		
Supply Air Filtration:		
CO_2Sensor:		
Notes:	0^2 Depletion	

Electrical

Power: (110/120) (208) (460)	1 PH and 3 PH 20A, 30A
Em. Power:	Y
UPS:	N (By owner)
Grounding:	N (Isolated)
Notes:	

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	
Dimming Sensors:	
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	4
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	Y
Steam:	
Acoustic:	NC45
Vibration:	
Shielding:	Y
Dust Control:	Y
Other:	

41.3 GLASS WASH/AUTOCLAVE

Department:	BME	Faculty Rep.:	-	# of Occupants:	0
Function:	Glass Wash	Room Type:	Lab Support	# Bench Positions:	0 @
Adjacencies	Bio Engineering	Room Number:	BME-41.3	Area:	330 SF

Architectural

Floor Material:	Epoxy
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	MFR ACT
Ceiling Height:	9'-6"
Door Size:	4'-6" x 8'-0"

Casework

LF of Bench:	10'-0"
LF of Shelving:	12'-0"
LF of Desktop:	0
Bench Height:	37"
Benchtop Material:	Stainless Steel
Base Cabinets Material:	
Wall Cabinets Material:	
Shelving Material:	
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	
Projection Screen:	
Desks:	
Chairs:	
Tables:	
File Cabinets:	
White Boards:	
Tack Boards:	
Notes:	

Plumbing

Sink Material:	Stainless Steel 24x24 (2)
Pure Water:	CAP 11, 1 MEG OHM
Hot/ Cold Water:	Y
Floor Drain:	N
Hose Bib	N
Waste:	Lab
Eyewash:	Adjacent
Em. Shower:	Adjacent
House Vacuum:	
ReseachVacuum:	
House Gases:	
Compressed Air:	
Natural gas:	
CO_2:	
N_2:	
Process Gases:	
Lab Gas 1:	
Lab Gas 2:	
Lab Gas 3:	
Lab Gas 4:	
Notes:	

Fire protection

System:	
Detection:	
Notes:	

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	6/hr	
Fresh Air Changes:	70%	
Air Velocity (Supply):	100fpm	
Air Velocity (Return):	100fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:		
Supply Air Filtration:		
CO_2Sensor:		
Notes:	Canopy hood over sterilizier	

Electrical

Power:	(110/120) (208) (460)
Em. Power:	N
UPS:	N
Grounding:	
Notes:	

Lighting

General Illumination:	100 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Y
Task Lights:	Y
Notes:	

Communications

# Phone Outlets:	0.000
# Data Outlets:	2
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	Sealed
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	
Vibration:	
Shielding:	
Dust Control:	
Other:	

41.4 CHEMICAL STORAGE

Department:	CHEM/CHEM ENG	Faculty Rep.:	-	# of Occupants:	0
Function:	Stg of Haz Mtrl	Room Type:	Lab Support	# Bench Positions:	0 @
Adjacencies	Chemistry/Chem Engineering	Room Number:	BME-41.4	Area:	330 SF

Architectural

Floor Material:	Epoxy
Base Material:	Epoxy
Walls Material:	GWB
Wall Finish:	Painted/Acoustic
Ceiling Material:	ALT
Ceiling Height:	10'-0" clear
Door Size:	3'-0" x 8'-0"

Casework

LF of Bench:	11
LF of Shelving:	24
LF of Desktop:	0
Bench Height:	37"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	NA
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	NA
Projection Screen:	NA
Desks:	NA
Chairs:	
Tables:	
File Cabinets:	
White Boards:	
Tack Boards:	
Notes:	Metal Flammable/Acid Lab as shown

Plumbing

Sink Material:	Epoxy	
Pure Water:	NA	NA
Hot/ Cold Water:	Y	NA
Floor Drain:	N	
Hose Bib	N	
Waste:	N	
Eyewash:	N	
Em. Shower:	N	
House Vacuum:	Y	19 inHg
ReseachVacuum:	N	
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	Y	80 -180 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	N	
Total Air Changes:	6	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:		
Supply Air Filtration:	N	
CO_2Sensor:		
Notes:		

Electrical

Power: (110/120) (208) (460)	
Em. Power:	Y
UPS:	N
Grounding:	Y (Isolated)
Notes:	

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed/Sealed
Occupancy Sensors:	Y
Dimming Sensors:	
Switching:	Single
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	1
# Data Outlets:	4
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	Remote ballast/driver
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	Card access
Explosion relief:	N
Process Cooling:	Y
Steam:	N
Acoustic:	NC50
Vibration:	VCB
Shielding:	NA
Dust Control:	N
Other:	

41.5 SHARED TISSUE CULTURE

Department:	BME	Faculty Rep.:	-	# of Occupants:	0
Function: Tissue Culture		Room Type:	Lab Support	# Bench Positions:	0 @ 0
Adjacencies	Bio Engineering Labs	Room Number:	BME-41.5	Area:	330 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACP, NRC.90, LR.85
Ceiling Height:	9"-6"
Door Size:	4'6"-8'-0"

Casework

LF of Bench:	15
LF of Shelving:	30
LF of Desktop:	
Bench Height:	37"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	
Notes:	

Furnishings

Window Treatment:	
Projection Screen:	
Desks:	
Chairs:	3 Stools
Tables:	
File Cabinets:	
White Boards:	
Tack Boards:	
Notes:	

Plumbing

Sink Material:	Epoxy 18x24	
Pure Water:	Rodi Cap11, 1 MEG OHM	
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab	
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19 inhg
ReseachVacuum:		
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	
CO_2:	Y	80 psi
N_2:	N	
Process Gases:		
Lab Gas 1:		
Lab Gas 2:		
Lab Gas 3:		
Lab Gas 4:		
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	N	
Total Air Changes:	7	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:		
Supply Air Filtration:		
CO_2Sensor:		
Notes:	Fan coil with control vent	

Electrical

Power:	(110/120) (208) (460)
Em. Power:	
UPS:	
Grounding:	
Notes:	E power @ incubators ref/rec

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Y
Task Lights:	Y
Notes:	

Communications

# Phone Outlets:	0.000
# Data Outlets:	2
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	Recessed/sealed
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

41.6 MICROSCOPY

Department:	BME	Faculty Rep.:	-	# of Occupants:	4
Function:	Optical	Room Type:	Lab Support	# Bench Positions:	0 @ 82
Adjacencies	Bio Engineering	Room Number:	BME-41.6-	Area:	330 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	9'-0"
Door Size:	3'-0"x8'-0"

Casework

LF of Bench:	20
LF of Shelving:	60
LF of Desktop:	
Bench Height:	30"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	
Notes:	

Furnishings

Window Treatment:	NA
Projection Screen:	NA
Desks:	NA
Chairs:	1 Stool
Tables:	NA
File Cabinets:	NA
White Boards:	NA
Tack Boards:	NA
Notes:	Optics Table (NIC)

Plumbing

Sink Material:	N	
Pure Water:	N	
Hot/ Cold Water:	N	
Floor Drain:	NA	
Hose Bib	NA	
Waste:	NA	
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19 inHg
ReseachVacuum:		inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	
CO_2:	Y	40 psi
N_2:	N	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	4-6	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/-2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	Y	
Supply Air Filtration:		
CO_2Sensor:		
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	
	(460)	
Em. Power:		N
UPS:		N
Grounding:		N
Notes:		

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Y
Task Lights:	Y - under shelf
Notes:	

Communications

# Phone Outlets:	0.000
# Data Outlets:	2
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

41.7 BIO ENGINEERING EQUIPMENT

Department:	BME	Faculty Rep.:	-	# of Occupants:	0
Function:	Equipment Storage	Room Type:	Lab Support	# Bench Positions:	0 @
Adjacencies	Bio Engineering	Room Number:	BME-41.7	Area:	165 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACP
Ceiling Height:	9'-6"
Door Size:	5'-0"/8'-0"

Casework

LF of Bench:	
LF of Shelving:	
LF of Desktop:	
Bench Height:	NA
Benchtop Material:	NA
Base Cabinets Material:	NA
Wall Cabinets Material:	NA
Shelving Material:	NA
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	NA
Projection Screen:	NA
Desks:	NA
Chairs:	NA
Tables:	NA
File Cabinets:	NA
White Boards:	NA
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	NA	
Pure Water:	NA	NA
Hot/ Cold Water:	NA	
Floor Drain:	NA	
Hose Bib	NA	
Waste:	NA	
Eyewash:	NA	
Em. Shower:	NA	
House Vacuum:		-
ReseachVacuum:		inHg
House Gases:		
Compressed Air:	NA	psi
Natural gas:	NA	psi
CO_2:	NA	psi
N_2:	NA	psi
Process Gases:		
Lab Gas 1:	NA	psi
Lab Gas 2:	NA	psi
Lab Gas 3:		psi
Lab Gas 4:	-	psi
Notes:		

Fire protection

System:	Ordinary
Detection:	Y
Notes:	

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	4	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	50 fpm	
Pressure:	Neutral	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/-2°F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:	N	
CO_2Sensor:	Y	
Notes:	Alh req'd for cooling	

Electrical

Power:	(110/120)	Y (6)
	(208)	Y (4)
	(460)	Y 480V
Em. Power:		
UPS:		
Grounding:		
Notes:		

Lighting

General Illumination:	50 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	N
Dimming Sensors:	N
Switching:	Y
Task Lights:	Y
Notes:	

Communications

# Phone Outlets:	0.000
# Data Outlets:	0.000
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	Recessed
Visual:	
Structural:	
Design Floor Load:	
Security:	
Explosion relief:	
Process Cooling:	Loop for freezer cooling
Steam:	-
Acoustic:	NC40
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

41.8 BIO ANALYSIS

Department:	BME	Faculty Rep.:	-	# of Occupants:	2
Function:	Chemistry Research	Room Type:	Lab Support	# Bench Positions:	2 @ 165
Adjacencies		Room Number:	BME-41.8	Area:	330 SF

Architectural

Floor Material:	Vinyl
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	3'-0"x8'-0"

Casework

LF of Bench:	40
LF of Shelving:	
LF of Desktop:	
Bench Height:	37" Adjustable
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Shades @ Exterior Walls
Projection Screen:	NA
Desks:	NA
Chairs:	2 Stools
Tables:	NA
File Cabinets:	NA
White Boards:	Glass
Tack Boards:	NA
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y	Y
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:		inHg
House Gases:		
Compressed Air:	Y	40 scfm psi
Natural gas:	N	psi
CO_2:	Y	40 psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Y / TBD	psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:	-	psi
Notes:		

Fire protection

System:	
Detection:	Ordinary Hazard
Notes:	group1 , 0.15/1500

HVAC

Recirc. Allowed:	N	
Total Air Changes:	6 minimum	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	Y	
Supply Air Filtration:	N	
CO_2Sensor:	N	
Notes:	See below	

Electrical

Power:	(110/120)	Y
	(208)	Y 1 PH AND 3 PH
	(460)	
Em. Power:		
UPS:		
Grounding:		
Notes:		

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	1
# Data Outlets:	8
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	BSC/INC/FRZR
Notes:	

Special Requirements

Lights:	LED pendants 80% up - 20% down
Visual:	
Structural:	
Design Floor Load:	100
Security:	
Explosion relief:	
Process Cooling:	Y
Steam:	
Acoustic:	NC45
Vibration:	VCB
Shielding:	N
Dust Control:	N
Other:	

General:

Min ach @ setback mode, 4 hoods with sash closed

41.9 RECOMBINANT PROTEIN CULTURE

Department:	BME	Faculty Rep.:	-	# of Occupants:	2
Function:	Protein Culture	Room Type:	Lab Support	# Bench Positions:	2 @ 165
Adjacencies	Bio Engineering	Room Number:	BME-41.9	Area:	330 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	6'-0"/8'-0"

Casework

LF of Bench:	41
LF of Shelving:	60
LF of Desktop:	
Bench Height:	37" Adjustable
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	Wood/Metal/Glass
Shelving Material:	Wood
Desktop Material:	
Notes:	

Furnishings

Window Treatment:	No Windows
Projection Screen:	NA
Desks:	NA
Chairs:	3 Stools
Tables:	
File Cabinets:	NA
White Boards:	
Tack Boards:	N
Notes:	

Plumbing

Sink Material:	Epoxy	
Pure Water:	NA	NA
Hot/ Cold Water:	NA	NA
Floor Drain:	NA	
Hose Bib	NA	
Waste:	NA	
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19 inHg
ReseachVacuum:	N	inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:	Y	40 psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	5	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W: 72°F
Temp Stability:	+/- 2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:		
Supply Air Filtration:	Y	
CO_2Sensor:	Y	
Notes:		

Electrical

Power: (110/120) (208) (460)	1 PH and 3 PH
Em. Power:	
UPS:	Y
Grounding:	NA
Notes:	

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	Y
Switching:	Multi (Manual)
Task Lights:	Y
Notes:	Vacancy sensors, ballast

Communications

# Phone Outlets:	0.000
# Data Outlets:	2
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	Zoned/Dim/Interlock laser in use
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	Y
Steam:	
Acoustic:	NC40
Vibration:	VCB
Shielding:	
Dust Control:	Y
Other:	

50.2 PROTOTYPING

Department:	DEVICES PROTO	Faculty Rep.:	-	# of Occupants:	6
Function:	Material Synthesis	Room Type:	Lab	# Bench Positions:	6 @ 110
Adjacencies	Dry Lab/Clean Lab	Room Number:	DP-50.2	Area:	660 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral Vinyl
Walls Material:	GWB
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	9'-0"
Door Size:	5'-0"X8'-0"

Casework

LF of Bench:	69
LF of Shelving:	63
LF of Desktop:	
Bench Height:	36"
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	
Shelving Material:	1" Wood
Desktop Material:	N/A
Notes:	Shelving 3 tier

Furnishings

Window Treatment:	Shades
Projection Screen:	NA
Desks:	NA
Chairs:	NA
Tables:	NA
File Cabinets:	NA
White Boards:	NA
Tack Boards:	NA
Notes:	NA

Plumbing

Sink Material:	Epoxy	
Pure Water:	CAP II, 1 MEG OHM	
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab (awn)	
Eyewash:	Adjacent	
Em. Shower:	Adjacent	
House Vacuum:	Y	19 inHg
ReseachVacuum:	Y	inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	
CO_2:	N	
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1, 0.15/1500

HVAC

Recirc. Allowed:	N	
Total Air Changes:	28	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	Negative	
Temperature:	S: 72°F	W:72°F
Temp Stability:	+/- 2 °F	
Relative Humidity:	S: 50%	W:-
Local Exhausts:	Y 100 cfm	
Supply Air Filtration:	As needed	
CO_2Sensor:	N	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	-
Em. Power:		N
UPS:		N
Grounding:		
Notes:		

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Y
Task Lights:	Y - under shelf
Notes:	

Communications

# Phone Outlets:	1
# Data Outlets:	2
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	
Explosion relief:	
Process Cooling:	
Steam:	
Acoustic:	NC 45
Vibration:	VCB
Shielding:	
Dust Control:	
Other:	

50.3 CONDENSED MATTER OPTICS

Department:	DEVICES PROTO	Faculty Rep.:	-	# of Occupants:	6
Function:	Laser spec/Optic research	Room Type:	Lab	# Bench Positions:	6 @ 110
Adjacencies		Room Number:	DP-50.3	Area:	660 SF

Architectural

Floor Material:	ESD
Base Material:	Rubber
Walls Material:	GWB/CMU/Acoustics
Wall Finish:	Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	3'-0"/8'-0"

Casework

LF of Bench:	24
LF of Shelving:	72
LF of Desktop:	16
Bench Height:	37" Adjacent
Benchtop Material:	Epoxy
Base Cabinets Material:	Metal/Wood
Wall Cabinets Material:	Metal/Wood/Glass
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Black out
Projection Screen:	NA
Desks:	-
Chairs:	4 Stools
Tables:	
File Cabinets:	
White Boards:	(1) Glass
Tack Boards:	
Notes:	

Plumbing

Sink Material:	NA	
Pure Water:	NA	
Hot/ Cold Water:	NA	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab (awn)	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	As req'd	inHg
House Gases:		
Compressed Air:	Y	40 psi
Natural gas:	N	psi
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Ar	40 psi
Lab Gas 2:	He	40 psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet Pipe
Detection:	Ordinary Hazard
Notes:	Group 1 , 0.15/1500

HVAC

Recirc. Allowed:	Y (Cooling)	
Total Air Changes:	4	
Fresh Air Changes:	100%	
Air Velocity (Supply):	>50 fpm	
Air Velocity (Return):	>100 fpm	
Pressure:	Positive	
Temperature:	S: 72°F	W:72°F
Temp Stability:	+/-2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:	Y	
CO_2Sensor:	N	
Notes:	Temp/Humid Tolerance +/- 1°C	

Electrical

Power: (110/120)	
(208)	1 PH and 3 PH
(460)	NA
Em. Power:	Y
UPS:	Y (By owner)
Grounding:	Y (Isolated)
Notes:	

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	N
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	1
# Data Outlets:	4
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	Y Low 0^2
Notes:	

Special Requirements

Lights:	LED
Visual:	
Structural:	
Design Floor Load:	125 psi
Security:	Y Prox
Explosion relief:	N
Process Cooling:	Y
Steam:	N
Acoustic:	NC20
Vibration:	VCD
Shielding:	EMI >= to 0.1 MG + RF
Dust Control:	Y
Other:	

50.4 CLEAN LAB

Department:	DEVICES PROTO	Faculty Rep.:	-	# of Occupants:	6
Function:	Clean Assembly	Room Type:	Lab	# Bench Positions:	6 @ 110
Adjacencies	Dry Labs	Room Number:	-DP-50.4	Area:	660 SF

Architectural

Floor Material:	Vinyl Sheet
Base Material:	Integral
Walls Material:	GWB
Wall Finish:	Epoxy Painted
Ceiling Material:	ACT
Ceiling Height:	10'-0"
Door Size:	9'-6"x 8'-0"

Casework

LF of Bench:	62
LF of Shelving:	96
LF of Desktop:	
Bench Height:	37"
Benchtop Material:	Epoxy
Base Cabinets Material:	Metal
Wall Cabinets Material:	NA
Shelving Material:	Wood
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Shades
Projection Screen:	NA
Desks:	
Chairs:	4 Stools
Tables:	NA
File Cabinets:	
White Boards:	2 (Mobile)
Tack Boards:	
Notes:	Mobile Glass Marker Boards

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y	18MEG OHM
Hot/ Cold Water:	N	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	Y	inHg
House Gases:		
Compressed Air:	Y	40
Natural gas:	N	NA
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:		psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Wet/Pipe
Detection:	Ordinary Hazard
Notes:	Group 1,0.15/1500

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	7	
Fresh Air Changes:	100%	
Air Velocity (Supply):	50 fpm	
Air Velocity (Return):	100 fpm	
Pressure:	+	
Temperature:	S: 72 °F	W:72 °F
Temp Stability:	+- 2 °F	
Relative Humidity:	S: 50%	W:
Local Exhausts:	N	
Supply Air Filtration:	NA	
CO_2Sensor:		
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	
Em. Power:		N
UPS:		N
Grounding:		Isolated
Notes:		

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Recessed
Occupancy Sensors:	Y
Dimming Sensors:	Y
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	8
Network:	
Paging System:	
Clock:	
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	Dimmable/Zoned/Sealed
Visual:	
Structural:	
Design Floor Load:	100 psi
Security:	Y Prox
Explosion relief:	
Process Cooling:	
Steam:	NA
Acoustic:	NC 45
Vibration:	VCB
Shielding:	NA
Dust Control:	NA
Other:	

60.0 CLEANROOM

Department:	-	Faculty Rep.:	-	# of Occupants:	4
Function:	-	Room Type:	Lab	# Bench Positions:	4 @
Adjacencies		Room Number:	CR-60.1 to CR-61.3	Area:	5242 SF

Architectural

Floor Material:	Welded ESD Vinyl Tile
Base Material:	Integral
Walls Material:	Alum Panel
Wall Finish:	Painted
Ceiling Material:	Aluminum Flush Grid
Ceiling Height:	10'-0"
Door Size:	6'-0"

Casework

LF of Bench:	60
LF of Shelving:	144
LF of Desktop:	NA
Bench Height:	37" (Adjustable)
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	-
Shelving Material:	1" Wood/Metal
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Shades
Projection Screen:	NA
Desks:	NA
Chairs:	4
Tables:	NA
File Cabinets:	NA
White Boards:	Glass
Tack Boards:	NA
Notes:	4 Adj height stools

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y Grade E1 Electronic	
Hot/ Cold Water:	Y	
Floor Drain:	Awn floor sinks	
Hose Bib	N	
Waste:	Acid Neutralization	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	By Users	inHg
House Gases:		
Compressed Air:	Y	1cfm/40psi
Natural gas:	N	-
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Y Hi-Purity	psi
Lab Gas 2:	Y Hi-Purity	psi
Lab Gas 3:	Y Hi-Purity	psi
Lab Gas 4:	Y Hi-Purity	psi
Notes:		

Fire protection

System:	Ordinary Hazard
Detection:	
Notes:	

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	90-275	
Fresh Air Changes:	12	
Air Velocity (Supply):	70fpm	
Air Velocity (Return):	70fpm	
Pressure:	0.05wg	
Temperature:	S: 68°F	W:68°F
Temp Stability:	+/-2°F	
Relative Humidity:	S: 44%	W:49%
Local Exhausts:	Solv./Corros. systems	
Supply Air Filtration:	HEPA	
CO_2Sensor:	N	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	Y
Em. Power:		Y ctrl cool down/shutdown
UPS:		By Users
Grounding:		Yes
Notes:		

Lighting

General Illumination:	80-100 fc
Fixture/Lamp Type:	LED (white and amber)
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	7
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	-
Notes:	

Special Requirements

Lights:	LED pendants 80% up - 20% down
Visual:	
Structural:	VC-A
Design Floor Load:	125 psi
Security:	Card/Prox
Explosion relief:	N
Process Cooling:	Y
Steam:	N
Acoustic:	NC-60
Vibration:	VC-D
Shielding:	N
Dust Control:	N
Other:	

General:

Process gases to be Hi purity grade

63.1 CHARACTERIZATION - IMAGING

Department:	-	Faculty Rep.:	-	# of Occupants:	3
Function:	-	Room Type:	Lab	# Bench Positions:	3 @
Adjacencies		Room Number:	I-63.1	Area:	1961 SF

Architectural

Floor Material:	ESD 2x2 Access flr.
Base Material:	Vinyl
Walls Material:	Painted GWB/ACP
Wall Finish:	Painted
Ceiling Material:	Alum. Open Cell
Ceiling Height:	13'-0"-16'-0"
Door Size:	6'-0"

Casework

LF of Bench:	60
LF of Shelving:	144
LF of Desktop:	NA
Bench Height:	37" (Adjustable)
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	-
Shelving Material:	1" Wood/Metal
Desktop Material:	NA
Notes:	

Furnishings

Window Treatment:	Shades
Projection Screen:	NA
Desks:	NA
Chairs:	4
Tables:	NA
File Cabinets:	NA
White Boards:	Glass
Tack Boards:	NA
Notes:	4 Adj. height stools

Plumbing

Sink Material:	Epoxy	
Pure Water:	N	
Hot/ Cold Water:	N	
Floor Drain:	N	
Hose Bib	N	
Waste:	N	
Eyewash:	N	
Em. Shower:	N	
House Vacuum:	N	
ReseachVacuum:	By users	inHg
House Gases:		
Compressed Air:	Y	1cfm/40psi
Natural gas:	N	-
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Y TBD	psi
Lab Gas 2:		psi
Lab Gas 3:		psi
Lab Gas 4:		psi
Notes:		

Fire protection

System:	Ordinary Hazard
Detection:	-
Notes:	

HVAC

Recirc. Allowed:	Y	
Total Air Changes:	Per code for fresh air	
Fresh Air Changes:	Per code for fresh air	
Air Velocity (Supply):	15 fpm	
Air Velocity (Return):	15 fpm	
Pressure:	NA	
Temperature:	S: 70° F	W:70° F
Temp Stability:	± 2°; 0.1° F/Min	
Relative Humidity:	S: 30%	W:60%
Local Exhausts:	SF6	
Supply Air Filtration:	Prefilter	
CO_2Sensor:	N	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	NA
Em. Power:		N
UPS:		By users
Grounding:		Y
Notes:		

Lighting

General Illumination:	100 fc Dimmable
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	7
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	LED pendants 80% up - 20% down
Visual:	
Structural:	Slab on grade
Design Floor Load:	125 psi
Security:	Card/Prox
Explosion relief:	N
Process Cooling:	Y
Steam:	N
Acoustic:	NC-25
Vibration:	VC-E
Shielding:	TBD
Dust Control:	N
Other:	

63.2 CHARACTERIZATION - MS/GC

Department:	-	Faculty Rep.:	-	# of Occupants:	5
Function:	-	Room Type:	Lab	# Bench Positions:	5 @
Adjacencies		Room Number:	I-63.2	Area:	3319 SF

Architectural

Floor Material:	Welded ESD Vinyl Tile
Base Material:	Integral
Walls Material:	Painted GWB/ACP
Wall Finish:	Painted
Ceiling Material:	Cleanroom ACT
Ceiling Height:	10'-0"
Door Size:	6'-0"

Casework

LF of Bench:	60
LF of Shelving:	144
LF of Desktop:	NA
Bench Height:	37" (Adjustable)
Benchtop Material:	Epoxy
Base Cabinets Material:	Wood/Metal
Wall Cabinets Material:	-
Shelving Material:	1" Wood/Metal
Desktop Material:	N/A
Notes:	

Furnishings

Window Treatment:	Shades/Blackout
Projection Screen:	NA
Desks:	NA
Chairs:	4
Tables:	NA
File Cabinets:	NA
White Boards:	Glass
Tack Boards:	NA
Notes:	4 Adj. height stools

Plumbing

Sink Material:	Epoxy	
Pure Water:	Y Grade E1	
Hot/ Cold Water:	Y	
Floor Drain:	N	
Hose Bib	N	
Waste:	Lab	
Eyewash:	Y	
Em. Shower:	Y	
House Vacuum:	Y	19 inHg
ReseachVacuum:	By users	inHg
House Gases:		
Compressed Air:	Y	1cfm/40psi
Natural gas:	N	
CO_2:	N	psi
N_2:	Y	80 psi
Process Gases:		
Lab Gas 1:	Y TBD	psi
Lab Gas 2:	Y TBD	psi
Lab Gas 3:	Y TBD	psi
Lab Gas 4:	Y TBD	psi
Notes:		

Fire protection

System:	Ordinary Hazard
Detection:	
Notes:	

HVAC

Recirc. Allowed:	Yes	
Total Air Changes:	Per code for fresh air	
Fresh Air Changes:	Per code for fresh air	
Air Velocity (Supply):	NA	
Air Velocity (Return):	NA	
Pressure:	NA	
Temperature:	S: 70° F	W:70° F
Temp Stability:	± 2°	
Relative Humidity:	S: 30%	W:60%
Local Exhausts:	N	
Supply Air Filtration:	Prefilter	
CO_2Sensor:	N	
Notes:		

Electrical

Power:	(110/120)	Y
	(208)	Y
	(460)	NA
Em. Power:		N
UPS:		By users
Grounding:		Y
Notes:		

Lighting

General Illumination:	70 fc
Fixture/Lamp Type:	LED
Fixture Mounting:	Pendant
Occupancy Sensors:	Y
Dimming Sensors:	N
Switching:	Dual
Task Lights:	Y
Notes:	Vacancy Sensors

Communications

# Phone Outlets:	0.000
# Data Outlets:	7
Network:	
Paging System:	N
Clock:	N
Monitors/ Alarms:	
Notes:	

Special Requirements

Lights:	LED pendants 80 & up -20% down
Visual:	
Structural:	Slab on grade
Design Floor Load:	125 psi
Security:	Card/Prox
Explosion relief:	N
Process Cooling:	Y
Steam:	N
Acoustic:	NC-40
Vibration:	VC-E
Shielding:	N
Dust Control:	N
Other:	