WICHITA STATE UNIVERSITY

Program for the new

# Technology II Facility

at the

## WSU Innovation Campus

18 December 2013

wdm ARCHITECTS

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# 1 INTRODUCTION

## 1.1 EXECUTIVE SUMMARY

This document outlines the requirements for the design of the completely new standalone *Technology II Facility* to house the Technology Transfer and Experiential Learning programs. These programs and facilities will create important opportunities and partnerships for the University, its students and faculty, private businesses and public organizations that will be mutually beneficial and keep Wichita State University at the forefront of technological advances in the engineering and business worlds.

Due to current site development limitations, the *Technology II Facility* is the first building of the *Innovation Campus* that is being developed in coordination with the recent master plan. As the necessary site becomes available, buildings *I, III & IV* will complete the vision for this complex.

## 1.2 OVERVIEW

Wichita State University's new strategic plan as approved by the Board of Regents in June 2013 includes the following core institutional mission:

> *The mission of Wichita State University is to be an essential educational, cultural, and economic driver for Kansas and the greater public good.*

Wichita State is well-positioned to act as a major driver of development in the state's largest metropolitan area. The proposed program addresses the institution's role in supporting technology-based economic growth and diversification for the purpose of enhancing job creation and increased income for the people of this metropolitan region and the state. This proposal is consistent with goals and activities of the Wichita Metro Chamber of Commerce and the work currently being conducted by the Chamber's Leadership Council.

Research by the Brookings Institution shows that, compared with all U.S. metropolitan areas, Wichita' metropolitan GDP includes a higher percentage of exports. More than 20 percent of the metropolitan GDP is tied directly to the export market. These exports are heavily weighted in the manufacturing sectors associated with aviation. Demand for aviation equipment and aircraft is cyclical and there is increasing competition in this sector from businesses in Latin America (especially Brazil), Canada and Asia. Both of these trends increase the importance of diversifying the economic base of the region and especially in increasing the economic diversity of technology-based enterprises. These types of enterprises tend to be globally competitive, and they produce high paying jobs.

The current building project will be a huge step for Wichita State toward providing essential support for local industry and propelling the university to new standards of excellence. This new building will provide additional funding sources for the university, enhanced experiential learning opportunities for the student body and economic development opportunities for the region.

## 1.3 TECHNOLOGY TRANSFER STATEMENT

A central goal of the university's Strategic Plan is to foster the transfer of advances and discoveries made by university researchers. To accomplish this, the university is actively seeking opportunities to increase invention disclosures, research and license agreements, start-ups and patents through the Office of Research and Technology Transfer. Wichita State University has already seen a 300 percent increase in invention disclosures from university faculty and staff. The university's institutional master plan calls for development of an "innovation campus" to house both institutional business spin-outs and technology-based businesses that benefit from co-location with institutional technical and business faculty. Similar technology parks already exist at many universities across the country, and they have significantly contributed to the competitive advantage of the metropolitan regions in which they are located.

In addition to supporting existing business and developing the first building in the innovation campus, this building project will allow expansion support for entrepreneurial development of technology-based businesses through expansion of existing businesses, new business spin-outs, licensing intellectual property, and supporting external entrepreneurs. This requires the university to significantly expand its space and facilities into areas that are not currently supported on campus. Of specific importance: growth of the technology sectors in Wichita can be promoted by concentration on four themes:

- Increase the efficiency of current industry; help them broaden their markets using their core technologies; and support aggregation of their supply chains in the Wichita region. The proposed program plan will allow Wichita State to enhance its support for existing industry.

- Encourage additional enterprises that can take advantage of the expertise associated with the current aircraft sector to relocate to Wichita; including recruitment of enterprises from other states and countries. The proposal program plan will expand the university's capacity to assist the Chamber, city, county, and state in recruiting these businesses.

- Encourage expansion or relocation of business, military, or other entities in non-aviation technology sectors. Entities in such sectors as software and software security; advanced medical manufacturing; additive manufacturing; high-end animation; and informatics would be supported by proposed program.

- Encourage and support the development of new small businesses in various technology fields. National data show that at least 70 percent of new jobs will be in created in new businesses. Supporting technology transfer, helping bring ideas from inventors to market, and incubating new technology-based enterprises can have significant impact on the future economy of the metropolitan region and state.

These themes take advantage of Wichita State's long-standing reputation in entrepreneurship and engineering. They strongly enhance the ability of the university to respond to the goals of the Governor to expand Kansas' competitiveness, and they are consistent with the institutional master plan, strategic plan, and the goals of local government and business leadership. The proposed innovation campus is anticipated to become a national leader in its impact on the global competitiveness of the state.

## 1.4 EXPERIENTIAL LEARNING STATEMENT

Wichita State's location in the heart of Wichita –a mecca for aircraft manufacturing, healthcare and business - provides the opportunity for applied learning and research to be infused throughout each student's educational experience. By conducting research and internships in their fields, students gain real-world experience, allowing them to develop and apply critical skills.

Coupled with the technology transfer initiatives, the experiential learning piece of this program is essential to support and grow Wichita as an engineering hub for the United States. Wichita currently ranks third the U.S., behind San Jose, CA and Houston, TX, in highest concentration of engineers – with 21 engineers per 1,000 employees. This is largely related to the cluster of manufacturing companies within the state, which accounts for a majority of the job sector.

WSU College of Engineering (CoE) will instruct engineering classes within the experiential learning facility enabling curriculum to be delivered and practiced by students in a contextualized learning environment. According to engineering education literature, engineering students tend to drop out of college in the first two years primarily due to: 1) limited engineering involvement in the first two years and 2) student difficulty with calculus and physics. The experiential learning facility will provide an environment where students can continue to engage in engineering design and projects throughout their course of study. Projects will require practical application of calculus and physics thereby increasing student comprehension and retention of challenging engineering fundamentals.

The State of Kansas aims to increase the number of engineering degrees awarded by the three state universities. The experiential learning facility will support the development, retention and degree completion of WSU student engineers, inventors and entrepreneurs by providing an environment that nurtures their creative and innovative energy/potential and providing tools, space and skills training to make their project ideas into evolve into reality. WSU students will become engineers by doing and experiencing engineering, i.e. through an experience-based

pedagogical approach, thereby creating an unparalleled environment to continuously educate and train students and workers in advanced manufacturing skills.

The concept for experiential learning in engineering differs from the traditional cooperative education model, which is already a strong suit of the university. Traditional cooperative education models are structured in which classroom-based education is combined with practical work experience that usually takes place during the summer or part-time during a semester near graduation. The new experiential learning model will allow students to work long-term on campus during the full-year to advance industry research initiatives.

To survive and thrive throughout drastic changes in history, humans adapt and learn in ways that are unprecedented. In an era of reduced state funding and emphasis on industry collaboration and economic development, WSU must make significant changes to its fundamental operating procedures and teaching strategies. With the growing demand for experienced engineers in industry, WSU has dedicated a majority of the proposed building space to experiential learning environments to enhance the experience level of graduating engineers.

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# 2 CONSIDERATIONS

## 2.1 SITE CONSIDERATIONS

The site for the project is generally that of the existing Wheatshocker apartments at the southeast corner of the academic campus and the southwest corner of Braeburn Golf Course.

A few major aspects regarding the development of the site are as follows:

- The golf course will remain in use. The development of the new building shall have minimal impact to the golf course. Based on the proposed footprint of the building and associated drives and parking there is the need to modify two of the adjacent holes (one tee-box and one green). It is important that Braeburn remain as a full 18-hole course.

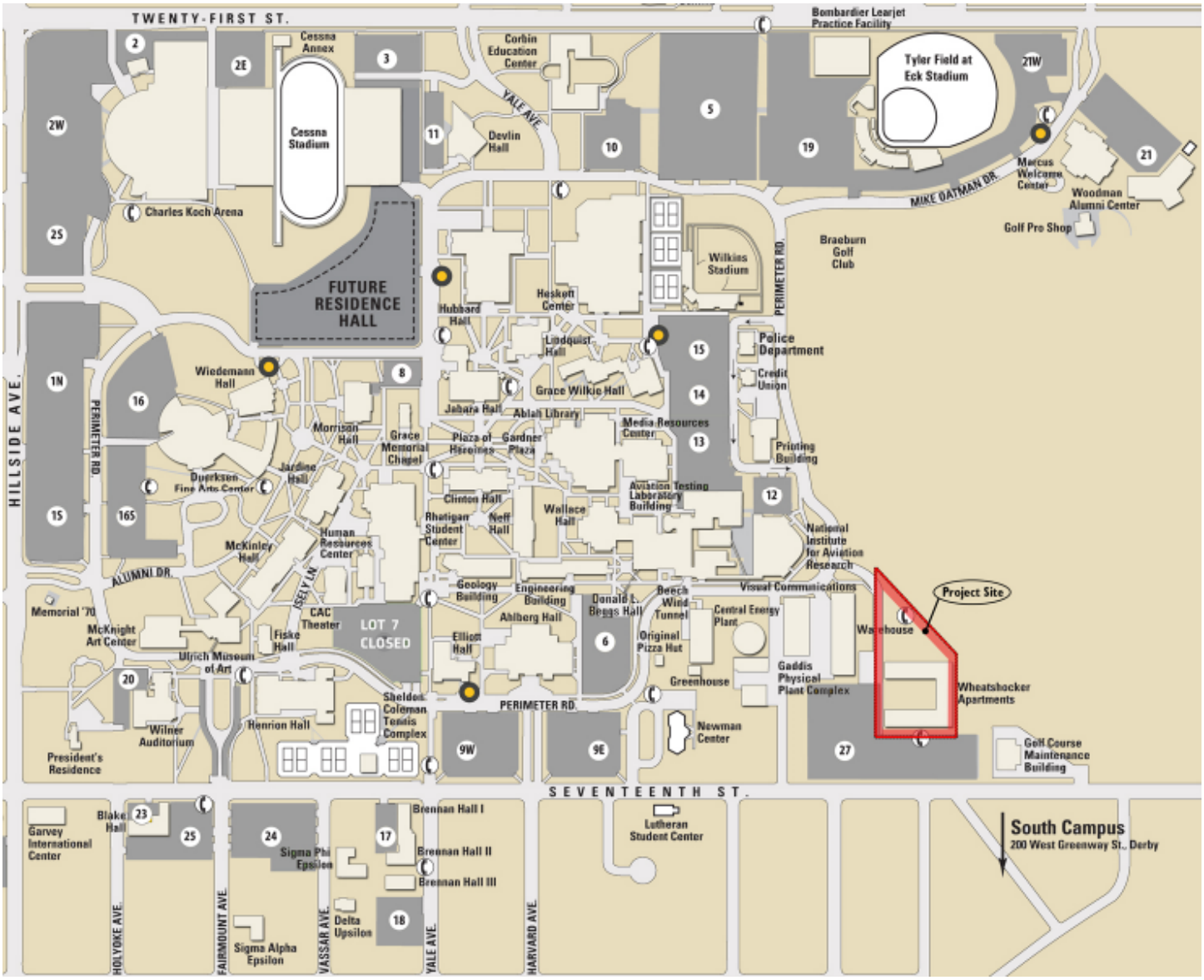
- The construction of the facility cannot begin until Wheatshocker is demolished as the footprint of the new building will significantly overlap the area of the current housing facility.

- Orientation of the new building needs to take into account several competing factors. The building will be a landmark denoting a new major entry to the campus from 17th street to the south. The function of the building is such that many of the building's user groups will be arriving daily from off campus, the approach and access to the building must accommodate this vehicular traffic. The building also needs to make a strong gesture to the north and west to tie into the bulk of the existing campus. Also, the master plan calls for a future build out of a grouping of related buildings to the east and northeast of which this facility is the anchor; all of which requires a design which embraces the pedestrian nature of the University environment.

- The Physical Plant warehouse building sits directly west of the proposed Technology II site. Design of the new facility shall minimize the visual impact of the warehouse for building occupants and maximize views toward the golf course (and future Innovation Campus).

- The existing parking lot to the south of the new facility is anticipated to remain. Overlay and necessary modifications will be a separate project and shall require coordination of efforts by the design teams.

- The new gateway and drive connecting 17th street to existing perimeter road will be a separate project and shall require coordination of efforts by design teams. It is anticipated that construction of the Technology II facility and new drive will occur concurrently under separate contracts (see schedule portion of this document).


TWENTY-FIRST ST.
Bombardier Learjet Practice Facility
Cessna Annex
Corbin Education Center
Tyler Field at Eck Stadium
Cessna Stadium
YALE AVE.
Devlin Hall
Charles Koch Arena
FUTURE RESIDENCE HALL
Hubbard Hall
Heskett Center
Wilkins Stadium
PERIMETER RD.
Braeburn Golf Club
MIKE OATMAN DR.
Marcus Welcome Center
Woodman Alumni Center
Golf Pro Shop
Lindquist Hall
Police Department
Credit Union
Wiedemann Hall
Grace Wilkie Hall
Jabara Hall
Ablah Library
Morrison Hall
Grace Memorial Chapel
Plaza of Heroines
Gardner Plaza
Media Resources Center
Printing Building
HILLSIDE AVE.
Duerksen Fine Arts Center
Jardine Hall
Clinton Hall
Aviation Testing Laboratory Building
Rhatigan Student Center
Neff Hall
Wallace Hall
National Institute for Aviation Research
McKinley Hall
Human Resources Center
ALUMNI DR.
ISELY LN.
Geology Building
Engineering Building
Donald L. Beggs Hall
Beech Wind Tunnel
Visual Communications
Project Site
Memorial '70
CAC Theater
LOT 7 CLOSED
Ahlberg Hall
Central Energy Plant
Warehouse
McKnight Art Center
Fiske Hall
Elliott Hall
Original Pizza Hut
Ulrich Museum of Art
Gaddis Physical Plant Complex
Greenhouse
Wheatshocker Apartments
Sheldon Coleman Tennis Complex
Henrion Hall
Wilner Auditorium
Newman Center
President's Residence
Golf Course Maintenance Building
SEVENTEENTH ST.
Garvey International Center
Blake Hall
Brennan Hall I
Lutheran Student Center
South Campus
200 West Greenway St., Derby
Sigma Phi Epsilon
Brennan Hall II
Brennan Hall III
HOLYOKE AVE.
FAIRMOUNT AVE.
VASSAR AVE.
YALE AVE.
HARVARD AVE.
Delta Upsilon
Sigma Alpha Epsilon

## CAMPUS MAP

**PROJECT SITE**

## 2.2 ARCHITECTURAL CONSIDERATIONS

This new facility is largely driven by the goal of creating partnerships between the University and private business in a multitude of ways. As such, every aspect of the building should be seen as a recruiting tool for students, faculty and outside partners. The design of the building needs to look the part as a center for hi-tech business development.

- Flexibility
  A large portion of this facility requires maximum flexibility. Private companies will be tenants, leasing space within the building. While a few companies have been identified as of the time of this program statement, tenants will change over time and will have different needs. Size of lease spaces will vary, and will be modified as needed. The electrical, HVAC, and plumbing infrastructure will need capacity for various kinds of equipment that may be used in labs (see engineering requirements for more information). Ceiling and partition systems shall accommodate changes as readily as possible.

- Build-out
  The flexible labs are programmed and budgeted as shell space. The tenant partners that will occupy the building will be responsible for the construction cost of build-out. Design of those spaces is to be included in services by the building architecture and engineering team.

- Security
  The building will be supporting the efforts of multiple companies working on projects that require a secure environment; hence most of the spaces within the building will require key card access. Additionally, it may be necessary to zone the building such that particular wings or levels are accessible only to those with necessary credentials.

- Collaborative environment
  One of the major concepts of the facility is exploring the very basis of how idea generation occurs and creating an optimal environment to foster innovation. New ideas often derive from collaborative moments "off the grid"- casual discussions that can spark a notion, a new twist, a re-invention. To that end the common spaces in the building play a large part in this extremely vital role. Comfortable and desirable spaces for interactions between all building users; students, faculty, business entrepreneurs, and engineers alike will include lounges, conference rooms, training room, and a striking lobby.

- Durability
  Many areas will be equipped for a variety of uses such as labs, fabrication, production & testing. Equipment could include but is not limited to the following: CNC machines, lathe, drill press, resins, fume hoods, etc. As such, all wall and floor surfaces should be considered for long term wear resistance and durability.

- Noise control
  The equipment and processes used in some areas have the possibility of generating high levels of sound. Conversely, the functions of other spaces have the possibility of being sensitive to the carryover noise. It is necessary to pay a high degree of attention to acoustic separation between such spaces. Due to the evolving nature of the building, sound transfer cannot be controlled completely by geographically separating noise generating occupancies from noise sensitive spaces. It shall be necessary to address noise control with the appropriate physical construction.

- Vibration control
  Similar to sound, structure borne vibration could be caused by certain pieces of equipment. The building design should seek to minimize the effect of vibration moving through the building elements.

- Equipment Access
  The various uses of the facility will require the ability to move large equipment in and out of all areas. A large freight elevator (independent of elevators for passenger access) is necessary that has good access to exterior loading areas as well as the flexible labs.

- Storm Shelter
  Corridor space in the basement should be provided as a storm shelter space for the occupants of the building.

## 2.3 ENGINEERING CONSIDERATIONS

Civil Infrastructure Components

1. Water:

   - An existing 8" looped water main is located west of the proposed development and will be available to provide domestic and fire services for the new building. Approximately 730 lineal feet of 8" water main shall be installed to surround the new building in order to provide an adequate fire protection loop and fire hydrant coverage of said building. This loop will also provide for future water infrastructure expansion in accordance with the Wichita State Master Plan concept. Construction of the proposed water shall be constructed in accordance with the City of Wichita standards and specifications for water main construction and shall be in compliance with KDHE regulations. All plan review fees and permits shall be the responsibility of the Contractor.

2. Sanitary Sewer:

   - An existing 8" Sanitary Sewer Main is located on the west side of the proposed facility. Connections to the existing main shall be located on the west side of the facility at an existing manhole.

   - As part of the 2013 Master Plan process and a 2007 Utility Study, an analysis performed on the existing sanitary sewer system revealed a capacity issue downstream of the proposed connection location. These planning documents recommend the upsizing of an

existing 8" main located in 17th street to a 12" collector as part of any development improvements in the subject area. However, with the demolition of Wheatshocker Apartments, it is anticipated that the sanitary sewer flow in the subject drainage basin will decrease, thus providing some temporary relief to the existing sanitary sewer. Thus, the requirement to upsize the insufficient sanitary sewer located in 17th Street is not anticipated with the construction of the Technology II Facility.

- The connection of the proposed sewer service to the existing collector shall be constructed in accordance with the City of Wichita standards and specifications for sanitary sewer construction and shall be in compliance with KDHE regulations. All plan review fees and permits shall be the responsibility of the Contractor.

3. Storm Sewer:

- An existing storm sewer system is located to the south and west of the proposed building. Storm sewer extension is required to accommodate the collection of storm water runoff from the proposed building and parking lot improvements. Storm water quality and some quantity management are anticipated with the development of the subject facility.

- The City of Wichita has adopted a regional storm water management policy with the intent to provide a comprehensive approach to storm water management. This policy integrates both drainage design and the control of storm water quantity and quality. In accordance with this policy, the storm water management requirements imposed on developments shall be based on the existing impervious condition of the subject tract, in comparison to the amount of impervious surface proposed by the new development. Redevelopment of previously developed land may be eligible for less stringent storm water management requirements depending on the proposed improvements.

- A summary of the City's storm water management requirements is as follows:

4. Development of Undeveloped Land:

- Pre vs Post Development Detention: waived if adding <0.5 AC of additional impervious area. If more than 0.5 AC additional impervious area then the development must detain 2, 5, 10, and 100 year peak outflow rates to less than existing conditions.

- Water Quality: required if disturbing more than 1.0 acre on an individual project or as an overall development plan. Development must treat site runoff to 80% TSS removal via City approved storm water Best Management Practices (BMP's).

5. Redevelopment of Developed Land:

- Pre vs Post Development Detention: waived if adding <0.5 AC of additional impervious. If more than 0.5 AC additional impervious area then the development must detain 2, 5, 10, and 100 year peak outflow rates to less than existing conditions.

- Water Quality: waived if the development will reduce the overall site impervious area by 20%. If not, 30% of the redeveloped area and 100% of the new development area must be treated to 80% TSS removal via City approved storm water BMP's.

6. Channel Bank Protection:

- Channel bank protection is required on all sites disturbing more than 5 AC.

Preliminary analysis of the proposed Tech Transfer development indicate that additional impervious surface in excess of 0.5 acres will be constructed, thus producing excess storm water runoff not currently generated by the existing housing development. As a result, the proposed development will be subject to the City of Wichita's storm water quality and quantity regulations. A detention facility(s) and water quality treatment will be required with the new development. Design, implementation and construction of said storm water management facilities shall minimize impacts to downstream storm water drainage systems and adjacent properties in accordance with local, state, and federal regulations.

Based on the information outlined above and preliminary site layout configurations, the proposed Tech Transfer development will be eligible for redevelopment credits pertaining to storm water quality and quantity, as a good portion of the proposed development will be located on land currently developed. Thus the required detention volumes and water quality TSS removal will be less stringent than the requirements for the development of a greenfield.

Impacts to the City of Wichita storm water infrastructure, campus infrastructure, as well as techniques for compliance with the City of Wichita drainage ordinance and storm water management policy should be carefully considered during the design stage of the project. A combination of regional and isolated storm water management techniques should be considered, allowing for a coordinated and congruent development of the WSU campus that works with the overall concepts of the Master Plan, landscape, sustainability, as well as educational research and study components of campus.

<u>Plumbing Components</u>

1. General Plumbing Fixtures:

- Plumbing fixtures for general use shall be commercial grade fixtures, appropriate for use. Flush valves and lavatory faucets in areas utilized by the public shall be sensor operated.

2. Compressed Air System:

- System shall generate compressed air at 100psig, for piped distribution through the building. Provide filtration for clean air and thermal mass air-dryer for 38°F or lower dewpoint.

3. Vacuum System:

    - Central equipment shall be capable of generating -29”Hg at the point of generation. Provide piped distribution point of use.

4. Water Heating:

    - Provide gas-fired storage type hot water heaters. Provide both 110°F distribution loop for general hand washing, and a 140°F distribution loop for other uses. Both loops shall be recirculated to maintain hot water at the point of use.

    - Option: Connect to existing central plant steam system for heating requirements and eliminate building burners.

<u>Mechanical (HVAC) Components</u>

The heating, air-conditioning and ventilation (HVAC) systems for the building must be configured for an appropriate amount of flexibility to accommodate the anticipated changes in the tenants and activities within the building over time.

1. Central Plant:

    - A central 4-pipe (chilled and heating hot water) system is planned. Generation of heating and cooling will be local to this building, with the boilers and pumps residing in the basement of the new facility. Air-cooled chillers located in an adequately unrestricted area will provide cooling capacity. Multiple boilers, chillers and pumps shall be utilized to provide redundancy in the event of the failure of a single piece of equipment. Both the chilled and heating water systems shall utilize variable volume pumping with variable speed drives for energy conservation.

    - Connecting to the existing central plant steam system for heating requirements and to eliminate the need for building boilers is not anticipated.

2. Air-Handling Systems:

    - Indoor central station air-handling units shall be utilized, located in the penthouse of the new building. This location will allow fresh air intake from above grade, and reduce the need for areaways or additional duct chases for fresh air. In addition, this location will make air-side heat recovery practical. Each unique space use (office, flexible labs, cubes, server rooms, etc.) shall be provided with its own air-handling system to maintain segregation of the air streams. Typical filtration requirement is for 30% efficient, with the laboratory spaces requiring 95% or better. All spaces shall be humidified at the central air-handlers to minimum 30%RH, with additional zone humidifiers where the program requires.

    - Each air system shall be provided with a variable frequency drive and variable air volume (VAV) control. In the office and classroom spaces, single duct VAV reheat or fan powered VAV terminals with hot water heat shall be utilized. In the laboratory spaces, or other

spaces requiring specific air changes and/or pressure relationships, laboratory grade controls and air valves shall be utilized.

- In the flexible labs, a central exhaust riser and central laboratory exhaust system shall be provided. This system shall be configured for variable air volume operation utilizing laboratory grade controls and air valves, and shall consider the use of heat recovery if appropriate.

- A central exhaust system shall be utilized for the core restroom spaces and other general exhaust, and shall utilize a total heat (enthalpy) heat recovery wheel.

3. Process Cooling Loop:

- A central, variable volume process-cooling loop shall be provided for user equipment within the space. This loop will be required to provide 24/7, year-round cooling of the equipment.

Electrical Components

1. Primary Electrical Service**:**

- Electrical service to the site shall be routed underground from the existing Westar substation located north of 17th Street and south of the Gaddis Physical Plant. Underground, concrete encased ductbank will be required to be extended from the existing manhole located at the NW corner of the Gaddis Physical Plant and northeast of the water tower. The ductbank shall be routed east to the side of the perimeter road to a pad mounted switch. The ductbank will be routed south along the perimeter road to a primary pedestal located across from the Tech Transfer building site. The two pad-mounted utility company transformers for the Tech Transfer Building will be fed from the pad mounted pedestal.

- The ductbank shall be extended south from the primary pedestal to 17th Street for future looping purposes. Provisions shall be made for extending the ductbank north of the pad mounted switch for future development.

2. Building Electrical Distribution**:**

- The building will be fed by two pad mounted utility company transformers. Secondary service from the transformers will be routed underground to switchboards located in the basement. The electrical services will be rated 277/480 volt, 3-phase, 4-wire. The switchboards will feed distribution panels located on each floor.

- A diesel generator with weatherproof sound attenuated enclosure and sub-base fuel tank shall provide emergency power for code required life safety loads and standby power to other loads via separate automatic transfer switches (ATSs). The generator shall also provide backup power to the fire pump (see "Fire Pump Service" below for additional information). The life safety ATS will serve emergency egress lighting, fire alarm system, emergency notification system (owner provided), and other life safety loads. The

standby ATS will serve other loads not designated as life safety loads. These could include process equipment (refrigerators, freezers, walk-in coolers, etc.), tenant provided uninterruptable power systems (UPSs), or other loads as desired.

- The ATSs will be located in the basement of the Tech Transfer Building in an electrical room separate from the normal power switchboards. Life safety and standby panels will be located on each floor in the same rooms as normal power panels.

- Electrical rooms shall be located on each floor. Electrical rooms shall contain normal, life safety, and standby panels and transformers.

- Lab spaces shall have dedicated power distribution for each lab. This shall include 480V and 120/208V branch circuit panelboards and associated step-down transformers for 120/208V. The panels and transformers serving each lab shall be located in associated lab. This will allow for loads to be added and removed easily in each lab without effecting other labs or areas in the building.

- Branch circuit homeruns shall be routed in 3/4" conduit. The rest of the branch circuit can be routed in 1/2" conduit.

3. Fire Pump Service:

- The building will be sprinklered and will require a fire pump. The fire pump shall be served from a separate utility service and shall also be fed from the diesel generator. Fire pump feeders shall be routed outside the building or shall be routed in a 2-hour fire rated enclosure.

4. Site Lighting**:**

- Site lighting for parking and pedestrian traffic shall match campus standards. Lighting shall be controlled via astronomic time clock and contactors.

5. Building Lighting**:**

- General lighting will be provided by recessed fluorescent troffers with T-8 lamps and program start electronic ballasts. Lamp color temperature shall be 4100K. LED light fixtures for general lighting shall be priced as an alternate with 0-10V dimming.

- The building will require a lighting control system for public spaces to switch lights off after normal business hours. Local override switches shall be provided for after normal hour use that will turn lights on in an area for a maximum of two hours. Private office will utilize dual relay vacancy sensors. Vacancy sensors require input from the room occupant to initially turn the lights on and will automatically turn the lights off.

- Exit signs shall be LED with black, cast-aluminum housings and self-diagnostics. Egress lighting shall be connected to the generator via the life safety transfer switch. Egress lighting will be used as night lights.

6. Fire Alarm:

   - The building will require a NFPA 72 compliant fire alarm system consisting of manual pull stations, smoke detectors for elevator recall, and duct smoke detectors for mechanical air handling units 2000 CFM or larger. Horns and strobes will provide occupant notification. The fire alarm system will monitor the fire sprinkler system via flow and tamper switches.

7. Telecommunications:

   - The building shall be fed from the existing communication facilities in the basement of the Central Plant. A communication ductbank consisting of two 4" conduits and concrete encased shall be routed from the Central Plant to the Tech Transfer building.

   - Telecommunication rooms and pathways shall comply with BICSI standards as a minimum. The main telecommunication room shall be located in the basement. Telecommunication closets shall be located on each floor.

   - Pathways for backbone cabling shall be provided from the basement to each floor telecommunication room. A telecommunication system grounding system shall be provided and connected to the building electrical system ground.

8. Lightning Protection System:

   - A NFPA compliant lightning protection system shall be provided. A UL Master Label shall be provided for the installed system. A ground loop around the building shall be provided.

9. Building Security:

   - The Main Lobby and all rooms associated with Experimental Learning (Machine Shop, A.N.R.I. Computer Lab, and all Labs) shall have rough-ins for access control. Access control shall be connected to the existing NIAR ProWatch System. Coordinate all requirements with the owner. The following shall be provided at all doors:
     - 120-volt power shall be located at each door for electric door strikes.
     - Pathways shall be provided to the door frame for electric door strike wiring.
     - A box and conduit to above accessible ceiling shall be provided for a card reader.

## 2.4 CODE CONSIDERATIONS

Applicable codes:

1. New facilities shall be designed in accordance with all applicable codes as identified by the local AHJ (authority having jurisdiction). At the time of this publication, OFPM (the Office of Facilities and Procurement Management) is the AHJ. Refer to the OFMP website (www.da.ks.gov/fp/) for a list of currently enforced codes. Applicable codes include but are not limited to the following:

    - International Building Code (IBC), 2006 Edition
        - Chapter 11, Accessibility, is deleted. 2010 ADA Standards for Accessible Design shall be applied in lieu of IBC Chapter 11.
    - International Building Fire Code (IFC), 2006 Edition
    - International Mechanical Code (IMC), 2006 Edition
    - International Plumbing Code (IPC), 2006 Edition
    - International Fuel Gas Code (IFGC), 2006 Edition
    - International Energy Conservation Code (IECC), 2006 Edition or ASHRAE 90.1-2007
    - National Fire Protection Association (NFPA), National Fire Codes and Standards
    - Kansas Fire Prevention Code
    - Kansas State Boiler Code

Project specific code issues:

1. Height:

    - Due to the site limitations and the program area the building is anticipated to be four stories above grade to accommodate the 'base program' or five stories above grade if the decision is made to enlarge the building with the 'additional program' area. It is anticipated that a five story building taking in account the tall ceiling height requirements of some spaces (particularly the flexible labs) will still result in a building with the highest occupied floor lower than 75 feet above the lowest level (or fire department vehicle access). If this height threshold is not surpassed the building is not classified as a high-rise building. (403.1).

2. Occupancy:

    - It is anticipated that the majority of the spaces will be classified as "B" occupancy with some accessory occupancies. Due to the flexible nature of some program spaces, there may be some incidental use areas that will require occupancy separations.

3. Construction Type:

    - As a four or five story building (not a high-rise) the structural components the construction can be of type I or type II.

4. Exterior Wall Fire Separation Distance:

    - The new facility is proposed to be built in relative proximity to the Physical Plant warehouse building. As such the Technology II Facility should be positioned a minimum of 60' from the existing warehouse to avoid restrictions on openings and wall construction per Table 602.

5. Hazardous materials:

    - The quantities of hazardous materials as defined by the International Building Code are expected to less than the maximum allowable quantities listed in Tables 307.1(1) and 307.1(2).

# 3 PROGRAM

## 3.1 Space Summary Program for WSU: Technology II Facility

| | | Base Program | | Additional Program* | | Total |
|---|---|---|---|---|---|---|
| *Room Name* | *Size* | Qty | *Area (sq. ft.)* | Qty | *Area (sq. ft.)* | ***Area (sq. ft.)*** |
| **Common Spaces** | | | | | | |
| Main Lobby | 4000 | 1 | 4,000 | | | **4,000** |
| Common Lounges | 1500 | 2 | 3,000 | 1 | 1500 | **4,500** |
| Small Conference Rooms (8 person) | 300 | 4 | 1,200 | 1 | 300 | **1,500** |
| Large Conference Rooms (16 person) | 600 | 2 | 1,200 | 1 | 600 | **1,800** |
| Multi-Purpose Seminar Room | 1500 | 1 | 1,500 | | | **1,500** |
| Warming Kitchen | 300 | 1 | 300 | | | **300** |
| Table/Chair Storage | 150 | 1 | 150 | | | **150** |
| Roof Terrace | 1000 | 1 | 1,000 | | | **1,000** |
| 3D Print Center | | | | | | |
| Lobby | 400 | 1 | 400 | | | **400** |
| Print Room | 1800 | 1 | 1,800 | | | **1,800** |
| Material Storage | 650 | 1 | 650 | | | **650** |
| Offices/work rooms | 120 | 3 | 360 | | | **360** |
| Office Print Center | 500 | 1 | 500 | | | **500** |
| Administration | | | | | | |
| Manager's Office | 200 | 1 | 200 | | | **200** |
| Staff Offices | 120 | 3 | 360 | | | **360** |
| Work Room | 200 | 1 | 200 | | | **200** |
| Mail Room | 200 | 1 | 200 | | | **200** |
| | | **subtotal** | 17,020 | | 2400 | **19,420** |
| **Technology Transfer** | | | | | | |
| Manufacturing "Cubes" | 4500 | 3 | 13,500 | | | **13,500** |
| White Box Offices (1k -8k sf ea.) | N/A | N/A | 15,000 | | 15,000 | **30,000** |
| Office of Technology Transfer | | | | | | |
| Reception | 400 | 1 | 400 | | | **400** |
| Director Offices | 200 | 3 | 600 | | | **600** |
| Staff Offices | 120 | 3 | 360 | | | **360** |
| Work Room | 200 | 1 | 200 | | | **200** |
| | | **subtotal** | 30,060 | | 15000 | **45,060** |
| **Experiential Learning** | | | | | | |
| ANRI Computer Lab | 5000 | 1 | 5,000 | | | **5,000** |
| Machine Shop | 4000 | 1 | 4,000 | | | **4,000** |
| Flexible "Labs" (including 250sf work room) | 2000 | 18 | 36,000 | | | **36,000** |
| | | **subtotal** | 45,000 | | | **45,000** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Support** | | | | | | |
| Public Restrooms | 650 | 5 | 3,250 | 1 | 650 | **3900** |
| Janitor Closets | 75 | 4 | 300 | 1 | 75 | **375** |
| | | **subtotal** | 3,550 | | 725 | **4,275** |
| **Mechanical / Electrical** | | | | | | |
| Boiler Room | 2500 | 1 | 2,500 | | | **2,500** |
| Shaft Space | 220 | 5 | 1,100 | 1 | 220 | **1,320** |
| Penthouse (air-handling units) | 14000 | 1 | 14,000 | | | **14,000** |
| Basement Telecomm | 160 | 1 | 160 | | | **160** |
| Main Electrical Room | 1000 | 1 | 1,000 | | | **1000** |
| Emergency Power | 195 | 1 | 195 | | | **195** |
| Telecomm Room (each floor) | 110 | 4 | 440 | 1 | 110 | **550** |
| Electrical Room (each floor) | 300 | 4 | 1,200 | 1 | 300 | **1,500** |
| | | **subtotal** | 20,595 | | 630 | **21,225** |
| **Total Program Area** | | | **116,225** | | **18,755** | **134,980** |
| **Circulation** | | | | | | |
| Circulation (15% of program area) | 17,434 | ≈ | 17,400 | | 2,800 | **20,200** |
| Vertical Circulation | | | 6,000 | | 700 | **6,700** |
| | | **subtotal** | 23,400 | | 3,500 | **26,900** |

**Base Program Total Area (sq. ft.) 139,625**

**Additional Program* Total Area (sq. ft.) 22,255**

**Grand Total Area (sq. ft.) 161,880**

***Note: Additional program areas are to be designed as an add alternate to the base bid. Alternate spaces shall constitute an additional story to be located above the highest occupied floor.**

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## 3.2 Space Descriptions

### Common

| | |
|---|---|
| *Room:* | **Main Lobby** |
| *Area (sf)*: | 4000 |

| | | |
|---|---|---|
| *Function:* | | main entry point, grand two story space, connected with open stair, designated space for "Hall of Patents", collaboration space |
| *Adjacency*: | | direct access to one large conference room |
| *Fixed Equipment:* | | reception desk |
| *Finishes:* | | |
| | *floors:* | high-wear walk-off carpet / high visibility aesthetic hard surface |
| | *walls:* | high-wear, low maintenance, high visibility aesthetic |
| | *ceiling:* | portion of space to be two story volume (+/- 20') |
| *Systems:* | | |
| | *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | drinking fountains |
| | *power:* | receptacles as required by room layout and cleaning, convenience outlets for mobile device charging near seating |
| | *lighting:* | general / accent lighting for "Hall of Patents" display |
| | *phone:* | yes, at reception desk, wiring by Owner |
| | *data:* | rough-ins as required for room/equipment layout, wiring by Owner |
| | *other:* | Fire alarm |
| *Furniture & Equip.:* | | soft seating, coffee tables, recessed flat screen monitors |
| *Remarks:* | | provide wall space for "Hall of Patents" display boards |

## Common

| | |
|---|---|
| *Room:* | **Lounge** |
| *Area (sf)*: | 1,500 |

| | | |
|---|---|---|
| *Function:* | | common break room, dining space, kitchenette, collaborative meeting space |
| *Adjacency*: | | convenient to offices, labs, and other major program spaces |
| *Fixed Equipment:* | | cabinets: base, upper & island |
| *Finishes:* | | |
| | *floors:* | durable, low maintenance, aesthetic hard surface / modular carpet |
| | *walls:* | durable, low maintenance |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | kitchenette sink, ice machine, coffee machine, filtered water |
| | *power:* | convenience outlets for mobile device charging |
| | *lighting:* | general, occupancy sensor |
| | *phone:* | NA |
| | *data:* | wi-fi, rough-in as required for equipment, wiring by Owner |
| | *other:* | fire<br>alarm |
| *Furniture & Equip.:* | | dining tables, chairs, soft seating, game tables, TV monitors, refrigerator, microwave,<br>vending |
| *Remarks:* | | |

## Common

| | |
|---|---|
| *Room:* | **Small Conference Room** |
| *Area (sf)*: | 300 |

| | | |
|---|---|---|
| *Function:* | | Conference room for +/- 8 persons |
| *Adjacency*: | | easy access form White Box Office and Flexible Labs<br>visibility from corridor and/or lobby |
| *Fixed Equipment:* | | monitor and/or<br>projector/screen |
| *Finishes:* | | |
| | *floors:* | modular carpet |
| | *walls:* | no special req. |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | NA |
| | *power:* | receptacles as required by room layout, min 1 per wall, floor receptacle(s) for power/data at table |
| | *lighting:* | multi-level /<br>dimming |
| | *phone:* | yes, rough-in as required by room layout, wiring by Owner |
| | *data:* | yes, rough-in as required by room layout, wiring by Owner |
| | *other:* | fire<br>alarm |
| *Furniture & Equip.:* | | conference table, office chairs, white board(s), flat screen(s) |
| *Remarks:* | | |

## Common

*Room:* **Large Conference Room**

*Area (sf)*: 600

*Function:* Conference room for +/- 16 persons

*Adjacency*: (1) Conference Room directly accessible from Main Lobby, remaining (2) distrubuted between other floors, visibility from corridor and/or lobby monitor and/or

*Fixed Equipment:* projector/screen

*Finishes:*

- *floors:* modular carpet
- *walls:* no special requirement
- *ceiling:* acoustic lay-in

*Systems:*

- *hvac:* Summer: 75°F, ≤55%RH
  Winter: 70°F, ≥30%RH
  Filtration: 30%
- *plumbing:* NA
- *power:* receptacles as required by room layout, min 1 per wall, floor receptacle(s) for power/data at table
- *lighting:* multi-level / dimming
- *phone:* yes, rough-in as required by room layout, wiring by Owner
- *data:* yes, rough-in as required by room layout, wiring by Owner
- *other:* fire alarm

*Furniture & Equip.:* windows with electric switchable privacy glass
conference table, office chairs

*Remarks:*

## Common

| | |
|---|---|
| *Room:* | **Multi-Purpose Room** |
| *Area (sf)*: | 1,500 |

| | | |
|---|---|---|
| *Function:* | | seminars, banquets, presentations, etc.<br>capacity for 50 persons, |
| *Adjacency*: | | direct access to Warming Kitchen, direct access to Table/Chair<br>Storage, near restrooms |
| *Fixed Equipment:* | | projector, powered screen |
| *Finishes:* | | |
| | *floors:* | modular carpet |
| | *walls:* | acoustical enhancement |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | NA |
| | *power:* | receptacles as required by room layout, min 1 per wall |
| | *lighting:* | zoned, multi-level/dimming |
| | *phone:* | yes, rough-in as required for room layout, wiring by Owner |
| | *data:* | yes, rough-in as required for equipment layout, wiring by Owner |
| | *other:* | fire alarm, speaker system<br>provide power and data rough-in for video recording equipment |
| *Furniture & Equip.:* | | podium, tables, chairs |
| *Remarks:* | | |

## Common

| | |
|---|---|
| *Room:* | **Warming Kitchen** |
| *Area (sf)*: | 300 |

| | | |
|---|---|---|
| *Function:* | | support kitchen for Multi-Purpose Room |
| *Adjacency*: | | direct access to Multi-Purpose Room |
| *Fixed Equipment:* | | serving counter, base & upper cabinets |
| *Finishes:* | | |
| | *floors:* | durable hard surface |
| | *walls:* | durable, high-wear |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | *hvac:* | Summer: 78°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | food prep sink, hand wash sink, drains, dishwasher |
| | *power:* | GFCI receptacles, power as required for equipment |
| | *lighting:* | recessed, lensed fluorescent troffers |
| | *phone:* | NA |
| | *data:* | NA |
| | *other:* | fire alarm |
| *Furniture & Equip.:* | | hot/cold serving carts, refrigerator, microwaves, ice machine |
| *Remarks:* | | |

## Common

| | |
|---|---|
| *Room:* | **Table/Chair Storage** |
| *Area (sf)*: | 150 |

| | | |
|---|---|---|
| *Function:* | | storage for Multi-Purpose Room |
| *Adjacency*: | | direct access to Multi-Purpose Room |
| *Fixed Equipment:* | | |
| *Finishes:* | | |
| | | durable hard |
| | *floors:* | surface |
| | *walls:* | no special requirement |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | *hvac:* | Summer: 78°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | NA |
| | *power:* | NA |
| | *lighting:* | general |
| | *phone:* | NA |
| | *data:* | NA |
| | *other:* | |
| *Furniture & Equip.:* | | table and chair storage carts |
| *Remarks:* | | |

## 3D Print Center

*Room:* **Lobby**

*Area (sf)*: 400

*Function:* public entry / waiting area

*Adjacency*: high visibility & directly accessible from Main Lobby
directly accessible to Print Room

*Fixed Equipment:* customer service counter

*Finishes:*

| | |
|---|---|
| *floors:* | high wear modular carpet |
| *walls:* | no special req. |
| *ceiling:* | acoustic lay-in |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 78°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | as required for room/equipment layout |
| *lighting:* | general |
| *phone:* | yes |
| *data:* | rough-in as required for equipment layout, wiring by Owner |
| *other:* | |

*Furniture & Equip.:* soft seating, coffee table(s)

*Remarks:* flat screen(s)

## 3D Print Center

| | |
|---|---|
| *Room:* | **Print Room** |
| *Area (sf)*: | 1,800 |

| | | |
|---|---|---|
| *Function:* | | 3-D printing service for University and Wichita area public |
| *Adjacency*: | | located on ground or 2nd floor<br>easy access to freight elevator (if not on ground floor)<br>directly accessible to Material Storage Room, Office, Workroom |
| *Fixed Equipment:* | | |
| *Finishes:* | | |
| | | durable hard |
| | *floors:* | surface |
| | *walls:* | durable, consider STC rating between adjacent spaces |
| | *ceiling:* | 10' clearance, could be exposed to structure |
| *Systems:* | | |
| | *hvac:* | good ventilation (**define**), low humidity (**define**), dedicated cooling (**define**), vent hoods (**type?**)? |
| | *plumbing:* | hand sink, hose bibb(s) for wash station(s) |
| | *power:* | Receptacles as required by room/equipment layout, **Special equipment power requirements (need to define),** 480v ? (**Define)** |
| | *lighting:* | task lighting |
| | *phone:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *data:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *other:* | vaccum, compressed air, fire alarm |
| *Furniture & Equip.:* | | 3D scanning table (≈3'x4'), mobile 3D scanner, 3D printers<br>wash station(s), computer desks & chairs |
| *Remarks:* | | stable floor is required, minimal vibration, ground or 2nd floor preferred, overhead door or double door required for equipment |

## 3D Print Center

*Room:* **Material Storage**

*Area (sf)*: 650

*Function:* storage for printing supplies

*Adjacency*: directly accessible from Print Room

near Office, Workroom

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | durable hard surface |
| *walls:* | no special req. |
| *ceiling:* | no special req. |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | min 1 receptacle per wall |
| *lighting:* | strip fluorescents, general |
| *phone:* | NA |
| *data:* | NA |
| *other:* | |

*Furniture & Equip.:* utility shelving

*Remarks:*

## 3D Print Center

*Room:* **Work Room**

*Area (sf)*: 120

*Function:* material prep / assembly

*Adjacency*: directly accessible/visible from Print Room
near Material Storage and
Office

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| | durable hard |
| *floors:* | surface |
| *walls:* | no special req. |
| *ceiling:* | no special req. |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | receptacles as required by room/equipment layout |
| *lighting:* | task lighting |
| *phone:* | rough-in as required for room/equipment layout, wiring by Owner |
| *data:* | rough-in as required for room/equipment layout, wiring by Owner |
| *other:* | fire<br>alarm |

*Furniture & Equip.:* work table(s), computer desk

*Remarks:*

## 3D Print Center

*Room:* **Office**

*Area (sf)*: 120

*Function:*
1.
Admin.
2. book keeping

*Adjacency*: directly accessible/visible from Print Room
near Material Storage and Work Room

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | modular carpet |
| *walls:* | no special req. |
| *ceiling:* | acoustic lay-in |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | receptacles as required by room layout, min 1 per wall |
| *lighting:* | task lighting |
| *phone:* | rough-in as required by for room layout, wiring by Owner |
| *data:* | rough-in as required by for room layout, wiring by Owner |
| *other:* | |

*Furniture & Equip.:* office desk & chair, file storage

*Remarks:*

## Common

| | |
|---|---|
| *Room:* | **Office Print Center** |
| *Area (sf)*: | 500 |

| | | |
|---|---|---|
| *Function:* | | copy and print room for use by University faculty and commercial tenants |
| *Adjacency*: | | near Building Manager's Office |
| *Fixed Equipment:* | | work counter, storage cabinets |
| *Finishes:* | | |
| | *floors:* | durable hard surface |
| | *walls:* | no special req. |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | NA |
| | *power:* | receptacles as required by room/equipment layout, min 1 per wall |
| | *lighting:* | task lighting, vacancy sensor |
| | *phone:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *data:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *other:* | fire alarm |
| *Furniture & Equip.:* | | printers, scanners, copiers, etc. |
| *Remarks:* | | |

## Administration

| | |
|---|---|
| *Room:* | **Building Manager's Office** |
| *Area (sf)*: | 200 |

| | | |
|---|---|---|
| *Function:* | | Admin. Office |
| *Adjacency*: | | near other Admin spaces<br>near Office Print Center |
| *Fixed Equipment:* | | |
| *Finishes:* | | |
| | *floors:* | modular carpet |
| | *walls:* | no special req. |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | NA |
| | *power:* | receptacles as required by room layout, min 1 per wall |
| | *lighting:* | vacancy sensor |
| | *phone:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *data:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *other:* | |
| *Furniture & Equip.:* | | office desk & chair, file storage, small conference table & chairs |
| *Remarks:* | | |

## Administration

*Room:* **Staff Offices**

*Area (sf)*: 120

*Function:*

*Adjacency*: near other Admin spaces
near Office Print Center

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | modular carpet |
| *walls:* | no special req. |
| *ceiling:* | acoustic lay-in |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | receptacles as required by room layout, min 1 per wall |
| *lighting:* | multi-level lighting, dual relay vacancy sensors |
| *phone:* | rough-in as required for room/equipment layout, wiring by Owner |
| *data:* | rough-in as required for room/equipment layout, wiring by Owner |
| *other:* | |

*Furniture & Equip.:* office desk & chair, file storage

*Remarks:*

## Administration

| | |
|---|---|
| *Room:* | **Work Room** |
| *Area (sf)*: | 200 |

| | | |
|---|---|---|
| *Function:* | | support for Admin. Offices |
| *Adjacency*: | | directly accessible from Admin. |
| *Fixed Equipment:* | | work counter, storage cabinets |
| *Finishes:* | | |
| | *floors:* | high-wear modular carpet |
| | *walls:* | no special req. |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| | *plumbing:* | NA |
| | *power:* | receptacles as req. by room/equipment layout, min 1 per wall |
| | *lighting:* | recessed fluorescent troffers |
| | *phone:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *data:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *other:* | fire alarm |
| *Furniture & Equip.:* | | printer(s), copier(s), fax |
| *Remarks:* | | |

## Administration

| | |
|---|---|
| *Room:* | **Mail Room** |
| *Area (sf)*: | 200 |

| | | |
|---|---|---|
| *Function:* | | mail outgoing/incoming |
| *Adjacency*: | | directly accessible from Admin.<br>convenient to University faculty and commercial tenants |
| *Fixed Equipment:* | | mail boxes, work counter |
| *Finishes:* | | |
| | | durable hard |
| | *floors:* | surface |
| | *walls:* | no special req. |
| | *ceiling:* | acoustic lay-in |
| *Systems:* | | |
| | | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH |
| | *hvac:* | Filtration: 30% |
| | *plumbing:* | NA |
| | *power:* | receptacles as required by room/equipment layout, min 1 per wall |
| | *lighting:* | recessed fluorescent troffers |
| | *phone:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *data:* | rough-in as required for room/equipment layout, wiring by Owner |
| | *other:* | |
| *Furniture & Equip.:* | | |
| *Remarks:* | | |

## Technology Transfer

*Room:* **Cube**

*Area (sf)*: 4,500

*Function:* adaptable open space for industrial product design, fabrication, testing, etc.

*Adjacency*: exterior access via overhead door and/or access to freight elevator

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | durable hard surface |
| *walls:* | durable |
| *ceiling:* | N/A exposed to structure, 16' clearance |

*Systems:*

| | |
|---|---|
| *hvac:* | capacity for future exhaust/ventilation as needed<br>Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30%/95%<br>(When OH doors closed) |
| *plumbing:* | commercial sink, floor drains, mud & oil trap, eye-wash station |
| *power:* | receptacles as required by room/equipment layout |
| *lighting:* | task lighting |
| *phone:* | rough-in as required by room/equipment layout, wiring by Owner |
| *data:* | rough-in as required by room/equipment layout, wiring by Owner |
| *other:* | compressed air, vacuum, fire alarm |

*Furniture & Equip.:* by tenant

*Remarks:* office space to be built out by future tenant and may include private office(s), conference room, and work room

## Technology Transfer

*Room:* **White Box Office**

*Area (sf)*: 15,000

*Function:* shell space for future business tenants

*Adjacency*: access to common conference rooms

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | NA |
| *walls:* | NA |
| *ceiling:* | NA |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | NA |
| *lighting:* | NA |
| *phone:* | NA |
| *data:* | NA |
| *other:* | fire alarm |

*Furniture & Equip.:*

*Remarks:* unfinished, easily subdivides into 1,000 to 8,000 sq.ft. units

## Office of Technology Transfer

*Room:* **Reception**

*Area (sf)*: 400

*Function:* reception/waiting for Office of Technology Transfer

*Adjacency*: direct access to common corridor/lobby

*Fixed Equipment:* reception desk

*Finishes:*

| | |
|---|---|
| *floors:* | modular carpet |
| *walls:* | no special req. |
| *ceiling:* | acoustic lay-in |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | receptacles as required by room layout, min 1 per wall |
| *lighting:* | recessed fluorescent troffers |
| *phone:* | rough-in as required by room/equipment layout, wiring by Owner |
| *data:* | rough-in as required by room/equipment layout, wiring by Owner |
| *other:* | fire alarm |

*Furniture & Equip.:* soft seating, coffee table(s), office chair(s)

*Remarks:*

## Office of Technology Transfer

*Room:* **Director Offices**

*Area (sf)*: 200

*Function:*

*Adjacency*: easy access to Reception, Staff Offices, Restroom and Work RM

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | modular carpet |
| *walls:* | no special req. |
| *ceiling:* | acoustic lay-in |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | receptacles as required by room layout, min 1 per wall |
| *lighting:* | recessed fluorescents, multi-level lighting, dual relay vacancy sensors |
| *phone:* | rough-in as required for room layout, wiring by Owner |
| *data:* | rough-in as required for room layout, wiring by Owner |
| *other:* | fire alarm |

*Furniture & Equip.:* office desk & chair, small conference table & chairs, file storage

*Remarks:*

## Office of Technology Transfer

*Room:* **Staff Offices**

*Area (sf)*: 120

*Function:*

*Adjacency*: easy access to Reception, Director Office, Restrooms & Workroom

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | modular carpet |
| *walls:* | no special req. |
| *ceiling:* | acoustic lay-in |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | receptacles as required by room layout, min 1 per wall |
| *lighting:* | recessed fluorescents, multi-level lighting, dual relay vacancy sensors |
| *phone:* | rough-in as required for room layout, wiring by Owner |
| *data:* | rough-in as required for room layout, wiring by Owner |
| *other:* | fire alarm |

*Furniture & Equip.:* office desk & chair, file storage

*Remarks:*

## Office of Technology Transfer

*Room:* **Work Room**

*Area (sf)*: 200

*Function:* printing, storage

*Adjacency*: easy access from Reception, Director/Staff Offices

*Fixed Equipment:* work counter, base & upper cabinets

*Finishes:*

| | |
|---|---|
| *floors:* | high-wear, modular carpet |
| *walls:* | no special req. |
| *ceiling:* | acoustic lay-in |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | receptacles as required by room/equipment layout |
| *lighting:* | recessed fluorescent troffers |
| *phone:* | rough-in as required for room/equipment layout, wiring by Owner |
| *data:* | rough-in as required for room/equipment layout, wiring by Owner |
| *other:* | fire alarm |

*Furniture & Equip.:* copier, printer, fax

*Remarks:*

## Experiential Learning

*Room:* **ANRI Computer Lab**

*Area (sf)*: 5,000

*Function:* Shell space for the Advanced Networking Research Institute (ANRI), which is based in the Department of Electrical Engineering and Computer Science (EECS) at Wichita State University. The ANRI contributes to the field of Computer Networking through state-of-the-art theoretical and experimental research.

*Adjacency*: easy access to common conference rooms

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | NA |
| *walls:* | NA |
| *ceiling:* | NA |

*Systems:*

| | |
|---|---|
| *hvac:* | Requirements to be defined by tenant finish. May include 24/7 Cooling Requirements for server rooms.<br>Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | NA |
| *power:* | NA |
| *lighting:* | NA |
| *phone:* | NA |
| *data:* | NA |
| *other:* | fire alarm |

*Furniture & Equip.:*

*Remarks:*

## Experiential Learning

*Room:* **Machine Shop**

*Area (sf)*: 4,000

*Function:*

*Adjacency*: easy access from Flexible Labs and freight elevator

*Fixed Equipment:*

*Finishes:*

| | |
|---|---|
| *floors:* | durable hard surface |
| *walls:* | consider high STC rating between adjacent spaces and control of noise build-up within the space |
| *ceiling:* | could be exposed to structure, +/- 16' clearance |

*Systems:*

| | |
|---|---|
| *hvac:* | exhaust/ventilation as required by equipment<br>Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30%/95%<br>(When OH doors closed) |
| *plumbing:* | commercial sink, floor drains, min 1 eyewash station |
| *power:* | Power distribution panels (277/480V and 120/208V with step-down transformer |
| *lighting:* | High-bay industrial fluorescents with multiple ballasts for multi-level switching |
| *phone:* | as required by room layout, wiring by Owner |
| *data:* | as required by room/equipment layout, wiring by Owner |
| *other:* | fire alarm, compressed air, vacuum |

*Furniture & Equip.:* CNC machine, drill press, table saw, lathe, etc.

*Remarks:*

## Experiential Learning

*Room:* **Flexible Labs**

*Area (sf)*: 2,000

*Function:*

*Adjacency*: easy access to freight elevator

*Fixed Equipment:* stainless steel work counter, base and upper cabinets

*Finishes:*

*floors:*

*walls:* double stud construction for high STC rating (55-60)

*ceiling:* 14'-16' clear in roughly 50% of labs, could be open to structure

*Systems:*

*hvac:* Consider separate AHU's
Easy access to central fume hood exhaust system.
Summer: 75°F, ≤55%RH
Winter: 70°F, ≥30%RH
Filtration: 30%

*plumbing:* minimum (1) eye wash station each
Compressed air
Vacuum

*power:* Separate power distribution panels for each lab (277/480V and 120/208V with step-down transformer)

*lighting:* High-bay industrial fluorescents with multiple ballasts for multi-level switching

*phone:* as required by room layout, wiring by Owner

*data:* as required by room/equipment layout, wiring by owner

*other:* Fire alarm

*Furniture & Equip.:*

*Remarks:*

## Support

*Room:* **Public Restrooms**

*Area (sf)*: 650 plus or minus

*Function:* accessible to all occupants, min (1) pair per occupied floor

*Adjacency*: easy access from corridor and/or lobby
(1) pair of restrooms with easy access from Cubes
and Machine Shop

*Fixed Equipment:* toilet partitions, toilet accessories, towel dispensers, mirrors, etc.

*Finishes:*

| | |
|---|---|
| *floors:* | durable aesthetic hard surface |
| *walls:* | durable aesthetic hard surface |
| *ceiling:* | acoustic lay-in |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | commercial grade fixtures, sensor operated flush valves, sensor operated lavatory faucets, floor drain(s) |
| *power:* | GFCI |
| *lighting:* | recessed fluorescent troffers, vacancy sensor |
| *phone:* | NA |
| *data:* | NA |
| *other:* | fire<br>alarm |

*Furniture & Equip.:*

*Remarks:* comply with ADA requirements

## Support

*Room:* **Janitor Closet**

*Area (sf)*: 75

*Function:*

*Adjacency*: easy access from corridor and/or lobby

*Fixed Equipment:* mop rack, utility shelving

*Finishes:*

| | |
|---|---|
| *floors:* | sealed concrete<br>durable hard |
| *walls:* | surface |
| *ceiling:* | no special req. |

*Systems:*

| | |
|---|---|
| *hvac:* | Summer: 75°F, ≤55%RH<br>Winter: 70°F, ≥30%RH<br>Filtration: 30% |
| *plumbing:* | mop<br>sink |
| *power:* | GFCI receptacle |
| *lighting:* | general |
| *phone:* | NA |
| *data:* | NA |
| *other:* | |

*Furniture & Equip.:*

*Remarks:*

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## 3.3 BUDGET

The budget represents anticipated cost based on local and regional data for similar construction systems, occupancy type, and scale.

| | *sf* | *$/sf* | *Base Program Cost* | *Additional Program Cost* | *Total Cost* |
|---|---|---|---|---|---|
| **Common Spaces** | | | | | |
| Main Lobby | 4,000 | 275 | $1,100,000 | | **$1,100,000** |
| Common Lounges | 3,000 | 225 | $675,000 | $337,500 | **$1,012,500** |
| Small Conference Rooms (8 person) | 1,200 | 225 | $270,000 | $67,500 | **$337,500** |
| Large Conference Rooms (16 person) | 1,200 | 225 | $270,000 | $135,000 | **$405,000** |
| Multi-Purpose Seminar Room | 1,500 | 225 | $337,500 | | **$337,500** |
| Warming Kitchen | 300 | 215 | $64,500 | | **$64,500** |
| Table/Chair Storage | 150 | 215 | $32,250 | | **$32,250** |
| Roof Terrace | 1,000 | 125 | $125,000 | | **$125,000** |
| 3D Print Center | | | | | |
| Lobby | 400 | 215 | $86,000 | | **$86,000** |
| Print Room | 1,800 | 215 | $387,000 | | **$387,000** |
| Material Storage | 650 | 215 | $139,750 | | **$139,750** |
| Offices/work rooms | 360 | 215 | $77,400 | | **$77,400** |
| Office Print Center | 500 | 215 | $107,500 | | **$107,500** |
| Administration | | | | | |
| Manager's Office | 200 | 215 | $43,000 | | **$43,000** |
| Staff Offices | 360 | 215 | $77,400 | | **$77,400** |
| Work Room | 200 | 215 | $43,000 | | **$43,000** |
| Mail Room | 200 | 215 | $43,000 | | **$43,000** |
| **Common Spaces** | | | **$3,878,300** | **$540,000** | **$4,418,300** |
| **Technology Transfer** | | | | | |
| Manufacturing "Cubes" | 13,500 | 235 | $3,172,500 | | **$3,172,500** |
| White Box Offices (1k -8k sf ea.)- *shell space** | 15,000 | 145 | $2,175,000 | $2,175,000 | **$4,350,000** |
| Office of Technology Transfer | | | | | |
| Reception | 400 | 215 | $86,000 | | **$86,000** |
| Director Offices | 600 | 215 | $129,000 | | **$129,000** |
| Staff Offices | 360 | 215 | $77,400 | | **$77,400** |
| Work Room | 200 | 215 | $43,000 | | **$43,000** |
| **Technology Transfer** | | | **$5,682,900** | **$2,175,000** | **$7,857,900** |
| **Experiential Learning** | | | | | |
| ANRI Computer Lab | 5,000 | 215 | $1,075,000 | | **$1,075,000** |
| Machine Shop | 4,000 | 235 | $940,000 | | **$940,000** |
| Flexible "Labs" (including 250sf work room) | 36,000 | 235 | $8,460,000 | | **$8,460,000** |
| **Experiential Learning** | | | **$10,475,000** | **$0** | **$10,475,000** |

| | sf | $/sf | Base Program Cost | Additional Program Cost | Total Cost |
|---|---|---|---|---|---|
| **Support** | | | | | |
| Public Restrooms | 3,250 | 215 | $698,750 | $139,750 | **$838,500** |
| Janitor Closets | 300 | 215 | $64,500 | $16,125 | **$80,625** |
| **Support** | | | **$763,250** | **$155,875** | **$919,125** |
| **Mechanical / Electrical** | | | | | |
| Boiler Room, Electrical Rooms, etc. | 20,595 | 215 | $4,427,925 | $135,450 | **$4,563,375** |
| **Circulation and Mechanical** | | | **$4,427,925** | **$135,450** | **$4,563,375** |
| **Circulation** | | | | | |
| Circulation (15% of program area) | 17,400 | 215 | $3,741,000 | $602,000 | **$4,343,000** |
| Vertical Circulation | 6,000 | 215 | $1,290,000 | $150,500 | **$1,440,500** |
| **Circulation** | | | **$5,031,000** | **$752,500** | **$5,783,500** |
| **Site Utilities** | | | | | |
| Storm sewer | | | $300,000 | | **$300,000** |
| Sanitary sewer | | | $10,000 | | **$10,000** |
| Water service | | | $70,000 | | **$70,000** |
| Electrical | | | $350,000 | | **$350,000** |
| **Site Utilities** | | | **$730,000** | | **$730,000** |
| **Construction Cost** | | | $30,988,375 | $3,758,825 | **$34,747,200** |
| **Soft costs** | | | | | |
| construction contingency | | 10.00% | $3,098,838 | $375,883 | **$3,474,720** |
| ff&e (primarily offices/ lounges/ conference rooms/ seminar) | | 2.50% | $774,709 | $93,971 | **$868,680** |
| IT infrastructure | | | $200,000 | $40,000 | **$240,000** |
| design fees (8%) | | 8.00% | $2,788,954 | $338,294 | **$3,127,248** |

**Base Program Total Project Cost $37,850,876**

**Additional Program Total Project Cost $4,606,972**

**Grand Program Total Project Cost $42,457,848**

**Notes:**

- The "White Box" offices are to be built as shell spaces in this budget. Tenant finishes additional.
- The sf cost for all construction assumes a 5$/sf premium for a structural system designed to support the 'additional program' area (5th floor);including the 4-story 'Base Program' project cost.

**Not included:**

- new drive connecting 17th street and existing campus perimter road
- parking lot modifications
- golf course modifications
- demolition of Wheatshocker apartments

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## 3.4 SCHEDULE

Following are the major milestones necessary for the facility to ready for full occupancy by the owner at the start of the 2016 fall semester.

| Phase | |
|---|---|
| Programming approved by Board of Regents | January 2014 |
| A/E Selection | March 2014 |
| SD / DD / CD's | March 2014 – November 2014 |
| Wheat Shocker Demolition (Separate Contract) | August 2014 – September 2014 |
| Final Document and Code Approval by State | November 2014 |
| Bidding | December 2014 |
| Contract Negotiation | January 2015 |
| Construction | February 2015 – May 2016 |
| New Road East of Tech II Facility (Separate Contract) | April 2015 – August 2015 |
| Owner Occupancy | June 2016 |

# 4 CONCEPTUAL DESIGN

**TECHNOLOGY II CONCEPTUAL SITE PLAN**

## INNOVATION CAMPUS CONCEPTUAL SITE PLAN

Legend

- Common Spaces
- Technology Transfer
- Experiential Learning
- Support (Restrooms / Janitor Closets)
- Mechanical/Electrical

| # | Room |
|---|---|
| 1. | Main Lobby |
| 2. | Common Lounge |
| 3. | Small Conference Room |
| 4. | Large Conference Room |
| 5. | Multi-Purpose Room |
| 6. | Warming Kitchen |
| 7. | Table/Chair Storage |
| 8. | Roof Terrace |
| 9. | 3D Print Center |
| 10. | Office Print Center |
| 11. | Administration |
| 12. | Manufacturing "Cubes" |
| 13. | White Box Offices |
| 14. | Office of Technology Transfer |
| 15. | ANRI Computer Lab |
| 16. | Machine Shop |
| 17. | Flexible "Lab" |
| 18. | Boiler Room |
| 19. | Mechanical Equipment |
| 20. | Electrical Room |
| 21. | IT Room |

# 1st Floor Concept Plan

0 25' 50' 100'

Legend

- Common Spaces
- Technology Transfer
- Experiential Learning
- Support (Restrooms / Janitor Closets)
- Mechanical/Electrical

| # | Room |
|---|---|
| 1. | Main Lobby |
| 2. | Common Lounge |
| 3. | Small Conference Room |
| 4. | Large Conference Room |
| 5. | Multi-Purpose Room |
| 6. | Warming Kitchen |
| 7. | Table/Chair Storage |
| 8. | Roof Terrace |
| 9. | 3D Print Center |
| 10. | Office Print Center |
| 11. | Administration |
| 12. | Manufacturing "Cubes" |
| 13. | White Box Offices |
| 14. | Office of Technology Transfer |
| 15. | ANRI Computer Lab |
| 16. | Machine Shop |
| 17. | Flexible "Lab" |
| 18. | Boiler Room |
| 19. | Mechanical Equipment |
| 20. | Electrical Room |
| 21. | IT Room |

# 2nd Floor Concept Plan

0 25' 50' 100'

Legend

- Common Spaces
- Technology Transfer
- Experiential Learning
- Support (Restrooms / Janitor Closets)
- Mechanical/Electrical

| # | Room |
|---|---|
| 1. | Main Lobby |
| 2. | Common Lounge |
| 3. | Small Conference Room |
| 4. | Large Conference Room |
| 5. | Multi-Purpose Room |
| 6. | Warming Kitchen |
| 7. | Table/Chair Storage |
| 8. | Roof Terrace |
| 9. | 3D Print Center |
| 10. | Office Print Center |
| 11. | Administration |
| 12. | Manufacturing "Cubes" |
| 13. | White Box Offices |
| 14. | Office of Technology Transfer |
| 15. | ANRI Computer Lab |
| 16. | Machine Shop |
| 17. | Flexible "Lab" |
| 18. | Boiler Room |
| 19. | Mechanical Equipment |
| 20. | Electrical Room |
| 21. | IT Room |

# 3rd Floor Concept Plan

0 25' 50' 100'

Legend

- Common Spaces
- Technology Transfer
- Experiential Learning
- Support (Restrooms / Janitor Closets)
- Mechanical/Electrical

| # | Room |
|---|---|
| 1. | Main Lobby |
| 2. | Common Lounge |
| 3. | Small Conference Room |
| 4. | Large Conference Room |
| 5. | Multi-Purpose Room |
| 6. | Warming Kitchen |
| 7. | Table/Chair Storage |
| 8. | Roof Terrace |
| 9. | 3D Print Center |
| 10. | Office Print Center |
| 11. | Administration |
| 12. | Manufacturing "Cubes" |
| 13. | White Box Offices |
| 14. | Office of Technology Transfer |
| 15. | ANRI Computer Lab |
| 16. | Machine Shop |
| 17. | Flexible "Lab" |
| 18. | Boiler Room |
| 19. | Mechanical Equipment |
| 20. | Electrical Room |
| 21. | IT Room |

# 4th Floor Concept Plan

0 25' 50' 100'

Legend

- Common Spaces
- Technology Transfer
- Experiential Learning
- Support (Restrooms / Janitor Closets)
- Mechanical/Electrical

| # | Room |
|---|---|
| 1. | Main Lobby |
| 2. | Common Lounge |
| 3. | Small Conference Room |
| 4. | Large Conference Room |
| 5. | Multi-Purpose Room |
| 6. | Warming Kitchen |
| 7. | Table/Chair Storage |
| 8. | Roof Terrace |
| 9. | 3D Print Center |
| 10. | Office Print Center |
| 11. | Administration |
| 12. | Manufacturing "Cubes" |
| 13. | White Box Offices |
| 14. | Office of Technology Transfer |
| 15. | ANRI Computer Lab |
| 16. | Machine Shop |
| 17. | Flexible "Lab" |
| 18. | Boiler Room |
| 19. | Mechanical Equipment |
| 20. | Electrical Room |
| 21. | IT Room |

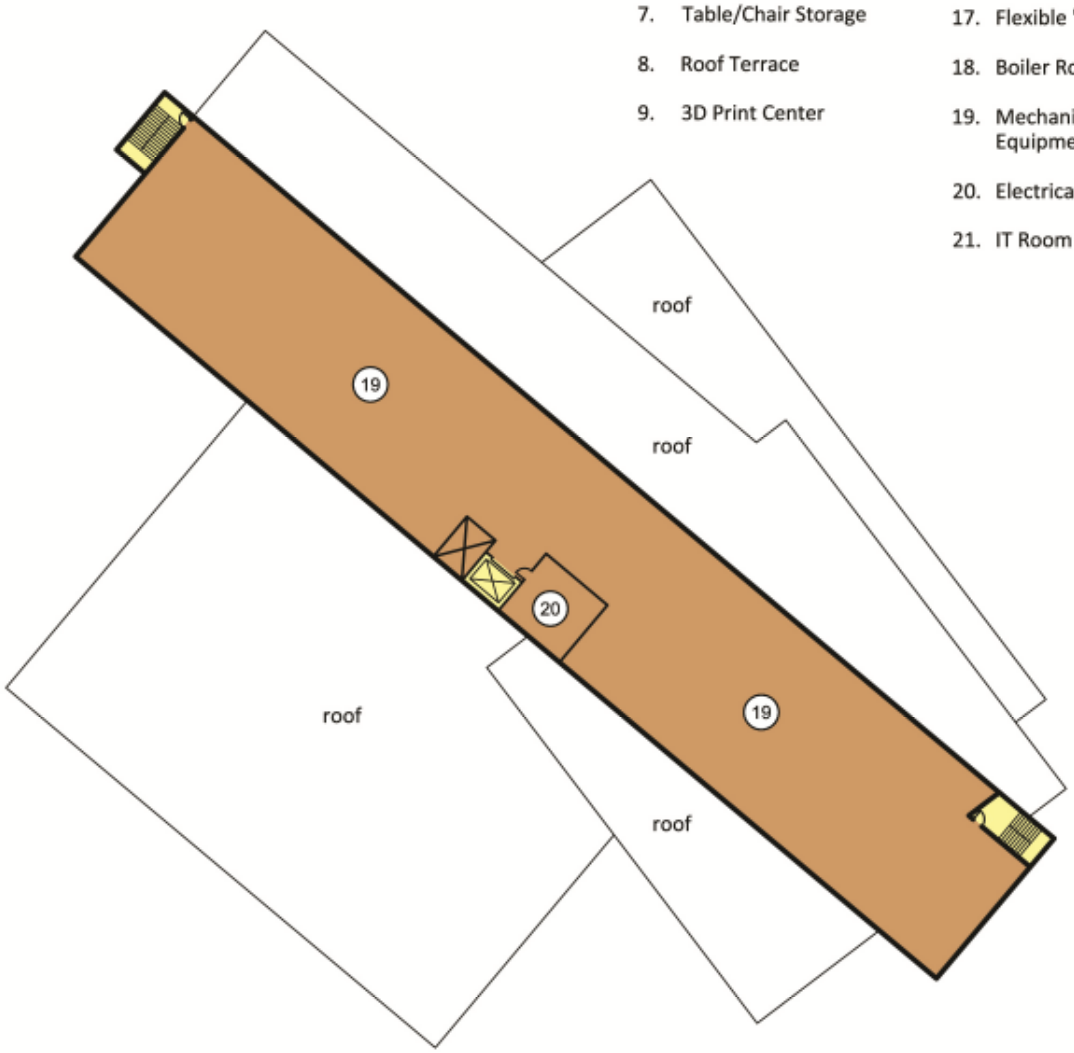
# 5th Floor Concept Plan

0 25' 50' 100'

Legend

- Common Spaces
- Technology Transfer
- Experiential Learning
- Support (Restrooms / Janitor Closets)
- Mechanical/Electrical

| # | Room |
|---|---|
| 1. | Main Lobby |
| 2. | Common Lounge |
| 3. | Small Conference Room |
| 4. | Large Conference Room |
| 5. | Multi-Purpose Room |
| 6. | Warming Kitchen |
| 7. | Table/Chair Storage |
| 8. | Roof Terrace |
| 9. | 3D Print Center |
| 10. | Office Print Center |
| 11. | Administration |
| 12. | Manufacturing "Cubes" |
| 13. | White Box Offices |
| 14. | Office of Technology Transfer |
| 15. | ANRI Computer Lab |
| 16. | Machine Shop |
| 17. | Flexible "Lab" |
| 18. | Boiler Room |
| 19. | Mechanical Equipment |
| 20. | Electrical Room |
| 21. | IT Room |



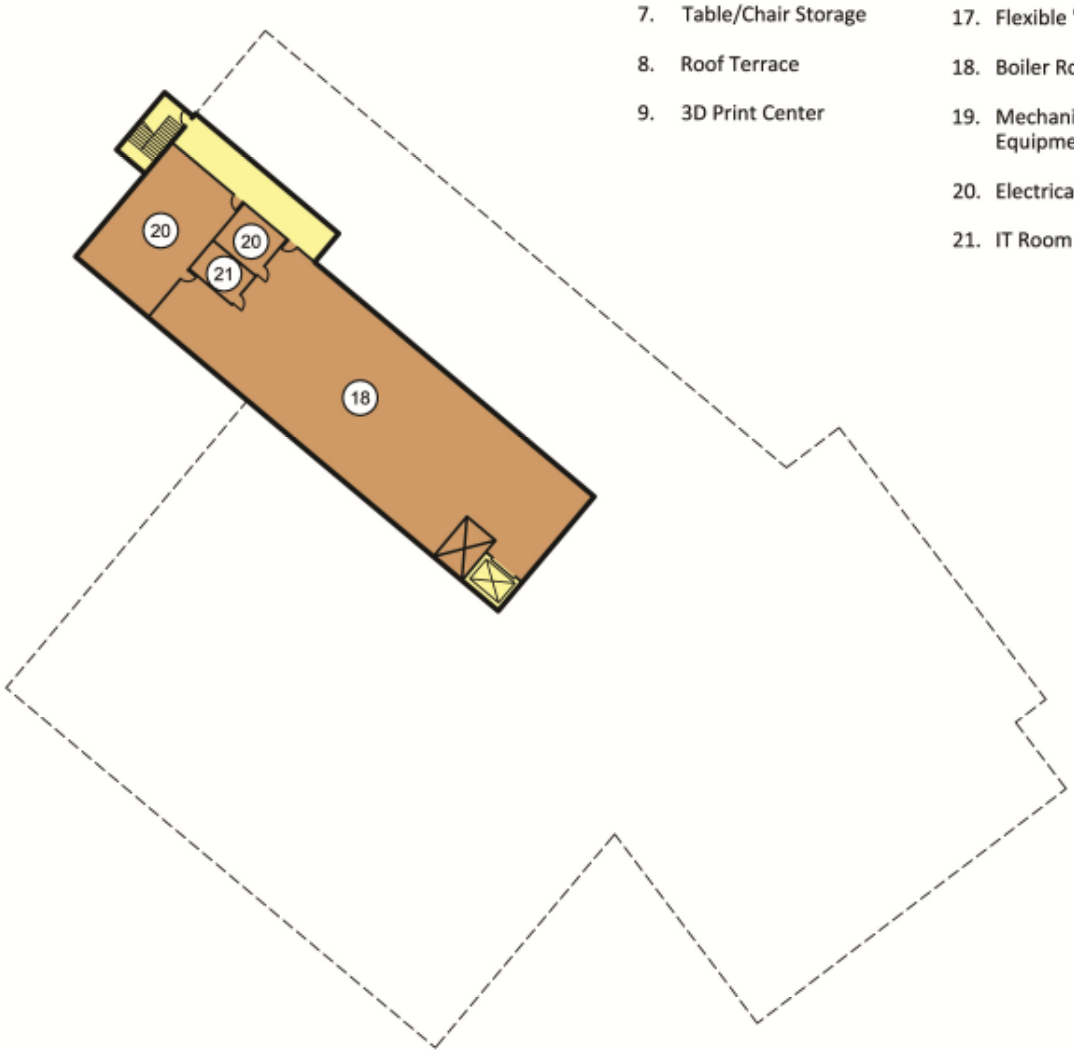

# Mechanical Penthouse Concept Plan

0 25' 50' 100'

Legend

- Common Spaces
- Technology Transfer
- Experiential Learning
- Support (Restrooms / Janitor Closets)
- Mechanical/Electrical

| # | Room |
|---|---|
| 1. | Main Lobby |
| 2. | Common Lounge |
| 3. | Small Conference Room |
| 4. | Large Conference Room |
| 5. | Multi-Purpose Room |
| 6. | Warming Kitchen |
| 7. | Table/Chair Storage |
| 8. | Roof Terrace |
| 9. | 3D Print Center |
| 10. | Office Print Center |
| 11. | Administration |
| 12. | Manufacturing "Cubes" |
| 13. | White Box Offices |
| 14. | Office of Technology Transfer |
| 15. | ANRI Computer Lab |
| 16. | Machine Shop |
| 17. | Flexible "Lab" |
| 18. | Boiler Room |
| 19. | Mechanical Equipment |
| 20. | Electrical Room |
| 21. | IT Room |




# Basement Concept Plan

0 25' 50' 100'