HEALTH TECHNOLOGY BUILDING

DRAFT

BUILDING PROGRAM

dfcm project no: 09021240
august, 2009

ajc architects

SRG PARTNERSHIP INC

OGDEN-WEBER APPLIED TECHNOLOGY COLLEGE

Contents

Acknowledgements

State of Utah Division of Facilities Construction and Management

Dave McKay	Project Manager

Ogden-Weber Applied Technology College

Collette Mercier	President
James Taggart	VP Instructional Services
Janet Olsen	Director Health Programs
Laraine Moellendorf	CNA
Amber Jenning	CNA
Tyler Call	College Services
Marta Jones	Coordinator
Lee Nelson	Counseling
Heidi Denson	Dental Assisting
Jeannie Barrette	Dental Office
Brenda Fell	Dental
Christa Wagstaff	Dental
Randy Hodges	Health Sciences
James Taggart	VP Instructional Services
Rosalie Buck	Instructional Designer
Kyle jensen	IT
Patrick Dean	Facilities
Michael Miller	Maintenance
Emma Anderson	Medical Assisting
Marilyn Holley	Medical Office Technology
Taun Carver	Nursing
Mary Lou Morales	Nursing
Deon Openshaw	Nursing
Tamie Tallant	Pharmacy Technician
Julie Hansen	Pharmacy Technician
Len Rogison	Pharmacy Technician
Mallory Twitchell	Pharmacy Technician
Cody Johnson	Phlebotomy
Fara Larsen	Phlebotomy
Heather Maw	Phlebotomy

Approvals

Ogdent-Weber Applied Technology College
Health Technology Building Program
DFCM Project No. 09021240

We have reviewed the OWATC Health Technology Building Program and warrant that it adequately represents our request for a facility to fulfill our mission and programmatic needs. All appropriate parties representing OWATC have reviewed it for completeness and accuracy.

State of Utah
Division of Facilities
Construction and Management

David G. Buxton, Director | Date

Ogden-Weber
Applied Technology College

Collette Mercier, President | Date

James Taggart, V.P. Instructional Services | Date

Janet Olsen, Director, Health Programs | Date

Patrick Dean, Director, Facilities | Date

Design Team

architectural

ajc architects
703 east 1700 south
salt lake city, ut 84105
ph: (801) 466.8818
fax: (801) 466.4411
contact: jill a. jones, AIA LEED AP

SRG Partnership
621 sw morrison
portland, or 97205
ph: (503) 222.1917
fax: (503) 294.0272
contact: jon wiener, AIA LEED AP

structural

Reaveley Engineers + Associates
675 east 500 south, suite 400
salt lake city, ut 84102
ph: (801) 486.3883
fax: (801) 485.0911
contact: jeff miller

mechanical.plumbing

Colvin Engineering Associates
244 west 300 north, suite 200
salt lake city, ut 84103
ph: (801) 322.2400
fax: (801) 322.2416
contact: fred broberg

electrical

Envision Engineering, P.C.
244 west 300 north, suite 100
salt lake city, utah 84103
ph: (801) 924.5542
fax: (801) 534.1080
contact: dave whitton

civil

Stantec Consulting, Inc.
3995 south 700 east, suite 300
salt lake city, ut 84107
ph: (801) 261.0090
fax: (801) 261.0099
contact: ken engstrom

landscape

Landmark Design
2834 south highland drive
salt lake city, ut 84106
ph: (801) 474.3300
fax: (801) 474.3303
contact: mark vlasic

cost estimator

Parametrix
7186 south highland drive
salt lake city, ut 84121
ph: (801) 733.5900
fax: (801) 733.5909
contact: j.r. anzer

Foreward

In May 2009, The State of Utah Division of Facilities Construction and Management contracted ajc architects and SRG Partnership to assist the Ogden-Weber Applied Technology College in developing a Program Document for the proposed Health Technology Building to be located on main campus in Ogden, Utah. From May through August 2009, ajc architects and SRG Partnership worked with the college administration/steering committee, as well as Health Occupations faculty and students to develop the required program of spaces on a room by room basis for the proposed building (See Section 4 for details).

A construction cost estimate was developed based on this program, and is included in the Project Cost Summary in Section 5. In addition to the program of spaces, the preferred stacking diagram and "test-fit" floor plans are also included in Section 4 of this document as a point of departure for schematic design. The preferred building siting option (included in Section 2) was selected based on the analysis of the existing site conditions. Narratives of building and systems design requirements are included in Section 3. The text and graphic information in these sections are intended to be the guide for subsequent design and construction phases.

Executive Summary . 1

PROJECT HISTORY AND JUSTIFICATION

Healthcare delivery has experienced unprecedented growth and change over the past decade. The evolution of information exchange technology and simulation-based learning, as well as changes in the global marketplace and increased population diversity, call for a dynamic approach to preparing the next generation of healthcare professionals. Schools offering education in healthcare technologies are playing a vital role in meeting the national workforce demand for more healthcare technical staff.

The Ogden-Weber Applied Technology College (OWATC), has been educating students since 1971, and is a leader in the Utah College of Applied Technology network. OWATC plays an important role in meeting the state's demand for healthcare technical staff. The administration and Health Occupations faculty work closely with local healthcare professionals to develop cutting-edge training programs and hands-on patient simulation for hundreds of students annually. The college's thirteen Health Occupations programs train nurses, medical assistants, lab and pharmacy technicians, medical office personnel, dental assistants, and phlebotomists. Open-enrollment classes at OWATC, in addition to the traditional format classes that are offered, allow for a customized educational experience and provide a unique college culture.

Executive Summary

With 600 students currently enrolled in the Health Occupations programs, the existing OWATC facilities are already pushing capacity limits. The administration and faculty foresee the need for a student capacity of 1,200 in the near future in order to accommodate the programs' growth and the region's workforce demand. Many of the Heath Occupations programs are forced to share inadequate classroom space that does not support the college's students and faculty's unique instruction style. Many of the buildings were originally constructed for purposes other than health technology labs and classrooms, and have relied on ad-hoc remodels to make due over the past four decades. In addition to these inconveniences and inefficiencies, opportunities for interdisciplinary collaboration are limited. The OWATC health technology departments are disconnected, spread across the main campus, with some departments located off-campus on the west side of the city.

To continue its role as a leader in healthcare education in Utah, the OWATC needs a purpose-built building, with adequately-sized classrooms and labs, cutting-edge technology and state-of-the-art equipment, to support teaching and learning in the current and future Health Occupations programs. Such a facility will bring together all health technology students and faculty under one roof, thus encouraging interaction, and providing greater opportunities for student-to-student mentoring and interdisciplinary collaboration. This building will increase visibility for the OWATC, and will strengthen its programs' abilities to attract and retain students and faculty. The proposed building will be a model institution for healthcare technology, and a leader in environmental sustainability. The goal for the project is to achieve LEED Gold level certification. This will provide the college with an opportunity to create a healthy, sustainable building, emphasizing energy efficiency, long-term durability, and human comfort. With open space available on the master-planned campus, providing pedestrian and vehicular connectivity to other campus amenities, and adequate utility capacity, the OWATC is primed for a state-of-the-art Health Technology Building.

PLANNING FOR THE FUTURE

The OWATC, after several years of study, with project oversight from the State of Utah Division of Facilities Construction and Management (DFCM), is now fully engaged in planning efforts for a state-of-the-art Health Technology Building to be located on the main campus. In May of 2009 ajc architects and SRG Partnership were contracted as the Programming Team to assist in the development of the Program Document, including a program of spaces, site analysis, construction cost estimate, and pre-design services for the OWATC Health Technology Building.

On June 9, 2009 the Programming Team facilitated a workshop with the administration and faculty to define the vision, or "keys to success," for the proposed Health Technology Building (See the Vision Workshop Summary in Appendix A). The following statements guided the programming phase, and are intended to provide direction for subsequent phases of design and construction:

The proposed Health Technology Building will...

… be a student-centered facility.

… create an atmosphere that supports and enhances the OWATC's unique culture - friendly and inviting.

… encourage cross-fertilization, collaboration, and sharing between Health Occupations programs.

… provide state-of-the-art classrooms and labs - right-sized for specialized instruction style.

… provide opportunities for more "real-life" training.

… accommodate growth and technological advancement, providing short-term flexibility and long-term adaptability.

… provide spaces/facilities to host events and conferences to increase visibility to the community.

… enhance safety and security for students and faculty/ instructors.

… be a model facility for future buildings on the OWATC campus as well as Health Technology programs state-wide, even nation-wide.

… express the outstanding health programs at the OWATC through architecture, by embodying the following:
- WOW factor – elegant and distinctive
- beautiful and clean, but not sterile
- balance between practical and innovative
- high tech / high touch
- be in harmony with surroundings – including existing buildings on campus, as well as the spectacular mountain scenery
- inviting on all four sides of the building
- maintenance friendly, energy efficient and environmentally sustainable
- human health and comfort – maximize natural daylight, and minimize noise

To determine the required program of spaces on a room by room basis, the Programming Team facilitated in-depth discussions with representatives from the each of the related OWATC Health Occupations departments, including: Practical Nursing, Nursing Assistant, Dental Assisting and Office Administration, Medical Assistant and Office Administration, Pharmacy Technician, and Phlebotomy Technician, as well as the representatives from the college's Administration, Facilities and Maintenance, and Student Services and, in addition, students from each of the Health Occupations programs.

Guided by the vision and the in-depth discussions, the Programming Team and the Steering Committee developed an initial program of spaces, including classrooms, labs, auditorium, formal gathering spaces, as well as informal gathering areas, office and office support spaces, circulation space, and building support spaces. This initial program of spaces was refined to eliminate unnecessary redundancies, establish efficiencies in shared spaces, and to be in line with the available construction budget and will provide 70,000 Gross-Square-Feet (GSF) of new space, including 5,000 GSF of shelled space for future program area. The program areas summarized below include all related classroom, lab, conference, and office and office support space. See Section 4 for a detailed Program of Space Needs.

BUILDING PROGRAM SUMMARY

Clinical Lab Programs	1,722 NSF
Dental Occupations Program	7,002 NSF
Medical Assisting Program*	5,835 NSF
Medical Office Technologies	2,090 NSF
Nursing Assistant Program	6,595 NSF
Pharmacy Technician Program	3,607 NSF
Practical Nursing/RN Programs	9,352 NSF
Shared Spaces	6,610 NSF
SUBTOTAL	42,803 NSF
Efficiency Factor**	0.66
Gross-Square Footage	65,000 GSF
Add-Option Shell Space for Future Program Area	5,000 GSF
TOTAL GROSS-SQUARE-FEET w/ Add-Option	70,000 GSF

Space shared with Phlebotomy.
** Accounts for dedicated circulation (stairs, halls, etc), structure, and building support spaces.

Based on the proposed program, the Steering Committee, evaluated three stacking options. Each stacking option proposed slight differences in adjacencies of each of the Health Occupations programs. Each stacking option presented different challenges and opportunities for building circulation, including public/student access to the building and each of the spaces, as well as security. Additionally, opportunities for each stacking option to maximize sustainable design were considered. Ultimately, the immediate adjacency of the two nursing programs was determined to be critical, and became the driving force for the preferred stacking solution. A hybrid of the original stacking options was generated from this workshop and is included in Section 4 as the Preferred Stacking Option.

The preferred stacking option is a two-story structure, with approximately 50% of the total program located on each level. The Preferred Stacking Option Diagram, included in Section 4, illustrates that the First Floor should include the Public lobby (accessed from the parking lot), a Student Lobby (accessed from the campus central pedestrian spine), the Auditorium, the Clinical Lab, Student Locker Room, and the Dental Occupations, Medical Assisting and Medical Office Technologies programs. Additionally, the Mechanical / Electrical spaces would be located on the main level. The Second Floor should include the Practical Nursing and Nursing Assistant programs, as well as the Pharmacy Technician program. The balance of the Second Floor should include program-related office and office support spaces, as well as a student study/gathering space. Additionally, the Add-Option for shelled space for future programs should be located on the Second Floor.

The site program will require a new delivery and drop-off area adjacent to the new building. Also, an additional 56 stall parking lot with ADA accessible stalls will be required as part of the site program. With the preferred site option, these site elements are located on the north side of the building, accessed by the campus's existing perimeter road (See Section 2).

The State's construction budget for the proposed OWATC Health Technology Building is $17,400,000 (hard costs only). The current cost estimate for the proposed program (70,200 GSF) is $18,130,049, which includes the cost for the Add-Option of 5,000 GSF of shelled space. This estimate affords approximately $242 per square-foot, which is in line with construction costs for comparable projects (See Section 6 for comparable project cost information). Note that related "soft costs" for the project are not included in this budget or estimate – those costs are identified in the overall project budget (not included in this document).The construction cost estimate includes costs to meet LEED Gold level certification and related design requirements. Costs are based on a competitive bid design-build delivery method, with a construction start date of January 2010.

BUILDING COST SUMMARY

- Architectural	$ 5,089,935	($ 78.31 / SF)
- Structural	$ 2,718,270	($ 41.82 / SF)
- Mechanical	$ 2,691,300	($ 41.40 / SF)
- Electrical	$ 1,568,250	($ 24.13 / SF)
- LEED Gold (additional cost above Silver)	$ 482,706	
SUBTOTAL (building only)	$12,550,361***	($193.08/SF)

***Cost before mark-ups:
General Conditions (7.0%),
Bonding (1.0%),
Overhead and Profit (5.0%),
Design Contingency (10.0%),
Inflation to January 2010 (2.0%)

BUILDING COSTS (hard costs including mark-ups)	$15,687,952	($241.35 / SF)
- Site Work	$ 1,742,098	
TOTAL CONSTRUCTION COSTS	$17,430,049	
- Add-Option: (5,000 GSF Shell for future program)	$ 700,000	($140.00 / SF)
TOTAL CONSTRUCTION COSTS w/ Add-Option	**$18,130,049**	

PROPOSED PROJECT SCHEDULE

The proposed project schedule is as follows:

Selection of Stage I Design-Build Finalists	September 2009
Selection of Stage II Design-Build Team	October 2009
Construction Substantial Completion	June 2011
Occupancy	August 2011

Site Analysis . 2

SUMMARY

The Site Analysis component of the Program identifies the affects of the site on the program, project cost and schedule. It also describes the physical characteristics of the proposed site and vicinity. The Site Analysis incorporates maps, photographs, and diagrams, illustrating the location, functional uses adjacent to the site, vehicular and pedestrian circulation, physical boundaries of the site, existing and proposed utilities, as well as local climate considerations.

This section concludes the preferred option illustrating potential siting of the building. The Site Analysis information is programmatic and should serve as an outline for a more detailed site analysis to be done in the design phase.

Ogden-Weber Applied Technology College's main campus is located in Ogden, Utah at the base of the rugged wasatch Mountains. Ogden is about 40 miles north of Salt Lake City, capitol city of the State of Utah.

The campus is located in a mainly residential areas to the north, east and south. There are mixed residential and light commercial zones to the immediate west of the campus. Also, there are some manufacturing/ industrial areas further west of the campus. The designated site for the new Health Technology Building is based on the college's Master Plan that was updated in 2003. The designated site for the new building based on this Master Plan will be at the heart of the campus.

SITE FUNCTIONS AND RELATIONSHIPS

OWATC is accessed from both Washington Blvd. and Monroe Blvd. These access points connect to the campus perimeter road. Several UTA bus routes serve the campus, dropping passengers off near the Business Building on the west side of campus. Pedestrian traffic on campus is mostly limited to between parking lots and the central campus pedestrian spine connecting each of the buildings via a network of sidewalks.

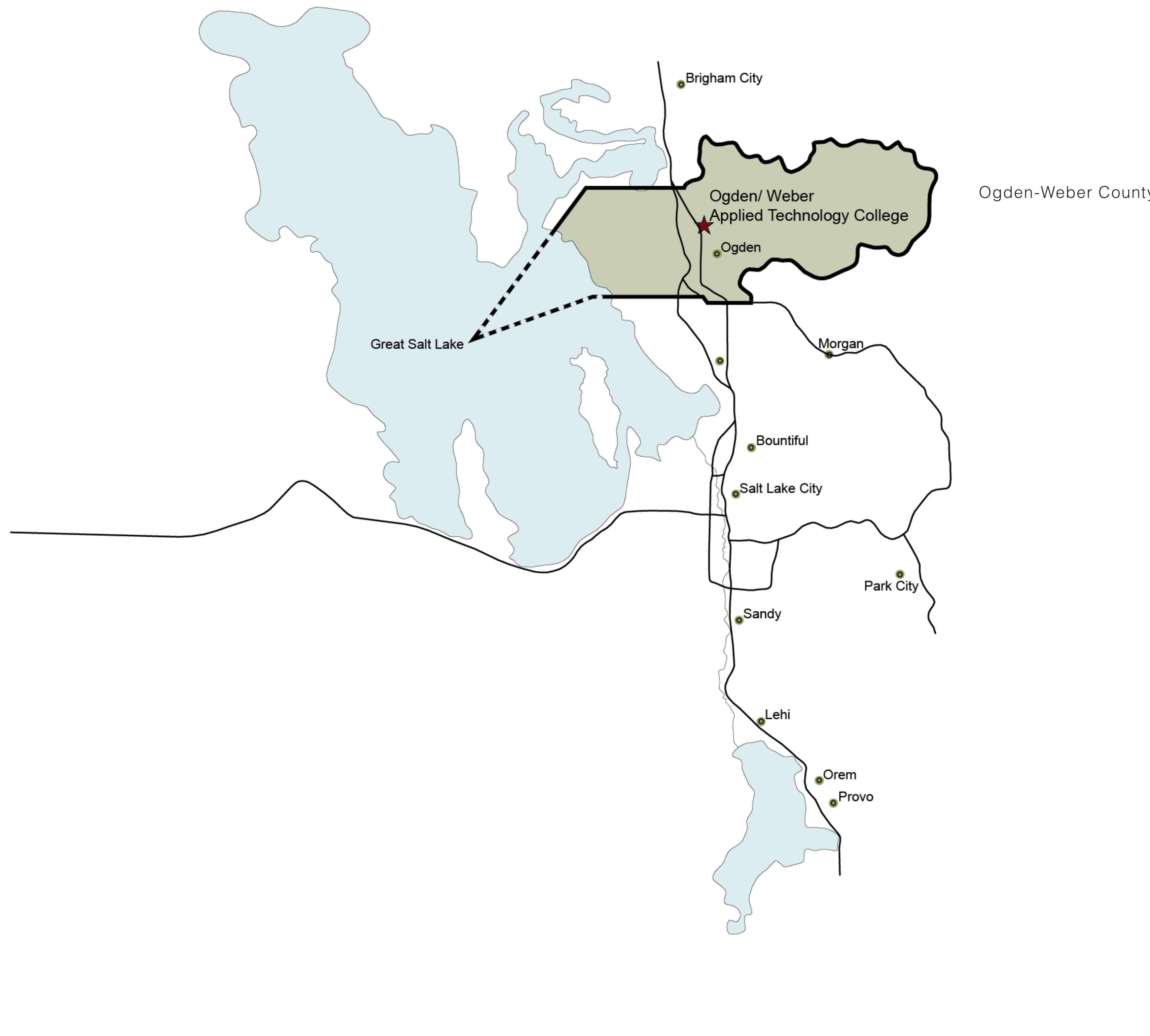
The preferred site is currently open green-space centrally located on the north side of the main campus pedestrian spine, within the perimeter access road circumference. The primary vehicular access to the preferred site is from the north, off of the existing campus perimeter road. Two existing parking lots are directly connected to the perimeter road. It should be noted that this site has been previously earmark for the Health Technology Building as recently as the updated 2003 Master Plan. This location will provide the Health Technology Building with convenient access to existing amenities on campus, including the Student Services Building, and the current Administration facility. Additionally, this location will provide pedestrian and vehicular connectivity to existing pathways (sidewalks, roads, etc). A new parking lot will be required, providing a minimum of 56 new stalls, including ADA accessible stalls will be required. The Campus Master Plan has identified a pattern of development for parking and should be followed as is feasible. Delivery access for the proposed building will also be required, and should be located with sensitivity to public/student entrance areas. While the campus has the utility infrastructure to support the proposed building, power, water, gas, sewer, storm and communication lines will require extension to the new site (See Site Utilities summary and diagram in Section 2 for detail).

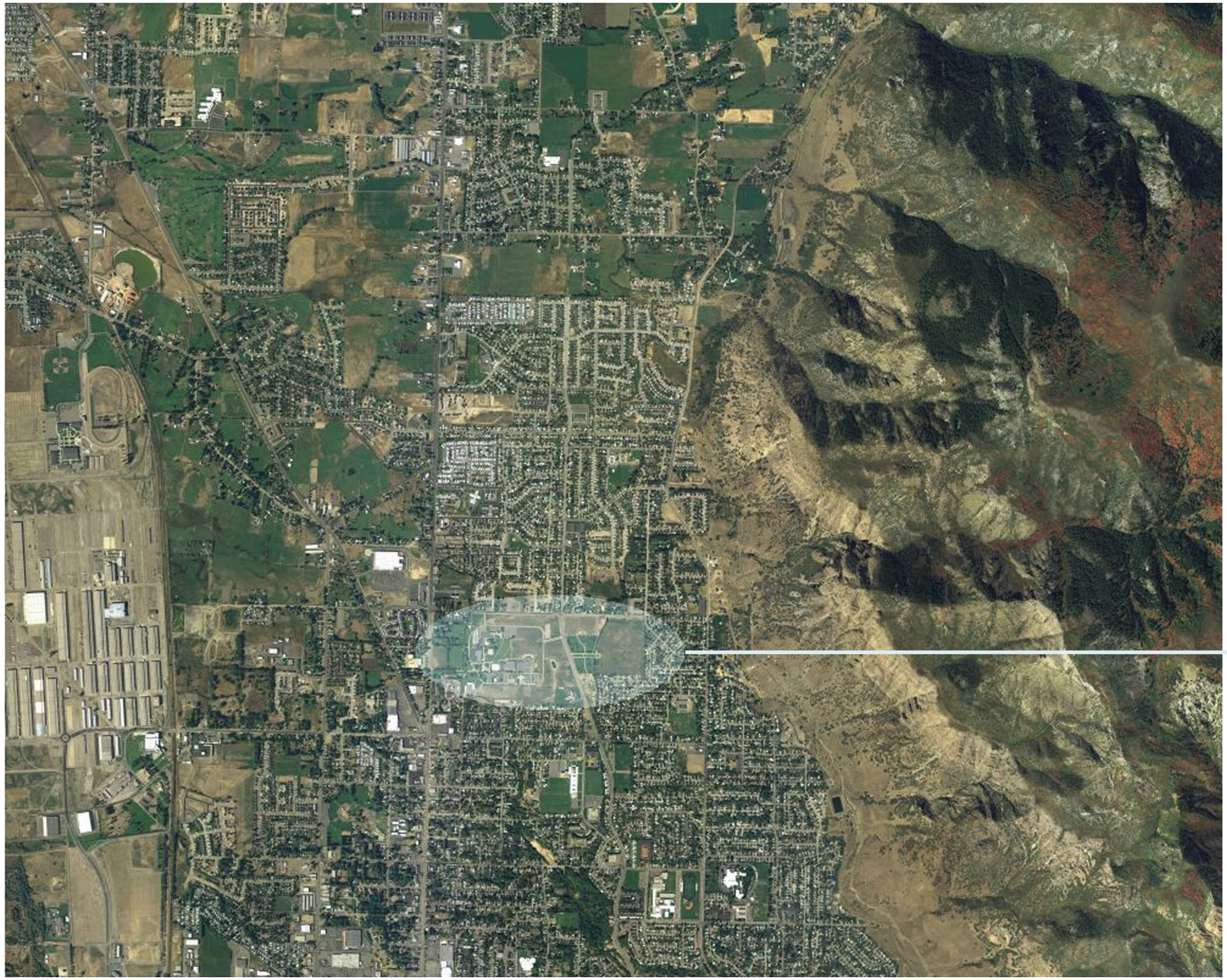
CODE AND EASEMENT RESTRICTIONS

No easement restrictions have been identified at this time. Re-verification should take place during subsequent design phases.

INDEPENDENT TESTING AND SURVEYING

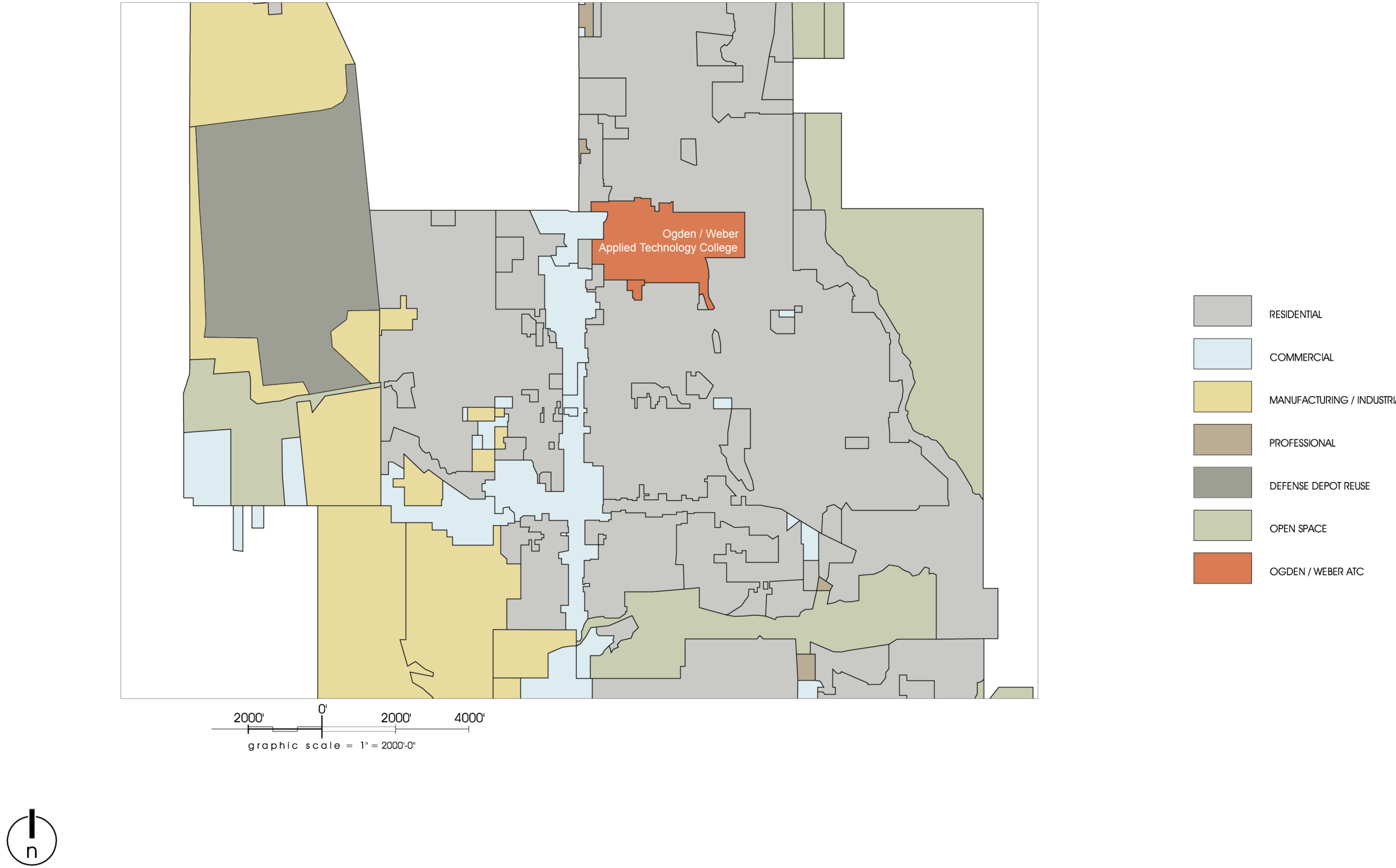
DFCM has completed both geotechnical testing and a site topographical survey. These documents are included in the Appendix.


Brigham City
Ogden/ Weber
Applied Technology College
Ogden
Ogden-Weber County
Great Salt Lake
Morgan
Bountiful
Salt Lake City
Park City
Sandy
Lehi
Orem
Provo
n



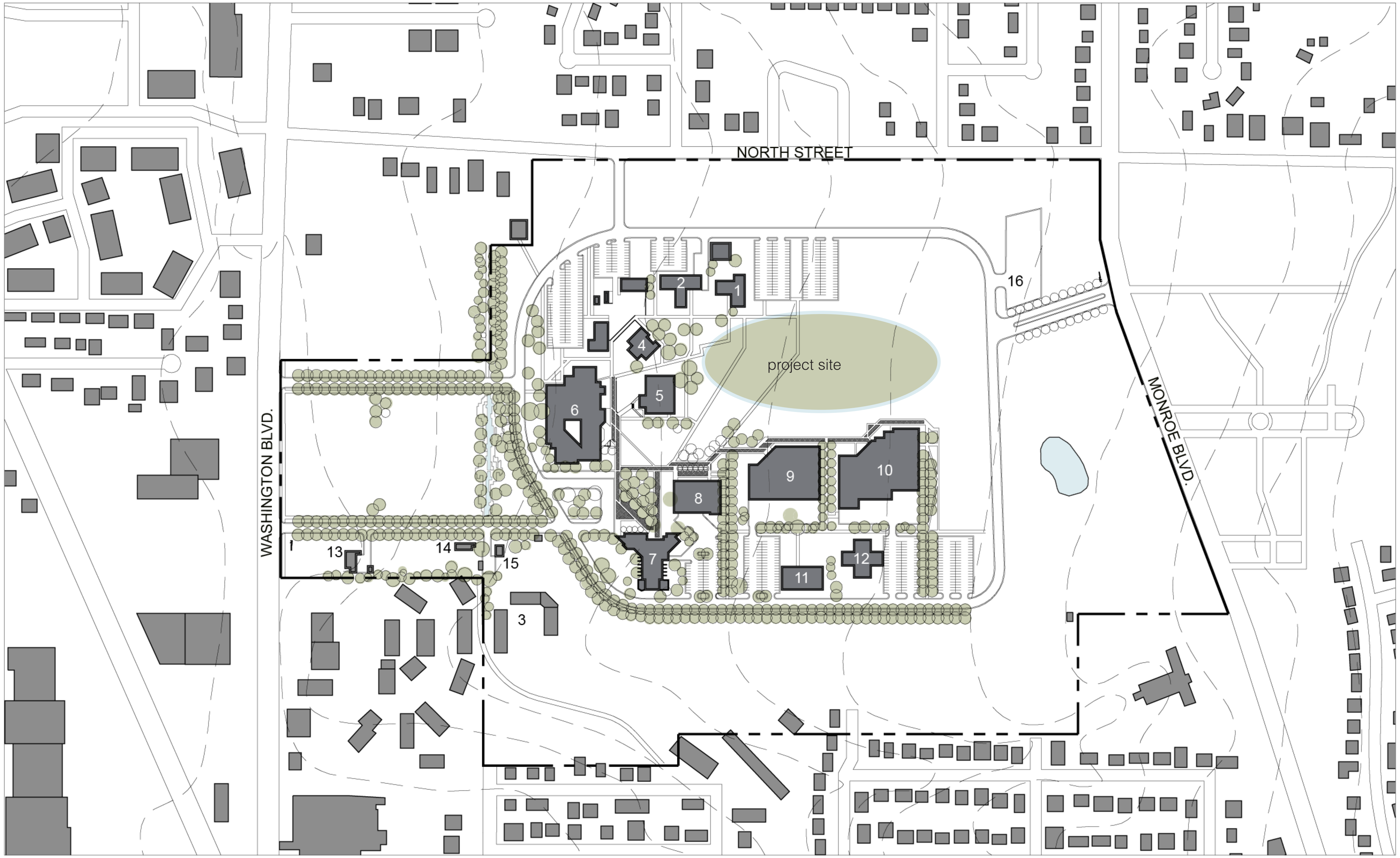
ogden - weber applied technology college

Zoning



Ogden / Weber
Applied Technology College
2000'
0'
2000'
4000'
graphic scale = 1" = 2000'-0"
RESIDENTIAL
COMMERCIAL
MANUFACTURING / INDUSTRIAL
PROFESSIONAL
DEFENSE DEPOT REUSE
OPEN SPACE
OGDEN / WEBER ATC
n

Campus Map



1- Children School North
2- Regional Resource
3- Maintenance
4- Central Heating Plant
5- Gymnasium
6- Business
7- Student Services
8- Student Union
9- Construction Technology
10- Metal Technology
11- Cosmetology
12- Children School South
13- Corporate Training Center
14- Greenhouse
15- Community Service
16- Driver Training

300' 0' 300' 600'

graphic scale = 1" = 300'-0"

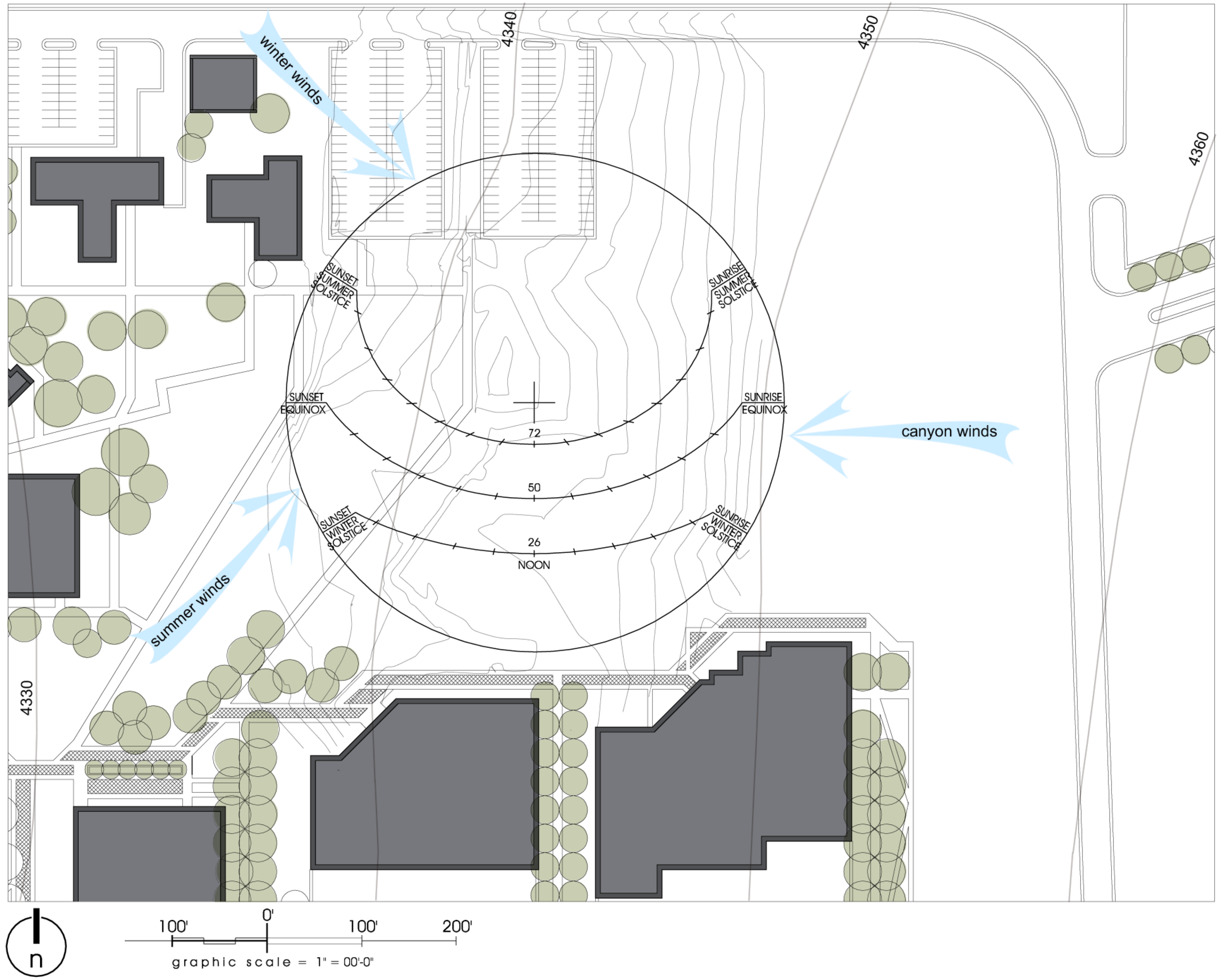
n

prepared by ajc architects + SRG Partnership

Site Climate

Ogden Metro Area, Utah, is about 4,400 feet above sea level and gets an average of 20 inches of rain per year. The U.S. average is 37 inches of rainfall annually. Snowfall in Ogden is 65 inches, with an average U.S. city receiving 25 inches of precipitation annually. The number of days with any measurable precipitation is 79 days, in the Ogden area.

On average, there are 232 sunny days per year in the Ogden, Utah metro area. The July high is approximately 91 degrees. The January low is 18 degrees. The comfort index, which is based on humidity during the hot months, is a 67 out of 100, where higher is more comfortable. The U.S. average on the comfort index is 44 degrees.



Average Summer Temperature: 76°
Average Winter Temperature: 26°
Average Annual Rain Fall: 20"
Average Annual Snow Fall: 65"

SUMMARY

An existing 6” diameter storm drain collection system with inlets exists on the site. The existing site drains from east to west.

The campus is served by an existing 8” diameter ductile iron pipe (DIP) looped water system.

An existing 8” diameter sanitary sewer connection stub extends from a sewer manhole located to the northwest of the proposed building and south of the existing Children’s School building.

The campus is supplied with natural gas service from Questar Gas Company. A 4” diameter service line feeds a master meter located adjacent to the existing Union Building. Gas piping from the meter to individual buildings on campus are maintained by campus personnel.

The campus has an existing Steam Distribution System. An existing 8” diameter steam pipe is located to the west of the proposed building, serving the existing Children’s School building from the south.

POWER

Medium Voltage Power Distribution
Currently, the campus electrical service is primary metered at 12,470 volts and receives its supply from 400 north street.

From record drawing information obtained from the OWATC, it is a 1/0 CU., 15 KV cable rated at approximately 200 Amps. According to Rocky Mountain Power, the peak demand for the last 12 month is 967 KW with a power factor of 89.77% or 1077 KVA. At 125% of peak demand, connected load on the service is 1,347 KVA or approximately 62 amps. At an estimated connected load of 25 VA per square foot and 70,000 SF, the total connected load of the new Health Technology Building should not exceed 1,750 KVA or 80 amps.

It is our opinion that the existing service should have enough capacity to accommodate the addition of the new Health Technology Building. In computing the total connected load, the Design Build Contractor shall size the electrical service equipment based on the actual loads proposed for the building. The electrical service shall be sized for the total anticipated connected load of the building including all shelled spaces.

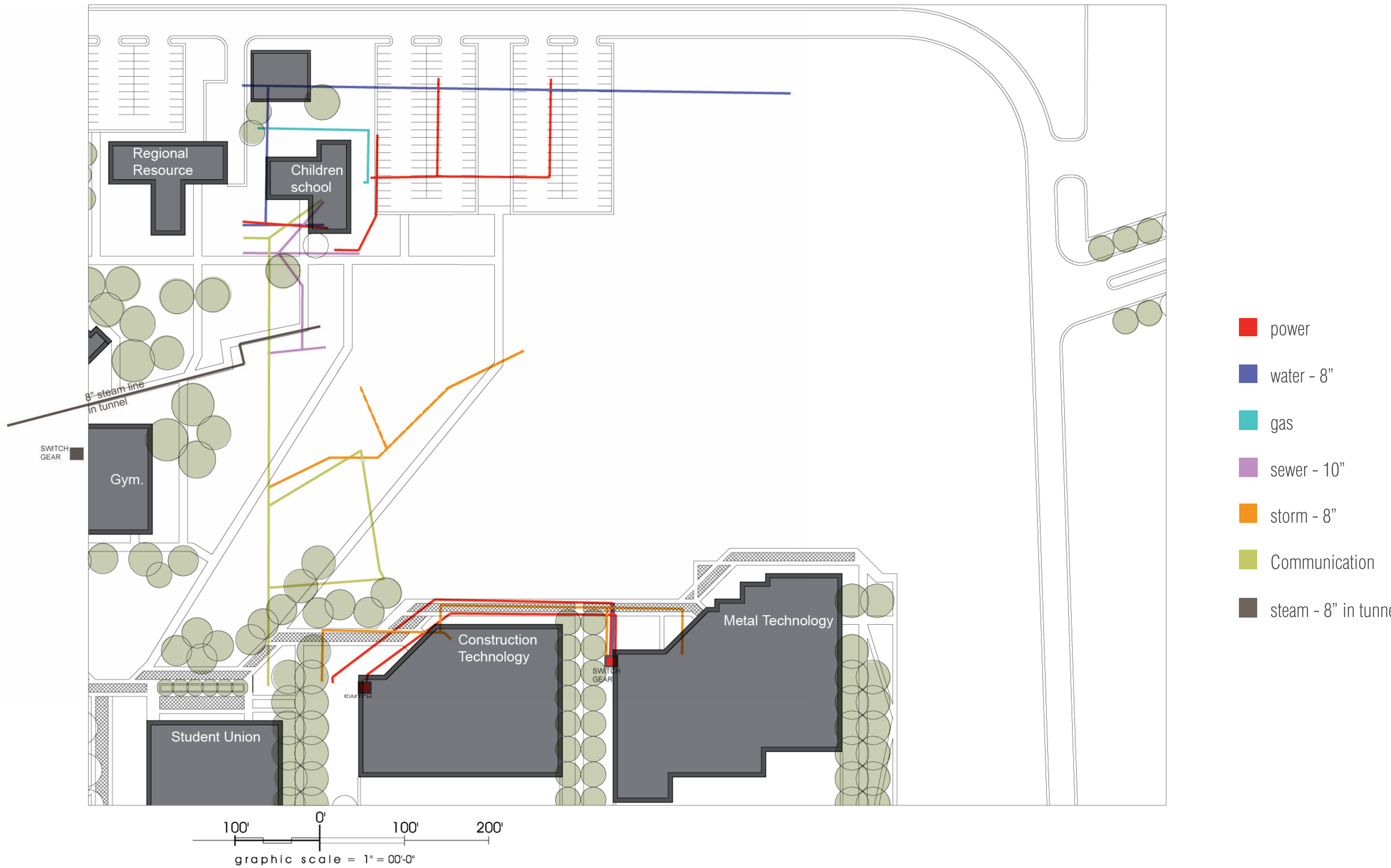
The other unfused compartment is labeled “East to Tub Resource Center” and is assumed to feed the transformer that serves the College Services and Children’s School-North Buildings; one of the fused compartments is labeled “Feed to Maintenance Building South-west” and the other compartment is labeled “Heat Plant South-east Tub”. The fused compartment labeled “Feed to Maintenance Building South-west” is believed to be a spare.

The existing transformer serving the College Services and Children’s School-North Buildings shall be disconnected from its source at the existing S & C PMH-9 and reconnected to the spare fused compartment. Three new fuses sized to the transformer will need to be provided. A new 2 x 4” concrete-encased duct bank (one conduit will contain 3 #1/0 15 KV EPR CU. with 1 #2 Bare CU. GND. and the other conduit shall be spare) shall be extended to a new S & C PMH-9 switch located near the new Health Technology Building. The duct back should route through the existing manhole near the transformer for the College Services and Children’s School-North Buildings and through a new manhole located near the new Health Technology Building.

The new S & C PMH-9 shall feed a transformer for the new Health Technology Building from one of the fused compartments; the other fused compartment shall be spare. The duct bank feeding the new transformer shall be 2 x 4” concrete-encased conduits (one conduit will contain 15 KV EPR CU. and Bare CU. GND. sized for to the transformer). Two additional duct banks each consisting of 2 x 4” concrete-encased conduits shall be routed from the new S & C switch to the east side of the project boundary and capped and marked at that location. The two additional duct banks shall route through the new manhole. Please refer to the attached Electrical Site Plan drawing. The new S & C switch and transformer shall be located in a screened enclosure.

The design build contractor shall coordinate all electrical work with Patrick Dean, Facilities Director at (801) 627-8384.

Site Utilities

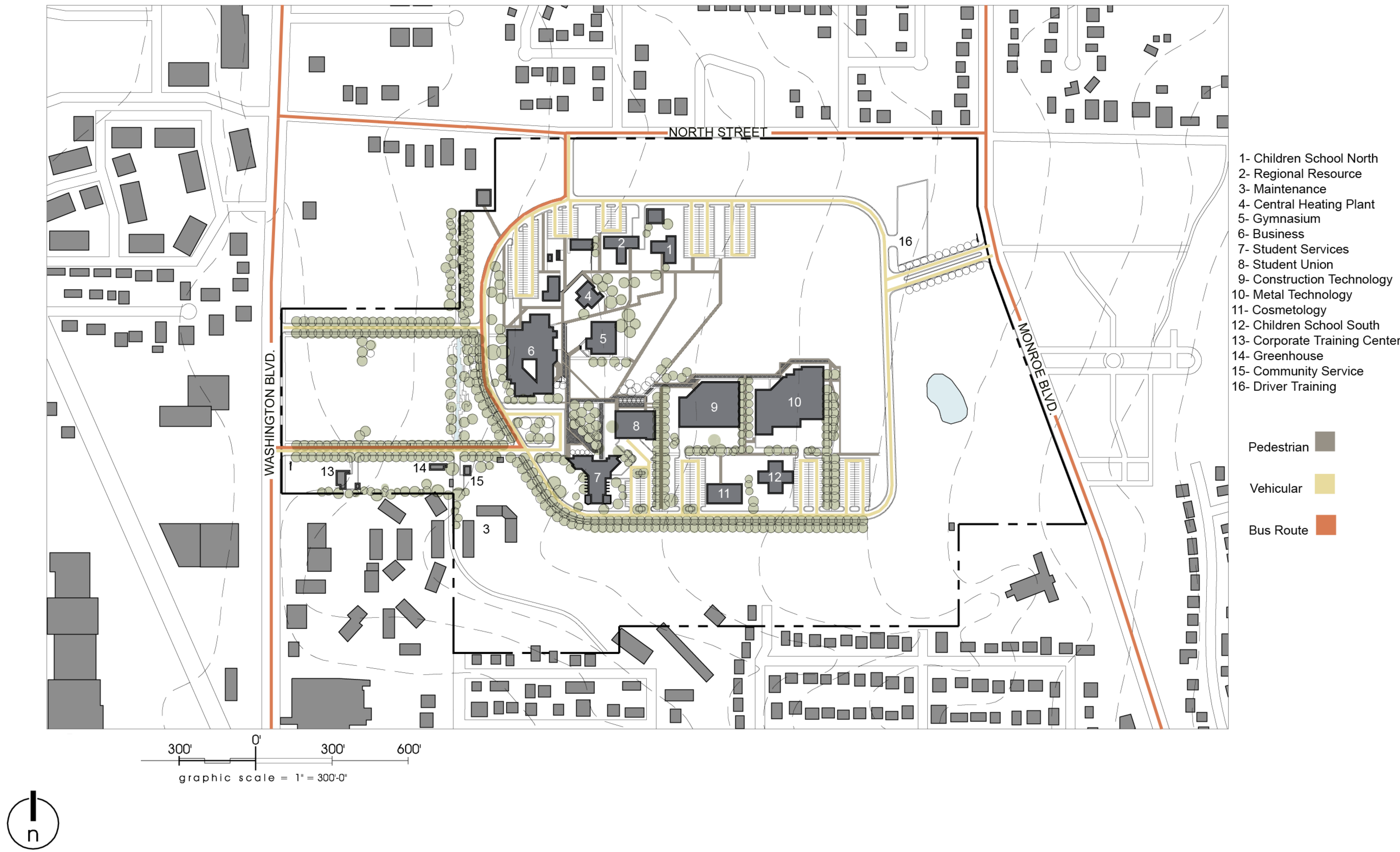


Site Circulation

There are several bus routes in the north/ south direction through Monroe Blvd. to the east of the campus and Washington Blvd. to the west. Also the bus runs through North Street in the east/ west direction connecting these two boulevards. Vehicular circulation is primarily in the perimeter of the campus with occasional small roads for deliveries to the back of the buildings. Much like the vehicular circulation, the parking lots are located on the outside edge of campus.

This allows for the interior of the campus to be vehicular free and allows for a pedestrian friendly environment in the heart of the campus. There is adequate parking for all existing buildings on campus. Although the new Health Technology Building requires an additional 140 stalls (1 stall per 500 SF per campus facilities) 84 existing stalls designated for the new building, leaving 56 new stalls required for the new Health Technology Building.

Site Circulation



Site Views

The most critical view of the site is the panaromic view of the Wasatch Mountains from the north east to the south east direction. Views of the residential neighborhood to the north, and existing campus buildings are to the south and west. Existing campus buildings are primarily one story with exception of several two story buildings. This allows for some of the taller mature trees to have a strong visual presence on the campus.

1. looking west

2. looking north

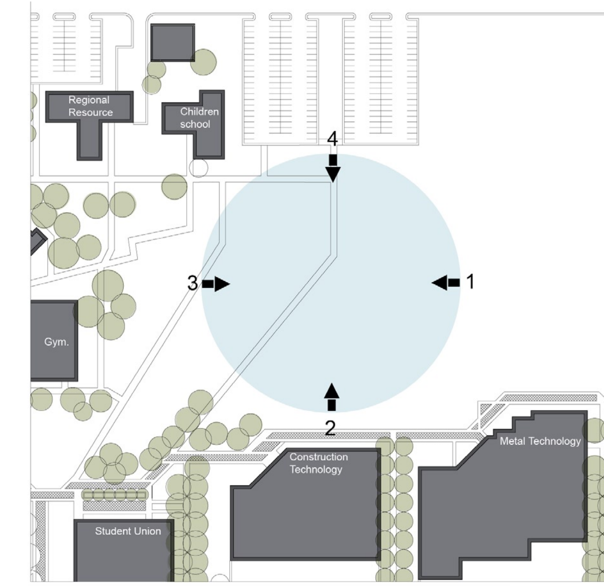
3. looking east

4. looking south

Site Views

1. looking west

2. looking north



3. looking east

4. looking south

The 2003 master plan, created by the College and MGB+A, The Grassli Group, continues to elaborate and illustrate some of the existing planning principles of the campus. Critical Master Plan principles are:

- Vehicular traffic and parking lots are located around the perimeter of the campus. The long-term vision of the site master plan “pushes” the vehicular circulation further out to the campus edge.

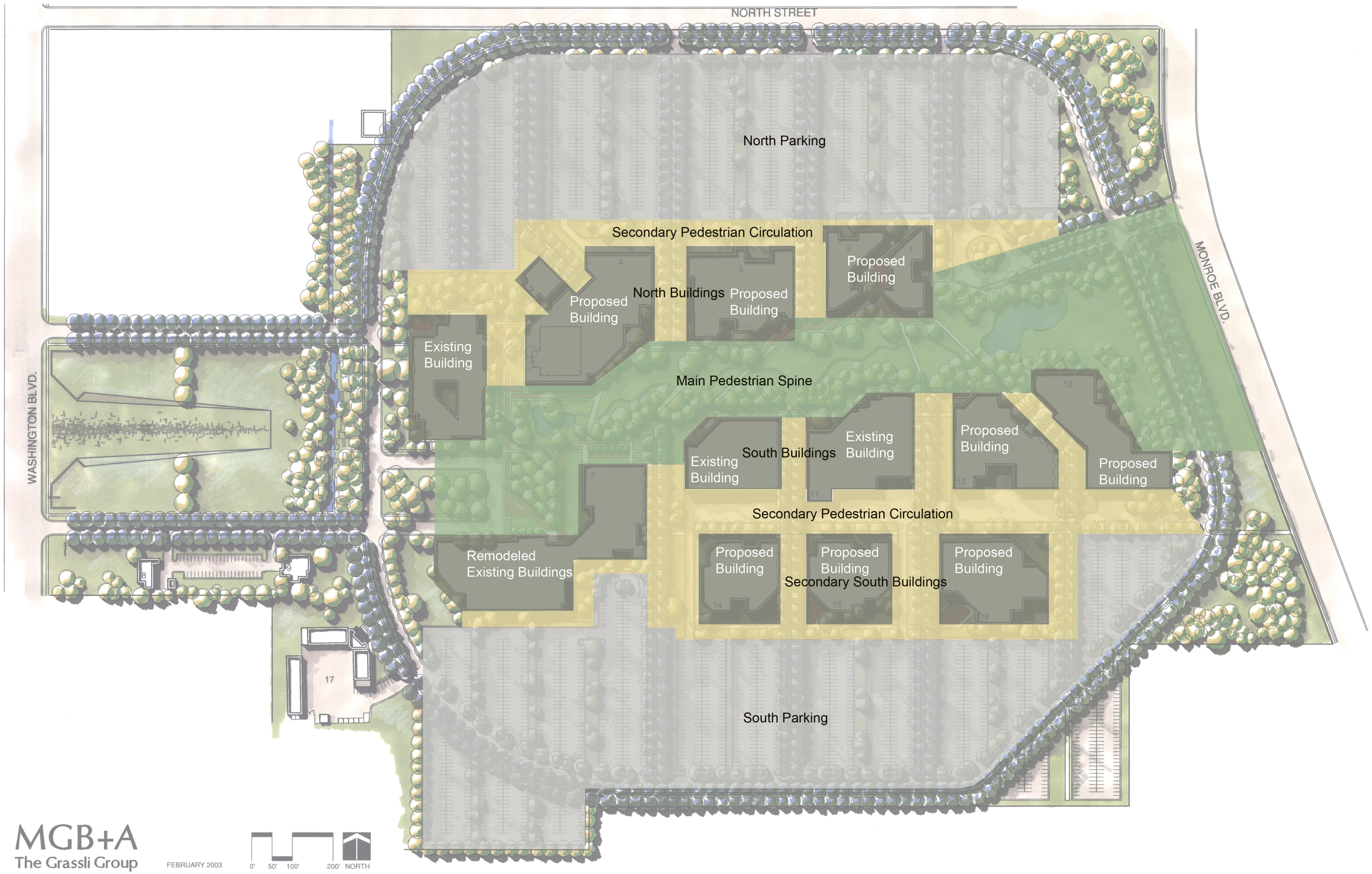
- There is a planned prominent pedestrian spine that runs in the east/ west direction in the middle of the campus. This spine steps up gradually to the north as it moves to the east to preserve views of the Wasatch Mountains.

- The location of all new major campus buildings should define the edge of this central spine.

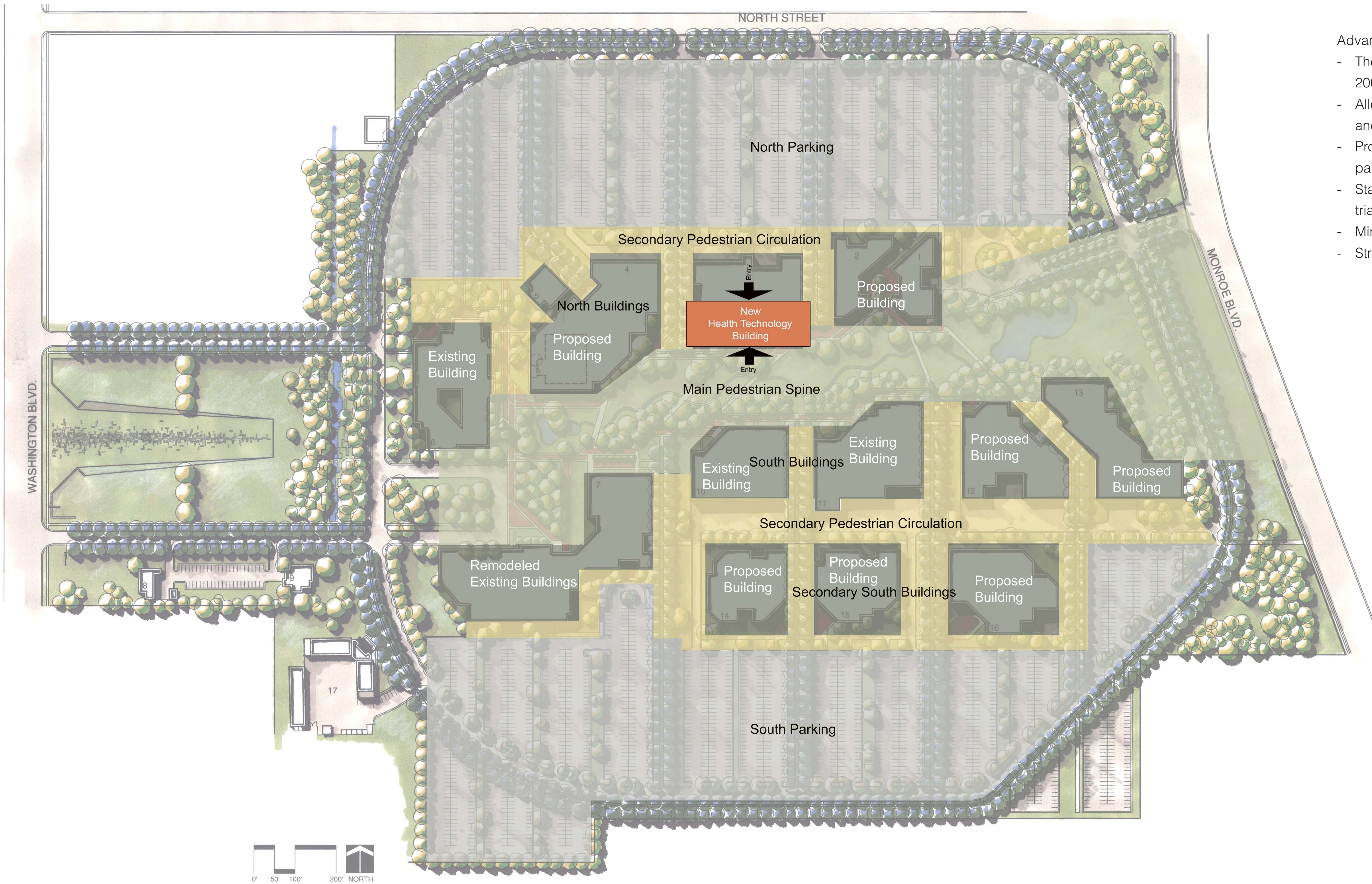
- A second tier of pedestrian circulation running east-

Master Plan


NORTH STREET
MONROE BLVD.
WASHINGTON BLVD.
LEGEND
1. ADMINISTRATION
2. FUTURE BUILDING
3. HEALTH PROGRAM
4. FUTURE BUILDING
5. CENTRAL HEATING
6. BUSINESS BUILDING
7. STUDENT CENTER
8. CORPORATE TRAINING
9. FUTURE CORPORATE TRAINING
10. CONSTRUCTION TECHNOLOGY
11. MANUFACTURING TECHNOLOGY
12. FUTURE BUILDING
14. FUTURE BUILDING
15. FUTURE BUILDING
16. FUTURE BUILDING
17. MAINTENANCE
OGDEN/WEBER APPLIED
TECHNOLOGY COLLEGE
LONG RANGE MASTER PLAN
MGB+A
The Grassli Group
FEBRUARY 2003
0' 50' 100' 200' NORTH


NORTH STREET
North Parking
Secondary Pedestrian Circulation
Proposed Building
North Buildings
Proposed Building
Proposed Building
Existing Building
MONROE BLVD.
WASHINGTON BLVD.
Main Pedestrian Spine
South Buildings
Existing Building
Existing Building
Proposed Building
Proposed Building
Secondary Pedestrian Circulation
Remodeled Existing Buildings
Proposed Building
Proposed Building
Proposed Building
Secondary South Buildings
South Parking
MGB+A
The Grassli Group
FEBRUARY 2003
0' 50' 100' 200' NORTH

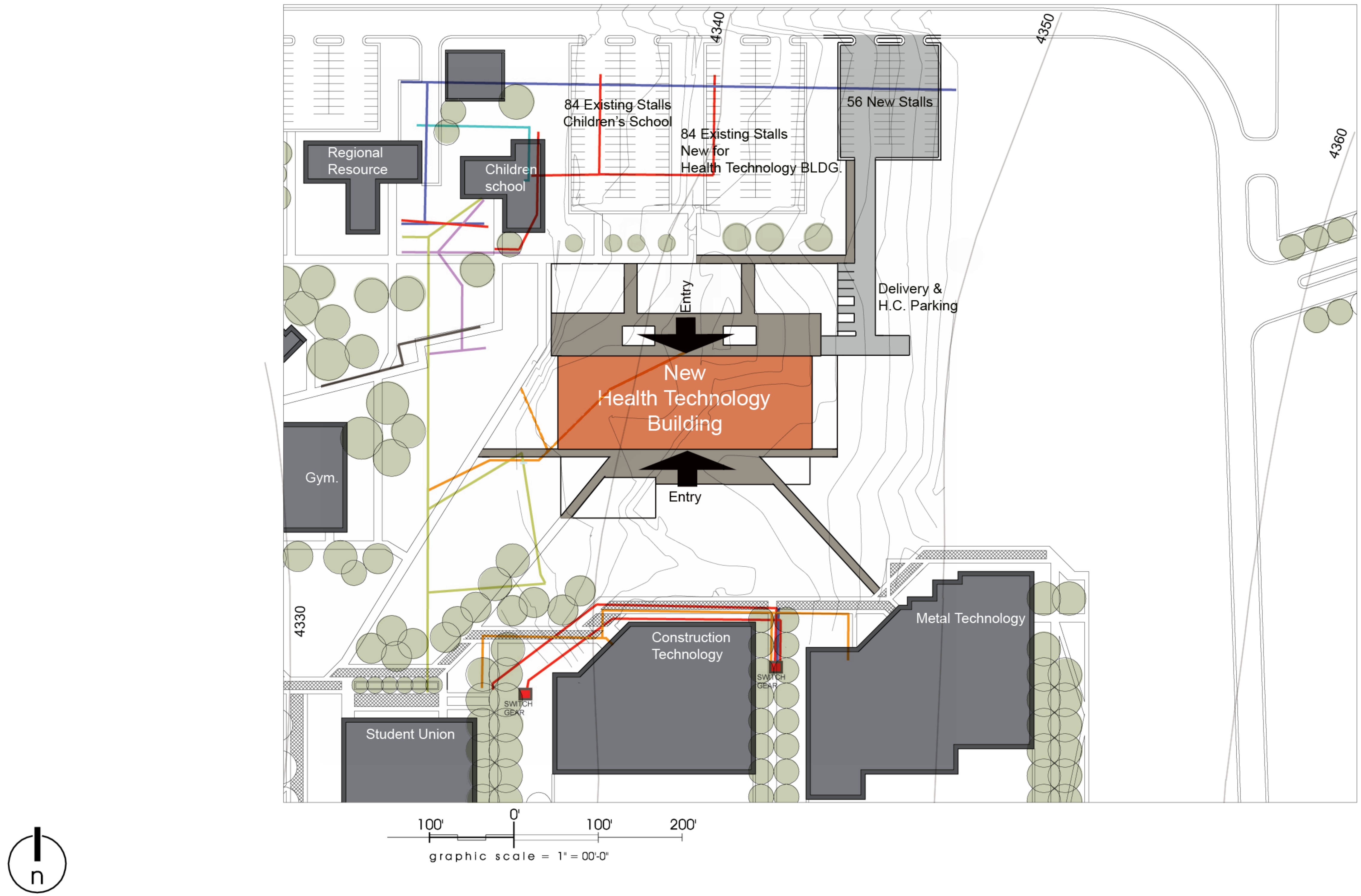
Preferred Site Option



Advantages:

- The building's proposed location supports the 2003 master plan.
- Allows for view corridors between the existing and future buildings to remain.
- Provides proximity to the existing designated parking for the new building.
- Starts to define the edge for the main pedestrian spine in the center of the campus.
- Minor impact to the existing utility lines.
- Strong proximity to other buildings on campus.

Preferred Site Option



Parking Requirements:
1 stall per 500 S.F.

70,000 S.F. - 140 required
84 Existing Parking Stalls

56 New Required

New Parking & Paving

New Sidewalks & Plaza

power

water - 8"

gas

sewer - 10"

storm - 8"

Communication

steam - 8" in tunnel

STORM WATER MANAGEMENT

The existing site drains from the east to the west. Gentle swales and landscaped berms will intercept storm water runoff and direct flow away from the building to existing flow patterns and a new storm water collection system. Storm water detention / retention may be accomplished using a landscaped retention pond/bio-swale, sized to maintain existing storm water runoff rates. The outfall of this pond will be to an existing storm water collection system.

Alternatively, storm water detention / retention could be achieved using an underground system if a surface pond is not desirable.

An existing 6" diameter storm drain collection system with inlets exists on the site. New storm drain cleanout boxes, catch basins and piping, installed around the new building, will replace the existing system as required to accommodate new construction.

WATER DISTRIBUTION

The campus is served by an existing 8" diameter ductile iron pipe (DIP) looped water system. This piped system is located to the north of the proposed building in the existing parking lots. New connections from the existing 8" dia. DIP, extending to the proposed building, will provide both potable and fire protection service.

SANITARY SEWER

An existing 8" diameter sanitary sewer connection stub extends from a sewer manhole located to the northwest of the proposed building and south of the existing Children's School building. The extension of this sewer line to the East side of the proposed delivery and handicap parking lot will provide a future sanitary sewer service continuation.

Sewer service for the proposed building will be provided by connecting a lateral pipe to the new 8" diameter sewer extension.

NATURAL GAS

The campus is supplied with natural gas service from Questar Gas Company. A 4" diameter service line feeds a master meter located adjacent to the existing Union Building. Gas piping from the meter to individual buildings on campus are maintained by campus personnel.

New service to the proposed building may be extended from existing campus gas lines located to the west of the existing Children's School building.

STEAM DISTRIBUTION

The campus has an existing Steam Distribution System. An existing 8" diameter Steam pipe is located to the West of the proposed building, servicing the existing Children's School building from the South.

The extension of this steam line to the East side of the proposed delivery and handicap parking lot will provide a future steam connection for future campus expansion. Steam service to the proposed building will be provided by connecting to the new 8" dia. steam piping.

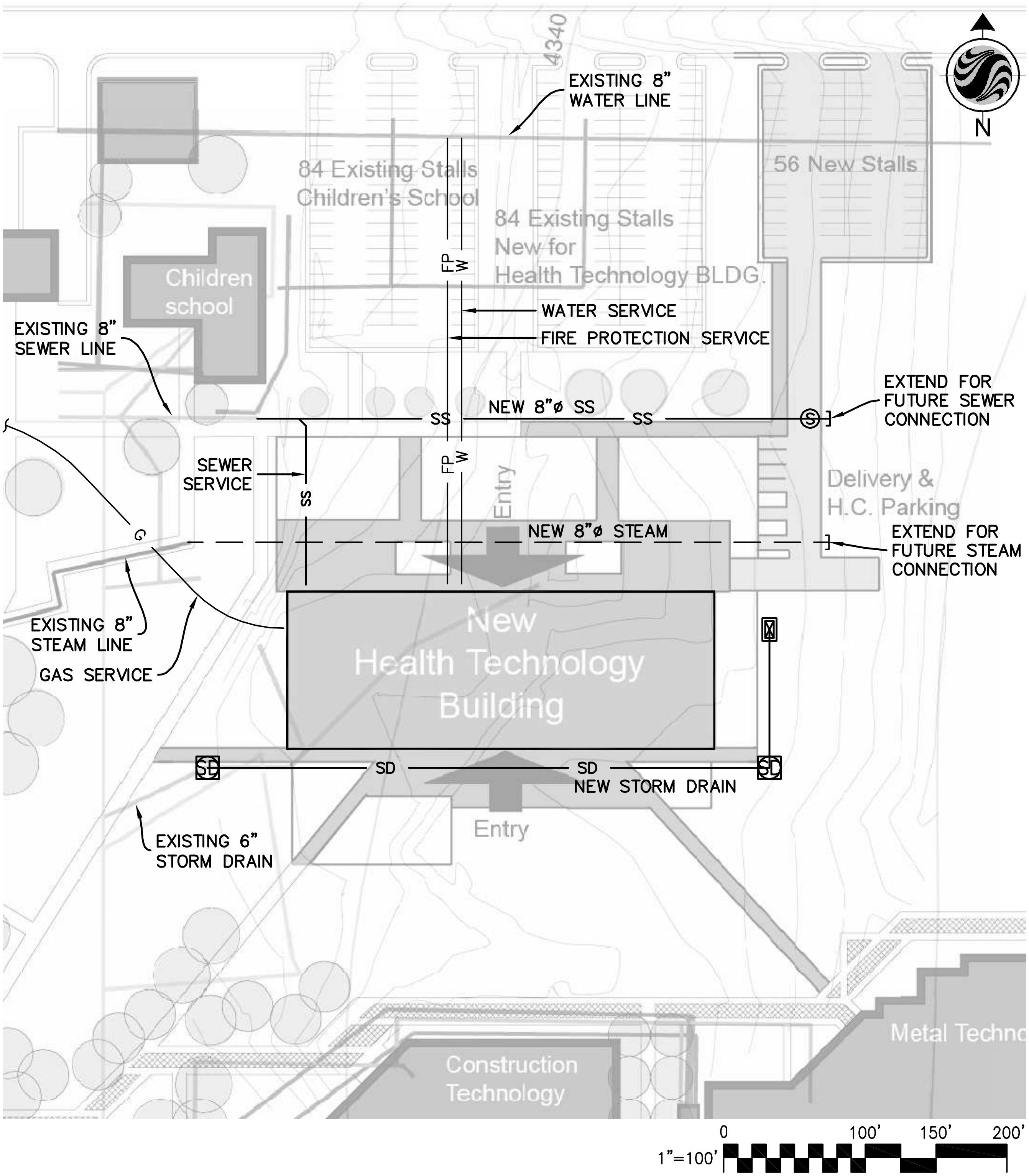
LEED REQUIREMENTS FOR 'SILVER' RATING

<u>SS Credit 6.1: Stormwater Design – Quantity Control:</u>
Excavation and construction of a detention/retention pond will reduce increased storm water runoff as a result of new improvements including roofs and paved surfaces. Additionally, a detention/retention pond would be required to accommodate the flow capacity limitations of the existing 6" dia. storm drain pipe described in the STORM WATER MANAGEMENT section.

<u>SS Credit 6.2 Stormwater Design – Quality Control:</u>
Water treatment will be obtained by the infiltration action of the retention pond identified above. BMP's such as 'Snout' hoods installed in catch basins and vegetated swales will provide additional storm water treatment.

SUSTAINABILITY - HIGH PERFORMANCE BUILDING STANDARDS:

Apart from LEED Gold Certification requirements, no civil or site specific related items are applicable.


4340
EXISTING 8"
WATER LINE
N
84 Existing Stalls
Children's School
56 New Stalls
84 Existing Stalls
New for
Health Technology BLDG.
FP
W
Children
school
WATER SERVICE
FIRE PROTECTION SERVICE
EXISTING 8"
SEWER LINE
EXTEND FOR
FUTURE SEWER
CONNECTION
NEW 8"ø SS
SS
SEWER
SERVICE
Delivery &
H.C. Parking
Entry
NEW 8"ø STEAM
EXTEND FOR
FUTURE STEAM
CONNECTION
G
EXISTING 8"
STEAM LINE
GAS SERVICE
New
Health Technology
Building
SD
NEW STORM DRAIN
Entry
EXISTING 6"
STORM DRAIN
Metal Techno
Construction
Technology
0
100'
150'
200'
1"=100'

SITE AND LANDSCAPE ANALYSIS AND IMPLICATIONS

The Health Technology Building is sited in a central campus location on the north side of the wide and linear “campus greenway.” Primary access to the building is from the existing north loop road for those arriving by vehicle; pedestrian access is on sidewalks and walkways located on the south side of the building. Existing campus buildings are located primarily to the west and south of the building site, with areas to the north and east undeveloped and planted in grass or fields.

The existing landscape setting includes two-double loaded parking lots north of the building site; existing campus buildings to the west; a large expanse of grass immediately to the south with existing campus buildings on the opposite side of the “campus greenway”; and open fields/lawn areas to the east. A few maturing trees are located along the south edge of the site, otherwise the surroundings are relatively open. The existing parking lot north of the building site will remain, with an additional smaller lot provided to the east to accommodate parking requirements of the project. It is assumed that all parking lots will be upgraded to include shade trees, pedestrian facilities and water-conserving landscape treatments when complete.

The existing Campus Master Plan has been laid out to capitalize on spectacular views of the Wasatch Mountains to the east, utilizing the “campus greenway” as the primary open space link. Far views north of the building also include the Wasatch Mountains, although the views in this direction are less dramatic and further away. Views to the south are flat and open; views to the east are terminated by lines of trees, with occasional glimpses of existing campus buildings beyond.

According to the existing Campus Master Plan, the primary pedestrian connection is located on the south side of the building. A linear east-west oriented entry plaza is also assumed in this location. The plaza and associated landscape treatments are intended to link the Health Technology Building with the “campus greenway”.

The north side of the building is also intended to include a plaza with pedestrian connections, but focused on creating a good entry experience for people moving from their cars to the building. Both plazas should take advantage microclimatic conditions such as solar access, shading and seasonal winds.

Pedestrian sidewalks extend in a southwest direction across the “campus greenway” toward existing campus buildings. It is assumed that these walkways and the open space corridors on either side of the building will be developed as indicated in the existing Campus Master Plan.

The look and feel of the campus is decidedly contemporary, incorporating simple geometrics, layouts and building configurations with generous open spaces and parking areas. The existing campus and outdoor spaces are relatively well-treed and shady. Buildings to the west of the building site include a few small meeting places or nodes, although the overall feeling of the campus is open and incomplete. The lack of mature trees and overhead shading exacerbates the open feel, particularly to the east.

GENERAL SITE AND LANDSCAPE PRINCIPLES

- Review the existing OWATC Master Plan regularly to ensure the building and landscape are coordinated with the overall campus design. Some of the key campus relationships to be considered when designing the outdoor environment of the Health Technology Building include:
    - Campus Access Points and Gateways
    - Streetscapes and Campus Perimeters
    - Campus Landscape Zones and Open Spaces
    - Campus Parking Layout and Vehicular Circulation
    - Pedestrian Circulation Patterns and Systems
    - Building Entry Zones and Pedestrian Connections
    - Public Art, Monuments and Furnishings
    - Signage and Wayfinding
- Include a coordinated system of hard surfaces, plant materials and furnishings should be used to provide order and help ensure that the site is coordinated with the overall campus landscape design.
- Ensure that the site and landscape design is on par with the building.
- Design the site and landscape in a manner that anticipates future growth and change.
- Incorporate a system of integrated paths and pedestrian amenities to encourage walking and biking on campus.
- Develop outdoor landscape spaces that are hierarchical and interconnected.
- Provide a range of outdoor spaces to accommodate meeting, gathering, seating, outdoor dining and instruction.
- Develop social gathering spaces near building entries that are both functional and pleasant.
- Utilize landscape forms and concepts that respond to the programming needs of the building while respecting the forms and concepts of the existing campus.
- Utilize landscape treatments that are sustainable and which conserve resources.
- Reduce solar heat gain through the use of light-colored paving surfaces and the generous use of shade trees. Providing shade over 50% of the site can result in an additional LEED point toward Gold Certification.
- Preserve existing trees and other landscape features to the greatest degree possible.

- Design the site to receive credit for Water Efficient Landscaping that reduces water use by 50% as part of achieving LEED Gold Certification. Important concepts to help achieve this goals include the following:
  - Limiting the use of lawn and turf or avoiding their use altogether;
  - If lawns are necessary, utilizing alternative turf types that require less water;
  - Maximizing surface areas that require little or no supplementary irrigation;
  - Applying “water-wise” and drought-tolerant planting treatments;
  - Utilizing native and adapted plant species that require little supplementary water;
  - Applying regionally-appropriate planting and irrigation techniques; and
  - Coordinating landscape maintenance and irrigation with campus routines and standards; and
  - Including water monitoring systems as part of the landscape design and maintenance routine.
- Include educational, directional, and interpretive signage to strengthen the image of the Health Technology Building as part of the OWATC campus.
- Integrate and enhance parking areas and service zones through the use of appropriate landscaping approaches and the generous use of trees.
- Provide a coherent transition between the Health Technology Building and adjacent traditional campus areas.
- Coordinate with local law enforcement agencies to ensure the landscape design meets Crime Prevention Through Environmental Design (CPTED) principles.
- Maintain existing views of the mountains to the east and the campus to the south and west.
- Provided a range of site amenities including comfortable furnishings and well-lit outdoor spaces.
- Provide clear indication of access and arrival from the adjacent road and parking lots.
- Develop parking lots that are inviting and pleasant.
- Ensure compliance with the Americans with Disabilities (ADA) regulations and other health, safety, and welfare requirements.
- Provide a range of smaller nooks, meeting places, outdoor teaching spaces nodes, niches, and comfortable seating areas within and along the edges of the entry plazas.

GENERAL SUSTAINABILITY PRINCIPLES

- Develop the site and landscape of the Health Technology Building in a manner that conserves resources and is energy efficient, durable and minimizes maintenance.
- Incorporate native and regionally appropriate landscape approaches that conserve water.
- Reduce the Urban Heat Island Effect through the use of light colored paving and generous use of trees for shading.

LANDSCAPE ZONES

As detailed below, the site surrounding the Health and Technology Building has been divided into five distinct landscapes, each with specific needs and approaches. The five zones are:

A. Transition Areas

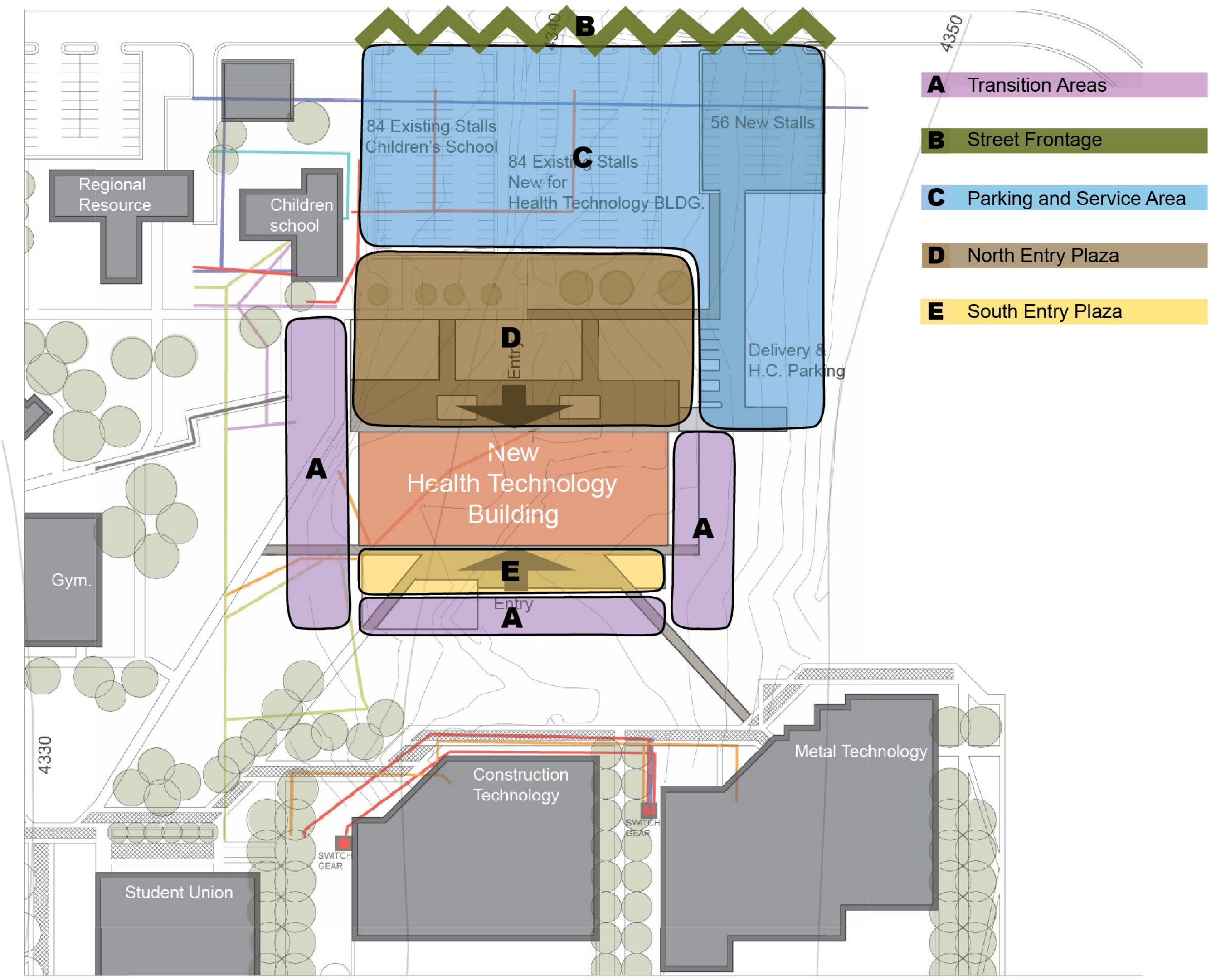
B. Street Frontage

C. Parking and Service Area

D. North Entry Plaza

E. South Entry Plaza

Detailed landscape treatments and design concepts are provided in the following text.



Landscape Zones

A. TRANSITION AREAS

The Transition Areas help link the Health Technology Building with the rest of the OWATC campus, which is dominated by green lawns and which has an open, unfinished feel. Since additional lawn and grass areas are not encouraged, these areas should be designed to help create a soft connection with the existing campus on the edges of the site. Transition Area plantings should be low and sparse on the edges, becoming increasingly large and dense as one moves toward the building. Plants should be carefully selected from the Landscape Program Plant Palette, at the end of this section, and located in a manner to enhance the “feathered” effect. Since much of the Transition Area is located on the south side of the building, deciduous trees should predominate, providing adequate shade against hot summer sun, yet allowing the warm rays of winter sun to reach the building and adjacent plaza areas after the leaves fall.

As with the rest of the site, the Transition Areas should be designed with water-wise plants and water-conserving irrigation methods. No furnishings are envisioned in this area. Pedestrian-scale lighting should be provided according to campus standards. Orientation and wayfinding signage should also be included.

B. STREET FRONTAGE

The Street Frontage provides a first glimpse of the building to users and visitors arriving by vehicle from the north side of the building. Trees and plants in this area should enhance the ‘sense of arrival’ while helping link the site with the campus. Large shade trees used elsewhere along the campus roadways (London Plane Trees, for example) should be provided within the parking strip, with additional water-wise shrubs, perennials and ornamental grasses provided to complete the edge. A higher concentration of ornamental grasses and colorful perennials should be provided near the parking lot access entry points to emphasize the arrival experience. Street lighting and orientation/wayfinding signage should be provided according to campus standards.

C. PARKING AND SERVICE AREA

The Health Technology Building Parking and Service areas should be enhanced with broad trees that maximize shade and help reduce the urban heat island effect. Paving should be light colored concrete in order to reduce solar heat gain and to help achieve LEED Gold Certification. Parking medians and islands should include a mix of large shade trees, shrubs, perennials and ornamental grasses to help reduce the utilitarian nature of the parking and service areas and to provide visual buffering. Ornamental grasses and colorful perennials should be used near parking entry points to emphasize the arrival experience, and to provide a seamless connection with the Street Frontage. Pedestrian pathways should be located within the north-south running medians that separate the parking areas, providing safe pedestrian access from the parking lot to the building.

The pathways should be delineated from the parking lots and vehicular circulation areas through the use of special paving materials (light-colored concrete or concrete unit pavers), bollards, curb treatments and traffic calming.

Water-wise decorative grasses and perennials should be massed within the parking islands and buffers to help link the parking lots with the established campus areas to the west. The parking lots should include lighting that meets the needs of both vehicles and pedestrians, with informational and wayfinding signs provided according to campus standards.

D. NORTH ENTRY PLAZA

The North Entry Plaza is the primary access point for those arriving by automobile. The plaza links the building with the Parking and Delivery Area, providing a place for vehicle drivers to meet and gather before entering the building. Since the plaza is located on the north side of the building, the plaza will be cool and pleasant in the summer months and cooler in the winter months.

The plaza is relatively large and should therefore be broken into a series of primary and secondary spaces, courtyards and outdoor rooms. The primary spaces should focus on hard surface treatments, trees canopies and open passages, while the secondary spaces should have a softer, more gardenesque feel. In general, the plaza should have a more detailed plant palette than the surrounding landscape areas. The plaza should include seating and outdoor furnishings to accommodate approximately 40 people at a given time, in addition to bike racks to accommodate ten cycles.

The North Entry Plaza plants should have a higher concentration of ornamental grasses, perennials, vines, and ground covers than other areas associated with the building. The use of evergreen trees should be encouraged to help mitigate the effects of strong winter winds. The plaza should include a system of attractive outdoor pedestrian lighting, and a landmark feature or environmental art to help distinguish the space. Signage should be provided enhance wayfinding and orientation.

E. SOUTH ENTRY PLAZA

The South Entry Plaza is the primary access point for users arriving by foot or bicycle from the existing campus. The plaza links the building with the "campus greenway, and will be a place to meet and gather. Since the plaza is located on the south side of the building, it will be warmer throughout the year. It is therefore important that a range of shade and ornamental trees be provided in this area to mitigate heat during hot summer months. The plaza is long and narrow, and should be treated as a singular space in a relatively simple manner. The plaza edges should be planted with a more detailed and diverse plant palette than the surrounding landscape areas, and should include seating for 30 people. The courtyard areas should be enhanced with special paving treatments.

South Entry Plaza plants should include a higher concentration of ornamental grasses, perennials, vines, and ground covers than other areas on campus, and few evergreen trees. Pedestrian-scaled outdoor lighting should be provided that is attractive, functional and consistent with lighting elsewhere on the campus. A landmark feature or environmental art expression should be provided in the plaza to help distinguish the space and create a "sense of place". Signage should be provided to enhance wayfinding and orientation, utilizing existing campus standards.

PLANT PALETTE

The following list is provided as a guide for selecting water-wise plants appropriate for the project. Consideration should be given to specific micro climatic conditions (sun, shade, solar aspect, etc), the size and growth habit of species at maturity, the overall landscape design concept, and special environmental conditions.

TREES

Abies concolor*	White Fir
Acer campestre	Hedge Maple
Acer glabrum*	Rocky Mountain Maple
Acer grandidentatum*	Bigtooth Maple
Acer negundo ‘Sensation’	Sensation Box Elder Maple
Acer tatarica	Tatarian Maple
Acer truncatum	Shantung Maple
Catalpa speciosa	Western Catalpa
Cedrus atlantica glauca	Blue Atlas Cedar
Celtis occidentalis	Common Hackberry
Celtis reticulata*	Netleaf Hackberry
Corylus colurna	Turkish Filbert
Fraxinus mandschurica ‘Mancana’	Manchurian Ash
Ginkgo biloba	Maidenhair Tree
Gleditsia tricanthos	Honeylocust
Gymnocladus dioica	Kentucky Coffee Tree
Juniperus scopulorum sp.**	Rocky Mountain Juniper
Juniperus osteosperma*	Utah Juniper
Koelreuteria paniculata	Golden Rain Tree
Maackia amurensis	Amur Maackia
Nyssa sylvatica	Black Tupelo
Picea abies	Norway Spruce
Picea pungens v. glauca*	Colorado Blue Spruce
Pinus aristata*	Bristlecone Pine
Pinus edulis*	Pinyon Pine
Pinus flexillis*	Limber Pine
Pinus heldrichii leucodermis	Bosnian Red Cone Pine
Pinus nigra	Austrian Pine
Pinus strobiformis	Western White Pine
Pinus sylvestris	Scotch Pine
Prunus maackii	Amur Chokecherry
Prunus virginiana*	Chokecherry
Prunus virginiana ‘Canada Red’	Canada Red Chokecherry
Pseudotsuga menziesii*	Douglas Fir
Quecus bicolor	Swamp White Oak
Quercus macrocarpa	Bur Oak
Robinia pseudoacacia ‘Purple Robe’	Black Locust
Sophora japonica ‘Halka’	Halka Pagodatree
Sophora japonica ‘Princeton Upright’	Pagodatree
Syringa reticulata sp.	Japanese Lilac Tree
Tilia tomentosa ‘Sterling Silver’	Sterling Silver Linden
Ulmus parvifolia ‘Allée’	Allée Elm
Ulmus wilsoniana ‘Prospector’	Prospector Elm
Ulmus x ‘Accolade’	Accolade Elm
Ulmus x ‘Frontier’	Frontier Elm
Ulmus x ‘Triumph’	Triumph Elm
Zelkova serrata sp.	Zelkova

SHRUBS

Amelanchier alnifolia*	Saskatoon Serviceberry
Amelanchier utahensis*	Utah Serviceberry
Aronia arbutifolia ‘Brilliantissima’	Brilliant Red Chokeberry
Aronia melanocarpa elata	Black Chokeberry
Artemisia cana*	Silver Sage
Artemisia frigida*	Fringed Sage
Artemisia nova*	Black Sage
Artemisia tridentata wyomingensis*	Wyoming Big Sage
Atriplex canescens*	Fourwing Saltbush
Caragana sp.	Peashrub
Caryopteris x clandonensis	Blue Mist Spirea
Ceratoides lanata*	Winterfat
Cercocarpus intricatus*	Dwarf Mountain Mahogany
Cercocarpus ledifolius*	Curl-Leaf Mountain Mahogany
Cercocarpus montanus*	Mountain Mahogany
Chamaebatiaria millefolium*	Fernbush
Chrysothamnus nauseosus*	Rubber Rabbitbrush
Cowania mexicana*	Cliff Rose
Cotoneaster apiculata	Cranberry Cotoneaster
Cotoneaster divaricata	Spreading Cotoneaster
Cotoneaster lucidus	Peking Cotoneaster
Cytisus scoparius	Scotch Broom
Ephedra viridis*	Mormon Tea
Fallugia paradoxa*	Apache Plume
Holodiscus dumosus*	Rock Spray Spiraea
Kerria japonica	Japanese Kerria
Mohoniaaquifolium compacta	Compact Oregon Grape
Pachistima myrsinites*	Mountain Lover
Philadelphus lewisii*	Lewis’ Mockorange
Physocarpus opulifolius sp.	Ninebark
Pinus mugo mugus	Dwarf Mugo Pine
Prunus besseyi	Western Sandy Cherry
Prunus besseyi ‘Pawnee Buttes’	Pawnee Buttes Sandy Cherry
Purshia tridentata*	Antelope Bitterbrush
Quercus gambelii*	Scrub Oak
Rhamnus frangula ‘Columnaris’	Tallhedge Buckthorn
Rhus aromatica ‘Autumn Amber’	Autumn Amber Sumac
Rhus aromatica ‘Grow Low’	Grow Low Sumac
Rhus glabra*	Smooth Sumac
Rhus glabra cismontana*	Dwarf Smooth Sumac
Rhus trilobata*	Oakbrush Sumac
Ribes aureum*	Golden Currant
Ribes cereum*	Wax Currant
Rosa meidiland sp.	Meidiland Rose
Rosa woodsii*	Woods Rose
Rubus deliciousus*	Rocky Mountain Thimble-berry
Salvia doorii*	Dorr’s Sage
Sorbus scopulina*	Western Mountain Ash
Symphoricarpos x chenaultii	Chenault Coralberry
Symphoricarpos oreophilus*	Mountain Snowberry
Viburnum lantana ‘Mohican’	Mohican Cranberry
Viburnum opulus nanum	Dwarf European Cranberry
Viburnum trilobum sp.	American Cranberry
Yucca sp.**	Yucca

ORNAMENTAL GRASSES

Achnatherum hymenoides*	Indian Rice Grass
Blepharoneuron tricholepis	Pine Dropseed
Bouteloua curtipendula*	Sideoats Grama
Bouteloua gracilis*	Blue Grama
Chasmanthium latifolium	Wood Oats
Calamagrostis acutiflora	Feather Reed Grass
Calamagrostis acutiflora Karl Foerster	Karl Foerster Reedgrass
Calamagrostis acutiflora 'Overdam'	Overdam Reedgrass
Deschampsia caespitosa	Tufted Hairgrass
Elytrigia elongata	Tall Wheatgrass
Festuca arizonica	Arizona Fescue
Festuca ovina glauca*	Blue Fescue
Helictotrichon sempervirens	Blue Oat Grass
Koeleria macrantha*	Prarie Junegrass
Leymus cinereus*	Great Basin Wildrye
Miscanthus sinensis	Maidenhair Grass
Muhlenbergia capellensis	Muhly Grass
Muhlenbergia montana*	Mountain Muhly
Muhlenbergia rigens	Deergrass
Mulhlenbergia wrightii	Spike Muhly
Panicum virgatum	Switchgrass
Pennisetum alopecuroides	Fountain Grass
Poa fendleriana*	Muttongrass
Pseudoregneria spicata*	Bluebunch Wheatgrass
Schizachyrium scoparium*	Little Bluestem
Sorghastrum nutans	Indiangrass
Sporobolus airoides*	Alkali Sacaton
Sporobolus contractus*	Spike Dropseed
Stipa comata*	Needle and Thread Grass

PERENNIALS

Achillea sp.**	Yarrow
Agastache sp	Hyssop
Alchemilla mollis	Lady's Mantle
Artemisia schmidtiana	Silvermound
Asclepia speciosa*	Butterfly Milkweed
Aster frikartii	Flora's Delight Aster
Aster novi-belgii	Aster
Aster oblongiflolius	October Skies Aster
Astragalus utahensis*	Utah Lady Finger
Baptisia australis	False Indigo
Berlandiera lyrata	Chocolate Flower
Brunnera macrophylla	Heartleaf Brunnera
Callirhoe involucrate	Prairie Winecups
Coreopsis grandiflora	Coreopsis
Coreopsis verticillata	Threadleaf Coreopsis
Corydalis lutea	Yellow Corydalis
Crocosmia lucifer	Montbretia
Echinacea sp.	Coneflower
Eriogonum umbellatum*	Sulfur Flower
Gaillardia aristata*	Blanket Flower
Gaura lindheimeri	Whirling Butterflies
Geranium viscosissimum*	Sticky Geranium
Hemerocallis sp.	Daylily
Heuchera micrantha 'Velvet Night'	Velvet Night Coral Bells
Heuchera x brizoides	Firefly Coral Bells
Iberis sempervirens	Candytuft
Iris missouriensis*	Rocky Mountain Iris
Kniphofia uvaria	Red Hot Poker
Lavandula angustifolia	English Lavender
Linum sp.**	Flax
Mirabilis multiflora*	Desert Four O'Clock
Nepeta faassenii	Catmint
Oenothera caespitosa*	Tufted Evening Primrose
Oenothera howardii	Bronze Evening Primrose
Oenothera missouriensis**	Missouri Evening Primrose
Penstemon sp.**	Penstemon
Perovskia atriplicifolia	Russian Sage
Pulsatilla vulgaris	Pasque Flower
Ratibida columnifera	Prairie Coneflower
Rudbeckia fulgida	Black-Eyed Susan
Rudbeckia nitida	Orange Coneflower
Rudbeckia occidentalis*	Western Coneflower
Salvia officinalis	Kitchen Sage
Santolina chamaecyparissus	Lavender Cotton
Santolia virens	Green Santolina
Saponaria ocymoides	Rock Soapwort
Sedum spectabile	Showy Stonecrop
Sempervivium tectorum	Hens and Chicks
Spharealcea sp.*	Globemallow
Teucrium chamaedrys	Wall Germander
Viguiera multiflora*	Showy Goldeneye
Zauschneria sp.**	Hummingbird Flower

VINES AND GROUNDCOVERS

Achillea ageratifolia	Greek Yarrow
Ajuga reptans	Bugleweed
Antennaria parviflora*	Pussy Toes
Antennaria rosea*	Pink Pussy Toes
Arctostaphylos uva-ursi*	Kinkkikinnick
Campsis radicans	Trumpet Vines
Clematis hirsutissima*	Clematis sp.
Clematis occidentalis*	Clematis sp.
Clematis montana*	Clematis
Delosperma nubigemium	Yellow Hardy Ice Plant
Fragaria vesca*	Woodland Strawberry
Fragaria x ‘Lipstick’	Lipstick Strawberry
Gallium odoratum	Sweet Woodruff
Juniperus horizontalis sp.	Creeping Juniper
Lonicera japonica	Japanese Honeysuckle
Mahonia repens*	Creeping Oregon Grape
Parthenocissus tricuspidata	Boston Ivy
Polygonum aubertii	Silverlace Vine
Rhus aromatica ‘Autumn Amber’	Autumn Amber Sumac
Rhus aromatica ‘Grow Low’	Grow Low Sumac
Sedum sp.	Stonecrop
Stachys byzantina ‘Silver Carpet’	Silver Carpet Lambs Ears
Symphoricarpos x chenaultii Hancock	Hancock Coralberry
Teucrium aroanium	Gray Creeping Germander
Thymus sp.	Creeping Thyme
Vitis spp.	Grapes
Wisteria sp.	Wisteria

WATERWISE TURF/ LAWN (not encouraged for this project)

Bouteloua curtipendula*	Sideoats Grama
Bouteloua gracilis*	Blue Grama
Buchloe dactyloides	Buffalograss
Festuca arundinacea	Turf-Type Tall Fescue
Festuca ovina*	Sheep Fescue
Koeleria macrantha*	Junegrass
Poa secunda*	Sandberg Bluegrass

** Utah native*

*** Some species native to Utah*

Building Requirements . 3

ARCHITECTURAL DESIGN CRITERIA

IDENTITY, HISTORY AND GROWTH, AND PROJECT JUSTIFICATION

Healthcare delivery has experienced unprecedented growth and change over the past decade. The evolution of information exchange technology and simulation-based learning, as well as changes in the global marketplace and increased population diversity, call for a dynamic approach to preparing the next generation of healthcare professionals. Schools offering education in healthcare technologies are playing a vital role in meeting the national workforce demand for more healthcare technical staff.

The Ogden-Weber Applied Technology College (OWATC), has been educating students since 1971, and is a leader in the Utah College of Applied Technology network. OWATC plays an important role in meeting the state's demand for healthcare technical staff. The administration and Health Occupations faculty work closely with local healthcare professionals to develop cutting-edge training programs and hands-on patient simulation for hundreds of students annually. The college's thirteen Health Occupations programs train nurses, medical assistants, lab and pharmacy technicians, medical office personnel, dental assistants, and phlebotomists. OWATC's open-enrollment format, in addition to the traditional semester format, has been very successful, affording students a very customizable approach to education and training.

The demand for healthcare technical staff in the region, along with the success of the college's Health Occupations programs, continues to draw more students to OWATC. However, the existing OWATC facilities are already at capacity. Moreover, the college's administration and faculty foresee the need for a capacity of 1,200 students in the near future, approximately doubling the current capacity. Many of the buildings were originally constructed for purposes other than health technology labs and classrooms, and have relied on ad-hoc remodels to make due over the past four decades. The facilities are undersized, and scattered across campus, even across the city. The Business Building on main campus, where the majority of the programs are housed, was built in 1966. This is where many of the Heath Occupations programs are forced to share inadequate classroom space that does not support the students learning or the faculty's unique instruction style. Though the recently built BDO Building 10A (2000), provides relatively appropriate space, it is located at the Business Depot of Ogden, nearly 3 miles across town. These existing facilities, along with obsolete equipment, are limiting the growth and potential of the college's programs, faculty and students.

VISION AND PLANNING

In order to continue its role as a leader in healthcare education in Utah, the OWATC needs a purpose-built building, with adequately-sized classrooms and labs, cutting-edge technology and state-of-the-art equipment, to support the unique teaching and learning style in the current and future Health Occupations programs. Such a facility will bring together all health technology students and faculty under one roof, thus encouraging interaction, and providing greater opportunities for student-to-student mentoring and interdisciplinary collaboration. This building will increase visibility for the OWATC, and will strengthen its programs' abilities to attract and retain students and faculty. Finally, this will provide the college with an opportunity to create a healthy, sustainable building, emphasizing energy efficiency, long-term durability, and human comfort. With wide-open space available on the master-planned campus, providing pedestrian and vehicular connectivity to other campus amenities, and adequate utility capacity, the OWATC is primed for a state-of-the-art Health Technology Building.

Based on previous studies, OWATC, with project oversight from the State of Utah Division of Facilities Construction and Management (DFCM), began formal efforts for programming a state-of-the-art Health Technology Building to house all of the Health Occupations programs. In May of 2009, ajc architects and SRG Partnership were contracted to assist in the development of this document, including a program of spaces, site analysis, building requirements, and construction cost estimate for the proposed building.

Early in programming, ajc and SRG facilitated a Vision Workshop with the OWATC administration/steering committee and faculty. The participants listed the drivers for the project, and identified the vision, or "keys to success" for the project (See Vision Workshop Summary in Appendix A).

The vision for the proposed Health Technology Building is captured below:

The proposed Health Technology Building will...

… be a student-centered facility.

… create an atmosphere that supports and enhances the OWATC's unique culture - friendly and inviting.

… encourage cross-fertilization, collaboration, and sharing between Health Occupations programs.

… provide state-of-the-art classrooms and labs - right-sized for specialized instruction style.

… provide opportunities for more "real-life" training.

… accommodate growth and technological advancement, providing short-term flexibility and long-term adaptability.

… provide spaces/facilities to host events and conferences to increase visibility to the community.

… enhance safety and security for students and faculty/ instructors.

… be a model facility for future buildings on the OWATC campus as well as Health Technology programs statewide, even nation-wide.

… express the outstanding health programs at the OWATC through architecture, by embodying the following:
- WOW factor – elegant and distinctive
- beautiful and clean, but not sterile
- balance between practical and innovative
- high tech / high touch
- be in harmony with surroundings – including existing buildings on campus, as well as the spectacular mountain scenery
- inviting on all four sides of the building
- maintenance friendly, energy efficient and environmentally sustainable
- human health and comfort – maximize natural daylight, and minimize noise

With this vision for the OWATC Health Technology Building project as a guide, the following text in this section elucidates the essence of the project. In addition to the Architectural Design Criteria below, please see the subsequent Design Criteria for Structural, Mechanical, Electrical and Technology, as well as General Sustainable Design, for related narratives. This section is intended to be the point of departure for subsequent design and construction phases.

PROJECT SUMMARY

The proposed Health Technology Building will be completely new construction, providing OWATC with approximately 70,000 GSF, including over 42,000 Net-Square-Feet of usable space and an Add-Option for 5,000 SF of shelled space for future program. The proposed building will provide a structurally-sound, universally accessible, and energy efficient, building for a safe and comfortable teaching and learning environment. With the goal of LEED Gold level certification, environmental sustainability and human comfort will be at the forefront of the design. The Preferred Site Option Diagram (See Section 4) in conjunction with the Preferred Stacking Diagram (See Sections 2 and 4 respectively) illustrate that, in order to maximize space adjacencies, and opportunities for natural daylight, daylight control, as well as building system efficiencies, the building should be oriented with the long axis oriented east to west with the program of spaces equally distributed on two levels. Additionally, while views of the Wasatch Front Mountains from the building /site are spectacular in most directions, this stacking/orientation will provide the best opportunities for views from most interior spaces.

The interior of the proposed building will provide cutting-edge labs and classrooms purpose-built for each of the Health Occupations programs. State-of-the-art mechanical, electrical, and communications systems will provide a healthy, energy efficient space, and will maximize human comfort. Public spaces should be located on the main level, near the entrance for convenience and security. The labs and classrooms for each of the individual Health Occupations programs will be located on either the first or second floor according to size and desired program adjacencies. Faculty office suites located on both the first and second floor will provide opportunities for casual interaction, interdisciplinary collaboration, as well as sharing of common resources. Each of the office suites will contain private and open offices, meeting rooms, and office support spaces (See Section 4 for detail).

The preferred site is currently open green-space centrally located on the north side of the main campus pedestrian spine, within the perimeter access road circumference. It should be noted that this site has been previously earmark for the Health Technology Building as recently as the updated 2003 Master Plan. This location will provide the Health Technology Building with convenient access to existing amenities on campus, including student services building, and the current administration facility. Additionally, this location will provide pedestrian and vehicular connectivity to existing pathways (sidewalks, roads, etc). A new parking lot will be required, providing a minimum of 56 new stalls, including ADA accessible stalls will be required. The Campus Master Plan has identified a pattern of development for parking and should be followed as is feasible. Delivery access for the proposed building will also be required, and should be located with sensitivity to public/student entrance areas. While the campus has the utility infrastructure to support the proposed building, power, water, gas, sewer, storm and communication lines will require extension to the new site (See Site Utilities summary and diagram in Section 2 for detail).

FUNCTIONAL RELATIONSHIPS

The faculty and students activities will remain relatively unchanged. It is anticipated that growth of the programs, over-time, will not significantly alter these functions. However, the new labs and classrooms in the proposed Health Technology Building will appreciably improve the learning lab environment. Adequate desk space, state-of-the-art presentation technology, testing space, hands-on patient simulation spaces, and cutting-edge lab equipment will all contribute to creating a comfortable teaching and learning environment. Students will have purpose-built spaces for casual social interaction, such as lobbies and a break room, as well as space specifically designed for study atmosphere. These spaces are intended to increase opportunities for social networking, as well as student-to-student mentoring outside of the classroom. During the program discussions with students and faculty, these types of spaces / opportunities were determined to be critical to support the unique open-enrollment format offered at OWATC.

The consolidation of faculty offices is intended to provide opportunities for casual social interaction and interdisciplinary collaboration between instructors. In addition to large, shared office areas with semi-private workstations for instructors, private offices for department coordinators are intended to provide a balance of privacy and openness for collaboration, daylight, views, etc. Office suites should have centrally located meeting areas, as well as common workspace areas, such as copy/fax rooms.

The Preferred Stacking Option Diagram, included in Section 4, illustrates that the First Floor should include 1,000 NSF for the Public lobby (accessed from the parking lot) and the Student Lobby (accessed from the campus central pedestrian spine). 2,800 NSF for the Auditorium should be located adjacent to the Public Lobby, and near the Student Lobby. With this space relationship, the lobbies will provide ample space when needed for casual gathering related to the Auditorium. Dedicated student spaces, including Break/Lunch Room (500 NSF), Student Lockers (125 NSF), and Student Study / Hearth (600 NSF) will also be located on the First Floor. The Clinical Lab (1,722 NSF), Dental Occupations (7,135 NSF), Medical Assisting (5,717 NSF) and Medical Office Technologies (2,090 NSF) programs should be located on the First Floor. A Faculty Workroom (150 NSF) is planned to support the programs on the First Floor. In addition to the office suite for the individual Health Occupations programs (square-footage included in the individual program numbers above), Office space for the Director, Counselor, and Administrative Assistant (410 NSF combined) should be located near the Public Lobby. General circulation, vertical circulation, and Mechanical / Electrical spaces should make up the balance of the main level.

The Second Floor should include the Practical Nursing (9,274 NSF) and Nursing Assistant (6,475 NSF) programs, as well as the Pharmacy Technician program (3,607 NSF). Program-related office and office support spaces will be consolidated on the Second Floor (square-footages included in the individual program numbers above). A dedicated Student Study / Hearth space (600 NSF) will be located on the Second Floor, near the vertical circulation. General circulation and vertical circulation will be stacked above First Floor circulation spaces. The 5,000 GSF Add-Option for shelled space for future programs should make up the balance of the upper level floor plate.

While a structural system or structural bay has not been determined, analyzing the relationship between vertical columns with the programmatic elements will be critical in subsequent design phases. Column bays should be modular where possible, and should be design to work with the optimal classroom layout. Smaller spaces, such as labs and offices should be designed to work with this bay size to maximize consistency and efficiency. Beam depths should be carefully considered to maximize interstitial space above the ceiling for HVAC, plumbing, electrical and technology lines, as. While maximizing interstitial space is imperative, this will have a direct effect on floor-to-floor, and floor-to-roof heights. The relationship of these two seemingly conflicting interests will need to be carefully studied as it will have an impact to the construction budget. However, this impact will be relatively small as the structure is proposed to be limited to two stories.

Similarly, while mechanical and electrical systems have not been determined, there are a few fundamental design considerations that should be noted. The main mechanical, electrical, and tele/data rooms should ideally be as centrally located as possible to minimize lengths and sizes of runs of HVAC, plumbing, and wiring and data lines. However, this may be compromised in order to maximize programmatic adjacencies where that is the paramount concern. Vertical shafts for mechanical and plumbing elements should be integrated into the overall floor plan as early as possible in subsequent design phases. The locations of large mechanical equipment and duct runs above the ceiling should be carefully considered with respect to noise and sound transfer to critical spaces such as classes, offices and conference rooms. Finally, exterior access to these rooms, including the delivery and removal of large equipment should be considered. These types of access points, along with exhaust or vent stacks, roof top units, transformers, panels, fire department connections, etc are often unattractive and should be located thoughtfully with respect to the exterior of the building.

INTERNAL RELATIONSHIPS

In addition to the functional relationships described above, fundamental relationships and building organization elements are elaborated upon in the text below, including: personnel interaction, circulation, and natural light and views.

Personnel Interaction

In order to support and enhance all of OWATC Health Occupations programs' unique instruction styles and formats (traditional semester format, open-enrollment format, student-to-student mentoring, group learning, one-on-one between instructor and student, etc), multiple environments within close proximity of one another will be necessary. It will be imperative to balance casual social interaction and interdisciplinary collaboration with the instructors' needs to manage the classroom environment, including integrity, privacy, security, etc. Spaces that encourage mentoring, interaction and collaboration among the following groups both within and outside of the classrooms and offices should be emphasized to the highest degree possible:

- Students among similar programs, at different levels of progress in training
- Students with Students from different programs
- Students and Faculty
- Instructors with Instructors from different programs
- Instructors with Department Coordinators
- Faculty, Students, and the Industry Representatives
- OWATC and the public

To promote this healthy interaction, public, semi-public, and shared common spaces should be centrally located, and near major circulation paths (stairs and elevators included), and restrooms, as well as major public program elements, such as the lobbies, auditorium, break rooms, etc. Conversely, spaces requiring a relatively high degree of privacy should be located a reasonable distance from high traffic areas where possible.

Translucency between spaces, such as interior windows, will serve to encourage interaction through visual connections. Additionally, translucency within each individual program suite will be critical for the instructors to manage the dynamic classroom and lab environments unique to OWATC.

In all spaces, furniture, lighting and architectural finishes will indirectly affect personnel interaction. Multiple modes of comfortable seating, both fixed and moveable, should be thoughtfully considered. Noise or sound control is also imperative. Selection of materials that dampen sound reverberation will need to be considered. Appropriate lighting strategies, including natural daylight as well as artificial light, will need to be considered to minimize glare and wash-out, but provide enough direct light for facial modeling.

Finally, interaction and connection to industry and the broader community is important. While personal computer stations should have internet capabilities for access to the World Wide Web, additional opportunities for informative displays, such as posters or banners, and perhaps even cable TV stations, could be incorporated into casual gathering areas such as lobbies and break rooms. These types of elements should be designed so as to be easily changed and maintained, as well as secured.

Circulation

External circulation paths simply need to tie into the existing network of sidewalks that provide connectivity to other buildings and amenities, and parking. The main entrances should be located to maximize and clarify the Health Technology Building's connection to the existing pathways, including the parking on the north, and the open green space on the south. Informal outdoor gathering areas should be planned for, and should be located near the main entrance(s). New sidewalks should be considered to enhance connectivity to existing buildings located on the campus pedestrian spine and parking where necessary (See Section 2 for the Preferred Site Option).

As illustrated in the Preferred Stacking Diagram (See Section 4), all program spaces are proposed to be efficiently organized along either side (double-loaded) of a main linear circulation path at the extreme interior of the building. Vertical circulation should be located near lobbies, and as necessary to provide emergency egress. The width of circulation paths should correspond to the amount of traffic anticipated, as well as life-safety requirements and movement of large equipment. In order to adhere to ADA requirements, halls should not be less than five feet wide. Single-loaded and dead-end corridors should be minimized as the floor plans develop in subsequent design phases.

While safety of students and faculty is of utmost concern to OWATC, building security should be considered as mild to moderate for this facility. Labs with valuable equipment will need to be considered on a room-by-room basis. Specific security requirements are to be consistent with operations and policies of OWATC.

Natural Light and Views

Windows are a much sought-after commodity in most campus facilities, especially in classrooms and offices, and the OWATC Health Technology Building is no exception. Natural light and views are critical to an environmentally sustainable project – and will be required in specific quantity / spaces for LEED certification. See the Sustainable Design Criteria at the end of Section 3 for detailed information.

In general, the program assumes the priority to provide every possible classroom, office, and workstation with natural light and a view to the outside. Where this is not possible, “borrowed light” strategies should be utilized. Borrowed light is difficult to quantify, however, and a lighting engineer’s experience and technology may be required to include this strategy in any calculations required for LEED certification.

Classrooms, open labs and other large spaces should be oriented to the north to minimize thermal gain. Offices and other relatively small, controlled environments can be oriented to the south, if sufficient solar control devices are provided. It is preferable that no part of the building with large exterior openings is oriented to the west. Even direct exposure to the east should be carefully considered. Both east and west sunlight is difficult to control throughout the year due to the amount of change in altitude and azimuth of the sun.

BUILDING FORM AND ARCHITECTURAL FINISHES

The proposed two-story Health Technology Building will command a significant presence near the center of the OWATC campus. The exterior expression of the building should reflect a cutting-edge health technology education classroom and lab building. The building form, orientation, construction, and material palette should be guided by principles of environmental sustainability, social sustainability, and economic sustainability. It should establish an architectural identity for the Health Occupations programs. At the same time, it should grow from and be in harmony with the existing architectural context of the campus. While the building form should not attempt to compete with the spectacular mountain views to the north, east, and south east, it should respond to and respect its environment in some manner. As this building is the first constructed on campus in many years, the architecture should set a tone, a point of departure, for future campus buildings as well.

The programmatic functions of the building should be manifest in the form of the building, where appropriate. The Auditorium, for example, could become a focal point as it will be a high-bay one story structure in contrast to the rest of the two-story building. The building form can also help to define and envelop outdoor spaces, such as gathering areas or plazas near the Public and Student lobbies. Forms and elements that create focal points and respond to the human scale are appropriate at these entry points.

Whereas the nature of the programs are about health technology, the building itself can become an expression of this through its architectural sustainable features. The location and arrangement of windows and related sun-shading elements provide opportunities to express sustainability through a response to solar orientation and views. Interior architectural planning should carefully consider the location of entries and circulation paths, specifically stairs so as to encourage their use in lieu of elevators.

While the aesthetic of the building's exterior and interior will be defined in subsequent phases, the selection of the materials palette should be thoughtfully considered. Material characteristics, including: color, texture, light reflectance, acoustic characteristics, should be considered relative to their appropriateness to the context (in the case of exterior materials) and the function of each individual space (in the case of interior materials). Additionally, sustainable attributes such as recycled content, regional availability, and rapidly renewable materials should be given high priority. Ultimately, the structure and finish materials should be designed to a 100-year building standard. Thus, wood framing should not be allowed. Only the use of durable materials of institutional quality that require minimal maintenance should be considered.

The existing one and two-story structures on campus are almost exclusively constructed with buff or gold masonry, veneer or otherwise. However, many of the buildings apply the masonry in different ways, allowing for consistency from afar, and unique details when viewed up-close. Many of the buildings have a visible expression of the roof support structure. While most roofs are "flat" and hidden behind parapets, some older buildings have moderately-sloped gable roofs. Most existing building forms are low and horizontal in nature, and are generally rectilinear, with occasional 45 degree angles to define corners and entries to buildings. Existing windows are often "punched" openings on older buildings, with some full-height aluminum curtain walls and ribbon windows on the more recent buildings.

MASTER PLAN RECONCILIATION

The decisions made during the Vision Workshop and Programming phase are consistent with the intent of the OWATC Long Range Master Plan by MGB+A The Grassli Group in February 2003 (See Section 2 for reproduction). The Preferred Site Option diagram in Section 2 illustrates that the proposed footprint of the building will be generally in line with the master-planned location for this building, directly north of the existing Construction Technology Building. The preferred site plan preserves the relationship to the central campus pedestrian spine, and vehicular parking areas as shown on the Master Plan. However, in contrast to the square-shaped building footprint indicated on the original Master Plan, the proposed footprint is rectangular with its long axis running east-west, roughly parallel to the campus pedestrian spine.

This modification to the orientation of the building is critical for the reasons stated in the first paragraph of the Project Summary above. This new orientation does have minor impacts to the Master Plan, as is evident on the east side of the proposed building , where due to the length of the proposed building, it conflicts with the Master Plan's north-south pedestrian alleys. Additionally, it should be noted that the relocation of the campus perimeter access road to the far north edge of the site as shown in the Master Plan is not included the scope of this project.

ARCHITECTURAL CODE NARRATIVE

The Governing codes for this project are listed below. The Design Team and Architect of Record – to be determined –needs verify all required codes, and code requirements at the beginning of the subsequent design phase. It is the Design Team and Architect of Record's responsibility to utilize all latest revisions, editions and adopted versions. The following analysis represents current applicable code issues, and is not a complete list of applicable codes.

CODE ANALYSIS

INTERNATIONAL BUILDING CODE (IBC)

- 2006

Occupancy classification – IBC Chapter 3

- 'A-3' Auditorium
  (Accessory occupancy, section 508.3.1)
- 'B' Educational above the 12th grade

Type of Construction – IBC Chapter 6

- Type II-B, sprinkled
- Note: Type V construction does not meet code

Building Area and Height for 'A-3' and 'B' occupancy
– IBC Table 503

- Allowable height = 55 feet
  (75 feet with sprinkler system)
- Allowable number of stories for 'B' = 4
  (5 stories with sprinkler system)

For 'B'

- Allowable Square Footage = 23,000 sq. ft.
  (table 503)

Increase due to Frontage and Fire sprinklers
17,250 sq. ft. + 46,000 sq. ft. = 63,250 sq. ft.

Total allowable Square Footage = 86,250 sq. ft.

- Proposed facility:
  2 stories
  Main Level = 36,000 sq. ft.
  Second Level = 34,000sq. ft.
  TOTAL 70,000 sq. ft

Fire Resistive Requirements – IBC Chapter 6, table 601

- Structural Frame 0 hour rating
- Bearing Walls
  Exterior 0 hour rating
  Interior 0 hour rating
- Exterior Nonbearing Walls 0 hour rating
- Interior Nonbearing Walls 0 hour rating
- Floor 10 hour rating
  (including supporting beamand joists)
- Roof 0 hour rating
  (including supporting beam and joists)
- Corridor 0 hour rating
  (table 1017.1)

Occupancy Separation – IBC Chapter 5, table 508.3.3

- A-3 from B 1 hour separation required

Occupancy Load Factors –
IBC Chapter 10, table 1004.1.1

Description of Occupancy	Occupancy (SF/occupant)
• Accessory (Storage areas, Mechanical, Electrical, Telecom, Janitor)	300 gross
• Business Areas (Offices, Work Rooms Break Area)	100 gross
• Assembly	15 net
• Lunch Room (Un-concentrated – table and chairs)	15 net
• Auditorium (Un-concentrated – table and chairs)	15 net
• Educational (classroom area)	20 net
(vocational room areas)	50 net
• Locker Room (Locker)	50 gross

Egress Width per Person served – IBC Chapter 10, table 1005.1 (with sprinkler system)

- Stairways = .20 inches/occupant
- Other = .15 inches/occupant

Elevator – Section 1007.2.1

Corridors and Doors

- Section 1017.2 – Minimum corridor width is 44 inches
- Section 1008.1.1 – Minimum door width is 32 inches clear; maximum door leaf is 48 inches
- Section 1017.3.2 – ' B' occupancy dead end corridors shall not exceed 50 feet.
- Section 1017.4.1 – The Corridor Ceiling may be used as a return air plenum

Number of Exits – IBC Chapter 10, table 1015.1 and 1019.2

- For 'B' occupancies the load that exceeds 49 requires 2 exits

Common path of Egress travel

- Section 1014.3 – Common path of egress travel distance is restricted to 100 feet (sprinkled)

Travel Distance – Chapter 10, table 1016.1

- 'A' and 'F-1' occupancy (sprinkler) = 3000 feet

Exit Separation – IBC Chapter 1015.2.1, exception 2

- Exit separation in sprinkled buildings = one third (1/3) the diagonal dimension of the building or area

Stairs, Ramps, and Guards – IBC Chapter 10

- Section 1007.3 exception 3 – clear with of 48 inches minimum between handrail is not required (fully sprinkled)
- Section 1009.3 – Stair riser height shall be 7 inches maximum and 4 inches minimum. The stair tread shall be 11 inches minimum.
- Section 1009.6 – The maximum distance a stair may rise without a landing is 12 feet.
- Handrail is required on each side
- Handrail height, from nosing, shall be not less than 34" and not more than 38".
- Section 1012.5 – handrail must return to wall, guard, walking surface, the handrail needs to be continuous to the next run of stairs (if not) than the handrail must extend 12 inches beyond the riser and slop a distance of one tread beyond the bottom of the stair riser.

Area of Refuge – Section 1007.6 (Utah code amendment)

- Not required

Guards – IBC Section 1013

- Section 1013.2 – provide Guard not less than 42 inches.
- Balusters or ornamental pattern shall not let a 4-inch sphere pass through any opening to 34 inches. From 34 inches to 42 inches an 8-inch sphere can not pass through; a 6-inch sphere can not pass through the triangle formed by riser and tread.

Accessible – IBC Chapter 11

- Section 1104 – An accessible route from the Accessible parking to the building
- Section 1105 – At least 60% of the entrances shall be accessible.
- Section 1106 – Accessible parking spaces shall be provided in compliance with table 1106.1
- Section 1106.5 – At least one accessible parking stall will be Van accessible; provide 1 van per 6 accessible parking
- Section 1109.2.1 and 1109.2.1.4 – Unisex toilets are not required
- Section 1109.2.2 – Toilet facilities require that a minimum of one wheelchair accessible water closet compartment be provided.
- Section 1109.3 – each restroom will need to have one accessible sink
- Section 1109.5 – 50 percent of the drinking fountains to be accessible; at least one required.
- Required accessible elements shall be identified using the international symbol of accessibility

Based on the use of each space and a defined occupancy factor per square foot, the code establishes the occupancy (Occupancy Load Factors – IBC Chapter 10, table 1004.1.1) of the building. This occupancy load of the building is used to establish: 1) exit and door widths, 2) number of exits from an individual spaces and the building, and 3) number and type of restroom fixtures. The scope of this work does not change the existing occupancy of the building.

Main level occupancy	=	988 occupancy
Second level occupancy	=	769 occupancy

- 1) Exit and Door widths will be determined by IBC Chapter 10, table 1005.1 (with sprinkler system)
- 2) Number of exits from individual rooms and the building
  Main level requires a minimum of 3 exits
  Second level requires a minimum of 3 exits
  All of the class rooms require two exits
- 3) Number of Restroom Fixtures

Main Level	= 988 occ/ 2
	= 494 men & 494 women
Second Level	= 769 occ / 2
	= 384.5 men & 384.5 women

Interior Finishes – (Table 803.5)

- For Sprinkled Buildings in M occupancy Exit enclosures and exit passageways = Class 'B' fire spread

Corridors = Class 'C' fire spread
Rooms and enclosed spaces = Class 'C' fire spread

Automatic Fire Sprinkler System – IBC Chapter 9 and NFPA 13

- Automatic Fire Sprinkler System through out
- NFPA Chapter 10, Portable Fire Extinguishers

Plumbing Fixtures required –
IBC Chapter 29; table 2902.1
<u>FOR 'B'</u>

- Water Closets / Urinals
  Male/Female; 1 per 25 for first 50
  1 per 50 for the remainder exceeding 50
- Lavatories
  Male/Female; 1 per 40 for the first 80
  1 per 80 for the remainder exceeding 80
- Drinking Fountain;
  1 per 100 required (1 for standing and 1 for ADA)
- Service sink (for the building)
  1 required

<u>Main Level</u>	Men	Women
Water Closets	10	10
Lavatories	7	7
Drinking Fountains	10 total	
(5 for persons in a wheelchair)		

<u>Second Level</u>	Men	Women
Water Closets	8	8
Lavatories	5	5
Drinking Fountains	8 total	
(4 for persons in a wheelchair)		

Roof Covering Fire Classification – IBC Table 1505.1

- 'C' Classification

GENERAL

The structural design for this project should provide a building system which will integrate with the program requirements for space layout, as well as with the architectural and building service needs, while meeting current code standards for vertical and horizontal load carrying capacity. User needs in terms of current flexibility of the spaces and future adaptability of use should be considered. The level of user comfort determined by the acoustic and vibration sensitivity of the structure should also be addressed.

STRUCTURAL/SERVICE COORDINATION

Layout of the structural grid will need to respect the planning modules established for the various building and laboratory functions. During the design phase, a completely integrated approach to building systems is recommended. Distribution of HVAC, plumbing and electrical services must be carefully coordinated with the structural elements, particularly at framing intersections and major crossover points. This close coordination must be achieved in order to avoid conflicts between building systems and limit penetrations of major structural members.

CODES AND STANDARDS

The building structure shall be designed in accordance with the DFCM Design Manual and the 2006 International Building Code (IBC 2006) unless a more recent edition of the code has been adopted before the design of the building commences.

Codes and standards that apply to the design of this building are:

- 2006 International Building Code
- DFCM Design Manual – most recent edition
- American Institute of Steel Construction (AISC) with Commentary
- ACI 318 Building Code Requirements for Reinforced Concrete
- ACI 530 Building Code Requirements for Masonry Structures
- American Iron and Steel Institute (AISI) Specifications for the design of Cold-Formed Steel Structural Members
- American Welding Society (ANSI/AWS) D1.1 Structural Welding Code
- Steel Joist Institute (SJI) for open web Joists and Girders
- Steel Deck Institute (SDI) for Metal floor and roof Decks

GEOTECHNICAL CRITERIA

Professional Service Industries, Inc. has completed a geotechnical report dated May 28, 2009 for the Health Technology Building. The design of the foundation systems for the building shall follow the requirements and recommendations of this report. Subsurface conditions disclosed by the test holes drilled by the geotechnical consultant consisted of surficial topsoil 6 to 18 inches thick underlain by soft to very stiff lean clay to the maximum depth explored, approximately 41.5 feet at boring 5. Groundwater was not encountered in the borings to the maximum depth of exploration of 41.5 feet.

The geotechnical report indicates that the building can be supported on conventional spread footings bearing entirely on undisturbed native soils or entirely on compacted structural fill extending down to undisturbed native soils. Footings bearing entirely on undisturbed native soils may be designed using a maximum net allowable bearing pressure of 1,500 pounds per square foot. Footings bearing entirely on at least 2 feet of compacted structural fill extending down to undisturbed native soils may be designed using a maximum net allowable bearing pressure of 2,000 pounds per square foot. Native soils below the structural fill shall be prepared as specified in the geotechnical report prior to placement of the footings or compacted structural fill. The compacted structural fill should extend a minimum of ½ the depth of the fill beyond the edges of all footings.

The minimum recommended footing widths are 24 inches for spot footings and 18 inches for continuous footings. Estimated total and differential settlements for footings designed according to the recommended parameters are less than 1 inch and ¾ inch respectively. Footings subjected to freezing temperatures should bear at least 30 inches below finish grade for frost protection. Footings not subjected to freezing temperatures should have a minimum embedment depth of 18 inches.

The seismic spectral accelerations of the ground at the site are high as indicated in the Earthquake Design section of this program. The nearest known potentially active fault of concern is the Wasatch Fault located about 0.75 miles to the east of the site. It does not appear that active mapped faults pass through the site. The geotechnical report indicates that the site is classified as a Site Class D for calculating earthquake loads on the building. The report indicates that the native soils are not likely to liquefy when they are subjected to earthquake shaking.

BASIS OF DESIGN

Loading Criteria

The structural systems in the facility shall be designed to meet the requirements of the 2006 International Building Code (IBC), Minimum Design Loads for Buildings ASCE 7-05 and the DFCM Design Manual adopted by the Utah State Building Board. Copies of the Design Manual can be obtained from the Division of Facilities Construction and Management (DFCM) web site. Section 3.1 deals with enhancements of building code requirements and section 3.4 lists general design requirements. The following minimum requirements should be anticipated:

- Wind Velocity: 90 mph, Exposure "B" or "C", for the building structure, as appropriate to the site. Exposure "C" shall be used for elements and components including the exterior window wall system
- Seismicity: 2006 IBC and ASCE 7-05 Seismic requirements with a "Seismic Importance Factor" of I = 1.25 for an occupancy category III building.
- Roof Base Snow Load: 33 psf minimum plus snow drift where appropriate.

  Snow Load Importance Factor I = 1.1 in accordance with Table 7.4, ASCE 7-05.
- Floor Design Live Loads: Floor design live loads shall be in accordance with the latest edition of the DFCM Design Criteria Manual and as follows:
  1. Classroom and Laboratory areas: 80 psf distributed load and 2,500 lb. concentrated load
  2. Office areas: 80 psf distributed load plus 15 psf minimum partition load, and 2,500 pound concentrated load
  3. Corridors, exits, and assembly areas: 100 psf distributed load
  4. Fixed seating areas in Auditorium: 60 psf distributed load
  5. Areas of concentrated standard file storage: 125 psf
  6. Heavy paper storage areas: 250 to 350 psf as appropriate
  7. Mechanical Equip. Rooms: 125 psf minimum, or more if required by the actual weight of equipment.

Areas where heavy load concentrations exceed the normal loading requirements shall be designed for the specific load case.

The more stringent requirement between the 2006 IBC, the DFCM Design Criteria Manual and the loads given above shall govern.

Structural System Selection and Cost Comparison

The structural system chosen for the building shall be selected based upon the following criteria:

- A cost comparison of at least two structural systems shall be investigated. The comparison should be broken down in detail with each component of cost significance being listed separately. The overall cost impact of alternate foundation systems as they relate to the foundation load magnitudes from different structural systems (i.e. steel versus concrete) shall be considered as part of this investigation.
- Various structural systems comparing building construction time, material availability, coordination of various trades, lead times for ordering materials, appearance, owner preference, maintenance costs, flexibility for future remodeling, and compatibility with surrounding buildings should be considered when choosing the final structural systems for the building.
- The structural system comparison shall include considerations of vibration performance of the finished structural system to provide the vibration environment needed for the comfort of the building occupants. The suggested guideline for vibration evaluation of floor systems is AISC Design Guide 11 “Floor Vibrations due to Human Activity”. Present plans for the building do not include any vibration sensitive equipment that would require more stringent vibration performance than what is suggested for comfort of the building occupants.
- Damage to the building structure and its contents due to lateral earthquake and/or wind loads should be evaluated between various structural systems. Damage control to building non-structural systems is a pertinent and important consideration when selecting the building structural system.

More rigid shear wall and/or braced frame lateral force resisting systems generally experience a lower degree of lateral drift from earthquake forces than more flexible systems such as moment resistant frames. This lower degree of lateral drift can result in greater damage control to a buildings non-structural elements and contents than a more flexible movement frame type lateral force resisting system. On the other hand, the more rigid lateral force resisting systems impose higher earthquake acceleration forces on the non-structural elements and contents. The non-structural elements need to be designed to resist the acceleration forces imposed on them during an earthquake. One clear advantage of moment frame lateral force resisting system that needs to be considered is that they provide almost unlimited programmatic and planning flexibility initially and during the life of the building.

Cast-in-place reinforced concrete shear wall lateral systems usually work most economically with a cast in place reinforced concrete structural floor framing system while diagonally braced steel lateral systems are usually most economical in conjunction with composite steel floor framing systems.

All cost comparisons between structural systems shall include interface costs between other building components such as architectural finishes, exterior enclosure systems, mechanical systems, and electrical systems. Life cycle costing methods shall be used where applicable.

FUTURE BUILDING EXPANSION

- Future vertical expansion is not anticipated, but this topic shall be considered and decided upon by the design team in the early phases of the design process.
- Future horizontal expansion of the structure is a possibility and merits further consideration during the design phase. It is anticipated that any future horizontal expansion of the building will be separated from the building by and expansion/seismic joint.

EARTHQUAKE DESIGN

The proposed structure shall be designed according to the requirements of the adopted edition of the International Building Code and “Minimum Design Loads for Buildings” ASCE 7-05. According to the project geotechnical report, the closest distance to a known seismic source is the Wasatch Fault about 0.75 miles to the east of the site. Spectral acceleration values for the site taken from the 2006 IBC maps are Ss = 1.463 and S_1 = 0.606. These spectral acceleration values shall be verified during the design process.

College or adult education buildings with an occupant load greater than 500 are classified as Occupancy Category III buildings. An Earthquake Importance Factor, “I_E” of 1.25 shall be used in earthquake design analysis according to Table 11.5-1 of ASCE 7-05.

WIND DESIGN

College or adult education buildings with an occupant load greater than 500 are classified as Occupancy Category III buildings. A Wind Importance Factor, "I_W" of 1.15 shall be used in wind design analysis according to Table 6-1 of ASCE 7-05.

ROOF SNOW LOAD DESIGN

College or adult education buildings with an occupant load greater than 500 are classified as Occupancy Category III buildings. A Snow Load Importance Factor, "I_S" of 1.10 shall be used in snow load design analysis according to Table 7-4 of ASCE 7-05.

TESTING AND INSPECTIONS

The Architect/Engineer, and the selected testing lab, shall perform periodic construction observations, testing, and special inspections, as outlined in Chapter 17 of the International Building Code. The design engineer shall list all required special inspections on the contract drawings, and perform periodic construction observations as required by the A/E agreement. Costs for special inspections and testing services will be paid by the owner.

CODES AND STANDARDS

Conform to the latest edition of the following codes and standards, or the requirements defined in this program, whichever is more restrictive:

2009 IBC

2009 IMC

2009 IPC

2009 IFC

2009 IECC

Division of Facilities Construction and Management (DFCM) Design Requirements, May, 2005

DFCM CADD Criteria, August 2001

AVAILABLE UTILITIES

Steam	There is an 8” steam line that terminates at the building site.
Culinary Water	Anticipated service size is 3”Φ
Natural Gas	Not required
Sanitary Sewer	An 8” line will be extended immediately north of the building. Anticipated building drain size = 6”Φ Gravity-flow sanitary sewer is required. Sewage ejection is not acceptable.
Storm Sewer	An 8” line will be extended on the south side of the building.
Fire Service	New 8”Φ service will be installed in a complete loop around the building as part of this project.

TEMPERATURE

Outdoor design temperatures:
winter: 12.1 ^{o}F (ASHRAE 99%)

Ogden/Hill Air Force Base

summer:	90.4_{DB} /60.4_{WB} ^{o}F	(ASHRAE 1%)
dehumidification:	72.8_{DB} /61.9_{WB} ^{o}F	(ASHRAE 1%)
evaporative:	82.0_{DB} /63.6_{WB} ^{o}F	(ASHRAE 1%)

Indoor design temperatures:
Maintain temperatures specified below, +/- 3 ^{o}F.

	Occupied		Unoccupied	
	Cooling	Heating	Cooling	Heating
Normally occupied Spaces	75	72	80	55
Computer/Server Rooms	72	72	72	72
Utility Spaces, including mechanical rooms	90	55	90	55

NOISE

Use the RC Mark II method for rating HVAC system related noise, and use the following table for maximum allowable noise levels generated by HVAC equipment:

Room Type	RC(N)
Classrooms	30
Private Offices	35
Open Plan Offices	40
Conference Rooms	35
Corridors	40
Teaching Laboratories with Hoods	45
Teaching Laboratories without Hoods	30

VENTILATION/INDOOR AIR QUALITY

Comply with ASHRAE 62.1-2007 and the International Codes for minimum ventilation requirements. Where discrepancies occur between the Codes and the ASHRAE standard, use the more stringent requirements.

Design a ventilation system that results in an air change effectiveness greater than or equal to 0.9 as determined by ASHRAE 129-1997. Follow recommended design approaches in ASHRAE 2005 Fundamentals, Chapter 33.

Develop and implement an IAQ Construction Management Plan that includes the use of high efficiency filters (Minimum Efficiency Reporting Value (MERV) = 8, as determined by ASHRAE 52.2-1999), at each return air grille for systems used during construction.

Provide MERV 7 pre-filters and MERV 13 final filters at central air handlers upon completion of project.

In addition to toilet exhaust, provide separate exhaust system as noted in the space conditions matrix, and demonstrate that the rooms are maintained at a negative pressure of 0.03" wg relative to adjoining spaces.

HUMIDITY

Humidification of the building is not required. Upper relative humidity levels inside the building are to be passively limited by the central air handling system to no greater than 55%.

PROJECT DOCUMENTATION

Provide a design narrative that includes the following:

- Basis of design, including all information required to prepare the design
- Sequence of operation of all systems, as well as their interaction with other systems
- System description, including operating parameters and assumptions
- Acceptance testing requirements, in tabular form, for use by the installing contractor and verification by the design engineer. This may be incorporated into the commissioning documentation
- A description of the methods used by the design team to achieve sustainability, including the integrated design process; and a description of the results, i.e. a description of the sustainable elements included in the design. Include in this section how the requirements of this program were met.
- Results of the energy simulation, with a design energy performance standard for the building.

ENERGY EFFICIENCY

Determine the energy cost budget for this building in compliance with ASHRAE/IESNA 90.1-2007, Section 11, then document that the proposed design reduces annual energy cost by at least 31.5%, using the methodology of ASHRAE/IESNA 90.1-2007, Appendix G. Cost-effective energy efficiency measures beyond this goal are encouraged.

Additionally, comply with the latest DFCM standards for building energy performance in effect at start of design.

Design in accordance with the minimum requirements of ASHRAE/IESNA 90.1-2007. Document compliance using COMchek-EZ.

Strategies that the mechanical engineer can implement to reduce the building energy consumption for heating and cooling include:

- Oversize the duct and piping systems for low static pressure losses.
- Oversize coils to reduce pressure drop.
- Design new coils for higher temperature range on fluid side to reduce system flow.
- Use variable flow heating, chilled and condenser water systems
- Provide demand controlled ventilation in areas with varying occupancy.
- Evaluate a dedicated outdoor air system with zone radiant heating and cooling
- Evaluate the use of operable windows with automatic zone interlock to prevent system operation when windows are open

INTERNAL LOADS

Use the following loads if more specific design information is not available:

People: 250 Btuh, sensible

200 Btuh, latent

Lights: 1.0 watts/ft^2, overhead

Equipment: 0.75 laptop PC per person in stacks and student areas

1 desktop PC per seat in offices

1 copier per 10 people in office groups

3 watts/ft^2 in high equipment density areas

Server / Network Operations:
100 watts/ft^2

Modify internal load calculations as required when more specific design information becomes available, in order to maintain indoor design temperatures and optimize size and cost of mechanical systems.

BUILDING ENVELOPE

Reference IECC 2006, Climate Zone 5 for minimum envelope requirements

POTABLE WATER CONSUMPTION

Design the plumbing system so that the annual potable water consumption by interior plumbing fixtures is no more than 90% of the Energy Policy Act of 1992 plumbing fixture maximum.

Strategies available to achieve water consumption reductions include 0.5 gpm lavatory faucets, 0.125 gpm urinal flush valves, low water consumption flush-valve water closets, and other similar items. Use only those items and types of products acceptable to the owner. Waterless urinals are not acceptable.

COMMISSIONING

Coordinate construction documents with the DFCM-selected commissioning agent. Commissioning of the building will comply with requirements for building commissioning detailed in the DFCM Solicitation for Commissioning Services.

Measurement And Verification

Provide continuous metering equipment and 4-20 MA signal outputs, integrated with building BMS system for the following uses:

Steam (condensate) consumption at building.

Domestic water consumption at building

GENERAL DESCRIPTION

Provide central station custom or field built-up air handler(s) with cooling and heating coils as required to meet minimum ventilation standards. Use backward-inclined centrifugal fans with variable speed control. Locate air handling equipment indoors in a roof-mounted penthouse, or basement mechanical room with adequate service clearance. Locate prime-source mechanical equipment (i.e. heat exchangers, pumps) in mechanical room.

Provide single duct air distribution, with VAV reheat boxes in all zones.

Use variable speed return/relief fans.

HEATING WATER

Steam from the central plant is available year-round. While it is distributed at 100 psig, for the purposes of sizing of heat exchangers and other building consumption, assume pressure is 80 psig.

Adequate capacity exists for this project.

Use a shell and tube heat exchanger to convert the steam to hot water for distribution via a constant volume primary, variable volume secondary hydronic system.

Heating water transport energy consumption is limited as follows:

Load	Maximum Water Transport Energy (bhp/1,000,000 Btuh)
Full Load	2.50
50% Load	1.15

Provide air handler coils as follows:

Tube		Fins	
MIN ROWS	MIN THICKNESS (IN)	MAX SPACING (FPI)	MAX THICKNESS (IN)
2	0.035	6	0.0075

Specify piping of domestic manufacture.

Design piping system, including isolation valves and appropriate piping arrangements to allow maintenance of sub-zones of the heating water system without requiring complete shutdown.

Review piping schematic with Physical Plant personnel.

CHILLED WATER

Provide a water-cooled constant-speed screw chiller, approximately 130 tons, with minimum efficiency of 4.90 COP and 4.95 IPLV

Design the chilled water transport energy consumption as follows:

Load	Maximum Water Transport Energy (bhp/ton)
Full Load	0.05
50% Load	0.04

Provide air handler coils as follows:

Tube		Fins	
Min Rows	Min Thickness (in)	Max Spacing (fpi)	Max Thickness (in)
6	0.035	10	0.0075

Specify piping of domestic manufacture.

Provide isolation valves at each air handler.

CONDENSER WATER

Provide a stainless steel counter flow or cross flow cooling tower, roof mounted, to accomplish indirect evaporative cooling as well as chiller condenser heat rejection.

Minimum efficiency at design conditions = 38.2 gpm/hp

Provide chemical-free water treatment.

Size cooling tower for 5° approach on evaporative design day.

Provide variable speed control of cooling tower fan(s).

SERVER ROOM

Provide at two dedicated air conditioning units per room. Air distribution will be overhead.

Heat rejection is via air-cooled condensing units, with low ambient capability.

AIR DISTRIBUTION

Document fan sizing calculations with zone-by-zone load calculations.

Use automatic dampers on exhaust fans in lieu of barometric dampers.

Document that transport energy consumption meets the following criteria:

Load	Maximum Air Transport Energy (bhp/1,000 cfm)
Full Load	1.0
50% Load	0.30

Require pressure testing of all duct systems in accordance with 2009 IMC.

Provide each space with individual room temperature control. Provide zoning plan during schematic design review that indicates proposed zoning plan for review and approval by Facilities Planning staff.

Provide custom air handlers, with double wall construction.

Construct all new supply and transfer air ductwork with galvanized sheet metal.

Construct all new medium pressure ductwork to SMACNA 6” pressure class.

Construct all new low pressure ductwork to SMACNA 2” pressure class.

Seal both types of ductwork to SMACNA seal class A.

Leak test all medium pressure ductwork.

Do not duct return air outside the mechanical rooms. Return air path will be through return air plenums above ceilings, or unducted through spaces without ceilings. Short metal transfer ducts/sound boots will be used to allow return air paths to penetrate walls that extend to the structural deck above.

Duct return air inside the mechanical rooms to the air handlers.

Coordinate location of outdoor air intakes relative to loading docks, generators and other sources of local air pollution.

PLUMBING

Provide pressure reducing valve station for domestic water service in mechanical room.

Use Type L copper supply piping, no-hub SV service cast-iron waste piping above grade and PVC below grade.

Specify piping of domestic manufacture.

Size hot and cold water piping to maintain 30 psi at hydraulically most remote fixture, and with maximum velocity of 6 fps.

Size roof drain system for 2” / hour maximum rainfall.

Support all piping from building structure via approved hangers and supports. Support piping to maintain required grading and pitching of lines, prevent vibration, and allow for expansion and contraction.

Insulate hot water, domestic cold water and primary roof drain piping. Provide all-service jacket in concealed areas, PVC jacket in exposed.

Identify all piping with markers at 20’-0” on center.

Provide full sized isolation ball valve at each floor, and at each terminal device.

Preferred plumbing fixtures are Kohler, with Zurn flush valves (1/8 gpf automatic sensor flush, hard-wired valve urinal, manual dual flush water closet). Wall hung, vitreous china.

Waterless urinals are not acceptable.

Provide wall-hung, vitreous china lavatories, single temperature supply with hard-wired 0.5 gpm sensor faucet.

Provide deep seal traps for floor drains. No trap primers.

Provide hose bibs on outside walls, two on each exposure, with freeze-proof quarter turn valve.

Provide a hose bib in each toilet room, with loose key handle and quarter-turn valve.

Generate at least 65% of the annual domestic hot water consumption with a flat plate or evacuated tube solar collector. Store heated water in insulated storage tanks, and mix down to circulate at 105°F. Generate remaining domestic hot water demand with steam-to-water plate and frame semi-instantaneous water heater.

Terminate hot water within 5’-0” of last fixture. Soft water is required.

VACUUM

Provide a duplex rotary vane dental vacuum system for the 6 chair dental clinic. Include amalgam separator, two separator tanks, and two rotary vane pumps, each sized for 70% of peak load.

Vacuum system to comply with NFPA 99C, Level 3.

Use PVC piping on wet side, routed underground.

COMPRESSED AIR

Provide duplex reciprocating oil free air compressors, tank-mounted with air filter-drier.

Compressed air system to comply with NFPA 99C, Level 3

Use Type L copper medical gas tubing, with wrought copper fittings and brazed joints.

FIRE PROTECTION

Provide fire sprinkler protection throughout building. System to comply with NFPA and State of Utah Fire Marshal requirements.

Provide individual floor control assembly, including zone check assembly, at each floor

Sprinkler Occupancy Hazard Classifications:

Office and Public Areas:	Light Hazard.
Service Areas:	Ordinary Hazard, Group 1.
Mechanical Equipment Rooms:	Ordinary Hazard, Group 1.
Building Service Areas:	Ordinary Hazard, Group 1.
Electrical Equipment Rooms:	Ordinary Hazard, Group 1.

Components and Installation:
Capable of producing piping systems with 175-psig minimum working-pressure rating, unless otherwise indicated.

Specify all piping and components Schedule 40 minimum, and of domestic manufacture.

Minimum Density for Automatic-Sprinkler Piping Design:
(Reduce Design areas with quick response heads when applicable and increase design area as required for pitched ceilings.)

Light-Hazard Occupancy:	0.10 gpm over 1,500 ft^2. area.
Ordinary-Hazard, Group 1 Occupancy:	0.15 gpm over 1,500 ft^2. area.
Ordinary-Hazard, Group 2 Occupancy:	0.20 gpm over 1,500 ft^2. area.
Special Occupancy Hazard:	As determined by authorities having jurisdiction.

<u>Maximum Protection Area per Sprinkler</u>:
(except as modified by authorities having jurisdiction)

Office Space:	225/400 ft^2.
Storage Areas:	130/400 ft^2.
Mechanical Equipment Rooms:	130 ft^2.
Electrical Equipment Rooms:	130 ft^2.
Other Areas:	According to NFPA calculations, unless otherwise indicated.

CONTROLS

Provide Direct Digital Control (DDC) system.

Integrate the mechanical and electrical systems. Provide microprocessor to microprocessor communication between the DDC and variable frequency drives, air handler(s), electrical distribution, lighting, emergency generators, UPS system and building power. Provide 15% reserve capacity for additional points to be made available for non-mechanical/electrical monitoring.

Provide written sequence of operation on drawings for all systems controlled by the DDC system.

ELECTRICAL CODES AND STANDARDS

Codes, Standards, and Guidelines, which are applicable to the design of the electrical systems, are listed below. Comply with each of the latest adopted publications:

ADA, Americans with Disabilites Act

International Energy Conservation Code

EIA/TIA, Electronics Industries Association/ Telecommunications Industry Association

IBC 2009, International Building Code

IEEE 1100-1999, Recommended Practice for Power and Grounding Electronic Equipment

IESNA, Illuminating Engineering Society of North America

NFPA, National Fire Protection Association (applicable sections including but not limited to):

- NFPA 70, National Electrical Code
- NFPA 72, National Fire Code

UL, Underwriter's Laboratories

Utah State Fire Marshal Laws, Rules and Regulations

Division of Facilities Construction and Management, Design Criteria

Ogden Weber ATC Design Standards for Electrical Engineering

TELECOMMUNICATION DISTRIBUTION

A new 12-strand multimode fiber cable shall be routed from the Data Center of the Business Building to the new main communication room of the new Health Sciences Building. The cable shall be routed in one of three 1-1/4" inner-ducts in a new 4" conduit. In addition, a spare 4" conduit with nylon pull rope shall also be provided. The existing and new steam tunnels shall be utilized where possible for routing of the conduits. New concrete-encased duct banks shall be provided in areas where the existing and new steam tunnels are not available.

The first duct bank shall be routed from the Data Center of the Business Building immediately west to the existing steam tunnel.

The second duct bank shall be routed from the new steam tunnel to the main communications room located in the new Health Technology Building. Please refer to the attached Telecommunication Site Plan drawing.

The design build contractor shall coordinate all telecommunications work with Kyle Jensen, PC Network Support Technician at (801) 627-8432.

ELECTRICAL DISTRIBUTION SYSTEMS

The main electrical room shall be constructed to house a 480/277 volt main distribution switchboard. This room should be located as close as possible to the pad-mounted high voltage transformers to reduce the length of feeder conduit and conductors.

The 480Y/277 volt main distribution switchboard shall be free-standing and equipped with a meter that meets OWATC requirements. This board shall be utilized to provide power to lighting panel boards, step-down transformers, 480 volt motors, elevators, and large mechanical equipment such as air handlers, pumps, chillers, fans, etc.

Panelboards shall be provided in vertically stacked electrical rooms. Electrical rooms shall be centrally located as much as possible so that the conductor distance from any panelboard to the most remote outlet is not greater than 150 feet.

These rooms shall be dedicated to electrical distribution and shall not be used for storage or any other purposes. Consideration shall be given to the ease and accessibility of running new and future conduits out of each room; for example, do not locate the room between stairs, elevators, restrooms, etc. that would make future work difficult. If inaccessible ceilings surround the room, then stub (5) spare 3 / 4" conduits from each panelboard to accessible ceiling areas.

Dedicate an area of each room for current and future riser conduits so that wall-mounted equipment will not impede vertical distribution. Electrical rooms shall have a minimum of 25 % additional space for future growth. Panelboards and dry-type transformers serving normal lighting and appliance circuits shall be located on the same floor as the circuits they serve.

Main distribution switchboard, power distribution panels, and branch panelboards shall have 25% excess capacity for future growth and flexibility and shall also have sufficient capacity to serve any shelled space.

Provide only copper service conductors. Bussing for switchboards shall be copper only.

FEEDER DISTRIBUTION

To the greatest extent possible, separate different types of loads onto different feeders and busses, such as HVAC equipment, vertical transportation, lighting, convenience power, and “clean” computer power. In general, large motors and equipment shall be served at 480V, 3 phase; lighting at 277V; outlets and small equipment at 120V.

480Y/277 volt lighting and appliance branch circuit panel boards shall be utilized to provide power for lighting, HVAC, and other electrical motor loads. Panel boards shall be dedicated to serve either lighting or HVAC loads but not both.

The 208Y/120 volt lighting and appliance branch circuit panelboards shall be utilized to provide power for incandescent lighting, computer equipment, owner furnished equipment, duplex outlets, small mechanical equipment, etc. Separate branch panelboards shall be installed to feed power to computer equipment. Computers and any sensitive equipment shall be tied to separate panelboards to isolate them from other equipment such as small mechanical equipment and general-purpose duplex outlets.

All 208Y/120 volt lighting and appliance branch circuit panelboards shall have 200% neutral busses and feeders.

Transformers that are used to supply 208 /120 volt panelboards shall comply with NEMA TP1 for energy efficiency and be designed for non-linear loads.

Provide motor control centers for areas where 3 or more motors are grouped. The ampacity of motor control centers should be calculated in accordance with the load that is served with an addition 25% spare capacity. All 3-phase motor starters shall be provided with phase failure protection. Provide variable frequency drives with harmonic filtering where required for mechanical equipment in compliance with DFCM and Campus requirements.

Provide only copper feeder conductors. Bussing for power panel boards, lighting and appliance branch circuit panel boards and motor control centers shall be copper only.

Power panels and lighting and appliance panel boards shall have 25% excess capacity for future growth and flexibility and shall also be provided complete with branch breakers with sufficient capacity to serve any shelled spaces.

SURGE SUPPRESSION

To provide protection against damage to sensitive electronic equipment, due to surges, provide transient voltage surge suppression (TVSS) devices at the main distribution switchboards and at branch circuit panelboards serving sensitive electronic equipment.

FAULT CURRENT, COORDINATION, AND ARC FLASH STUDY

A fault current and coordination study shall be performed by a licensed electrical engineer to indicate available fault current at all points in the 15 kV and building distribution systems. New equipment shall be adequately rated for the amount of available fault current. System coordination shall be studied, and fuses or breakers selected to ensure minimum system outage due to overloads or fault currents. Breakers with adjustable long time, short time, instantaneous and / or ground fault settings shall be set at levels for optimum system coordination. In addition, an arc flash study shall be provided; electrical equipment shall be provided with labeling per all NEC requirements.

BRANCH CIRCUITS

Branch circuits shall be loaded to no more than 80% of what is allowed by NFPA 70. Where outlets are intended for a specific piece of equipment, the load of the outlet shall be based on the equipment nameplate. Otherwise, allow no more than 4 convenience outlets per circuit in instructional lab spaces and for computer workstations, and 6 convenience outlets per circuit for general purpose use. Outlets with dedicated branch circuits (one outlet per circuit) are required for vending machines, copy machines, break room counters, A/V cabinets and where the equipment nameplate requires it. Each branch circuit homerun shall have no more than 3 circuits per raceway. All branch circuits shall be provided with an oversized neutral (one AWG size larger than the largest phase conductor). Conductors for branch circuits shall be sized to prevent voltage drop exceeding 3% at the farthest load.

The total voltage drop on both feeders and branch circuits shall not exceed 5%. When calculating the voltage drop, the load shall be assumed to be 80% of the ampacity of the branch circuit. Branch circuit wiring should be installed overhead in accessible or open ceiling spaces to simplify relocation of circuits due to remodeling.

Branch circuit conductor shall be copper installed in conduit, ¾" minimum. Type MC cable is allowed only when concealed in ceiling or walls. MC cables must be protected from physical damage and supported directly from the building or structure by use of a listed support. MC Cable home runs are not allowed. Home runs must be in conduit from the electrical panel or cabinet to the first junction or pull box. MC Cable used for Fire Alarm System Signaling or Initiation Circuits must have an overall outer coating with red finish.

STANDBY POWER DISTRIBUTION SYSTEM

A 480Y/277 volt standby diesel engine generator with an under-skid mounted fuel tank shall be provided. The generator shall be located exterior to the building in a sound attenuated enclosure. The generator set shall be located in a screened enclosure. The generator shall support building life safety equipment including lights and fire alarm equipment. The generator shall also support optional standby loads such as telephone and data equipment, A/C equipment for communication rooms, and other standby outlets as designated by the users. Standby diesel engine generator shall have approximately 10% excess capacity for future growth and flexibility. The fuel tank should be sized for 24 hours of engine operation at full load. The generator shall be monitored via the building automation system.

A dedicated automatic transfer switch and distribution shall be provided for life safety equipment. A dedicated automatic transfer switch and distribution shall be provided for the stand-by branch. Small dry-type transformers shall be utilized to step down the voltage down to 208V/120 volt lighting and appliance panel boards. Transformers that are used to supply 208 /120 volt panelboards shall comply with NEMA TP1 for energy efficiency and be designed for non-linear loads.

UNINTERRUPTIBLE POWER SYSTEM (UPS)

It is anticipated that a small UPS will be used to backup telephone and data systems for the new building. Uninterruptible power system shall be backed up by a building diesel stand-by engine generator. The UPS will be furnished by the owner and installed and connected by the design build contractor.

POWER FACTOR CORRECTION

This facility shall meet the minimum requirement of 95% and maximum of 98% power factor. The Design Build Contractor shall provide fixed capacitors and/or an automatic switching bank to meet this requirement. A third party commissioning agent shall be employed to obtain readings from the digital multimeter for a one year period after the building is substantially occupied. If the power factor is not compliant with this requirement, the design build contractor shall provide additional power factor equipment at no additional charge to the owner.

LIGHTNING PROTECTION

Provide a lightning protection system for the new building. The lightning protection system should consist of air terminals, down conductors, ground rods, and a buried grounding conductor to surround and traverse the building. Engage an LPI-certified installer, designer and inspector for the system. Provide a UL Master Label and comply with NFPA 780.

OUTLETS

Refer to program and space plan sheets for basic requirements. Where requirements cannot be identified, the following shall be used as a general guideline. Each outlet location shall be coordinated with the design team and end user during the design.

Instructional Labs: Outlets sufficient for programmed equipment, plus outlets along work benches or tables – no greater than 2' on center (unless otherwise identified in the space plan sheets).

Meeting Rooms and Instructional Spaces: Provide outlets for instructor's station, audio / visual equipment. Ensure that there is at least one outlet for each 10' of wall space. Provide floor outlets where stations or equipment cannot be served directly from the wall without crossing aisle space. Where tables are fixed in place, coordinate power outlets mounted directly into the millwork.

Commons Areas, Lounges and Informal Gathering Areas: Provide power outlets for laptop computers, at least one duplex for each group of 4 seats, but no less than one outlet per each 12' of wall space. Provide floor outlets where stations or equipment cannot be served directly from the wall without crossing aisle space.

Offices: For each workstation, provide one outlet dedicated to computer terminals and one normal outlet, and one additional normal outlet for every 10' of wall space.

Conference and Board Rooms: One outlet for every 10' of wall space, plus one outlet dedicate to computer terminals on two walls. Provide combination power/ communication floor outlets underneath conference room tables.

Lounges / Breakrooms / Kitchenettes: GFI Outlets on dedicated circuits every 4' on counter top plus dedicated outlets for refrigerator, microwave, and disposal (switched at counter top), plus one outlet for every 10' of other wall space in room.

Counter tops (in general): One outlet every 4'; GFI where within 8' of a sink.

Telephone / Data Closets: Provide one 208 volt outlet near the telecommunications rack on emergency power for a UPS – coordinate amperage requirements with OWATC. Provide two 120 volt quad outlets on emergency power on the telephone terminal board, plus one outlet on normal near the door.

Electrical Rooms: At least one outlet on normal power.

Restrooms / Shower Rooms: One GFI outlet near each lavatory counter top.

Corridors, Lobbies: Provide at least one outlet every 25', on alternating sides of the corridor or lobby.

Stairs: One outlet at the landing of each level.

Storage Rooms (small), Janitors Closets: One outlet.

Building Exterior: One WP / GFI outlet near each entrance.

Grounding: Grounding Conductors: Grounding conductors shall be installed with all feeder and branch circuits. Provide an additional isolated grounding conductor to all 120/208-volt branch panel boards.

Provide a grounding riser system throughout the telecommunication rooms consisting of a grounding bus mounted on the wall in each room near the telecommunications boards and two grounding conductors (one extending to the main ground bus of the main distribution panel and the other extended to building steel).

INTERIOR LIGHTING

General Design Criteria

Utilize standard fixtures to meet the illumination requirements while maintaining high efficiency and requiring minimal maintenance. Install fixtures in locations such that special equipment is not required for lamp replacement. Provide task lighting where practical to reduce the overall energy consumption. Lighting intensity and uniformity should provide shadow-free and glare-free illumination of work surfaces. Lighting intensity control using dimmers or multi-level switching should be incorporated in specialized instructional spaces where computer or other electronic equipment monitors are used. Pendant indirect or direct / indirect fixtures are ideally suited for the environments that will be encountered and should be used where ceiling heights will allow for suspension of 18 inches or more below the finished ceiling. If pendant fixtures are used in rooms with ceiling projectors, carefully coordinate the pendant fixtures with the projected image to eliminate any conflicts.

Task Illuminance

Lighting levels shall be in accordance with the Recommended Illuminance Categories and Illuminance Values for Lighting Design, IES Lighting Handbook. Total lighting load for the facility should not exceed the calculated lighting power budget, minus 10%, as determined by ASHRAE 90.1-2007. The lighting levels listed below in footcandles should be used for design purposes. The values listed are average maintained illuminance levels using a maintenance factor of 75%. The numbers listed are target values and should be adjusted to meet the special requirements of individual areas.

Task lights shall be provided by the Construction Contract if part of the lab casework.

Function / Space	Illuminance (Avg. Footcandles)
Instructional Laboratories	50 (ambient) – 100 (task)
Instructional Minor Surgery	300 (ambient) – 2500 (task)
Offices	30 (ambient) – 50 (task)
Classrooms	50
Media Rooms	30
Instructional Exam Rooms	50
Instructional Patient Bed Spaces	50
Conference / Meeting Spaces	50
Corridors / stairwells	20
Corridors / stairwells, Staff only	10
General Storage	30
Lab Equipment Rooms	30
MECHANICAL / ELECTRICAL ROOMS	20

Lamps

The number of different lamps that are used should be kept to a minimum so that replacement stock will be minimal and the opportunity for replacement errors will be reduced. The design should strive to utilize only one type of T8 or T5 fluorescent lamp and one type of compact fluorescent lamp; however, this requirement should not override the goals of maximizing energy efficiency and proper task illumination. T8 lamps characteristics should include rapid-start, low-mercury, minimum color rendering index of 82, 4100 K color temperature, and average rated life of 20,000 hours. T5 lamps characteristics should include programmed-start, low-mercury, minimum color rendering index of 85, 4100 K color temperature, and average rated life of 20,000 hours. Compact fluorescent lamp characteristics should include minimum color rendering index of 80, 4100 K color temperature, 10,000 hours average rated life at 3 hours per start. All fluorescent lamps should comply with the Federal Toxic Characteristics Leaching Process (TCLP) test, and yield less than 0.2 mg of mercury per liter when tested according to NEMA LL 1.

Ballasts for linear fluorescent lamps should be electronic programmed start with not greater than 10% total harmonic distortion. Ballasts for compact fluorescent lamps should also be electronic and should operate at minimum 90% power factor.

Incandescent lamps should not be used, except for special cases where a CRI of 100 and / or a dimming range of 0% -100% is critical to the task involved. Incandescent lamps, if used, should be tungsten halogen IR type par lamps.

Interior Lighting Control
Occupancy sensors should be used in normally occupied enclosed areas such as offices, break rooms, conference rooms, and toilet rooms to shutdown lighting when the areas are not occupied. Lighting in common areas such as corridors and lobbies should be controlled by a programmable networked lighting relay control system with the capability of timed control, sensor inputs and building automation system integration. Low voltage wall station override switches are required in convenient locations throughout the facility to allow for on / off override to suit the specific needs of the building occupants.

Provide day lighting control in common areas where natural illumination alone provides sufficient lighting levels. Photoelectric sensors should be used to shutdown or dim the artificial lighting when it is not needed. In offices and instructional laboratories where day lighting control is used, utilize continuous dimming to negate the noticeable affects of the on / off cycles of the artificial illumination.

As required by the room use, provide variable lighting levels by multiple level switching or dimming. In rooms with audio / visual (AV) equipment, provide variable and zoned lighting control, from front to back, to allow for flexibility in lighting scenes for the various room functions. Where central AV control systems are used, provide lighting control / dimming systems with an RS232 AV interface to allow the lights to be controlled from the AV system.

EXTERIOR LIGHTING

Design Criteria
The exterior lighting fixtures should be selected to harmonize with the architectural style of the building. In general, all outdoor lighting shall have full cut-off optics as defined by the IESNA. Wall mounted decorative fixtures may be used to draw attention to main entry or circulation areas. Wall mounted fixtures at other locations should be non-decorative with cutoff optics that are designed for the intended use. Fixtures for parking surface areas and walkways are to be pole mounted and shall comply with the OWATC campus standard type. Check with the Campus design standards to ensure that the latest pole standards are used. A common metal halide lamp should be selected for use in all exterior fixtures to minimize the maintenance stock requirements where practical. All exterior light fixtures should be robust and suitable for the harsh exterior environment. Preference should be given to fixtures that have design features such as hinging reflectors and removable ballast trays that reduce the cost of lamp replacement and fixture repairs.

Illuminance
Lighting levels should be in accordance with the Recommended Illuminance Categories and Illuminance Values for Lighting Design, IES Lighting Handbook. Total lighting load for the facility should not exceed the calculated lighting power budget as determined by ASHRAE 90.1 - 2007. The lighting levels listed below in footcandles should be used for design purposes. The values listed are average maintained illuminance levels using a maintenance factor of 75%.

Function	Iluminance (Avg. Footcandles)
Parking	1
Walkways	1
Building Perimeter - Entrances	5

Emergency Illuminance

Select standard building lighting as may be required to achieve the illuminance criteria set forth in the NFPA Life Safety Code, IBC, and local codes. Designate these fixtures as egress lighting fixtures. Where lamp sources of building lighting are not instant on, provide arc keeper devices or battery/inverter units to prevent lamp source from extinguishing until emergency power can be supplied. Provide dedicated branch circuiting from the emergency power branch. Emergency lighting shall be provided on all paths of egress including but not necessarily limited to corridors, large open office or instructional spaces, restrooms, mechanical rooms, electrical rooms, and communication rooms.

Provide illuminated exit signs in locations as required by the NFPA Life Safety Code, IBC, and local codes. Exit sign shall be cast aluminum LED type. Provide dedicated branch circuiting from the emergency power branch.

Fire Alarm System

Fire alarm system shall be designed to comply with Utah State Fire Marshall's "Rules and Regulations" and OWATC Design Standards. Only Notifier systems are allowed on campus. An addressable fire alarm system shall be designed capable of networking with the campus system. Reporting back to the campus head end equipment shall be via radio.

Design strobes visible from all locations except private offices. Horn installation shall comply with NFPA including for higher ambient noise requirements. Provide duct detectors and fan shutdown where required by NFPA and the IMC, including detection of smoke at all return air shafts servicing multiple floors. Provide smoke detectors in elevator lobbies and in machine rooms. Provide heat detectors in machine rooms. Coordinate location of the building fire alarm control panel and annunciator panel with the Campus fire marshal.

TELECOMMUNICATION SYSTEM

The voice and data system shall consist of two main categories: 1) Pathways and Spaces to support the voice and data system, and 2) The structured cabling system.

Pathways and Spaces

There shall be one main communication room. This room shall house the main computer and phone equipment that serves the building. Each equipment room shall be a minimum of 150 square feet (10' x 15') in size. The room shall be located as close to the center of the building as possible.

The second floor shall also have a communication room that is 150 square feet (10' x 15') in size. Additional communication rooms of the same size may be required on each floor if the horizontal cable length to a telecommunications outlet exceeds 90 meters. (The standards set the maximum cable length at 100 meters. That includes the length in the communication room from the wall to the switches, and in the classrooms, from the wall to the computers.)

A minimum of two (2) 3" conduits shall be run from the communication room on level two to the roof of the building for roof mounted external wireless communications. All communication rooms shall be located in a stacked configuration and shall be interconnected with at least (4) 4" sleeves. There shall be no water (for example but not limited to restrooms, drinking fountains or janitors sinks) adjacent to or above any of the communications rooms. All communications rooms shall have access directly from a hallway without needing to go through a classroom or office to enter the room.

Each floor shall have a cable tray system that covers each floor. The cable tray system shall connect communication rooms on the same floor. Generally, it shall be routed in corridors and coordinated with ducts, piping, and electrical conduits. It should also be extended into each lecture room or major area. Provide basket-type cable tray. It is anticipated that a 12” wide by 4” deep tray should be sufficient; however, this should be carefully evaluated during design. The tray should be trapeze-hung and seismically braced; center-hung trays are not allowed. The location of the tray should be coordinated with duct work and piping during design. Mechanical fire stop systems should be utilized where the cable tray passes through fire rated partitions to allow for moves, additions, and changes in a flexible and easy manner.

Wherever possible, each communication room should have cable tray entering the room from two directions to maximize flexibility and future moves, additions, and changes. The cable tray in communication rooms shall be a minimum of 18” wide with a 4” loading depth.

Each telephone/data outlet shall utilize a 4” square by minimum 2-1/8” deep junction box with a single-gang plaster –ring. One 1” conduit with nylon pull rope shall be run from each junction box to the nearest cable tray and a protective bushing should be provided at the end of the conduit at the cable tray. Conduit to tray clamps shall be employed.

In small offices, provide one (1) telephone/data outlet. In larger offices where it is anticipated that there could be two (2) workstations or varying locations for a single workstation, provide at least two (2) telephone/data outlets and more as may be required.

STRUCTURED CABLING SYSTEM

The structured cabling system shall be designed to support high-speed voice/data/video and future high bandwidth applications. The system should be a Category 6 solution.

The campus network service entrance cable and backbone cable shall be fiber-optic. Horizontal cabling to each telephone/data outlet shall be unshielded twisted pair. All backbone cables shall be terminated in a wall-mounted fiber break out enclosure. All horizontal cabling shall be terminated in patch panels located in a 7'-0" high, 19" floor-standing rack. Each communication rooms shall be provided with a floor-standing rack.

Each telephone/data outlet shall have at least three (3) Category 6 RJ-45 4-pair ports with a dedicated horizontal Category 6 cable ran from the respective communication room on that particular level to each port.

Provide telephone outlets for payphones, ATM's, elevator panels, building automation system, wall phone and other required uses. Each telephone outlet shall have one Category 6 RJ-45 4-pair port with a dedicated horizontal Category 6 cable ran from the respective communication room on that particular level to each port.

Wireless

The user desires that the building and all immediate adjacent outdoor areas, be provided with reliable wireless local area network coverage. Provide data outlets at owner designated location for wireless points to cover all interior areas, as well as to spill out into all immediate adjacent outdoor areas. Design wireless access point data outlet with one category 6, RJ-45 data jack mounted in a 4" square by minimum 2-1/8" deep junction box with a coverplate.

SECURITY SYSTEMS

All security systems will comply with established campus standards. Systems will annunciate alarm conditions to, and be completely monitored by, the OWATC campus police department.

Security System devices, cabling, control panels, monitors, terminations, etc. shall be furnished, installed, and connected by OWATC. The design build contractor shall provide all required raceways, outlet boxes, 120 volt power connections, etc.

The following is a description of the security systems planned for this building:

<u>Card Access</u>

A complete access control system will control entry to all perimeter entry / exit points. Card readers will be the proximity type, and will comply with established Campus Standards. Card readers will report to a central door controllers. Coordinate door hardware to minimize the aesthetic impact to the appearance of the building. Request-to-exit motion detectors will be installed on the secure side of each access-controlled door. Magnetic locks and/or electric strikes will be utilized to secure access-controlled door.

Student Attendance Recording: A complete student attendance recording consisting of card readers and fixed surveillance cameras will monitor student attendance. Card readers will be the proximity type and report to central door controller. It is anticipated that card readers and cameras will be installed around perimeter entry / exit points only.

Video Surveillance
A complete video surveillance system with control for visual monitoring of building perimeter, all building entry / exit points, at select main building thoroughfares, elevator lobbies, and at select sensitive interior areas. PTZ cameras will monitor exterior areas including the building perimeter. Fixed cameras will monitor designated locations inside the building. Cameras will be installed in appropriately rated enclosures. Signals from cameras will be connected to a central switching / multiplexing system with minimum 13" video monitors for viewing. All camera images will be digitally recorded by DVR's that are local area network accessible. Additionally, cameras will be monitored and controlled at a remote location on campus with transmission via the campus network system.

Intrusion Detection
A complete intrusion detection system will be installed for electronic monitoring and status reporting of all building entry / exit points, select building thoroughfares, and at select sensitive interior areas. Sensing devices will include door position switches and motion sensors. All sensing devices will report to a zoned monitoring panel for specific location identification of an alarm condition. The intrusion detection system will be integrated with the video surveillance system for priority viewing of security breach areas. Alarms shall be reported to the campus monitoring location via radio signal.

CLOCK SYSTEM

Provide 120 volt digital clocks in each classroom and instructional lab.

AUDIO AND VIDEO SYSTEMS

Audio and video systems will be specified for installation as part of the building construction work, to be completed with all building trades. Audio and video systems will be specified for full compliance with established Campus Standards.

Large Auditorium

The Large Auditorium will be provided with fully integrated audio, video, and control systems (Crestron or equivalent). Audio systems will amplify the spoken word from presenters, as well as amplify program audio originating from media source playback devices such as computers and DVD players. The spoken word originating from presenters will be captured using wireless, lapel microphones and lectern-mounted gooseneck microphones. Once captured, the audio signal will be processed and amplified to an appropriate speaker system. Design speaker systems to provide even sound pressure level throughout the entire seating area with + 2 dB at 2 KHz, with a frequency response of at least150 Hz to 15 KHz + 2 dB, and a maximum of 12% articulation loss of consonants.

Several media source devices and inputs will be provided. These devices will include, but not be limited to, inputs for portable computing devices, inputs for computer systems resident in lecterns, DVD / VCR players, document cameras, and audio / video / data sources originating from outside the Auditorium. Audio originating from these source devices will be selected, processed, and amplified to a separate, dedicated speaker system for media playback audio only. The speaker system will be full range, for music playback, including, but not limited to, sub-woofers, and low, mid, and high frequency transducers. The media playback speaker system will be 2-channel only (stereo). A multi-channel (surround sound) speaker system is not required.

The media playback speaker system shall reproduce audio from 50 Hz to 17 KHz, and shall be co-located with the projection screens. Provide a wireless assisted listening system in compliance with the Americans with Disabilities Act for all voice and media reinforced audio.

Provide video systems for the large screen display of presenter subject matter. Size projection screens so that all viewers with average eyesight can read text from any seat. Use AV industry-wide accepted mathematical formulas to determine appropriate image sizes. Locate projection screens in close coordination with seating layouts to assure appropriate viewing sight lines. Provide projectors with a minimum native resolution of 1280 X 1024, or 1920 X 1080 depending upon the desired aspect ratio of the projected image as identified by the Owner during the design process.

Depending upon final room ceiling heights, provide tension cabled, electric roll up or fixed projection screens as directed by the Owner during the design process. As with screen sizing, utilize mathematical formulas to calculate the required light output for each projector to assure that images will not be "washed out" by ambient room lighting. Specify appropriate screen surfaces based on calculations. Include all video system calculations in the construction drawings.

Provide two projectors and screens in the Large Auditorium with the ability to display different images on the screens simultaneously. In addition, provide the ability to write electronically (annotate) over the displayed images independently.

The Large Auditorium will be equipped with an integrated control panel for control of all audio and video system components, and lighting systems. To meet this need, a touch screen control panel will be provided. The touch screen control panel will serve as the control panel, lectern monitor, and the annotation input device. Specify control system manufacturers in compliance with established Campus Standards. The touch screen control panel will be programmed in full compliance with the end user's desired button layout, configuration, and labeling. In addition, the control systems will be programmed with macros so that multiple events will occur when a button on the touch panel is engaged.

Classrooms

Classrooms will be provided with fully integrated audio, video, and control systems (Crestron or equivalent). Audio systems will amplify the spoken word from presenters, as well as amplify program audio originating from media source playback devices such as computers and DVD players. The spoken word originating from presenters will be captured using wireless, lapel microphones and lectern-mounted gooseneck microphones. Once captured, the audio signal will be processed and amplified to an appropriate speaker system. Design speaker systems to provide even sound pressure level throughout the entire seating area with + 2 dB at 2 KHz, with a frequency response of at least150 Hz to 15 KHz + 2 dB, and with a maximum of 12% articulation loss of consonants. Include all audio system calculations on the construction drawings.

Several media source devices and inputs will be provided. These devices will include, but not be limited to, inputs for portable computing devices, inputs for computer systems resident in lecterns, DVD / VCR players, document cameras, and audio / video / data sources originating from outside the Seminar Room. Audio originating from these source devices will be selected, processed, and amplified to the above identified speaker system. Provide a wireless assisted listening system in compliance with the Americans with Disabilities Act.

Provide video systems for the large screen display of presenter subject matter. Size projection screens so that all viewers with average eyesight can read text from any seat. Use AV industry-wide accepted mathematical formulas to determine appropriate image sizes. Locate projection screens in close coordination with seating layouts to assure appropriate viewing sight lines. Provide projectors with a minimum native resolution of 1280 X 1024, or 1920 X 1080 depending upon the desired aspect ratio of the projected image as identified by the Owner during the design process.

Depending upon final room ceiling heights, provide tension cabled, electric roll up or fixed projection screens as directed by the Owner during the design process. As with screen sizing, utilize mathematical formulas to calculate the required light output for each projector to assure that images will not be "washed out" by ambient room lighting. Specify appropriate screen surfaces based on calculations. Include all video system calculations in the construction drawings.

Provide two projectors and screens in the Large Seminar Rooms with the ability to display different images on the screens simultaneously. In addition, provide the ability to write electronically (annotate) over the displayed images independently.

The Large Seminar Rooms will be equipped with an integrated control panel for control of all audio and video system components, and lighting systems. To meet this need, a touch screen control panel will be provided. The touch screen control panel will serve as the control panel, lectern monitor, and the annotation input device. Specify control system manufacturers in compliance with established campus standards. The touch screen control panel will be programmed in full compliance with the end user's desired button layout, configuration, and labeling. In addition, the control systems will be programmed with macros so that multiple events will occur when a button on the touch panel is engaged.

CONFERENCE ROOMS

Conference Rooms will be equipped with audio and video systems for media source device presentations, teleconferencing, and video conference capability. Tables in Conference Rooms will be permanently wired with microphones for the capture of meeting participant audio. All microphones will be mixed through automatic matrix mixers with individual echo cancellors for each microphone input. Design speaker systems to provide even sound pressure level throughout the entire seating area with + 2 dB at 2 KHz, with a frequency response of at least150 Hz to 15 KHz + 2 dB, and a maximum of 12% articulation loss of consonants. Include all audio system calculations on the construction drawings.

Video systems will be provided for large screen display of meeting subject matter. Provide a 58” HDTV plasma television. Provide one CODEC and a minimum of two pan, tilt, zoom cameras for image capture of video conferencing participants in each conference room. Conference Room tables will be permanently wired with computer video, composite video and S-video inputs, along with their associated audio signals. This connectivity will be provided in a “hidden” connection panel that rises out of the table when needed. Basic source devices including a DVD / VCR player, and document camera will also be provided.

Conference Rooms will be equipped with an integrated wireless control panel for control of all audio and video system components, lighting systems, and motorized window coverings (if applicable). To meet this need, a wireless WiFi touch screen control panel will be provided. The touch screen control panel will be programmed in full compliance with the end user's desired button layout, configuration, and labeling. In addition, macros (multiple events) will occur when a button on the touch panel is engaged.

TV DISTRIBUTION SYSTEM

An RF TV distribution system will be provided for distribution of audio and video signals throughout the building on coaxial cable. The TV distribution system will include all cable, amplifiers, splitters, couplers, terminators, outlets, and connectors. The system will be the broadband type, for distribution of low resolution, modulated audio and video signals onto a carrier frequency. A minimum 750 MHz bandwidth will be specified, and all outlets will be provided with between +5 and +10 dBu at each building television outlet. Television outlets shall be provided at each A/V system.

GENERAL

Buildings play a significant role in our natural environment, health, productivity and economy. Sustainable design and building practices are aimed to directly address these important issues and maximize both economic and environmental performance. In the context of this Program Document, “sustainable,” or “sustainability,” refers to the design and building practices that make progress towards the goal of environmental sustainability, social sustainability, and economic sustainability. In an effort to contribute to this progress, the U.S Green Building Council has developed the LEED (Leadership in Energy & Environmental Design) Green Building Rating System to measure individual project design strategies and construction components that directly contribute to these goals above and beyond standard building code requirements. LEED is a voluntary, consensus-based national standard for developing high performance, sustainable buildings. The LEED process provides a complete framework for assessing building performance and meeting sustainability goals.

Based on well-founded scientific standards, LEED categorizes sustainability into six major themes: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation in Design process. Holistically, concerted efforts to achieve high levels of performance in each of these categories in design and building practices contribute to a successful, high performance building, and, ultimately, an ever-growing network of high performance buildings. The U.S. Green Building council offers LEED Certification for distinguished projects that have demonstrated a commitment to sustainability by meeting the highest performance standards. Different levels of certification are available depending on the quantifiable increase in water efficiency, energy efficiency, etc (Certified, Silver, Gold, and Platinum).

The State of Utah is aligned with the U.S. Green Building council, in their commitment to building sustainable projects. New projects funded by the State of Utah are required to comply with DFCM's most current High Performance Building Rating System. The High Performance Building Rating System requires, as prerequisite, a minimum of LEED Silver certification level design and construction standards. By means of thorough analysis and modeling, the State intends to limit a building's ecological and economic impact, and targets strategies for reducing energy and water consumption, as well as reducing consumption and waste of resources during and after construction. Additionally, the State requires buildings to be built to a minimum 50-year life-cycle. The selection of design and construction practices are based on modeling of building systems to analyze life-cycle costs, including: Initial costs (Purchas – Acquisition), Construction Costs, Fuel and Energy Costs, Operation, Maintenance and Repair costs, Replacement Costs, Residual Values (Resale, Salvage or Disposal), and Finance Charges (loan interest payments where applicable).

The proposed OWATC Health Technology Building is no exception to the State's requirements. In this respect, sustainability was directly addressed at a Sustainability Workshop in July 2009 - facilitated by the Programming Team, including LEED Accredited Professionals at ajc architects, SRG Partnership, and consulting engineers. The workshop participants discussed the opportunities and challenges of a high performance building with respect to the mission and goals of the OWATC and the Health Occupations programs. Ultimately, the workshop participants were resolute that the proposed OWATC Health Technology Building should be a model facility for human health and comfort, energy and water efficiency, and construction that incorporates durable, low-maintenance regional and recycled materials.

Based on the Sustainability Workshop, and subsequent discussions, DFCM and OWATC determined that the proposed Health Technology Building is to meet LEED 3.0 Gold certification design and construction standards. The current construction cost estimate, including costs for LEED Gold certification, is in line with the construction budget (see Section 5). The following text elaborates on Sustainable Design Criteria with respect to the State's High Performance Building Rating System requirements as well as LEED Rating System. This section is intended to be a point of departure for subsequent design and construction phases.

STATE OF UTAH HIGH PERFORMANCE BUILDING RATING SYSTEM (2009)

Reference Standards and Codes

ANSI/ASHRAE Standard 52.2	Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size
ANSI/ASHRAE Standard 55	Thermal Environmental Conditions for Human Occupancy
ANSI/ASHRAE Standard 62	Ventilation for Acceptable Indoor Air Quality
ANSI/ASHRAE/IESNA Standard 90.1	Energy Standard for Buildings Except Low-Rise Residential Buildings, including Appendix G
Illuminating Engineering Society of North America,	IESNA Lighting Handbook
U.S. Green Building	Leadership in Energy & Environmental Design for New & Major Renovations (LEED – NC)

Per DFCM High Performance Building Rating System requirements, the project must achieve the following credits in the LEED rating system:

(1) WE Credit 1.1: Water Efficient Landscaping: Reduce by 50%
(2) EA Credit 3: Enhanced Commissioning
(3) EQ Credit 3.1: Construction IAQ Management Plan: During Construction
(4) EQ Credit 4.1: Low-Emitting Materials: Adhesives and Sealants
(5) EQ Credit 4.2: Low-Emitting Materials: Paints and Coatings

In addition to building design criteria presented in the program, specific energy modeling requirements include the development of a Preliminary Load Baseline Model that identifies:

- Annual Energy Use (BTU/SF/yr, kWh/SF/yr, $/SF/yr) of baseline building
- Peak heating/cooling day profile
- Baseline envelope criteria
- Baseline equipment efficiencies
- Baseline systems
- Energy Use by loading type
  - Graphs and chart that illustrate energy loads breakdown such as those from space heating, cooling, equipment, hot water, lighting, pumps, etc. The purpose of this is to understand the magnitude of energy loads relative to each other.
- Energy reduction prediction based on energy reduction strategies. Predictions should be broken out by measure to understand their respective impact. These strategies may include, but are not limited to high efficiency glazing, envelope, or lighting, daylighting, building orientation, and efficient mechanical systems such as evaporative cooling or equipment such as pumps or fans. Also included shall be a description of the following:
  - Load reduction strategies to be analyzed in schematic design
  - Energy saving strategies to be analyzed in schematic design

LEED GREEN BUILDING RATING SYSTEM

Prerequisites

Fundamental Building Systems Commissioning: DFCM will engage a Commissioning Agent that is not an individual directly responsible for project design or employed by one of the designers. Commissioning Agent shall ensure that fundamental building components are installed and calibrated to operate as intended.

Life-Cycle Cost Analysis: The Design Team shall use life-cycle cost analysis in making decisions about their investments in products, services, construction, and other projects to lower the State Government's costs and to reduce energy and water consumption.

CFC Reduction in HVAC and Refrigeration Equipment: The Design Team shall select HVAC and refrigeration equipment without chlorofluorocarbons (CFC) based refrigerants.

Ventilation Systems: Designer shall provide mechanical ventilation system according to Standard 62. Mechanical ventilation system shall have the capability Design Requirements – 020608 75 to operate continuously during occupancy and designed not to be easily shut-down or otherwise defeated, such as blocked registers.

Fundamental Lighting Design: Designer shall design the lighting system according to IESNA Lighting Handbook.

Mold Prevention during Construction: Contractor shall ensure porous type building materials, such as wood, insulation, paper, and fabric, is kept dry to prevent the growth of mold and bacteria. Materials that have been affected by mold shall be abated or replaced. Building insulation that is damp or wet for 72 hours shall be replaced.

Filtration Media Replacement before Occupancy: Contractor shall ensure that filtration media is replaced before occupancy.

Thermal Comfort: The Design Team shall ensure that thermal comfort requirements are met according to Standard 55.

Building Envelope: New building envelope components shall be designed to be 10% better than ASHRAE 90.1-2004 minimum requirements.

Mechanical Systems: Mechanical systems shall be designed to meet minimum performance based on ASHRAE90.1-2004.

Drainage Systems: Roof drains and any other plumbing or HVAC system drains shall be designed to avoid standing water around or in the building.

3rd Party Energy Specialist: DFCM shall engage a 3rd party energy specialist to evaluate different energy saving measures, and coordinate these with the design team, commissioning agent, and possibly with available utility company energy credits. Items with a payback of less than 3-5 years are strongly encouraged, as long as they will be compatible with this building and the University's requirements.

Energy Performance: Participate in design meetings with the Energy Specialist who will model the energy consumption and reduction techniques considered for the building. Provide information that will allow the model to establish a baseline, and then energy reduction strategies to improve over the baseline. Consider all of the items discussed in the "General" section above, as well as any other opportunities that are presented or discussed.

Sustainable Sites

Construction Activity Pollution Prevention: Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation. Potential Technologies & Strategies Include: Create an Erosion and Sedimentation Control Plan during the design phase of the project. Consider employing strategies such as temporary and permanent seeding, mulching, earth dikes, silt fencing, sediment traps and sediment basins.

Site Selection: Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site. Potential Technologies & Strategies Include: During the site selection process, give preference to those sites that do not include sensitive site elements and restrictive land types. Select a suitable building location and design the building with the minimal footprint to minimize site disruption of those environmentally sensitive areas identified above.

Development Density & Community Connectivity: Channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources. Potential Technologies & Strategies Include: During the site selection process, give preference to urban sites with pedestrian access to a variety of services.

Brownfield Redevelopment: Rehabilitate damaged sites where development is complicated by environmental contamination, reducing pressure on undeveloped land. Potential Technologies & Strategies Include: During the site selection process, give preference to brownfield sites. Identify tax incentives and property cost savings. Coordinate site development plans with remediation activity, as appropriate.

Alternative Transportation/Public Transportation: Access Reduce pollution and land development impacts from automobile use. Potential Technologies & Strategies Include: Perform a transportation survey of future building occupants to identify transportation needs. Site the building near mass transit.

Alternative Transportation/Bicycle Storage & Changing Rooms: Reduce pollution and land development impacts from automobile use. Potential Technologies & Strategies Include: Design the building with transportation amenities such as bicycle racks and showering/ changing facilities.

Alternative Transportation/Low-Emission & Fuel-Efficient Vehicles: Reduce pollution and land development impacts from automobile use. Potential Technologies & Strategies Include: Provide transportation amenities such as alternative fuel refueling stations. Consider sharing the costs and benefits of refueling stations with neighbors.

Alternative Transportation:
Parking Capacity: Reduce pollution and land development impacts from single occupancy vehicle use. Potential Technologies & Strategies Include: Minimize parking lot/garage size. Consider sharing parking facilities with adjacent buildings. Consider alternatives that will limit the use of single occupancy vehicles.

Site Development

Protect or Restore Habitat: Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity. Potential Technologies & Strategies Include: On greenfield sites, perform a site survey to identify site elements and adopt a master plan for development of the project site. Carefully site the building to minimize disruption to existing ecosystems and design the building to minimize its footprint. Strategies include stacking the building program, tuck-under parking and sharing facilities with neighbors. Establish clearly marked construction boundaries to minimize disturbance of the existing site and restore previously degraded areas to their natural state. For previously developed sites, utilize local and regional governmental agencies, consultants, educational facilities, and native plant societies as resources for the selection of appropriate native or adapted plant materials. Prohibit plant materials listed as invasive or noxious weed species. Native/adapted plants require minimal or no irrigation following establishment, do not require active maintenance such as mowing or chemical inputs such as fertilizers, pesticides or herbicides, and provide habitat value and promote biodiversity through avoidance of monoculture plantings.

Site Development/Maximize Open Space: Provide a high ratio of open space to development footprint to promote biodiversity. Potential Technologies & Strategies Include: Perform a site survey to identify site elements and adopt a master plan for development of the project site. Select a suitable building location and design the building with a minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck-under parking and sharing facilities with neighbors to maximize open space on the site.

Stormwater Design:

Quantity Control: Limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, and managing stormwater runoff. Potential Technologies & Strategies Include: Design the project site to maintain natural stormwater flows by promoting infiltration. Specify vegetated roofs, pervious paving, and other measures to minimize impervious surfaces. Reuse stormwater volumes generated for non-potable uses such as landscape irrigation, toilet and urinal flushing and custodial uses.

Quantity Control: Reduce or eliminate water pollution by reducing impervious cover, increasing onsite infiltration, eliminating sources of contaminants, and removing pollutants from stormwater runoff. Potential Technologies & Strategies Include: Use alternative surfaces (e.g., vegetated roofs, pervious pavement or grid pavers) and nonstructural techniques (e.g., rain gardens, vegetated swales, disconnection of imperviousness, rainwater recycling) to reduce imperviousness and promote infiltration, thereby reducing pollutant loadings.

Use sustainable design strategies (e.g., Low Impact Development, Environmentally Sensitive Design) to design integrated natural and mechanical treatment systems such as constructed wetlands, vegetated filters, and open channels to treat stormwater runoff.

Heat Island Effect

Non-Roof: Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat. Potential Technologies & Strategies Include: Shade constructed surfaces on the site with landscape features and utilize high-reflectance materials for hardscape. Consider replacing constructed surfaces (i.e., roof, roads, sidewalks, etc.) with vegetated surfaces such as vegetated roofs and open grid paving or specify high-albedo materials to reduce the heat absorption.

Roof: Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat. Potential Technologies & Strategies Include: Consider installing high-albedo and vegetated roofs to reduce heat absorption.

Light Pollution Reduction: Minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce development impact on nocturnal environments. Potential Technologies & Strategies Include: Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model. Technologies to reduce light pollution include full cutoff luminaires, low-reflectance surfaces and low-angle spotlights.

Water Efficiency

Water Efficient Landscaping/Reduce by 50%: Limit or eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation. Potential Technologies & Strategies Include: Perform a soil/climate analysis to determine appropriate plant material and design the landscape with native or adapted plants to reduce or eliminate irrigation requirements. Where irrigation is required, use high-efficiency equipment and/or climate-based controllers.

Water Efficient Landscaping/No Potable Water Use or No Irrigation: Eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation. Potential Technologies & Strategies Include: Perform a soil/climate analysis to determine appropriate landscape types and design the landscape with indigenous plants to reduce or eliminate irrigation requirements. Consider using stormwater, graywater, and/or condensate water for irrigation.

Innovative Wastewater Technologies:
Reduce generation of wastewater and potable water demand, while increasing the local aquifer recharge. Potential Technologies & Strategies Include: Specify high-efficiency fixtures and dry fixtures such as composting toilet systems and non-water using urinals to reduce wastewater volumes. Consider reusing stormwater or graywater for sewage conveyance or on-site wastewater treatment systems (mechanical and/or natural). Options for on-site wastewater treatment include packaged biological nutrient removal systems, constructed wetlands, and high-efficiency filtration systems.

Water Use Reduction/20% Reduction:
Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems. Potential Technologies & Strategies Include: Use high-efficiency fixtures, dry fixtures such as composting toilet systems and nonwater using urinals, and occupant sensors to reduce the potable water demand. Consider reuse of stormwater and graywater for non-potable applications such as toilet and urinal flushing and custodial uses.

Water Use Reduction/30% Reduction:
Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems. Potential Technologies & Strategies Include: Use high-efficiency fixtures, dry fixtures such as composting toilet systems and waterless urinals, and occupant sensors to reduce the potable water demand. Consider reuse of stormwater and graywater for non-potable applications such as toilet and urinal flushing, mechanical systems and custodial uses.

Energy and Atmosphere

Fundamental Commissioning of the Building Energy Systems: Verify that the building's energy related systems are installed, calibrated and perform according to the owner's project requirements, basis of design, and construction documents. Potential Technologies & Strategies Include: In order to meet this prerequisite, owners are required to use qualified individuals to lead the commissioning process. Owners are encouraged to consider including water-using systems, building envelope systems, and other systems in the scope of the commissioning plan as appropriate. The building envelope is an important component of a facility which impacts energy consumption, occupant comfort and indoor air quality. While it is not required to be commissioned by LEED, an owner can receive significant financial savings and reduced risk of poor indoor air quality by including building envelope commissioning.

Minimum Energy Performance: Establish the minimum level of energy efficiency for the proposed building and systems. Potential Technologies & Strategies Include: Design the building envelope, HVAC, lighting, and other systems to maximize energy performance.

Fundamental Refrigerant Management: Reduce ozone depletion. Potential Technologies & Strategies Include: When reusing existing HVAC systems, conduct an inventory to identify equipment that uses CFC refrigerants and provide a replacement schedule for these refrigerants. For new buildings, specify new HVAC equipment in the base building that uses no CFC refrigerants.

Optimize Energy Performance: Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use. Potential Technologies & Strategies Include: Design the building envelope and systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost-effective energy efficiency measures. Quantify energy performance as compared to a baseline building.

On-Site Renewable Energy: Encourage and recognize increasing levels of on-site renewable energy self-supply in order to reduce environmental and economic impacts associated with fossil fuel energy use. Potential Technologies & Strategies Include: Assess the project for non-polluting and renewable energy potential including solar, wind, geothermal, low-impact hydro, biomass and bio-gas strategies. When applying these strategies, take advantage of net metering with the local utility.

Enhanced Commissioning: Begin the commissioning process early during the design process and execute additional activities after systems performance verification is completed. Potential Technologies & Strategies Include: Although it is preferable that the Commissioning Agent be contracted by the Owner, for the enhanced commissioning credit, the Commissioning Agent may also be contracted through the design firms or construction management firms not holding construction contracts.

Enhanced Refrigerant Management: Reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to global warming. Potential Technologies & Strategies Include: Design and operate the facility without mechanical cooling and refrigeration equipment. Where mechanical cooling is used, utilize base building HVAC and refrigeration systems for the refrigeration cycle that minimize direct impact on ozone depletion and global warming. Select HVAC&R equipment with reduced refrigerant charge and increased equipment life. Maintain equipment to prevent leakage of refrigerant to the atmosphere. Utilize fire suppression systems that do not contain HCFCs or Halons.

Measurement & Verification: Provide for the ongoing accountability of building energy consumption over time. Potential Technologies & Strategies Include: Develop an M&V Plan to evaluate building and/or energy system performance. Characterize the building and/or energy systems through energy simulation or engineering analysis. Install the necessary metering equipment to measure energy use. Track performance by comparing predicted performance to actual performance, broken down by component or system as appropriate. Evaluate energy efficiency by comparing actual performance to baseline performance.

Green Power: Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis. Potential Technologies & Strategies Include: Determine the energy needs of the building and investigate opportunities to engage in a green power contract. Green power is derived from solar, wind, geothermal, biomass or low-impact hydro sources.

Materials and Resources

Storage & Collection of Recyclables: Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills. Potential Technologies & Strategies Include: Coordinate the size and functionality of the recycling areas with the anticipated collection services for glass, plastic, office paper, newspaper, cardboard and organic wastes to maximize the effectiveness of the dedicated areas. Consider employing cardboard balers, aluminum can crushers, recycling chutes and collection bins at individual workstations to further enhance the recycling program.

Construction Waste Management/Divert 50% from Disposal: Divert construction, demolition and land-clearing debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites. Potential Technologies & Strategies Include: Establish goals for diversion from disposal in landfills and incinerators and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Designate a specific area(s) on the construction site for segregated or comingled collection of recyclable materials, and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials. Note that diversion may include donation of materials to charitable organizations and salvage of materials on-site.

Construction Waste Management/Divert 75% from Disposal: Divert construction and demolition debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites. Potential Technologies & Strategies Include: Establish goals for diversion from disposal in landfills and incinerators and adopt a construction waste management plan to achieve these goals. Consider recycling cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Designate a specific area(s) on the construction site for segregated or comingled collection of recyclable materials, and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials. Note that diversion may include donation of materials to charitable organizations and salvage of materials on-site.

Materials Reuse 5%: Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources. Potential Technologies & Strategies Include: Identify opportunities to incorporate salvaged materials into building design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick and decorative items.

Materials Reuse 10%: Reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing impacts associated with the extraction and processing of virgin resources. Potential Technologies & Strategies Include: Identify opportunities to incorporate salvaged materials into building design and research potential material suppliers. Consider salvaged materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick and decorative items.

Recycled Content 10% (Post-Consumer + ½ Pre-Consumer): Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials. Potential Technologies & Strategies Include: Establish a project goal for recycled content materials and identify material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed. Consider a range of environmental, economic and performance attributes when selecting products and materials.

Recycled Content 20% (Post-Consumer + ½ Pre-Consumer): Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials. Potential Technologies & Strategies Include: Establish a project goal for recycled content materials and identify material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed. Consider a range of environmental, economic and performance attributes when selecting products and materials.

Regional Materials 10% Extracted, Processed & Manufactured Regionally: Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation. Potential Technologies & Strategies Include: Establish a project goal for locally sourced materials, and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed. Consider a range of environmental, economic and performance attributes when selecting products and materials.

Regional Materials 20% Extracted, Processed & Manufactured Regionally: Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation. Potential Technologies & Strategies Include: Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed. Consider a range of environmental, economic and performance attributes when selecting products and materials.

Rapidly Renewable Materials: Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials. Potential Technologies & Strategies Include: Establish a project goal for rapidly renewable materials and identify products and suppliers that can support achievement of this goal. Consider materials such as bamboo, wool, cotton insulation, agrifiber, linoleum, wheatboard, strawboard and cork. During construction, ensure that the specified renewable materials are installed.

Certified Wood: Encourage environmentally responsible forest management. Potential Technologies & Strategies Include: Establish a project goal for FSC-certified wood products and identify suppliers that can achieve this goal. During construction, ensure that the FSC-certified wood products are installed and quantify the total percentage of FSC-certified wood products installed.

Indoor Environmental Quality

Minimum IAQ Performance: Establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants. Potential Technologies & Strategies Include: Design ventilation systems to meet or exceed the minimum outdoor air ventilation rates as described in the ASHRAE standard. Balance the impacts of ventilation rates on energy use and indoor air quality to optimize for energy efficiency and occupant health. Use the ASHRAE 62 Users Manual for detailed guidance on meeting the referenced requirements.

Environmental Tobacco Smoke (ETS) Control: Minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to Environmental Tobacco Smoke (ETS). Potential Technologies & Strategies Include: Prohibit smoking in commercial buildings or effectively control the ventilation air in smoking rooms. For residential buildings, prohibit smoking in common areas, design building envelope and systems to minimize ETS transfer among dwelling units.

Outdoor Air Delivery Monitoring: Provide capacity for ventilation system monitoring to help sustain occupant comfort and well-being. Potential Technologies & Strategies Include: Install carbon dioxide and airflow measurement equipment and feed the information to the HVAC system and/or Building Automation System (BAS) to trigger corrective action, if applicable. If such automatic controls are not feasible with the building systems, use the measurement equipment to trigger alarms that inform building operators or occupants of a possible deficiency in outdoor air delivery.

Increased Ventilation: Provide additional outdoor air ventilation to improve indoor air quality for improved occupant comfort, well-being and productivity. Potential Technologies & Strategies Include: For mechanically ventilated spaces: use heat recovery, where appropriate, to minimize the additional energy consumption associated with higher ventilation rates. For naturally ventilated spaces: follow the eight design steps described in the Carbon Trust Good Practice Guide 237: 1) Develop design requirements, 2) Plan airflow paths, 3) Identify building uses and features that might require special attention, 4) Determine ventilation requirements, 5) Estimate external driving pressures, 6) Select types of ventilation devices, 7) Size ventilation devices, 8) Analyze the design. Use public domain software such as NIST's CONTAM, Multizone Modeling Software, along with LoopDA, Natural Ventilation Sizing Tool, to analytically predict room-by room airflows

Construction IAQ Management Plan During Construction: Reduce indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants. Potential Technologies & Strategies Include: Adopt an IAQ management plan to protect the HVAC system during construction, control pollutant sources and interrupt contamination pathways. Sequence the installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile and gypsum wallboard. Coordinate with EQ Credits 3.2 and 5 to determine the appropriate specifications and schedules for filtration media. If possible, avoid using permanently installed air handlers for temporary heating/cooling during construction. Consult this LEED-NC v2.2 Reference Guide for more detailed information on how to ensure the well-being of construction workers and building occupants if permanently installed air handlers must be used during construction.

Construction IAQ Management Plan Before Occupancy: Reduce indoor air quality problems resulting from the construction/renovation process in order to help sustain the comfort and well-being of construction workers and building occupants.

Potential Technologies & Strategies Include: Prior to occupancy, perform a building flush-out or test the air contaminant levels in the building. The flush-out is often used where occupancy is not required immediately upon substantial completion of construction. IAQ testing can minimize schedule impacts but may be more costly.

Low-Emitting Materials/ Adhesives & Sealants: Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. Potential Technologies & Strategies Include: Specify low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section of the specifications where adhesives and sealants are addressed. Common products to evaluate include general construction adhesives, flooring adhesives, fire-stopping sealants, caulking, duct sealants, plumbing adhesives, and cove base adhesives.

Low-Emitting Materials/Paints & Coatings: Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. Potential Technologies & Strategies Include: Specify low-VOC paints and coatings in construction documents. Ensure that VOC limits are clearly stated in each section of the specifications where paints and coatings are addressed. Track the VOC content of all interior paints and coatings during construction.

Low-Emitting Materials/Carpet Systems: Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. Potential Technologies & Strategies Include: Clearly specify requirements for product testing and/or certification in the construction documents. Select products that are either certified under the Green Label Plus program or for which testing has been done by qualified independent laboratories in accordance with the appropriate requirements.

Low-Emitting Materials: Composite Wood & Agrifiber Products: Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Potential Technologies & Strategies Include: Specify wood and agri.ber products that contain no added urea-formaldehyde resins. Specify laminating adhesives for field and shop applied assemblies that contain no added urea-formaldehyde resins.

Indoor Chemical & Pollutant Source Control: Minimize exposure of building occupants to potentially hazardous particulates and chemical pollutants. Potential Technologies & Strategies Include: Design facility cleaning and maintenance areas with isolated exhaust systems for contaminants. Maintain physical isolation from the rest of the regularly occupied areas of the building. Install permanent architectural entryway systems such as grilles or grates to prevent occupant-borne contaminants from entering the building. Install high-level filtration systems in air handling units processing both return air and outside supply air. Ensure that air handling units can accommodate required filter sizes and pressure drops.

Controllability of Systems/ Lighting: Provide a high level of lighting system control by individual occupants or by specific groups in multi-occupant spaces (i.e., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants. Potential Technologies & Strategies Include: Design facility cleaning and maintenance areas with isolated exhaust systems for contaminants. Maintain physical isolation from the rest of the regularly occupied areas of the building. Install permanent architectural entryway systems such as grilles or grates to prevent occupant-borne contaminants from entering the building. Install high-level filtration systems in air handling units processing both return air and outside supply air. Ensure that air handling units can accommodate required filter sizes and pressure drops.

Controllability of Systems/Thermal Comfort: Provide a high level of thermal comfort system control by individual occupants or by specific groups in multi-occupant spaces (i.e., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants.

Potential Technologies & Strategies Include: Design the building and systems with comfort controls to allow adjustments to suit individual needs or those of groups in shared spaces. ASHRAE Standard 55-2004 identifies the factors of thermal comfort and a process for developing comfort criteria for building spaces that suit the needs of the occupants involved in their daily activities. Control strategies can be developed to expand on the comfort criteria to allow adjustments to suit individual needs and preferences. These may involve system designs incorporating operable windows, hybrid systems integrating operable windows and mechanical systems, or mechanical systems alone. Individual adjustments may involve individual thermostat controls, local diffusers at floor, desk or overhead levels, or control of individual radiant panels, or other means integrated into the overall building, thermal comfort systems, and energy systems design.
Thermal Comfort/Verification: Provide for the assessment of building thermal comfort over time.

Potential Technologies & Strategies Include: ASHRAE Standard 55-2004 provides guidance for establishing thermal comfort criteria and the documentation and validation of building performance to the criteria. While the standard is not intended for purposes of continuous monitoring and maintenance of the thermal environment, the principles expressed in the standard provide a basis for design of monitoring and corrective action systems.

Daylight & Views/Daylight 75% of Spaces: Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building. Potential Technologies & Strategies Include: Design the building to maximize interior daylighting. Strategies to consider include building orientation, shallow floor plates, increased building perimeter, exterior and interior permanent shading devices, high performance glazing and automatic photocell based controls. Predict daylight factors via manual calculations or model daylighting strategies with a physical or computer model to assess footcandle levels and daylight factors achieved.

Daylight & Views/Daylight 90% of Spaces: Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building. Potential Technologies & Strategies Include: Design the space to maximize daylighting and view opportunities. Strategies to consider include lower partition heights, interior shading devices, interior glazing, and automatic photocell-based controls.

Innovation and Design Process

Innovation in Design: To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED 3.0 Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED 3.0 Green Building Rating System. Potential Technologies & Strategies Include: Substantially exceed a LEED 3.0 performance credit such as energy performance or water efficiency. Apply strategies or measures that demonstrate a comprehensive approach and quantifiable environment and/or health benefits.

LEED Accredited Professional: To support and encourage the design integration required by a LEED 3.0 green building project and to streamline the application and certification process. Potential Technologies & Strategies Include: Educate the project team members about green building design & construction and application of the LEED Rating System early in the life of the project. Consider assigning the LEED AP as a facilitator of an integrated design & construction process.

Sustainable planning, design, and construction strategies should continue to be evaluated throughout subsequent design phases. A LEED Project Checklist should be completed early in the next design phase to determine potential “points” and the feasibility of achieving Gold level of certification.

MECHANICAL/PLUMBING

This building will achieve LEED 3.0 Gold Rating, using the following mechanical/plumbing strategies:

Credit	Description	Points	Strategy
WE PR 1: Water Use Reduction	Use 20% less water than baseline calculated for the building	-	Use 1/8 gpf urinals, dual flush water closets, 0.5 gpm aerators with sensor faucets, and low flow shower heads
WE CR 2: Innovative Wastewater Technologies	Reduce potable water for building sewage conveyance by 50%	2	Capture cooling tower water and treat for use in a secondary water system for toilet flushing Investigate rainwater capture for use in same system
WE CR 3: Water Use Reduction	Employ strategies that in aggregate use 40% less water than the water use baseline	4	See above
EA PR 1: Fundamental Commissioning of Building Energy Systems	Verify that energy related systems are installed, calibrated and perform.	-	Coordinate with DFCM Commissioning Agent
EA PR 2: Minimum Energy Performance	Demonstrate 10% improvement in proposed building performance rating	-	Reference strategies for EA CR 1
EA PR 3: Fundamental Refrigerant Management	Zero use of CFC-based refrigerants	-	Do not specify CFC based refrigerants

Credit	Description	Points	Strategy
EA CR 1: Optimize Energy Performance	Demonstrate a 34% improvement in the proposed building performance	12	Oversize the duct and piping systems for low static pressure losses Oversize coils to reduce pressure drop Design coils for higher temperature range on fluid side to reduce system flow Use variable flow heating, chilled and condenser water systems Provide demand controlled ventilation in areas with varying occupancy Evaluate a dedicated outdoor air system with zone radiant heating and cooling Evaluate the use of operable windows with automatic zone interlock to prevent system operation when windows are open
EA CR 2: On-Site Renewable Energy	Use on-site renewable energy to offset 5% of building energy costs	3	Use solar water heating to offset 65% of annual domestic hot water consumption
EA CR 3: Enhanced Commissioning	Provide additional commissioning process activities	2	Coordinate with DFCM Commissioning Agent
EA CR 4: Enhanced Refrigerant Management	Select refrigerants that minimize the emission of compounds that contribute to ozone depletion and global climate change	2	Select refrigerants with low ODP and GWP
IEQ PR 1: Minimum Indoor Air Quality Performance	Meet the minimum requirements of Sections through 7 of ASHRAE 62.1-2007	-	Code minimum

Credit	Description	Points	Strategy
IEQ CR 1: Outdoor Air Delivery Monitoring	Install permanent monitoring systems to ensure that ventilation systems maintain design minimum requirements	1	Provide outdoor airflow monitoring stations at air handler inlet, and provide means to adjust air flow rate as required to meet minimum requirements Provide CO_2 sensors in densely occupied spaces and use the sensor to modulate ventilation airflow rate
IEQ CR 2: Increased Ventilation	Increase breathing zone outdoor air ventilation rates to occupied spaces to 30% above minimum rate	1	Use the ventilation Rate Procedure to determine ventilation rates for each occupied zone, and set VAV box minimums to provide 30% greater ventilation rate to breathing zone Use low temperature heating supply to increase ventilation rate effectiveness
IEQ CR 3.1: Construction Indoor Air Quality Management plan During Construction	Exceed SMACNA IAQ Guidelines for Occupied Buildings Under Construction	1	Ensure specifications incorporate all SMACNA requirements, and assist Contractor to provide documentation
IEQ CR 3.2: Construction Indoor Air Quality Management Plan Before occupancy	Flush building out before occupancy	1	Assist Contractor with flush out procedure, flowing Path 2 of Option 1
IEQ CR 5: Indoor Chemical and Pollutant Source Control	Exhaust each space where hazardous gases or chemical may be present Install new air filtration media prior to occupancy	1	Ensure all janitor's closets, science laboratories, shops and printing rooms can maintain an air pressure differential relative to adjoining spaces of 0.02 in wc
IEQ CR 7.1: Thermal Comfort – Design	Design HVAC systems to meet the requirements of ASHRAE Standard 55-2004	1	Establish acceptable comfort range and document how systems achieve it
IEQ CR 7.2: Thermal Comfort – Verification	Agree to conduct a thermal comfort survey of building occupants	1	Develop survey, and corrective action plan

Electrical

The following is a list of potential opportunities related to the electrical design together with strategies that that should be considered to maximize the energy efficiency and performance of a building:

Light Pollution Reduction: Provide lighting systems that reduce light pollution where possible, thereby increasing visual access to the night sky, by specifying full cut-off type luminaires for the building exterior. Please note that the OWATC has a standard for walkway lighting which may conflict with this requirement. In this case, the OWATC standard must be provided, but evaluated with respect to the LEED requirement. Carefully balance a safe outdoor environment with lighting levels that are not excessive. Do not provided exterior lighting intended to illuminate the building but does not contribute to safety and security. To maximize energy efficiency, the exterior lighting design should include only lighting that is required to provide a safe and secure site.

Optimize Energy: Through careful design of the lighting and control systems, energy usage can be greatly reduced while still providing a pleasing and functional atmosphere to the building occupants. Below are some strategies that are identified:

- Reduce the overall ambient lighting levels and use task lights for specific functions. For example, in instructional labs, the contribution from the permanently installed ceiling lights can be reduced and task lights in the furniture systems be provided.
- Where day lighting is available, provide day lighting control systems. For classrooms and offices, use continual dimming of fluorescent lights to supplement the natural daylight and adjust with less noticeable effect. In corridors and common areas, stepped switching may be used at reduced cost where the expense of dimming is not justified.
- Control all building lighting through a programmable lighting relay system and occupancy sensors. Provide override switches so that the occupants can always turn lights off. If lights are normally off and overridden on, the lights will be timed off after a specified period of time.

- Use premium efficiency lamps and ballasts that have longer lives, use less energy, and qualify for maximum dollar credits on the Rocky Mountain Power FinAnswer program.

- Use premium efficiency transformers, beyond the NEMA TP1 standard, for the non-regulated 120 / 208V loads.

On-Site Renewable Energy: Investigate the feasibility of a grid-interactive photovoltaic (PV) system to supply 1%, 3%, 5%, 7%, 9%, 11%, 113% of the building's total annual energy consumption (corresponding to 1, 2 3, 4, 5, 6, and 7 LEED points respectively). If the building budget does not allow for the initial installation of PV, then make provisions in the design by allowing roof area for PV panels and stubbing conduit to the roof for future wiring.

Measurement and Verification: Divide the electrical distribution system into separate branches feeding the lighting, outlets, HVAC systems, and vertical transportation systems. Provide sub-metering on these systems to allow the Owner to verify the energy performance of the building during the measurement and verification period. Locate meter displays in a central sustainability exhibit that can show energy consumption of the building and energy being produced by the renewable energy sources.

Indoor Environmental Quality / Controllability of Lighting: Design lighting zones and switching to allow all occupants or groups of occupants to have access to lighting control for the individual tasks, areas or common spaces.

Individual Space Outline . 4

PEOPLE

Programming sessions included a kick-off ‘visioning’ session, meetings with individual program representatives, large group meetings with multiple programs and a meeting with students. Programs included in the project are: Clinical Lab Assisting, Dental Occupations, Medical Assisting, Medical Office Technologies, Nursing Assisting, Pharmacy Technician, Phlebotomy, Practical Nursing and a future Registered Nurse program. The space list also includes expansion space for future allied health programs. Faculty includes both full time and adjunct instructors. In addition, the program director, administrative support, and a counselor will occupy space in the building. Teaching spaces and faculty offices are currently in multiple buildings and current spaces do not accommodate strategic adjacencies, so the programming effort included discussion about adjacencies that will bring faculty and users together in ways that will further the educational goals of OWATC.

ACTIVITY

The space program was developed using detailed diagrams for each space. The specialized nature of the spaces and the multiple functions they need to accommodate required individual study. Dental Occupations, Medical Assisting, Medical Office Technology and Nursing Assisting are all open enrollment programs. Open enrollment programs accept new students at weekly intervals, so teaching strategies must accommodate a wide variety of experience levels and activities. Room sizes are thus affected due to the multiple functions occurring at the same time in classrooms and labs. In all programs, instructors require a high level of interconnectedness of rooms due to the number of activities they supervise. Most programs are designed as suites, with a number of immediately adjacent rooms. Faculty offices are programmed as suites of open office workstations, with private offices for coordinators and small private meeting rooms in each suite.

Faculty from different programs may be in shared suites depending on their size, adjacency requirements or space available in the plan. Larger suites may be desirable if they provide efficiencies of space. Suites may also be configured differently than the current room diagrams, but relationships should remain the same. This open plan concept is new for this user group and is intended to encourage faculty interaction. Faculty supported this concept given the trade-off of private offices in favor of small open and enclosed meeting rooms. Faculty generally did not express a need to be immediately adjacent to their teaching spaces.

Student activity in the building will be supported through a series of spaces that offer varieties of uses. Students expressed a need for spaces that allow studying before and after classes. They noted that studying on campus was productive time. The space program reflects large and small spaces that accommodate individual, small group, and large group studying. Students will also have access to a break room.

RELATIONSHIPS

In the programming sessions adjacency needs among departments was discussed and diagrammed. There is currently not a high level of interaction among programs both in socialization and in teaching strategies. Opportunities for interdisciplinary education will be improved by providing space for learning outside the classroom, faculty interaction areas and close proximity of related programs.

Location of programs in the new building was considered with respect to required adjacencies, fit of space in an assumed two floor scheme, and access requirements. The Phlebotomy and Pharmacy Tech programs are currently evening programs so access during otherwise low occupancy hours in the building was a criterion for their locations. Nursing Assisting classes run into evening hours as well. Visual connections to other spaces would also be desirable so that occupants felt safe in the evening. Access to daylight suggests that teaching spaces be located on the North side of the building for the diffuse daylight, while the faculty offices can be located on the South side as heat load is less problematic since the spaces have low occupancy during the day. The dental clinic and auditorium will have the most outside visitors and as such should be located close to a main building entrance.

SUSTAINABLE

- Maximize north/south exposure; minimize east/west exposure
- Provide daylight to all occupied rooms
- South facade to have small windows to minimize solar heat gain
- North facade to have large windows with heads as high as possible to maximize daylighting
- East and west facades to have minimal to no windows
- Provide external cantilevered sunshades on south facing windows
- Provide operable windows throughout; maximize passive ventilation
- Meet LEED gold standard
- Energy consumption for heating and cooling to be 31.5% better than code minimums

ARCHITECTURAL

- Structure and finish materials to be 100 year building. Wood framing not allowed. Use durable materials of institutional quality that will require minimal maintenance
- Create a sense of community within the building; bring faculty, staff and students from the various departments together
- Encourage learning outside the classroom
- Each program to have all spaces contiguous
- The auditorium should be discernable from the exterior, having a distinctive form
- Faculty offices to be open office with landscape partitions, except the Director and Program Coordinators will have private offices
- All student table desks to be 24” x 60” for two people
- All computer testing desks to be 24” x 42” except in Medical office technologies where they will be 48” long
- Since the building can help teach health, provide open inviting stairs that encourage their use

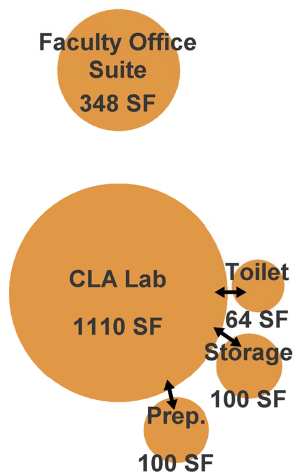
Ogden-Weber Applied Technology College 8/10/2009

Program of Space Needs

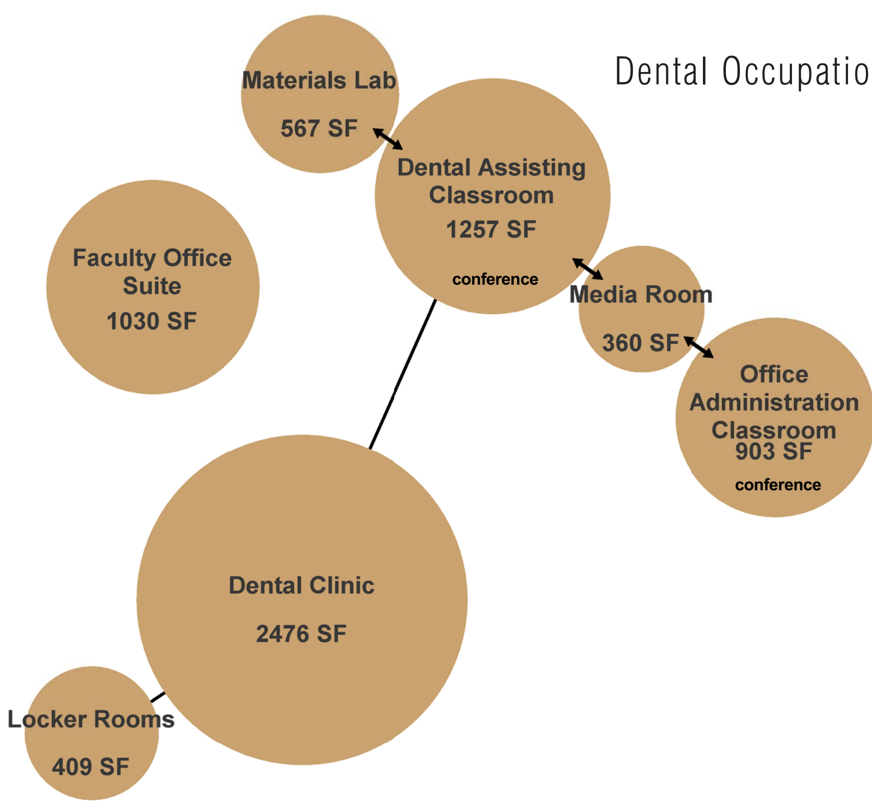
Space Name	Qty	NSF	Total	Seats	Comments
Clinical Lab Programs					
Clinical Lab Suite					
Lab	1	1,110	1,110	16	
Toilet Room	1	64	64		
Storage	1	100	100		
Instructor Prep.	1	100	100		
Office Suite	1	348	348	2	
Clinical Lab Subtotal			**1,722**		
Dental Occupations Program					
Dental Assisting Classroom	1	1,257	1,257	32	Includes 2 conference rooms for 6. Adjacent to Media Room.
Dental Office Administration Classroom	1	903	903	16	Includes 1 conference room for 6. Adjacent to Media Room.
Media Room	1	360	360	18	Area between classrooms. Immediate visual connection to classrooms.
Materials Lab	1	567	567	6	
Dental Clinic	1	2,476	2,476		6 Dental chairs. Close to mechanical room.
Locker Rooms	1	409	409		Includes mens' and womens' locker rooms.
Office Suite	1	1,030	1,030	6	Includes Coordinator's office
Dental Occupations Subtotal			**7,002**		
Medical Assisting Program (space shared by Phlebotomy)					
Medical Assisting Classroom Suite					40 full height lockers immediately adjacent.
Classroom 1	1	1,253	1,253		Includes Nursing Station alcove and Testing area for 6.
Conference	1	117	117	4	
Patient Exam Room	3	140	420		
Classroom 2	1	1,650	1,650	40	Includes 16 computer stations and 1 conference room.
X Ray Lab	1	240	240		
Medical Assisting Lab Suite					
Medical Assisting Lab	1	790	790		
Restroom	1	72	72		
Minor Surgery	1	196	196		
Medication Room	1	67	67		
Office Suite	1	1,030	1,030	6	Shared with Medical Office Technology
Medical Assisting Subtotal			**5,835**		
Medical Office Technologies					
Medical Office Tech Classroom	1	1,750	1,750	30	Includes 15 PC stations and 1 conference room
Medical Office Lab	1	340	340		
Instructor Office	1	0	0		See Medical Assisting Office Suite
Medical Office Tech Subtotal			**2,090**		
Nursing Assistant Program					
CNA Classroom	1	1,296	1,296	40	Includes 4 computer stations
CNA Overflow Classroom	1	796	796	20	Includes 4 computer stations
CNA Lab					
CNA Lab including classroom area	1	2,268	2,268		Includes 16 desks, 7 beds
Toilet Room	1	54	54		
Laundry	1	96	96		
Storage Room	1	317	317		
Media Room	1	740	740	20	
Office Suite	1	1,028	1,028	6	
Nursing Assistant Subtotal			**6,595**		
Pharmacy Technician Program					
Pharmacy Classroom #1	1	1,450	1,450	40	Suite that includes 4 PC stations and 1 testing room.
Pharmacy Classroom #2	1	1,165	1,165	30	Suite that includes 4 PC stations and 1 testing room.
Compounding/ Retail Lab	1	492	492		
Office Suite	1	500	500	4	Area may be deleted if suite is shared by Pharm. Tech., Phlebotomy & Clinical Lab
Pharmacy Technician Subtotal			**3,607**		
Practical Nursing/RN Programs					
Classroom #1	1	1,152	1,152	40	
Classroom #2	1	1,188	1,188	40	
PN/ RN Skills Lab					Suite that includes includes 16 desks, 8 beds, and control room.
PN/ RN Lab including classroom area	1	2,340	2,340		Includes control room
Simulation Room	2	146	292		
Storage Room	1	353	353		
Practice Lab	1	900	900	6	
Computer Lab	1	1,040	1,040	34	Adjacent to PN/ RN but shared with other programs. One proctor station.
Conference Room	1	224	224	12	
Office Suite	1	1,853	1,853	14	
Practical Nursing/RN Subtotal			**9,342**		
Shared Spaces					
Student Lockers	1	250	250	100	PN/ RN: 60 half height lockers, MA: 40 full height lockers, CNA: 66 cubbies
Auditorium	1	2,800	2,800	140	
Directors Office	1	150	150	1	
Administrative Assistant	1	130	130	1	Needed if the Director is not co-located with PN/ RN
Faculty Workroom	2	150	300		
Counselors Office	1	130	130	1	
Lobby/Student Interaction	1	1,000	1,000		
Student Break/Lunch Room	1	500	500		
Student Study/Hearth	2	600	1,200		
Receiving Room	1	150	150		Access to parking lot to north
Laundry Area	1	0	0		See Nursing Assistant Program
Student/Campus Interaction Subtotal			**6,610**		

Total Net SF - Current Program Area	42,803
Grossing Factor	0.66
Gross SF - Current Program Area	65,000
Shell Space - Future Program Area	5,200
TOTAL GROSS SQUARE FEET	**70,200**

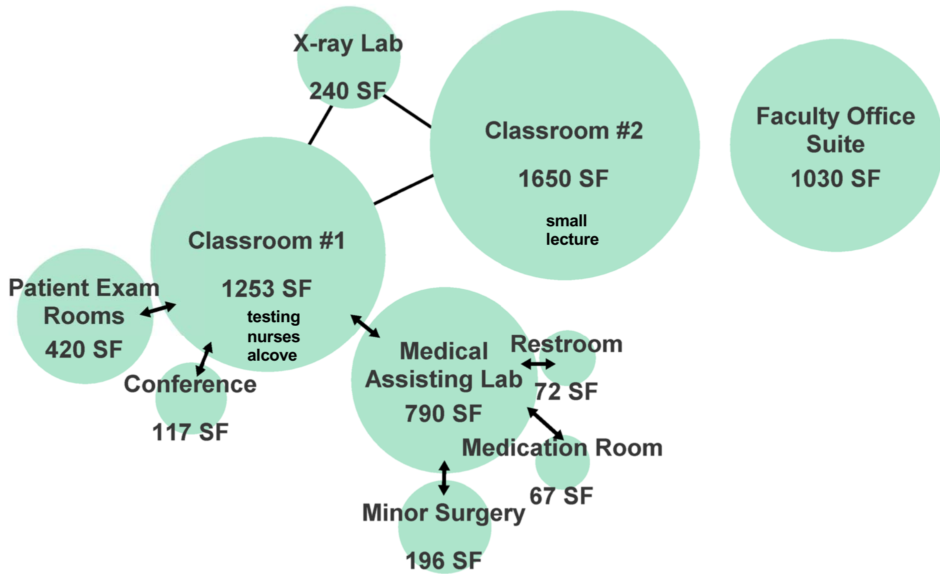
Clinical Lab



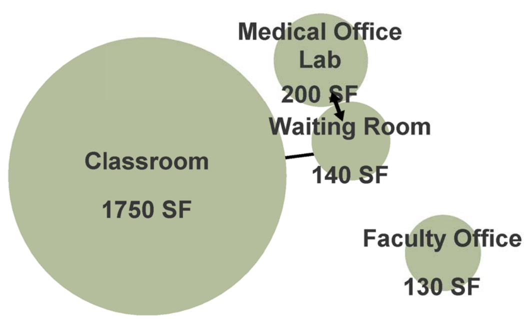
Dental Occupations



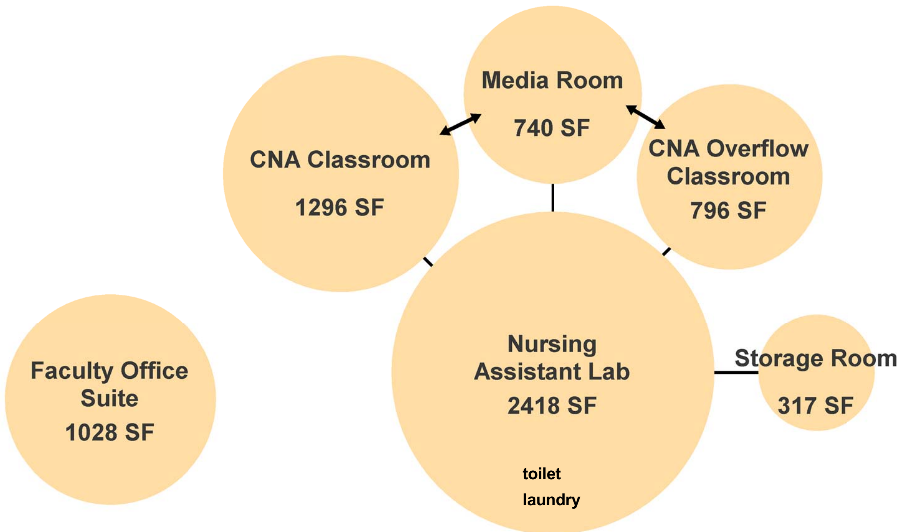
Medical Assisting



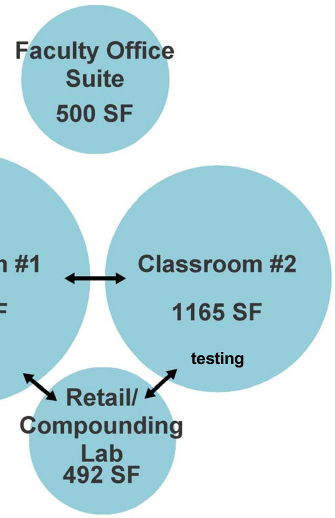
Medical Office Technologies



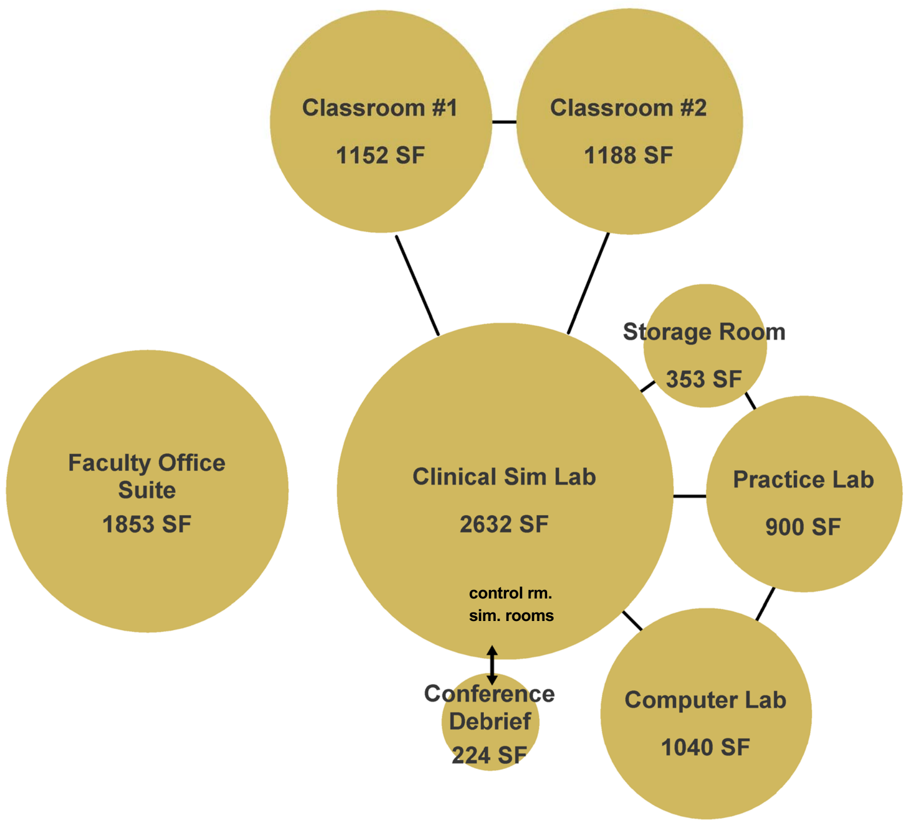
Nursing Assistant



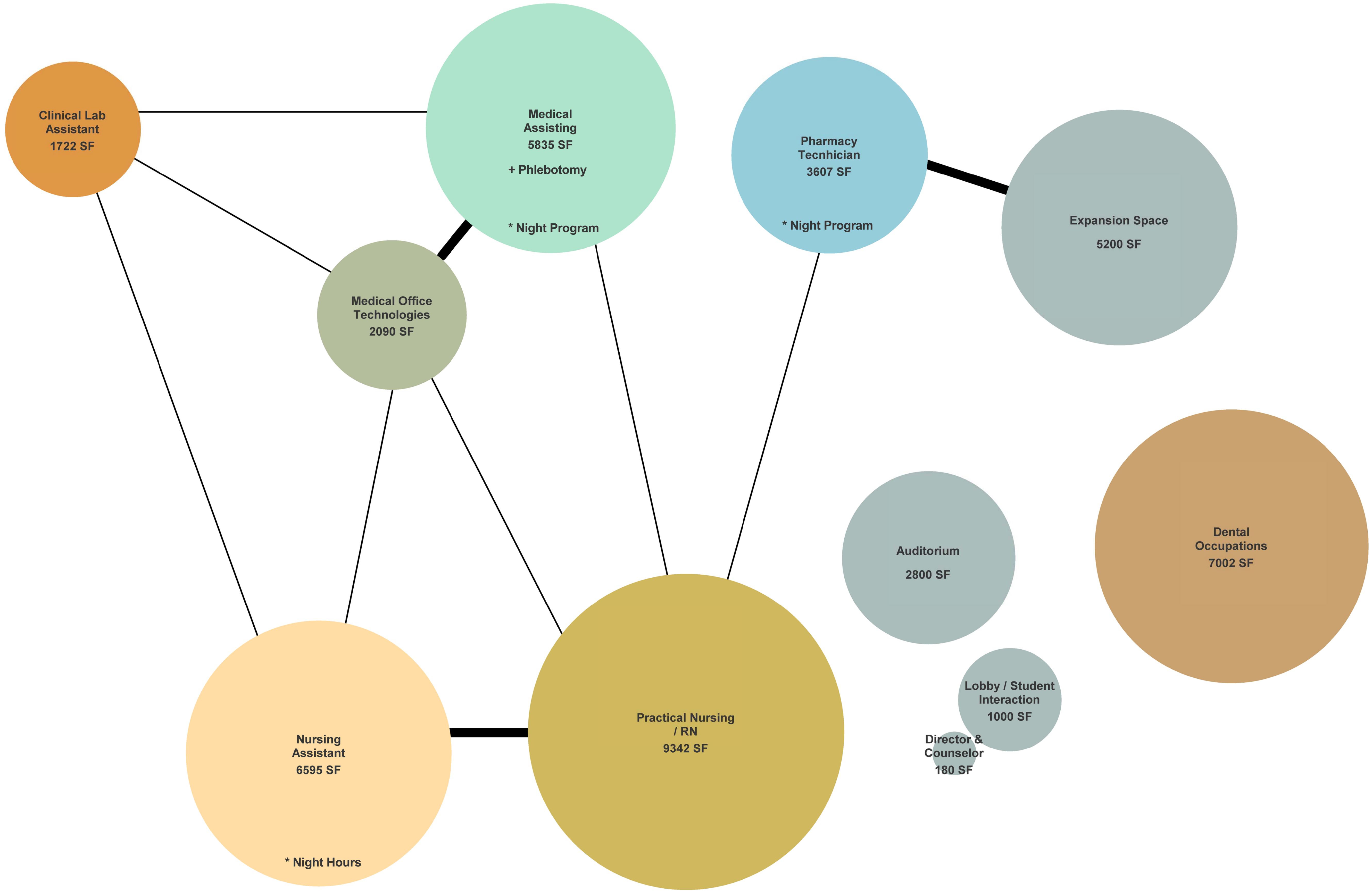
Pharmacy Technician



Practical Nursing

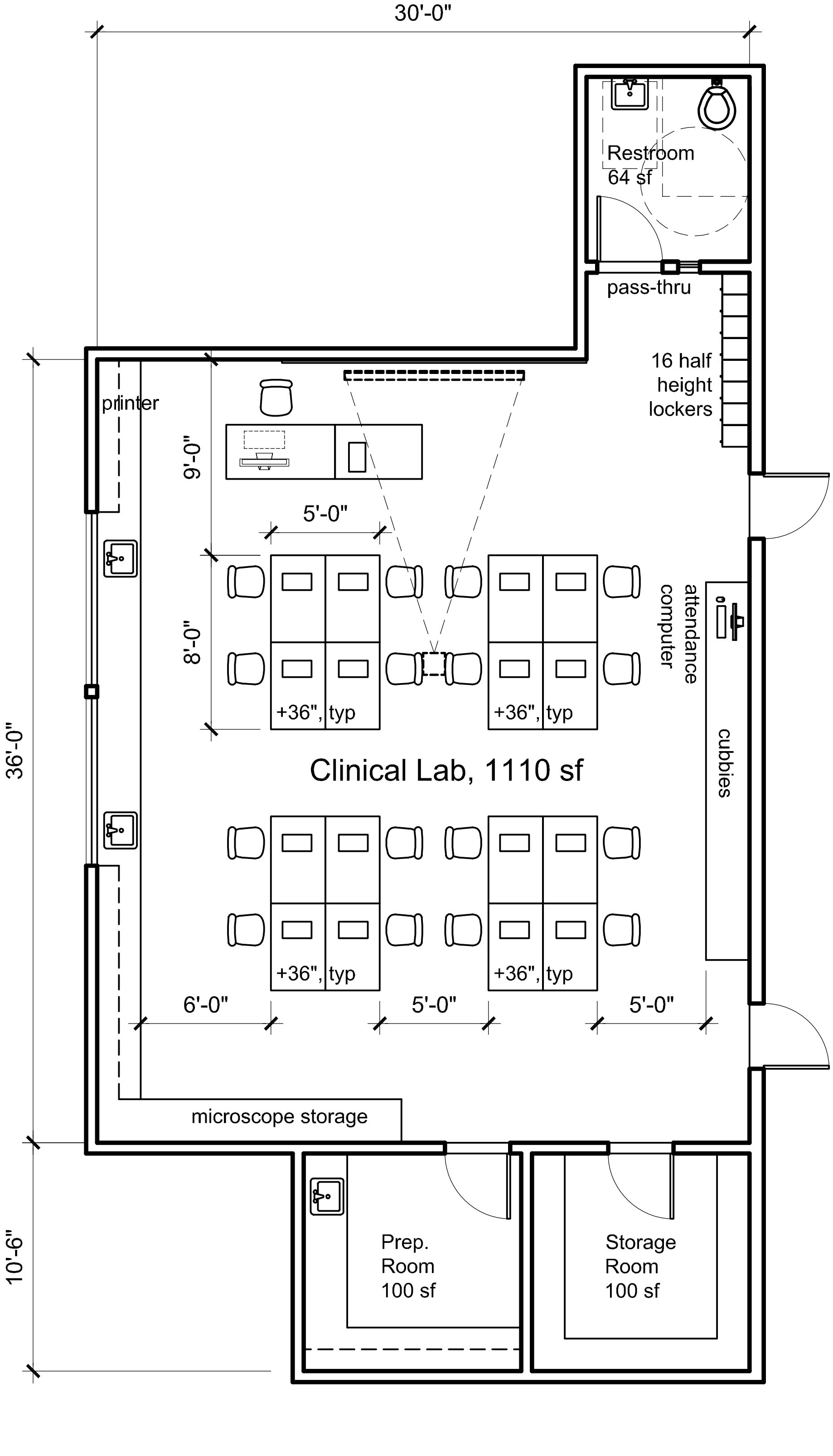


Program


Clinical Lab Assistant
1722 SF
Medical Assisting
5835 SF
+ Phlebotomy
* Night Program
Pharmacy Tecnhician
3607 SF
* Night Program
Expansion Space
5200 SF
Medical Office Technologies
2090 SF
Auditorium
2800 SF
Dental Occupations
7002 SF
Lobby / Student Interaction
1000 SF
Director & Counselor
180 SF
Nursing Assistant
6595 SF
* Night Hours
Practical Nursing / RN
9342 SF

Clinical Lab

Clinical Lab	1374 sf
Office Suite	348 sf



prepared by ajc architects + SRG Partnership
HEALTH TECHNOLOGY BUILDING PROGRAM

1. PROGRAM

General Space Description	Classroom
No. of Occupants	16 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	No special requirements

3. ARCHITECTURAL CHARACTERISTICS

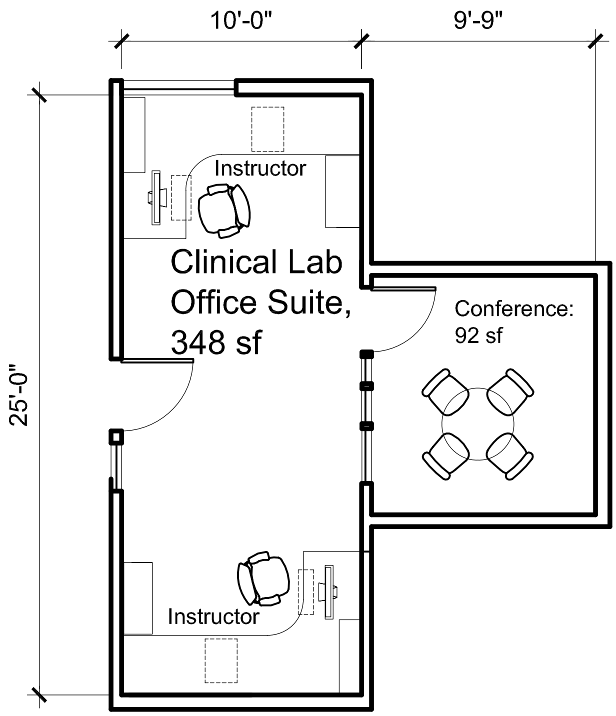
Windows	Yes
Doors	36" single leaf
Floor	Sheet vinyl/ linoleum
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10'-0"
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets, outlets for microscopes
Plumbing	4 sinks, 1 toilet
Lighting	Zoned lighting: separate controls for headwall and seating area. All lighting to be dimmable.
Phone/Data	Wireless data, internet at each (17) microscope, 2 PCs
Special Requirements	

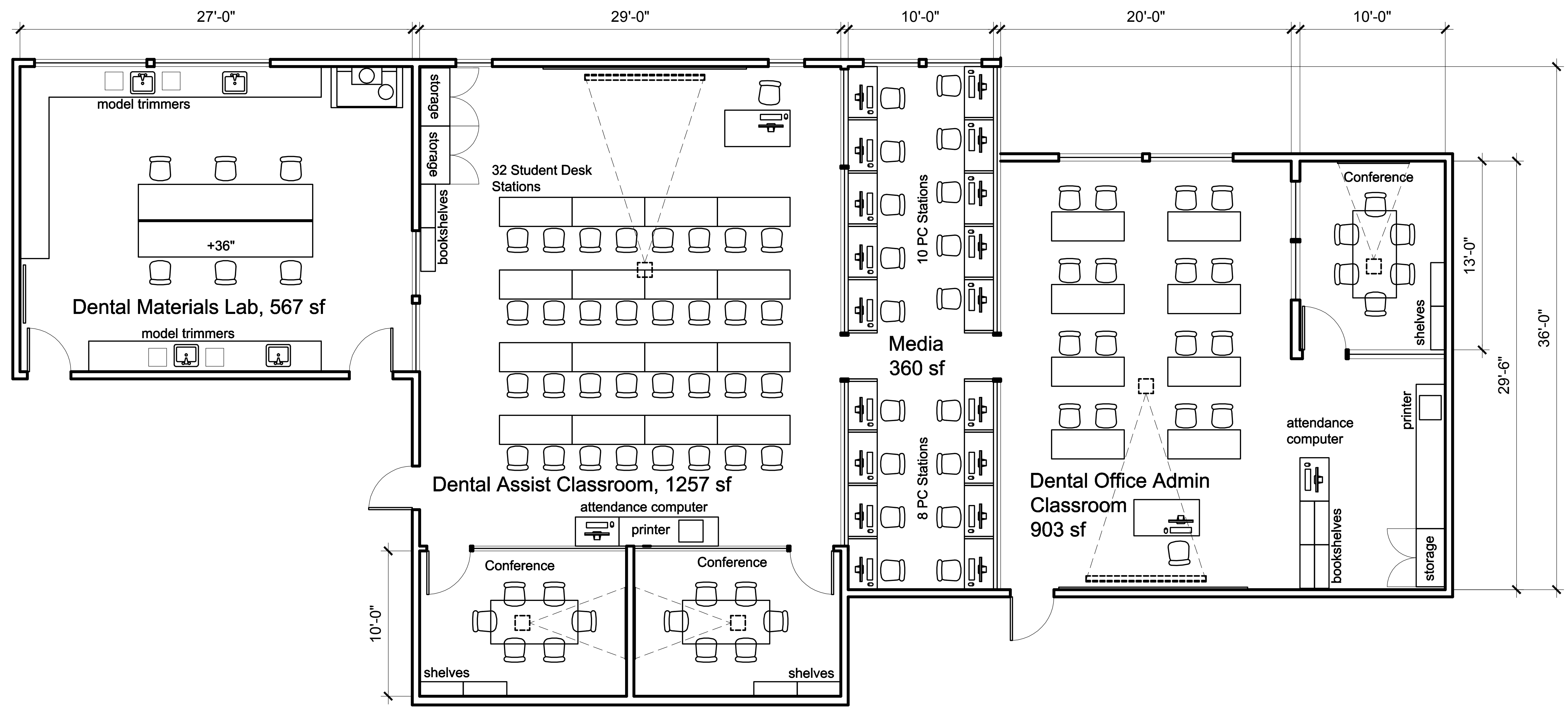
5. EQUIPMENT, FURNITURE, ACCESSORIES

General	16 student stations - 36" high, 16 microscope stations, 1 teaching microscope, 1 instructor station with PC, 2 sinks, 1 printer, 2 whiteboards, 2 bulletin boards, 10'x10' storage room, 16 half-height lockers, cubbies, restroom, attendance computer, 1 locking storage cabinet to hold 16 microscopes



prepared by ajc architects + SRG Partnership
HEALTH TECHNOLOGY BUILDING PROGRAM

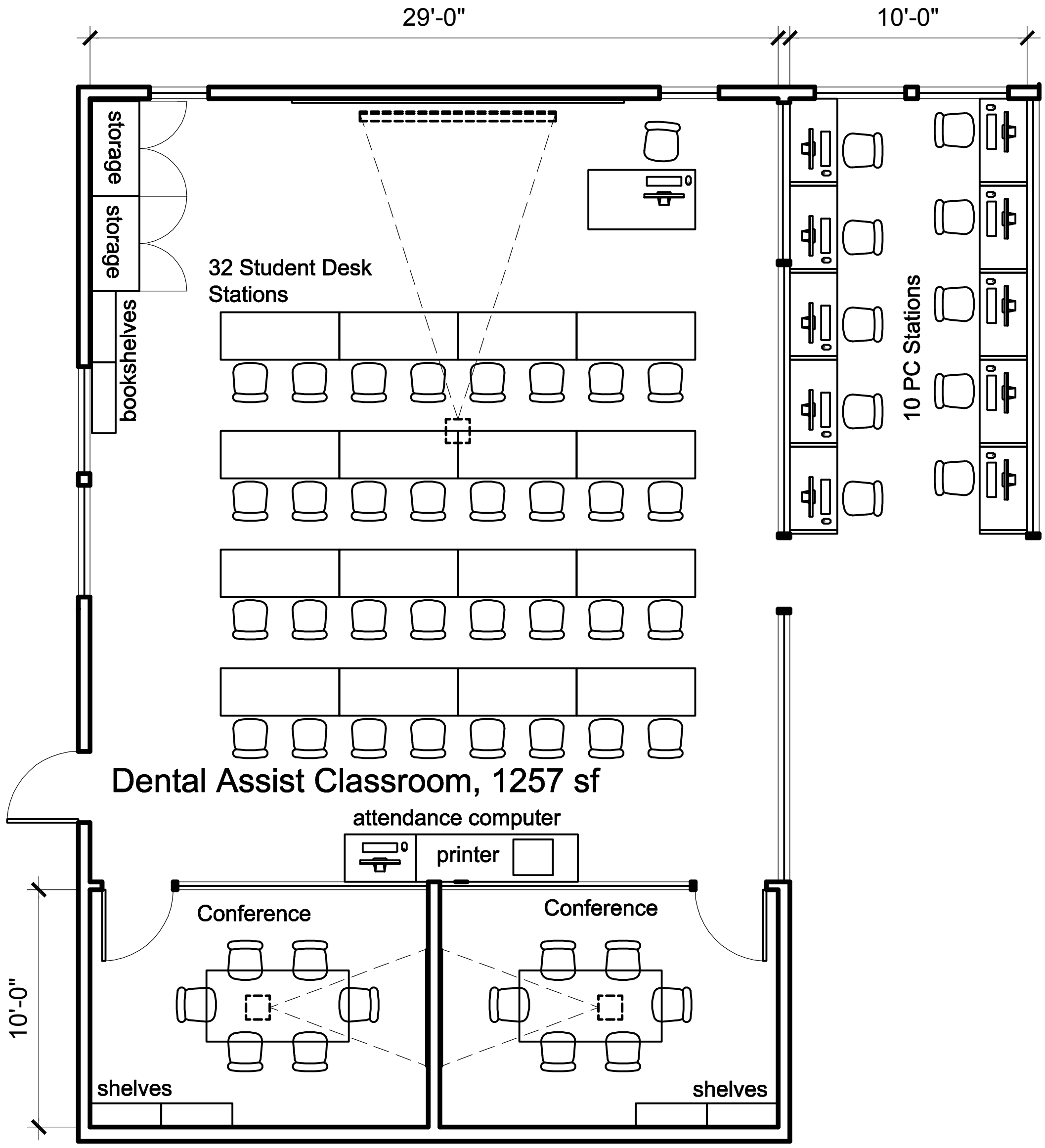
1. PROGRAM	
General Space Description	Office
No. of Occupants	2
2. PROXIMITY AND ACCESS REQUIREMENT	
Must be adjacent to	No special requirements
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustic ceiling panels
Ceiling Height	10’-0”
Acoustics	
4. ENGINEERING SYSTEMS	
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Offices: power on two walls
Plumbing	None
Lighting	Ambient and task
Phone/Data	Offices: two data ports each on two walls
Special Requirements	2 PC, 3 phones
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	2 instructor work stations, private meeting room



27'-0"
29'-0"
10'-0"
20'-0"
10'-0"
model trimmers
+36"
Dental Materials Lab, 567 sf
model trimmers
storage
storage
bookshelves
32 Student Desk Stations
Dental Assist Classroom, 1257 sf
attendance computer
printer
Conference
Conference
shelves
shelves
10'-0"
10 PC Stations
Media
360 sf
8 PC Stations
Dental Office Admin Classroom
903 sf
Conference
shelves
13'-0"
29'-6"
36'-0"
attendance computer
printer
bookshelves
storage

Dental Occupations

Dental Classroom Suite	
Assisting Classroom, Conf. Rooms	1257 sf
Office Admin Classroom, Conf. Room	903 sf
Media Room	360 sf
Materials Lab	567 sf
Dental Clinic	2476 sf
Dental Locker Rooms	409 sf
Dental Office Suite	1030 sf


29'-0"
10'-0"
storage
storage
bookshelves
32 Student Desk Stations
10 PC Stations
Dental Assist Classroom, 1257 sf
attendance computer
printer
Conference
Conference
10'-0"
shelves
shelves

1. PROGRAM

General Space Description	Classroom
No. of Occupants	32 Students in classroom, 6 Ea. in Conference, 10 in Media (PC) Room

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	2 Conference rooms, Media Room Dental Office Administration Classroom Dental Materials Lab

3. ARCHITECTURAL CHARACTERISTICS

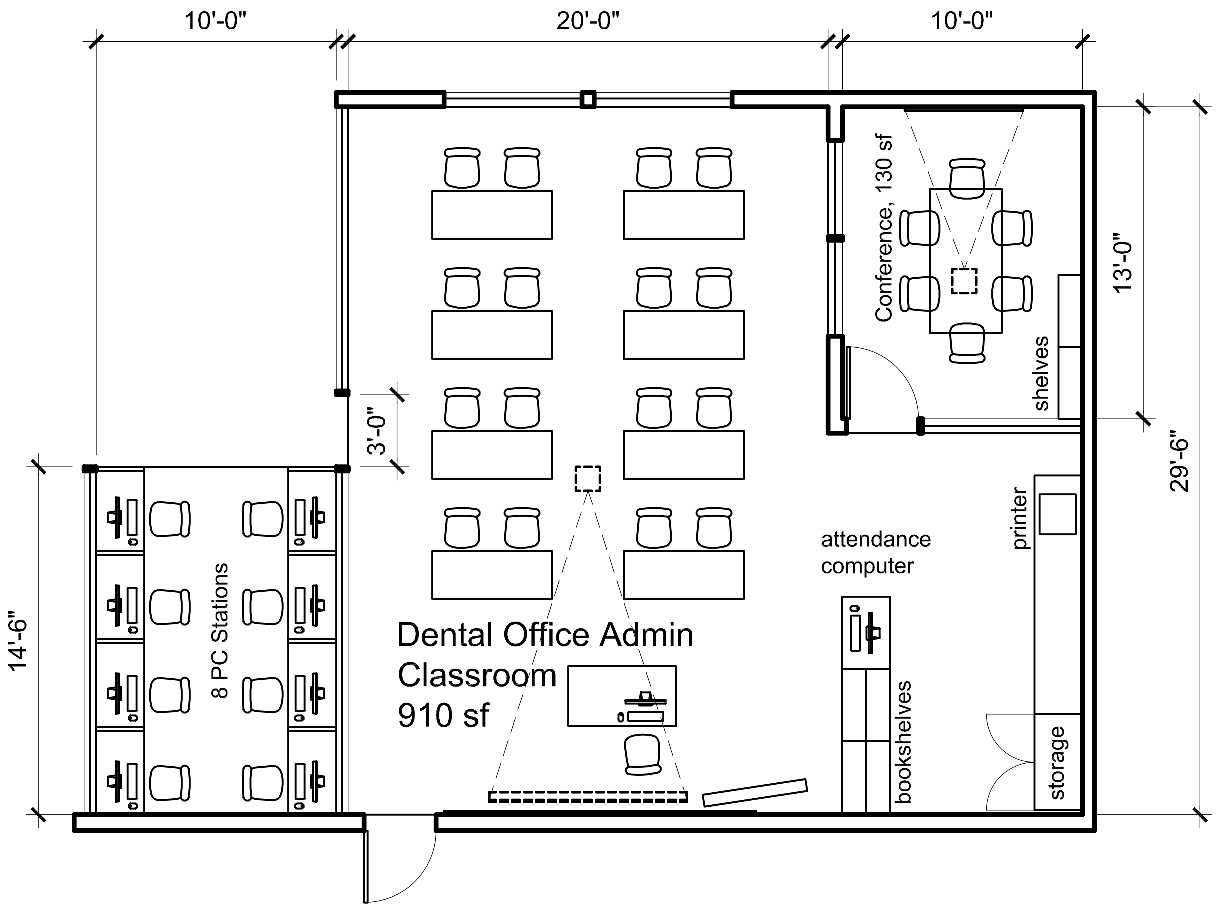
Windows	Yes
Doors	36" single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10'-0"
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data at 11 PC stations and attendance computer
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	32 desk stations, 10 PC stations, 1 printer, 1 instructor station with PC, 1 attendance computer, 2 whiteboards, 2 bulletin boards, bookshelves or storage closet, 1 large flat screen.


10'-0"
20'-0"
10'-0"
Conference, 130 sf
13'-0"
shelves
29'-6"
3'-0"
14'-6"
8 PC Stations
printer
attendance
computer
Dental Office Admin
Classroom
910 sf
bookshelves
storage

1. PROGRAM

General Space Description	Classroom
No. of Occupants	16 Students in classroom, 6 In Conference, 8 in Media (PC) Room

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Dental Assisting Classroom 1 Conference Room, Media Room

3. ARCHITECTURAL CHARACTERISTICS

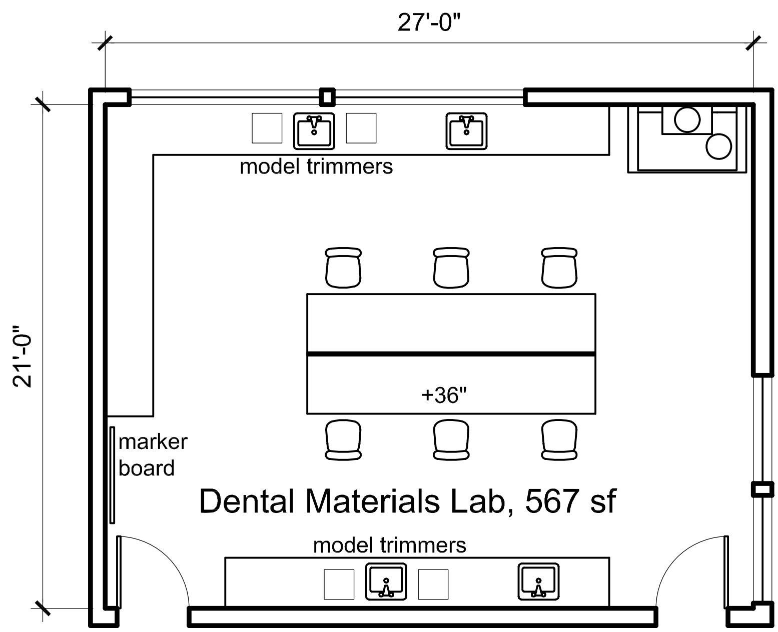
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data at 9 computer stations and attendance computer
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	16 desk stations, 1 instructor station with PC, 8 PC stations, attendance computer, conference table for six, 1 printer, 2 whiteboards, 1 bulletin board, bookshelf or storage closet, 1 large flat screen.


27'-0"
21'-0"
model trimmers
+36"
marker
board
Dental Materials Lab, 567 sf
model trimmers

1. PROGRAM

General Space Description	Materials Lab
No. of Occupants	6-8 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Dental Assisting Classroom, windows btwn

3. ARCHITECTURAL CHARACTERISTICS

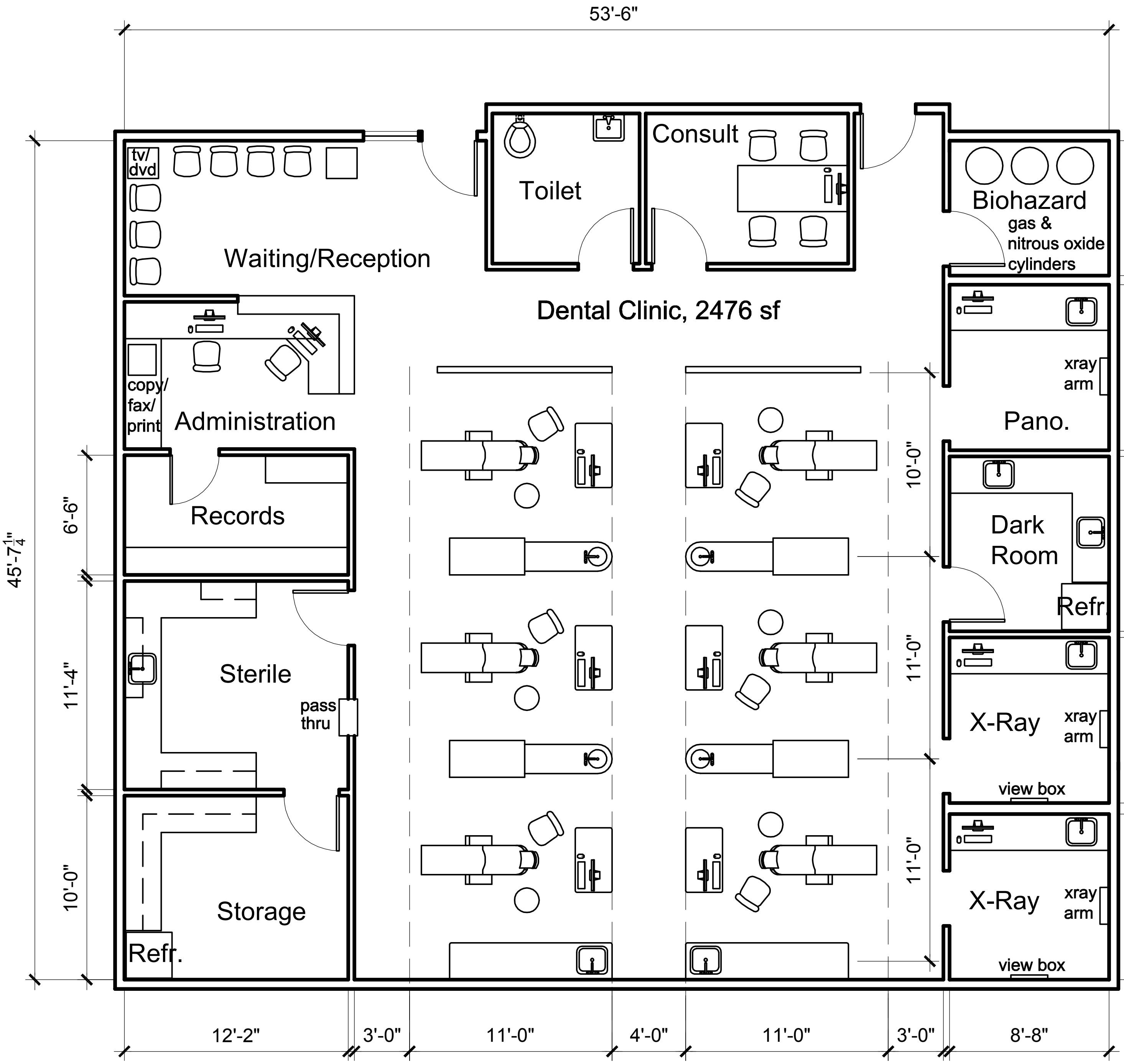
Windows	Yes - interior
Doors	36” single leaf
Floor	Sheet vinyl
Wall	Epoxy painted gypsum board
Ceiling	Mylar faced acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	Acoustical separation for room due to equipment use

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	Venting for fume hood
Electrical	Per equipment requirements
Plumbing	4 sinks with plaster traps
Lighting	Ambient and task lighting
Phone/Data	Wireless data, hard-wired data outlets at perimeter
Special Requirements	Fume Hood, gas line to bunsen burners

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	4 sinks, 4 model trimmers (two each per two sinks) with 2 wall-mtd. plaster bins, 4 laboratory handpieces with dust collector, 2 laboratory lathes with dust collector, 2 light curing units, 2 vacuum formers, plaster mixer, Bunsen burners (connected to gas line), heat trimmer/knife, 4’x4’ marker board, 1 Acrylic fume hood (3’ / one person)


53'-6"
45'-7 1/4"
Waiting/Reception
tv/
dvd
Toilet
Consult
Biohazard
gas &
nitrous oxide
cylinders
Dental Clinic, 2476 sf
Administration
copy/
fax/
print
Records
Sterile
pass
thru
Storage
Refr.
Pano.
xray
arm
Dark
Room
Refr.
X-Ray
xray
arm
view box
X-Ray
xray
arm
view box
12'-2"
3'-0"
11'-0"
4'-0"
11'-0"
3'-0"
8'-8"
6'-6"
11'-4"
10'-0"
10'-0"
11'-0"
11'-0"
7'-4"
9'-0"
9'-6"
9'-0"
9'-0"

1. PROGRAM

General Space Description	Clinic with reception, consultation, treatment rooms, X-Ray, storage
No. of Occupants	6 Patients, clinic staff

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Locker rooms, Mechanical room (to access air and vacuum compressors)

3. ARCHITECTURAL CHARACTERISTICS

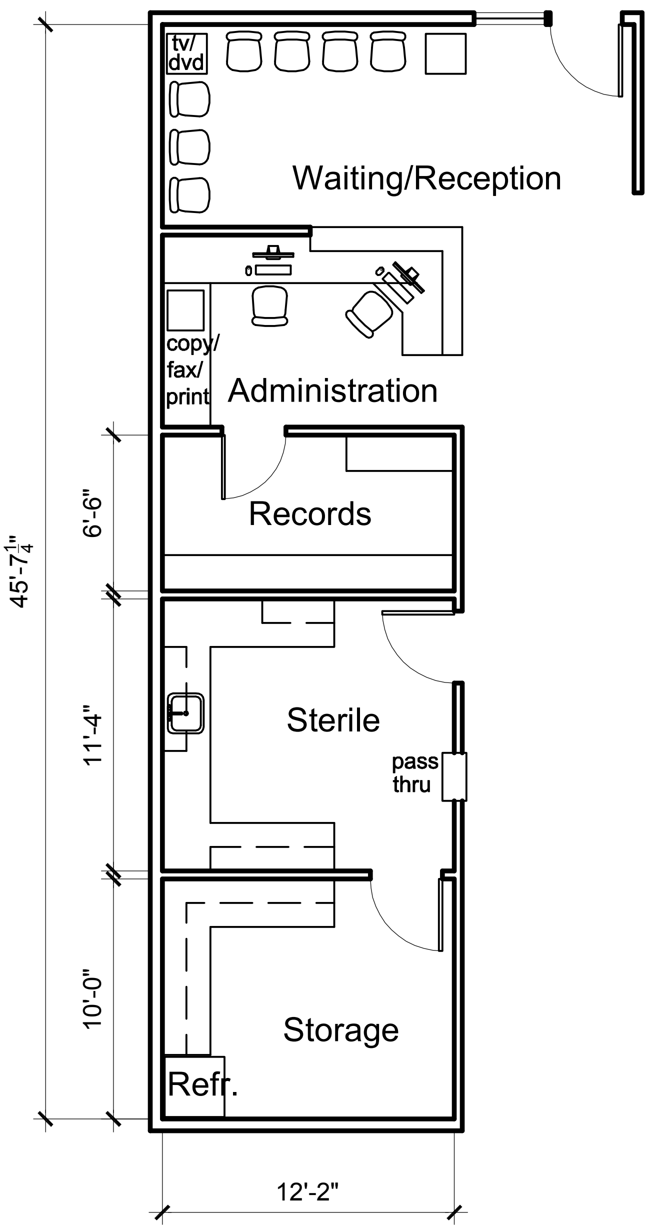
Windows	Yes
Doors	36” single and double leaf
Floor	Sheet vinyl
Wall	Epoxy painted gypsum board
Ceiling	Mylar faced acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	Compressed air, suction, oxygen and nitrous oxide in cylinders (manifold to each operatory) Electrical Per equipment requirements
Plumbing	13 sinks, 2 toilets
Lighting	Ambient lighting, operating light attached to side cabinets
Phone/Data	Computer at each operatory, computer and phone at consultation
Special Requirements	Per dental equipment requirements

5. EQUIPMENT, FURNITURE, ACCESSORIES

Operatories	patient dental chair, rear delivery cabinet with computer, water in bottle, space for portable Xray viewer, amalgamator, curing light, side cabinet with operating light, sink, counter space and storage, drawer for manikin, operator and assistant task stools, Consultation: table, chairs, computer, telephone
Consultation	table, 4 chairs, PC with monitor, telephone


tv/ dvd
Waiting/Reception
copy/ fax/ print
Administration
Records
Sterile
pass thru
Storage
Refr.
45'-7 1/4"
6'-6"
11'-4"
10'-0"
12'-2"

1. PROGRAM

General Space Description	Clinic reception, administration, records, sterilization, storage
No. of Occupants	Waiting: 7, Administration: 2

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Locker rooms, Mechanical room

3. ARCHITECTURAL CHARACTERISTICS

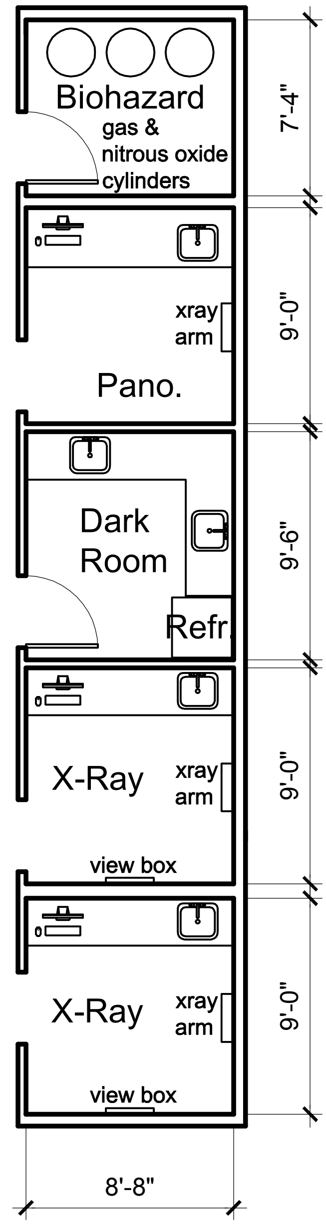
Windows	Yes
Doors	36” single and double leaf
Floor	Sheet vinyl
Wall	Epoxy painted gypsum board
Ceiling	Mylar faced acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

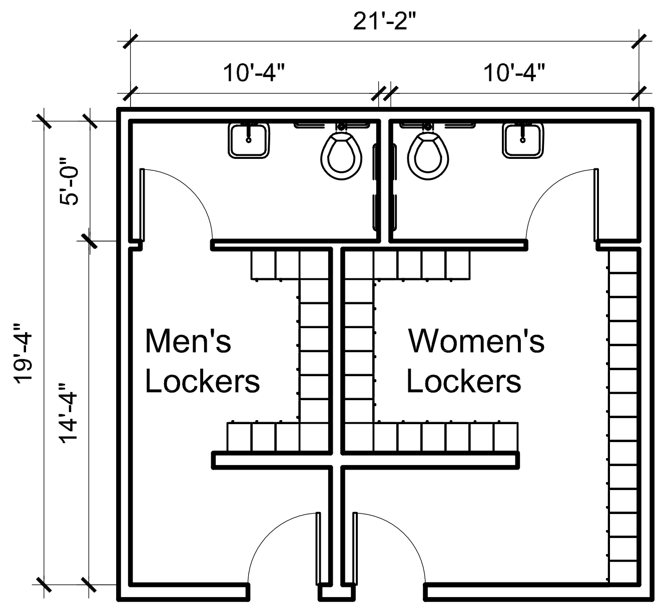
Security Electronics	No special requirements
HVAC	No special requirements
	Electrical
	Per equipment requirements
Plumbing	sink, water distiller
Lighting	Ambient and task lighting
Phone/Data	Wireless data, hard-wired data to 2 computer stations
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

Waiting	chairs, occasional tables, tv/dvd
Adminstration	2 computers, intraoffice communication system, phone, copy/fax/ printer, storage for supplies, Records: medical record shelving
Sterilization	under-cabinet bio-hazard waste bin, sink, dropped ultrasonic instrument cleaner, dropped holding solution container, handpiece cleaning station (requires compressed air), statium autoclave, autoclave, pass-through at wall for pre-set trays, water distiller (shared use w/ MA dept.)
Storage	refrigerator


Biohazard
gas &
nitrous oxide
cylinders
7'-4"
xray
arm
Pano.
9'-0"
Dark
Room
Refr.
9'-6"
X-Ray
xray
arm
view box
9'-0"
X-Ray
xray
arm
view box
9'-0"
8'-8"

1. PROGRAM	
General Space Description	Clinic Biohazard, Xray and Dark rooms
No. of Occupants	1- 3 Ea.
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	Locker rooms, Mechanical room
3. ARCHITECTURAL CHARACTERISTICS	
Windows	No
Doors	36” single leaf
Floor	Sheet vinyl
Wall	Epoxy painted gypsum board
Ceiling	Acoustical ceiling panels. Painted gypsum board ceiling in Dark Room.
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	No special requirements
HVAC	Oxygen and nitrous oxide in cylinders in Biohazard Room (manifold to each operatory)
Electrical	Per equipment requirements
Plumbing	5 sinks
Lighting	Ambient lighting, In-use light for Dark Room
Phone/Data	Computer in each Xray Room
Special Requirements	Per dental equipment requirements
5. EQUIPMENT, FURNITURE, ACCESSORIES	
Biohazard	material waste bins, oxygen and nitrous oxide cylinders
Panoramic Xray	panoramic xray unit
Dark Room	sink, refrigerator, automatic film processor (intraoral and extraoral), safelight, film duplicator, silver recovery unit
Xray	xray unit, digital sensor, large drawer for manikin, sink/ counter, PC or laptop, patient chair, wall-mounted view box



Dental Locker Rooms, 409 sf

1. PROGRAM

General Space Description	Locker Rooms
No. of Occupants	Womens: 30, Mens: 10

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Dental clinic

3. ARCHITECTURAL CHARACTERISTICS

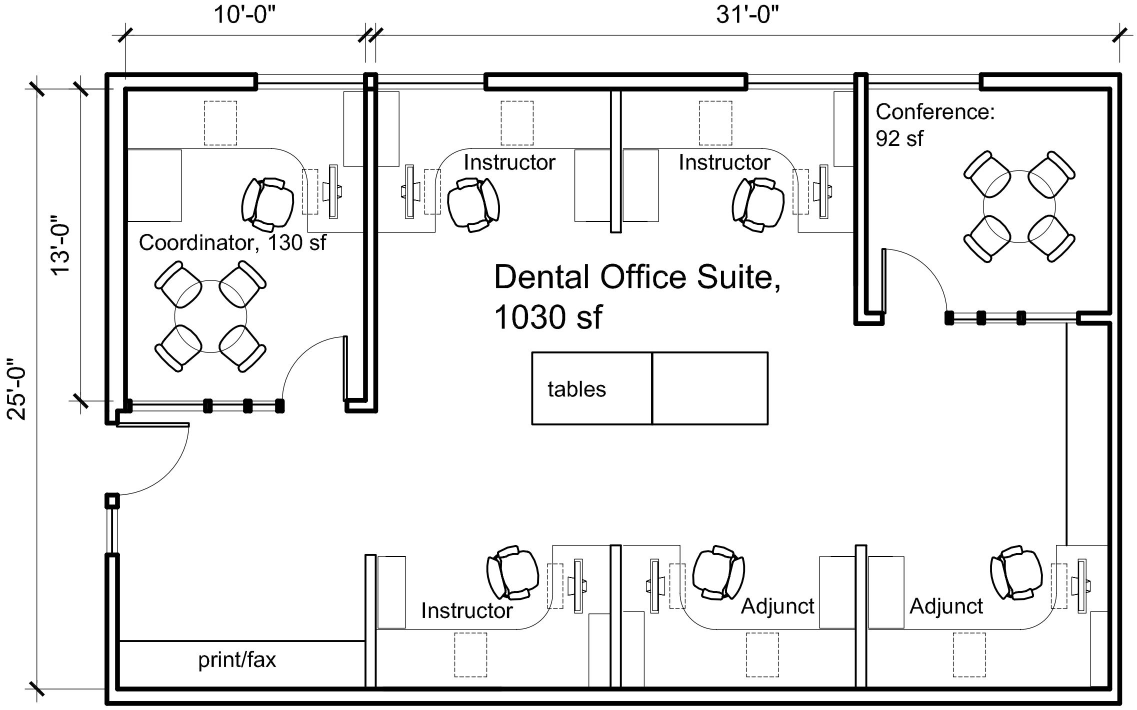
Windows	No
Doors	36” single leaf
Floor	Sheet Vinyl
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

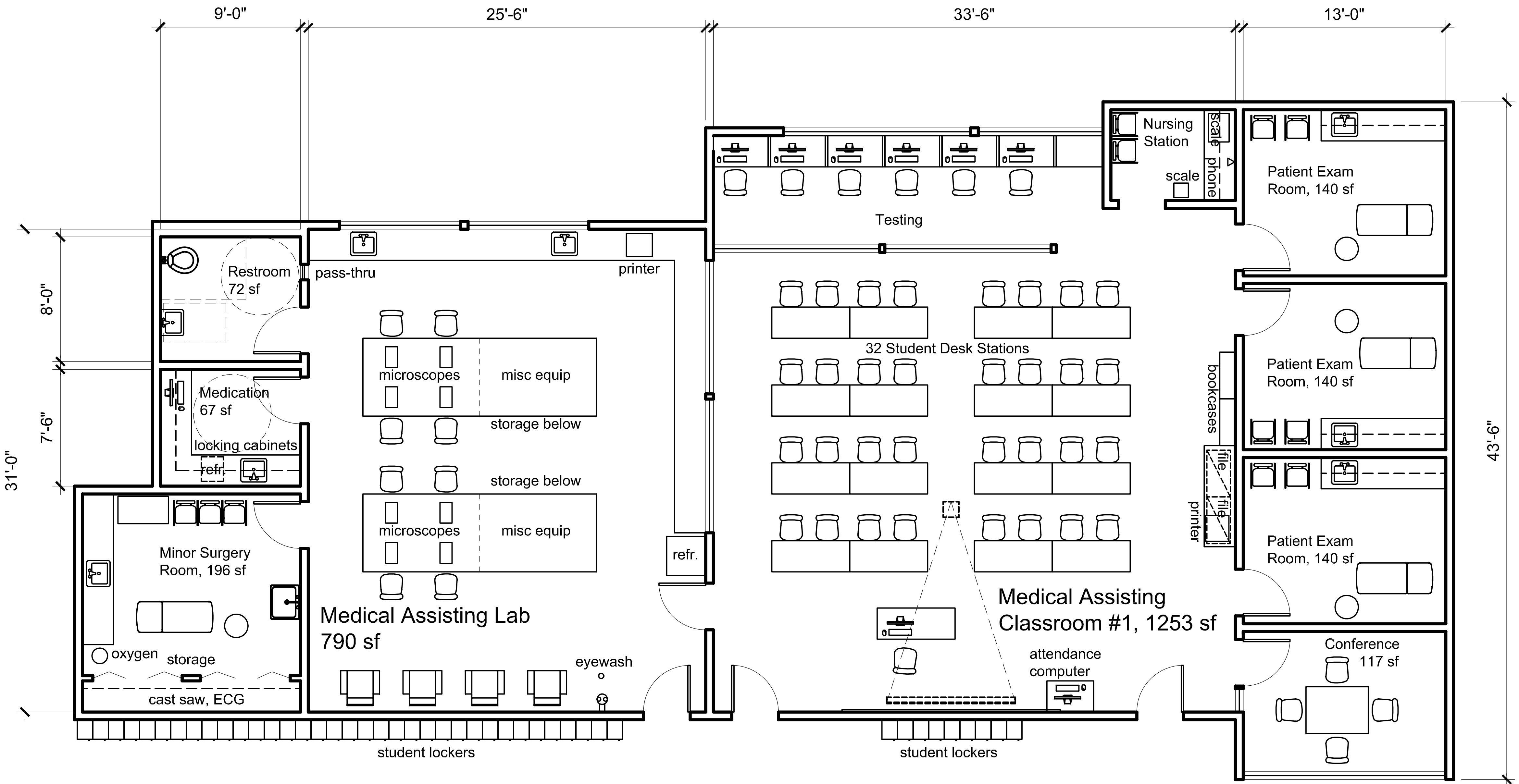
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	1 sink, 1 toilet per gender
Lighting	Ambient lighting
Phone/Data	Wireless data
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	40 full length lockers (30 women’s, 10 men’s), 1 restroom for each ender

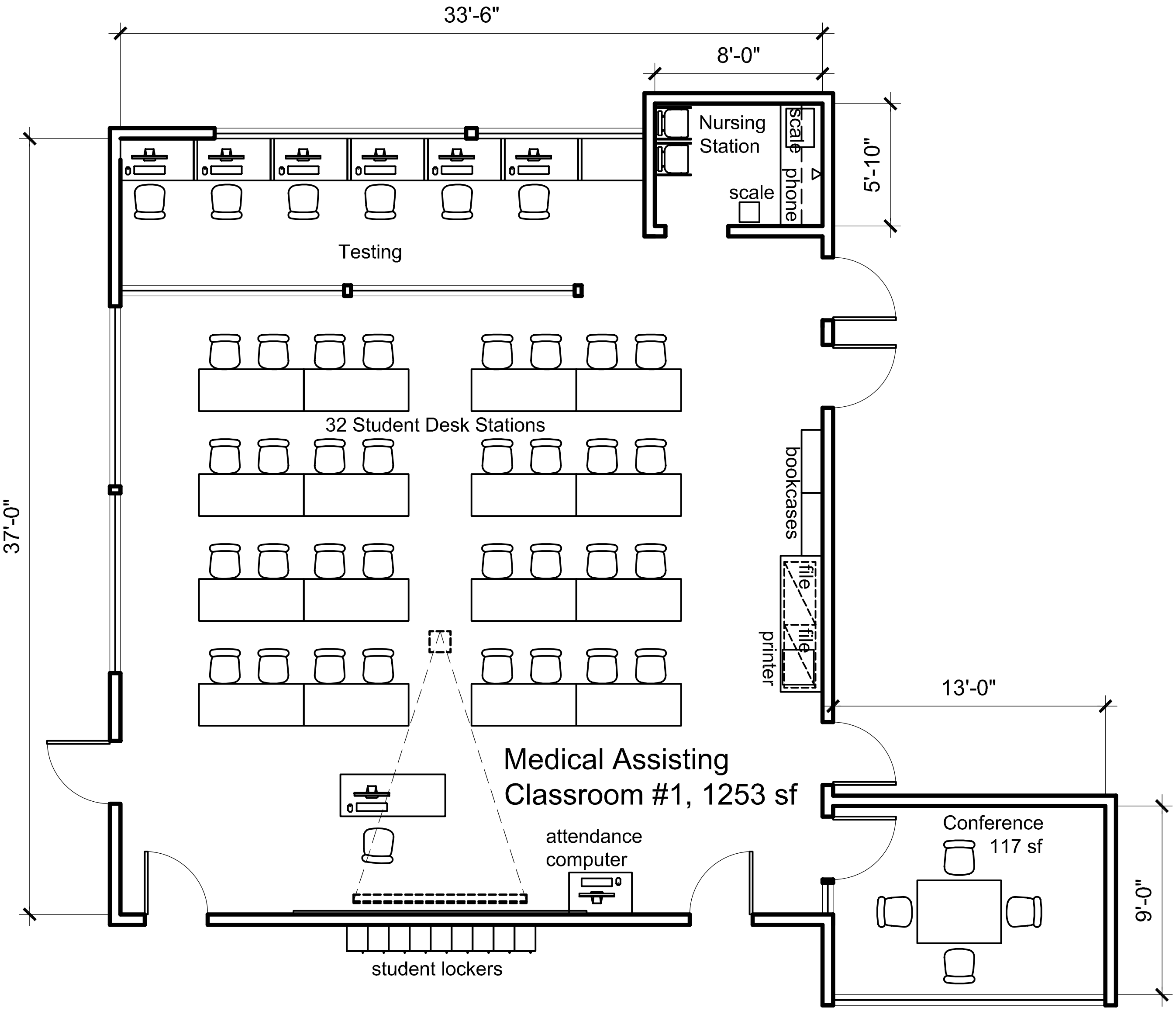

10'-0"
31'-0"
13'-0"
25'-0"
Coordinator, 130 sf
Instructor
Instructor
Conference:
92 sf
Dental Office Suite,
1030 sf
tables
Instructor
Adjunct
Adjunct
print/fax

1. PROGRAM	
General Space Description	Offices
No. of Occupants	6
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	No special requirements
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiing panels
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Private offices: power on two walls
Plumbing	None
Lighting	Ambient and task
Phone/Data	Wireless data, hard-wired data to 6 PCs, 7 phones. Private offices: two data ports each on two walls
Special Requirements	
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	1 Coordinator office, 3 instructor desks, 2 adjunct desks, private meeting space


9'-0"
25'-6"
33'-6"
13'-0"
8'-0"
7'-6"
31'-0"
43'-6"
Restroom
72 sf
pass-thru
printer
Medication
67 sf
locking cabinets
refr.
microscopes
misc equip
storage below
Minor Surgery
Room, 196 sf
oxygen
storage
cast saw, ECG
Medical Assisting Lab
790 sf
eyewash
refr.
student lockers
Testing
32 Student Desk Stations
Nursing
Station
scale
phone
Patient Exam
Room, 140 sf
bookcases
file
printer
Medical Assisting
Classroom #1, 1253 sf
attendance
computer
Conference
117 sf

Medical Assisting

Medical Assist Classroom Suite	
Classroom #1 (with nursing alcove & testing)	1253 sf
Conference Room	117 sf
Patient Exam Rooms (3)	420 sf
Medical Assisting Lab	790 sf
Minor Surgery Room	196 sf
Medication Room	67 sf
Restroom	72 sf
Classroom #2	1650 sf
X-Ray Lab	240 sf
Office Suite	1030 sf



33'-6"
8'-0"
Nursing Station
scale
phone
scale
5'-10"
Testing
37'-0"
32 Student Desk Stations
bookcases
file
file
printer
13'-0"
Medical Assisting Classroom #1, 1253 sf
attendance computer
Conference 117 sf
9'-0"
student lockers

1. PROGRAM

General Space Description	Classroom with conference, testing, nursing alcove
No. of Occupants	32 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Medical Assisting Lab

3. ARCHITECTURAL CHARACTERISTICS

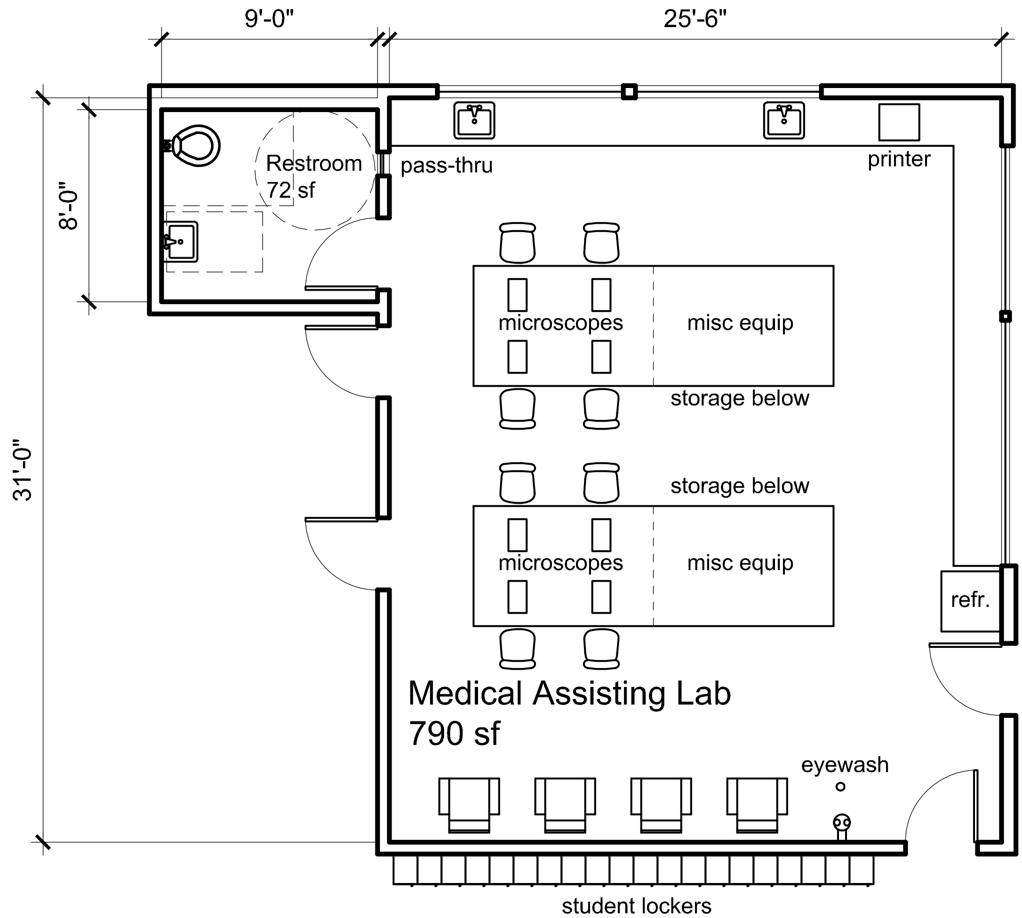
Windows	Yes (no windows into exam rooms)
Doors	36" single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10'-0"
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data for PCs, phone in nursing alcove
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	32 student desk stations, small glass enclosed conference room with 4 chairs and a PC, glass enclosed area for testing with 6 PC stations, 1 printer, 1 instructor station with PC, 2 whiteboards, 3 bulletin boards, 2 bookshelves, 2 filing cabinets, storage closet, Nursing alcove: 1 scale, 1 infant scale (on counter), 1 PC, 2 patient chairs, storage cabinets
Nursing Station	1 scale, 1 infant scale, 1 PC, 2 patient chairs, storage cabinet


9'-0"
25'-6"
8'-0"
31'-0"
Restroom
72 sf
pass-thru
printer
microscopes
misc equip
storage below
storage below
microscopes
misc equip
refr.
Medical Assisting Lab
790 sf
eyewash
student lockers

1. PROGRAM

General Space Description	Medical Assisting Lab
No. of Occupants	10 - 12

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Med Assist Classroom, windows between Restroom with pass-through window

3. ARCHITECTURAL CHARACTERISTICS

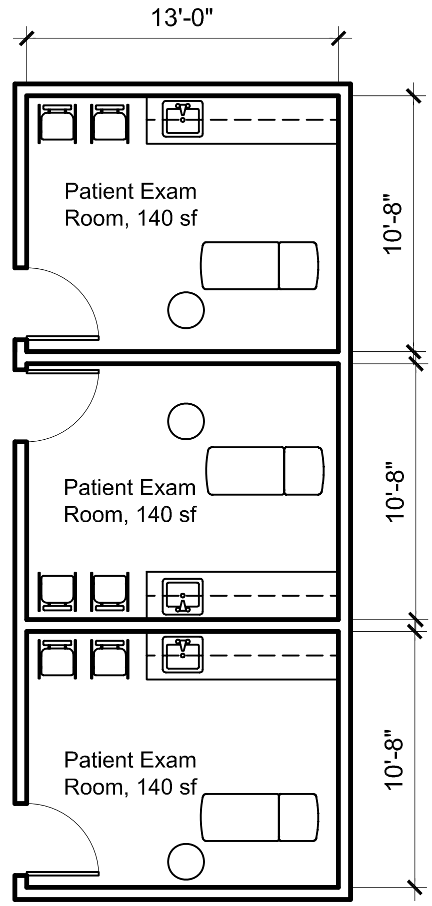
Windows	Yes
Doors	36” single leaf
Floor	Sheet Vinyl/ linoleum
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	Needs good ventilation
Electrical	Perimeter outlets, outlets for microscopes
Plumbing	3 sinks, 1 toilet
Lighting	Ambinet and task
Phone/Data	Wireless data, hard-wired data to 2 computer stations, 1 phone
Special Requirements	Lots of electrical outlets for equipment

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	1 full size refrigerator, 2 sinks with foot controls, 1 eye wash station, cupboards and countertops, large drawers, 4 biohazard waste receptacles, 4 blood drawing stations (double arm), 8 microscopes (on 34” high counters), 2 PCs, 1 printer, 1 distilled water station, 1 phone, 1 attached restroom with door/window for UA, 40 full-height student lockers adjacent to suite
Countertop equipment	1 incubator, 2 QBC machines, 2 Reflotrons 2 A1C machines, 2 Coagucheks, 4 centrifuges, 2 Cliniteck


13'-0"
Patient Exam
Room, 140 sf
10'-8"
Patient Exam
Room, 140 sf
10'-8"
Patient Exam
Room, 140 sf
10'-8"

1. PROGRAM

General Space Description	Exam Rooms
No. of Occupants	5 - 6

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Medical Assisting Classroom 1

3. ARCHITECTURAL CHARACTERISTICS

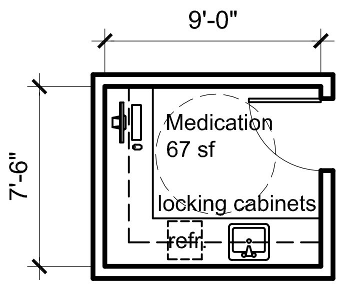
Windows	No
Doors	36” single leaf
Floor	Sheet Vinyl/ linoleum
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	1 sink each room
Lighting	Ambient and task (goose neck) lighting
Phone/Data	Wireless data, hard-wired data to 1 PC and 1 phone in each room
Special Requirements	No special requirements

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	In each room: exam table, goose neck lamp, Dr’s stool, integrated diagnostic systems, sink, 2 patient chairs with arms, PC, countertop and cupboard, storage, whiteboard, mirror, phone



1. PROGRAM

General Space Description	Medication Room
No. of Occupants	2

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Medical Assisting Lab

3. ARCHITECTURAL CHARACTERISTICS

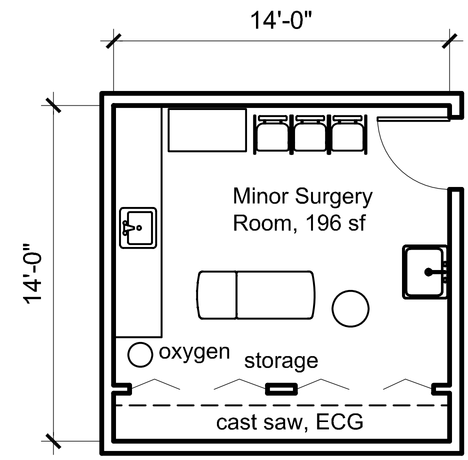
Windows	Yes
Doors	36” single leaf
Floor	Sheet vinyl/ linoleum
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	1 sink
Lighting	Ambient and task lighting
Phone/Data	Wireless data, hard-wired data to 1 PC
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	1 undercounter refrigerator, locking cupboard with shelves, 1 sink, storage space, PC



1. PROGRAM

General Space Description	Simulated Surgery room
No. of Occupants	10 - 12

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Medical Assisting Lab

3. ARCHITECTURAL CHARACTERISTICS

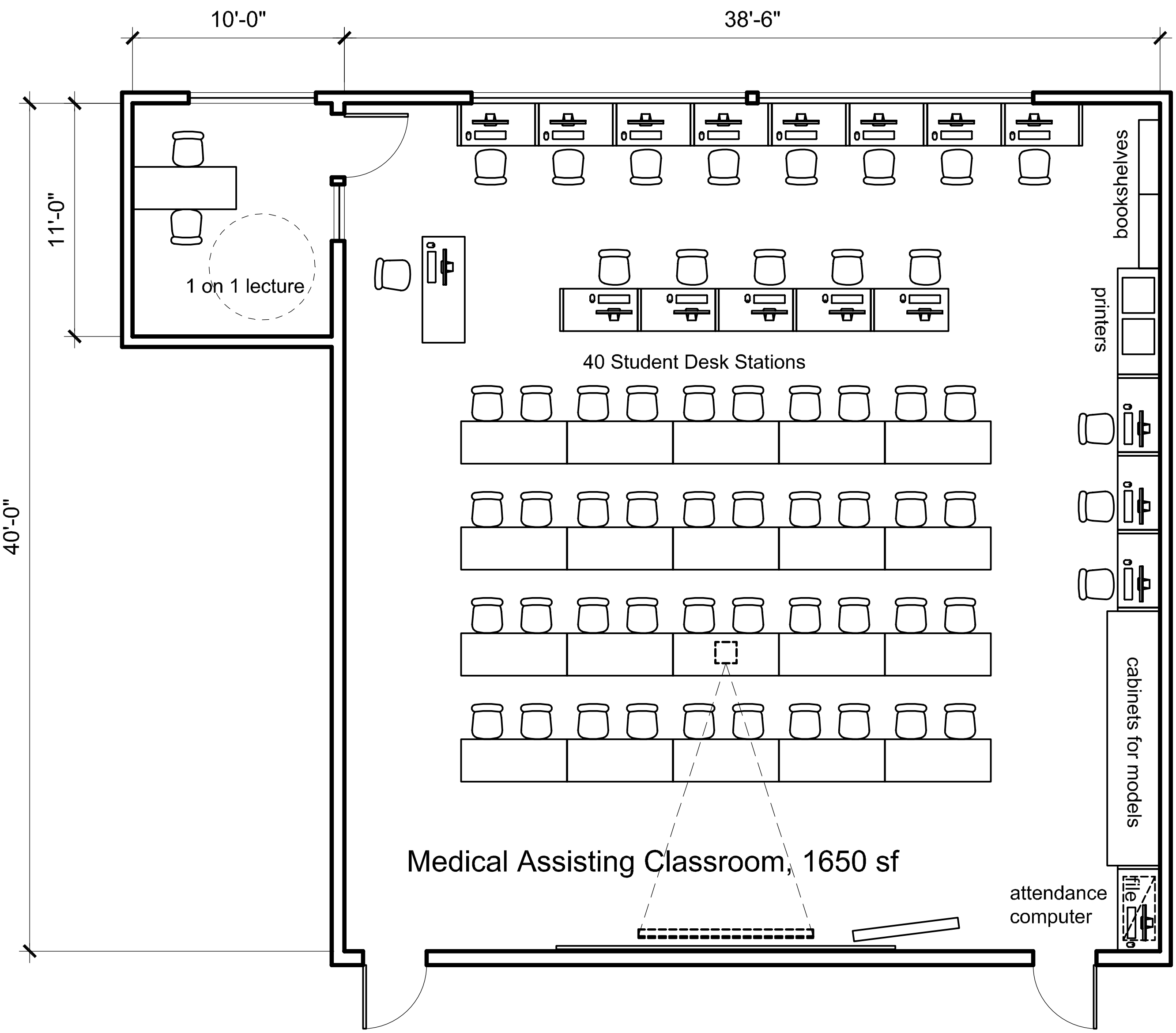
Windows	No
Doors	36” single leaf
Floor	Sheet Vinyl/ linoleum
Wall	Epoxy painted gypsum board
Ceiling	Mylar faced acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

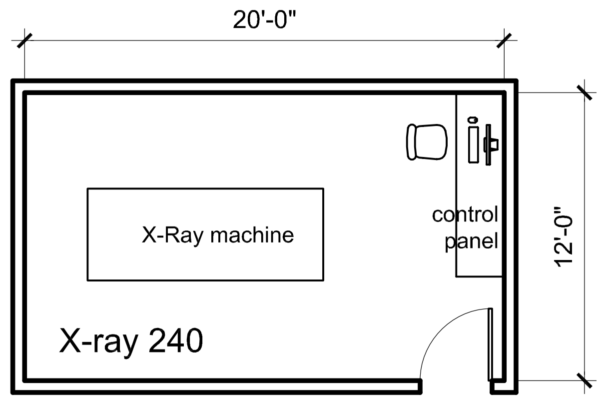
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets, see equipment requirements
Plumbing	2 Sinks (with foot controls)
Lighting	Ambient and task (ceiling operating light)
Phone/Data	Wireless data, hard-wired data to PC
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	1 Autoclave, 2 sinks with foot controls, 1 minor surgery table, 1 ceiling operating light, 1 documenting station with PC, 1 Hyfrecator, storage area with shelves and large drawers, 1 Dr’s stool, 3 patient chairs with arms, 1 cast removal saw, 1 oxygen tank, 1 portable vital sign cart


10'-0"
38'-6"
11'-0"
40'-0"
1 on 1 lecture
bookshelves
printers
40 Student Desk Stations
cabinets for models
Medical Assisting Classroom, 1650 sf
attendance computer
file

1. PROGRAM	
General Space Description	Classroom
No. of Occupants	40 students
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	Medical Assistant Classroom 1 and Lab
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum wall board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data to 18 PCs
Special Requirements	One-on-one lecture space in a sound-suppressed environment
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	20 tables, 40 chairs, 1 instructor desk, 9 chairs, 2 bulletin boards, 180”x40” whiteboard, 40”x60” LCD wall mounted TV, 2 5-shelf bookcases, 16 PCs, 8 24”x60” computer tables, 2 printers, 1 4-drawer filing cabinet,
Equipment in cabinets	2 full size adult skeletons with articulated joints, 2 adult anatomical torsos, 4 eye models, 4 ear models, 2 urinary system models with expanded kidney section


20'-0"
12'-0"
X-Ray machine
control
panel
X-ray 240

1. PROGRAM

General Space Description	X-ray Lab
No. of Occupants	3 - 4

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Medical Assisting classrooms and lab

3. ARCHITECTURAL CHARACTERISTICS

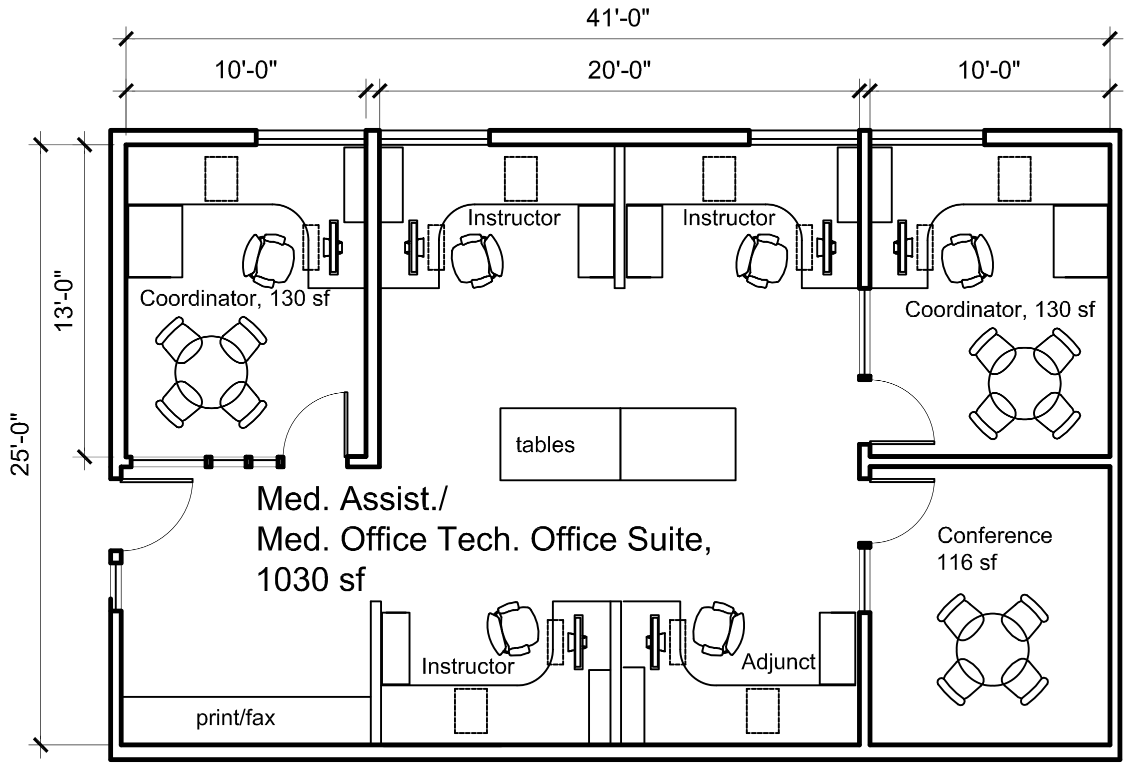
Windows	No
Doors	36” single leaf
Floor	Sheet Vinyl
Wall	Painted gypsum board
Ceiling	Acoustical ceiling tile
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets, power for Xray machine
Plumbing	None
Lighting	Ambient and task
Phone/Data	1 PC
Special Requirements	Lead-lined walls

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	1 digital X-ray machine, 1 X-ray table, 1 wall bucky, 1 shielded area for radiographs, 1 processor, 1 PC


41'-0"
10'-0"
20'-0"
10'-0"
13'-0"
25'-0"
Instructor
Instructor
Coordinator, 130 sf
Coordinator, 130 sf
tables
Med. Assist./
Med. Office Tech. Office Suite,
1030 sf
Conference
116 sf
Instructor
Adjunct
print/fax

1. PROGRAM

General Space Description	Offices
No. of Occupants	6

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	No special requirements

3. ARCHITECTURAL CHARACTERISTICS

Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

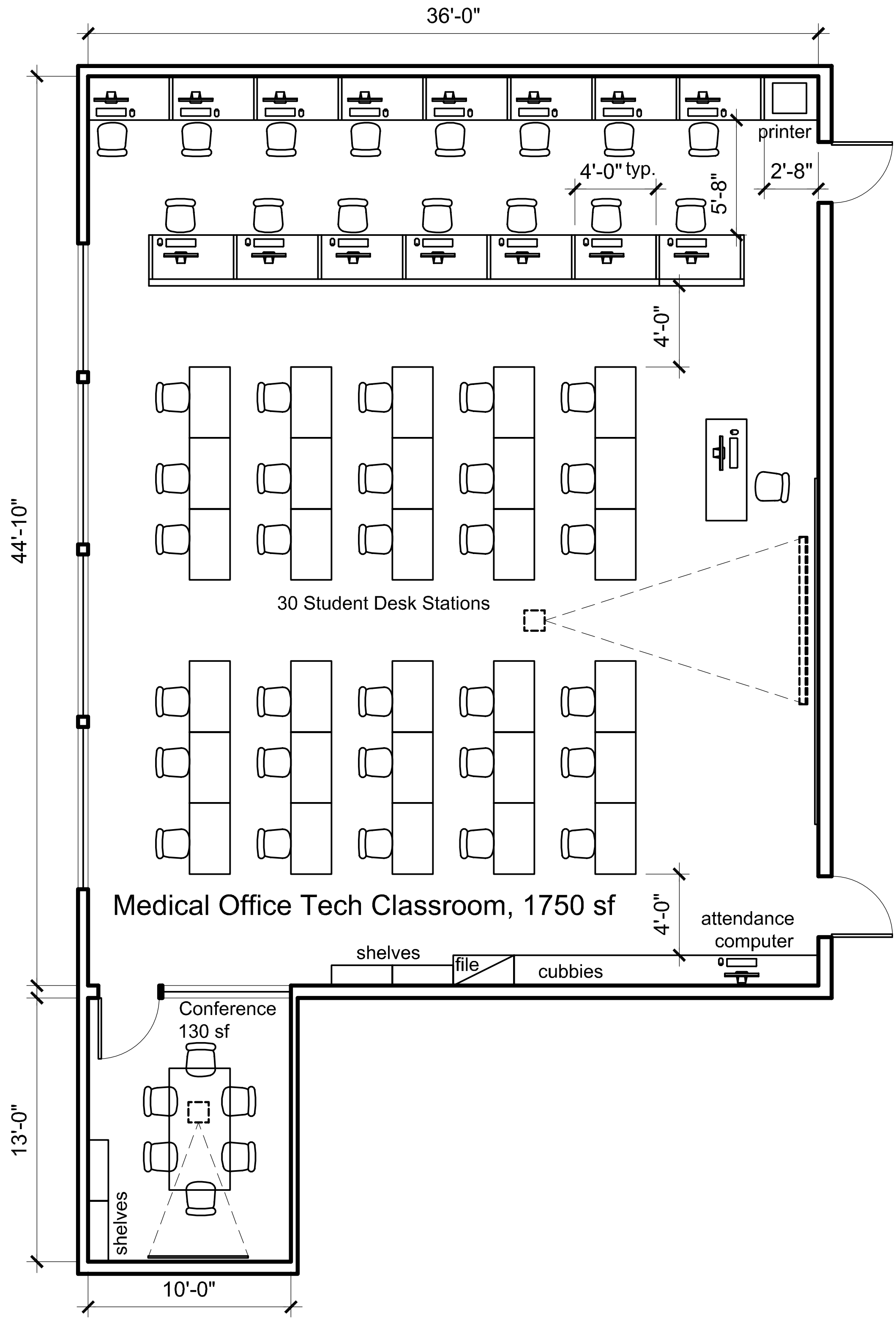
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Private offices: power on two walls
Plumbing	None
Lighting	Ambient and task
Phone/Data	Private offices: two data ports each on two walls, hard-wired data to 6 PCs, 7 phones
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	2 Coordinator offices, 3 instructor desks, 1 adjunct desks, private meeting space, printer

Medical Office Technologies

Medical Office Technology Classroom	1750 sf
Medical Office Technology Lab	340 sf


36'-0"
printer
2'-8"
4'-0" typ.
5'-8"
4'-0"
44'-10"
30 Student Desk Stations
Medical Office Tech Classroom, 1750 sf
4'-0"
attendance computer
shelves
file
cubbies
Conference
130 sf
13'-0"
shelves
10'-0"

1. PROGRAM

General Space Description	Classroom
No. of Occupants	30 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Medical Office Tech Front Office

3. ARCHITECTURAL CHARACTERISTICS

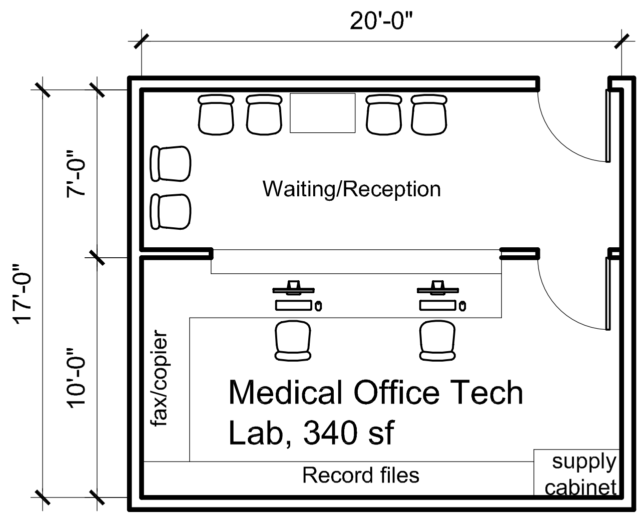
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets, power to PCs
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data to 17 PCs
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	30 Student desk stations, 15 PC stations, 1 printer, 1 instructor station with PC, 2 whiteboards, 1 file cabinet, 2 bookshelves, 1 TV with DVD player, cubbies, conference room for 6


20'-0"
17'-0"
7'-0"
10'-0"
Waiting/Reception
fax/copier
Medical Office Tech
Lab, 340 sf
Record files
supply
cabinet

1. PROGRAM

General Space Description	Medical Office Reception
No. of Occupants	8

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Medical Office Tech Classroom

3. ARCHITECTURAL CHARACTERISTICS

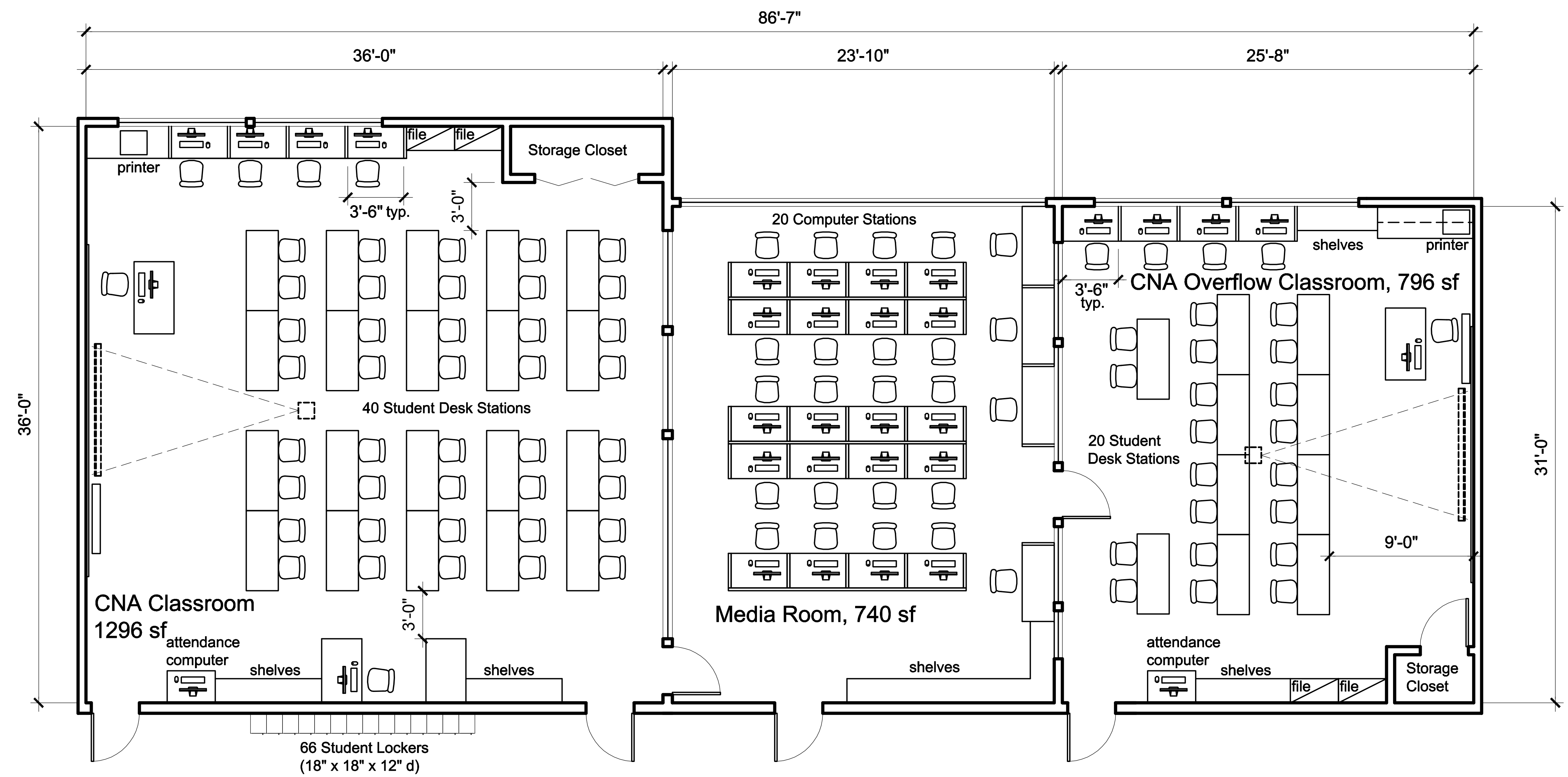
Windows	n/a
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Ambient lighting
Phone/Data	Wireless data, hard-wired data to 2 PCs
Special Requirements	

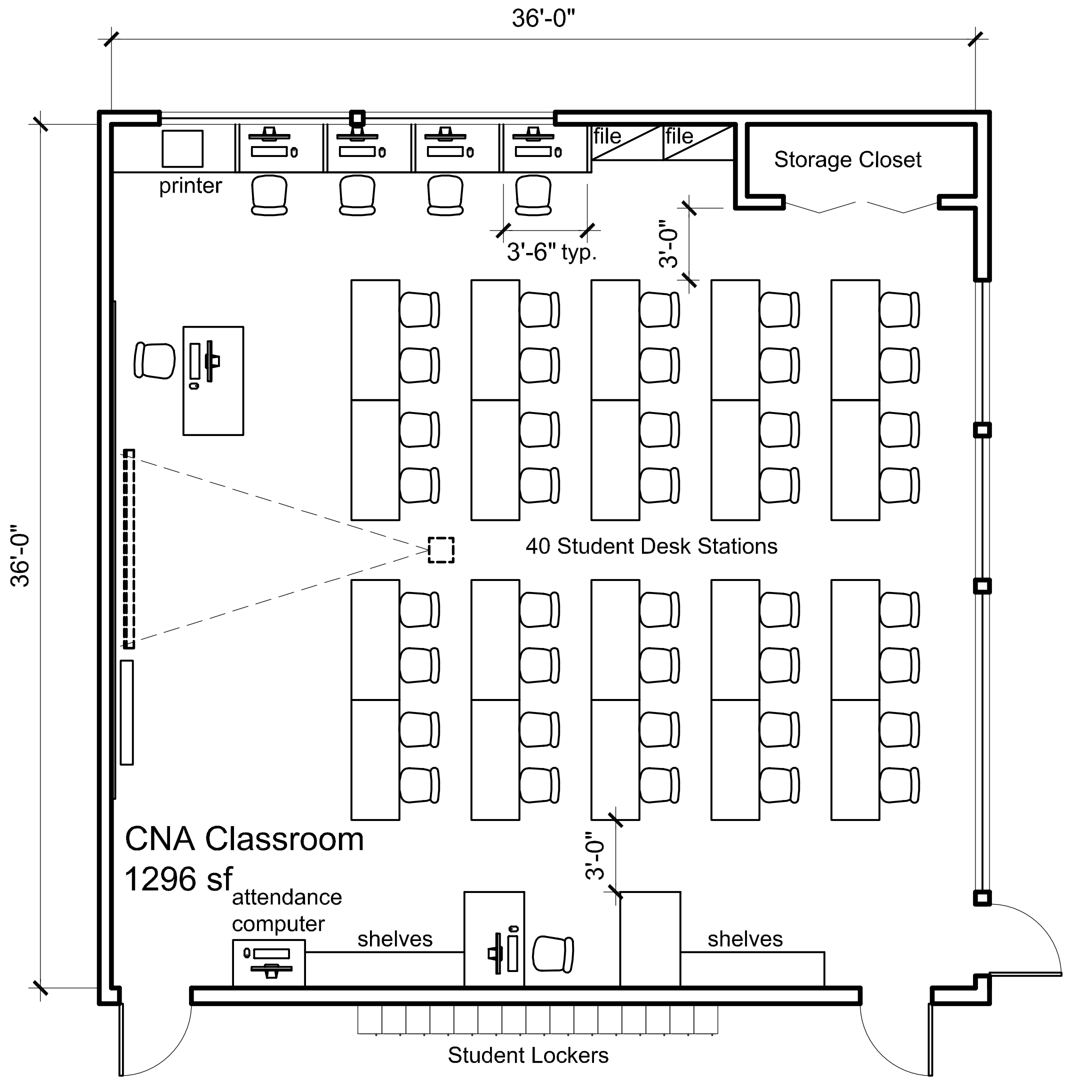
5. EQUIPMENT, FURNITURE, ACCESSORIES

General	1 fax/copier/printer combination, 1 fax machine, 2 multi-line phone systems (with voicemail capabilities), 1 open wall filing cabinet, 1 Electronic Medical Record & Practice Management System Software, 1 supply cabinet, credit/debit card machine, waiting room table, 6 chairs, receptionist desk with two stations

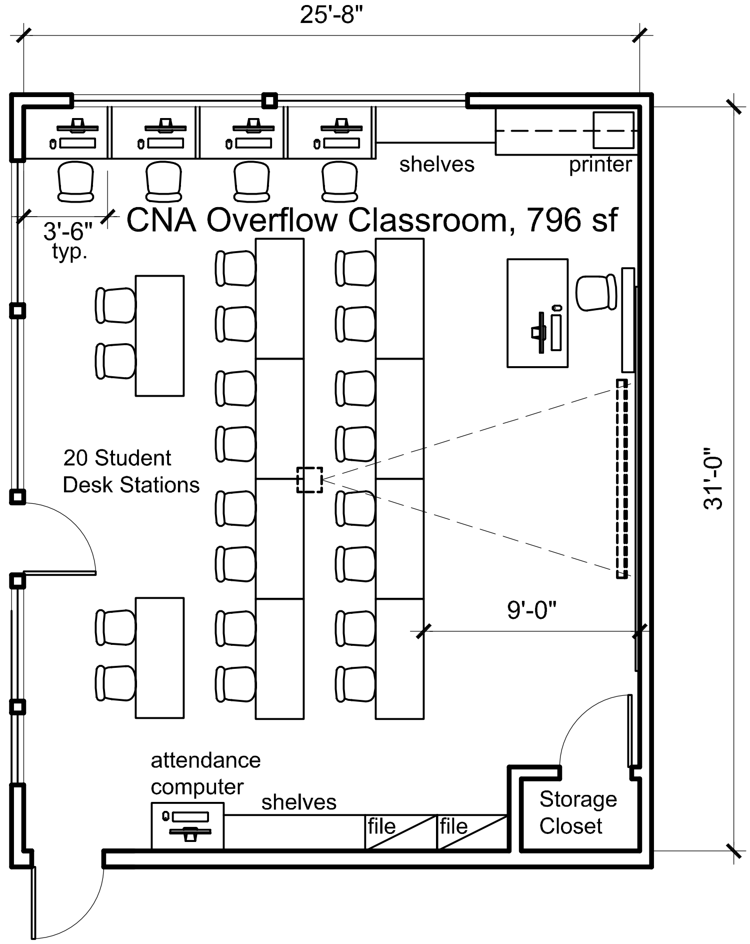

86'-7"
36'-0"
23'-10"
25'-8"
Storage Closet
printer
file
file
3'-6" typ.
3'-0"
36'-0"
40 Student Desk Stations
CNA Classroom
1296 sf
attendance
computer
shelves
shelves
3'-0"
66 Student Lockers
(18" x 18" x 12" d)
20 Computer Stations
Media Room, 740 sf
shelves
3'-6"
typ.
CNA Overflow Classroom, 796 sf
shelves
printer
20 Student
Desk Stations
9'-0"
31'-0"
attendance
computer
shelves
file
file
Storage
Closet

Nursing Assistant

Nursing Assistant Classroom Suite	
CNA Classroom	1296 sf
CNA Overflow Classroom	796 sf
Media Room	2268 sf
Nursing Assistant Lab	
Toilet	96 sf
Laundry	317 sf
Storage	1028 sf
Nursing Assistant Office Suite	


36'-0"
36'-0"
printer
file
file
Storage Closet
3'-6" typ.
3'-0"
40 Student Desk Stations
CNA Classroom
1296 sf
attendance
computer
shelves
3'-0"
shelves
Student Lockers

1. PROGRAM	
General Space Description	Classroom
No. of Occupants	40 students
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	Media Room
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Yes
Doors	36” single leaf, storage
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data to 7 PCs
Special Requirements	
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	1 52” TV, 2 large shelves, 2 instructor desks with PC, 20 student desks with 2 chairs per desk, 1 printer, 2 whiteboards, 2 bulletin boards, 4 PC stations, 1 large storage closet, 1 LCD projector, 2 large filing cabinets


25'-8"
31'-0"
shelves
printer
3'-6"
typ.
CNA Overflow Classroom, 796 sf
20 Student
Desk Stations
9'-0"
attendance
computer
shelves
file
file
Storage
Closet

1. PROGRAM

General Space Description	Classroom
No. of Occupants	20 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Media Room, CNA Classroom

3. ARCHITECTURAL CHARACTERISTICS

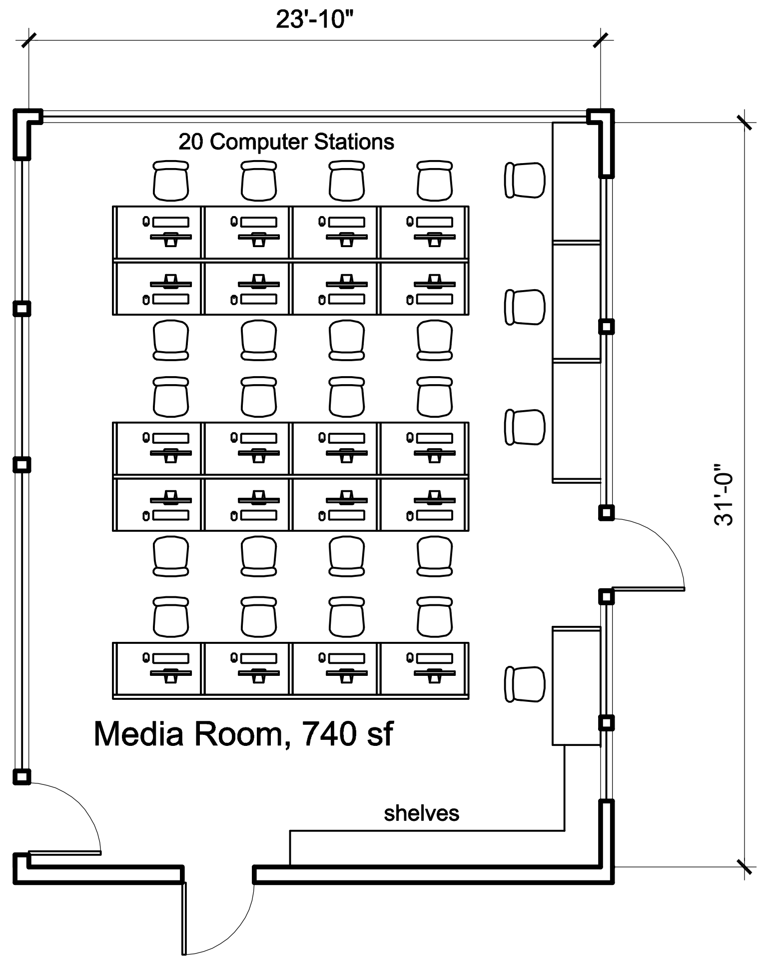
Windows	Yes
Doors	36” single leaf, storage
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data to 5 PCs
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	1 52” TV with DVD and VHS, 2 large shelves, 1 instructor desk with PC, 15 student desks with 2 chairs per desk, 1 printer, 1 whiteboard, 4 PC stations, 1 large storage closet, 1 LCD projector, 2 large filing cabinets


23'-10"
20 Computer Stations
31'-0"
Media Room, 740 sf
shelves

1. PROGRAM

General Space Description	Media Room
No. of Occupants	24 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	CNA Classroom CNA Overflow Classroom

3. ARCHITECTURAL CHARACTERISTICS

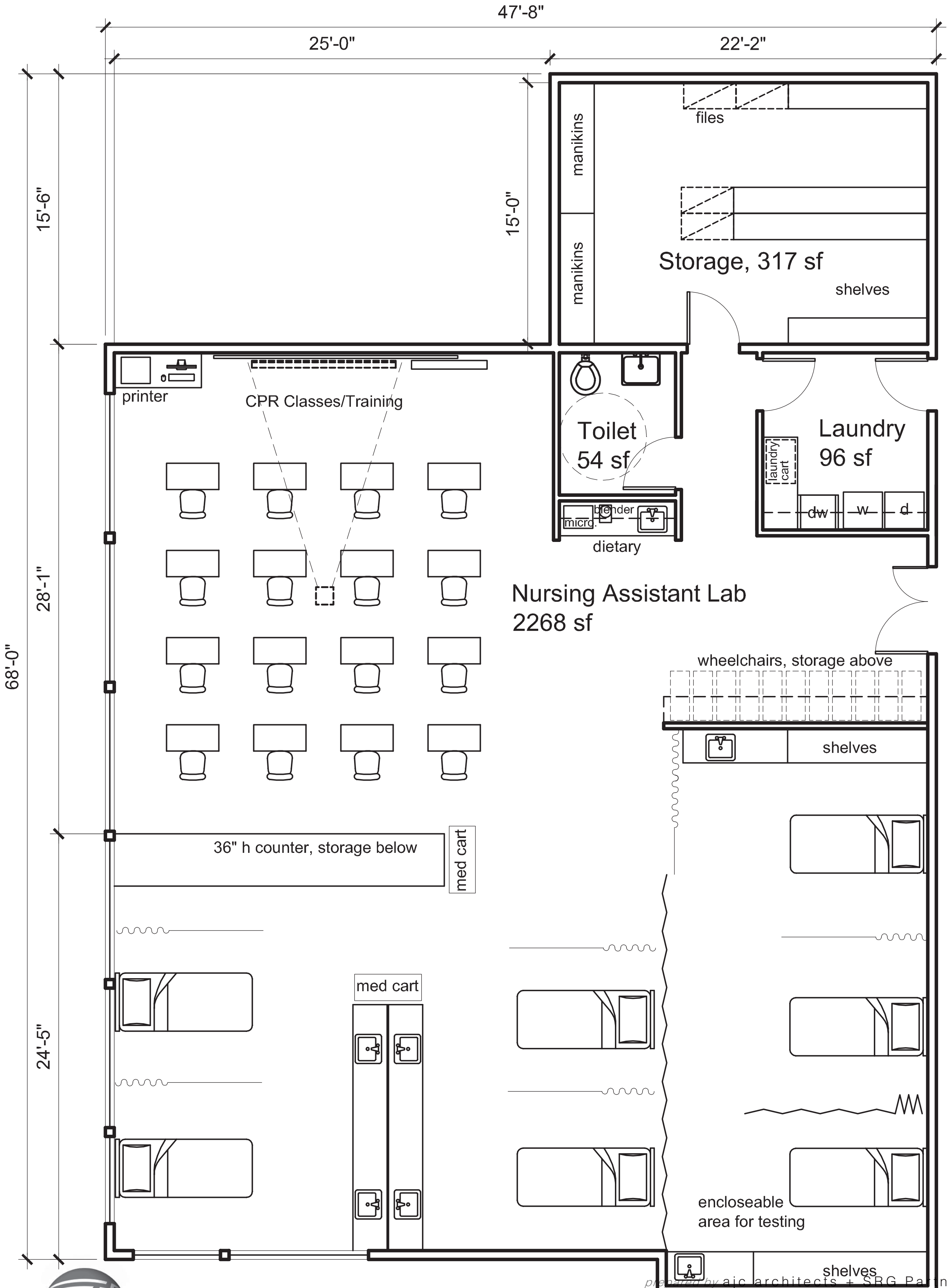
Windows	Yes - into each adjacent classroom
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panel
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Surveilance camera, monitored in classrooms
Plumbing	None
Lighting	Ambient lighting
Phone/Data	20 computer stations
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	20 PCs, 1 camera, 4 student desks (24” x 42”), 4 chairs, shelves


47'-8"
25'-0"
22'-2"
15'-6"
15'-0"
68'-0"
28'-1"
24'-5"
files
manikins
manikins
Storage, 317 sf
shelves
printer
CPR Classes/Training
Toilet
54 sf
Laundry
96 sf
laundry cart
dw
w
d
blender
micro.
dietary
Nursing Assistant Lab
2268 sf
wheelchairs, storage above
shelves
36" h counter, storage below
med cart
med cart
encloseable
area for testing
shelves

1. PROGRAM

General Space Description	CNA Lab
No. of Occupants	16 desks, 7 beds

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Storage, laundry, toilet

3. ARCHITECTURAL CHARACTERISTICS

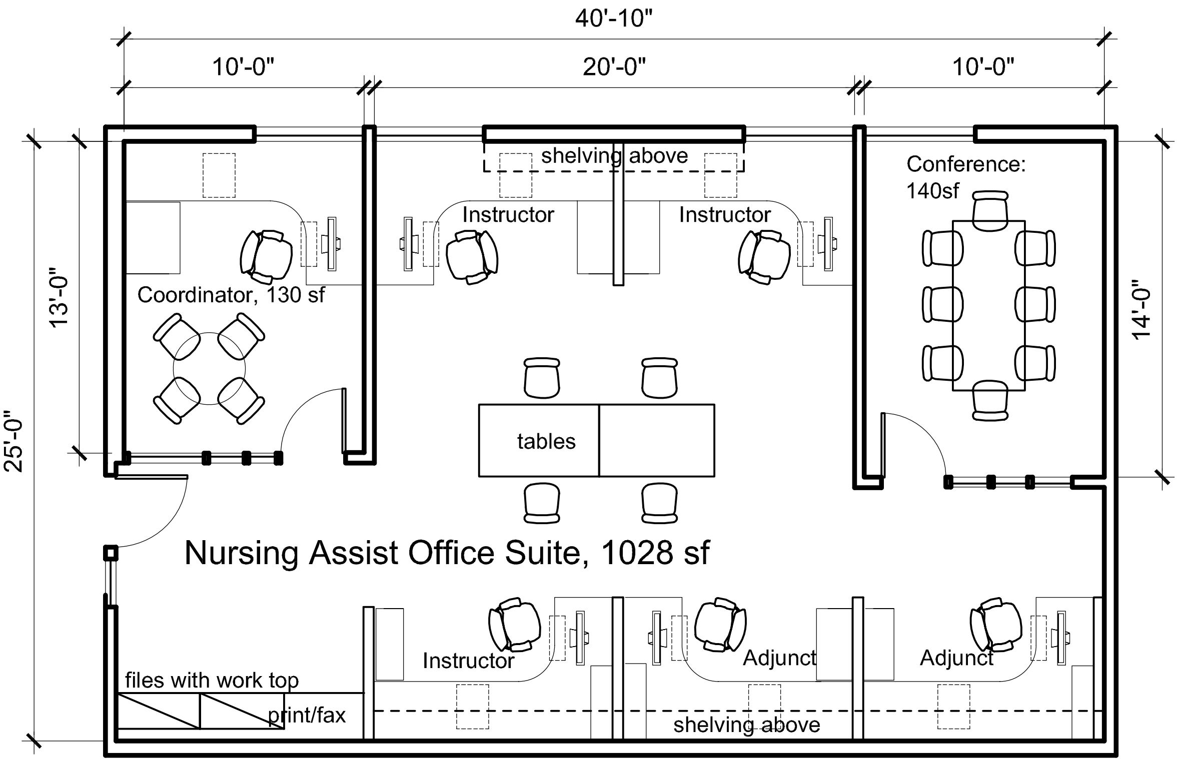
Windows	Yes
Doors	36” single and 60” double leaf
Floor	Sheet Vinyl/ linoleum
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	call light connections
Plumbing	7 sinks, 2 toilets, 1 dishwasher, 1 washing machine
Lighting	Ambient lighting
Phone/Data	Wireless data, 1 hard-wired camera connection
Special Requirements	Enclosable area for skills testing

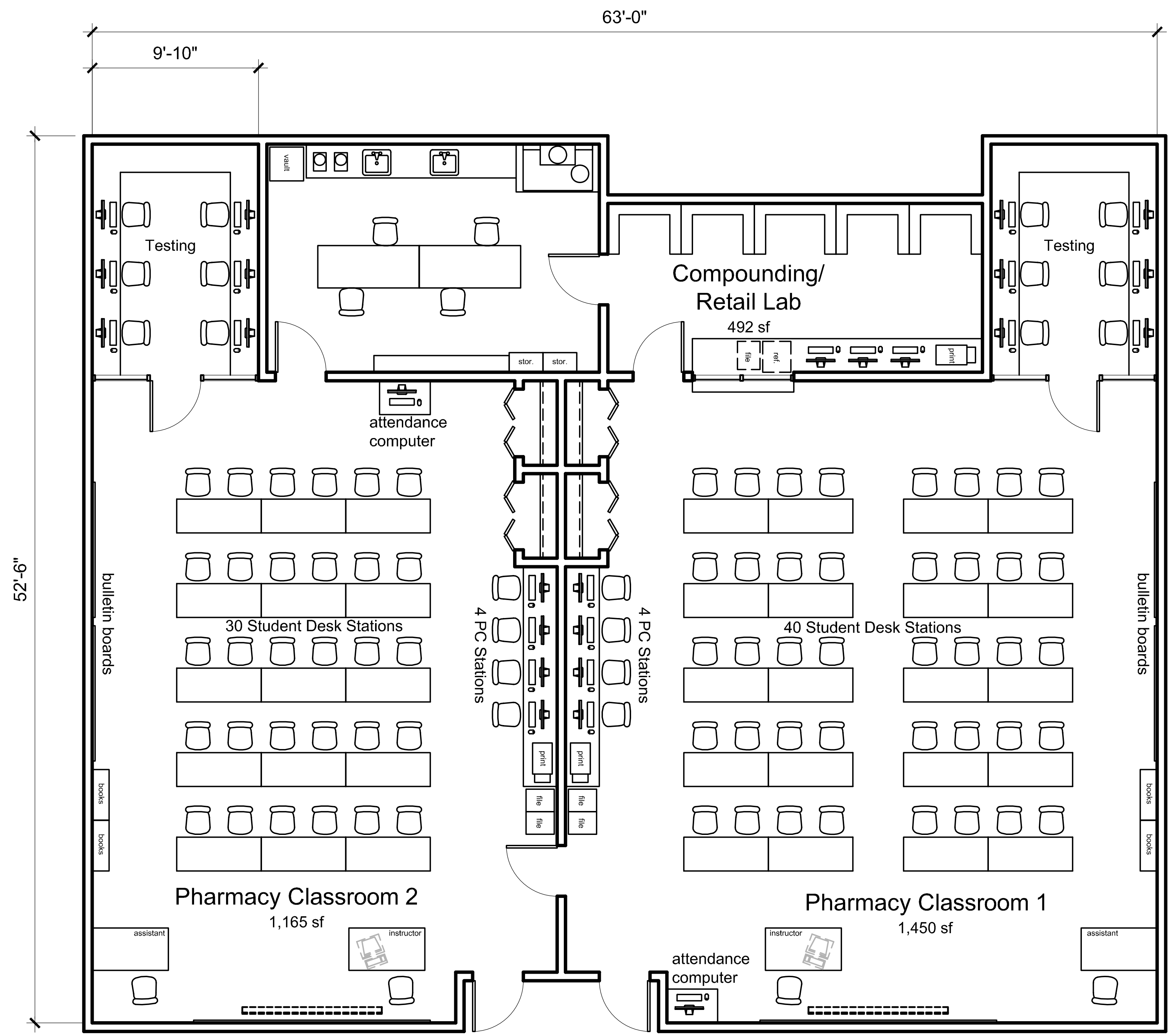
5. EQUIPMENT, FURNITURE, ACCESSORIES

Lab	7 hospital beds, 7 manikins, 2 Medication Aide medication carts, 15 single student desks, 1- 52” TV with DVD and VHS, large storage closets, 3 large shelves, 4 oxygen concentrators, 6 oxygen wall mount, 6 blood pressure wall mount, 1 LCD projector, 1 printer, 6 sinks with flat surface, paper towel holders, privacy curtains, restroom (toilet, large sink, wall mount water spray handle), 7 call light connections, 4 SPO2, 1 camera, wall partitions, 10 wheelchairs, 1 bedside commode
Laundry	laundry cart, 1 washer, 1 dryer, 1 dishwasher.
Storage	3 large shelves, 2 large storage closets, 4 large filing cabinets, 7 manikin storage


40'-10"
10'-0"
20'-0"
10'-0"
25'-0"
13'-0"
14'-0"
shelving above
Conference:
140sf
Instructor
Instructor
Coordinator, 130 sf
tables
Nursing Assist Office Suite, 1028 sf
Instructor
Adjunct
Adjunct
files with work top
print/fax
shelving above

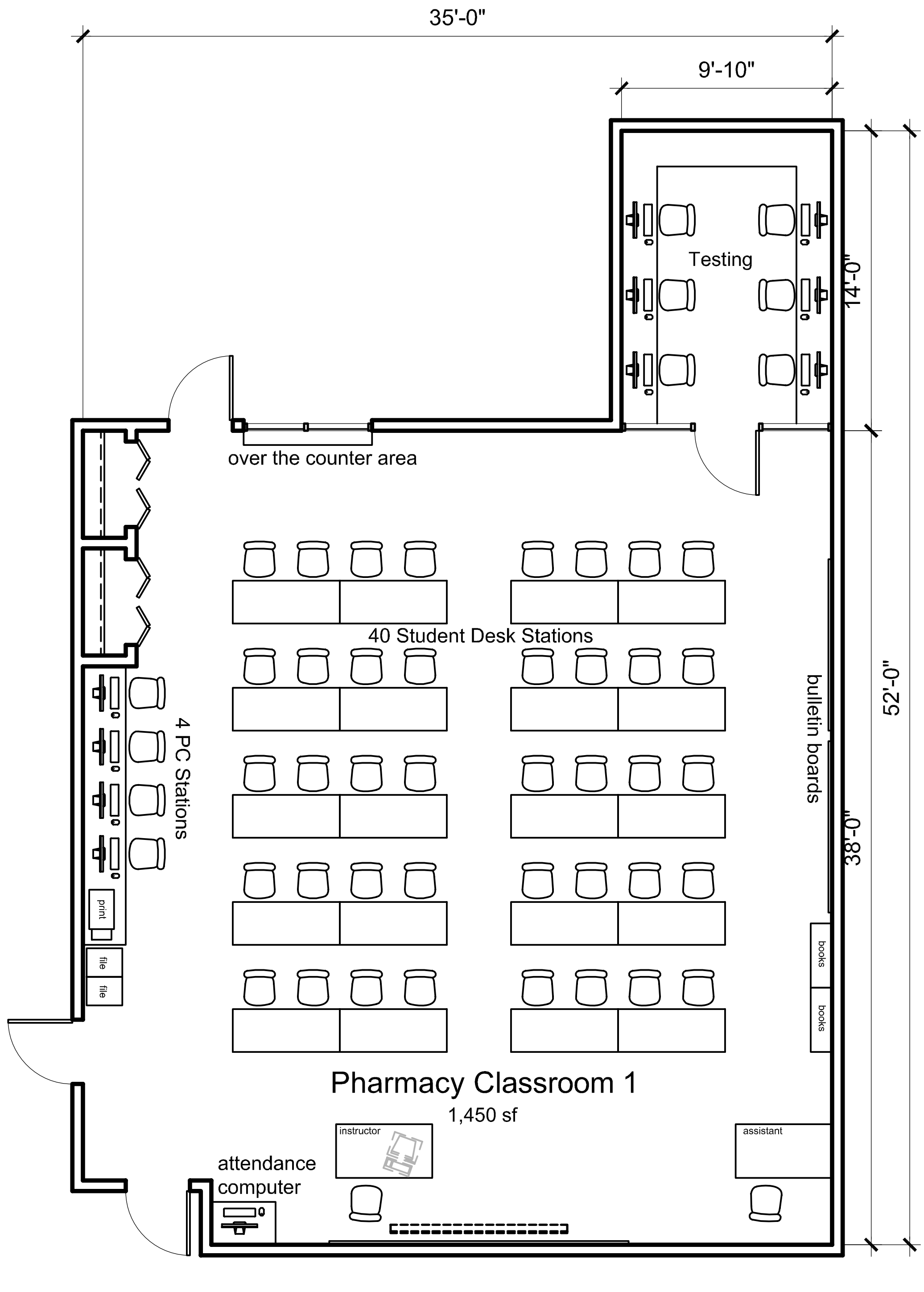
Nursing Assistant

1. PROGRAM	
General Space Description	Offices
No. of Occupants	6
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	Conference Room
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustic ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Private offices: power outlets on two walls
Plumbing	none
Lighting	Ambient and task lighting
Phone/Data	Wireless data, hard-wired data to 6 PC, 7 phones, printer
Special Requirements	
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	1 Coordinator Office: 1 office chair, 1 desk with PC, 1 Laptop with docking station, 4 visitor chairs, 1 round table, 1 printer, 1 bulletin board, 1 wall mount calendar, 1 large filing cabinet, 1 large shelf, 3 instructor stations, 2 Adjunct stations


63'-0"
9'-10"
52'-6"
Testing
vault
Compounding/
Retail Lab
492 sf
stor.
stor.
file
ref.
print
Testing
attendance
computer
bulletin boards
30 Student Desk Stations
4 PC Stations
4 PC Stations
40 Student Desk Stations
bulletin boards
print
print
file
file
file
file
books
books
books
books
Pharmacy Classroom 2
1,165 sf
assistant
instructor
Pharmacy Classroom 1
1,450 sf
instructor
assistant
attendance
computer

Pharmacy Technician

Pharmacy Technician Suite	
Pharmacy Classroom #1	1450 sf
Pharmacy Classroom #2	1165 sf
Compounding/ Retail Lab	492 sf
Office Suite	500 sf


35'-0"
9'-10"
14'-0"
52'-0"
38'-0"
Testing
over the counter area
40 Student Desk Stations
4 PC Stations
bulletin boards
print
file
file
books
books
Pharmacy Classroom 1
1,450 sf
instructor
assistant
attendance computer

1. PROGRAM

General Space Description	Classroom with testing room
No. of Occupants	40 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be close to	Pharmacy Classroom 2, Retail & Compounding Lab

3. ARCHITECTURAL CHARACTERISTICS

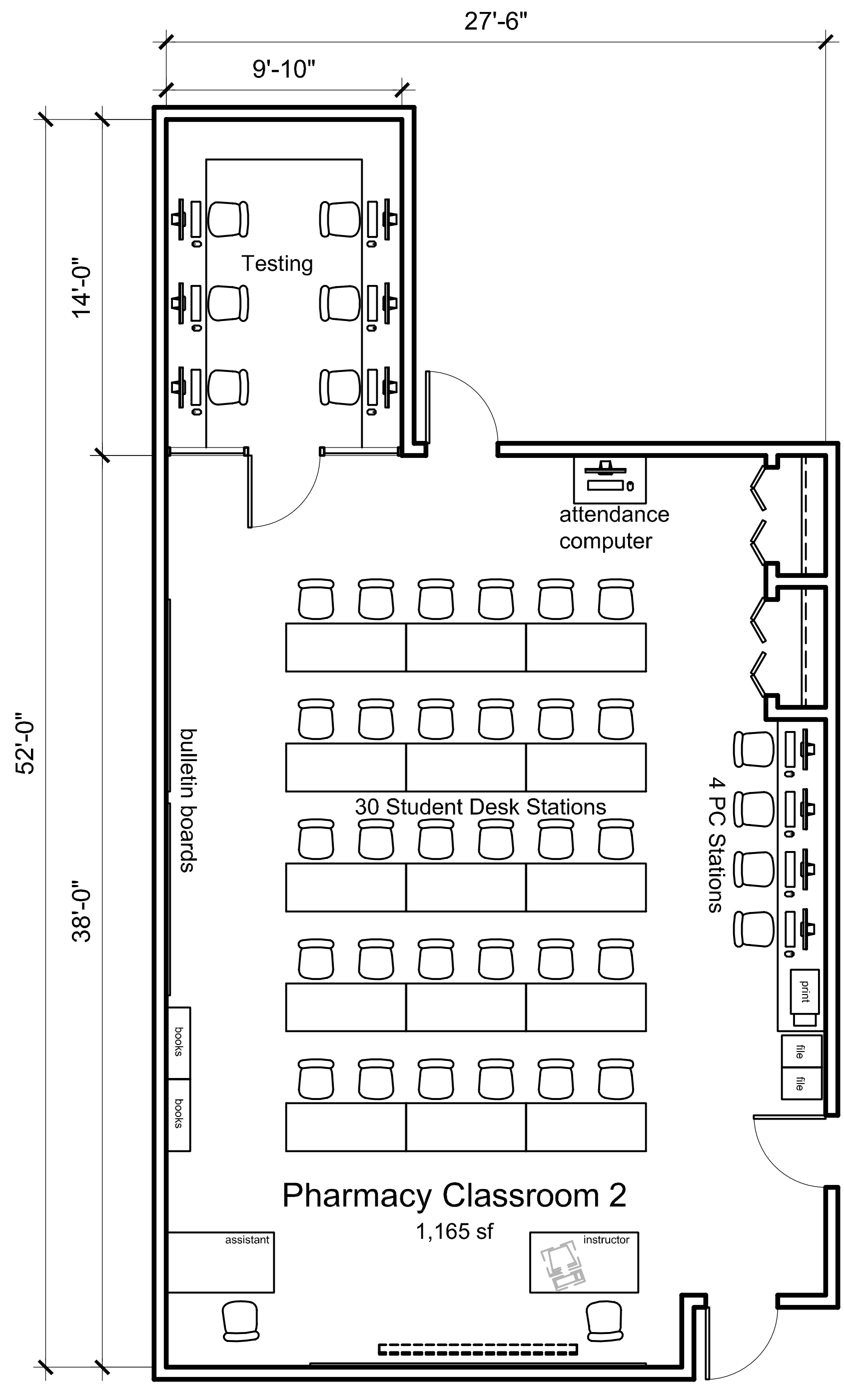
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data at 5 computer stations, testing computers, 1 attendance computer
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	20 Tables, 40 chairs, 1 instructor station with PC, 2 whiteboards, 1 glass enclosed testing area, 2 bulletin boards, 2 bookshelves, 4 locking storage closets, 1 printer, 2 filing cabinets, 4 PC stations


27'-6"
9'-10"
14'-0"
52'-0"
38'-0"
Testing
attendance
computer
bulletin boards
30 Student Desk Stations
4 PC Stations
print
file
file
books
books
Pharmacy Classroom 2
1,165 sf
assistant
instructor

1. PROGRAM

General Space Description	Classroom with testing room
No. of Occupants	30 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be close to	Pharmacy Classroom1, Retail & Compounding Lab

3. ARCHITECTURAL CHARACTERISTICS

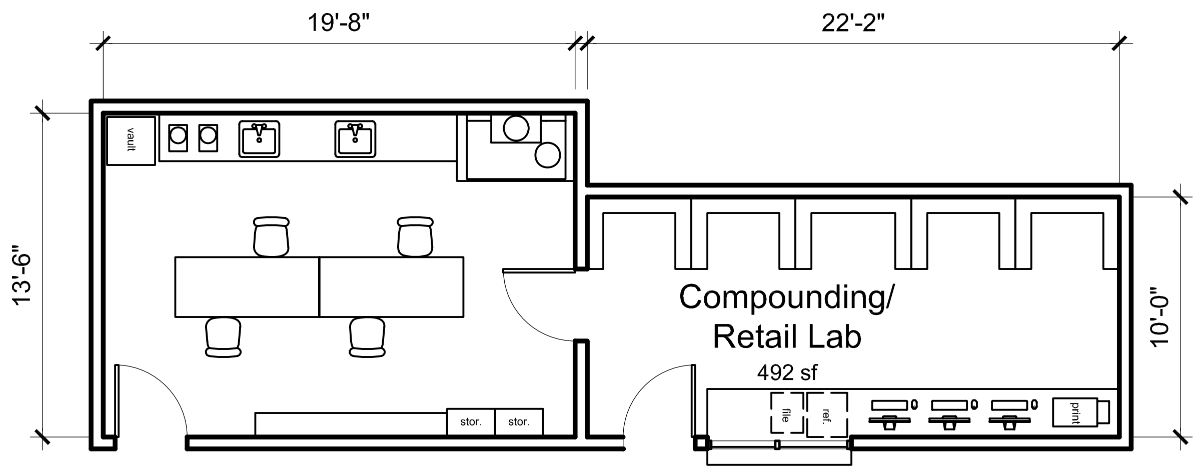
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls at headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data, hard-wired data at 5 computer stations, testing computers, 1 attendance computer
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	15 Tables, 30 chairs, 1 instructor station with PC, 2 whiteboards, 1 glass enclosed testing area, 2 bulletin boards, 2 bookshelves, 4 locking storage closets, 1 printer, 2 filing cabinets, 4 PC stations


19'-8"
22'-2"
13'-6"
10'-0"
vault
Compounding/
Retail Lab
492 sf
file
ref.
print
stor.
stor.

1. PROGRAM

General Space Description	Simulated retail pharmacy and Compounding Lab
No. of Occupants	10

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Pharmacy Classrooms I & 2

3. ARCHITECTURAL CHARACTERISTICS

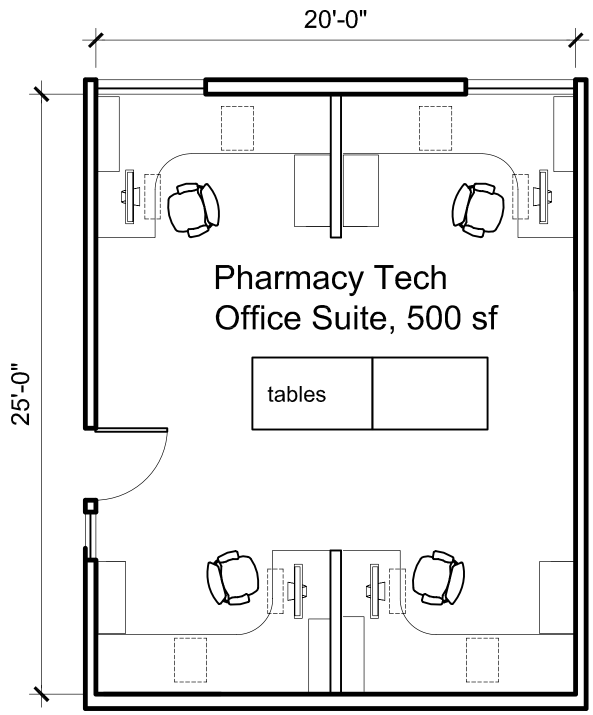
Windows	Service window for Retai Lab
Doors	36” single leaf
Floor	Sheet vinyl/ linoleum
Wall	Painted gypsum board
Ceiling	Acoustic ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	At entry
HVAC	Laminar flow hood
Electrical	Perimeter outlets
Plumbing	2 sinks
Lighting	Ambient lighting
Phone/Data	4 computer stations
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

Retail Lab	3 PCs, 1 printer, 1 filing cabinet, 5 bays with 3 sections of 12 shelves each (3 ft long), over-the-counter area with 4 shelves, 2 locking storage cabinets, 2 bunsen burners, under counter refrigerator
Compounding Lab	1 Laminar flow hood, 2 sinks, 1 reconstitute tube, 2 3’x6’ tables, 4 chairs, 2 scales, 2 sets of weights, shelving with 12 bins, 1 vault (approx. 2’W x 4’H)


20'-0"
25'-0"
Pharmacy Tech
Office Suite, 500 sf
tables

Pharmacy Technician

1. PROGRAM

General Space Description	Offices
No. of Occupants	4

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	No special requirements

3. ARCHITECTURAL CHARACTERISTICS

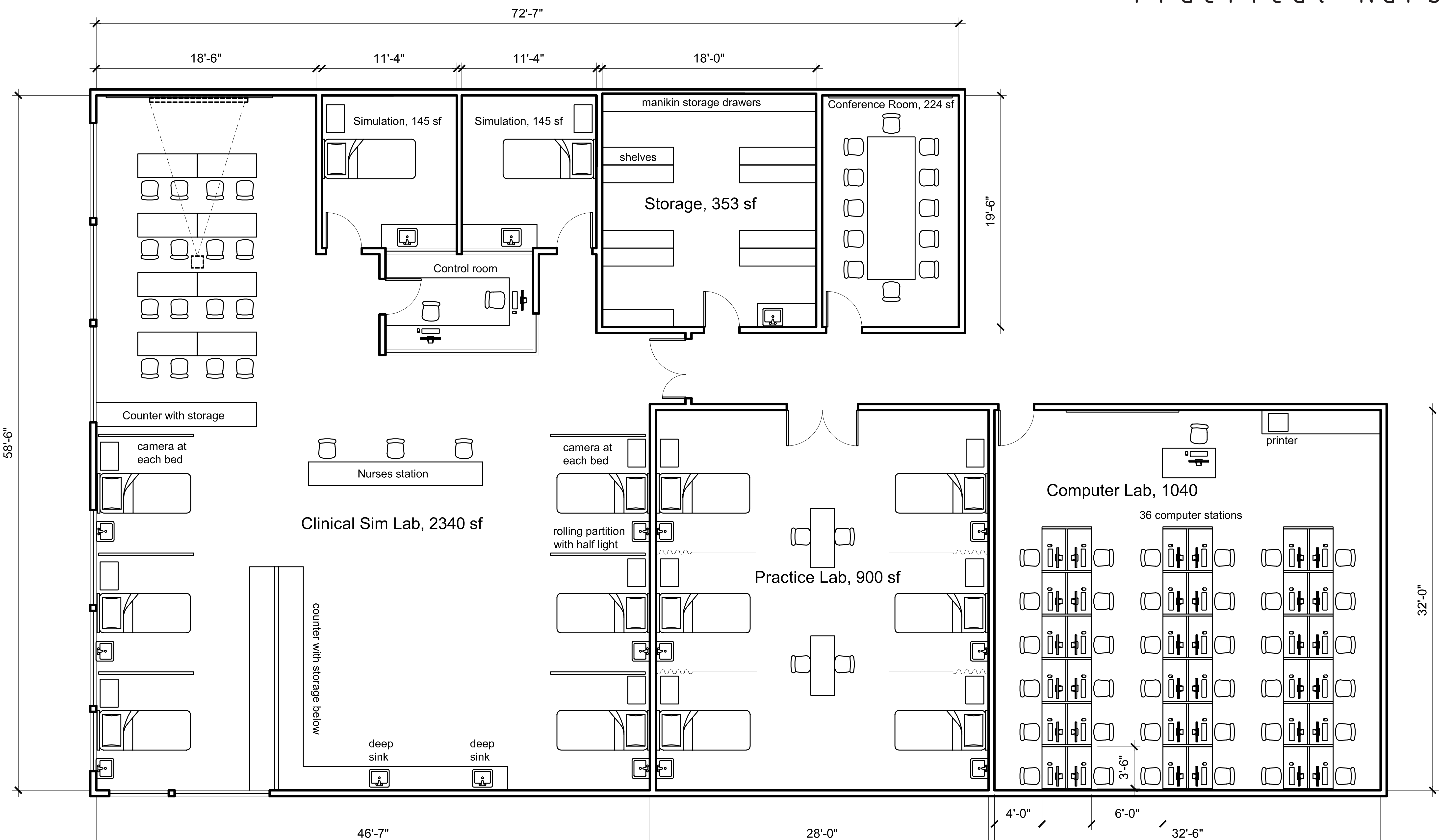
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’ - 0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	none
Lighting	Ambient and task lighting
Phone/Data	4 computers, 4 phones
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

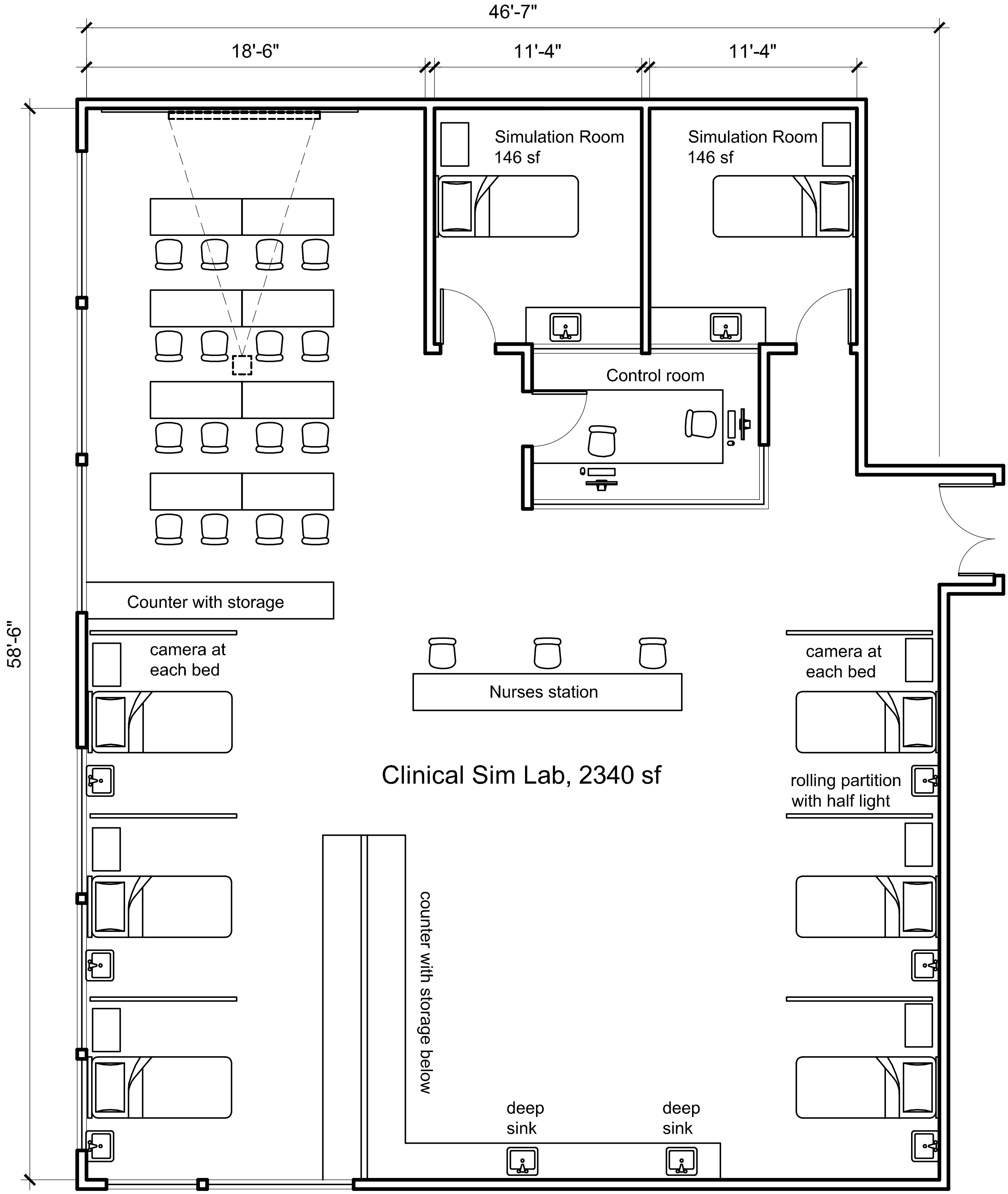
General	4 workstations



72'-7"
18'-6"
11'-4"
11'-4"
18'-0"
Simulation, 145 sf
Simulation, 145 sf
manikin storage drawers
Conference Room, 224 sf
shelves
Storage, 353 sf
19'-6"
Control room
58'-6"
Counter with storage
camera at each bed
Nurses station
camera at each bed
Clinical Sim Lab, 2340 sf
rolling partition with half light
Practice Lab, 900 sf
printer
Computer Lab, 1040
36 computer stations
32'-0"
counter with storage below
deep sink
deep sink
3'-6"
4'-0"
6'-0"
46'-7"
28'-0"
32'-6"

Practical Nursing

Practical Nursing Lab Suite	
Clinical Sim Lab with Classroom	2340 sf
Simulation Rooms (2)	292 sf
Storage Room	353 sf
Conference Room	224 sf
Practice Lab	900 sf
Computer Lab	1040 sf
Classroom #1	1152 sf
Classroom #2	1188 sf
Office Suite	1853 sf


46'-7"
18'-6"
11'-4"
11'-4"
58'-6"
Simulation Room
146 sf
Simulation Room
146 sf
Control room
Counter with storage
camera at
each bed
camera at
each bed
Nurses station
Clinical Sim Lab, 2340 sf
rolling partition
with half light
counter with storage below
deep
sink
deep
sink

1. PROGRAM

General Space Description	Clinical Sim Lab
No. of Occupants	16 desks, 8 beds

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Practice Lab, Computer Lab, Debrief, Storage

3. ARCHITECTURAL CHARACTERISTICS

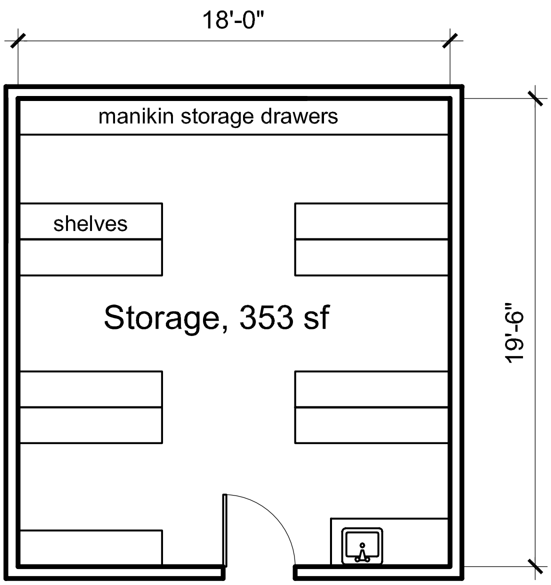
Windows	Yes
Doors	“36” single, 60” double leaf
Floor	Sheet vinyl
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	Headwall units to have simulated oxygen (air),air and suction
Electrical	Headwall units to have electrical outlets, camera at each bed, computers at nurses station and control rm. equip.
Plumbing	Handwashing sink next to each bed with knee or foot controls & gooseneck faucet, 2 deep sinks
Lighting	Zoned lighting over each bed with individual bed switch and lighting on a dimmer switch over the teaching area
Phone/Data	Wireless data, data at headwall units, phone/ data at nurses station, webcasting or videoconferencing capability
Special Requirements	Closed circuit btwn Sim Rooms and Control Room, pan-tilt-zoom camera at each bed, ceiling tracks for patient lift at each bed, one way mirrors at control room, Smartboard in classroom area, wall clocks w/ second hand, 1 patient hydraulic lift

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	8 beds, classroom seating for 16, nurse’s station, rolling partitions with upper half-light, misc. medical equipment



1. PROGRAM

General Space Description	Storage room
No. of Occupants	

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Clinical Sim Lab

3. ARCHITECTURAL CHARACTERISTICS

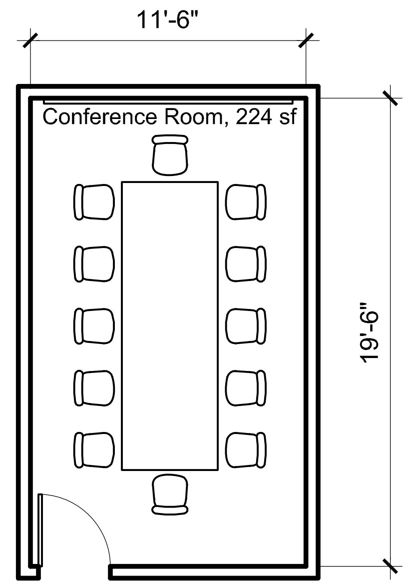
Windows	Yes
Doors	“36” single leaf
Floor	Sheet vinyl
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	1 deep sink
Lighting	Ambient lighting
Phone/Data	None
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

Storage	Shelves, sink, storage for manikins



1. PROGRAM

General Space Description	Conference Room
No. of Occupants	12

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Clinical Sim Lab

3. ARCHITECTURAL CHARACTERISTICS

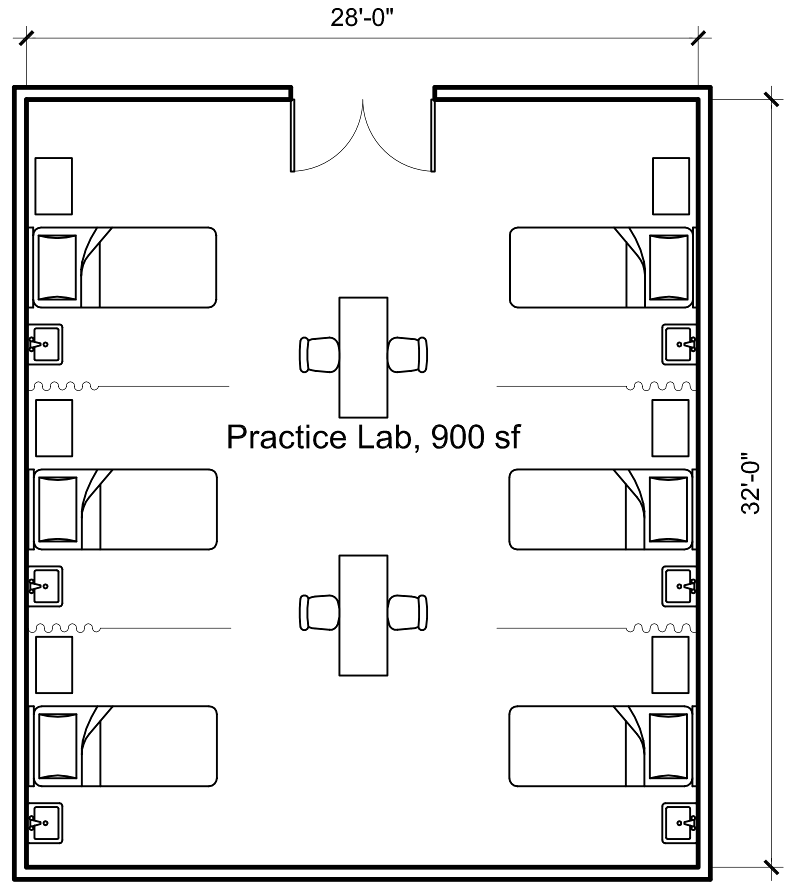
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	LCD or flat screen monitor
Plumbing	None
Lighting	Ambient lighting, dimmable
Phone/Data	A/V Connection to Sim. & Control rooms, videoconferencing capability
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

Conference	Large table, 12 chairs, 1 smart board, 48”x96” whiteboard


28'-0"
32'-0"
Practice Lab, 900 sf

1. PROGRAM

General Space Description	Practice Lab
No. of Occupants	6 beds

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Clinical Sim. Lab

3. ARCHITECTURAL CHARACTERISTICS

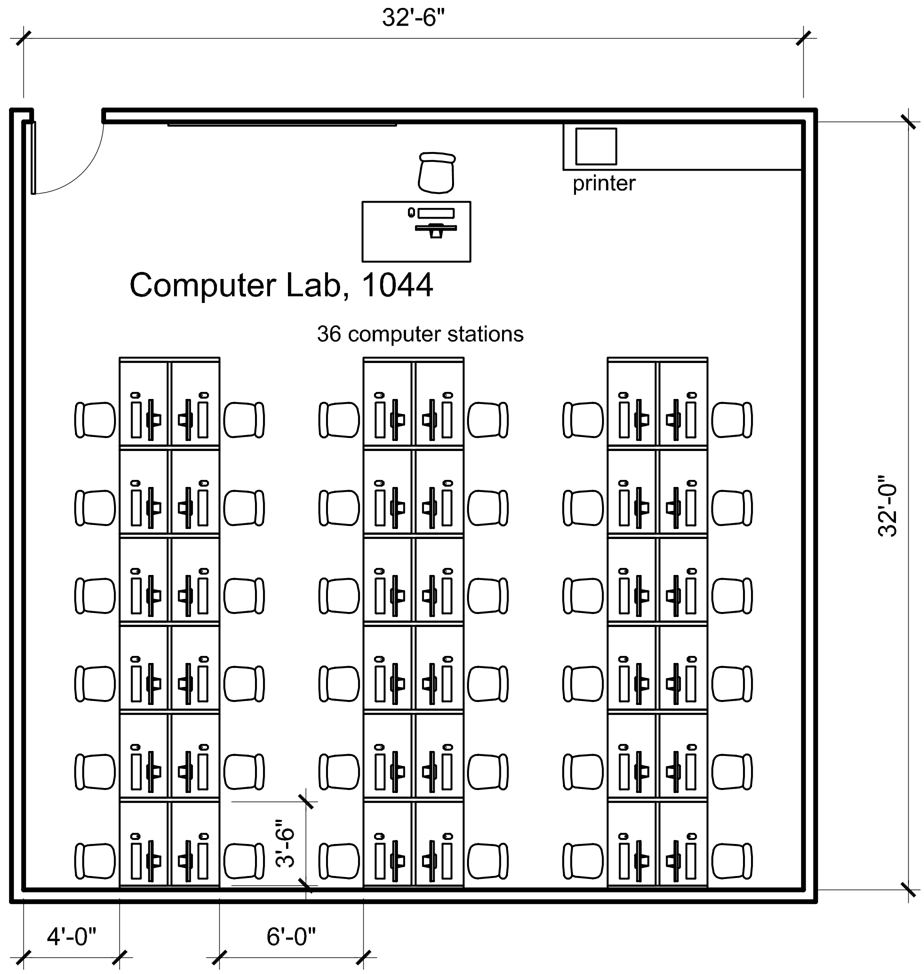
Windows	Yes
Doors	6'-0" double leaf
Floor	Sheet vinyl
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10'-0"
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	Headwall units to have simulated oxygen (air),air and suction
Electrical	Headwall units to have electrical outlets
Plumbing	Handwashing sink next to each bed with knee or foot controls & gooseneck faucet
Lighting	Zoned lighting over each bed with individual bed switch and lighting on a dimmer switch over the teaching area
Phone/Data	Wireless data, data at headwall units,
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	6 beds, 6 sinks, 6 bedside tables, 2 tables


32'-6"
printer
Computer Lab, 1044
36 computer stations
32'-0"
3'-6"
4'-0"
6'-0"

1. PROGRAM

General Space Description	Computer Lab
No. of Occupants	36 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Clinical Sim. Lab, Practice Lab

3. ARCHITECTURAL CHARACTERISTICS

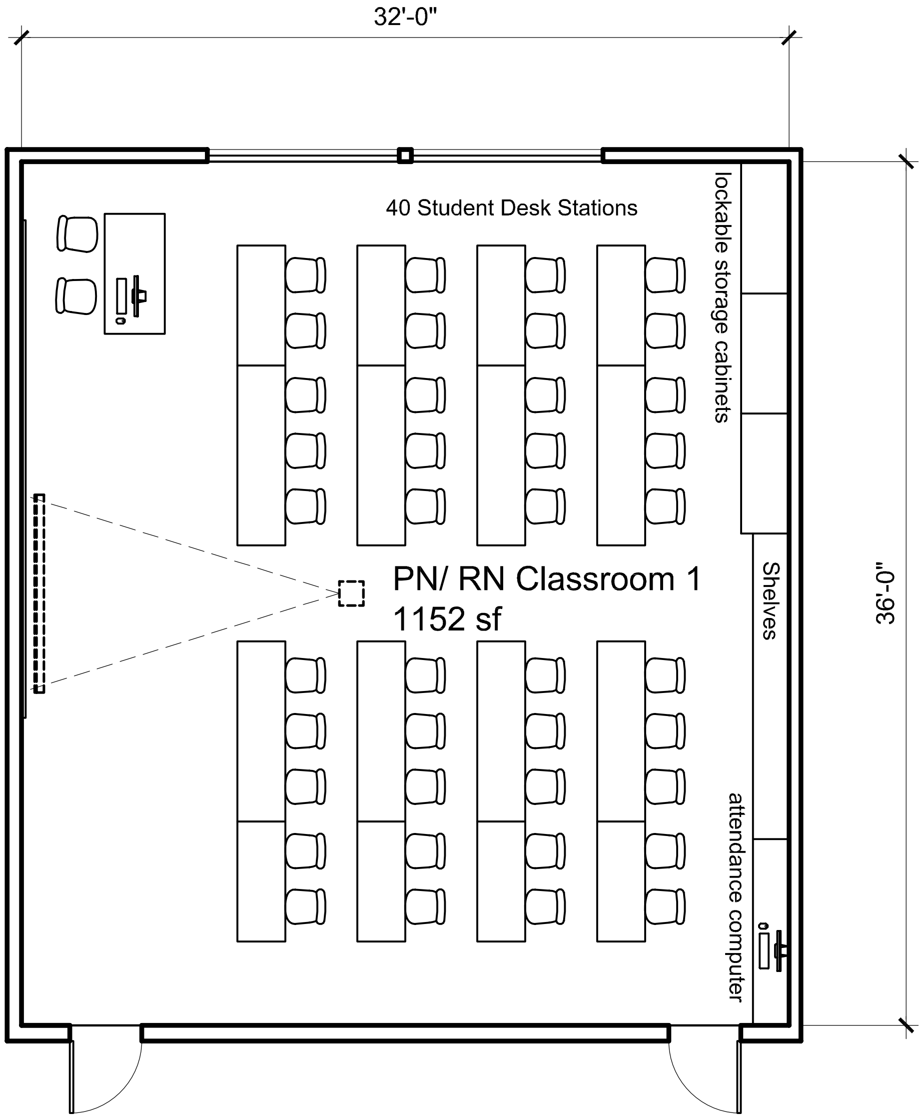
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceilng panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

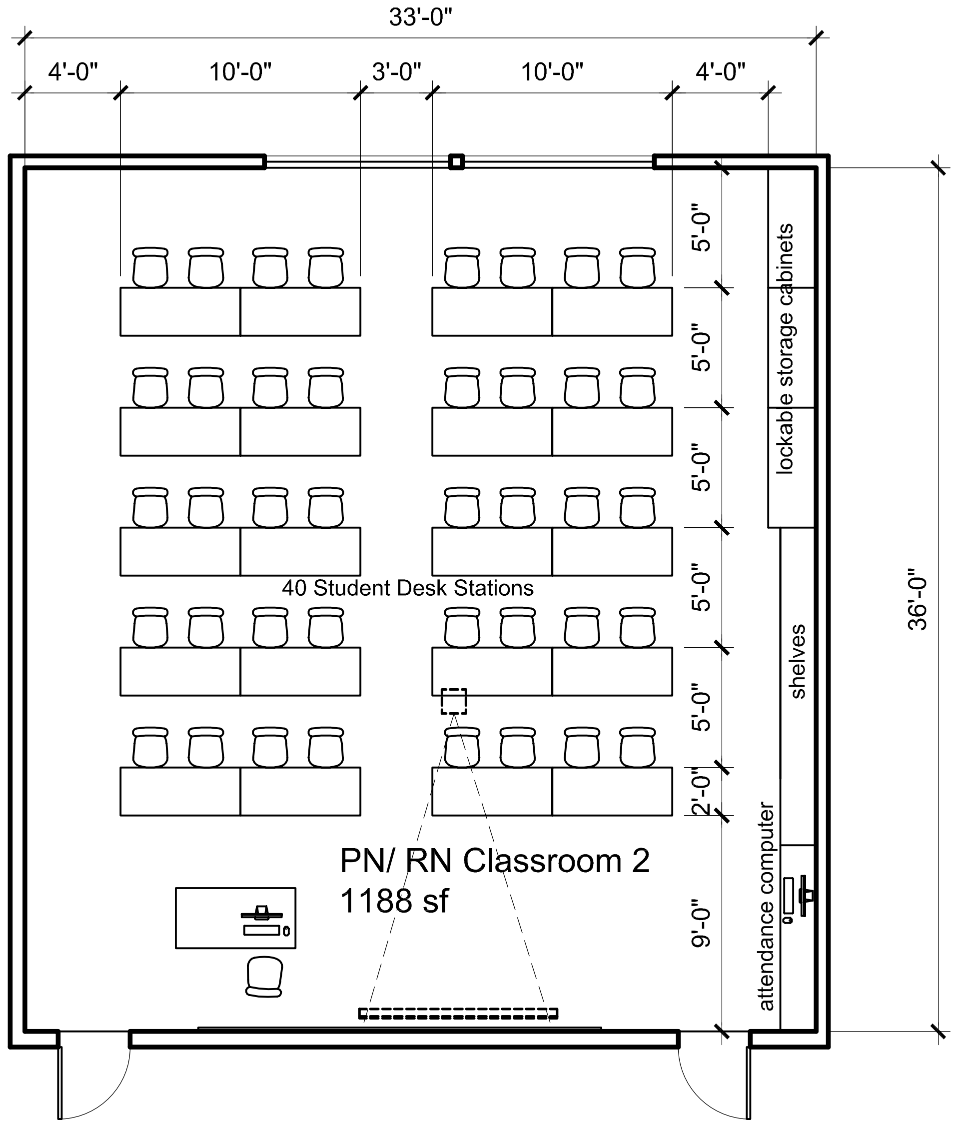
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Power for PCs
Plumbing	None
Lighting	Ambient lighting, dimmable
Phone/Data	37 PCs (including instructor PC)
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	36 tables (24” x 42”), 36 chairs, 36 PCs, 2 14’x4’ whiteboards, 1 printer, 1 instructor/ proctor station with PC


32'-0"
36'-0"
40 Student Desk Stations
lockable storage cabinets
PN/ RN Classroom 1
1152 sf
Shelves
attendance computer

1. PROGRAM	
General Space Description	Classroom
No. of Occupants	40 students
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	No special requirements
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating area. All lighting to be dimmable.
Phone/Data	1 computer station, 1 attendance computer
Special Requirements	
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	20 tables, 40 chairs, 1 LCD, 1 laptop, 2 - 10’x4’ whiteboards, 1 3D desktop visualizer camera, 1 smart board, 1 PC, 1 96”x96” projector screen, 1 instructor desk with 2 chairs, 3 locking storage cabinets


33'-0"
4'-0"
10'-0"
3'-0"
10'-0"
4'-0"
5'-0"
5'-0"
5'-0"
5'-0"
5'-0"
2'-0"
9'-0"
36'-0"
lockable storage cabinets
shelves
attendance computer
40 Student Desk Stations
PN/ RN Classroom 2
1188 sf

1. PROGRAM

General Space Description	Classroom
No. of Occupants	40 students

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	No special requirements

3. ARCHITECTURAL CHARACTERISTICS

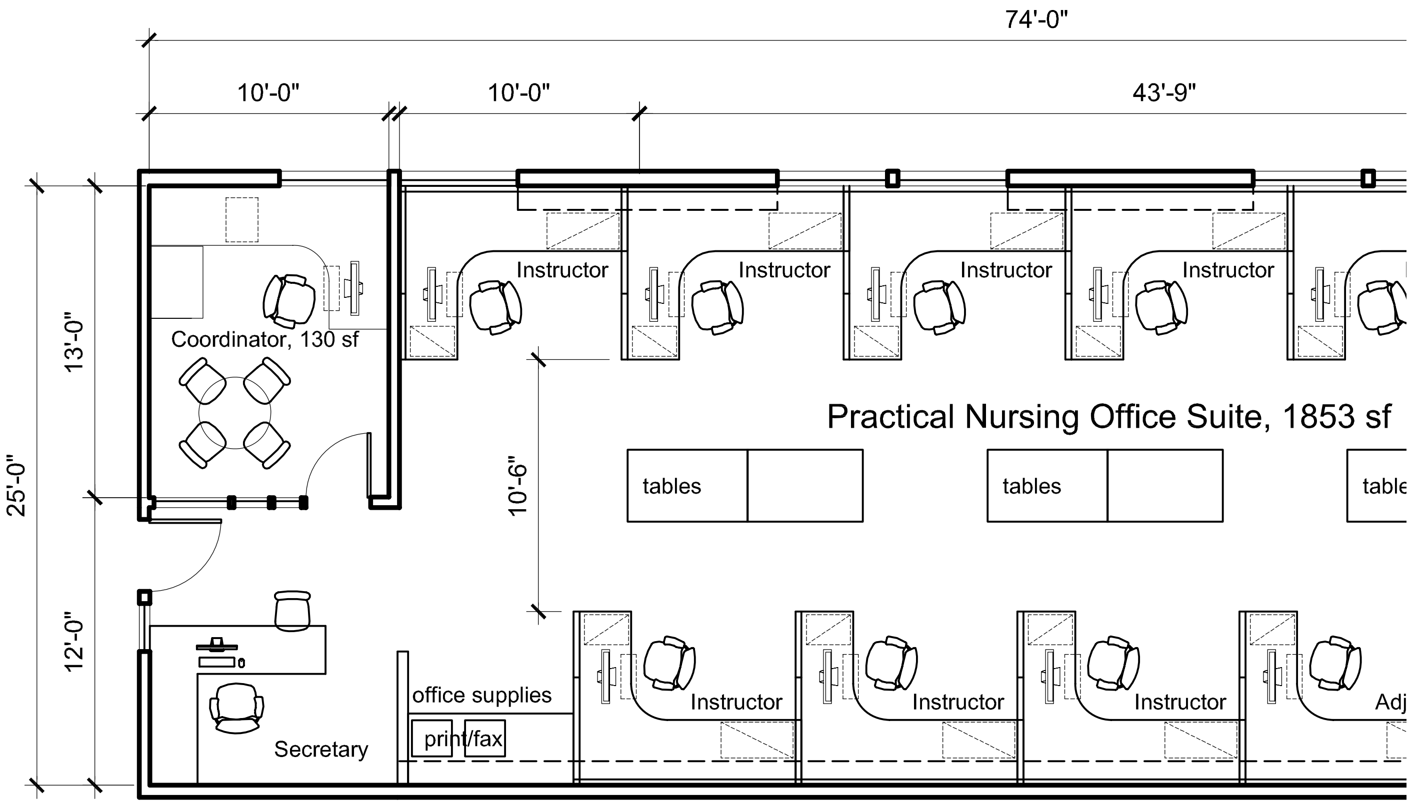
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

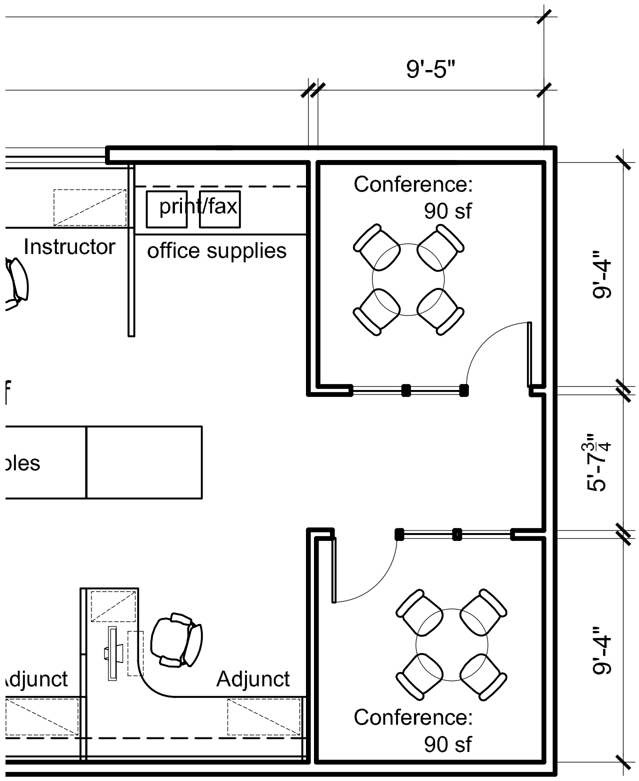
4. ENGINEERING SYSTEMS

Security Electronics	Attendance computer
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	1 computer station, 1 attendance computer
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	20 tables, 40 chairs, 1 LCD, 1 laptop, 2 - 10’x4’ whiteboards, 1 3D desktop visualizer camera, 1 smart board, 1 PC, 1 96”x96” projector screen, 1 instructor desk, 3 locking storage cabinets


74'-0"
10'-0"
10'-0"
43'-9"
13'-0"
25'-0"
12'-0"
10'-6"
Instructor
Instructor
Instructor
Instructor
Coordinator, 130 sf
Practical Nursing Office Suite, 1853 sf
tables
tables
table
Secretary
office supplies
print/fax
Instructor
Instructor
Instructor
Adj



1. PROGRAM

General Space Description	Office suite
No. of Occupants	12

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	No special req.

3. ARCHITECTURAL CHARACTERISTICS

Windows	Yes
Doors	36" single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panel
Ceiling Height	10'-0"
Acoustics	No special req.

4. ENGINEERING SYSTEMS

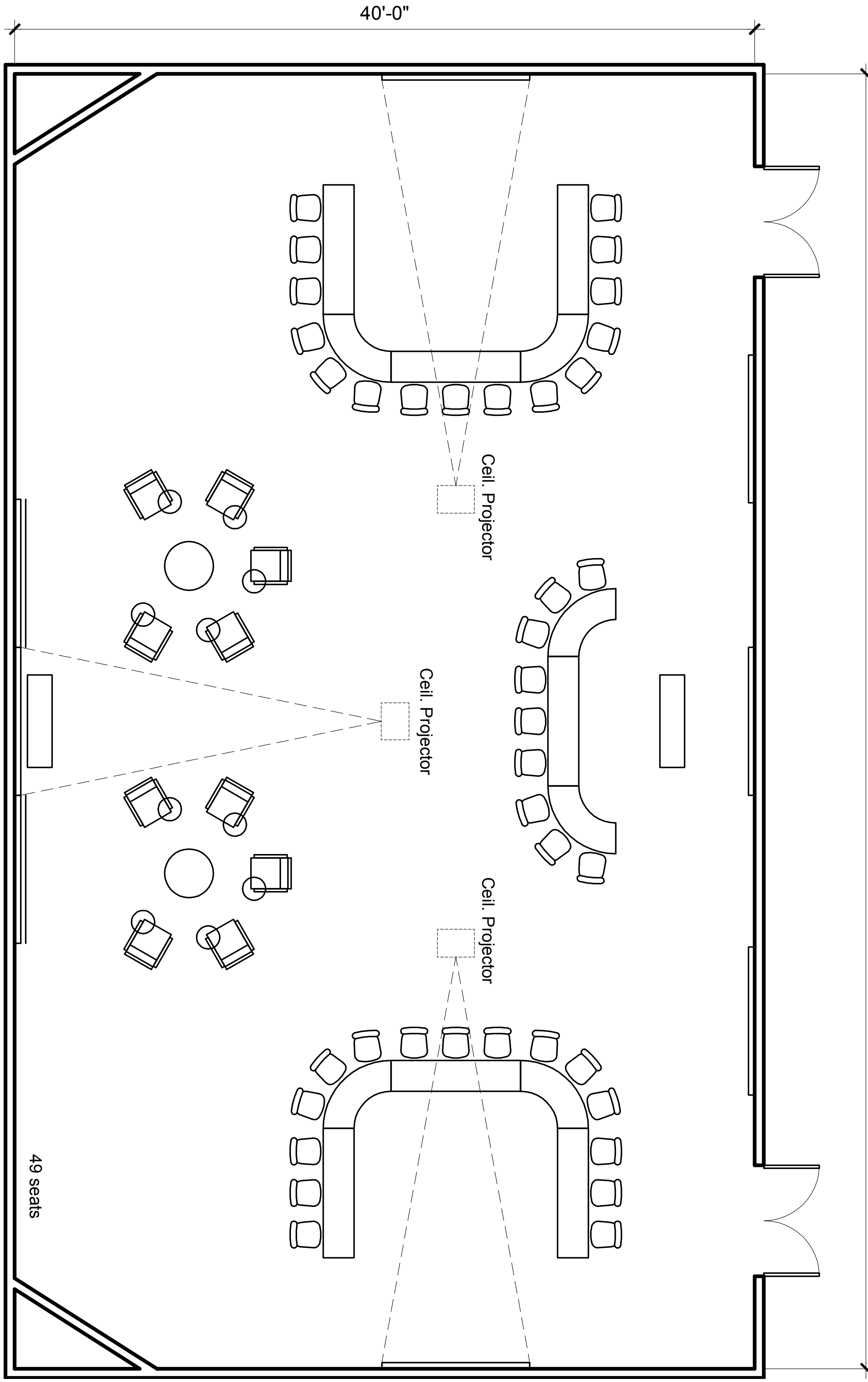
Security Electronics	No special req.
HVAC	No special req.
Electrical	Private offices: power outlets on two walls
Plumbing	None
Lighting	Ambient and task
Phone/Data	for ea. station Private offices: two data outlets each on two walls
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

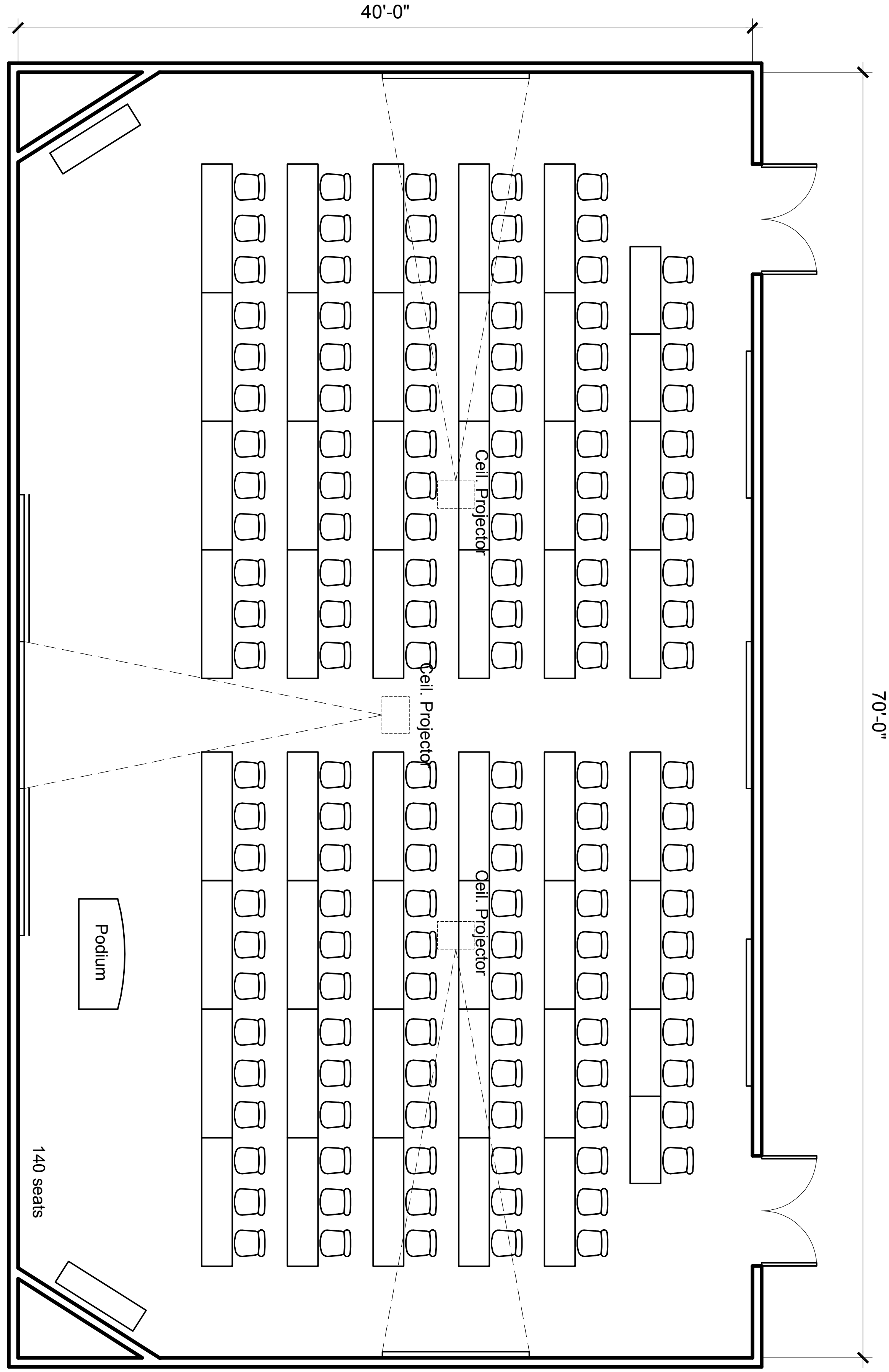
General	12 PC stations, 2 laser printers, fax machine, private meeting areas, storage for office supplies

Shared Spaces

Auditorium - Flat Floor option 1	2800 sf
Auditorium - Flat Floor option 2	2800 sf
Auditorium - Tiered	2800 sf
Lobby/Student Interaction	1000 sf
Director's Office	150 sf
Counselor's Office	130 sf
Faculty Workroom (2)	300 sf
Lockers	


40'-0"
70'-0"
Ceil. Projector
Ceil. Projector
Ceil. Projector
49 seats

1. PROGRAM	
General Space Description	Auditorium
No. of Occupants	140
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	Building lobby
3. ARCHITECTURAL CHARACTERISTICS	
Windows	No
Doors	72” double leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	15’ - 0”
Acoustics	Acoustical separation from adjacent spaces
4. ENGINEERING SYSTEMS	
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data
Special Requirements	
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	140 chairs, moveable podium, ceiling projectors


40'-0"
70'-0"
Ceil. Projector
Ceil. Projector
Ceil. Projector
Podium
140 seats

1. PROGRAM

General Space Description	Auditorium
No. of Occupants	140

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Building lobby

3. ARCHITECTURAL CHARACTERISTICS

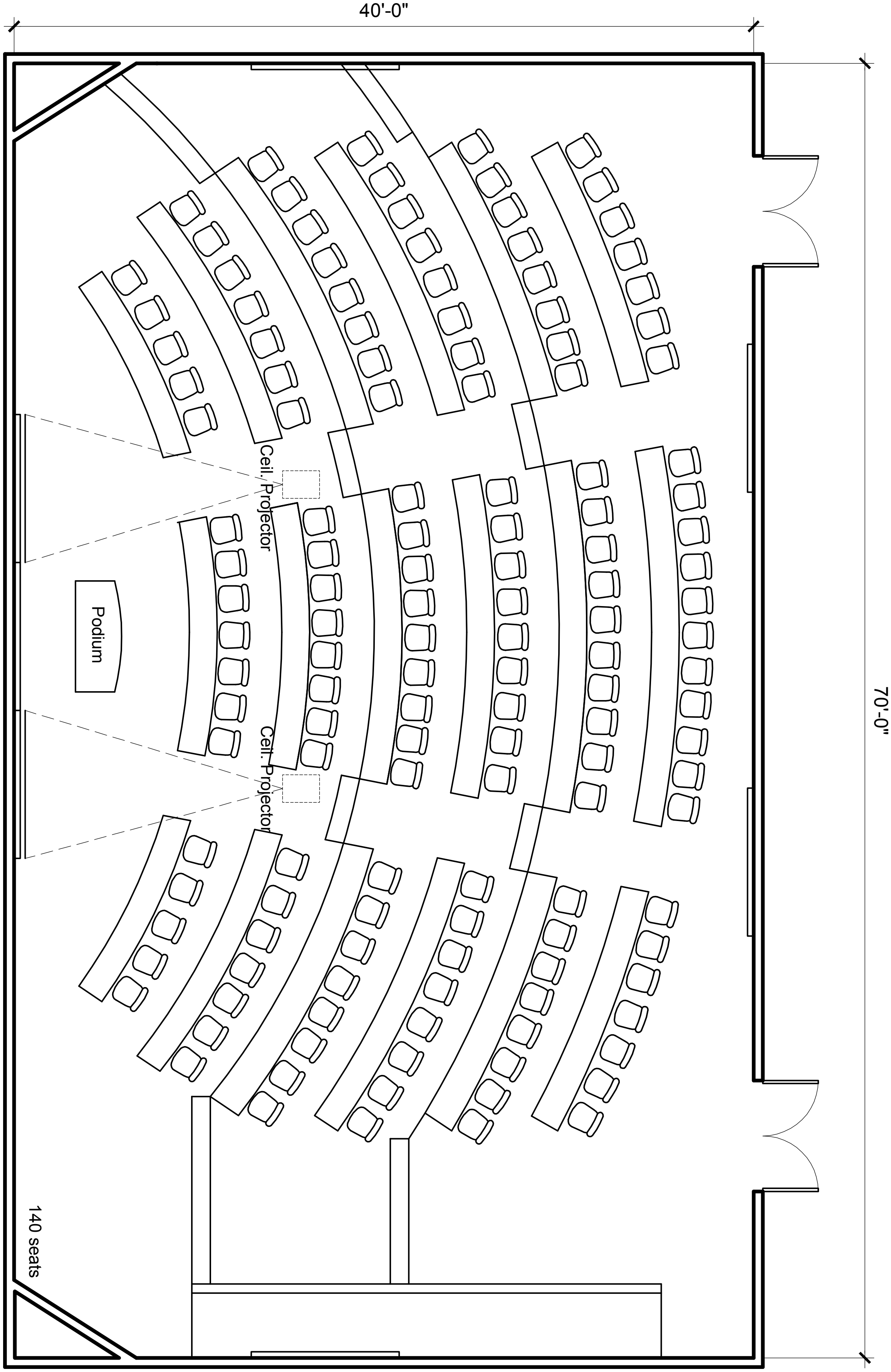
Windows	No
Doors	72” double leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	15’ - 0”
Acoustics	Acoustical separation from adjacent spaces

4. ENGINEERING SYSTEMS

Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	140 chairs, moveable podium, ceiling projectors


40'-0"
70'-0"
Ceil. Projector
Podium
Ceil. Projector
140 seats

1. PROGRAM

General Space Description	Auditorium
No. of Occupants	140

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Building lobby

3. ARCHITECTURAL CHARACTERISTICS

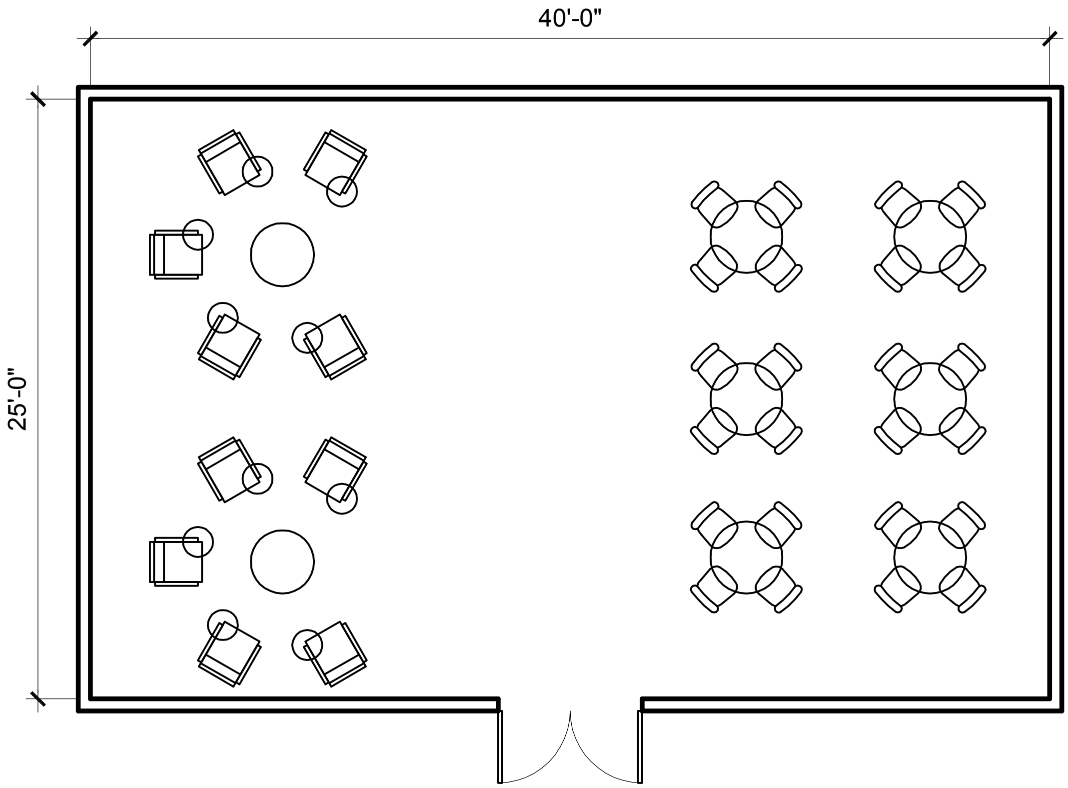
Windows	No
Doors	72” double leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	15’ - 0”
Acoustics	Acoustic separation from adjacent spaces

4. ENGINEERING SYSTEMS

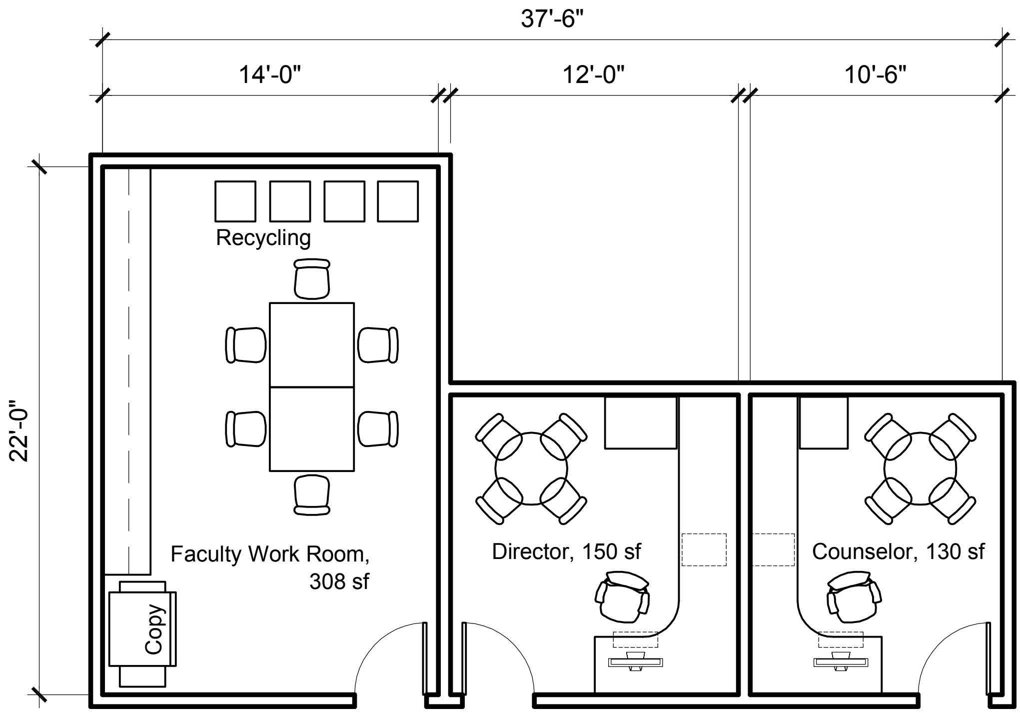
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Zoned lighting: separate controls for headwall and seating areas. All lighting to be dimmable.
Phone/Data	Wireless data
Special Requirements	Tiered floor

5. EQUIPMENT, FURNITURE, ACCESSORIES

General	140 chairs, moveable podium, ceiling projectors


40'-0"
25'-0"

1. PROGRAM	
General Space Description	Lobby
No. of Occupants	30+
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	Auditorium
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Yes
Doors	36” double leaf
Floor	Carpet
Wall	Painted gypsum board or special finish
Ceiling	Acoustic ceiling panels or special acoustical ceiling
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	Security per campus standard
HVAC	No special requirements
Electrical	Perimeter outlets, floor outlets
Plumbing	None
Lighting	Ambient lighting
Phone/Data	Wireless data
Special Requirements	
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	Furniture to support studying and socializing


37'-6"
14'-0"
12'-0"
10'-6"
22'-0"
Recycling
Faculty Work Room, 308 sf
Copy
Director, 150 sf
Counselor, 130 sf

1. PROGRAM

General Space Description	Offices
No. of Occupants	Offices: 1 - 5 ea. Faculty work room: 6

2. PROXIMITY AND ACCESS REQUIREMENTS

Must be adjacent to	Faculty work and meeting areas

3. ARCHITECTURAL CHARACTERISTICS

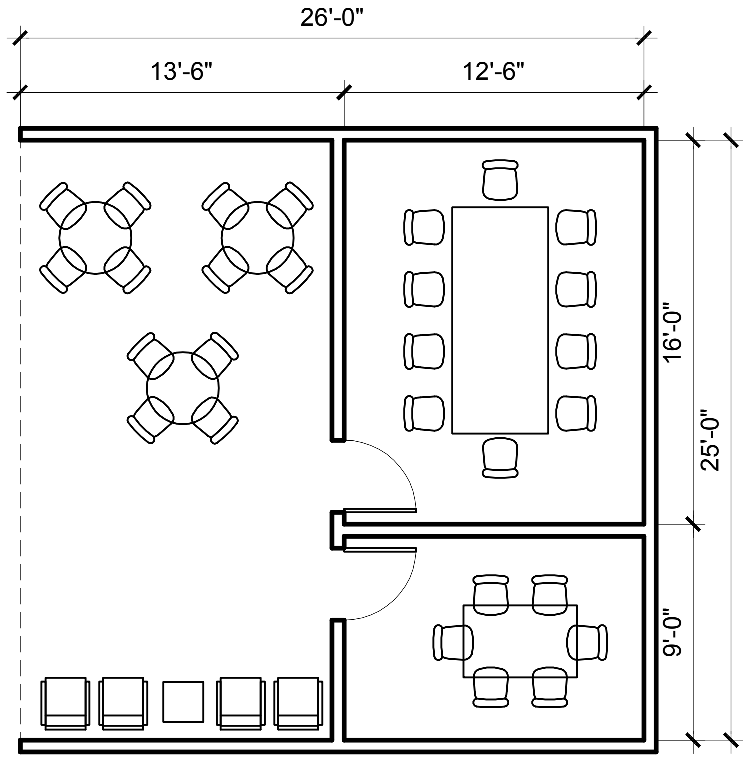
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements

4. ENGINEERING SYSTEMS

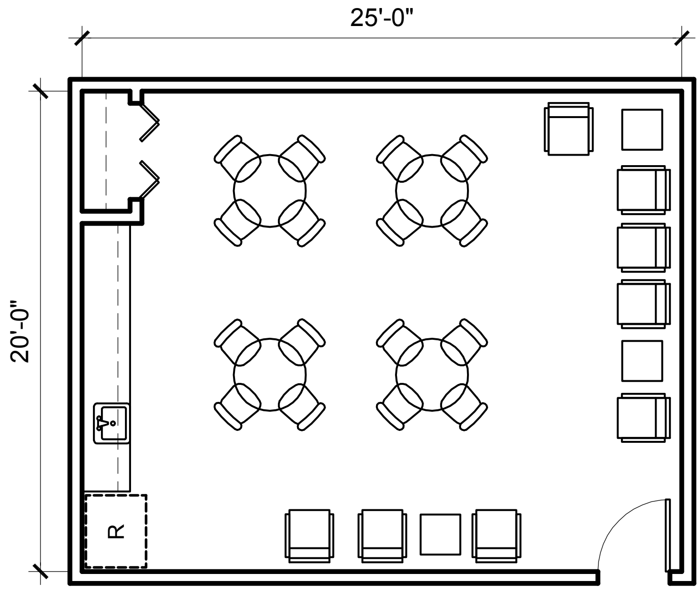
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Offices: power on two walls Work room: perimeter power and power for office equipment
Plumbing	None
Lighting	Ambient and task lighting
Phone/Data	Offices: two data ports each on two walls Work room: data per equipment requirements
Special Requirements	

5. EQUIPMENT, FURNITURE, ACCESSORIES

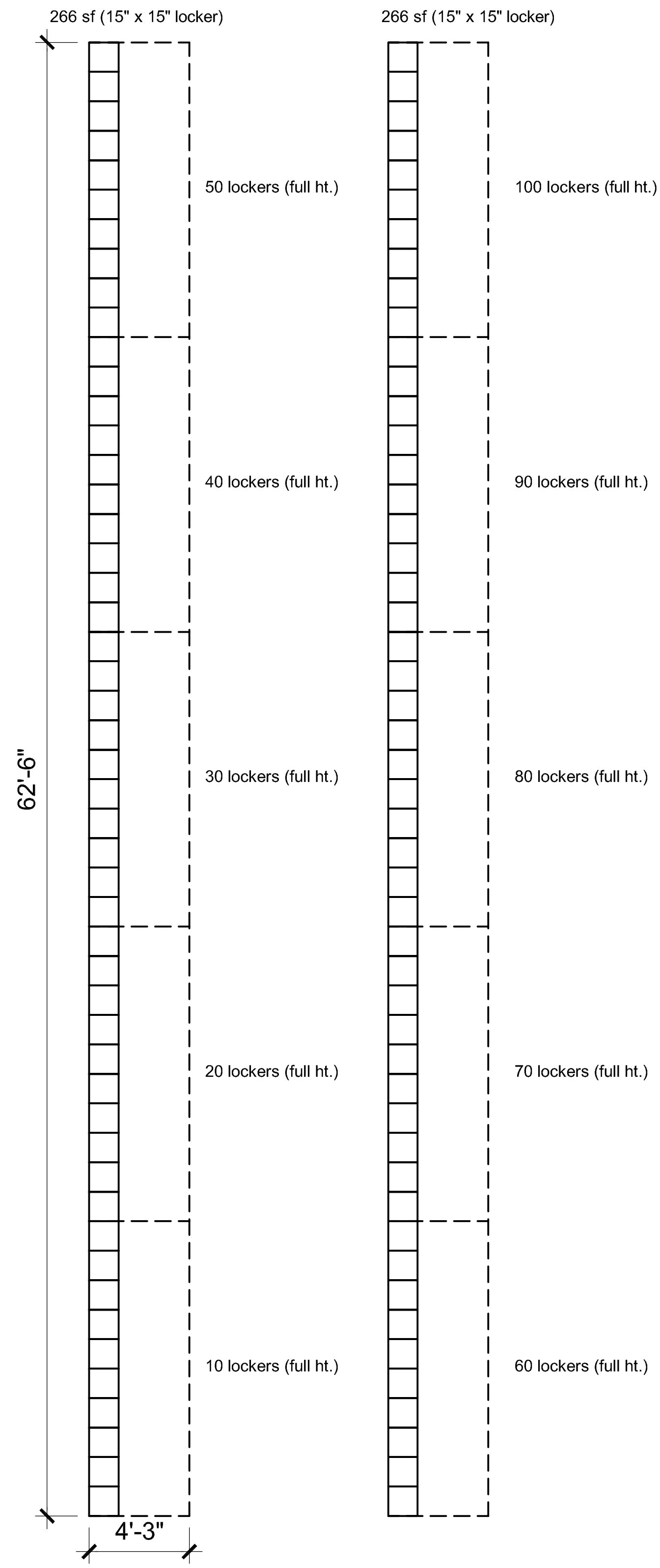
Each Office	1 office chair, 1 desk with PC, 1 Laptop with docking station, 4 visitor chairs, 1 round table, 1 printer, 1 bulletin board, 1 wall mount calendar, 1 large filing cabinet, 1 large shelf
Faculty work room	copy/ fax/ print equipment, recycling, faculty mail boxes


26'-0"
13'-6"
12'-6"
16'-0"
25'-0"
9'-0"

1. PROGRAM	
General Space Description	Open and private student study
No. of Occupants	Varies
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	No special requirements
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Yes
Doors	36” single leaf
Floor	Carpet
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	None
Lighting	Ambient lighting
Phone/Data	Wireless data, hard-wired data at perimeter
Special Requirements	
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	Spaces and tables to provide study groups of varying sizes from individual to sound separated rooms for 8-10 students.


25'-0"
20'-0"
R

1. PROGRAM	
General Space Description	Student Break Room
No. of Occupants	24
2. PROXIMITY AND ACCESS REQUIREMENTS	
Must be adjacent to	No special requirements
3. ARCHITECTURAL CHARACTERISTICS	
Windows	Preferred
Doors	36” single leaf
Floor	Sheet vinyl/ linoleum
Wall	Painted gypsum board
Ceiling	Acoustical ceiling panels
Ceiling Height	10’-0”
Acoustics	No special requirements
4. ENGINEERING SYSTEMS	
Security Electronics	No special requirements
HVAC	No special requirements
Electrical	Perimeter outlets
Plumbing	Sink
Lighting	Ambient lighting, task lighting at countertop
Phone/Data	Wireless data, hard-wired data at perimeter
Special Requirements	
5. EQUIPMENT, FURNITURE, ACCESSORIES	
General	Refrigerator, sink, countertops, storage, coat closet, tables and chairs


266 sf (15" x 15" locker)
266 sf (15" x 15" locker)
50 lockers (full ht.)
100 lockers (full ht.)
40 lockers (full ht.)
90 lockers (full ht.)
62'-6"
30 lockers (full ht.)
80 lockers (full ht.)
20 lockers (full ht.)
70 lockers (full ht.)
10 lockers (full ht.)
60 lockers (full ht.)
4'-3"

1. PROGRAM

General Space Description	Lockers

5. EQUIPMENT, FURNITURE, ACCESSORIES

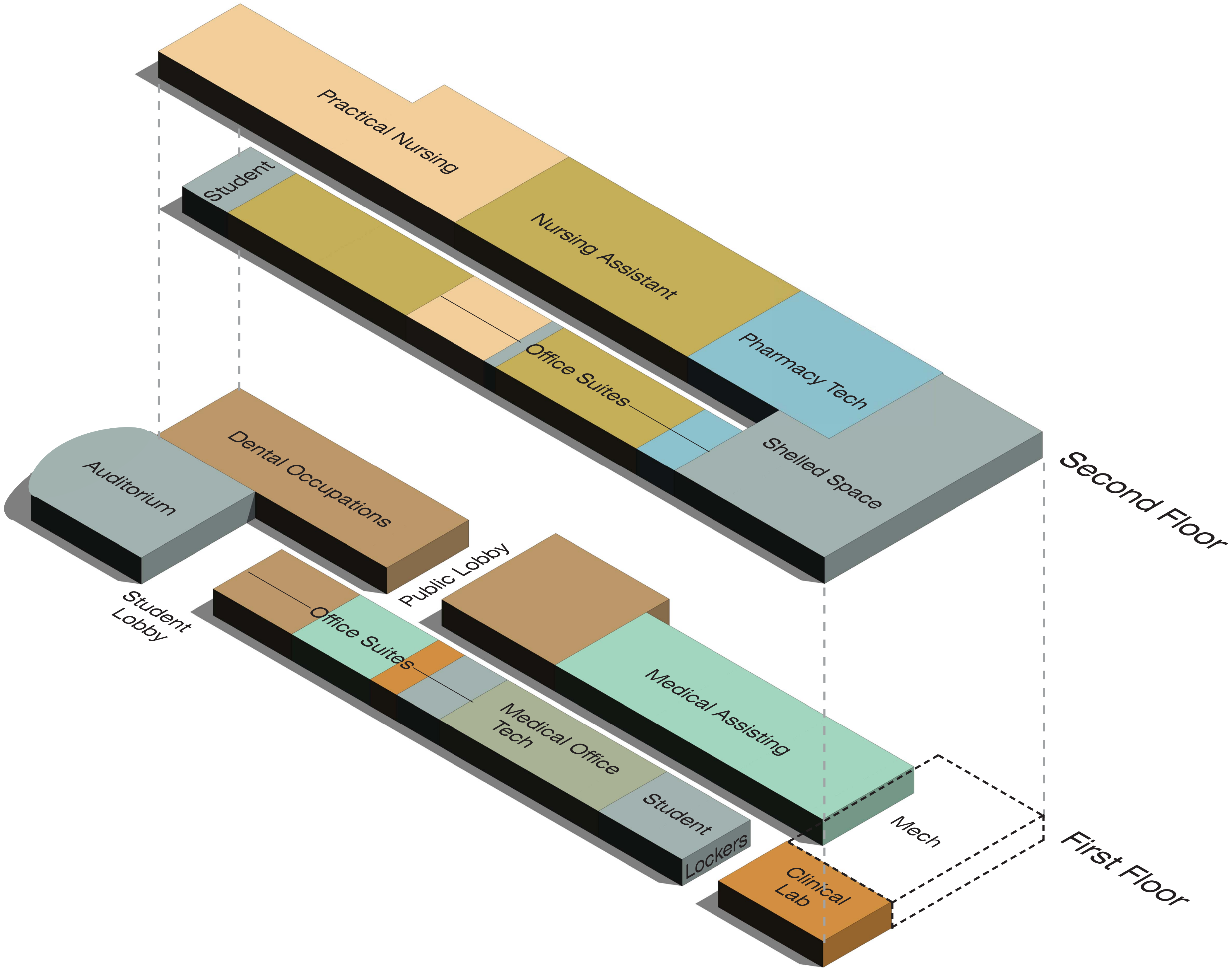
60 half-height lockers for PN/ RN
40 full-height lockers for Medical Assisting
66 cubbies for Nursing Assistant (18”x18”x12”)

A variety of stacking options were considered. The preferred scheme was driven by having the two nursing programs on the same floor. Since the Nursing assistant and Pharmacy tech programs are taught in the evening, visual connection to the ground floor is important so that students feel safe. Other criteria that affected the placement of the various programs are noted below:

LOCATION CRITERIA

- Maximize north/south exposure; minimize east/west facades. (Sustainable design)
- Maximize the number of rooms with daylight. (Sustainable design)
- Create a compact 2 story shape. (Sustainable design)
- Small, low use spaces such as the faculty offices should be on the south side of the building. (Sustainable design)
- Large, high use spaces such as the labs and classrooms should be on the north side of the building. (Sustainable design)
- Medical office technologies should next to Medical assist
- Dental occupations should near the main public entry
- The Directors office should be near the main public entry
- The two nursing programs should be on the same floor
- The Pharmacy tech space should be adjacent to the Shell space
- The Shell space should be at the far east end on the second floor
- Congregate faculty offices together, but locate adjacent to their teaching spaces
- Provide a public entry facing north and student entries facing south, near the east and west ends
- The lecture hall should be near the main student entry and visible from the primary public entry
- The lecture hall could be on the west end of the building in order to take advantage of not needing windows
- Do not place a second floor on top of the lecture hall to allow top daylighting and a higher volume.
- The student break room should be away from the main entry
- Provide visibility within the building for night time programs (security)
- Provide an outdoor student space

Stacking Diagrams



Location Criteria for Auditorium

- Minimal windows
- Windowless facades towar east or west
- Top lighting
- No second floor space above
- Near an entry
- Discernable in architecture

Second Floor	
Practical Nursing	6,475 sf
Nursing Assistant	3,607 sf
Pharmacy Technician	750 sf
Shared	5,200 sf
Shelled Space	25,373 sf

First Floor	7,058 sf
Dental Occupations	5,942 sf
Medical Assisting	2,090 sf
Medical Office Tech	1,722 sf
Clinical Lab	2,800 sf
Auditorium	1,810 sf
Shared	21,422 sf

Project Cost Summary . 5

Health Technology Building
Ogden - Weber Applied Technology College

August 13, 2009

CONSTRUCTION COST ESTIMATE

M A S T E R   S U M M A R Y

SECTION	AREA	UNIT	COST/SF	COST
CONSTRUCTION COST:				
BUILDING	65,000	GSF	241.35	$15,687,952
SITE				$1,742,098
TOTAL (Construction)				$17,430,049
ADD OPTION:				
Additional Building Shell	5,000	SF	140.00	$700,000
TOTAL WITH ADD OPTION (Construction)				$18,130,049

NOTES: Costs are for Construction only.
Costs are for a "LEED Gold" Facility.
Costs are Based on a Competitive Bid Basis.
Costs are Based on a Construction Start of January 2010.

Health Technology Building
Ogden - Weber Applied Technology College

August 13, 2009

CONSTRUCTION COST ESTIMATE

BUILDING SUMMARY

SECTION		AREA	UNIT	COST/SF	COST
ARCHITECTURAL		65,000	GSF	78.31	$5,089,835
STRUCTURAL		65,000	GSF	41.82	$2,718,270
MECHANICAL		65,000	GSF	41.40	$2,691,300
ELECTRICAL		65,000	GSF	24.13	$1,568,250
LEED GOLD (Additional Cost From Silver)	4.0%				$482,706
SUB TOTAL		65,000	GSF	193.08	$12,550,361
GENERAL CONDITIONS	7.0%				$878,525
BONDING	1.0%				$125,504
OVERHEAD & PROFIT	5.0%				$627,518
SUB TOTAL		65,000	GSF	218.18	$14,181,908
DESIGN CONTINGENCY	10.0%				$1,255,036
INFLATION TO JANUARY 2010	2.0%				$251,007
TOTAL (Construction)		65,000	GSF	241.35	$15,687,952

NOTES: Costs are for Construction only.
Costs are for a "LEED Gold" Facility.
Costs are Based on a Competitive Bid Basis.
Costs are Based on a Construction Start of January 2010.

CONSTRUCTION COST ESTIMATE

B U I L D I N G   D E T A I L

SECTION	QUANTITY	UNIT	UNIT COST	COST
ARCHITECTURAL				
ROOF				
Metal Roofing System, Rigid Insulation & Flashings	9,900	SF	16.00	$158,400
Membrane Roofing System, Rigid Insulation & Flashings	23,100	SF	9.00	$207,900
			5.64	$366,300
EXTERIOR WALLS				
Foundation Dampproofing w/ Rigid Insulation	4,160	SF	3.00	$12,480
CMU Veneer, Metal Studs, Batt Insulation & Gypsum Bd	21,220	SF	25.00	$530,500
Metal Siding, Metal Studs, Batt Insulation & Gypsum Bd	14,140	SF	26.00	$367,640
			14.01	$910,620
INTERIOR WALLS				
Metal Studs, Sound Insulation & Gypsum Board	48,750	SF	8.50	$414,375
			6.38	$414,375
DOORS AND WINDOWS				
Aluminum Windows / Curtain Wall w/ Glass	17,680	SF	65.00	$1,149,200
Sun Shading Devices	2,120	SF	90.00	$190,800
Man Doors w/ Hardware	140	LEAF	1,400	$196,000
			23.63	$1,536,000
FINISHES				
Floor Finishes	65,000	SF	6.50	$422,500
Wall Finishes	132,860	SF	1.50	$199,290
Ceiling Finishes	65,000	SF	4.00	$260,000
			13.57	$881,790

Health Technology Building
Ogden - Weber Applied Technology College

August 13, 2009

CONSTRUCTION COST ESTIMATE

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CONSTRUCTION COST ESTIMATE

BUILDING DETAIL

SECTION	QUANTITY	UNIT	UNIT COST	COST
STRUCTURAL				
FOUNDATION				
Concrete Footings w/ Reinf	390	CY	385.00	$150,150
Concrete Foundation Wall w/ Reinf	4,160	SF	22.00	$91,520
Excavation and Backfill, Foundation	3,120	CY	23.00	$71,760
			4.82	$313,430
FLOORS				
Concrete Slab on Grade	33,000	SF	5.00	$165,000
Steel Structure, Decking, Fireproofing & Concrete Slab on Deck	32,000	SF	37.00	$1,184,000
Steel Pan Stairs w/ Railings	3	EA	22,000	$66,000
			21.77	$1,415,000
COLUMNS				
Steel Columns w/ Fireproofing	65,000	SF	3.50	$227,500
			3.50	$227,500
ROOF				
Steel Structure, Decking & Fireproofing	33,000	SF	20.00	$660,000
			10.15	$660,000
INTERIOR WALLS				
CMU Interior Walls	7,310	SF	14.00	$102,340
			1.57	$102,340

Health Technology Building
Ogden - Weber Applied Technology College

August 13, 2009

CONSTRUCTION COST ESTIMATE

BUILDING DETAIL

SECTION	QUANTITY	UNIT	UNIT COST	COST
MECHANICAL				
FIRE PROTECTION				
Fire Sprinkler System	65,000	SF	3.50	$227,500
			3.50	$227,500
PLUMBING				
Plumbing Fixtures w/ Piping	145	EA	3,000	$435,000
Plumbing Equipment & Specialties	65,000	SF	1.50	$97,500
			8.19	$532,500
HVAC				
HVAC Ductwork & Insulation	58,500	LB	7.00	$409,500
HVAC Grilles, Registers & Diffusers	765	EA	120.00	$91,800
HVAC Equipment	65,000	SF	12.00	$780,000
HVAC Piping & Specialties	65,000	SF	4.50	$292,500
HVAC Control System	65,000	SF	4.00	$260,000
HVAC Test & Balance / Commissioning	65,000	SF	1.50	$97,500
			29.71	$1,931,300

CONSTRUCTION COST ESTIMATE

B U I L D I N G   D E T A I L

SECTION		QUANTITY	UNIT	UNIT COST	COST
ELECTRICAL					
ELECTRICAL					
Light Fixtures		980	EA	250.00	$245,000
Devices (Outlets & Switches)		1,470	EA	100.00	$147,000
Gear (Panels & Transformers)		65,000	SF	2.50	$162,500
Emergency Generator		1	EA	120,000	$120,000
Feeder & Branch Circuitry		65,000	SF	5.50	$357,500
Fire Alarm System		65,000	SF	1.75	$113,750
Phone / Data System		65,000	SF	2.75	$178,750
Special Systems		65,000	SF	3.00	$195,000
Electrical Specialties		65,000	SF	0.75	$48,750
				24.13	$1,568,250
LEED GOLD (Additional Cost From Silver)	4.0%				$482,706
SUB TOTAL		65,000	GSF	193.08	$12,550,361
GENERAL CONDITIONS	7.0%				$878,525
BONDING	1.0%				$125,504
OVERHEAD & PROFIT	5.0%				$627,518
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TOTAL (Construction)		65,000	GSF	241.35	$15,687,952

Health Technology Building
Ogden - Weber Applied Technology College

August 13, 2009

CONSTRUCTION COST ESTIMATE

SITE SUMMARY

SECTION		AREA	UNIT	COST/SF	COST
SITE					$1,340,075
LEED GOLD (Additional Cost From Silver)	4.0%				$53,603
SUB TOTAL					$1,393,678
GENERAL CONDITIONS	7.0%				$97,557
BONDING	1.0%				$13,937
OVERHEAD & PROFIT	5.0%				$69,684
SUB TOTAL					$1,574,856
DESIGN CONTINGENCY	10.0%				$139,368
INFLATION TO JANUARY 2010	2.0%				$27,874
TOTAL (Construction)					$1,742,098

NOTES: Costs are for Construction only.
Costs are for a "LEED Gold" Facility.
Costs are Based on a Competitive Bid Basis.
Costs are Based on a Construction Start of January 2010.

CONSTRUCTION COST ESTIMATE

SITE DETAIL

SECTION	QUANTITY	UNIT	UNIT COST	COST
SITE				
ON-SITE				
Demo, Clear & Grade	162,000	SF	1.00	$162,000
Landscaping & Irrigation	82,400	SF	3.50	$288,400
Asphalt Paving, Resurface Existing	34,000	SF	1.25	$42,500
Asphalt Paving	25,000	SF	4.50	$112,500
Concrete / Plaza Paving	21,600	SF	8.50	$183,600
Site Specialties	1	LS	25,000	$25,000
Remove Utility Line	220	LF	20.00	$4,400
Sanitary Sewer Line	400	LF	65.00	$26,000
Storm Sewer Line	620	LF	90.00	$55,800
Fire Line	300	LF	80.00	$24,000
Culinary Water Line	300	LF	40.00	$12,000
Natural Gas Line	800	LF	25.00	$20,000
Steam Line w/ Tunnel	375	LF	625.00	$234,375

Health Technology Building
Ogden - Weber Applied Technology College

August 13, 2009

CONSTRUCTION COST ESTIMATE

SITE DETAIL

SECTION		QUANTITY	UNIT	UNIT COST	COST
SITE - Continued					
ON-SITE - Continued					
Power Ductbank		230	LF	200.00	$46,000
Telecom Ductbank		150	LF	90.00	$13,500
High Voltage Switch		1	EA	40,000	$40,000
Site Lighting		1	LS	50,000	$50,000
					$1,340,075
LEED GOLD (Additional Cost From Silver)	4.0%				$53,603
SUB TOTAL					$1,393,678
GENERAL CONDITIONS	7.0%				$97,557
BONDING	1.0%				$13,937
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TOTAL (Construction)					$1,742,098

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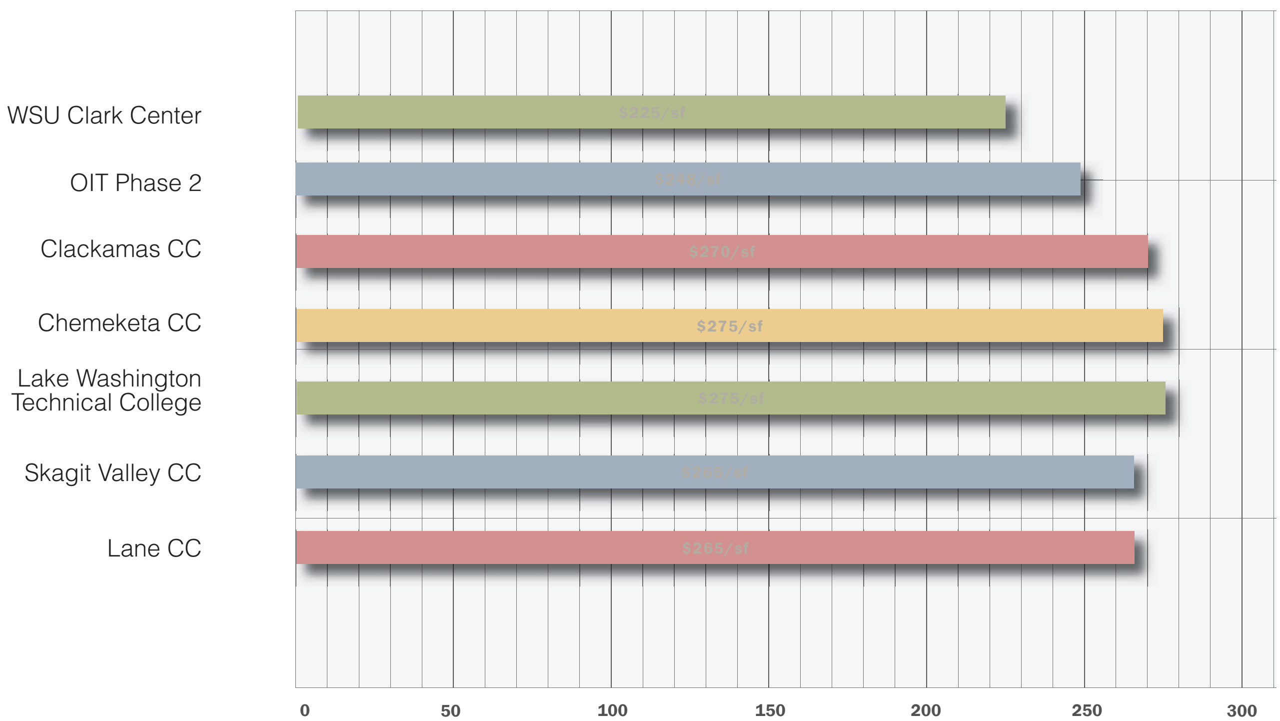
Costs are Based on a Construction Start of January 2010.

ALLIED HEALTH PROJECTS

• OIT Phase 2	50,300 sf	Nursing, Respiratory Care, A&P, Life Sciences
• Clark Center @ WSU	63,334 sf	Nursing, Sciences
• Clackamas CC	47,500 sf	Nursing, EMT
• Chemeketa CC	65,000 sf	Dental Hygiene, Dental Assist, Nursing, Dental Lab, Classrooms, Faculty Offices
• Lane CC	43,500 sf	Nursing, Respiratory Care, EMT
• Lake Washington TC		Allied Health Building
• Skagit Valley CC		Science and Health Building

ALLIED HEALTH PROJECTS

Construction Costs Adjusted to Salt Lake City January 2009



Appendices . 6

APPENDIX A
Vision Workshop Summary

APPENDIX B
Geotechnical Investigation

APPENDIX C
Topographic Survey

APPENDIX D
Program Data Spreadsheet

APPENDIX E
Site Options Not Selected

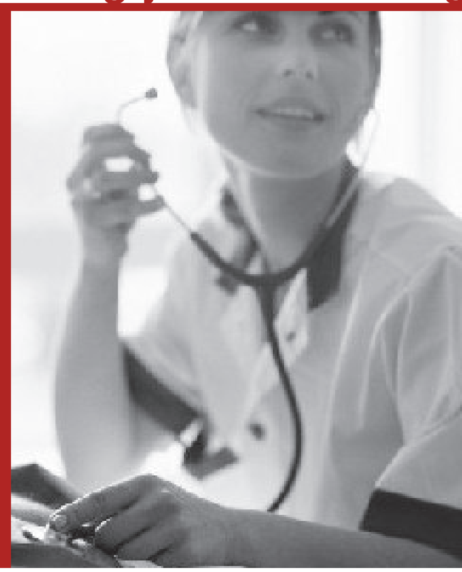
APPENDIX F
Stacking Options Not Selected

Appendix . a

Ogden-Weber Applied Technology College

Health Technology Building

PROGRAM



VISION WORKSHOP SUMMARY

ajc architects

DFCM Project #09021240 June 9, 2009

prepared by ajc architects + SRG Partnership


Goals of
Drivers

Participants

The following is a list of individuals and groups represented at the Vision Workshop:

Ogden-Weber Applied Technology College

Collette Mercier	President
James Taggart	V.P. Instruction
Janet Olsen	Director
Laraine Moellendorf	CNA
Amber Jenning	CNA
Tyler Call	College Services
Marta Jones	Coordinator
Lee Nelson	Counseling
Heidi Denson	Dental Assisting
Jeannie Barrette	Dental Office
Brenda Fell	Dental
Christa Wagstaff	Dental
Randy Hodges	Health Sciences
Rosalie Buck	Instructional Designer
Michael Miller	Maintenance
Emma Anderson	Medical Assisting
Marilyn Holley	Medical Office Technology
Taun Carver	Nursing
Mary Lou Morales	Nursing
Deon Openshaw	Nursing
Julie Hansen	Pharmacy Tech.
Len Robison	Pharmacy Tech.
Mallory Twitchell	Pharmacy Tech.
Cody Johnson	Phlebotomy
Fara Larsen	Phlebotomy
Heather Maw	Phlebotomy
Rhonda Boren	Student Services

Architects

Jon Wiener	SRG Partnership
Jill A. Jones, AIA	ajc architects
Mehrdad Samie, AIA	ajc architects
Joshua Greene, AIA	ajc architects

Design Team

Architects

ajc architects
703 East 1700 South, Salt Lake City, Utah 84105 — Phone: (801) 466-8818

SRG Partnership
621 SW Morrison, Portland, Oregon 97205 — Phone: (503) 222-1917

Civil Engineer

Stantec Consulting Inc.
3995 South 700 East, Suite 300, Salt Lake City, Utah 84107 — Phone: (801) 261-0090

Structural Engineer

Reaveley Engineers + Associates
675 East 500 South, Suite 400, Salt Lake City, Utah 84102 — Phone: (801) 486-3883

Mechanical Engineer

Colvin Engineering Associates, Inc.
244 West 300 North, Suite 200, Salt Lake City, Utah 84103 — Phone: (801) 322-2400

Electrical Engineer

Envision Engineering
244 West 300 North, Suite 100, Salt Lake City, Utah 84103 — Phone: (801) 534-1130

Landscape Architect

Landmark Design
2834 South Highland Drive, Salt Lake City, Utah 84106 — Phone: (801) 474-3300

Cost Estimator

Parametrix
7186 South Highland Drive, Salt Lake City, Utah 84121 — Phone: (801) 733-5900

State of Utah Division of Facilities Construction Management

Capitol Development Manager: Dave McKay
4110 State Office Building, Salt Lake City, Utah 84114

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Joshua Greene, AIA	ajc architects


EXIT
ALLIED HEALTH PROJECTS
INTERACTIVE LEARNING SPACES
ALLIED HEALTH PROJECTS
Program Impl
SPECIALIZED EQU
BUILDING UTILIZA
FLEXIBILITY/ADAPTA
NET TO GROSS
PUBLIC & INDUSTRY IN
OWATC HEALTH TECHNOLOGY BUILDING

Appendix A

Foreword

In May 2009, The State of Utah Division of Facilities Construction Management (DFCM) contracted ajc architects and SRG Partnership to assist the Ogden-Weber Applied Technology College (OWATC) in developing a Program Document for the proposed Health Technology Building. On June 9, 2009 representatives from the OWATC and ajc architects and SRG Partnership participated in a workshop to establish the vision, and identify drivers, for the proposed project. A summary of the Vision Workshop is captured on the following pages, and is intended to be the foundation for this Programming Phase, as well as subsequent phases of design and construction.

Vision Workshop Summary

Vision Workshop Summary 01

Vision Workshop Summary

Project Introduction

Project Introduction

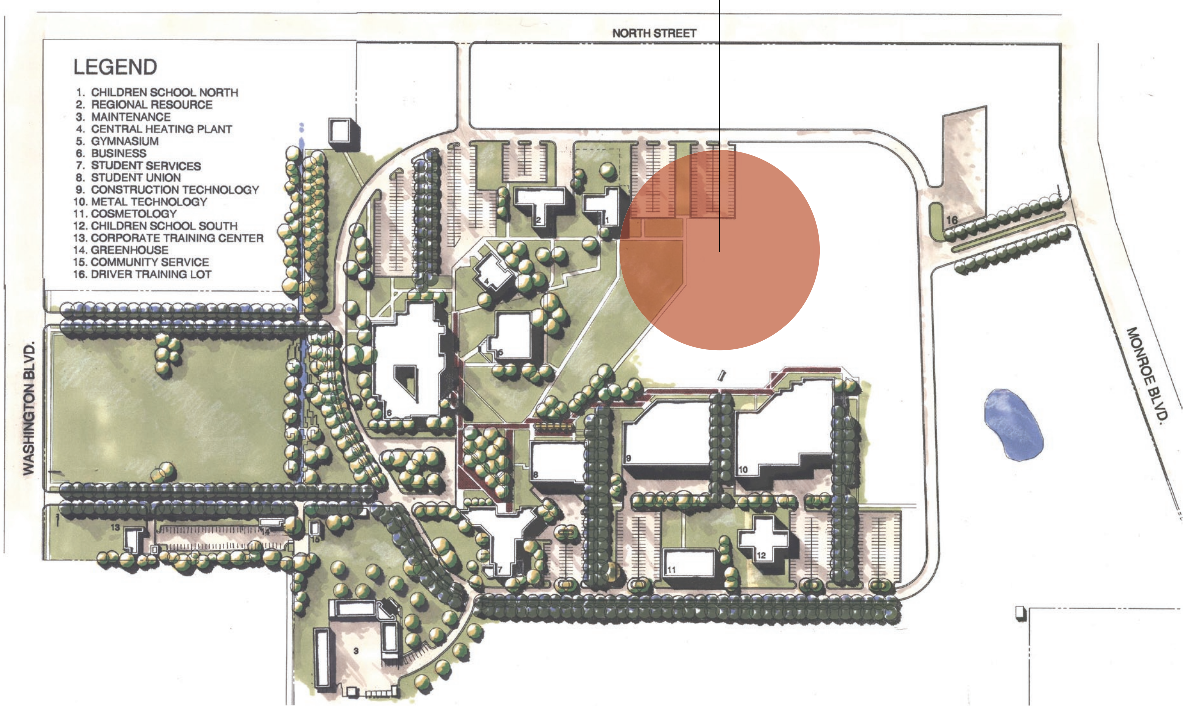
Schools offering education in Health Technologies are playing a vital role in meeting the national workforce demand for more healthcare technical staff. In Utah, the Ogden-Weber Applied Technology College (OWATC) administration and faculty play an important role in meeting the state of Utah's demand for healthcare technical staff. However, the majority of existing facilities for the Health Technology departments at the college are undersized and obsolete. Additionally, the Health Technology departments are disconnected and spread across the campus, with some departments inconveniently located off-campus. The OWATC needs a purpose-built building with adequately-sized classrooms, and cutting-edge labs and equipment to bring its faculty and students together in order to continue its role as a leader in health education in the state of Utah.

After several years of study, the OWATC administration and faculty, along with the State of Utah Division of Facilities Construction Management (DFCM), are now in the beginning stages of planning for a state-of-the-art Health Technology Building to be located on the OWATC main campus. With the proposed building, administration, faculty and evolving health education programs and unique culture, the college will secure its place at the forefront of health education in the state of Utah.

In May of 2009, the Programming Team, ajc architects and SRG Partnership, was contracted to assist in the development of the Program Document, including a program of spaces, site analysis, and pre-design services for the OWATC Health Technology Building. On June 9, 2009 the Programming Team facilitated a workshop with the administration and faculty to elicit and define the College's vision for the Health Technology Building. The vision statements on the following pages will be the guiding principles for the current programming phase, as well as subsequent phases of design and construction.

OWATC Campus Map

Proposed Project Site



The proposed site for the Health Technology Building is located on the north side of campus, near the middle of a proposed mall, or major pedestrian pathway, illustrated in the campus Master Plan (last updated 2003). The proposed site, currently an open field, provides opportunities to connect to the existing network of pathways, parking, and buildings, while affording spectacular views of the Wasatch mountains to the north, south, and east.

Workshop Process

The Vision Workshop included representatives from the OWATC administration and the following departments that will be in the Health Technology Building:

Dental Program

- Dental Assistant
- Dental Office Administration

Lab and Pharmacy Technicians

Medical Assistants

Medical Office Personnel

- Medical Coder
- Medical Office Administrator
- Medical Transcription

Nursing

- Nursing Assistant (CNA)
- Practical Nursing
- Medication Aide

Phlebotomists

- Phlebotomy Technician
- Clinical Lab Technician

The text below summarizes the goals of the workshop identified by the participants:

- Develop a vision for the Health Technology Building project, including the Programming phase as well as future design phases
- Strengthen cross-fertilization between departments
- Think outside the box - Look beyond what the College is doing/has now
- Discuss the College image/perception and how to be more "visible"
- Understand the unique OWATC culture
- Discuss, compare and contrast "open entry / open exit" delivery system with traditional "semester-based" system
- Understand parameters and limitations, while also working outside of the comfort zone
- Understand how to maximize space in proposed building
- Discuss real-life scenarios / interdisciplinary opportunities in running a health education facility
- Discuss how to create a "WOW!" building
- Discuss how to create a dynamic building
- Discuss how to create a "maintainable" facility
- Understand OWATC's environmental sustainability goals

The follow groups were identified as potential stakeholders and users/uses:

Administrators

Faculty / Instructors

Students - Adults

Students - Highschool (20% of student body)

Employees Seeking Professional Development (Upgrade training)

Employers

Counselors (Student Services)

Community / Public

Clinics

Health Fairs / Career Fairs

Project Drivers and Vision

Project Drivers - "Issues to Overcome"

The participants of the Vision Workshop listed the following points as the project "drivers" or issues to overcome:

- The Students are the driving force. The College needs to recruit and retain students.
- There is a perception problem - that technical college is "less" than a traditional 4-year college.
- The existing buildings/spaces do not fit the program(s). The existing spaces are too small / inadequate, and are difficult to re-purpose. Additionally, it is difficult to way-find at the existing facilities.
- The College needs to provide the best training for meeting employers' needs.
- The departments are currently spread out across campus and even across the city.
- The College needs places to host related events.
- The College needs to address program growth.
- The College needs to maintain state-of-the-art faculty/instructors.
- The Health Technology departments need to have an Identity and an Image.

Project Vision - "Keys to Success"

The proposed Health Technology Building will...

- be a student-centered facility.
- create an atmosphere that supports and enhances the OWATC's unique culture - warm, friendly and inviting.
- provide state-of-the-art classrooms and labs - right-sized for specialized instruction style.
- provide opportunities for more "real-life" training.
- encourage cross-fertilization, collaboration, and sharing between health technology programs.
- accommodate growth and technological advancement, providing short-term flexibility and long-term adaptability.
- provide spaces/facilities to host events and conferences to increase visibility to the community.
- enhance safety and security for students and faculty/instructors.
- be a model facility for future buildings on the OWATC campus as well as Health Technology programs state-wide, even nation-wide.
- express, through architecture, the outstanding health programs at the OWATC:
    - WOW factor, beautiful
    - Balance between Practical & Innovative
    - High Tech / High Touch
    - In harmony with surroundings - campus, and views from site
    - Inviting on all 4 sides of building
    - Maintenance friendly, energy efficient and environmentally sustainable
    - Human health and comfort - Maximize natural daylight, and minimize noise
    - Clean but not sterile

Conclusion

The Vision Workshop process identified some areas that will require further inquiry and study. The open enrollment/open exit delivery system for many of the health technology programs is unique to the OWATC culture, and is a challenge that may have unique implications on the building program. In this delivery system, each individual is learning at a different pace and requires different levels of involvement and interaction with instructors and other students. Visual connections between instructors and students will be critical to successfully managing the dynamic classroom setting. This demands a certain level of flexibility within the classrooms and labs. This presents a challenge for collaboration and informal/out-of-the-classroom interactions as well. As this discussion evolves, it is anticipated that equally unique solutions will help to make the proposed facility right-sized for the OWATC and a model for other Health Technology education programs.

The project drivers and vision statements captured in this document will become the foundation for the programming process and subsequent design and construction phases. The next phase of programming will include in-depth interviews with each department to determine the anticipated quantity an quality of department-specific space, as well as opportunities for shared spaces. Once the spaces are compiled for the entire project, the Programming Team will work with the OWATC to ensure that the building program is aligned with the available budget. Concurrently, the Programming Team will facilitate workshops for building siting options as well as building “stacking” and test-fit floor plans. Additionally, the consulting engineers will generate narratives on related building systems that will complete the balance of the final program document.

Appendix . b

Information To Build On
Engineering • Consulting • Testing

GEOTECHNICAL ENGINEERING REPORT
PROPOSED HEALTH AND TECHNOLOGY BUILDING
200 NORTH WASHINGTON BOULEVARD
OGDEN, UTAH

PSI PROJECT No: 710-95018

May 28, 2009

Prepared For:
State of Utah
Division of Facilities Construction and Management
4100 State Office Building
Salt Lake City, Utah 84116

Attn: Mr. Dave McKay

Prepared By:

PROFESSIONAL SERVICE INDUSTRIES, INC.
2779 South 600 West
Salt Lake City, Utah
(801) 484 - 8827

psi *Information To Build On*
Engineering • Consulting • Testing

May 28, 2009

Mr. Dave McKay
Division of Facilities construction and Management
4100 State Office Building
Salt Lake City, Utah 84116

SUBJECT: Geotechnical Engineering Report
Proposed Health and Technology Building
200 North Washington Boulevard
Ogden, Utah
PSI Project No. 710-95018

Dear Mr. McKay:

Professional Service Industries, Inc. (PSI) is pleased to submit this report of a geotechnical investigation for the proposed health and technology building to be located on the north side of the Ogden-Weber Applied Technology College situated at 200 North Washington Boulevard in Ogden, Utah. This report summarizes the work accomplished and provides our recommendations for design and construction of the project.

Based on the results of our field investigation, laboratory testing, and engineering analysis, the site is suitable for the proposed construction from a geotechnical standpoint provided the recommendations of this report are followed. The primary geotechnical considerations with respect to the development include moisture sensitivity and potential disturbance of near surface on-site soils during periods of wet weather, and foundation subgrade preparation. Conclusions and recommendations regarding the geotechnical aspects of project design and construction are presented in the attached report.

PSI is committed to providing quality services to its clients, commensurate with their wants, needs, and desires. PSI appreciates the opportunity to provide its services on this project. If you have questions pertaining to this project or if we may be of further assistance, please call the undersigned. We appreciate your business and look forward to our next project with you.

Respectfully Submitted,
PROFESSIONAL SERVICE INDUSTRIES, INC.

LICENSED PROFESSIONAL ENGINEER
5-28-09
No. 188305
CHRIS T. GARRIS
STATE OF UTAH

for

MANUEL E. ZEA, PEI
Staff Engineer

CHRIS T. GARRIS, PE
Principal Consultant

MEZ/CTG
P:\710\Reports\2009\Geotechnical\710-95018 Health and Tech blding\710-95018 Proposed Health and Technology Building - ctg.doc

Professional Service Industries, Inc. • 2779 South 600 West •Salt Lake City, Utah, 84115 • Phone 801/484-8827 • Fax: 801-487-3312

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents the results of a geotechnical investigation for the proposed Health and Technology Building to be located on the north side of the Ogden-Weber Applied Technology College Campus situated at 200 North Washington Boulevard in Ogden, Utah. The services for this project were performed in accordance with Professional Service Industries, Inc (PSI) Proposal No. PO710-950025 dated May 4, 2009 and authorized by Mr. Dave McKay of the State of Utah Division of Facilities Construction and Management (DFCM).

The purpose of this investigation was to explore the subsurface conditions at the site and develop recommendations for earthwork and the design and construction of foundations and floor slabs. This report describes the work accomplished and presents our conclusions and recommendations for the design and construction of the project.

2.0 PROJECT DESCRIPTION

Based on the information provided by Dave McKay of DFCM, PSI understands that the proposed structure will be approximately 65,000 square feet and will be one or two stories in height with concrete masonry walls and concrete slab-on-grade floors. Based on similar structures, PSI anticipates that maximum column and wall loads will not exceed 130 kips nor 6 kips per lineal foot, respectively.

Based on the information provided at the time of our site investigation by Mr. Pat Dean with Ogden-Weber Applied Technology College, we understand that a building was demolished by others on the west side of the project site. At the time of our site visit, this area had been filled and graded was covered with landscaping.

Site grading information for the proposed construction was not available at the time of preparation of this report; however we assume that the maximum cuts and fills will not exceed three (3) feet. If greater amounts of site grading fill are anticipated beneath building areas, additional foundation recommendations and possibly surcharging may be required to maintain tolerable post-construction settlement.

The geotechnical recommendations presented herein are based on the available project information, location, and the subsurface conditions described in this report. If the assumed building loads or any of the noted information is incorrect, please inform PSI in writing so that we may amend the recommendations presented in this report if appropriate.

3.0 SITE DESCRIPTION

3.1 Site Conditions and Topography

The project site is located on the north side of the Ogden-Weber Applied Technology College Campus situated at 200 North Washington Boulevard in Ogden, Utah. At the time of PSI's field investigation, the project site consisted of landscaped land vegetated with grass. The eastern side of the proposed building consisted of agricultural fields vegetated with alfalfa. Based on available topographic information and our observations, the ground surface at the project site generally slopes downward very gently to the west-northwest. The project site is bounded by parking lots to the north, existing buildings to the south and east, and agricultural fields to the east. Photo 1 depicts the site and its surroundings at the time of our field investigation.

Photo 1: View of Proposed Site Looking South

3.2 Regional Geology

According to available geologic maps[1] of the area, the project site is mantled with Alluvium deposits. These deposits typically consist of sand and silts with varying amounts of clay and gravel. The site is located in an area designated by Weber County as having a "moderate to high" potential for liquefaction, which suggests that there is a greater than 50 percent chance that the site may experience seismic ground shaking strong enough to induce liquefaction within a 100-year time period. A review of seismic literature indicates that the project site is located approximately 0.75 miles west of the Weber segment of the Wasatch fault; however, no faults are mapped at the project site area. Earthquake design parameters including IBC Site Class are provided in Section 7.9 of this report.

4.0 FIELD EXPLORATIONS

Subsurface conditions at the project site were explored with five (5) borings, designated B-1 through B-5, at the approximate locations indicated on Figure A-2 in Appendix A. The borings

[1] Richard Van Horn (1979), *"Surficial Geologic Map of the Salt Lake City South Quadrangle, Salt Lake County, Utah",* Utah, U.S. Geological Survey.

were drilled to depths ranging from about 21½ to 40½ feet below existing site grades using a truck-mounted drill rig equipped with 3¼-inch inside diameter continuous-flight hollow-stem augers. The borings were located on the site with the assistance of Mr. Pat Dean who helped PSI locate the approximate building corners for the proposed construction. Drilling and sampling were performed under the direction of a PSI Geotechnical Engineer who maintained detailed logs of the subsurface materials and conditions encountered in the borings, and collected representative samples of soil.

Samples were obtained at about 2½ to 5 foot intervals in each boring. Both disturbed and relatively undisturbed samples of the soils were obtained for subsequent laboratory testing and examination. Relative undisturbed samples were obtained using 3-inch outside diameter (O.D.) Shelby tubes. Disturbed samples were obtained by driving a standard 2-inch (O.D.) split-spoon sampler into the soil distance of 18 inches using a 140-lb hammer dropped from a height of 30 inches. The number of blows required to drive the sampler the last 12 inches is known as the standard penetration resistance, or N-value. The N-values provide a measure of the relative density of granular soils, such as sand, and the relative consistency, or stiffness, of cohesive soils, such as clay or silt.

The disturbed samples were examined in the field and representative portions were stored in sealable plastic bags. Relatively undisturbed Shelby tube samples were capped and sealed. The samples were transported to our laboratory for further examination and testing. The borings were backfilled up to the ground surface with auger cuttings and on-site soils.

The borings were logged and the soil encountered was classified in general accordance with the Unified Soil Classification System. Boring logs, which include project designation and project location, boring number, method of boring, type drill rig and sampling, date of boring, depth of various soil layers, a complete description of each soil layer including color, consistency and visual grain-size classification, water level information, laboratory test data, stratifications, and classifications based on the Unified Soil Classification System are included in Appendix B.

5.0 LABORATORY TESTING

Representative samples of soil were tested to evaluate physical and engineering properties. The laboratory testing program included determinations of natural water content, grain size distribution, one-dimensional consolidation tests, and Atterberg Limits. The results of the analyses are presented on the Boring Logs (Figures B-1 through B-5), and the Summary of Laboratory Test Results (Figure B-6) in Appendix B.

5.1 Consolidation Test

One-dimensional consolidation tests were performed on representative soil samples in accordance with ASTM D 2435. Relatively undisturbed soil samples obtained from the field exploration at depths ranging from about 15 to 35 feet below the ground surface, using 3-inch O.D. Shelby tubes, were prepared for consolidation testing. The purpose of this test was to evaluate the compressibility behavior of the on-site soils in the presence of free water. The consolidation test results are presented on Figures C-1 through C-3 in Appendix C.

6.0 SUBSURFACE CONDITIONS

6.1 Soils

Soil conditions encountered in the borings generally consisted of about six (6) inches to about 18 inches of topsoil underlain by soft to very stiff lean clay (CL).

Standard penetration resistance values ranged from about three (3) blows per foot to 24 blows per foot of penetration for the native fine-grained soils. Hand-held pocket penetrometer readings ranged from about 0.25 tons per square foot (tsf) to about 1.5 tsf. Natural soil moisture contents of the selected soil samples tested in the laboratory ranged from about 14 to 32 percent. For a detailed description of the materials and conditions encountered at boring locations, please refer to Figures B-1 through B-6 in Appendix B.

The subsurface profile described above is a generalized interpretation provided to highlight the major subsurface stratification features and material characteristics. The boring logs included in the Appendix should be reviewed for more specific information. These records include soil description, stratifications, standard penetration resistances, location of samples, and laboratory test data. The stratifications shown on the boring logs represent the conditions only at the boring locations for this study. The stratifications indicated on the boring logs represent the approximate boundary between subsurface materials. The actual transitions may be gradual. Subsurface materials and conditions may vary across relatively short distances at the site and may become apparent with additional explorations or excavation. If soil conditions are found to be different than described herein, we should be allowed to reevaluate our recommendations if necessary.

6.2 Groundwater

Free water was not encountered in the borings to the maximum depth of exploration, or 41.5 feet during our field investigation. It should be noted that groundwater levels may fluctuate during the year depending on climatic, local irrigation practices, and other factors. Additionally, discontinuous zones of perched water may exist at varying locations and depths beneath the ground surface. As a result, groundwater conditions during construction may be different than during the field investigation.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Geotechnical Discussion

The following geotechnical-related recommendations have been developed based on the subsurface conditions encountered in the borings and PSI's understanding of the proposed construction. The primary geotechnical considerations with respect to the development include moisture sensitivity and potential disturbance of near surface on-site soils during periods of wet weather and foundation subgrade preparation. Further details are provided in the following sections of the report.

7.2 Site Preparation and Earthwork

PSI recommends that the ground surface within the proposed development and all other areas to receive structural fill be cleared of all existing slabs or other structures, topsoil, construction debris, organics, vegetation, and otherwise unsuitable material. In general, we anticipate that stripping to depths of about 6 inches will be required to remove topsoil, organics, and other unsuitable material; however, a greater or lesser amount of stripping may be required locally. Other unsuitable features and/or materials such as abandoned structures or utilities, not evident at the time of PSI's field investigation should also be removed.

Foundations should bear entirely on the undisturbed natural soils or entirely on compacted structural fill extending down to the undisturbed natural soils. A representative of the Geotechnical Engineer should observe all foundation and subgrade excavations prior to placement of fill or concrete. PSI should be retained to observe and document construction of fill pad and subgrade preparation.

Upon completion of foundation subgrade excavation, the exposed subgrades should be evaluated by a representative of the Geotechnical Engineer. Proof rolling with construction equipment may be a part of this evaluation. Subgrade soils that are observed to rut or deflect excessively (typically greater than 1-inch) under the moving load of a loaded rubber-tired dump truck (typically 50–ton) or other suitable rubber-tired construction vehicle should be over-excavated to firm undisturbed native soils and backfilled with properly placed and compacted structural fill.

Please note that near surface on-site soils contain significant amount of fine-grained (clay) soils that are sensitive to changes in moisture content. Typically, when these soils are in excess of four (4) to five (5) percent of their optimum moisture content, they can become weak and unstable during construction activities. Ideally, site preparation and earthwork, may be best accomplished during warmer, drier months, typically extending from mid-May to mid-October of the year.

Footing excavations should be made using an excavator equipped with a smooth edge and supported from outside the excavation. If the subgrade is disturbed during construction, disturbed soils should be over-excavated to firm, undisturbed soil and backfilled with compacted granular materials.

7.3 Excavations

Excavations should be performed in accordance with OSHA regulations as stated in 29 CFR Part 1926. The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor should evaluate the soil exposed in the excavations as part of the required safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. PSI is providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

During wet weather, earthen berms or other methods should be used to prevent runoff water from entering the excavations. The bottom of the excavations should be sloped to a collection point. Collected water within the foundation and utility trench excavations should be discharged to a suitable location outside the construction limits.

7.4 Structural Fill

Based on the results from our field and laboratory investigation, on-site soils contain a significant amount of fine-grained soils that are not generally suitable for use as structural fill material beneath building areas due to their inherent resistance to uniform moisture conditioning and workability to achieve desired compaction. These materials may be used, however, as site grading fill, backfill, or as fill in landscape areas.

Imported structural fill should consist of well-graded sand and gravel materials that are free of organic or other deleterious materials. Imported fill material should be approved by the Geotechnical Engineer prior to its delivery to the project site. Structural fill material should ideally meet the specifications in the following table:

Sieve Size	Percent Passing by Weight
3 inch	100
¾ inch	85 - 100
No. 4	40 - 80
No. 40	10 – 40
No. 200	5 - 15
Liquid Limit (LL)	≤ 35
Plasticity Index (PI)	15 (Max.) - 4 (Min.)

7.5 Compaction

Fill materials should be moisture conditioned to two (2) percent below optimum to two (2) percent above optimum moisture content. Structural fill should be placed in loose lifts not exceeding nine (9) inches thick and compacted to at least 95 percent of the maximum dry density as determined by the ASTM D 1557 Test Method. Site grading fill or backfill placed beneath floor slabs or flat work should be compacted to at least 90 percent of the maximum dry density as determined using ASTM D 1557.

Placement and compaction of all fill materials should be observed, tested, and documented by a representative of the Geotechnical Engineer. Tested fill materials that do not achieve either the required dry density or moisture content requirements should be recorded, the location noted, and reported to the contractor and owner. A re-test of that area should be performed after the contractor has performed all necessary remedial measures including moisture conditioning (wetting or drying) and reworking the fill.

7.6 Foundations

The proposed building can be supported on spread and/or continuous footings bearing entirely on undisturbed native soils or entirely on properly placed and compacted granular structural fill extending down to undisturbed native soils. The contractor should understand that the on-site soils are sensitive to changes in moisture content and are easily disturbed and softened by construction activities. Soft and/or otherwise disturbed soils are not suitable for supporting foundations and slabs and should be removed down to firm native soils and replaced with properly placed and compacted structural fill. The following design parameters are recommended for footing design and construction:

- Footings bearing entirely on undisturbed native soils may be designed using a maximum net allowable bearing pressure of 1,500 pounds per square feet (psf) or a subgrade modulus of 10 pounds per cubic inch (pci). Foundations bearing on at least 2 feet of properly placed and compacted granular structural fill extending down to undisturbed native soils may be designed using a maximum net allowable bearing pressure of 2,000 psf or a subgrade modulus of 14 pci. The recommended allowable bearing pressure refers to the total dead load and may be increased by 1/3 to include transient live loads such as wind and seismic.

- Footings subjected to freezing temperatures after foundation construction should bear at a minimum depth of 30 inches below final grade for frost protection. Interior footings or footings not subjected to freezing temperatures may be constructed at a minimum embedment depth of 18 inches.

- Foundations should have minimum lateral dimensions of 18 inches for continuous footings and 24 inches for isolated column footings.

- Structural fill, where required, should extend a minimum of ½ the depth of the fill laterally beyond the outside edge of the footings.

- Footings should be designed in accordance with the International Building Code (IBC), 2006 edition.

Horizontal shear forces can be resisted partially or completely by frictional forces developed between the base of footings and the underlying soil. The total frictional resistance between the footing and the soil is the summation of vertical forces (dead load) times the coefficient of friction between the soil and the base of the footing. We recommend a value of 0.30 for the coefficient of friction for concrete placed on undisturbed natural soils, or granular structural fill extending down to undisturbed natural soils. If additional lateral resistance is required, passive soil resistance from embedded retaining walls and/or foundations may be evaluated on the basis of an equivalent fluid having a unit weight of 250 pcf. If required, additional lateral earth pressures including seismic lateral loads may be provided upon request.

We recommend that the footing excavations be observed and documented by PSI's Geotechnical Engineer or a designated technical representative prior to placement of structural fill, concrete or reinforcing steel to verify their suitability for foundation support. Footing observation and concrete placement should occur as quickly as possible to avoid prolonged exposure of the exposed footing excavation to wetting, drying or freezing. Footing excavations should be sloped to allow collection of surface water and to discharge the collected water to a suitable location.

7.7 Foundation Settlements

Total settlement of an individual foundation will vary depending on the plan dimensions of the foundations and the actual load supported. We estimate that total settlement under static loads will not exceed one (1) inch footings designed according to the recommendations described in Section 7.6 above. Differential settlements are expected to approach about 75 percent of the estimated total settlement under static conditions.

7.8 Floor Support

The proposed building floor slab should be supported either entirely on the native soils or on properly placed and compacted granular structural fill extending down to undisturbed native soil. We recommend that a minimum of six (6) inches of free-draining gravel be placed immediately below the floor slab and/or exterior flatwork to enhance drainage, promote curing, and aid in the distribution of floor loads. Installation of a vapor retarder beneath the floor may also be considered if moisture sensitive floor coverings and contents are anticipated inside the building. The vapor retarder should be installed in accordance with the manufacturer's recommendations. The floor slab should have adequate number of joints to reduce cracking resulting from any differential movements and shrinkage.

7.9 Earthquake and Seismic Design Parameters

A review of seismic literature indicates that the project site is located approximately 0.75 miles west of the Weber segment of the Wasatch Fault. No faults are indicated to pass through or to lie adjacent to the project site. A search of the U.S. Geological Survey National Earthquake Hazard Reduction Program (NEHRP) database resulted in the probabilistic ground motion values at the bedrock elevation for the project site located at 40.157 degrees North Latitude and 111.648 degrees West Longitude as shown in Table 1.

Table 1: Earthquake Design Factors Using the NEHRP Database (IBC-2006)

Intensity Measure Type	Intensity Measure Level	
	2% in 50 Years	10% in 50 Years
Peak Ground Acceleration - PGA (g)	0.623	0.219
0.2 Sec. Spectral Acceleration - S_s (g)	1.462	0.522
1.0 Sec. Spectral Acceleration - S_1 (g)	0.605	0.181

The 2006 Edition International Building Code (IBC) requires the assignment of Site Class for the calculations of earthquake design forces and the structural design based on a 2 percent probability of exceedance in 50 years. Site Class is a function of soil profile i.e., depth of soil and strata type in the top 100 feet below site grades. Based on subsurface conditions encountered at the site and PSI's experience in the area, the soil profile at the project site can be best characterized as Site Class D. Accordingly, site coefficient values Fa = 1.0 and Fv = 1.5 with corresponding SMs = 1.462 and SM_1 = 0.907 may be used for short and long period seismic design of structures for a seismic event resulting from a 2 percent probability of exceedance in 50 years earthquake only if the period of vibration of the structure is less than or equal to 0.5 seconds. The parameters provided above are based on subsurface information obtained from relatively shallow explorations. The International Building Code (IBC) 2006 Site Class is based on the top 100 feet of subsurface profile, which may require a deeper test boring to a depth of at-least 100 feet below existing site grades or other geophysical methods to obtain information for the upper 100 feet of the subsurface profile. These services are beyond our current scope of work; however, PSI would be pleased to provide a quote for these services upon request.

7.9.1 Liquefaction Potential

In general, liquefaction is a condition where soils lose intergranular strength due to abrupt increases in pore water pressure. Pore water pressure increases typically occur during dynamic loading such as ground shaking during a seismic event. Liquefaction, should it occur on a site, can induce ground settlement and lateral spreading, which can result in damage to the structures. The following conditions must be present for liquefaction to occur:

- The soil sediments must be in saturated or near-saturated conditions. At least 80-85 percent saturation is generally considered necessary for the liquefaction to occur.
- The soil must be predominately composed of non-plastic material such as sand or silt.
- The soil must be in a loose state.
- The soil must be subjected to dynamic loading, such as an earthquake.

The site specific probabilistic ground acceleration (PGA) values presented in Table 2 above were used to evaluate liquefaction potential at the site in accordance with procedures outlined in the National Center for Earthquake Engineering and Research Technical Report NCEER-97-0022, dated December 31, 1997. Based on limited SPT data collected at 5-foot increments, the subsurface soils encountered in the upper forty (40) feet of subsurface profile are predominately fine-grained and are not likely to liquefy.

7.10 Utility Trenches

Utility trenches should be kept free from water during excavation, fine grading, pipe laying, jointing, and embedment operations. Surface water should be prevented from entering trenches. If unstable soils are encountered at invert elevations, it may be necessary to over-excavate and replace the unstable soils with free draining gravel backfill. The depth of over-excavation, if necessary, should be determined by field observation.

7.10.1 Utility Trench Backfill

The backfill placed in utility trench excavations within the limits of the building and paved areas should consist of sand and gravel, or crushed rock with a maximum size of up to 1½ inches, and with not more that 5 percent passing the No. 200 sieve (washed analysis). This backfill should be uniformly moisture conditioned and firmly compacted for pipe support. The granular backfill should be placed in maximum 9 inches-thick lifts (loose) and compacted using vibratory compaction equipment to at least 95 percent of the maximum dry density as determined by the ASTM D 1557 Test Method. Flooding or jetting the backfilled trenches with water to attempt to achieve compaction should not be permitted.

Even when placed and compacted under optimum conditions, trench backfill may settle over time. Therefore, all improvements such as floor slabs and footings, and pavements placed over trench backfill should be designed to span over localized irregularities or be designed to allow for some differential movement.

7.11 Surface Drainage

Positive site drainage away from the foundations and drive areas should be established during the construction and maintained throughout the life of proposed construction. Water should not be allowed to collect near the foundations or floor slab areas of the building or in pavement areas either during or after construction. Undercut or excavated areas should be sloped towards one corner to facilitate removal of any collected surface runoff. Water from roof downspouts of the proposed building should be conveyed in pipes that discharge in areas a suitable distance away from the building. PSI recommends that a minimum 5 percent gradient should be maintained for a distance of at least 10 feet away from any foundation wall in unpaved areas. Site perimeters should be prepared with silt fences and/or other erosion control devices to keep storm water properly contained and controlled within the site boundaries.

8.0 DESIGN REVIEW AND CONSTRUCTION SERVICES

PSI should be retained to review all geotechnical related portions of the plans and specifications to evaluate whether they are in conformance with the recommendations provided in our report. Additionally, it is our opinion that all construction operations dealing with earthwork and foundations should be observed by a PSI representative to observe compliance with the intent of our recommendations, design concepts, and the plans and specifications. PSI's construction services will allow for timely design changes if site conditions are encountered that are different from those described in this report. If site conditions are different than described in this report, PSI should be notified so that we can re-evaluate our recommendations if necessary.

9.0 GEOTECHNICAL RISK

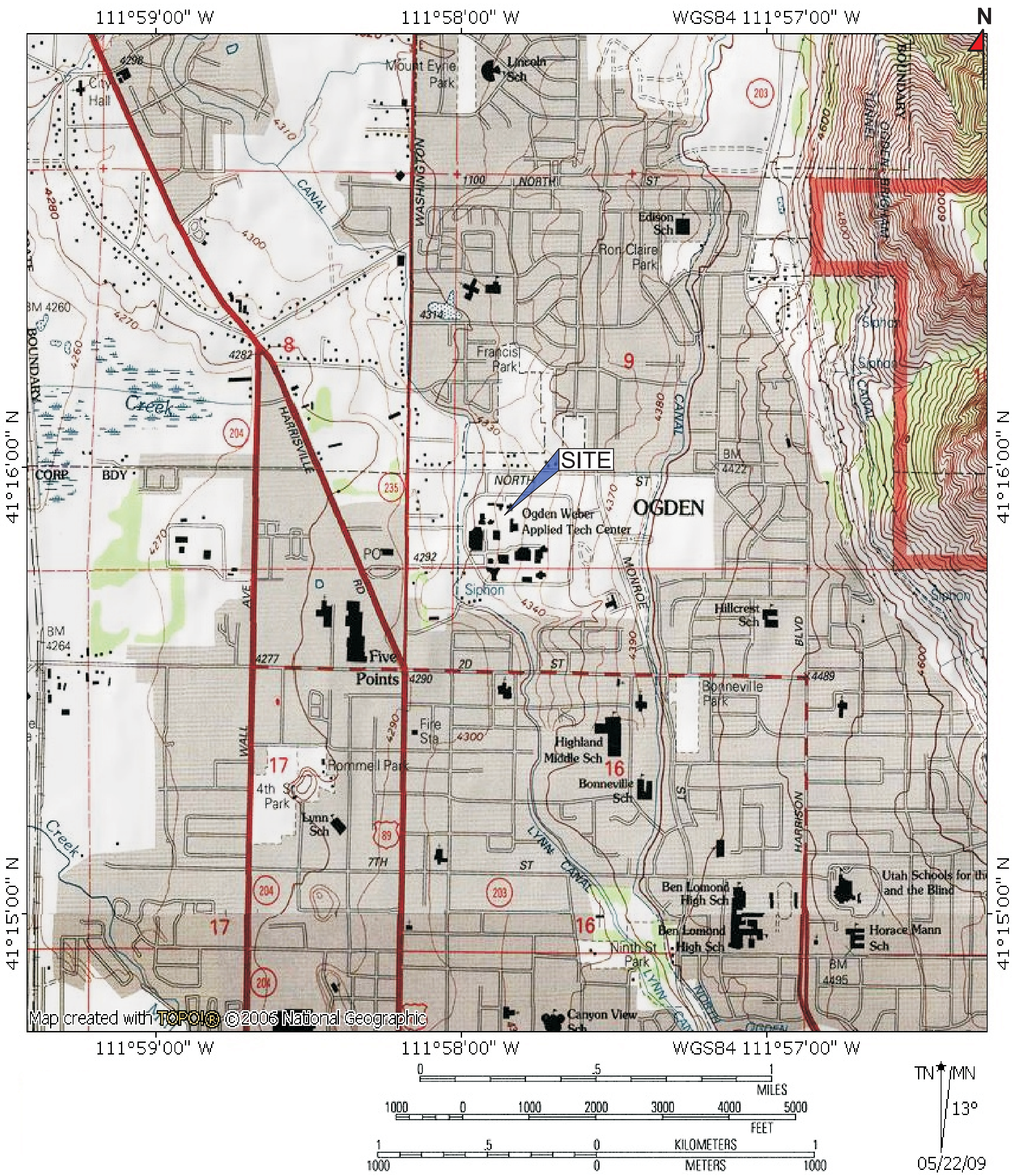
The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools which Geotechnical Engineer uses are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the proposed structure will perform as planned. The engineering recommendations presented in the preceding sections constitute PSI's professional estimate of those measures that are necessary for the proposed structure to perform according to the proposed design based on the information generated and referenced during this evaluation, and PSI's experience in working with these conditions.

10.0 LIMITATIONS

The recommendations submitted are based on the available subsurface information obtained by PSI, and information provided by State of Utah, Division of Facilities Construction and Management. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the foundation and/or other recommendations are required. If PSI is not retained to perform these functions, PSI cannot be responsible for the impact of those conditions on the performance of the project. The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed. The Geotechnical Engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of State of Utah, Division of Facilities Construction and Management, and their respective successors and assigns for the specific application to the proposed health and technology building to be located on the north side of the Ogden-Weber Applied Technology College situated at 200 North Washington Boulevard in Ogden, Utah.

APPENDIX A

Vicinity Map
Site Map with Boring Locations



psi Information To Build On — Engineering • Consulting • Testing	Project: Proposed Health and Tech. Building, 200 North Washington Boulevard, Ogden, Utah. Project No: 710-95018	VICINITY MAP
		Drawn By: MEZ; Checked By: CTG; Date: May, 2009 — Scale: As Shown; Figure: A-1

APPENDIX A

Vicinity Map
Site Map with Boring Locations

PSI
2779 South 600 West
Salt Lake City, UT 84115
Telephone: (801) 484-8827
Fax: (801) 487-3312

LOG OF BORING B-1

Sheet 1 of 1

PSI Job No.: 710-95018
Project: Proposed Health and Technology Building
Location: 200 North Washington Boulevard
Ogden, Utah

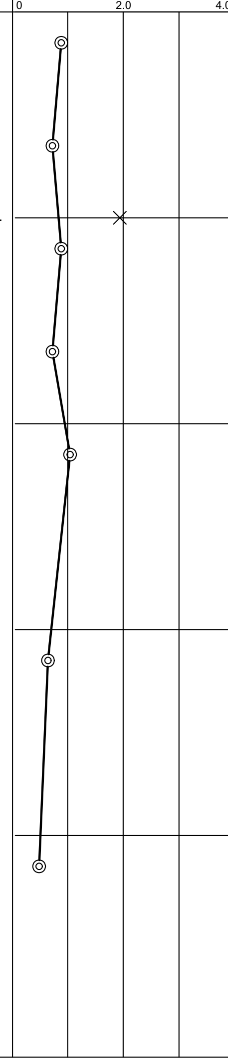
Drilling Method: Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: 140-lb/30-in. drop
Boring Location:

WATER LEVELS	
While Drilling	Dry
Upon Completion	Dry
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
	0	Split-Spoon	1	8	**TOPSOIL:** Sandy Lean Clay, dark brown, with vegetation **Lean Clay:** -- stiff, brown, moist		4-5-6 N=11		
		Split-Spoon	2	18			3-3-6 N=9		
	5							24	Fines=98.0%
		Split-Spoon	3	18			3-5-6 N=11		
		Split-Spoon	4	10			3-4-5 N=9		
	10	Split-Spoon	5	15			4-7-6 N=13		
	15	Split-Spoon	6	18			2-4-4 N=8		
	20	Split-Spoon	7	16	-- medium stiff		2-2-4 N=6		
	21.5				-- Bottom of Boring @ 21.5-feet				

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0



Completion Depth:	21.5 ft
Date Boring Started:	5/15/09
Date Boring Completed:	5/15/09
Logged By:	NW
Drilling Contractor:	Great Basin Drilling, Inc.

Sample Types:
Auger Cutting, Split-Spoon, Rock Core, Shelby Tube, Hand Auger, Texas Cone

Latitude:
Longitude:
Drill Rig: CME55
Remarks:

Figure B-1

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI
2779 South 600 West
Salt Lake City, UT 84115
Telephone: (801) 484-8827
Fax: (801) 487-3312

LOG OF BORING B-2

Sheet 1 of 1

PSI Job No.: 710-95018
Project: Proposed Health and Technology Building
Location: 200 North Washington Boulevard
Ogden, Utah

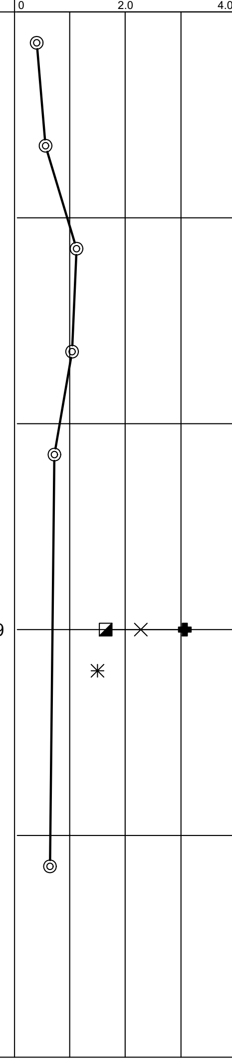
Drilling Method: Hollow Stem Auger
Sampling Method: Split Spoon/Shelby Tube
Hammer Type: 140-lb/30-in. drop
Boring Location:

WATER LEVELS	
While Drilling	Dry
Upon Completion	Dry
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
	0	Split-Spoon	1	8	**TOPSOIL:** Sandy Lean Clay, dark brown, with vegetation **Lean Clay:** -- medium stiff to stiff, brown, moist		3-3-2 N=5		
		Split-Spoon	2	12			3-3-4 N=7		
	5	Split-Spoon	3	11			4-6-8 N=14		
		Split-Spoon	4	13			4-5-8 N=13		
	10	Split-Spoon	5	15	-- with thin sand seams below 10 feet		3-4-5 N=9		
	15	Shelby Tube	6	16			-	29	LL = 38 PL = 21 Fines=98.3%
	20	Split-Spoon	7	18			2-3-5 N=8		
					-- Bottom of Boring @ 21.5-feet				

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0



Completion Depth:	21.5 ft
Date Boring Started:	5/15/09
Date Boring Completed:	5/15/09
Logged By:	MEZ
Drilling Contractor:	Great Basin Drilling, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Shelby Tube
Hand Auger
Texas Cone

Latitude:
Longitude:
Drill Rig: CME55
Remarks:

Figure B-2

The stratification lines represent approximate boundaries. The transition may be gradual.

APPENDIX B

Log of Borings
Summary of Laboratory Test Results

PSI
2779 South 600 West
Salt Lake City, UT 84115
Telephone: (801) 484-8827
Fax: (801) 487-3312

LOG OF BORING B-3

Sheet 1 of 1

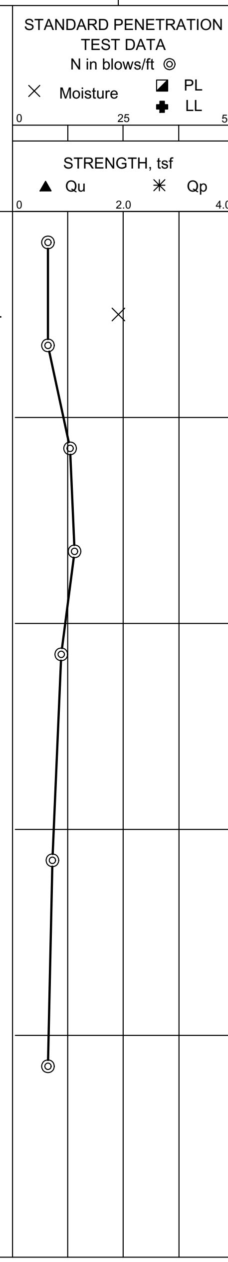
PSI Job No.:	710-95018	Drilling Method:	Hollow Stem Auger
Project:	Proposed Health and Technology Building	Sampling Method:	Split Spoon
Location:	200 North Washington Boulevard Ogden, Utah	Hammer Type:	140-lb/30-in. drop
		Boring Location:	

WATER LEVELS

While Drilling	Dry
Upon Completion	Dry
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
	0	1	10	**TOPSOIL:** Sandy Lean Clay, dark brown, with vegetation **Lean Clay:** -- stiff, brown, sitff		6-4-4 N=8		
							24	Fines=95.6%
		2	12			2-3-5 N=8		
	5	3	16			4-6-7 N=13		
		4	18			4-7-7 N=14		
	10	5	13			3-5-6 N=11		
	15	6	14			2-4-5 N=9		
	20	7	11			2-3-5 N=8		
				-- Bottom of Boring @ 21.5-feet				



Completion Depth:	21.5 ft
Date Boring Started:	5/15/09
Date Boring Completed:	5/15/09
Logged By:	NW
Drilling Contractor:	Great Basin Drilling, Inc.

Sample Types: Auger Cutting, Split-Spoon, Rock Core, Shelby Tube, Hand Auger, Texas Cone

Latitude:
Longitude:
Drill Rig: CME55
Remarks:

Figure B-3

The stratification lines represent approximate boundaries. The transition may be gradual.

PSI
2779 South 600 West
Salt Lake City, UT 84115
Telephone: (801) 484-8827
Fax: (801) 487-3312

LOG OF BORING B-4

Sheet 1 of 1

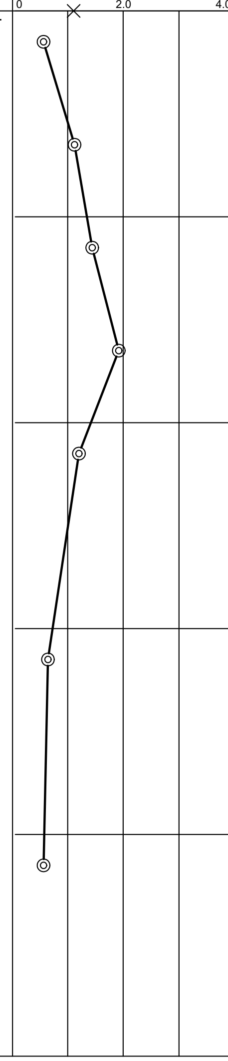
PSI Job No.:	710-95018
Project:	Proposed Health and Technology Building
Location:	200 North Washington Boulevard, Ogden, Utah
Drilling Method:	Hollow Stem Auger
Sampling Method:	Split Spoon
Hammer Type:	140-lb/30-in. drop
Boring Location:	

WATER LEVELS	
While Drilling	Dry
Upon Completion	Dry
Delay	N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
	0	Split-Spoon	1	8	**TOPSOIL:** Sandy Lean Clay, dark brown, with vegetation		3-3-4 N=7	14	Fines=63.3%
					Lean Clay: -- stiff, brown, moist				
		Split-Spoon	2	10			5-6-8 N=14		
	5	Split-Spoon	3	12	-- very stiff		5-8-10 N=18		
		Split-Spoon	4	12			9-11-13 N=24		
	10	Split-Spoon	5	14			6-8-7 N=15		
	15	Split-Spoon	6	18	-- stiff		2-3-5 N=8		
	20	Split-Spoon	7	18			2-3-4 N=7		
					-- Bottom of Boring @ 21.5-feet				

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0



Completion Depth:	21.5 ft
Date Boring Started:	5/15/09
Date Boring Completed:	5/15/09
Logged By:	NW
Drilling Contractor:	Great Basin Drilling, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Shelby Tube
Hand Auger
Texas Cone

Latitude:
Longitude:
Drill Rig: CME55
Remarks:

Figure B-4

The stratification lines represent approximate boundaries. The transition may be gradual.

Log of Borings
Summary of Laboratory Test Results

PSI
2779 South 600 West
Salt Lake City, UT 84115
Telephone: (801) 484-8827
Fax: (801) 487-3312

LOG OF BORING B-5

Sheet 1 of 1

PSI Job No.:	710-95018
Project:	Proposed Health and Technology Building
Location:	200 North Washington Boulevard Ogden, Utah
Drilling Method:	Hollow Stem Auger
Sampling Method:	Shelby Tube/Split Spoon
Hammer Type:	140-lb/30-in. drop
Boring Location:	

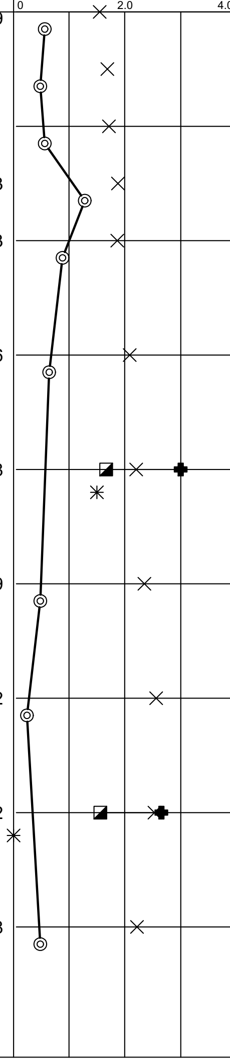
WATER LEVELS

While Drilling	Dry
Upon Completion	Dry
Delay	N/A

Station: N/A
Offset: N/A

Depth, (feet)	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	Additional Remarks
0	Split-Spoon	1	12	**TOPSOIL:** Sandy Lean Clay, dark brown, with vegetation **Lean Clay:** -- medium stiff, brown, moist		6-4-3 N=7	19	
2.5	Split-Spoon	2	10			3-2-4 N=6	21	
5	Split-Spoon	3	14			2-3-4 N=7	21	
7.5	Split-Spoon	4	15	-- very stiff		5-6-10 N=16	23	
10	Split-Spoon	5	16	-- stiff		3-5-6 N=11	23	
15	Split-Spoon	6	16			3-3-5 N=8	26	
20	Shelby Tube	7	24	-- very moist, with sand seam below 20 feet		-	28	LL = 37 PL = 21 Fines=97.0%
25	Split-Spoon	8	17	-- medium stiff		3-3-3 N=6	29	
30	Split-Spoon	9	18	-- soft		2-1-2 N=3	32	
35	Shelby Tube	10	24			-	32	LL = 33 PL = 19 Fines=97.2%
40	Split-Spoon	11	18	-- medium stiff, with gray silty sand last 2 inches -- Bottom of Boring @ 41.5-feet		1-2-4 N=6	28	

STANDARD PENETRATION TEST DATA
N in blows/ft
Moisture PL LL
0 25 50
STRENGTH, tsf
Qu Qp
0 2.0 4.0



Completion Depth:	41.5 ft
Date Boring Started:	5/15/09
Date Boring Completed:	5/15/09
Logged By:	NW
Drilling Contractor:	Great Basin Drilling, Inc.

Sample Types: Auger Cutting, Split-Spoon, Rock Core, Shelby Tube, Hand Auger, Texas Cone

Latitude:
Longitude:
Drill Rig: CME55
Remarks:

Figure B-5

The stratification lines represent approximate boundaries. The transition may be gradual.

Laboratory Summary Sheet

Sheet 1 of 1

Borehole	Approx. Depth	Liquid Limit	Plastic Limit	Plasticity Index	Qu (tsf)	%<#200 Sieve	Est. Specific Gravity	Water Content (%)	Dry Density (pcf)	Satur-ation (%)	Void Ratio
B-1	5					98.0%		24			
B-1	15										
B-2	15	38	21	17		98.3%		29			
B-3	2.5					95.6%		24			
B-4	0					63.3%		14			
B-5	0							19			
B-5	2.5							21			
B-5	5							21			
B-5	7.5							23			
B-5	10							23			
B-5	15							26			
B-5	20	37	21	16		97.0%		28			
B-5	25							29			
B-5	30							32			
B-5	35	33	19	14		97.2%		32			
B-5	40							28			

PSI
2779 South 600 West
Salt Lake City, UT 84115
Telephone: (801) 484-8827
Fax: (801) 487-3312

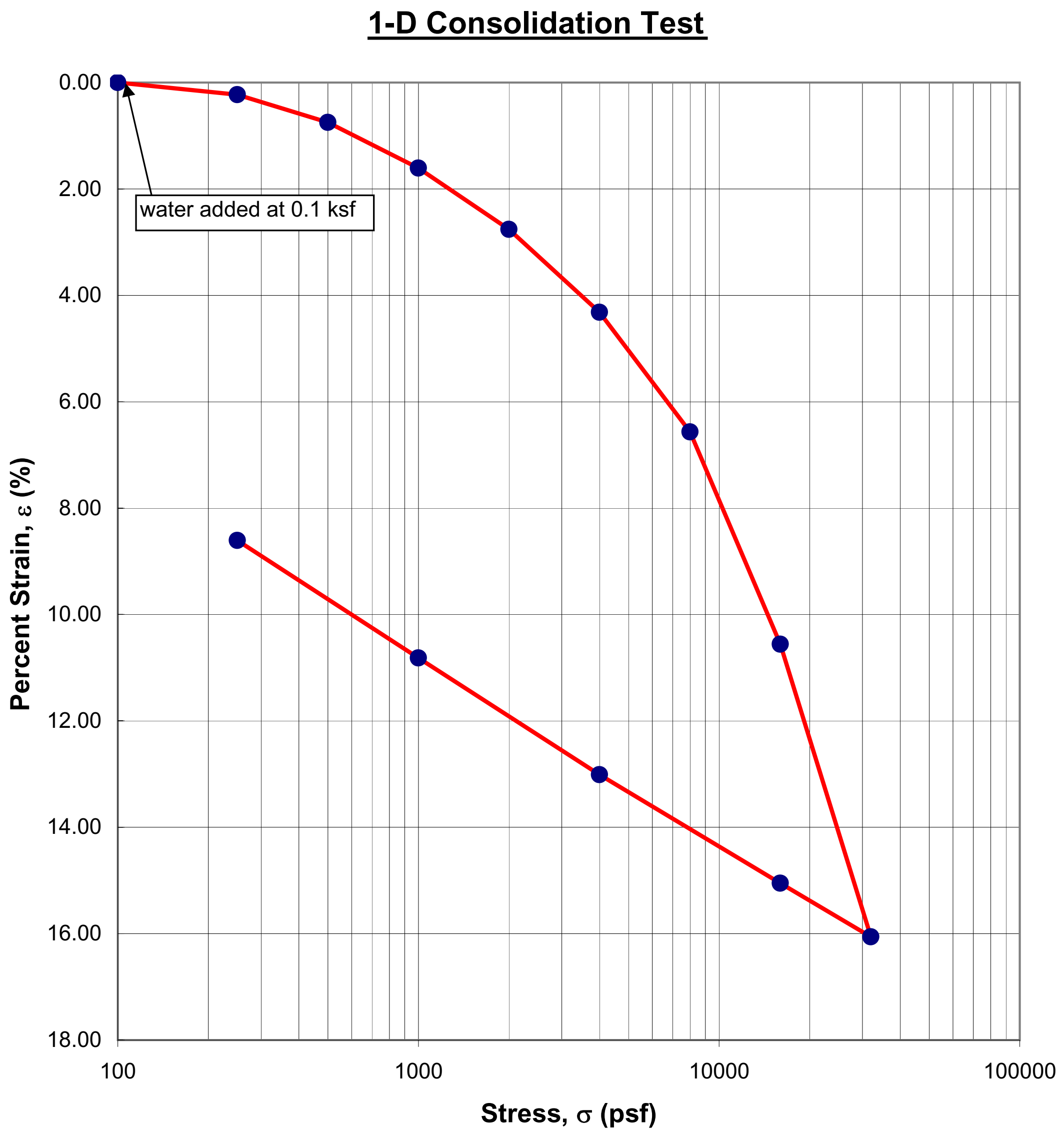
Summary of Laboratory Results

PSI Job No.: 710-95018
Project: Proposed Health and Technology Building
Location: 200 North Washington Boulevard
Ogden, Utah

Figure B-6

APPENDIX C

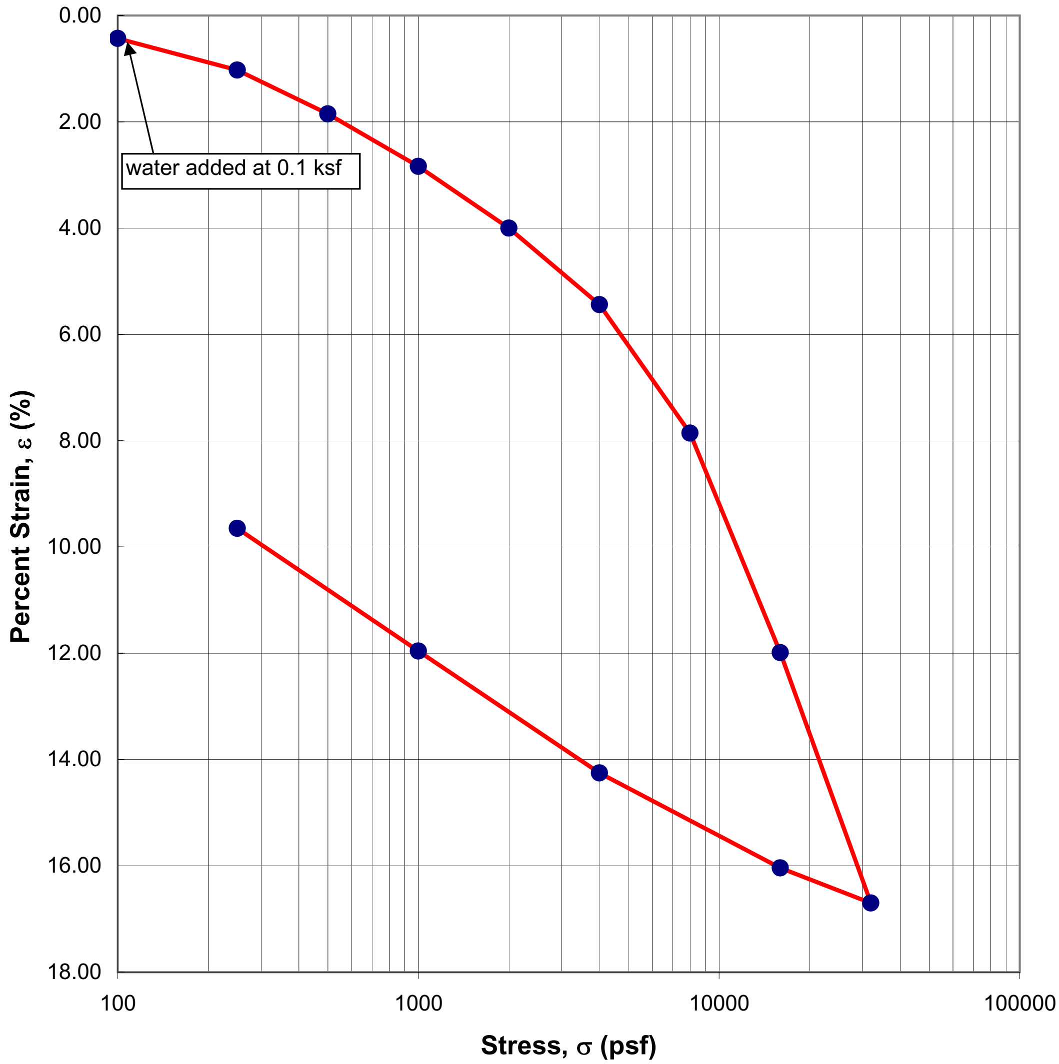
Consolidation Test Results



Sample Location	B-2	**Dry Density**	97	pcf
Sample Depth (ft)	15	**Initial Moisture Content**	28.5	%
Sample Description	Lean Clay	**Collapse**	N/M	%
USCS Classification	CL	**Swell**	N/M	%

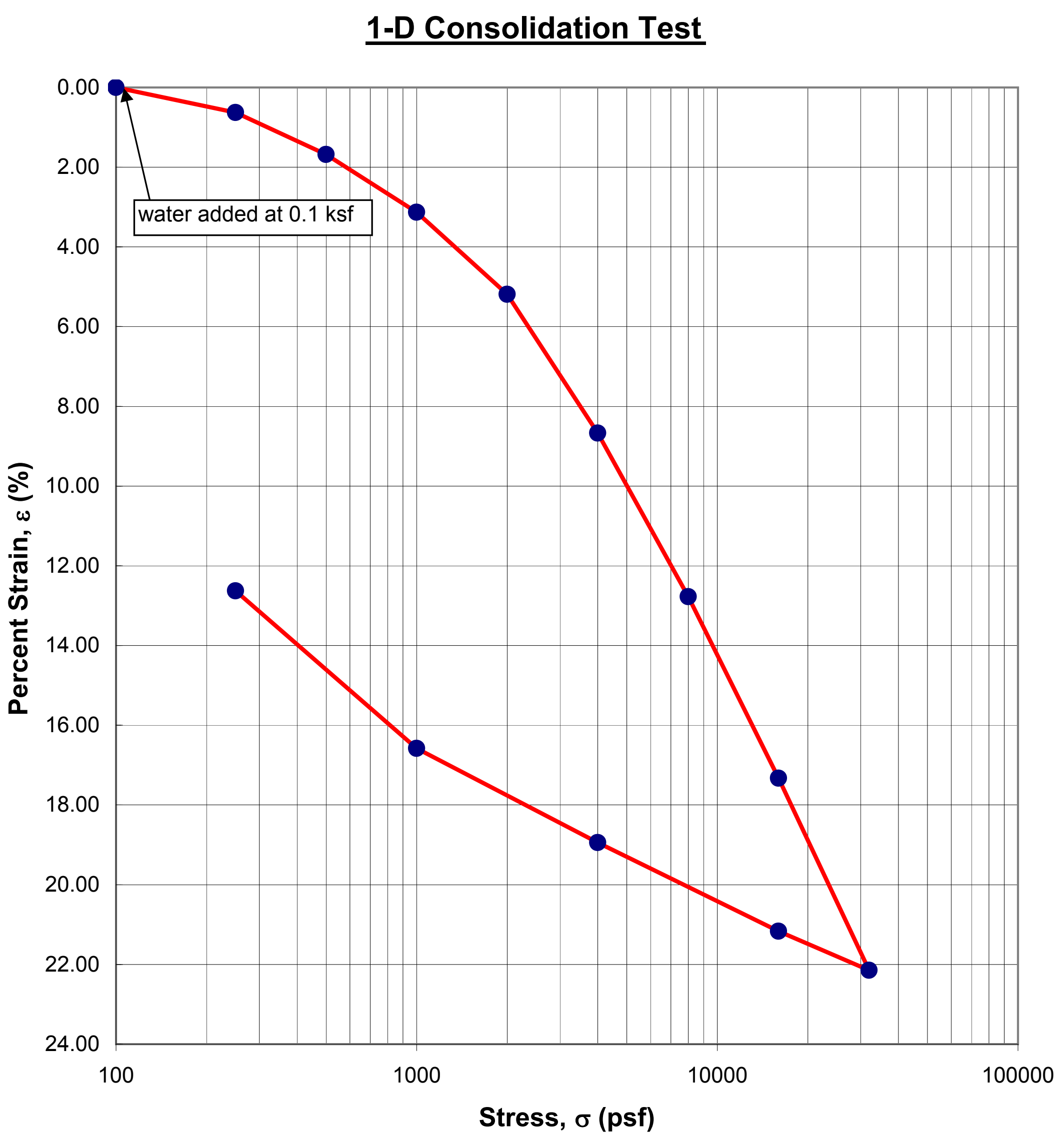
psi Information To Build On — Engineering • Consulting • Testing	**Proposed Health and Tech. Build.**	Job No.	710-95018
	1-D Consolidation Test	Figure No.	C-1

1-D Consolidation Test



Sample Location	B-5	**Dry Density**	97	pcf
Sample Depth (ft)	20	**Initial Moisture Content**	27.6	%
Sample Description	Lean Clay	**Collapse**	N/M	%
USCS Classification	CL	**Swell**	N/M	%

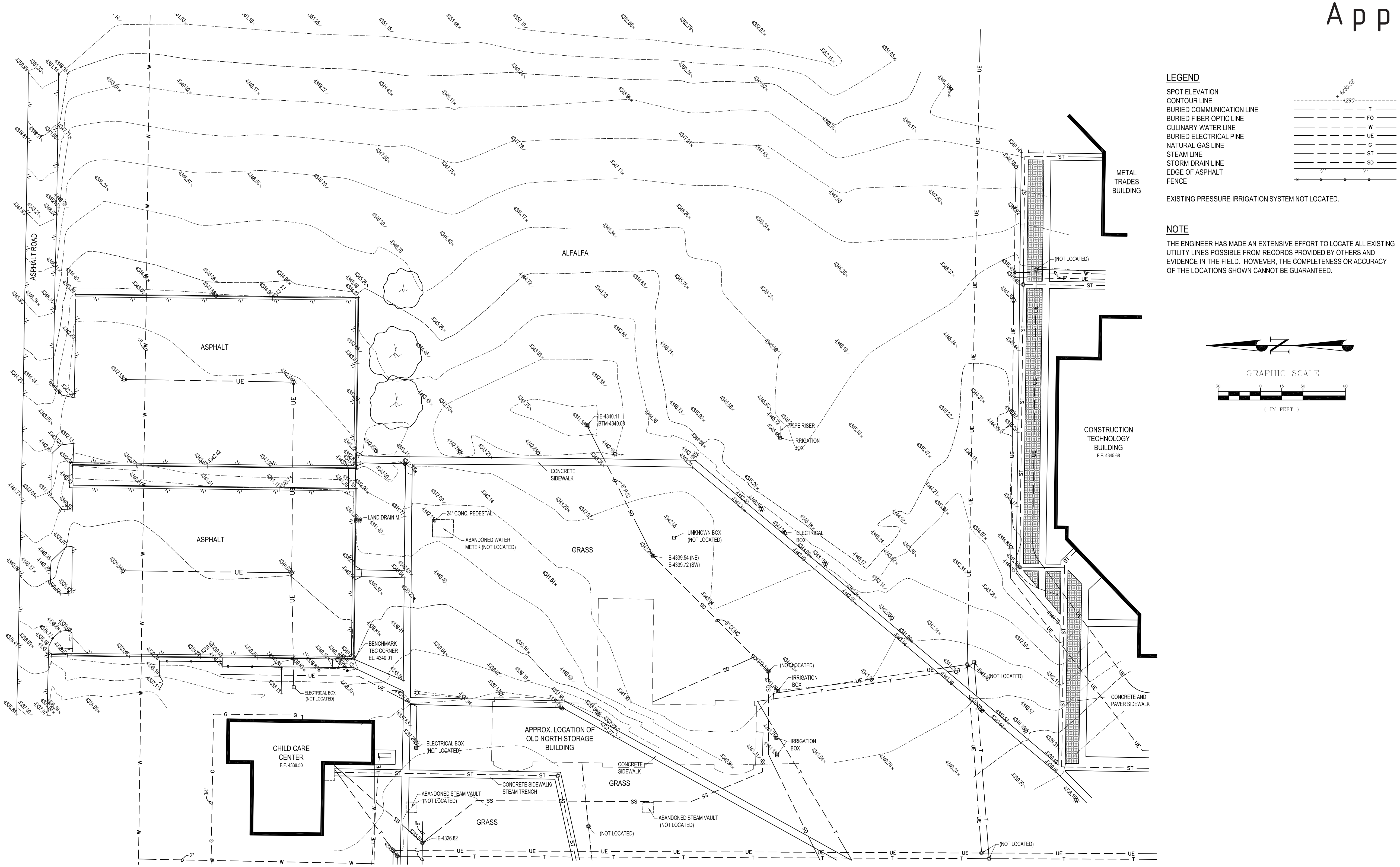
psi Information To Build On Engineering • Consulting • Testing	**Proposed Health and Tech. Build.**	Job No.	710-95018
	1-D Consolidation Test	Figure No.	C-2



Sample Location	B-5	**Dry Density**	90	pcf
Sample Depth (ft)	35	**Initial Moisture Content**	31.7	%
Sample Description	Lean Clay	**Collapse**	N/M	%
USCS Classification	CL	**Swell**	N/M	%

psi Information To Build On Engineering • Consulting • Testing	**Proposed Health and Tech. Build.**	Job No.	710-95018
	1-D Consolidation Test	Figure No.	C-3

Appendix . C



IF THE ABOVE SCALE BAR DOES NOT MEASURE 1-INCH IN LENGTH, DO NOT USE THIS DRAWING FOR SCALING PURPOSES. DIMENSIONS AND MEASUREMENTS SPECIFIED IN THE DRAWING TAKE PRECEDENCE TO SCALED MEASUREMENTS.

PRINCIPAL
PROJECT MANAGER: CMK
CHECKED BY
DRAWN BY: CKP
DRAWING SCALE: 1"=30'-0"
ISSUE DATE

CALDWELL RICHARDS SORENSEN
ANSWERS TO INFRASTRUCTURE

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2060 EAST 2100 SOUTH
Suite 110
Farmington, UTAH 8025
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FAX: 801 . 939 . 5570
www.crsengineers.com

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TOPOGRAPHIC SURVEY
MAY 22, 2009

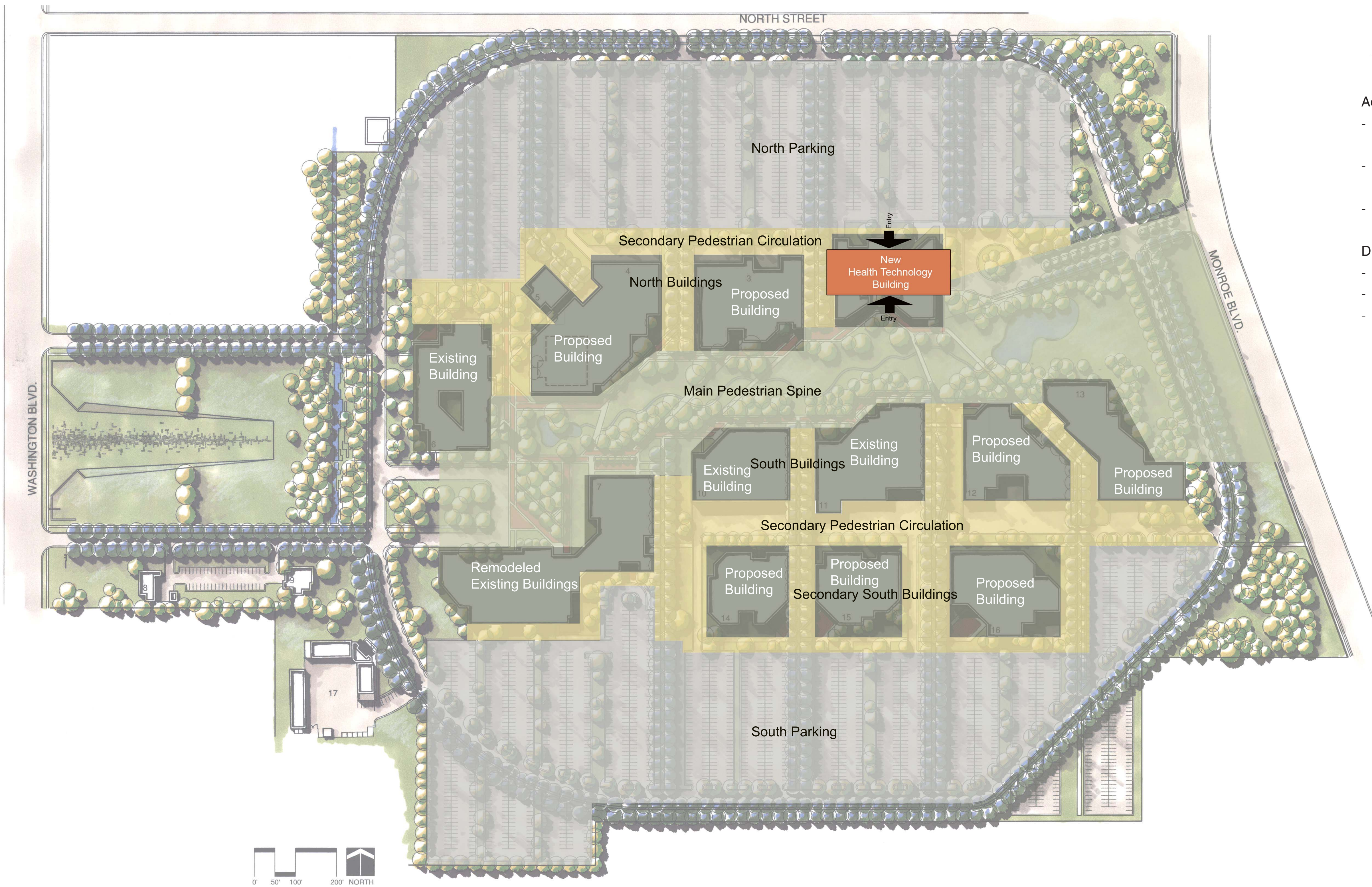
STAMP

PROJECT NUMBER: 09046F
SHEET 1 OF 1
SHEET NUMBER: **CS101**

Appendix . d

Program Data Spreadsheet										
Space Name	**Area**	**Current Occupants**	**Occupants**	**Months in Use**	**Days of Use**	**Hours of Use**	**PCs**	**Testing Room**	**Conference Room**	**Notes**
Dental Occupations										
Dental Assisting Classroom	1257 SF	20	32	Jan - Dec	M - F	8 - 3	2	0	2	
Office Administration Classroom	903 SF	0	16	Jan - Dec	M - F	8 - 3	2	0	1	
Materials Lab	567 SF	0	8	Jan - Dec	M - F	8 - 3	0	0	0	
Dental Clinic	2476 SF	0	32	Jan - Dec	M - F	8 - 3	12	0	0	
Locker Rooms	409 SF	0	40	Jan - Dec	M - F	8 - 3	0	0	0	
Faculty Office Suite	1030 SF	4	6	Jan - Dec	M - F	7:30 - 6	6	0	0	
Media Room	360 SF	0	16	Jan - Dec	M - F	8 - 3	18	0	0	
	7002 SF	24	150				40			
Medical Assisting										
Classroom #1	1253 SF	16	30	Jan - Dec	M - F	8 - 3	8	1	1	2 bc, 2 filing cabinets
Classroom #2	1650 SF	16	40	Jan - Dec	M - F	8 - 9pm	18	0	1	2bc, model cabinets
Patient Exam Rooms	420 SF	6	6	Jan - Dec	M - F	8 - 3	3	0	0	
Medical Assisting Lab	790 SF	8	12	Jan - Dec	M - F	8 - 3	2	0	0	bench top w/8 scopes, 4 blood draw stations
Restroom	72 SF	0	1	Jan - Dec	M - F	8 - 3	0	0	0	Attached to lab w/ specimen pass-thru
Minor Surgery	196 SF	0	12	Jan - Dec	M - F	8 - 3	1	0	0	
Conference	117 SF	0	3	Jan - Dec	M - F	8 - 3	1	0	0	
Medication Room	67 SF	0	2	Jan - Dec	M - F	8 - 3	1	0	0	attached to lab
X-ray Lab	240 SF	0	4	Jan - Dec	M - F	6pm - 10pm	1	0	0	2 machines
Faculty Office Suite	1030 SF	4	4	Jan - Dec	M - F	7am - 9 pm	6	0	0	
	5835 SF	50	114				41			
Medical Office Technologies										
Classroom	1750 SF	20	30	Jan - Dec	M - F / M & TH	8 - 3 / 5 - 8	17	1	1	cubbies
Medical Office Lab	200 SF	0	2	Jan - Dec	M - F / M & TH	8 - 3 / 5 - 8	2	0	0	chart area
Waiting Room	140 SF	0	6	Jan - Dec	M - F / M & TH	8 - 3 / 5 - 8	0	0	0	next to front office
Faculty Office	130 SF	0	1	Jan - Dec	M - F / M & TH	8 - 3 / 5 - 8	1	0	0	
	2220 SF	20	39				20			
Nursing Assistant										
CNA Classroom	1296 SF	32	30	Jan - Dec	M - F	8 - 3 / 5 - 9	7	0	0	storage closet, 4 tvs, 2 filing cabinets
CNA Overflow Classroom	796 SF	15	20	Jan - Dec	M - F	8 - 3 / 5 - 9	6	0	0	storage closet, 2 filing cabinets
Nursing Assistant Lab	2418 SF	0	30	Jan - Dec	M - F	8 - 3 / 5 - 9	0	0	0	7 beds, 15 desks, restroom
Storage Room	317 SF	0	0	Jan - Dec	M - F	8 - 3 / 5 - 9	0	0	0	
Media Room	740 SF	0	20	Jan - Dec	M - F	8 - 3 / 5 - 9	20	0	0	
Faculty Office Suite	1028 SF	6	6	Jan - Dec	M - F	8 - 3 / 5 - 9	6	0	0	
	6595 SF	53	106				39			
Pharmacy Technician										
Classroom #1	1450 SF	40	40	Jan - Dec	M & W	5 - 9	13	1	0	4 cabinets, 2 bookcases, 2 filing cabinets
Classroom #2	1165 SF	0	30	Jan - Dec	M & W	5 - 9	13	1	0	4 cabinets, 2 bookcases, 2 filing cabinets
Retail/ Compounding Lab	492 SF	0	10	Jan - Dec	M & W	5 - 9	3	0	0	5 bays & retail counter
Faculty Office Suite	500 SF	4	4	Jan - Dec	M & W	5 - 9	4	0	0	
	3607 SF	44	84				33			
Clinical Lab Programs										
CLA Lab	1110 SF	22	16	Jan - Dec (2 mo. on/ 1 off)	T & TH / Sat	6 - 9/ 9 - 1	2	0	0	20 perimeter scopes
Toilet	64 SF	0	1	Jan - Dec (2 mo. on/ 1 off)	T & TH / Sat	6 - 9/ 9 - 1	0	0	0	upper shelves for reference material
Storage	100 SF	0	0	Jan - Dec (2 mo. on/ 1 off)	T & TH / Sat	6 - 9/ 9 - 1	0	0	0	
Prep.	100 SF	0	1	Jan - Dec (2 mo. on/ 1 off)	T & TH / Sat	6 - 9/ 9 - 1	0	0	0	
Faculty Office Suite	348 SF	2	2	Jan - Dec (2 mo. on/ 1 off)	T & TH / Sat	6 - 9/ 9 - 1	2	0	0	
	1722 SF	24	20				4			
Practical Nursing										
Classroom #1	1152 SF	33	40	Aug - May	M - F	8:30 - 3	2	0	0	3 cabinets
Classroom #2	1188 SF	0	40	Aug - May	M - F	8:30 - 3	2	0	0	3 cabinets
Storage Room	353 SF	0	0	Aug - May	M - F	8:30 - 3	0	0	0	
Conference Debrief	224 SF	0	12	Aug - May	M - F	8:30 - 3	0	0	0	
Clinical Sim Lab	2632 SF	0	40	Aug - May	M - F	8:30 - 3	3	0	0	8 beds, classroom, tables & chairs
Practice Lab	900 SF	0	20	Aug - May	M - F	8:30 - 3	0	0	0	4-6 beds, a few tables and chairs
Computer Lab	1040 SF	0	36	Aug - May	M - F	8:30 - 3	36	0	0	near skills lab
Faculty Office Suite	1853 SF	10	12	Aug - May	M - F	8:30 - 3	12	0	0	waiting room with program secretary
	9342 SF	43	200				55			
Grand total: 44	36323 SF	258	713				232			

Appendix . e



Advantages:

- Building will be the anchor building for campus from Monroe Boulevard per master plan 2003
- Proximity to the master planned anchor green space and pond
- Proximity to the new parking lot

Disadvantages:

- Isolated from the rest of the buildings on campus
- Distance to the existing utility lines
- Imposes site limitations for the future building to the west

Site Option Two-A

Parking Requirements:
1 stall per 500 S.F.

70,000 S.F. - 140 required
84 Existing Parking Stalls

56 New Required

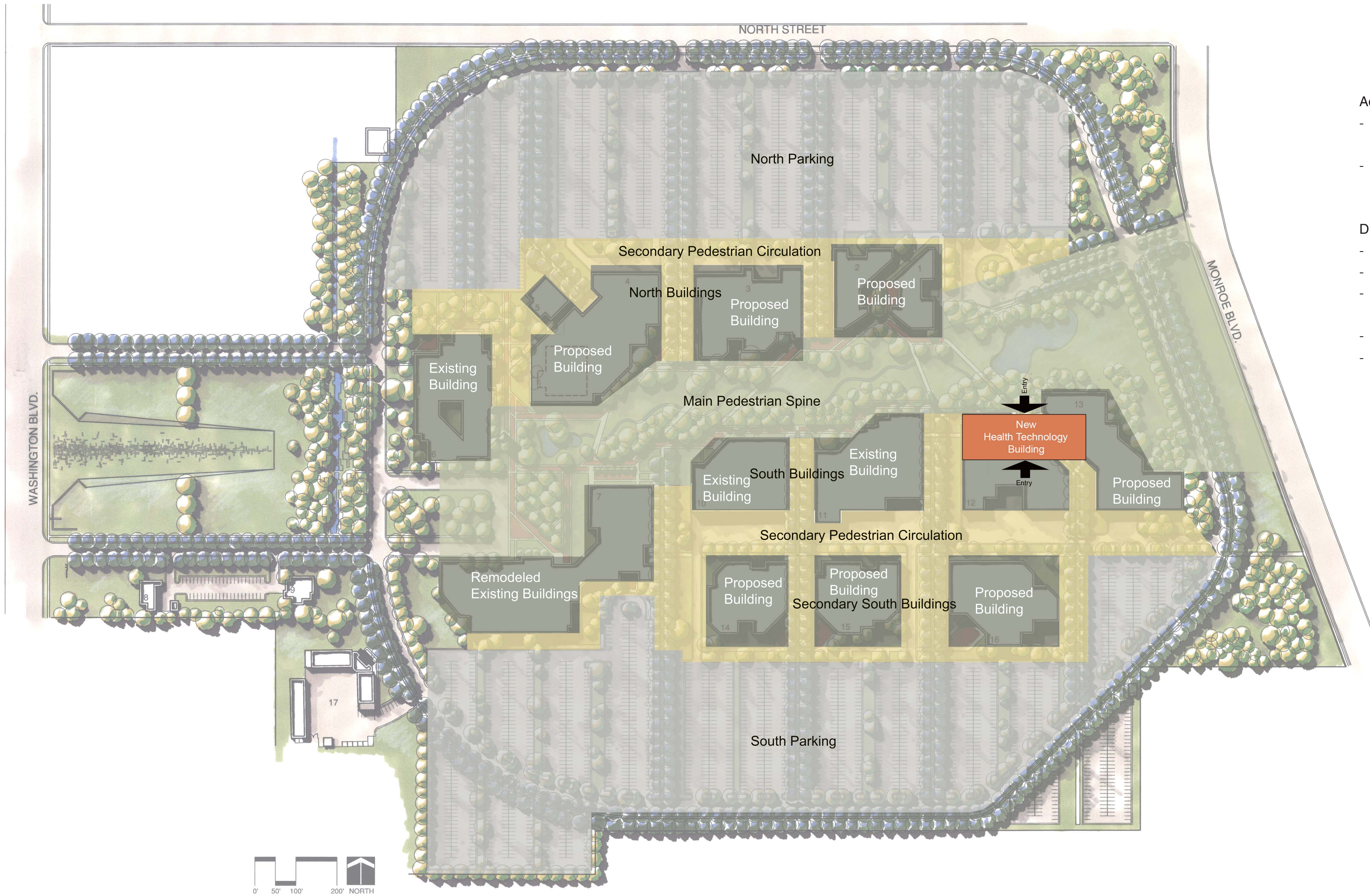
Existing & Masterplanned Buildings

Secondary Pedestrian Circulation

Existing & Masterplanned Parking

Central Pedestrian Spine

Site Option Two-A



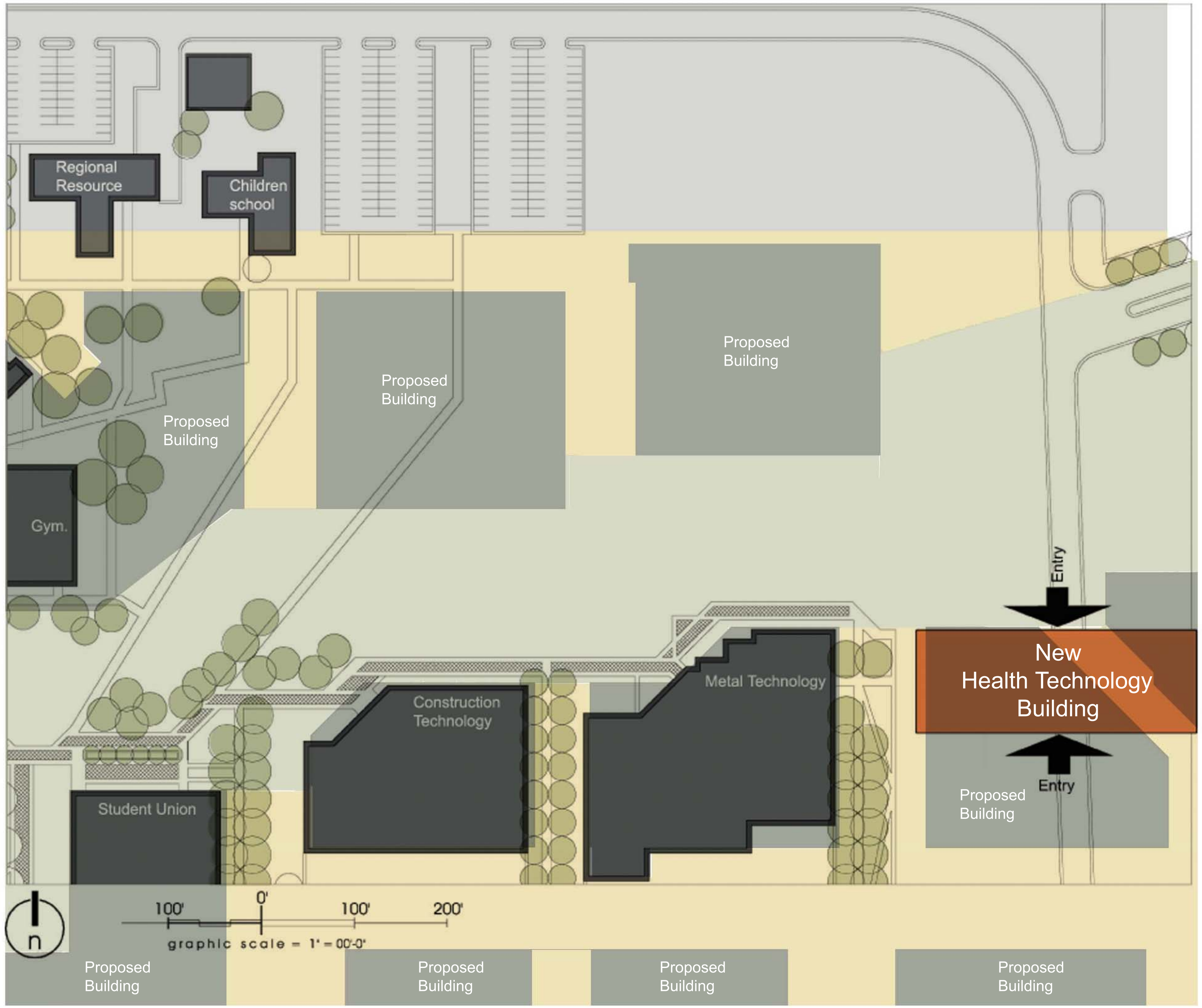
Advantages

- Building will be the anchor building for campus from Monroe Boulevard per master plan 2003
- Proximity to the master planned anchor green space and pond

Disadvantages

- Isolated from the rest of the buildings on campus
- Distance to the existing utility lines
- Imposes site limitations for the future building to the east
- Distance to the new parking lot
- Requires re-routing of the existing road

Site Option Two-B



Parking Requirements:
1 stall per 500 S.F.

70,000 S.F. - 140 required
84 Existing Parking Stalls

56 New Required

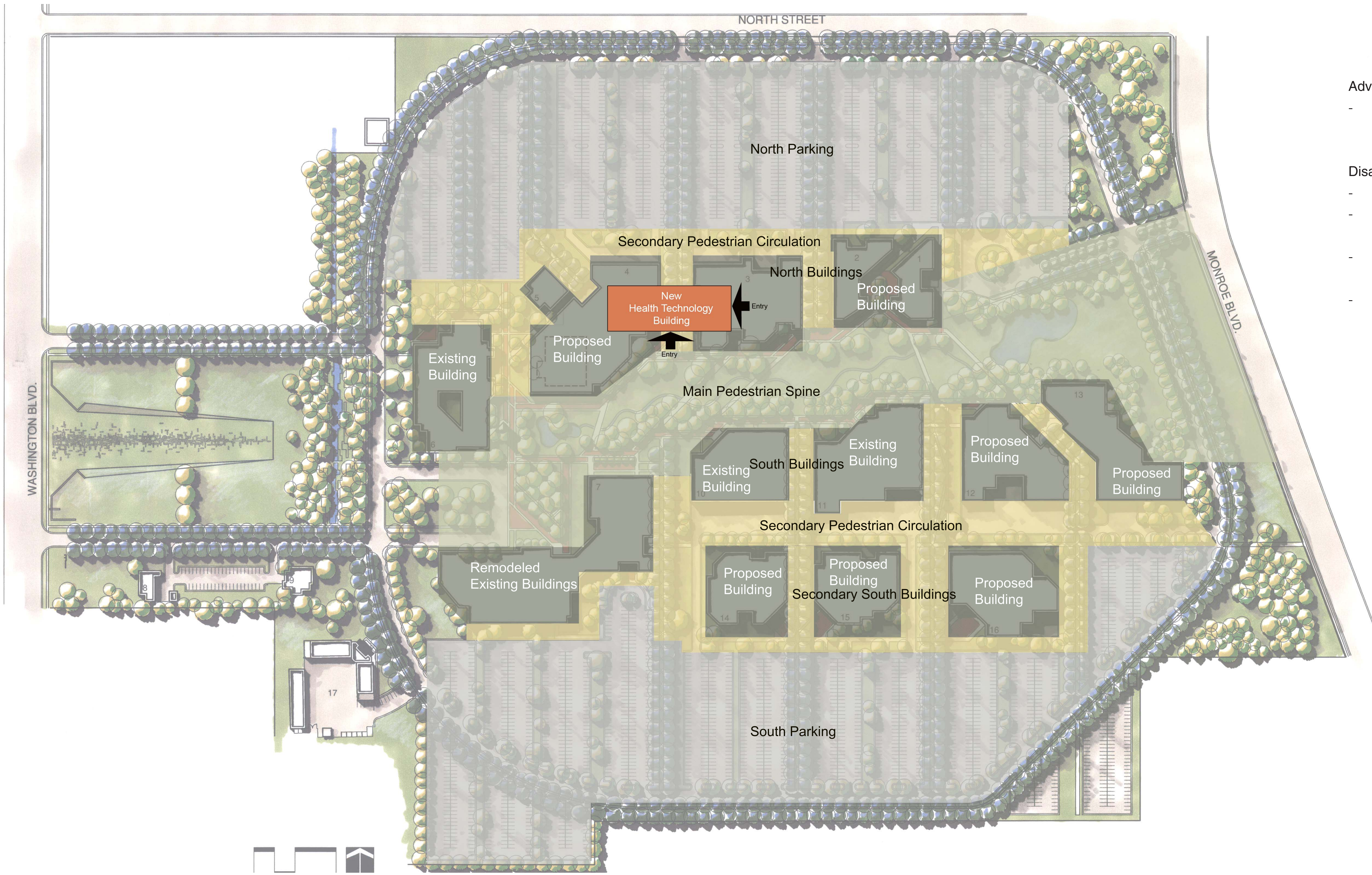
Existing & Masterplanned Buildings

Secondary Pedestrian Circulation

Existing & Masterplanned Parking

Central Pedestrian Spine

Site Option Two-B



Advantages
- Building will be more integrated with the existing campus

Disadvantages:
- Major effect on utility lines
- In conflict with view corridors stablished by the 2003 master plan
- Imposes site limitations for the future building to the east and west
- Distance to the new parking lot

Site Option Three

Parking Requirements:
1 stall per 500 S.F.

70,000 S.F. - 140 required
84 Existing Parking Stalls

56 New Required

Existing & Masterplanned Buildings

Secondary Pedestrian Circulation

Existing & Masterplanned Parking

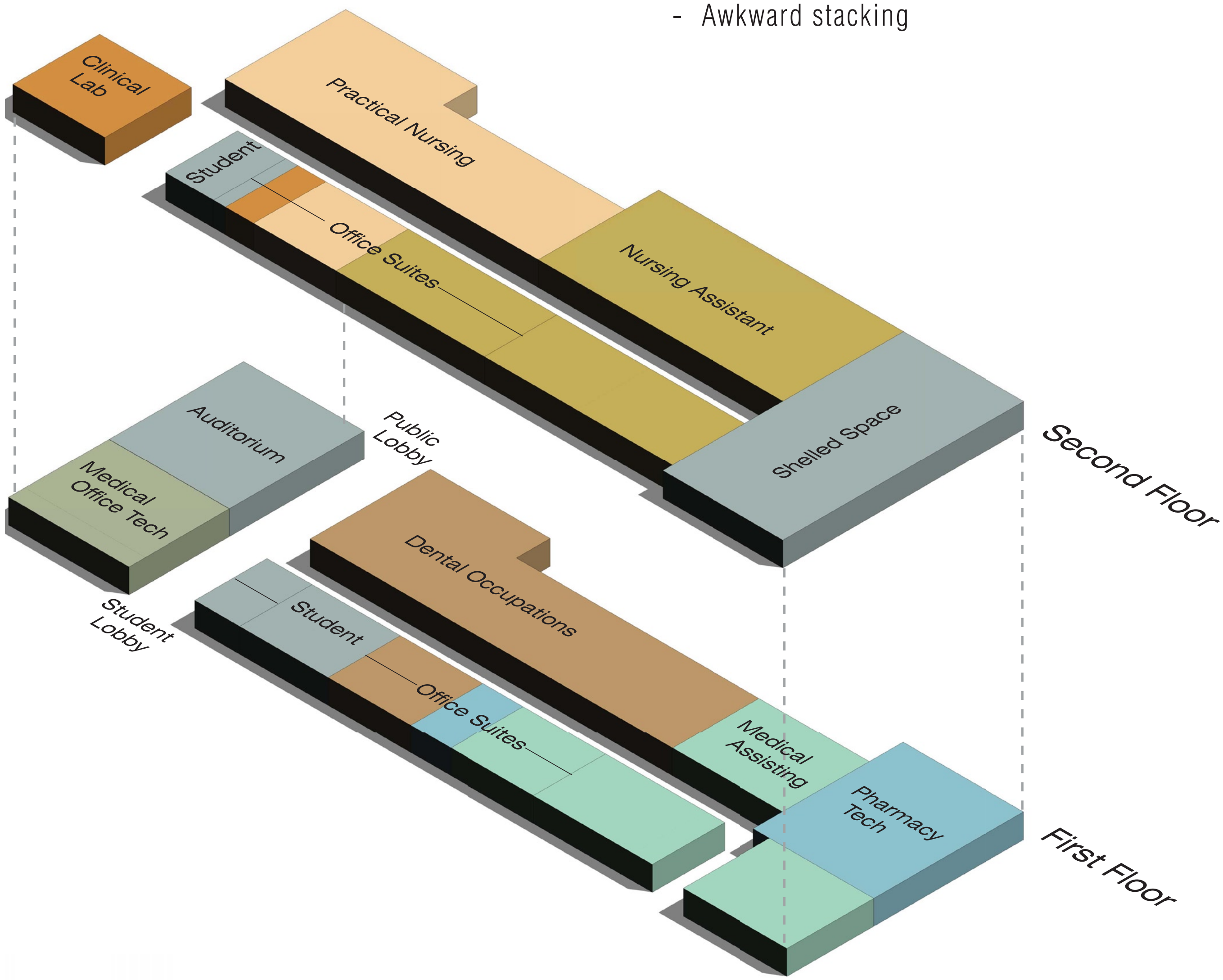
Central Pedestrian Spine

Site Option Three

Appendix . f

PROS:
- Auditorium and Public share lobby
- Auditorium has campus and public facade
- Student and Public lobby continuous, creates circulation axis

CONS:
- Medical Assisting divided
- Awkward stacking



PROS:
- Opportunity at NE corner for second floor at-grade access
- Auditorium at potential below-grade location
- Logical stacking

CONS:
- Public access far from Auditorium
- Dental Occupations divided
- Medical Office Tech on second floor, not near Medical Assisting
- Second floor built over Auditorium