CENTRAL INSTRUCTION BUILDING

[BUILDING PROGRAM DOCUMENT]

USU EASTERN

METHODSTUDIO INC.

DECEMBER 2, 2013

FINAL PROGRAM DOCUMENT

UTAH STATE UNIVERSITY REVIEW SIGNATURES

We have reviewed the Program for the Utah State University Eastern, Price Campus, Central Instruction Building and warrant that it adequately represents our request for a program document and it fulfills our mission and program goals. The appropriate parties listed below have reviewed it for approval.

UTAH STATE UNIVERSITY

Joe Peterson, Chancellor USU Eastern — Date

STATE OF UTAH DFCM

David McKay, Project Manager — Date

Brian Bales, Project Manager — Date

Acknowledgements and Program Design Team

ACKNOWLEDGEMENTS

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Utah State Building Board
Utah State Board of Regents
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Tony Basso, College benefactor
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ACOUSTICS
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COST ESTIMATING
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01 Executive Summary

Project Goals/Mission and Vision

USU MISSION

The mission of Utah State University is to be one of the nation's premier student-centered land-grant and space-grant universities by fostering the principle that academics come first, by cultivating diversity of thought and culture, and by serving the public through learning, discovery, and engagement.

Utah State University's 10 Goals:

1. Enhance the reputation of the University for learning, discovery, and engagement.
2. Expand and diversify the revenues of the University.
3. Adopt new business models that embrace accountability, responsiveness, and efficiency, and a budget process that is responsive to University goals.
4. Strengthen the recruitment, retention, graduation, and placement of students and, as part of that goal, reduce the student-faculty ratio.
5. Raise the base level of compensation for faculty and staff to be more competitive with peer institutions, and reward especially outstanding faculty and staff achievements.
6. Build a socially and intellectually vibrant campus community, enhanced by the diversity of its faculty, staff, and students.
7. Infuse new energy into graduate programs, particularly at the doctoral level.
8. Foster new partnerships, both internally and externally.
9. Communicate the success of the University to the world.
10. Launch and complete a successful comprehensive campaign in support of the other nine goals generally and establish the central proposition that, at Utah State, academics come first.

USU EASTERN MISSION

USU Eastern's mission is to prepare the people who create and sustain Southeast Utah. By providing a residential campus experience for rural Utah's young people, the Price campus prepares future generations of economic leaders and community builders. Also, by bringing students from other parts of Utah, the nation, and the world into Southeast Utah, and by providing those students a top-quality educational experience, the Price Campus creates affinity for Southeast Utah, infuses new human capital into the workforce, and contributes to regional vitality. As an anchor for educational programs that are delivered in Price and throughout Southeast Utah, the proposed building will create educational, cultural, and economic benefits.

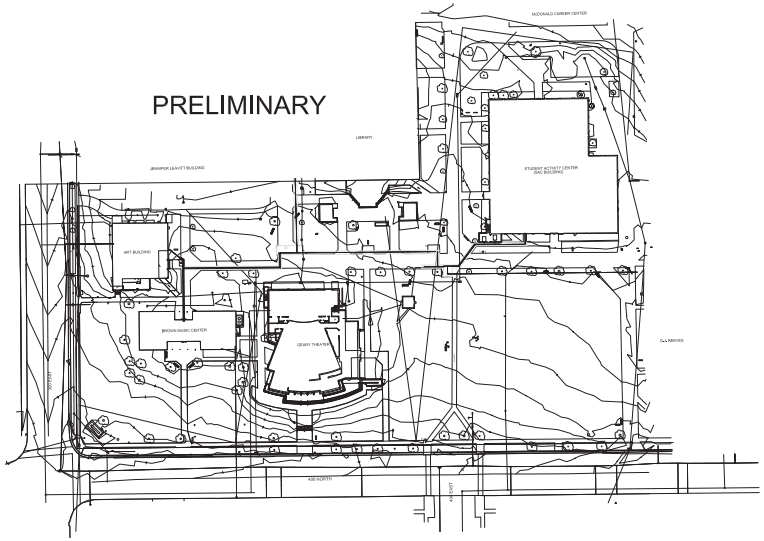
USU Eastern Campus, Price UT

PROJECT MISSION

This facility is central to USU Eastern's educational mission. To better serve the region, USU Eastern must increase its enrollments, preparing a larger percentage of the region's residents, and attracting students from outside the region in larger numbers. Because many prospective students base their decision of where to attend college on superficial criteria – the quality of facilities – the Price Campus's aging, dangerous, and inadequate facilities have long been a significant inhibitor to the College's success.

PROJECT GOALS

- Provide instructional infrastructure for USU's statewide educational mission. The building should allow the Price Campus to serve more effectively as an anchor for program delivery throughout Utah.
- Serve as a prominent and iconic building that establishes campus identity.
- Improve campus "curb appeal," remove facilities that inhibit enrollment growth, and contribute to the cultural and economic vitality of Southeast Utah.
- Serve as a connection to the community, reaching out and bringing residents and prospective students onto campus. The building should be located prominently, such that it has great visibility to the public. Academic programs within the building should likewise be visible to the public.
- Through transparency, allow academic programs located within the building to develop identity and program brand that increases program participation.
- Integrate academic programs spatially and allow for efficiencies of academic operation.
- Eliminate dangerous and inadequate facilities.
- Contribute to the economic and cultural vitality of Southeast Utah.



PROJECT JUSTIFICATION

Utah State University's land-grant mission to provide educational opportunities across the state has revolutionized higher education in rural Utah. With nearly half of the University's enrollment occurring outside of Logan, the University is responding to the state's wider educational needs. As part of this effort, USU proposes a new multi-purpose educational facility at USU Eastern in Price.

With educational programs offered through the vast areas of Carbon, Emery, Grand, and San Juan Counties, USU Eastern's mission is to prepare the people who create and sustain this region. Many of USU Eastern's programs are anchored in facilities at the Price Campus, which serves as a hub for program delivery.

Because USU Eastern's success directly impacts the economic and cultural vitality of Southeast Utah, and because functionally inadequate facilities at the Price Campus have been a significant inhibitor to USU Eastern's enrollment success, the proposed building will have a direct and positive impact on Southeast Utah's economic and educational vitality.

The proposed Central Instruction Building will be home to several academic programs and will provide 54,000 square feet of replacement and new space. The facility will replace two of USU Eastern's Price Campus facilities, the SAC and Music Buildings, which are among Utah's most dangerous and functionally inadequate buildings. By eliminating these facilities, and by bringing together instruction in criminal justice, communication, theatre, music, and visual arts into one facility on campus, the project will allow the Price campus to improve campus safety, create efficiencies of integration and operation in modern instructional spaces, and more effectively serve rural Utahans.

With its history as a rural community college, USU Eastern's Price Campus remains in early stages of campus evolution. Unlike larger college and university campuses that have buildings for individual academic programs (such as Education Buildings, Business Buildings, or Natural Resources Buildings), at this stage of development, the Price Campus is composed of small and functionally inadequate structures, and two large, multi-program instructional buildings. Approximately two-thirds of the College's classes occur in the two existing multi-purpose facilities; however, one-third occurs in small, aging, and dangerous facilities. The proposed building will add a third multi-program instructional facility, modernize the Campus, and remove classes from functionally inadequate buildings.

(Current classroom/music instruction spaces)

Building Program Summary

DESCRIPTION

The Utah State University Eastern Central Institution Building will consist of the following major program elements: criminal justice, communications, art, music, theater, and building support spaces. Further explanation of the major programmed areas can be found in Section 4 in the Detailed Space Area Summary and in the Individual Space Summary, Sections 5-12. To meet the programmatic needs for the new USU building, it has been sized to 56,630 gross square feet. A .25 grossing factor was applied to the net square footage to get to the final gross square footage amount. The gross factor is for circulation, wall thickness, shafts and ancillary spaces.

Description	Sq. Feet
CRIMINAL JUSTICE	2670
COMMUNICATIONS	2810
ART	6360
MUSIC	5515
THEATER	7530
GENERAL	16599
BUILDING SUPPORT	3820
NSF Subtotal	45304
Circulation, access, walls (25% NSF)	11326
TOTAL	**56630**

01 Executive Summary

Building Cost Summary

PROJECT ESTIMATE - CONSTRUCTION CONTROL CORPORATION - 10/17/2013
PROJECT NAME……..USU EASTERN, CENTRAL INSTRUCTION BUILDING
LOCATION……..PRICE, UT
ARCHITECT……METHOD STUDIO Project Size: 56,630 SF
STAGE OF DESIGN……..PROGRAMMING

CSI #	DESCRIPTION	UNIT QTY	UNIT COST	
	BUILDING A COST SUMMARY			
02	SITEWORK & DEMOLITION		$ 25.24	$ 1,429,608
03	CONCRETE		$ 9.48	$ 537,030
04	MASONRY		$ 10.64	$ 602,600
05	METALS		$ 25.38	$ 1,437,006
06	WOODS & PLASTICS		$ 5.83	$ 330,267
07	THERMAL & MOISTURE PROTECTION		$ 14.46	$ 818,882
08	DOORS & WINDOWS		$ 13.52	$ 765,870
09	FINISHES		$ 28.17	$ 1,595,246
10	SPECIALTIES		$ 1.98	$ 112,127
11	EQUIPMENT		$ 4.19	$ 237,376
12	FURNISHINGS		$ 1.03	$ 58,573
14	CONVEYING SYSTEMS		$ 1.17	$ 66,000
15	MECHANICAL		$ 42.96	$ 2,432,825
16	ELECTRICAL		$ 31.74	$ 1,797,436
SUBTOTAL			$ 215.80	$12,220,848
GENERAL CONDITIONS		5%	$ 10.79	$611,042
OVERHEAD & PROFIT		4%	$ 8.63	$488,834
DESIGN CONTINGENCY		10%	$ 21.58	$1,222,085
TOTAL CONSTRUCTION COST			$ 256.80	$ 14,542,809

ESCALATION HAS NOT BEEN FACTORED INTO THE COSTS OF THIS ESTIMATE.
ESTIMATE IS FOR CONSTRUCTION COSTS ONLY, SOFT COSTS ARE NOT INCLUDED.

CSI #	DESCRIPTION	UNIT QTY	UNIT COST	
02 SITEWORK & DEMOLITION				
	Demolition			
	Site Clearing	196568 SF	$ 0.23	$ 44,818
	Subtotal for Demolition			**$ 44,818**
	Earthwork			
	Site Grading	168253 CY	$ 0.37	$ 62,590
	Site Excavation	6232 CY	$ 11.58	$ 72,162
	Building Excavation	3146 CY	$ 4.80	$ 15,101
	Backfill and Compaction w/ imported fills	3146 CY	$ 15.18	$ 47,758
	Building Grading	28315 SF	$ 0.47	$ 13,251
	Gravel under Slab	1124 TNS	$ 33.60	$ 37,773
	Subtotal for Earthwork			**$ 248,635**
	Site Utilities			
	Sewer Service	1 LS	$ 30,000.00	$ 30,000
	Water Service	1 LS	$ 24,000.00	$ 24,000
	Storm Drainage	1 LS	$ 48,000.00	$ 48,000
	Electrical Feeder	1 LS	$ 18,000.00	$ 18,000
	Communication Feeder	1 LS	$ 9,000.00	$ 9,000
	Subtotal for Site Utilities			**$ 129,000**
	Site Concrete			
	Concrete Sidewalk	15500 SF	$ 4.26	$ 66,030
	Miscellanceous Site Concrete	168253 SF	$ 2.40	$ 403,807
	Subtotal for Site Concrete			**$ 469,837**
	Asphalt Paving			
	Asphalt Patching	2500 SF	$ 3.30	$ 8,250
	Asphalt Striping	2500 SF	$ 0.04	$ 90
	Subtotal for Asphalt Paving			**$ 8,340**
	Landscaping			
	Landscaping	121938 SF	$ 3.60	$ 438,977
	Subtotal for Lanscaping			**$ 438,977**
	Site Lighting	1 LS	$ 90,000.00	**$ 90,000**
	TOTAL SITEWORK & DEMOLITION			**$ 1,429,608**

CSI #	DESCRIPTION	UNIT QTY	UNIT COST	
03	**CONCRETE**			
	Footings Continuous	163 CY	$ 354.00	$ 57,532
	Spot Footings	163 CY	$ 366.00	$ 59,482
	Foundation Wall	7570 SF	$ 23.62	$ 178,773
	Slab on Grade	28315 SF	$ 4.26	$ 120,622
	Topping Slab	28315 SF	$ 4.26	$ 120,622
	TOTAL CONCRETE			**$ 537,030**
04	**MASONRY**			
	Interior CMU	3328 SF	$ 17.62	$ 58,626
	Exterior Masonry	18888 SF	$ 28.80	$ 543,974
	TOTAL MASONRY			**$ 602,600**
05	**METALS**			
	Miscellaneous Steel	56630 SF	$ 0.46	$ 25,823
	Metal Floor Deck	28315 SF	$ 2.34	$ 66,257
	Floor Structure - 14#/SF	396410 LB	$ 1.86	$ 737,323
	Metal Roof Deck	29515 SF	$ 2.34	$ 66,257
	Roof Structure - 7#/SF	206605 LB	$ 1.86	$ 384,285
	Decorative Stairs	268 SF	$ 180.00	$ 48,240
	Decorative Railings	200 LF	$ 270.00	$ 54,000
	Stair - Regular	336 SF	$ 64.80	$ 21,733
	Free Standing Railing	140 LF	$ 150.00	$ 21,000
	Wall Mounted Railing	140 LF	$ 66.00	$ 9,240
	TOTAL METALS			**$ 1,437,006**
06	**WOOD & PLASTICS**			
	Carpentry:			
	Wood Plates & Blocking	56630 SF	$ 0.37	$ 21,067
	Subtotal for Carpentry			**$ 21,067**

CSI #	DESCRIPTION	UNIT QTY	UNIT COST	
	Millwork	56630 SF	$ 5.46	$ 309,200
	TOTAL WOOD & PLASTICS			**$ 330,267**
07	**THERMAL & MOISTURE PROTECTION**			
	Batt Insulation at exterior wall	25184 SF	$ 0.80	$ 20,248
	3” Rigid at Building Exterior	25184 SF	$ 3.54	$ 89,151
	Rigid Roof Insulation	29515 SF	$ 3.06	$ 90,316
	Sound Batt	110429 SF	$ 0.58	$ 63,607
	Metal Wall Cap	1580 SF	$ 9.18	$ 14,504
	Metal Flashings	1580 SF	$ 6.78	$ 10,170
	Single Ply membrane	29515 SF	$ 3.18	$ 93,858
	Soffit	1200 SF	$ 33.60	$ 40,320
	Exterior Sheathing	25184 SF	$ 2.10	$ 52,886
	Weather Barrier	25184 SF	$ 3.60	$ 90,662
	Fire Stopping/ Caulking	56630 SF	$ 0.22	$ 12,232
	Caulking & Sealants	56630 SF	$ 0.25	$ 14,271
	TOTAL THERMAL & MOISTURE PROTECTION			**$ 818,882**
08	**DOORS & WINDOWS**			
	Doors	56630 SF	$ 2.34	$ 132,514
	Exterior Glazing Aluminum (40% of Exterior)	10074 SF	$ 45.60	$ 459,356
	Shading Devices	1000 SF	$ 84.00	$ 84,000
	Interior Glazing	2500 SF	$ 36.00	$ 90,000
	TOTAL DOORS & WINDOWS			**$ 765,870**
09	**FINISHES**			
	Exterior Metal Stud Framing	25184 SF	$ 3.84	$ 96,707
	Interior Metal Stud Partitions	110429 SF	$ 2.22	$ 245,151
	5/8” Gypsum board	246041 SF	$ 1.56	$ 383,824
	Teaching/ Instruction Area Ceiling	16145 SF	$ 4.50	$ 72,653
	Office Area Ceiling	3065 SF	$ 3.90	$ 11,954

CSI #	DESCRIPTION	UNIT QTY	UNIT COST	
	(FINISHES CONT.)			
	Storage Area Ceiling	1430 SF	$ 3.90	$ 5,577
	Lobby/ Ticketing Ceiling	6140 SF	$ 6.60	$ 40,524
	Concessions Ceiling	184 SF	$ 4.80	$ 883
	Restroom Ceiling	1800 SF	$ 4.80	$ 8,640
	Black Box/ Rehearsal Room Ceiling	3470 SF	$ 9.18	$ 31,855
	Shop Area Ceiling	3800 SF	$ 6.60	$ 25,080
	Studio Ceiling	4200 SF	$ 6.60	$ 27,720
	Gallery Ceiling	1250 SF	$ 15.18	$ 18,975
	Circulation area Ceiling	11326 SF	$ 5.10	$ 57,763
	Teaching/ Instruction Area Flooring	16145 SF	$ 4.00	$ 64,515
	Office Area Flooring	3065 SF	$ 4.00	$ 12,248
	Storage Area Flooring	1430 SF	$ 2.70	$ 3,861
	Lobby/ Ticketing Flooring	6140 SF	$ 12.78	$ 78,469
	Concessions Flooring	184 SF	$ 10.38	$ 1,910
	Restroom Flooring	1800 SF	$ 10.38	$ 18,684
	Black Box/ Rehearsal Room Flooring	3470 SF	$ 13.98	$ 48,511
	Shop Area Flooring	3800 SF	$ 0.47	$ 1,778
	Studio Flooring	4200 SF	$ 3.96	$ 16,632
	Gallery Flooring	1250 SF	$ 12.78	$ 15,975
	Circulation area flooring	11326 SF	$ 10.38	$ 117,564
	Sealed concrete	3820 SF	$ 0.47	$ 1,788
	Paint Gypsum Board Walls	246041 SF	$ 0.58	$ 141,720
	Wall Coverings	246041 SF	$ 0.18	$ 44,287
	TOTAL FINISHES			**$ 1,595,246**
10	**SPECIALTIES**	**56630 SF**	**$ 1.98**	**$ 112,127**
11	**EQUIPMENT**			
	Black Box Theater Rigging	1 Allow	$ 60,000.00	$ 60,000
	Black Box Theater Lighting	1 Allow	$ 60,000.00	$ 60,000
	Black Box Tension Grid & Catwalks	1 LS	$ 80,000.00	$ 80,000
	Other Building Equipment	56630 SF	$ 0.66	$ 37,367
	TOTAL EQUIPMENT			**$ 237,376**

CSI #	DESCRIPTION	UNIT QTY	UNIT COST	
12	FURNISHINGS			
	Walk-Off Mats	120 SF	$ 34.80	$ 4,176
	Blinds	10074 SF	$ 5.40	$ 54,397
	TOTAL EQUIPMENT			**$ 58,573**
14	CONVEYING SYSTEMS			
	Passenger Elevator 2 stop	1 EA	$ 66,000.00	$ 66,000
	TOTAL CONVEYING SYSTEMS			**$ 66,000**
15	MECHANICAL			
	HVAC:	56630 SF	$ 36.00	$ 2,038,680
	Fire Protection:	56630 SF	$ 3.06	$ 173,288
	Plumbing	56630 SF	$ 3.90	$ 220,857
	TOTAL MECHANICAL			**$ 2,432,825**
16	ELECTRICAL			
	Service & Distribution:	56630 SF	$ 6.78	$ 383,951
	Power:	56630 SF	$ 3.18	$ 180,083
	Lighting:	56630 SF	$ 9.60	$ 543,648
	Telecommunication System:	56630 SF	$ 3.90	$ 220,857
	Fire/Smoke System:	56630 SF	$ 2.70	$ 152,901
	Special Systems:	56630 SF	$ 5.58	$ 315,995
	TOTAL ELECTRICAL			**$ 1,797,436**

02 Site Analysis

Overview

ANALYSIS

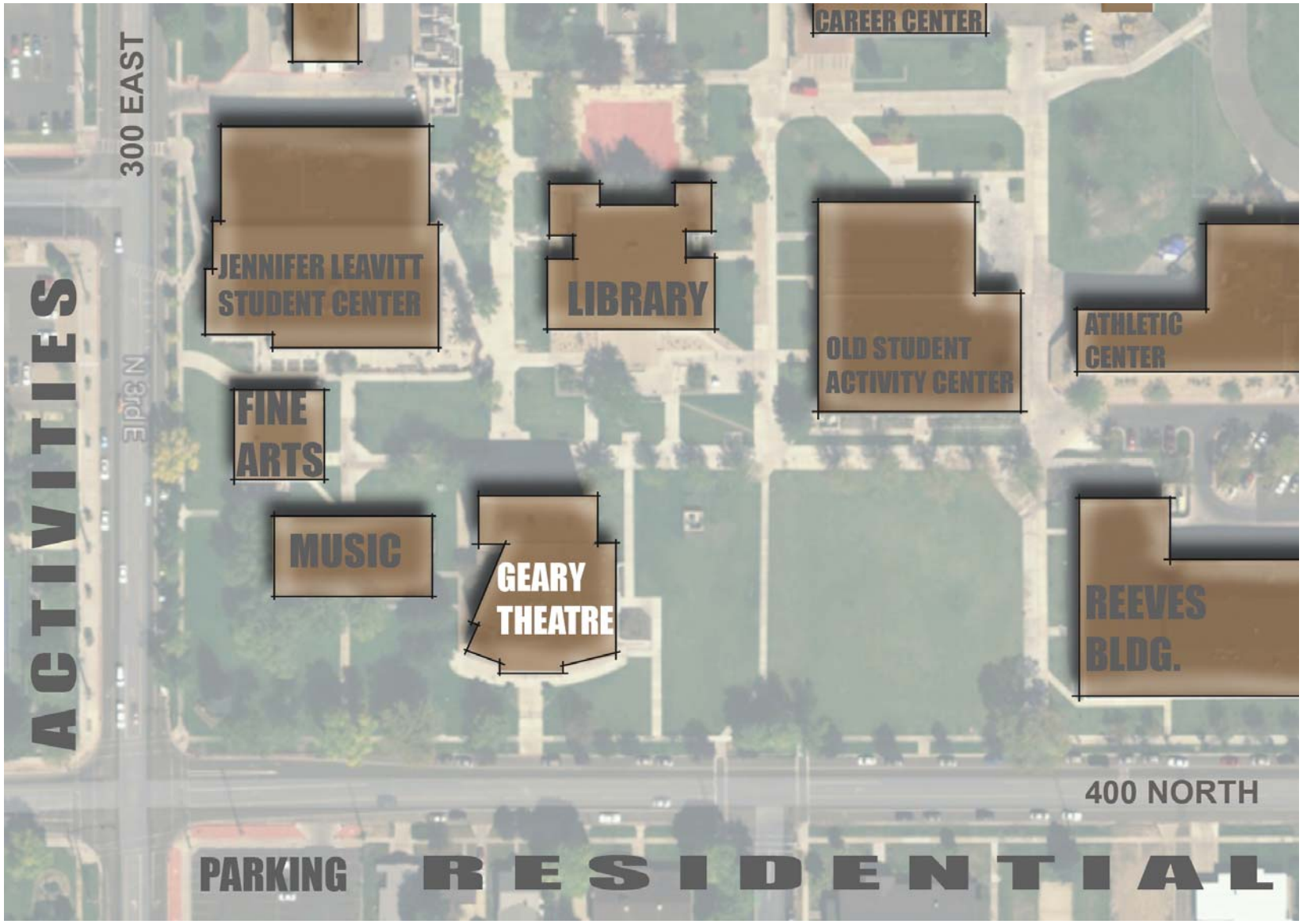
The Site Analysis portion of the program document identifies the impact of the site on the program, project budget and schedule. It identifies the physical characteristics of the direct building site and the surrounding geographical region. The analysis includes diagrams, maps and photographs to illustrate key features including: site topography, site climate, pedestrian and vehicular circulation, view corridors, key physical and visual adjacencies. The site analysis for the programming phase is intended to be a useful tool for the design phase of the project.

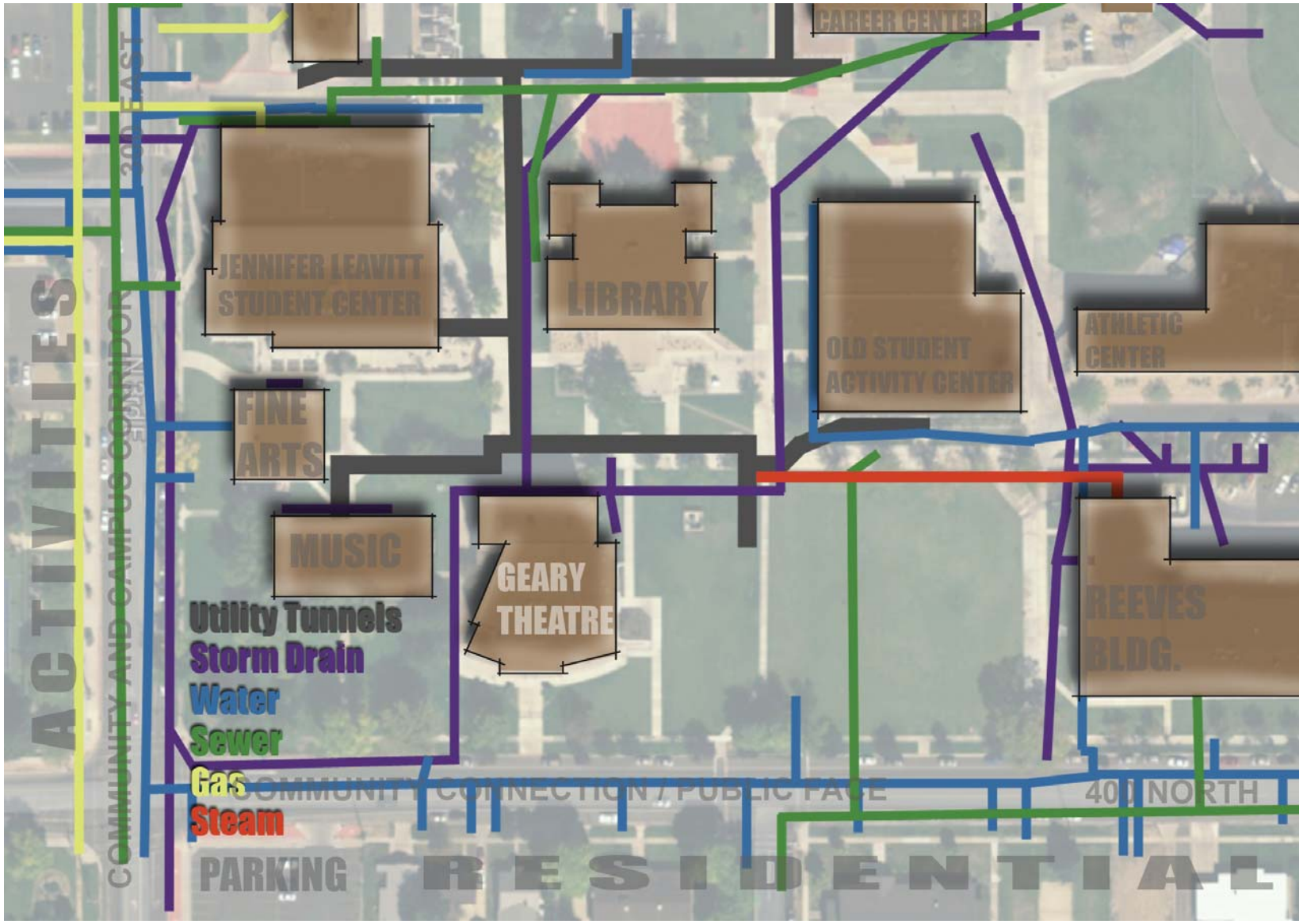
LOCATION

The Utah State University Eastern campus is located in Price, Utah of Carbon County. It is approximately 120 miles from Salt Lake City, Utah and 165 miles from Grand Junction, Colorado. The campus is located a short distance from several National and State Parks, including Arches National Park, Canyonlands National Park, Capitol Reef National Park, Huntington State Park, Goblin Valley State Park, Starvation State Park, Lake Powell (Glen Canyon Ntl Recreation Area), Ouray National Wildlife Refuge, Nine Mile Canyon, Scofield Resevoir, and Strawberry Resevoir.

The new Central Instruction Building will be located on the south-central edge of USU Eastern's Price campus. The campus encompasses the area from 400 North to 600 North and 100 East to 600 East make. The building's approximate address will be 400 N and 400 E, adjacent to the Geary Theater (on the west), and the Reeves Building (on the east).

CIB SITE
USU EASTERN
MAIN STREET
BUSINESS DISTRICT
Price
SALT LAKE CITY
- 119 MILES
HWY 6
GRAND JUNCTION
- 165 MILES
Google earth
© 2013 Google


CAREER CENTER
300 EAST
JENNIFER LEAVITT STUDENT CENTER
LIBRARY
OLD STUDENT ACTIVITY CENTER
ATHLETIC CENTER
ACTIVITIES
N 3rd E
FINE ARTS
MUSIC
GEARY THEATRE
REEVES BLDG.
400 NORTH
PARKING
RESIDENTIAL


CAREER CENTER
JENNIFER LEAVITT STUDENT CENTER
LIBRARY
OLD STUDENT ACTIVITY CENTER
ATHLETIC CENTER
FINE ARTS
MUSIC
GEARY THEATRE
REEVES BLDG.
ACTIVITIES
COMMUNITY AND CAMPUS CORRIDOR
200 EAST
Utility Tunnels
Storm Drain
Water
Sewer
Gas
Steam
COMMUNITY CONNECTION / PUBLIC FACE
400 NORTH
PARKING
RESIDENTIAL

02 Site Analysis

Site Location and Planning Principals

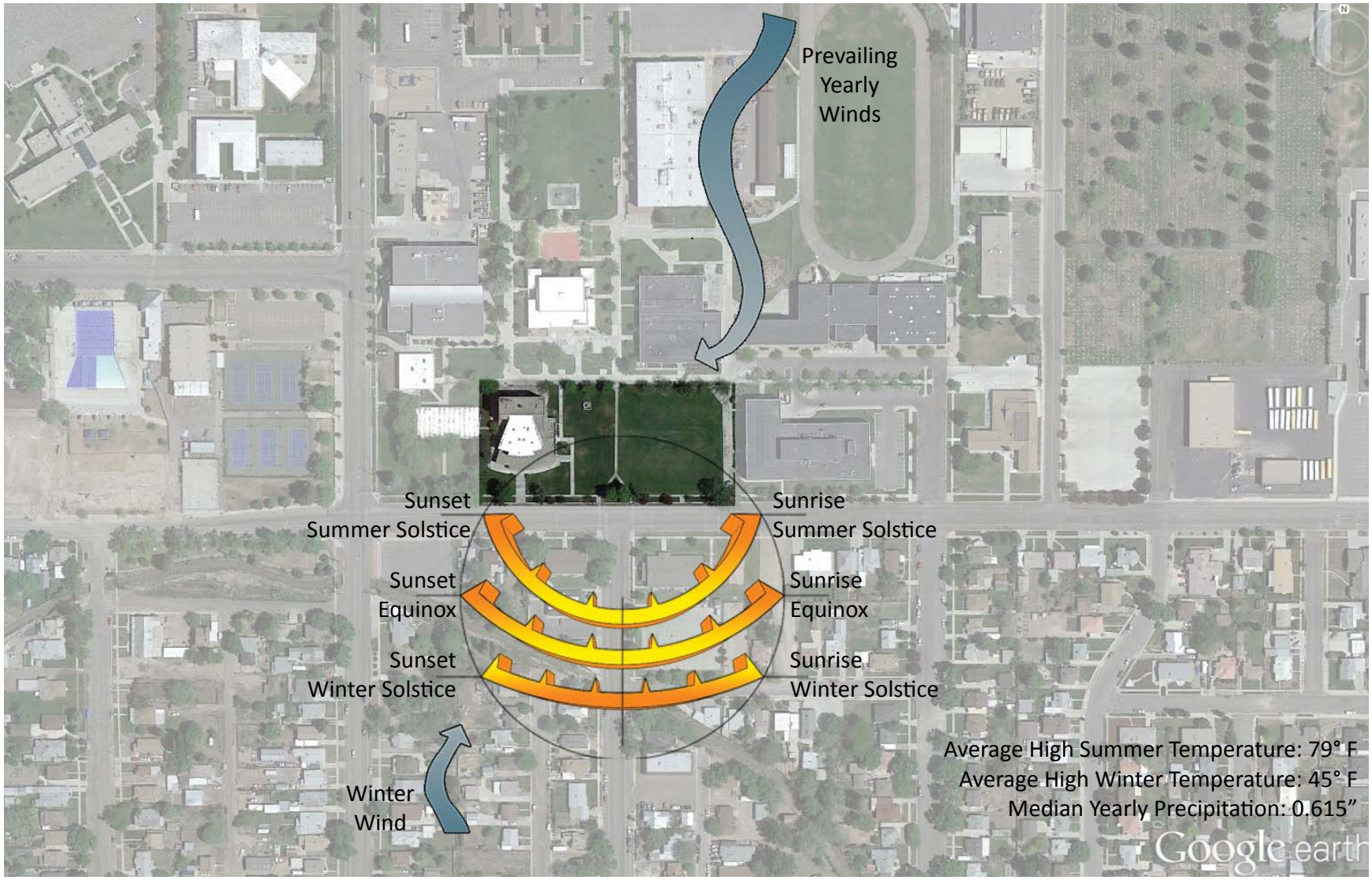
SITE SUMMARY
The site is currently an open, grass-covered area, sloping slightly to the south. Little to no grading or demolition will be required. Refer to the Civil Design Criteria for additional information.

OUTDOOR SPACES
The design team will explore opportunities for the creation of outdoor spaces such as ampitheatre style seating, plazas, and performance spaces. Additionally, benches will be incorporated into the landscape plan.

LANDSCAPE
The site will utilize regional and waterwise landscaping. Because the project will be LEED® Silver, there will be opportunities to gain LEED credits for water efficient irrigation and plantings. Refer to the Landscape Design Criteria for additional information.

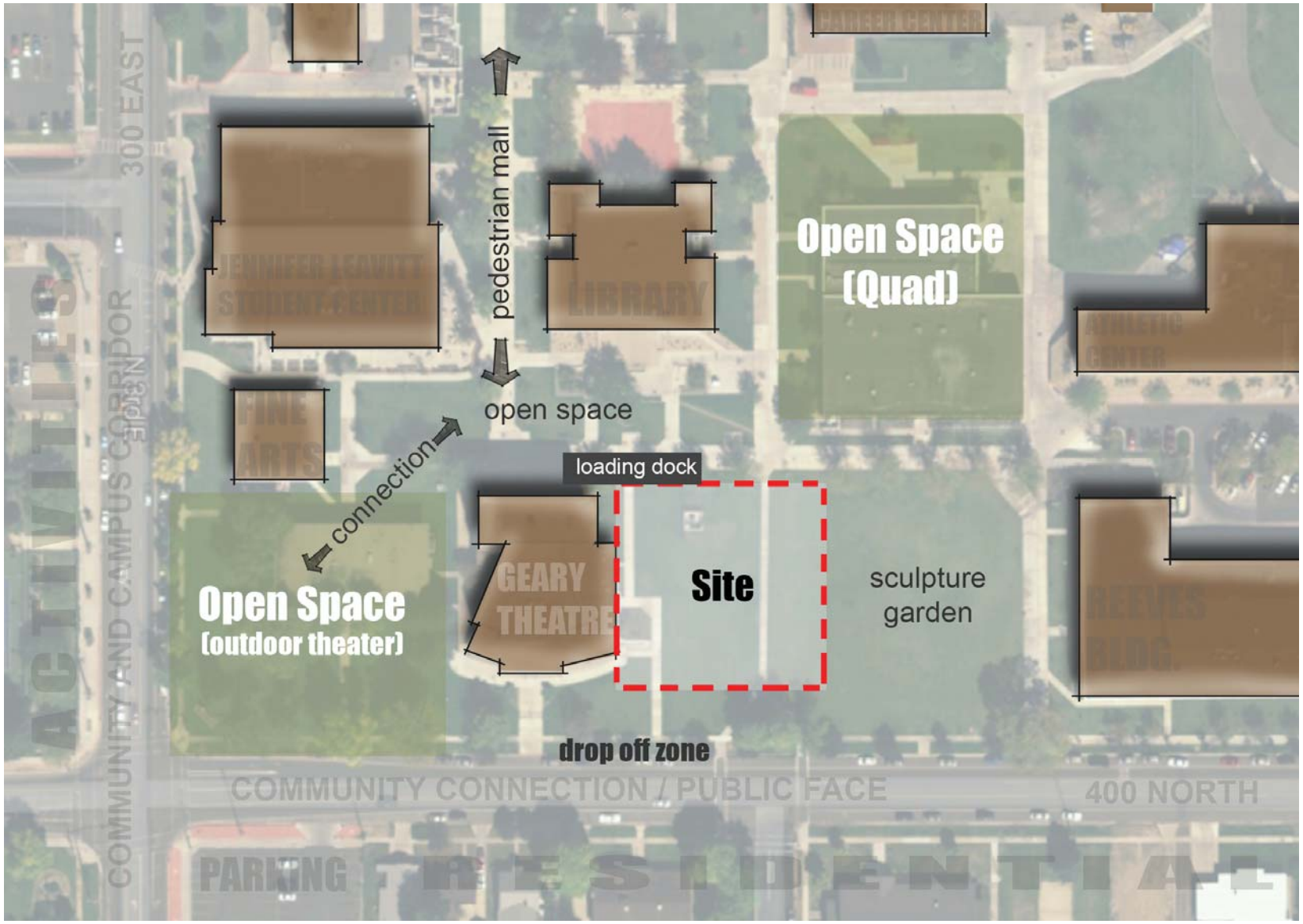
PARKING
No additional parking will be required for this project.

Site Climate/Orientation



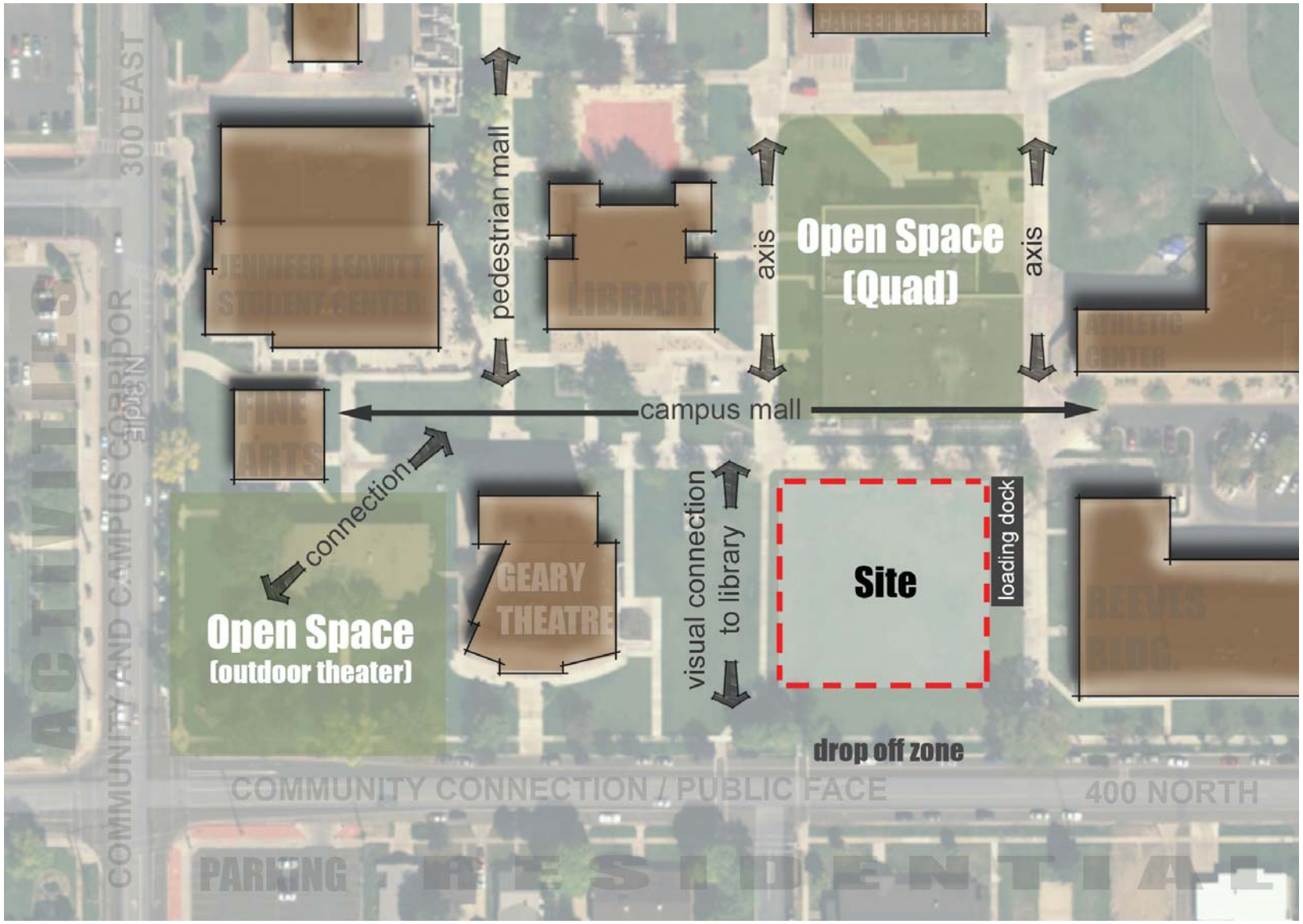
02 Site Analysis

Site Option 1



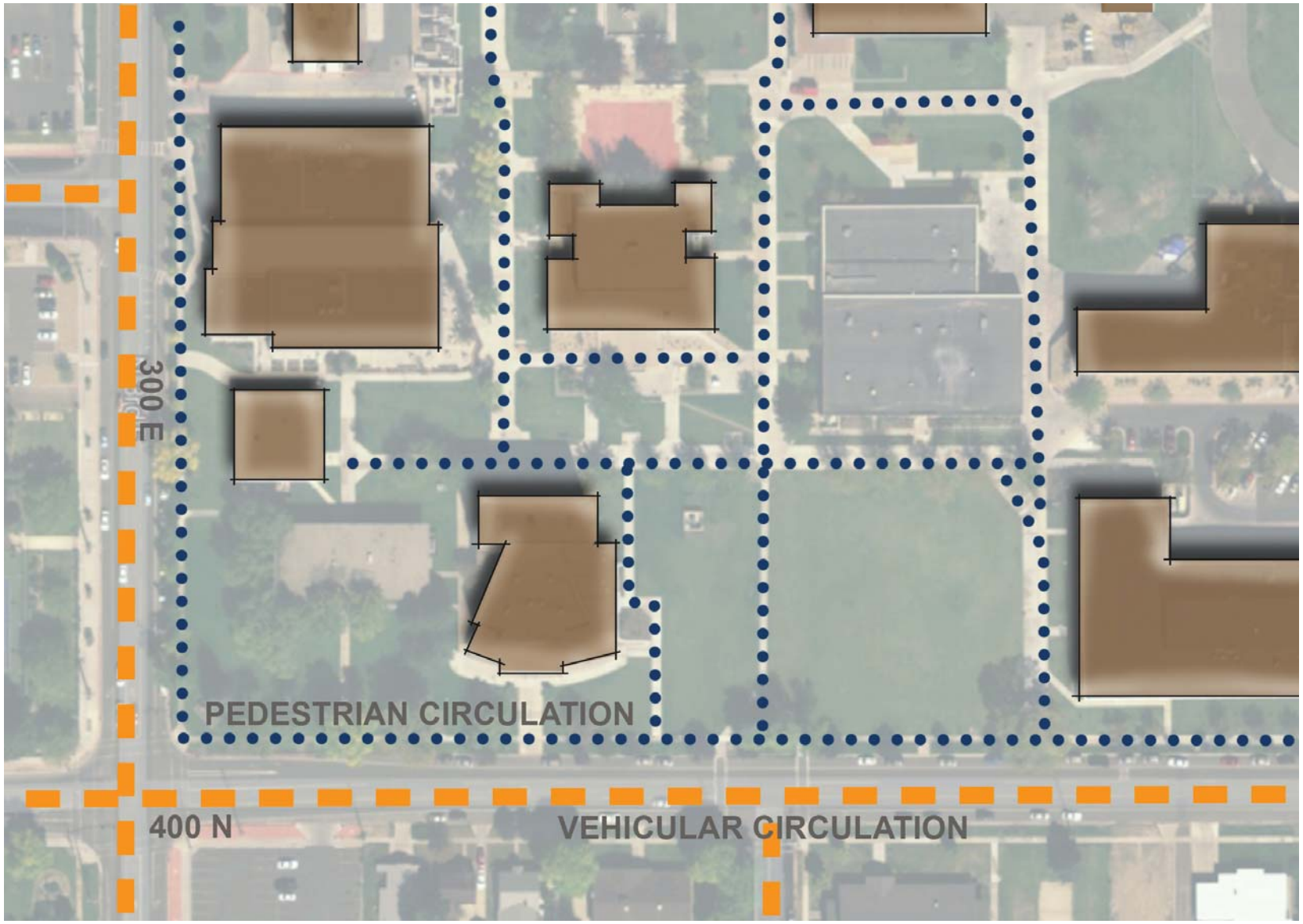
METHODSTUDIO INC.

Site Option 2



VEHICLE TRAFFIC FLOW
Primary east-west vehicle traffic for the new CIB building will occur along 400 N, while primary north-south vehicle traffic will occur along 300 E. No new parking will be added, thus avoiding the need for a high volume of vehicular access to the site. However, potential locations for a loading dock will be assessed, preferably near the Geary Theatre building.

PEDESTRIAN TRAFFIC FLOW
Primary east-west pedestrian traffic will occur along the south of the site (400 N) and along the north border of the site: primary north-south pedestrian traffic will occur on campus sidewalks placed between the project site and the Geary Theatre building (to the west) and Reeves building (to the east). These paths connect directly to the pedestrian network throughout campus.

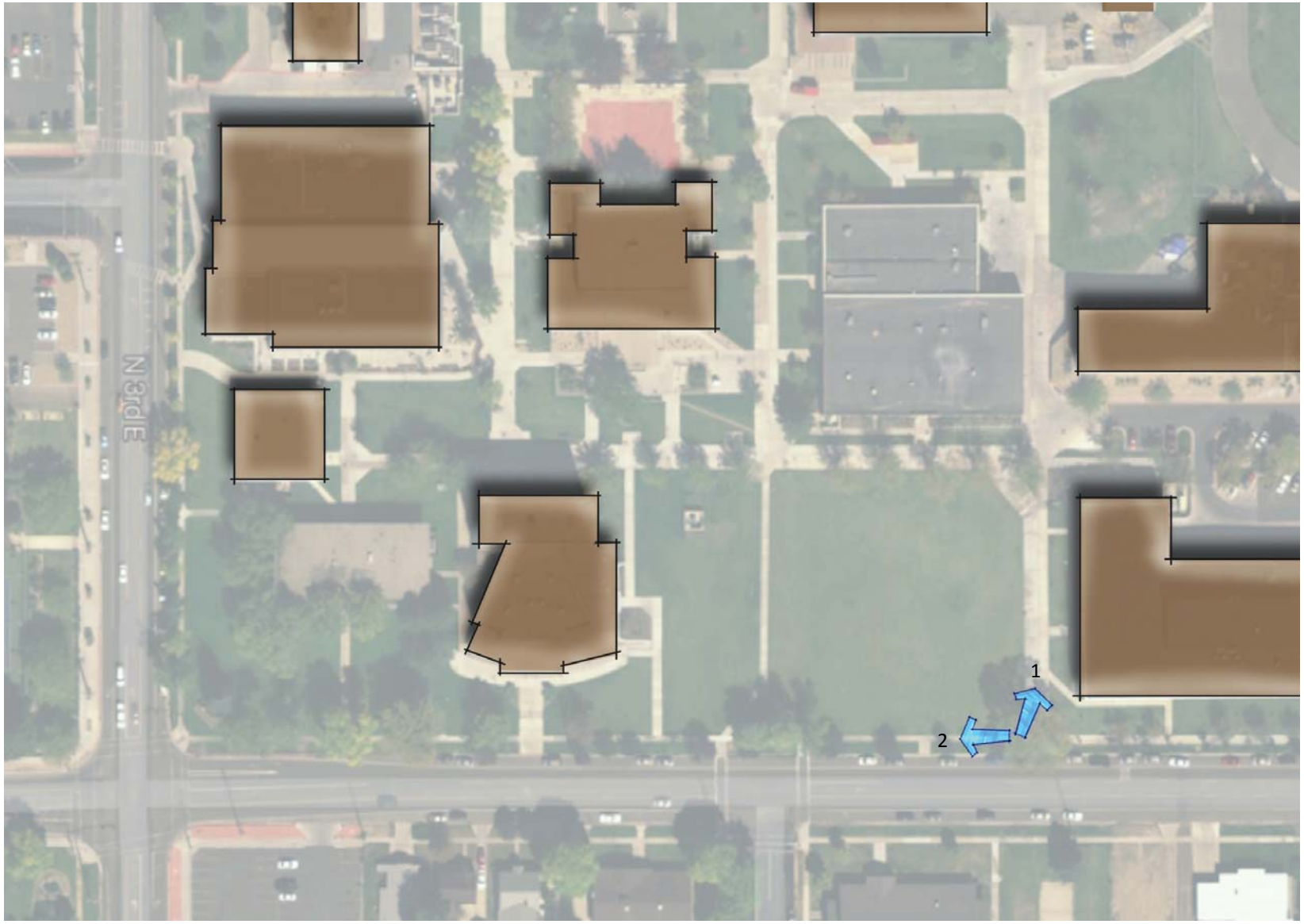

300 E
PEDESTRIAN CIRCULATION
400 N
VEHICULAR CIRCULATION

02 Site Analysis

Site Views

View 1
(looking northeast)

View 2
(looking west)

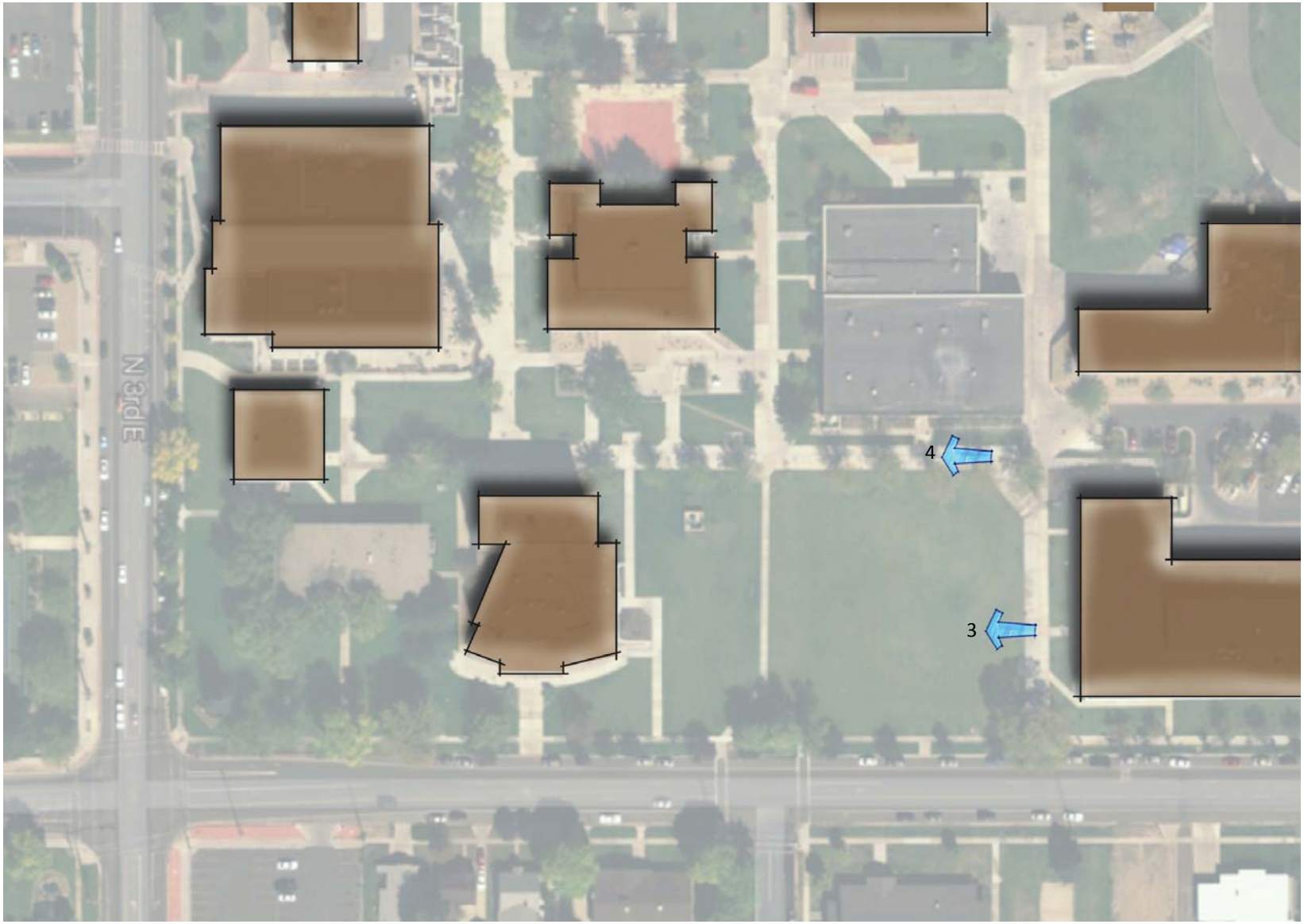

N 3rd E
1
2

02 Site Analysis

Site Views

View 3
(looking west)

View 4
(looking west)

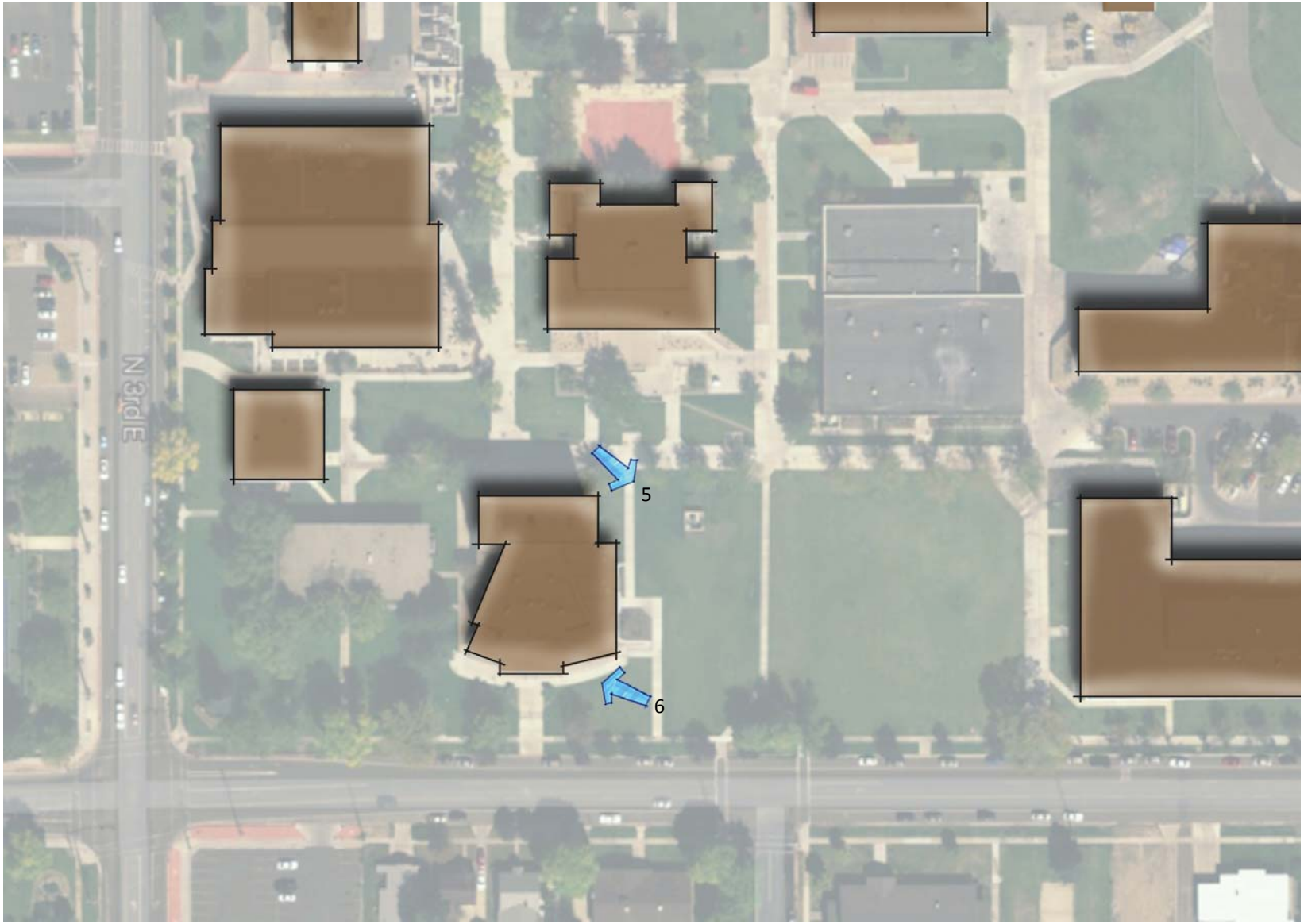

N 3rd E
4
3

02 Site Analysis

Site Views

View 5
(looking southeast)

View 6
(looking northwest)


N 3rd E
5
6

02 Site Analysis

Site Views

View 7
(looking northeast)

View 8
(looking east)

N 3rd E
7
8

03 Building Requirements

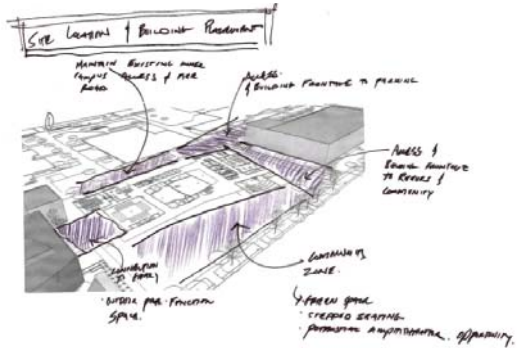
Architectural Narrative/Vision

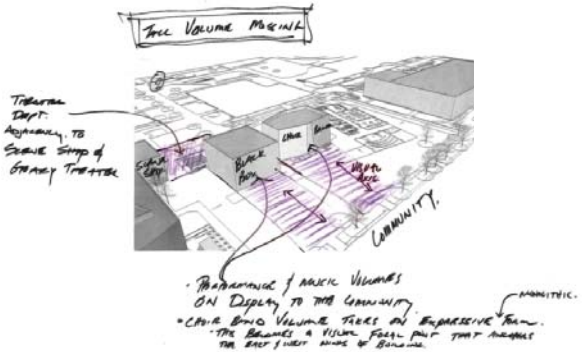
BUILDING DESIGN

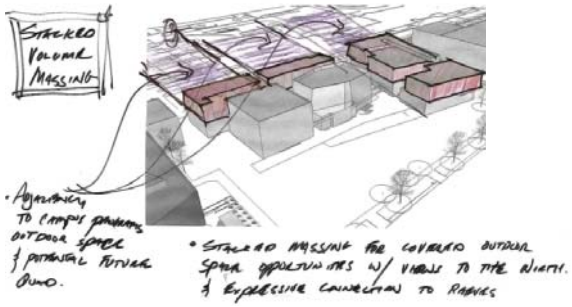
Throughout the duration of the programming effort, the architectural vision of the project has been discussed at length. Four major drivers have come to the forefront. USU Eastern has a significant desire to reconnect with the community in a significant way. The direction was given to provide a building that replaces several deteriorating structures on campus with longevity and flexibility in mind, while putting the programs on display, conveying a sense of transparency and creating an appropriate icon for the campus. The preferred location for the building is the open property between the Geary Theater and the Reeves building on campus. The site is bordered by 400 north to the south and is situated at the termination of 400 East; a road that was formerly the main access to campus. The new building is envisioned to be a 2-story structure with a strong architectural style. One that respects the contextual elements and heritage of the existing campus while establishing a contemporary higher education statement and expression to lead the programs and the college into the future.

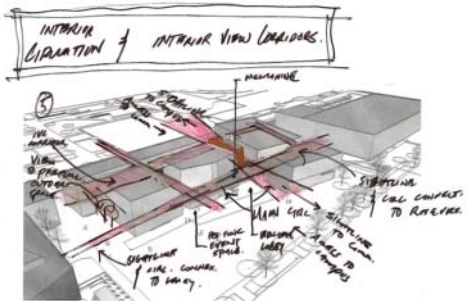
BRANDING & IDENTITY (PUTTING PROGRAMS ON DISPLAY)

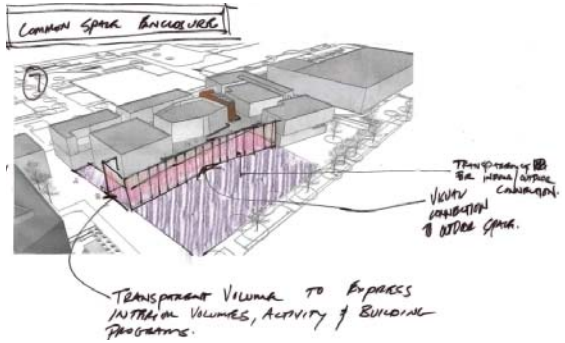
This unique facility will be the third cross-disciplinary instructional building on campus and represents the coming together of a multiplicity of programs into one building. The other two buildings already in use are the Western Instructional Building and the Reeves Building each containing varying departments and general classrooms within. This Central Instructional Building (CIB) will house general classrooms, as well as the Communications, Art, Theatre, Music, & Criminal Justice departments. With the overlapping uses and coming together of multiple programs, each department expressed the desire to establish an identity within the building. This request initiated a conversation of branding each department and finding a way to "put each program on display". With this in mind considerations must be made on how to achieve this and create identity while maintaining a cohesive language with the architectural and interior design of the building.

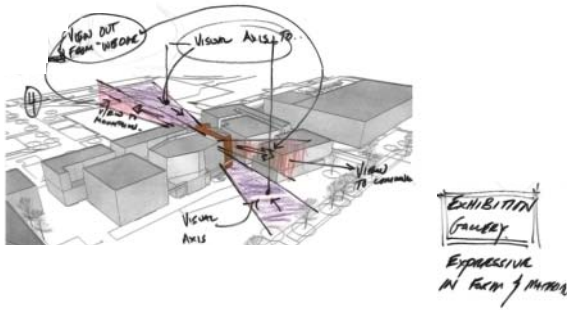












USER GROUP INTERACTION

With any campus or cross-disciplinary building, there are varying user groups that utilize and interact with the building. The building has three distinct user groups made up of students, faculty, and the public. The steering committee has expressed the desire to find opportunities within the building where these three user groups can interact. This can happen in the public event spaces such as the Black Box Theatre as well as within the Choral Rehearsal and Instrument Rehearsal Rooms that will be used for public events on occasion. However, in addition to these public forums for community, student, and faculty crossover, the Exhibition Gallery, common lobby space and circulation are great venues for this to occur as well. These spaces should be celebrated and serve as the bridge between the distinct user groups. This can only serve to enrich and enhance the learning environment and quality of space within the facility. It must be done however without compromising the function of each of the departments and maintaining appropriate security and privacy where required.

BUILDING MASSING AND FORM

There is a strong desire that this building serve as an icon for the campus. The preferred siting of this building between the Reeves and Geary provides a prominent location to achieve this end goal. As considerations for massing and the design and form of the building are studied, it is strongly encouraged that the design of the facility take advantage of opportunities to put the building on display and create a sense of stature and prominence to the public edge of the campus along 400 north. Consideration must also be given to breaking up the massing of the building and providing articulation to the facades on each elevation of the structure as they face the different sides of campus. This can be done both horizontally and vertically with the massing or within the fenestration or architectural detail of the elevations. Attention should also be given to stepping the building and breaking down the massing to address scale, in particular to respond to the scale of the Geary and Reeves building to the west and east respectively.

Design sensitivity should also be given to the campus master plan and any potential future buildings.

BUILDING ORIENTATION
The building should be oriented to not only meet the goal of serving as a gateway building to the community but should also take advantage of sustainable practices in response to solar orientation, wind, and taking full advantage of views and natural day lighting. Strong considerations must also be given to existing buildings that surround the site. Existing utility infrastructure, pedestrian & vehicular circulation, grading, and parking should also be carefully studied and thoughtfully contemplated as design of the facility moves forward. In addition, relationship and adjacency to outdoor amenities is an important element to the student experience on campus and must be considered in the development of the building location and orientation.

NATURAL LIGHT AND VIEWS
Every opportunity to utilize natural light to maintain and enhance view corridors should be thoroughly evaluated in the design of the facility. In particular all public spaces, offices, and classrooms must maintain access to natural light and views. This is critical element that impacts both the comfort and well-being of the occupants as well as the building's energy efficiency.

In an effort to achieve this goal the design could consider the use of large windows, clerestory windows, skylights, and other potential transparent or translucent materials. Window openings should be oriented to take advantage of soft northern sky or controlled southern exposure. Windows on the west and east sides of the building should also be controlled or minimized.

Additionally, attention to the type of glass will be important to controlling and minimizing the amount of heat gain and harmful UV exposure. Balancing the type of glass with the size and orientation will be critical to meet the minimum quantities prescribed by code and to achieve the goal of LEED Silver Certification and Utah State mandated high performance standards.

CONTEXT

MATERIAL

PRECEDENT

EXTERIOR MATERIALS

The architectural response should consider the context of Price City, Carbon County, and the surrounding areas. Existing buildings utilize materials such as brick, stone, precast concrete elements, integral colored honed or split-faced CMU, metal panel, and glass elements. It is the desire of the University to explore a palette of materials that respects the regional context and creates a rich and welcoming expression in the architecture.

Generally, selected materials should be easily maintained and durable. The building should be designed to be warm and inviting to students, faculty, the local community and all that interact with the University. Consideration may also be given to selecting materials that respond and tie back into USU's main campus in Logan.

INTERIOR MATERIALS

The design of the interior spaces should create a welcoming learning environment that is warm, bright, inviting, and promotes good health. Selection of interior finishes and materials should be responsive to the use of each of the spaces as outlined in this program document. Consideration must also be given to texture, color, acoustics, sustainability, and light reflectance and how they affect each space.

Selection of materials should be carefully considered in an effort to create an appropriate response to the function of each space while maintaining a cohesive language throughout the building. In regard to durability and maintenance, generally the selection of materials within reason should consider a 50-year building standard and should correspond to the amount of traffic and anticipated use of each space.

03 Building Requirements

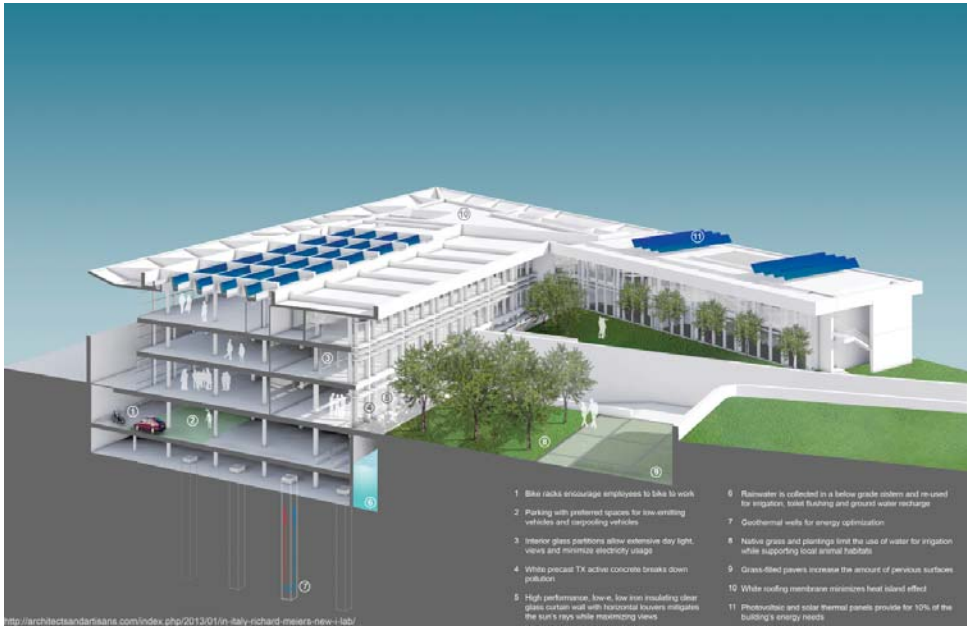
Architectural Narrative/Vision

SUSTAINABLE DESIGN

The State of Utah has adopted the policy that all future State owned buildings are required to be designed to a minimum of LEED® Silver Certification. With this in mind, the design of the facility must incorporate sustainable practices while balancing budget parameters.

LANDSCAPE

The landscape plan will be one of sustainability and durability. The plant materials should be native to the Price city and surrounding area, and once established will require low amounts of water to maintain. The vegetation that surrounds the building will consist of larger trees that will break up the building facade and allow for easy maintenance. All of the main entrances will have an identifying landscape that will help to create a warm welcome environment to the students, faculty, and visitors. These plant materials should also be low maintenance and small enough not to provide a security risk. All the vegetation will be positioned in a way to allow various views around the buildings and into the entry plaza to help maintain the overall security of the site. The irrigation system will be a high efficiency system. The planter beds and islands will utilize a drip system and the turf areas will use a combination of larger rotors and small pop-up spray heads. The new building site will use low trajectory nozzles in the sprinkler heads to help combat wind and provide the most efficient use of water. This use of drip and low trajectory nozzles will also assist in keeping the building from being sprayed and developing water stains.



USU

OVERVIEW
For the USU Eastern new Central Instruction Building (CIB) the materials, design and construction will conform to the standards established by the Utah State Division of Facilities Construction and Management (DFCM). Furthermore, it will conform to all building, accessibility codes and requirements and the energy codes adopted by the State of Utah at the time of design and construction, whether or not they are specifically referenced in this document.

It is the Design Team and the Architect of Record's responsibility to verify and use all the latest revisions, editions and adopted version code documents. If there are conflicting standards, code provisions and/or regulations, the most stringent will govern unless such requirements are waived in writing by the Utah State Division of Facilities Construction and Management.

DESIGN STANDARDS
Partial list of applicable codes and standards:

- National Electric Code (NEC) w/ Utah Amendments 2011
- Life Safety Code NFPA 101 w/ Utah Amendments
- International Building Code (IBC) 2012 w/ Utah Amendments
- International Fire Code (IFC) 2009
- International Mechanical Code (IMC) 2012
- International Plumbing Code (IPC) 2012
- Laws, Rules, & Regulations of the Utah State Fire Marshal
- Americans w/ Disabilities Act Title III, 1991/1998 (ADA)
- Planning & Design Criteria to Prevent Architectural Barriers for Aged & Physically Handicapped (4th Revision, w/ lever hardware amendment)
- International Energy Conservation Code 2009
- International Fuel Gas Code (IFGC) 2012
- EIA/TIA, Electronics Industries Association / Telecommunications Industry Association
- IEEE 1100-1999, Recommended Practice for Power & 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 Alarm Code
- ASHRAE Indoor Air Quality 62-2001 & Addendum 62
- Utah Code for Energy Conservation in New Building Construction (ASHRAE Standard 90.1-1989)
- American Society of Heating, Refrigeration & Air Conditioning (ASHRAE)
- Occupational Safety & Health Administration (OSHA)
- Sheet Metal & Air Conditioning Contractor National Association (SMACNA)
- Underwriters Laboratory (UL)

- American Society of Testing Materials (ASTM)
- American Standards Association (ASA)
- DFCM Design Criteria for Architects & Engineers
- DFCM Indoor Air Quality Criteria

OCCUPANCY CLASSIFICATION

The occupancy presented in this package is for preliminary programming and planning purposes. The occupancy determination must be confirmed by the Architect of Record with the State Building Official and the State Fire Marshall at the time of design.

ADA ACCESSIBILITY

The new USU Eastern Central Instruction Building is required to be in compliance with the American with Disabilities Act, Title III, 1991/1998 (ADA). The Utah State Building Board has adopted the following additional requirements:

- All public entries to the building will be ADA compliant with automatic door operators including required vestibule doors.
- One set of accessible Rest room doors shall be equipped with automatic door operators including vestibule doors if applicable.
- ADA compliant parking shall be provided.

03 Building Requirements

2012 International Building Code Review

TYPE OF CONSTRUCTION

(Chapter 6)	Type IIA

OCCUPANCY

(Chapter 3) Educational/University function	B	(section 304)
Black box Theatre	**A-1**	(section 303)
Large Classroom/multipurpose room	A-3	(section 303)
Shop areas- welding/manufacturing	F-1	(section 306)
Occupancy Separation required	No	(A-1 occ. selected throughout)
Occupancy Separation	None required	

FIRE SPRINKLERS Yes

FRONTAGE

(Section 506.2)	Assume .75

STORIES ALLOWED

(Table 503)	A-1: 4 stories

ALLOWABLE BUILDING AREA

Occupancy	A-1
Program area sf	56,630 total (both floors)
Basic allowable area:	
Table (503) per floor	15,500
Frontage increase (506.2)	1.75
Multi story increase (506.4.1)	x2
Sprinkler increase (506.3)	54,250/floor (108,500 sf total)
Actual/Allowable (506.41)	26%

FIRE-RESISTIVE REQUIREMENTS

Structural Frame- including columns, girders, trusses	1 HR
Bearing Walls- Exterior walls	1 HR
Interior walls	1 HR
Non Bearing walls- interior/exterior	0 HR/interior, 1HR/exterior
Floor Construction-including supporting beams and joists	1 HR
Roof Construction- including supporting beams and joists	0 HR, 1HR (depending upon location above structure)

The occupancy classification is determined by the IBC 2012 definition and confirmed by the Architect of Record and the State Fire Marshall.

USU Eastern is required to be in compliance with the American with Disabilities Act as adopted by the State of Utah and applicable Utah State Building Board adopted amendments.

The Central Instruction Building will conform to the standards established by the Utah State Division of Facilities Construction and Management (DFCM) and it will conform to all building, accessibility codes and requirements, and the energy codes adopted by the State of Utah at the time of design and construction.

STRUCTURAL SYSTEMS NARRATIVE

OVERVIEW

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 as determined by the acoustic and vibration sensitivity of the structure also should be addressed.

STRUCTURAL / SERVICE COORDINATION

Layout of the structural grid will need to respect the classroom, office, Black Box Theater, Band and choral rooms, and public area spaces established for the various building 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 and limit penetrations of major structural members.

BUILDING CODES & STRUCTURAL DESIGN STANDARDS

The Building Codes and Design Standards that apply to this building are:

- DFCM Design Manual, Current Version
- International Code Council (ICC), IBC-2012 International Building Code as adopted by the State of Utah
- American Society of Civil Engineers, ASCE 7-10 Minimum Design Load for Buildings
- American Institute of Steel Construction (AISC), AISC 360-10 Specification for Structural Steel Buildings, AISC 341-10 Seismic Provisions for Structural Steel Buildings
- American Concrete Institute (ACI), ACI 318-11 Building Code Requirements for Structural Concrete, ACI 530-11 Building Code Requirements for Masonry Structures

- American Iron and Steel Institute (AISI), Standard for Cold-formed Steel Structural Members
- American Welding Society (AWS), D1.1 Structural Welding Code
- Steel Joist Institute (SJI), for Open-web Steel Joists and Girders
- Steel Deck Institute (SDI), for Metal Roof & Floor Deck

GEOTECHNICAL DESIGN CRITERIA

A preliminary geotechnical report (offered as Appendix VI) for the site has been completed by RB&G Engineering. This report indicates that the site has very low bearing capacity due to the presence of soft lean clay layers. The Site B location borings indicate these soft clays to depths up to 15' deep. Spread footings could be incorporated at this site if the existing clays are removed and replaced with imported, compacted structural fill. On-site materials cannot be reused. Ground water was encountered at depths as shallow as 8', therefore dewatering of the excavation would be required. This is the option recommended by the geotechnical engineer. Alternately, deep foundations could be used to support the structure. The report indicates 24" to 36" diameter caissons with shafts extending to a depth of 20' to 25' and extending at least 5' into competent claystone bedrock. Micropiles, for light loads, could be used. Under the deep foundation option it is also recommended that the on grade slabs be supported on deep foundations to prevent adverse floor settlement. As the report provided is preliminary, a final report should be provided with the following minimum information:

- Soil bearing capacity (provided via. Addendum No. 1, October 9, 2013)
- Deep foundation requirements including sufficient information to analyze resistance to lateral forces.
- Potential differential settlements
- Potential for expansion or collapse of soils due to moisture changes
- Liquefaction potential
- Groundwater restrictions
- Seismic considerations, coefficients, fault traces, etc.

- Lateral bearing pressures – active and passive
- Alternate foundation systems

STRUCTURAL DESIGN CRITERIA / BASIS OF DESIGN

The structural systems in the facility shall be designed to meet the requirements of the 2012 International Building Code (IBC) and the Design Criteria Manual adopted by the Utah State Building Board. The following minimum requirements should be anticipated:

- Risk Category: Category III (Buildings and other structures with a capacity greater than 500 for colleges or adult education facilities)
- Wind Loads
  Basic Wind Velocity: 120 mph, (3 second Gust)
  Exposure Type: "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 systems
  Wind Importance Factor, Iw: 1.00
- Seismic Loads
  Short Period Mapped Acceleration: Ss = 0.47 g
  Long Period Mapped Acceleration: S1 = 0.15 g
  Site Class: C (per geo. report for Area B & structural fill option) D (per geo. report for Area B & deep foundation option)
  Seismic Design Category: C
  Seismic Importance Factor, Ie: 1.25

- Roof Loads
  Ground snow, pg: 43 psf
  Calculate roof snow load as specified in the Utah Uniform Building Standard Act Rules R156-56 issued January 1, 2002. Design for snowdrift where appropriate. Roof live loads shall not be less than that specified in IBC 1607.11.
  Snow Importance Factor, Is: 1.10
- Floor Live Loads
  Floor design live loads shall be in accordance with the latest edition of the DFCM Design Criteria Manual and the 2012International Building Code and as follows:
  1. 80 psf, unreduced, except for column and footing designs
  2. 15 psf movable partition load
  3. Areas of concentrated standard file storage - 125 psf
  4. Floor areas supporting high density rolling files – 225psf, or actual load
  5. Paper storage areas – 250 to 350 psf as appropriate
  6. UPS Battery Storage areas – 250 to 450 psf as appropriate
  7. Mechanical Equipment Rooms – 125 psf minimum or as required by actual equipment

  Areas where heavy load concentrations exceed the normal loading requirements shall be designed for the specific load case.
  Note: The more stringent requirement between the 2012 IBC, the DFCM Design Criteria Manual, and the loads given above shall govern.

FLOOR VIBRATION CRITERIA

Control of suspended floor and roof structure vibrations due to human and mechanically induced excitation forces shall be considered in the selection of the building structural floor and roof framing systems.

ANTICIPATED CONSTRUCTION

It is anticipated that the building will be supported on conventional reinforced concrete spread footings over 10' to 15' of imported structural fill. The option to incorporate a deep foundation will also be considered and compared for budgetary impact.

Suspended floor areas are anticipated to consist of concrete slabs on metal deck supported by steel wide flange floor framing and steel columns. The floor framing will incorporate welded studs to make the floor slab composite with the beams. The roof framing is anticipated to consist of open web steel joist and wide flange beams supporting steel roof deck. There are a number of spaces that will require clear spans in the 60' range. These spaces will be most economically located in the single story areas of the building.

The lateral force resisting system is anticipated to incorporate steel braced frames and/or concrete shear walls. Moment frames will not be used in conjunction with concrete shear walls, as these systems are not compatible for this building. Shear wall systems will be considered where deemed appropriate with architectural expression and space planning needs and flexibility.

FUTURE BUILDING EXPANSION

The A/E designers of the building shall not consider potential future horizontal and/or vertical expansions because:

- Future vertical expansion is not anticipated.
- Future horizontal expansion of the structure is not anticipated.

TESTING & INSPECTION

The Architect/Engineer, and the selected testing lab, shall perform periodic construction observations, testing, and special inspections, as outlined in the DFCM Design Criteria for Architects and Engineers. 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 for directly by the owner.

MECHANICAL SYSTEMS NARRATIVE

GENERAL
The mechanical system will to provide heating, ventilation and air conditioning required for the new building functions. The mechanical system will be designed to provide a safe, economical, energy efficient, low maintenance type system that is balanced with the projects sustainability goals. All mechanical systems will have a proven track record of high quality, energy efficiency and environmental control.
Design will comply with the DFCM Design Guidelines and the USU Design Guidelines.

MECHANICAL DESIGN CRITERIA
Comply with the 2012 edition of the International Codes:
International Building Code (IBC),
International Mechanical Code (IMC)
International Plumbing Code (IPC)
International Fuel Gas Code (IFGC)
International Energy Conservation Code (IECC)
International Fire Code (IFC)
National Electric Code (NEC)
All state amendments.
Comply with all applicable local, state, and federal codes and regulations.

HVAC system to comply with the following standards, most current edition:
ANSI/ASHRAE Standard 62-2010: Ventilation for Acceptable Indoor Air Quality
ANSI/ASHRAE Standard 55-2010: Thermal Environmental Conditions for Human
Occupancy
ANSI/ASHRAE 90.1-2010: Energy Standard for Buildings
SMACNA Sheet Metal and Air Conditioning Contractor's National Association standards
Industrial Ventilation: A Manual of Recommended Practice

Heating and Cooling Load Calculations: Size the building heating and cooling systems based on undiversified calculated loads for space and process equipment. Include 10% safety factor for the heating load calculations and no safety factor for the cooling load calculations.
Infiltration: Design for 30 MPH wind when calculating infiltration loads and building pressurization controls. Design at the DFCM Standard of 0.10 CFM/Square Foot of wall area.
Design for Energy Conservation and Sustainability. Project requirement is LEED Silver.

DESIGN CONDITIONS
Outside Design Conditions: Use the following climate data from ASHRAE Fundamental Handbook for Price, Utah:

Elevation	5902 FT
Summer Design Dry Bulb Temp. (ASHRAE 1.0%)	90° F
Summer Mean Coincident Web Bulb (ASHRAE 1.0%)	59° F
Cooling Tower Web Bulb Temp. (ASHRAE 1.0%)	61° F
Winter Design Dry Bulb Temp. (ASHRAE 99%)	8° F
Winter Design Dry Bulb Temp. (VBFA Standard)	-10° F

Indoor Design Conditions: Use the following indoor design conditions from AHSRAE Standard 55:

1. Classrooms, Auditoriums, Computer Labs, and student spaces:
   - Summer 72° F +/- 4° F
   - Winter 68º F +/- 4º F
2. Laboratory and Laboratory Support:
   - Summer 72º F +/- 2° F
   - Winter 70° F +/- 2° F
   - Relative Humidity (controlled) 30%-59%
3. Mechanical Rooms, Electrical Rooms, and Elev. Equip. Rooms:
   - Summer 85° F Ventilation Only
   - Winter 60° F min
4. Telephone/Data/Communication/Server Rooms:
   - Year Round 75° F (USU Standard)
5. Unoccupied Spaces:
   - Summer 95° F

Noise Criteria: Design the heating, ventilating and air conditioning systems to meet the following:

1. Laboratory Areas with Fume Hoods or BSCs: NC = 50 - 55
2. Laboratory Areas without Fume Hoods or BSCs: NC = 45 - 50
3. Laboratory Support Areas: NC = 50 - 55
4. Open Offices: NC = 40 - 45
5. Private Offices: NC = 30 - 35
6. Conference Rooms: NC = 25 - 30
7. Classrooms: NC = 25 - 30
8. Circulation Spaces, Lobbies: NC = 35 - 40

Pressure Relationships: Design the heating, ventilating and air conditioning systems to meet the following:

1. Building: Positive to outside
2. Laboratories: Negative to adjacent spaces
3. Toilet Rooms: Negative to adjacent spaces

VENTILATION REQUIREMENTS

Ventilation will comply with the IMC & ASHRAE Standard 62. Provide a building relief air system to maintain the building to be +0.03-0.05 in. W.G. building static pressure.

HEAT SOURCE

The heat source will be the campus central high pressure steam system. New direct buried steam and condensate pipes will be extended from the existing steam tunnel into the new building. A steam pressure reducing station will reduce the pressure to 15 PSI.

STEAM CONDENSATE SYSTEM

The steam condensate will be steam pressure powered type. Two main condensate pumps will be provided in the Mechanical Room.

COOLING SOURCE
The cooling source will be a two stage cooling system. There will be direct evaporative cooling, and chilled water cooling. Chilled water will be provided from the Central Chilled Water Plant. Chilled water lines will be extended from the existing tunnel to the new building. An indirect evaporative system should be considered. There are currently no cooling towers on campus.

AIR HANDLER
The air handler will be located indoors. The air handler will have outside air and return air mixing dampers, pre-filters, final filters, plenum supply and return fan(s), glycol preheat coil, chilled water cooling coil, and direct evaporative cooling section.

AIR DISTRIBUTION SYSTEM
The system will be a variable air volume (VAV) system with terminal VAV boxes with hot water reheat coils. Consideration is being given to a thermal displacement ventilation (TDV) system. Air would be supplied at the floor and returned at the ceiling. A TDV system will save cooling energy and heating energy. The indoor air quality is also improved. The supply and return/relief fans will be on VFD's. The ceiling spaces will be used for return air plenums.

HEATING HOT WATER SYSTEM
The heating hot water system will include the two steam to water heat exchangers. Each heat exchanger will be sized for 60% of the load, for redundancy. The hot water system will be variable flow served by two parallel pumps, with VFD's. There will be a glycol heat exchanger and variable flow pumps for the preheat coil.

CHILLED WATER SYSTEM
The chilled water system will be variable flow. The pumps in the Central Chilled Water Plant have adequate pressure to serve the new building.

EXHAUST AIR SYSTEM

A general exhaust system will serve the toilet rooms, janitors closets and other general exhaust. The welding room will have a dedicated general exhaust system. The wood shop will have a dedicated exhaust system with a sawdust collector located indoors. Wood shop air will be recirculated through the sawdust collector filtration system and returned to the space. There will also be general exhaust in the wood shop.

AUTOMATIC TEMPERATURE CONTROLS

There will be a DDC system. The system will be as approved for the Campus. It will have DDC controllers and electric actuators. The existing Campus control system is INET by Utah Yamas Controls.

FIRE SPRINKLING SYSTEM

Automatic wet-pipe fire sprinkler system. The fire main line will be served from the water main north of the building.

PLUMBING SYSTEMS

Low flow fixtures will be used. The water closets will be 1.28 gallons per flush. The urinals will be 1/8 gallons per flush. The lavatories will be 0.5 GPM.

The water heater will be a an instantaneous steam-to-water heat exchanger. Steam is available from the Central Plant year around.

The domestic water service will come from the water main located north of the new building.

The building sanitary sewer line will connect to the sewer main in 400 North.

ELECTRICAL SYSTEMS NARRATIVE

CODES, STANDARDS, AND REFERENCE MATERIALS

Codes and Standards which are directly applicable to design of the electrical systems are listed below:

- ADA, Americans with Disabilities Act
- ASHRAE 90.1 Energy Code
- IECC, International Energy Conservation Code
- DFCM, Division of Facilities Construction and Management, Design Requirements
- DFCM, State Buildings Energy Standard
- USU, Utah State University, Design Standards
- EIA/TIA, Electronics Industries Association/ Telecommunications Industry Association
- IBC, International Building Code
- IESNA, Illuminating Engineering Society of North America, appropriate Recommended Practices and 10th Edition of the IES Lighting Handbook
- NFPA, National Fire Protection Association (applicable sections including but not limited to):
    - NFPA 70, National Electrical Code
    - NFPA 72, National Fire Alarm Code
- Standard Broadcast Wiring and Installation Practices", as excerpted from "Recommended Wiring Practices," Sound System Engineering, (2nd Edition), D. Davis The Basics of Audio and Visual Systems Design, Revised Edition, Ray Wadsworth / International Communications Industries Association, INC.
- UL, Underwriter's Laboratories
- Utah State Fire Marshal Laws, Rules and Regulations

SITE ELECTRICAL
Electrical service for this project will be fed from the USU Eastern 12,470V distribution system on campus and shall follow standard USU design requirements for such installations. In addition to the new electrical service for this building, the existing building site will require relocation and/or consolidation of the existing Geary Theatre electrical service transformer and gear. The Geary Theatre and Music Center will need to be re-fed at 208V from the new building. The design will combine the new building and Geary Theatre into a single service or electrical yard. Final location and direction will be finalized later during design.

SITE TELECOMMUNICATIONS RACEWAYS
Minimum of (2) 4” conduits shall be provided from the campus communications backbone into the new building. Communications service shall run from the Jennifer Leavitt Student Center Room 107 through the existing utility tunnel and then branch off with new communications ductbank into the new building. Final design will be coordinated with the USU IT department. All telecommunications cabling will be provided by USU IT. Raceway only design shall be included in the electrical design. It is anticipated that 12SM/12MM fiber and 50 pair copper will be brought into the building.

BUILDING SERVICE & DISTRIBUTION

MAIN SERVICE
Service size is anticipated to be between 800-1200A at 277/480V, 3-phase, 4-wire for mechanical and lighting loads and a second service 1200-1600A at 120/208V, 3-phase, 4-wire for computer and 120V loads.

MOTOR CONTROL CENTERS
Motor control centers will be provided for areas where 6 or more motors (larger than 5 HP) are grouped and controlled by standard starters. All 3-phase motors 5 HP and larger will be provided with phase-loss protection. Provide disconnect switches within sight of all motors.

Provide variable frequency drives (VFD's) where required for mechanical equipment in compliance with DFCM and Campus requirements, and sized at least 10% over the connected motor load. The design electrical engineer may evaluate the variety of harmonic filtering and mitigation techniques and choose the best method to achieve this performance.

PANELBOARDS
Distribution panelboards will be provided in vertically stacked electrical rooms. The electrical rooms are to be centrally located as much as possible, while taking into account other building and architectural considerations. Ease and accessibility of running new and future conduits out of each room is an important consideration in defining the location of the rooms. Panelboards serving normal lighting and outlet circuits will be located on the same floor as the circuits they serve. All branch panelboards will have hinged front covers, as opposed to screw-on or latching covers.

SPARE CAPACITY
Switchboards, panelboards, transformers and other distribution equipment will be provided with 25% spare capacity and spaces/spares for future growth and flexibility. Electrical equipment rooms will have 25% additional space for future equipment.

BRANCH CIRCUITS
Branch circuits will 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 will be based on the equipment nameplate. Otherwise, no more than 6 convenience outlets per circuit or 4 outlets per circuit serving workstation computer terminals, on average, will be used. Sufficient capacity for plug-in task lights and other peripherals typical of desk items will be provided. Outlets with dedicated branch circuits (one outlet per circuit) are provided for lab equipment, vending machines, copy machines, break room counters, refrigerators, dishwashers, A/V cabinets and other locations likely to have equipment requiring dedicated

circuits. Each branch circuit homerun will have no more than 3 circuits per raceway. Dedicated neutrals for each phase conductor will be provided.

CONDUCTORS

All conductors will be copper. Conductors for branch circuits will be sized to prevent voltage drop exceeding 3% at the farthest load. The total voltage drop on both feeders and branch circuits will not exceed 5%. For measurement purposes, a load of 180 VA (1.5A) per outlet, with a 50% diversify factor will be assumed.

RACEWAYS

All raceways are minimum ¾"C. MC Cable is not allowed. Conduit is not allowed to be embedded in elevated concrete slabs. Cable tray system will be such that raceways do not extend more than 50' (approx.) to cable tray. Conduits will be stubbed to the cable tray and contain pull strings. Raceway is included for all security, audio/visual, and technology systems whether furnished as part of the construction contract or furnished by the Owner.

EQUIPMENT & FURNITURE

Furniture and equipment that is identified in the program will be provided with electrical connections.

FAULT CURRENT & COORDINATION STUDY

A fault current and coordination study will be performed to indicate available fault current at all points in the distribution system. New equipment will be rated for the amount of available fault current. Fuses or breakers will be selected to ensure minimum system outage due to overloads or fault currents. Set breakers with adjustable long time, short time, instantaneous and/or ground fault settings for optimum system coordination. Per the 2011 NEC, emergency systems will be selectively coordinated to the extent possible.

SURGE PROTECTIVE DEVICES

Surge Protective Devices (SPD's) and "noise" protection is provided at service equipment (each main) and on main 120/208V distribution panelboards in the facility which serve computer terminals. SPD units will be integral to the panelboard or switchboard.

It is recommended that additional surge strips be provided under the furnishings and equipment budget on an as-needed basis. The surge strip should be commercial-grade quality and have at least 26 kA per phase maximum surge rating.

OUTLETS

Outlets will be 20A, minimum. The program and space data sheets will be used as a guideline, but user input will be welcomed during the design. Unless noted otherwise, the following will be used as a general guideline where more specific requirements are not elsewhere identified. Each outlet location will be coordinated with the design team and end user during design. Where the term "outlet" is used, this refers to a 20A duplex receptacle outlet (unless otherwise noted).

Classrooms, Lecture Halls and other Instructional Spaces: Provide outlets for instructor's station, audio/visual equipment and each student. Ensure that there is at least one duplex 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.

Student Commons, Lounges and Study Areas: Provide power outlets for laptop computers, at least one duplex for 20% of user 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. For ultimate flexibility, a raised floor is being provided in selected areas (refer to Architectural description). In other areas, floor boxes, conduit stubs or poke-through type devices will be used to provide the required connectivity.

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. Provide sufficient outlets to accommodate task lighting for all staff workstations.

Conference and Board Rooms: One outlet for every 10' of wall space, plus one outlet dedicate to computer terminals on two walls. Provide floor outlets underneath conference room tables. Coordinate installation of outlets in conference table tops with furniture/millwork.

Lounges/Breakrooms/Kitchenettes: GFI Outlets on dedicated circuits every 4' on counter top plus dedicated outlets for refrigerator, microwave, dish washer, ice machine 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.

Labs: Provide outlets for instructor's station, audio/visual equipment and each student. Ensure that there is at least one duplex 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 hard wired power connections as required. Provide power to lab equipment.

Main Telecom MDF: Several outlets on emergency power around perimeter or room with circuit density to allow for at least 100 watts per square foot. Coordinate exact quantity required with the User groups and the anticipated equipment, including future provisions as well. UPS power is assumed to be rack-mounted, plug-in style and provided by the Owner. Racks and cable tray within these rooms shall be provided by USU IT.

Telephone/Data Closets (IDF): At least 6 quad outlets on emergency power with circuit density to allow for at least 50 watts per square foot. Provide a minimum 6-outlet surge/power strip in every equipment rack. UPS power is assumed to be rack-mounted, plug-in style and provided by the Owner. Racks and cable tray within these rooms shall be provided by USU IT.

Electrical Rooms: At least one outlet on emergency power.
Restrooms: One GFI outlet on wall adjacent to sink at counter height, plus one remote from sink at standard height for breast pumps, vacuum cleaner or power scrubber. Confirm final location with UVU.
Corridors, Lobbies: Provide at least one outlet every 15', on alternating sides of the corridor or lobby.
Stairs: One outlet at each landing and intermediate landing.
Storage Rooms (small), Janitors Closets: One outlet, near light switch.
Building Exterior: One WP/GFI convenience outlet near each entrance, or a minimum of every 120 feet; additional outlets as needed for special events. Coordinate with users during design.
Other Areas: Refer to individual space plan data sheets, and where not defined coordinate requirements with user during design.

GROUNDING
All feeder and branch circuit raceways will include an insulated equipment grounding conductor. Provide a grounding riser system throughout the telecommunications closets, with grounding bus bars mounted accessibly in each closet. In computer or server rooms with raised access flooring, provide a signal reference grounding grid in accordance with IEEE standard 1100-1999. All grounding systems will be bonded together per NEC requirements.

LIGHTNING PROTECTION
A lightning protection system analysis in accordance with NFPA has been completed and a lightning protection system is recommended. Therefore, a lightning protection system shall be included for the new Building. Engage an LPI-certified installer, designer and inspector for the system. Provide a UL Master Label System and comply with NFPA 780.

EMERGENCY SERVICE & DISTRIBUTION
An emergency diesel generator shall be provided for the new building. Generator location will be carefully selected

to minimize noise to occupants and neighbors (it shall not be located on the south side of the building). Generator exhaust shall be coordinated with HVAC intake to avoid intake of generator exhaust and fumes into the building. A sound-attenuating housing and skid-mounted, 48 hour double-walled fuel tank shall be included. Design at least two transfer switches: one for emergency and one for non-emergency ("stand-by") loads. Annunciate alarms adjacent to fire alarm panel. Design generator distribution panel with digital metering. The following will be provided with emergency power:

- Emergency egress and exit lighting
- Fire Alarm
- HVAC system for IT rooms
- Communications and Server rooms (including main computer room) – outlets, lights and air conditioning
- Electrical rooms – lights and outlets
- Security systems
- Fume Hoods as identified by USU
- Select lab equipment such as freezer and refrigerators as identified by the USU

LIGHTING

GENERAL

The basis for design shall be the IES and its Recommended Practices, such as RP1-93 "Office Lighting", RP3-00 "Lighting for Educational Facilities", and RP-33-99 "Lighting for Exterior Environments". For exterior lighting, indirect lighting, and other specialized task lighting, a point-by-point plot of illuminance establishing conformance with the Recommended Practices shall be furnished. Ballasts shall be 10% THD to minimize system harmonics. The amount of different lamp types shall be minimized, making replacement and maintenance easier. Comply with USU design standards for technology preferences. Lamps shall comply with EPA TCLP requirements.

ASHRAE 90.1 requirements shall be met and exceeded to meet the overall project requirement to beat this energy code by at least 20%. This will ensure compliance with the State High Performance Rating System, and contribute to the LEED credits sought for this building. Energy savings design techniques such as daylighting control, occupancy sensors, centralized and de-centralized control systems, energy efficient lamps/ballasts shall be used where practical to maximize energy efficiency. A preference shall be given to LED fixtures for both interior and exterior use.

EXTERIOR LIGHTING

Exterior lighting will use campus standard lighting fixtures and poles for walkways, parking and roadways as coordinated with USU during design. All exterior lighting fixtures shall be full cut-off to avoid sky glow and light trespass conditions unless standard USU fixture differs. Control exterior lighting utilizing combination photocell and time schedule control.

INTERIOR LIGHTING

Interior lighting will use fluorescent lamps or LED sources to the greatest extent possible, with the 4' T8 lamp and LED sources being the campus preference based on maintenance and cost. HID sources may be considered where needed to provide the required illuminance levels in large volume spaces, but the issues of restrike time and the desirability of instant on need to be addressed. Incandescent sources should be avoided altogether. LED sources will be evaluated and given preference where economically feasible. All fixtures shall be easily maintained and replaceable.

For offices and meeting rooms, pendant indirect lighting should be strongly considered, but must be carefully coordinated in rooms with projectors so that the fixtures will not interfere with the projected image. Select luminaires for areas where VDTs are planned which are designed to minimize ceiling reflections, and provide multilevel lighting control and task lighting to reduce the illuminance on the VDT. In addition, in rooms with audio visual, design lighting with variable or switched levels as indicated with a separate

controlled zone to reduce glare and illuminance on the audio visual display. In rooms with projectors, provide a separate bank of lighting control switches or station near the instructor position for ease of controlling lighting during presentations.

For IVC labs and classrooms, provide directional lighting with high vertical illumination to provide lighting for broadcasting and good camera images. Lighting shall be provided with dimming to allow light levels to be adjusted and to balance between good vertical illumination glare.

For spaces where glare control is not required, fluorescent, lay-in fixtures may be used. This includes corridors, workrooms, restrooms, common areas, equipment rooms and storage rooms. Recessed fluorescent downlights shall be used in areas where aesthetics call for an upgraded appearance, such as in main lobbies.

All interior lighting shall be controlled by some automatic means. This shall include vacancy sensors for smaller enclosed areas and relay control with clock and/or timer supervision for larger areas. The corridors and common areas shall be controlled through a lighting control system or occupancy sensors with local wall switch override. Wherever natural daylight is provided, incorporate day lighting controls to promote energy savings by using artificial lighting only as needed. This can be accomplished with automatic dimming, stepped switching or simple on/off control depending on the functional needs of the space. All lighting shall be “instant on” to facilitate quick response to demand and power interruptions.

Exit and emergency lighting shall comply with the IBC. Emergency lighting for means of egress to 1 fc average, 0.3 fc minimum, shall be provided. Emergency lighting shall be included in restrooms, electrical rooms, and communication rooms.

The following table summarizes lighting levels and control methods for important spaces.

LIGHTING SUMMARY TABLE:

TYPICAL AREA	ILLUMINANCE IN FOOTCANDLES	COMMENTS
Classrooms	30/50	Bi-level Switched
Labs	50+	Illuminated from above, higher light levels may be required at task locations
Black Box Theatre	20 ambient Plus Theatrical	Illuminated from above for house lighting, custom theatrical lighting and controls
Conference Rooms	40/50	Multi-zoned or dimmed
Custodial Rooms	10	
Lobby areas	15/30	Daylight Responsive if possible
Offices	20 ambient / 50 task	Daylight Responsive if possible
Restrooms	30	UT Health Dept. Code
Storage Rooms	10	
Toilet / Changing Rooms	30	UT Health Dept. Code
Corridors	10/20	

FIRE ALARM

CAMPUS FIRE ALARM & LIFE SAFETY

Comply with Utah State Fire Marshal's "Rules and Regulations" and USU requirements. Silent Knight is the preferred manufacturer at the USU Eastern Campus and shall be used as the basis of design. Design an addressable system capable of reporting back to central campus or for dial out monitoring by a third party as required by USU Eastern. Design strobes visible from all locations except private offices and coordinate with furniture and equipment plans, keeping in mind standard stack height is 90" and depth of wall shelving may hinder visibility from below. Locate smoke detectors through corridors and spaces open to corridors as required by Utah State Amendments. Provide duct detectors and fan shutdown where required by NFPA and the IMC, including detection of smoke at all return air shafts serving multiple floors. Coordinate location of the building annunciator with the AHJ. All other detectors and functions will comply with the referenced codes and standards. All fire alarm wiring will be in conduit. Final programming of system will be coordinated with the Campus Fire Marshal to ensure that the program will be compatible with campus fire alarm programming.

TELECOMMUNICATION RACEWAYS

RISER DISTRIBUTION

Stacked telecommunications closets are provided to serve each floor of the building. Equipment layout and wall space will be coordinated with the USU IT. Closets are located such that when cabling is routed through the raceway system provided, no cable length will exceed 290' regardless of the path. Consideration was given to the ease and accessibility of running new and future raceways and cables out of each room. Four 4" conduits from the MDF to the stacked IDF locations are provided and four 4" sleeves between floors. Both normal and emergency circuits are provided to each IDF, 3 each, with one fourplex per circuit. The air conditioning for these rooms will be on the generator.

HORIZONTAL RACEWAY DISTRIBUTION

A wire basket type cable tray distribution network is provided throughout each floor and into the IDF closets. Cable tray will be routed above corridors, common and similar areas. Where ceilings are inaccessible, provide an equivalent conduit system bridging cable trays in accessible ceilings. It will be the designer's responsibility to size the cable tray and raceway system for the intended cabling installation. Specify that cable runs take routes that will limit the total cable distance, between termination end points, to 290' or less.

VOICE/DATA DROPS

Each voice/data outlet location will consist of a 4" square box with two gang mud ring and one 1" conduit connected to the nearest cable tray. Refer to program space plans for quantities and coordinate exact locations with the users during design. As a minimum, provide one voice/data drop for each workstation, fax machine, copy machine, vending machine, desk, computer terminal and teaching station. Allow one voice/data box per 80 square feet for areas that are not specifically defined. Provide wireless access point locations as directed by USU IT.

AUDIO/VISUAL SYSTEMS

Provide empty raceways for all A/V systems including the distance education IVC equipment in the building as coordinated with USU A/V. All design, cabling, and equipment will be provided by USU.

Black Box Theater: Provide an audio system for high quality voice and music reproduction. Specify complete speaker system coverage of seating areas and performance areas using full range loudspeakers with a minimum frequency response of 40 Hz to 18,000 Hz + 3 dBA, with no less than 90 dBA sound pressure level present at any seat/performance area location, with no more than 14% articulation loss of consonants.

Provide wireless transmission systems for all assisted listening systems and wireless microphone systems that include distributed antenna systems. Provide wireless

microphone systems including, but not limited to head worn microphone elements and body pack transmitters for performers; and high power hand held transmitters for miscellaneous use.

Provide portable sound system equipment including, but not limited to, microphones, cords, stands, monitor/fill speakers. Include multi-boxes for input and output connectivity to portable media systems, wired microphones, and specialty speaker monitoring systems.

Provide a complete control booth appropriate for the designed sound system. Include a mixing console with inputs for all microphones plus 25% spare capacity, resident media sources for playback of audio programs, digital audio processors, power amplifiers, monitor speakers, auxiliary inputs and outputs, equipment racks, as well as all other necessary items.

Network all power amplifiers for monitoring and remote control using a computer in the control booth. The monitoring system will provide real time data for individual amplifier load, temperature, and current status.

Provide fully integrated remote control systems. Control systems will be programmed with macros to simplify sound system set up and operation. For example, without implying limitation, macros will be programmed for orderly power up and down of the sound system, speaker system zone muting procedures for various seating configurations; system preset selection for specialty functions such as drama performance, drama rehearsal, dance teams, lectures, etc…

Choral Room, Band Room, and Rehearsal Room:
Provide an audio system in each room for high quality music reproduction and recording. Specify full range loudspeakers with a minimum frequency response of 40 Hz to 18,000 Hz + 3 dBA, with no less than 85 dBA sound pressure level present at any seat location.

Provide wireless transmission systems for all assisted listening systems and wireless microphone systems that include distributed antenna systems. Provide wireless microphone systems including, but not limited to head worn microphone elements and body pack transmitters; and high power hand held transmitters for miscellaneous use.

Provide portable sound system equipment including, but not limited to, microphones, cords, stands, monitor/fill speakers. Include multi-boxes for input and output connectivity to portable media systems, wired microphones, and specialty speaker monitoring systems.

Provide a mixing console with inputs for all microphones plus 25% spare capacity, resident media sources for playback of audio programs, a digital audio recording system for recording of audio programs, digital audio processors, power amplifiers, monitor speakers, auxiliary inputs and outputs, equipment racks, as well as all other necessary items.

SECURITY SYSTEMS
Provide access controls and security system compatible with USU Eastern standards and where indicated by USU. The system shall be stand alone for this individual building, but should be compatible with the existing cards. CCTV system shall be raceway only for an IP based CCTV camera system that will be provided by USU. Camera locations shall be confirmed and additional conduit provided as needed to ensure pathway exists from the anticipated camera locations to the nearest IT room.

CLOCK SYSTEMS
Provide self-correcting GPS based clock system complete with headend receiver/transmitter and battery powered clocks. Clocks shall be located as directed by USU.

DISTRIBUTED ANTENNA SYSTEM

A specification shall be included to perform field testing of emergency radio frequencies to ensure compliance with Utah State Law Requirements. If testing results in inadequate signal strength for the emergency radio frequencies, a DAS design shall be completed and system installed as a change order to meet required signal strength.

THEATRICAL SYSTEMS

BLACK BOX THEATER

The following theatrical equipment shall be provided in the black box theatre: tension wire grid, theatrical lighting and lighting control equipment equipped for LED stage lighting instruments and moving lighting instruments. Black masking curtains completely around the room. Flexible seating risers and seating for performance arrangement for approximately 175 people.

Acoustic performance will be designed to have a relatively dead room response, as is typically designed for Black Box Theatre, so speech will be clear and intelligible and the room will not color sound effects, etc. This will be achieved by applying a sound absorptive material to the underside of structure and sound absorptive material on the walls. Also, the background sound levels due to HVAC will be limited to NC 20-25.

DRAMA CLASSROOM

The following theatrical equipment shall be provided for the drama classroom, suitable for simple drama tasks, stagecraft classes and distance learning instructional activities. This shall include lighting, lighting controls and a hoist for a single lighting batten and a limited amount of masking curtains on a track

Acoustic performance will be designed to have a relatively dead room response, so speech will be clearly audible and intelligible. This will be achieved by providing an acoustically absorptive ceiling and durable acoustical wall panels. Background sound levels due to HVAC will be limited to NC 25-30 for this space.

CHORAL & BAND REHEARSAL ROOMS

The following theatrical equipment shall be provided for the choral and band rehearsal rooms, suitable for simple concerts or recitals, tasks, and distance learning instructional activities. This shall include lighting, lighting controls and a single lighting batten.

Acoustic performance of the Choral Rehearsal Room will be relatively lively, to support choral music. This will be achieved by providing a combination of reflective, absorptive and diffusive acoustical treatments on the walls and ceiling. The flooring will be hard, to further support the acoustic response desired for this space. Background sound levels due to HVAC will be limited to NC 20-25.

Acoustic performance of the Band Rehearsal Room will be relatively dead, to make it easier to hear separate instruments and provide a level of hearing protection for instructor and students. This will be achieved by providing a combination of reflective, absorptive and diffusive acoustical treatments on the walls and ceiling, with more absorptive materials than in the Choral Rehearsal Room. It is recommended that the floor be carpet, but hard surface flooring can be compensated for in additional treatments on the walls or ceiling. Background sound levels due to HVAC will be limited to NC 20-25.

ACOUSTICAL SYSTEMS

ACOUSTIC SEPARATION ASSEMBLIES

There are a few sound-sensitive adjacencies in this building that require specific acoustic construction assemblies to provide sufficient acoustic separation. These adjacencies and assemblies are summarized below.

CHORAL & BAND REHEARSAL ROOMS

The acoustic separation between the Choral and Band Rehearsal Rooms will need to be at least STC 75-80 in order to use these spaces simultaneously and not be intrusive, with special consideration of the low frequency attenuation provided by the wall. This can best be achieved by two separate CMU walls, separated by an air space and a separation joint the floor, with furred sheetrock on either side. Other options to achieve this separation will be investigated as the design progresses.

METAL SHOP & IVC CLASSROOM

The acoustic separation between the Metal Shop and IVC Classroom above will need to be at least STC 85-90. This can be achieved by floating a concrete floor in the IVC classroom and suspending a gypsum board ceiling on springs in the Metal Shop. This assembly would consist of (3) layers of gypsum board hung on spring hangers, with insulation in the cavity and minimal penetrations of the gypsum board.

CIVIL NARRATIVE

PROGRAMMING STANDARD
2.5 Site Analysis
A.1.
a. Currently there is a green space with sidewalks and buildings surrounding the proposed construction site. There are also existing utility tunnels and underground utilities located on site near the new building footprint. These utilities include culinary water, sewer, communication, power, steam lines, storm drain, and gas.
b. The existing site will affect the project by:
The new Central Instructional Building (CIB) will be directly east of the G.J. Reeves Building. This area has utility mains nearby and a site analysis shows that the soils are less problematic than other sites. Currently the entire building footprint is on green space, therefore little to no structure demolition will be needed. A few sidewalks, ramps, and an electrical transformer station will be removed. A majority of the conflicts are utility conflicts, which will be discussed below.

A.2.
d. At this point, neither new parking nor access lanes will be constructed for the CIB. Existing parking lots to the southwest, west, and east will be used. Most pedestrian traffic will enter the building on the north and south side along the existing sidewalk corridors.

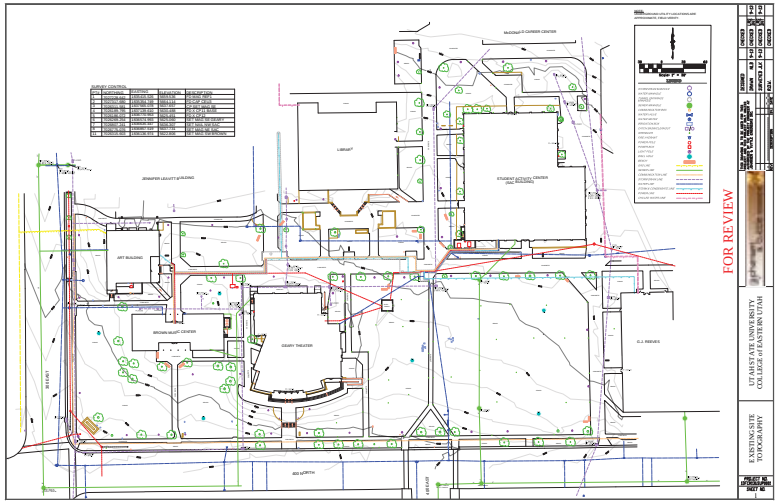
B.1.
Visual survey investigation
c. site description: The footprint of the new CIB will be located on an existing green space that is enclosed by sidewalks. The Geary Theater is located directly west of the new building and the G.J. Reeves Building is located directly to the east of the CIB. The Library and SAC building are located north of the proposed building. 400 north borders the south side of the new building. Trees are spaced around the periphery of this green space also.

e. There is an electrical vault in the northwest corner of the proposed building that will have to be removed/relocated. There is also a sprinkler system with a series of sprinkler heads that currently water the green space that will have to be removed. There is a storm drain main located in the northwest corner of the project site that also may need to be relocated. This storm drain system may need to be relocated out of the project footprint.

B.2.

d. As shown on the overall Existing Site Topography sheet produced by Johansen & Tuttle Engineering, the existing ground east of the Geary Theater slopes from north to south at an approximate slope of 2%. There is approximately a 5 foot drop over 225 feet. Immediately south of the Geary Theater, the existing ground slopes from north to south at 10% with a vertical drop of 4 feet over 40 feet. Property lines extend out to 400 north to the south and 300 east to the west. The Geary Theater is located between the project site and 300 east. The project limits will extent to the sidewalk to the south and the Geary Theater to the west. The library and SAC building are located to the north of the project area. The G.J Reeves building is located to the east of the project site.

e. The library and SAC buildings have existing sidewalks and utilities that should not conflict with the project foot print. The sidewalk just west of the G.J. Reeves building and the utilities in between this sidewalk and the G.J. Reeves buildings should not be in conflict with the project footprint. There are a series of irrigation lines and sprinkler heads that water the grass area east of the Geary Theater. The irrigation in this will need to be removed and reconfigured to match the new site plan. There is also a sewer lateral extending from the SAC building to the sewer main in 400 north. This line will need to remain in use and eventually relocated around the new building footprint. This sewer lateral is located in the middle of the grass field that is east of the Geary Theater. In this same area, there is a culinary water lateral that extends north of 400 north through the project site and enters the tunnel system north of the site. This culinary line services the Geary



Theater from the tunnel vault and also the SAC building. The SAC building water line runs inside the tunnel along with the other utilities. There are also existing light poles located along 400 north that may need to be relocated. There is also an electric transformer that is located in the grass field near the northeast corner of the Geary Theater that must be relocated. There are a series of electrical lines the run west and north out of this transformer. This transformer and electrical system will need to be relocated.
A Utility tunnel runs under the existing sidewalk that is located north of the project site. Power, communication, water, and steam lines are located in the tunnel. The storm drain system also runs along the north end of the project site and may need to be relocated.

B.3.

a. Utility feasibility studies

Existing utility tunnels and underground utilities are located on site near the new building footprint. These utilities include culinary water, sewer, communication, power, steam lines, storm drain, and gas. All of these utilities can feasibly be tied into the new building. The closest cooling line location is at the northwest corner of the library. Approximately 500 l.f. of new cooling lines will need be installed (inside the existing tunnel system) for use at the new CIB.
The SAC building sewer lateral will have to be relocated outside the footprint of the new building. The 2” culinary water line will need to be rerouted around the CIB to tie into existing lines to the Geary Theater and SAC building. A new fire hydrant will most likely need to be installed within the final location of the fire riser room.

e. existing drawings available:

Existing Site Topography sheet
College of Eastern Utah Master Plan Update 2008
USU-CEU Irrigation Master Plan Study, October 2012
USU Eastern Campus Map 2011 http://eastern.usu.edu/facilities/htm/campus-maps
USU Eastern ADA Parking Stalls Map http://eastern.usu.edu/facilities/htm/campus-maps

E.1.

a. fire lane access has been discussed to be 26' lanes. The current and anticipated fire lines are the existing concrete walk-ways between the JLSC building and the library and the lane just south of the library and SAC building. The current lane widths are approximately 20' wide. It is anticipated that the access area would widen 6' to the south in the area just north of the new CIB. The utility tunnel system runs to the north of this existing access.

E.3.
City and zoning ordinances
Current Codes Adopted By Price City:
The International Building Code 2012 Edition, International Plumbing Code 2012 Edition, International Mechanical Code 2012 Edition, National Electrical Code 2011 Edition, International Fire Code 2012 Edition, International Energy Conservation Code 2012 Edition, The Federal Manufactured Housing Construction and Safety Standards Act (HUD Code). Manufactured Home Installations-NCSBCS/NFPA A225.1 2005 Edition. International Residential Code 2012 Edition. Uniform Code for Abatement of Dangerous Buildings 1997 Edition. Uniform Housing Code 1997 Edition, ICC/A117.1 2009 and all State Adopted Amendments to Each.

LANDSCAPE NARRATIVE

1. OUTDOOR SPACE DESIGN OF AMENITIES & FEATURES:

· Primary objectives for outdoor space will be to:

- Design Landscape and Irrigation such that it complies to LEED Silver v2009 standards.
- Enhance visual, walking, and landscape connections to Geary Theatre and surrounding existing campus buildings tie and transition these areas seamlessly.
- Invite a rich cultural experience with use of an art gallery and outdoor sculpture garden area.
- Engage the surrounding community by designing open access landscape and urban spaces that invite community participation and support of USU Goals and Objectives for students and community.
- Strengthen connections between Historic Geary Theatre and New Central Instruction Bldg. with related outdoor plaza and courtyard spaces.
- Enrich the learning experience with strong visual and functional connection of the indoors with the outdoors and providing pleasant and engaging outdoor plaza, seating, art/sculpture, and courtyard spaces.

· Lines and other important physical elements represented by the architectural material palette will be extruded out into the landscape to strengthen and enhance the lines and design of the architecture and to connect the surrounding landscape with the Historic Geary Theatre Building and other site features and elements.

· Curves may be used to soften the interface between the existing area surroundings with the hard lines of the architecture.

· Native vegetation will play an important role as it fingers its way through the various outdoor spaces and creates interesting edges that juxtapose against the more refined elements of crushed rock and layered plant material.

· Pedestrian links from among all educational facilities in the vicinity: the Historic Geary Theatre, the adjacent USU campus property, and surrounding homes and community of Price will be important to enhance and maintain.

· The vehicular experience with respect to views and circulation patterns will be designed to promote efficiency of travel along designated pathways. Safety of travel along these pathways will be addressed through sound design guidelines and queues from landscape and hardscape treatments in paving, walls, and plantings.

2. PLANT MATERIALS & SOIL ENHANCEMENTS:

· Effective soil testing and analysis are vitally important and suggested so as to assess soil conditions. Effective soil amendments and mitigation, if necessary, allow for plant material to have the nutrients they need to not only survive the harsh conditions of this area but to thrive in them.

· Use of water wise and indigenous plant materials is encouraged and will be a majority of the plant palette and should be able to withstand drought tolerant conditions during the high heat of the summer months as well as constant high winds.

· Deciduous trees are encouraged along pedestrian corridors and walkways and also in plaza and courtyard areas to provide shade and relief from the hot sun and to reduce the “heat island effect” in parking lot areas.

· Evergreen trees are encouraged to act as a wind break wherever appropriate and also to add winter interest and year round green.

· Shrub plant massing’s will avoid creating a security hazard by obstructing views through the site, especially along pedestrian corridors, walkways, entries, etc.

· Trees will be planted to provide shade and to enhance views of surrounding landscape and campus buildings.

3. IRRIGATION DESIGN:

· Irrigation System will be designed to deliver maximum watering efficiency inherent in a LEED Silver v2009 scenario. Water efficient irrigation heads, smart controllers, smart flow sensors, and other water efficient irrigation parts will ensure minimum water use while increasing plant survival in harsh desert conditions.

· Native vegetation and more drought tolerant material will be designed and implemented on a majority of site. Colorful flora and textures of plant material will be intensified and massed at important pedestrian and vehicular pathways and at entryways and around signage to enhance, delight, and direct users and travelers of the various outdoor spaces.

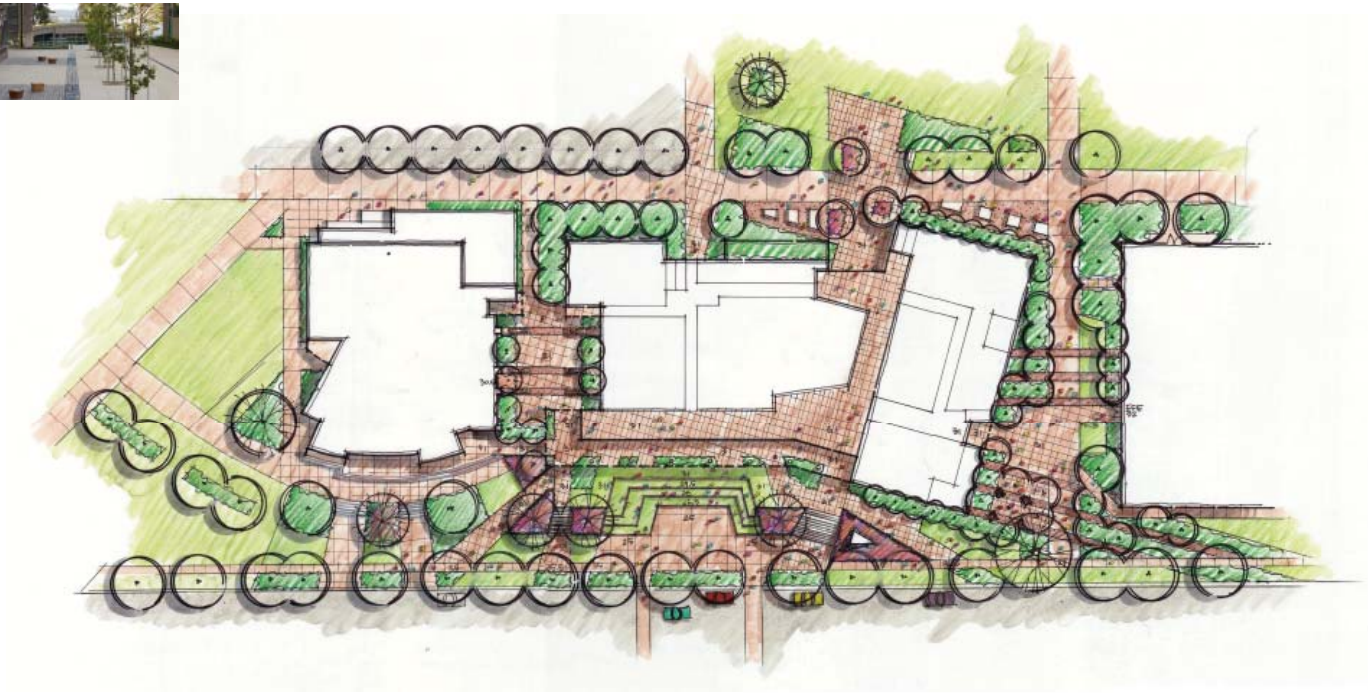
· Drought tolerant turf areas will be incorporated to give useable recreational spaces and visual contrast from native planting areas to more functional outdoor spaces.

· Water wise Drip Irrigation will be incorporated and coordinated between installing contractors and landscape maintenance providers.

4. SITE ACCESSIBILITY:

· Paths to building entrances shall meet ADA criteria for slope and landings. Wherever possible, all other site paths shall meet ADA criteria. If that is unfeasible in a particular location, provide elevator access within the Central Instruction Building. All usable outdoor spaces shall be fully accessible.

CONCEPT IMAGES



USU EASTERN CENTRAL INSTRUCTION BUILDING

URBAN SITE/LANDSCAPE DESIGN CONCEPTS

LOFTSIXFOUR landscape architecture

9500 S. 500 W. SUITE 213, SANDY UTAH / 801-580-3325 / LOFTSIXFOUR.COM

ENERGY EFFICIENCY NARRATIVE

Utah DFCM has engaged a separate Energy Engineer to perform an energy analysis of the project, according ASHRAE Standard 90.1-2007; Appendix G. The analysis will consider reducing energy consumption in each of the following categories: lighting, space cooling, space heating, pumps, heat rejection, ventilation fans, internal loads and external loads.

The Energy Engineer and design team will be required to attend a Design and Technology Charrette, to evaluate the building design and consider technologies, including but not limited to, daylighting, evaporative cooling, demand-controlled ventilation, green roof, spectrally selective glazing, low flow plumbing fixtures, and on-site renewable energy systems, etc.

The design team will also identify and evaluate the suitability of any potential incentives, policies or rebates for energy efficiency and renewables, offered by federal, state, or local authorities, as well as those offered by private entities and utility companies. The design team will evaluate the effectiveness of each program's alternative paths and pursue the incentive(s), accordingly.

The energy analysis will be used, wholly or in part, for the basis of evaluating several energy related project requirements, referenced throughout the program document. These include demonstrating compliance with, and/or documenting, the following:

- Utah State Building Energy Efficiency Program's High Performance Building Standard.
- Utah State University's Climate Action Plan (as part of the American College & University Presidents Climate Commitment).
- Utah State University's Energy Conservation Policy.
- U.S. Dept. of Energy's (DOE) ENERGY STAR rating.
- Estimating potential project energy efficiency incentives, as referenced above.

The design team will be required to demonstrate the issues related to reaching each energy efficiency requirements/goals and benchmark the feasibility of each, for consideration by the appropriate performance rating authority, in the event that the project cannot meet the energy efficiency goals, within the project scope and budget.

ENERGY MODELING

In order to establish a credible Baseline and a preliminary Proposed model, an energy analysis has been performed in accordance with LEED Reference Guide for Green Building Design and Construction – 2009 Edition: EAc1 (ASHRAE 90.1-2007 Appendix G). This analysis has incorporated, where appropriate, the discussions that took place in the Design and Technology Charrette, held October 28, 2013, at the USU Easter JLSC Board Room. Results of the analysis are summarized below, and simulation output reports, are offered as Appendix VII.

It is also important to note that the preliminary energy analysis does not include any assessment of simple payback or life-cycle cost analysis. The design team will be required to demonstrate life-cycle cost effectiveness, in the event that the energy efficiency measures applied to the project interfere with the project budget and how it relates to the energy efficiency requirements, for the project. Because of the aggressive energy efficiency goals/requirements of the project, much of the approach or consideration to design, for all disciplines, will be heavily tied to the results and implications of energy analysis. As such, additional evaluation of EEM effectiveness is recommended through life cycle cost analysis (LCCA).

As a result of this energy analysis being performed at such an early stage of the project, some of the assumptions and definitions used for the preliminary energy analysis may be obsolete or require revision, by the time the program document is released, and/or during the design process. Therefore, it should be noted that, in part, the analysis was used to demonstrate the relative feasibility of reaching the energy efficiency goals/requirements of the project, particularly LEED EAc1, and to develop a preliminary group of energy efficiency measures that may be appropriate for the project. The analysis is not intended to constrain the design team to a prescriptive EEM criterion, as applied here, which may or may not be appropriate, as the project advances.

As stated previously, the primary intent of the energy analysis was to establish a reliable Baseline energy cost for the project and, to itemize the Baseline energy consumption by end-use category. This provides the basis for establishing a reasonable Proposed model energy cost target and list of potentially suitable EEM's, for the Proposed Design. Energy consumption by end-use category, for both the Baseline and hypothetical Proposed Design, can be compared in Figure 1 and Figure 2.

The graphs listed above indicate an annual energy consumption performance improvement of 26%. Once the appropriate utility/fuel rates and project square footage are applied to the results of the models, the annual energy cost performance and Energy Use Index (EUI) are determined, as follows:

Model	EUI (kbtu/ft^2/yr)	Annual Utility Costs
Baseline	65.5	$79,856
Proposed	48.4	$63,662

A general description of design parameters applied to the Proposed Design model are summarized, as follows. Again, any assumptions made as part of this preliminary analysis are not intended to prescribe any specific design path or criteria, to the design team.

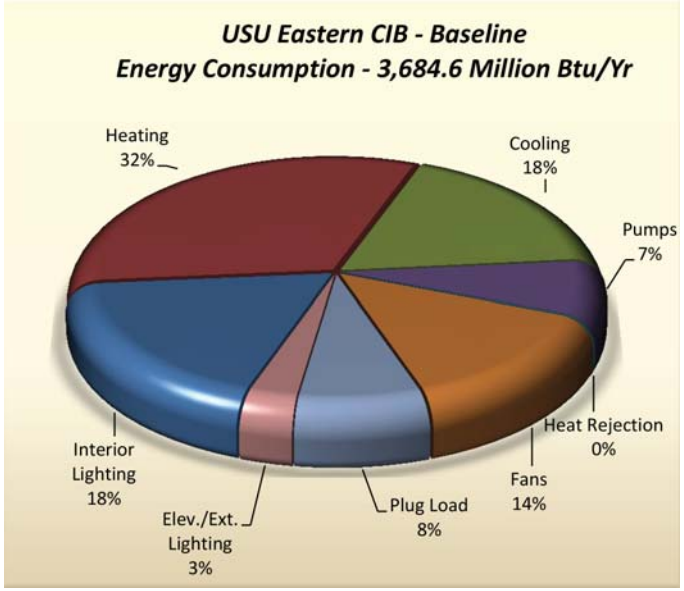


Figure 1 - Baseline Energy Consumption by End-Use Category

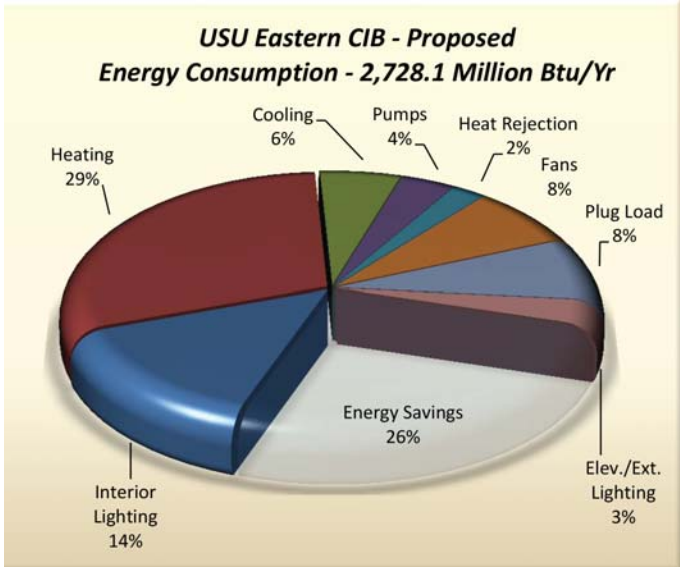


Figure 2 - Proposed Energy Consumption by End-Use Category

ENVELOPE

ENVELOPE COMPONENT	BASELINE	PROPOSED
Walls	R-15.6	R-20
Roof	R-20.8	R-30
Window to wall ratio	40.30%	40.30%
Fenestration Assembly U-factor	0.45	0.4
Fenestration SHGC	0.4	0.27
Fenestration Shading	N/A	16" overhang on South and West exposures.

ELECTRICAL SYSTEMS & PROCESS LOADS

- Overall reduced lighting power annual energy consumption of 25% for the Proposed Design (includes effects of reduced lighting power densities, daylighting controls, and occupancy sensors for spaces not required by energy code)
- 20 Hp elevator load definition (same as Baseline)
- 2.5 kW exterior lighting load definition (same as Baseline)

HVAC & PLUMBING SYSTEMS

- Indirect / Direct Evaporative HVAC System
- Supply Air Reset (8°F-max, based on outside air temperature)
- Improved Supply Air Fan Efficiency
- Improved Hydronic Pump Efficiency
- Demand Control Ventilation (DCV)
- Improved Unitary Equipment Efficiency

Additional EEM's that were not applied to the preliminary analysis, but may be considered by the design team (toward owner benefit and/or LEED credit) include, but are certainly not limited to the following.

- Alternative HVAC System(s) (i.e. Chilled Beams)
- Dedicated Outdoor Air System (DOAS) - (i.e. w/ Chilled Beams)
- Energy Star rated computers and appliances
- Displacement Ventilation
- Low Flow Plumbing Fixtures
- On-Site Renewable Energy

- Occupancy Sensors (controlling HVAC set back)
- LED lighting

As indicated above, for the preliminary energy analysis, the following items are provided as additional documentation:

- LEED Energy Performance Report
- Baseline and Proposed Monthly Energy Consumption Report
- Baseline and Proposed Monthly Utility Costs Report
- Baseline and Proposed System Checksums Reports

Inspection of the System Checksums Reports (SCR) provides information that will be useful to the design team, beyond what is offered in terms of energy analysis reports. For example, the Proposed Design SCR offers preliminary calculations of peak heating and cooling loads, design air flow rates/capacities, and several other points of reference data relating to HVAC building and system design parameters that could be referenced toward Schematic Design.

This analysis also relies on the assumptions that the Proposed Design will be served from the existing steam and chilled water central plants. The LEED modeling protocol for central plants, detailed in the document "Treatment of District or Campus Thermal Energy in LEED V2 and LEED 2009 - Design & Construction" (LEED DES document) dated August 13, 2010 has been applied to this analysis. Additionally, due to the fact that no actual efficiency performance data exists for the central chilled water and steam plants, Option 1 - Building Stand-Alone Scenario was required. While this approach somewhat limits the ability of the project to demonstrate energy performance to any given rating authority, it does hold the district energy cost as "neutral", and allows the analysis to focus on the portions of the project for which the design team has actual control.

Because of the project's mixed uses, several energy efficiency measures that may be applied to standard types of building projects are not necessarily appropriate or may not be given credit under the modeling protocol found in ASHRAE 90.1 Appendix G and, may add to the challenge of meeting the various energy efficiency goals/requirements, on a life-cycle-cost basis. One advantage the project benefits from, toward meeting or exceeding the project's energy efficiency requirements/goals, is that the USU A/E Design Manual (Section 22.00.50(D)(3)) requires that the project be designed according to ASHRAE Standard 90.1-2010. Because the requirements of this version of the energy standard are more stringent than the 2007 version of the standard, which is used as the Baseline for the above referenced rating authorities, the project should realize some added benefit, in terms of energy performance reporting.

The following bullets offer additional miscellaneous comments regarding the preliminary energy performance analysis and pursuit of utility incentives:

- The USU Eastern campus is served by Price City Electric, which does not currently offer incentives for energy performance. As such, only Questar Gas incentives may be obtained; however, these will be extremely limited, as primary heating equipment already exists, as part of the central steam plant.
- 30% increased ventilation rates have been applied to the analysis, consistent with LEED EQc2.
- Process/Plug loads, related to the following, have not been clearly determined, and may have an appreciable impact on the projects continuing energy performance evaluation. These loads include, but are not necessarily limited to the following.
- Theatrical Lighting
- Theatrical Production Equipment (i.e. costume shop, set production, etc.)
- Crime Laboratory Plug/Process Loads
- Crime Laboratory Ventilation
- Art Space Ventilation
- Art Equipment (i.e. kilns)

03 Building Requirements

Sustainable Design Criteria

The new USU Eastern CIB's building and site design should incorporate industry and regional sustainable design practices. The building materials should use thermally broken windows, roof and general building shell materials to optimize energy performance and thermal transfer. The mechanical and electrical systems should utilize the latest energy efficient fixtures and equipment. The site should use regional plants and be graded to minimize storm water runoff and maximize on site water detention.

In addition to industry standard sustainable design principles the new building has specific design requirements including the State of Utah adopted policy that all future State owned buildings are required to achieve a minimum of LEED® Silver Certification. There are many paths available to meet LEED Silver certification: the design team and client will navigate through the United States Green Building LEED points system to take advantage of the most desirable and cost effective sustainable design options. All new Utah State owned and funded buildings also must meet the DFCM established high performance building criteria. There are several LEED requirements that need to be achieved to meet the high performance criteria including: WE credit 1.1 Water Efficient Landscape Reduction by 50%, EA Credit 3- Enhanced commissioning, IEQ Credit 3.1- Construction IAQ Management Plan, EQ Credit 4.1-Low Emitting Materials (adhesives and sealants), IEQ Credit 4.2 Low Emitting Materials (paints and solvents). An energy model is required to demonstrate that the building design will meet code energy requirements.

In addition to the strategies listed above, a life cycle cost analysis will be provided by the design team. Enhanced building commission with comprehensive envelope commissioning is typically contracted on large scale state projects to help insure many of the sustainable requirements are achieved. With this in mind, the design of the facility must incorporate sustainable practices while balancing budget parameters.

Refer to the preliminary LEED score sheet on the following page for more information.

LEED 2009 for New Construction and Major Renovations

Project Checklist

USU Eastern - Central Instruction Building

October 20th 2013

Sustainable Sites — Possible Points: 26

Y	?	N			
10	3	13		**Sustainable Sites**	Possible Points: 26
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
		5	Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
		6	Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y	?	N			
4	4	2		**Water Efficiency**	Possible Points: 10
Y			Prereq 1	Water Use Reduction—20% Reduction	
2	2		Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
2	2		Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y	?	N			
6	17	12		**Energy and Atmosphere**	Possible Points: 35
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
2	11	6	Credit 1	Optimize Energy Performance	1 to 19
	1	6	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y	?	N			
3	5	6		**Materials and Resources**	Possible Points: 14
Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
	2		Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
				Materials and Resources, Continued	
	2		Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
	1		Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y	?	N			
12	1	2		**Indoor Environmental Quality**	Possible Points: 15
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
	1		Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
		1	Credit 8.1	Daylight and Views—Daylight	1
		1	Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

Y	?	N			
6				**Innovation and Design Process**	Possible Points: 6
1			Credit 1.1	Innovation in Design: EAc3 exemplary performance	1
1			Credit 1.2	Innovation in Design: Specific Title	1
1			Credit 1.3	Innovation in Design: SSc5.2 exemplary performance	1
1			Credit 1.4	Innovation in Design: Specific Title	1
1			Credit 1.5	Innovation in Design: MRc5 exemplary performance	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

Y	?	N			
2	1	1		**Regional Priority Credits**	Possible Points: 4
		1	Credit 1.1	Regional Priority: SSc8	1
1			Credit 1.2	Regional Priority: WEc1	1
1			Credit 1.3	Regional Priority: IEQc8.1	1
	1		Credit 1.4		1

Total — Possible Points: 110

Y	?	N			
43	31	36		**Total**	Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

04 Building Planning

Space Area Summary

Description	CRIMINAL JUSTICE	COMMUNICATIONS	ART	MUSIC	THEATER	GENERAL	BUILDING SUPPORT	NSF Subtotal	Circulation, access, exterior walls (25% NSF)	TOTAL
Sq. Feet	2670	2810	6360	5515	7530	16599	3820	45304	11326	56630

CRIMINAL JUSTICE					
Scott Henrie & Rich Walton		Teaching Lab (IVC capable)	1	1500	1500
Scott Henrie & Rich Walton		Storage Room	1	100	100
Scott Henrie & Rich Walton		Conference/Library	1	300	300
Scott Henrie & Rich Walton		Faculty Office (large)	1	140	140
Scott Henrie & Rich Walton		Faculty Office (small)	3	120	360
Scott Henrie & Rich Walton		Crime Scene Room	1	270	270
		Subtotal			2670

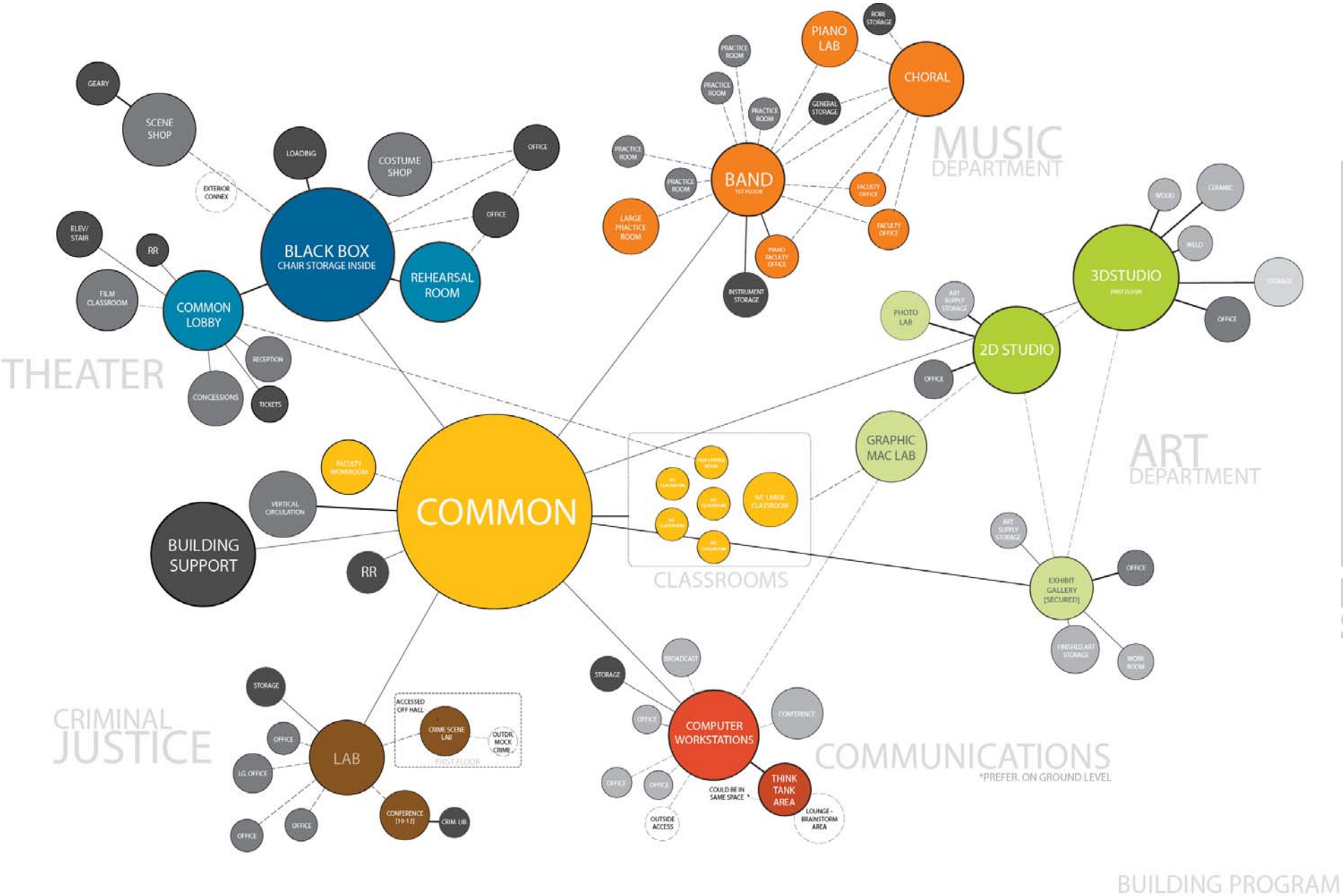
COMMUNICATIONS					
Susan Polster		Computer Work Space	1	1650	1650
Susan Polster		Think Tank Area	1	300	300
Susan Polster		Offices	3	120	360
Susan Polster		Conference Room	1	300	300
Susan Polster		Storage	1	100	100
Susan Polster		Broadcast Room	1	100	100
Susan Polster		Graphics/MAC Lab (General shared space with Art: 1000 sf)	0	0	0
		Subtotal			2810

ART					
Noel Carmack		2-D Studio	1	800	800
Noel Carmack		3-D Studio	1	3000	3000
Noel Carmack		Photo Lab	1	300	300
Noel Carmack		Offices	3	120	360
Noel Carmack		Art Supply Storage	2	200	400
Noel Carmack		Finished Art Storage	1	250	250
Noel Carmack		Gallery Work Room	1	250	250
Noel Carmack		Exhibition Gallery	1	1000	1000
Noel Carmack		Graphics/MAC Lab (General shared space with Communications: 1000 sf)	0	0	0
		Subtotal			6360

GENERAL					
Method		Classroom (large)	1	2000	2000
Method		Classroom (small)	6	1000	6000
Method		Lobby	1	6000	6000
Method		Ticketing	1	140	140
Method		Restrooms	1	1800	1800
Method		Concessions	1	184	184
Method		Faculty Workroom	1	475	475
		Subtotal			16599

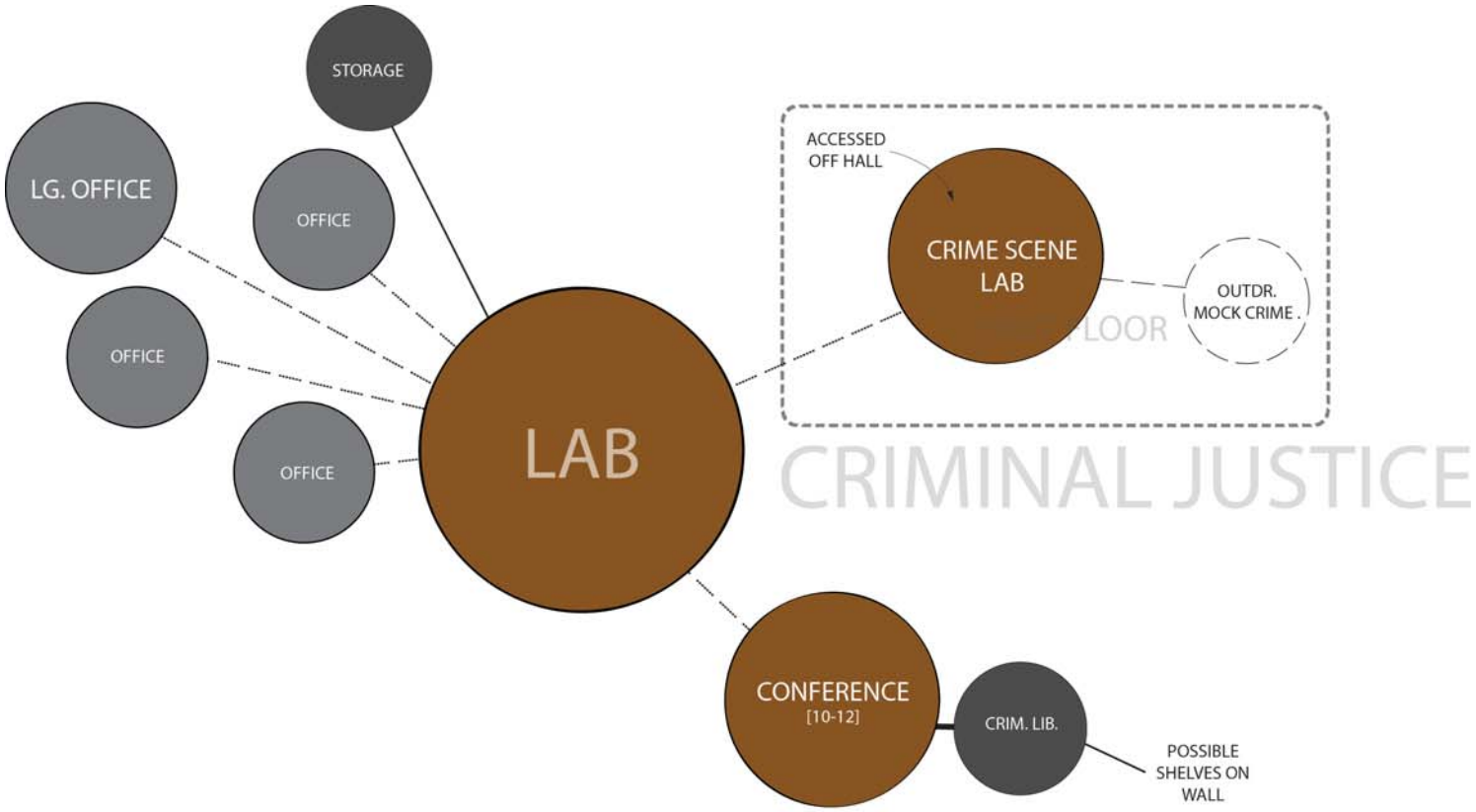
MUSIC					
Method: Feasibility Study		Band Room	1	2100	2100
Method: Feasibility Study		Choral Room	1	1300	1300
Method: Feasibility Study		Practice Rooms	3	80	240
Method: Feasibility Study		Duet Practice	1	160	160
Method: Feasibility Study		Quartet Practice	1	325	325
Method: Feasibility Study		Piano Instruction & Office	1	170	170
Method: Feasibility Study		Faculty Offices	2	170	340
Method: Feasibility Study		Instrument Storage	1	380	380
Method: Feasibility Study		Choir Robe Storage	1	150	150
Method: Feasibility Study		General storage	1	50	50
Method: Feasibility Study		Piano Lab	1	300	300
		Subtotal			5515
THEATER					
Grady McEvoy & Corey Ewan		Scene Shop	1	3000	3000
Grady McEvoy & Corey Ewan		Costume Shop	1	800	800
Grady McEvoy & Corey Ewan		Rehearsal Room	1	800	800
Grady McEvoy & Corey Ewan		Black Box Theater	1	2670	2670
Grady McEvoy & Corey Ewan		Office (large)	1	140	140
Grady McEvoy & Corey Ewan		Office (small)	1	120	120
		Subtotal			7530
BUILDING SUPPORT SPACES					
Method		support-electrical/comm	1	1000	1000
Method		support-mechanical	1	2500	2500
Method		janitor	2	80	160
Method		elevator	1	160	160
		Subtotal			3820

Overall Adjacency Diagram

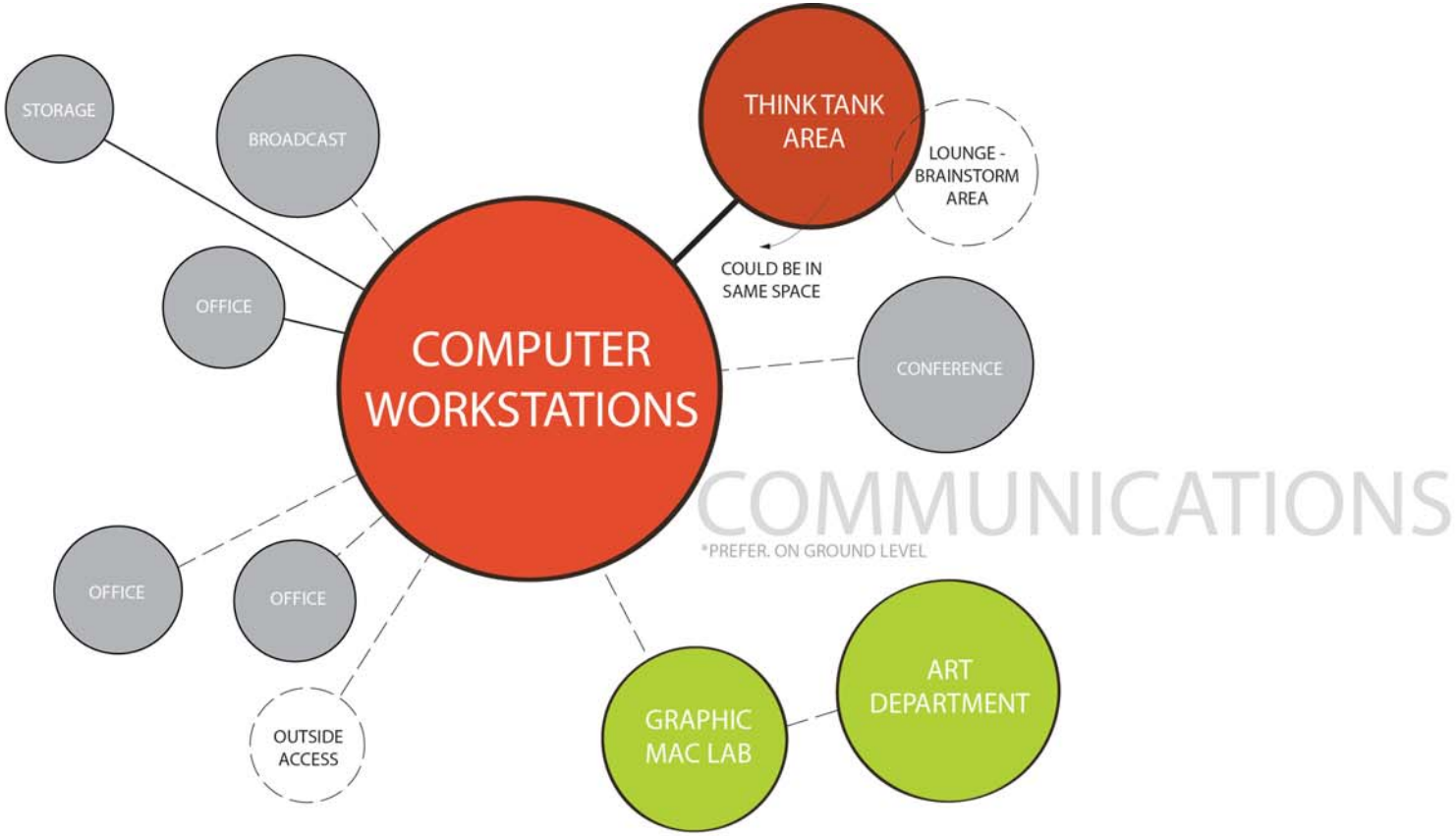


04 Building Planning

Adjacency Diagram



Adjacency Diagram



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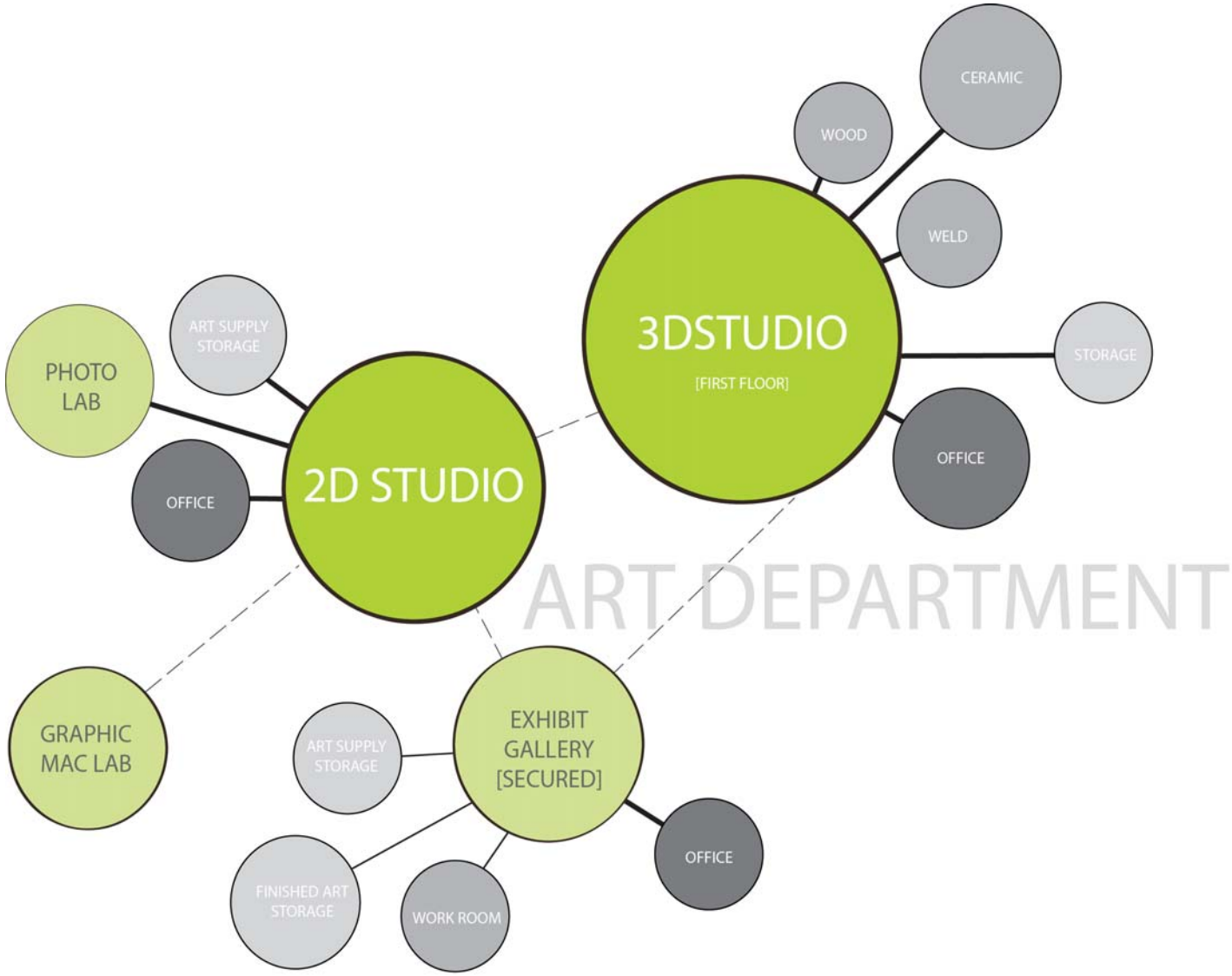

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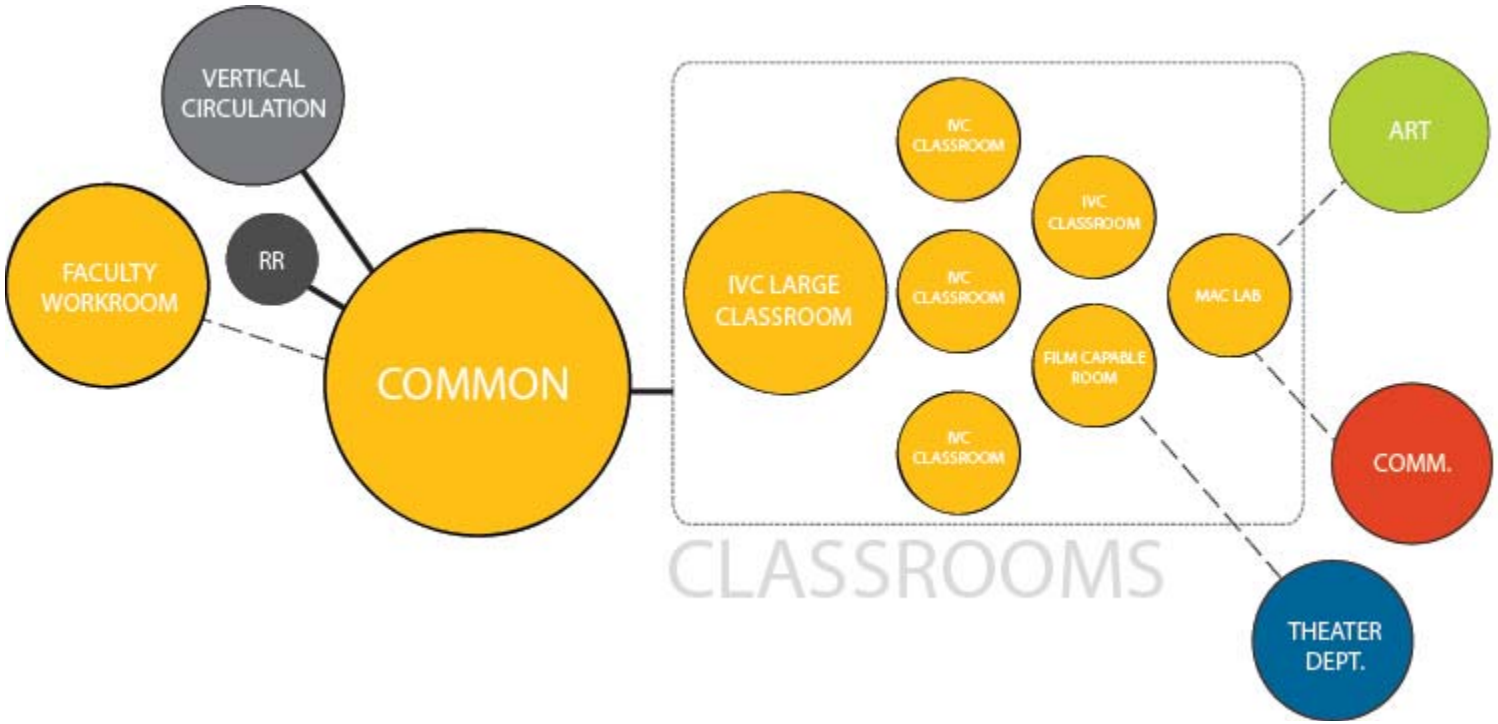
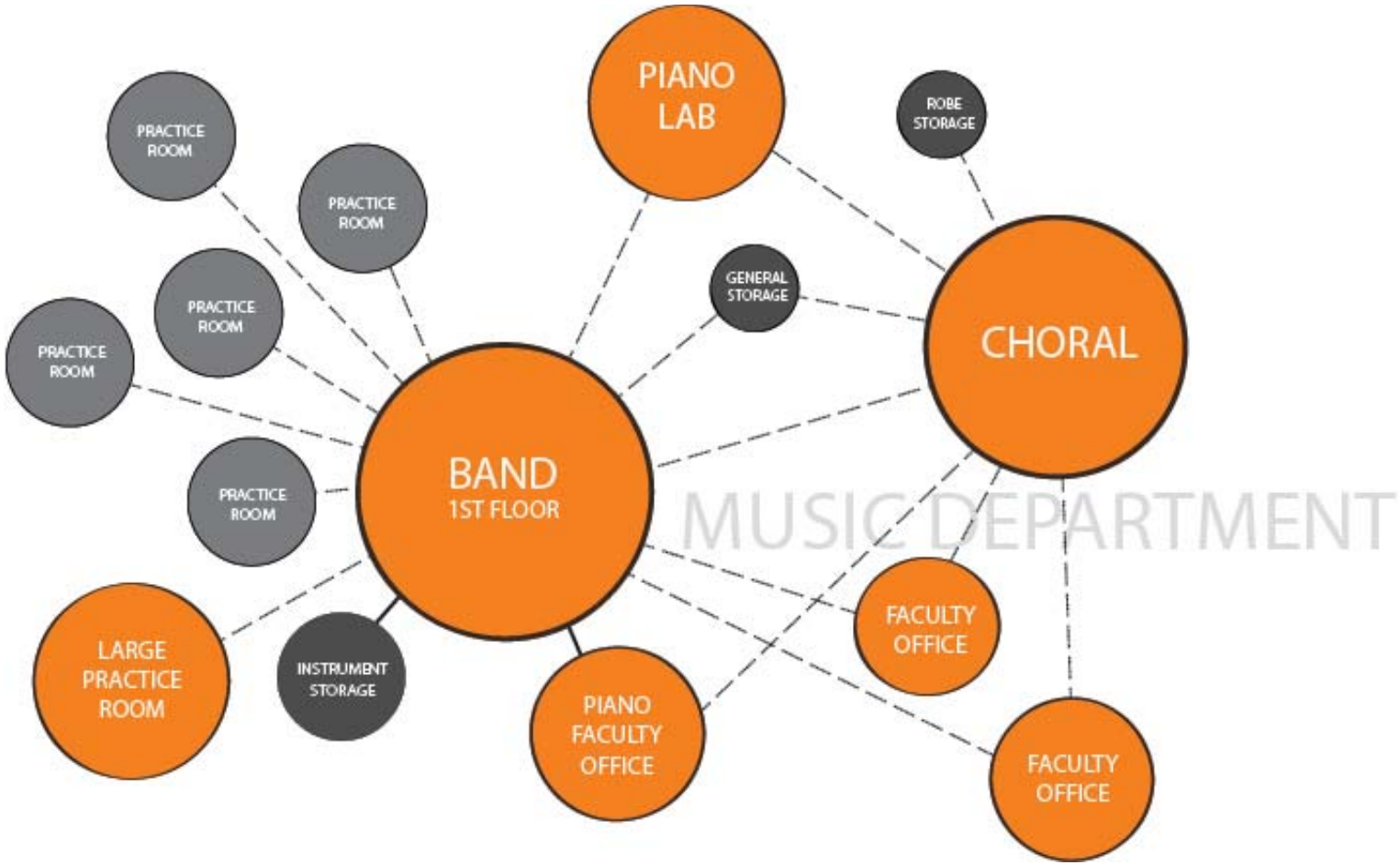
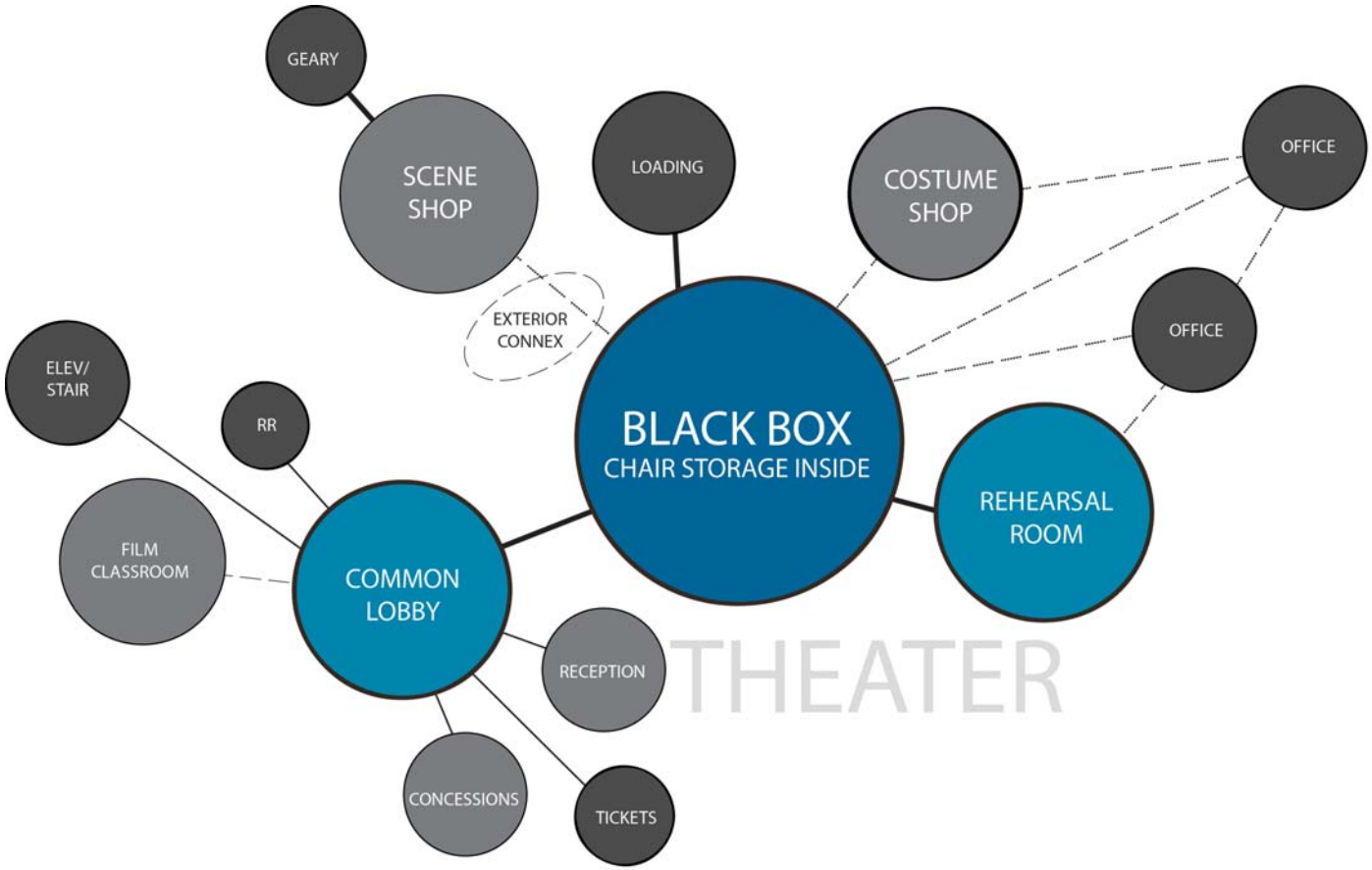
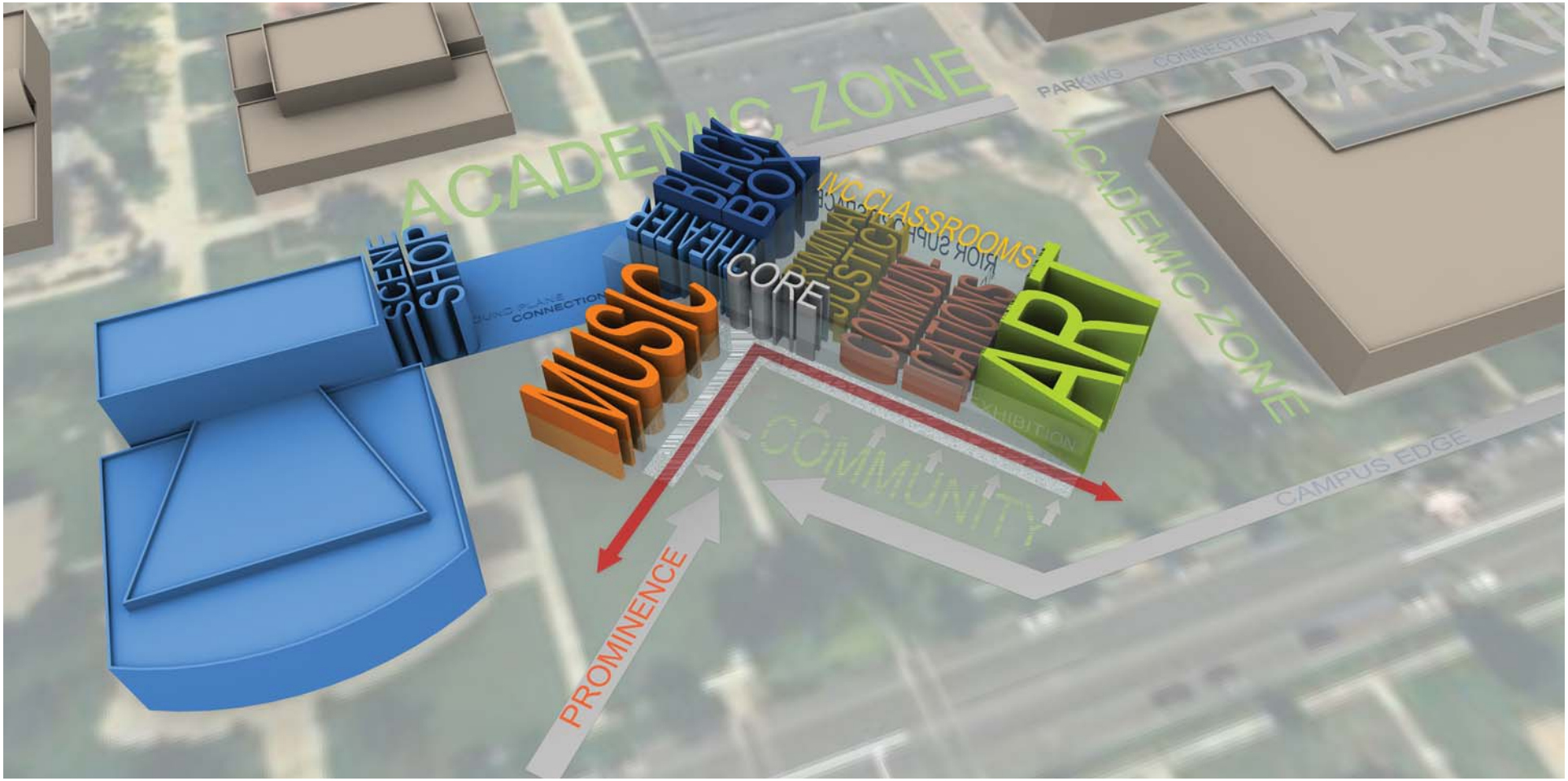


Adjacency Diagram



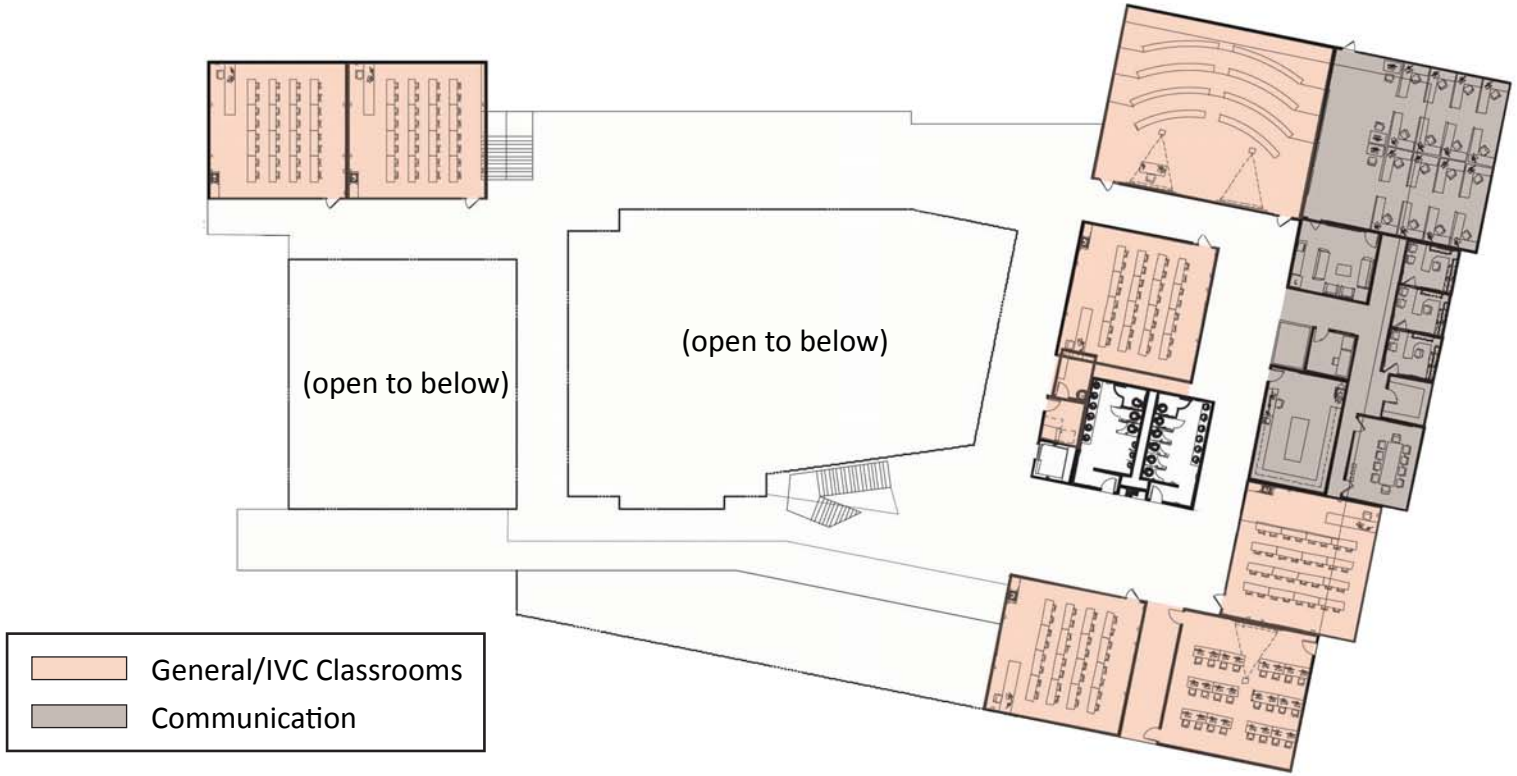
Adjacency Diagram




ACADEMIC ZONE
PARKING CONNECTION
PARK
ACADEMIC ZONE
IVC CLASSROOMS
SCENE SHOP
SOUND PLANE CONNECTION
BLACK BOX THEATER
CORE
MUSIC
RURAL COMMUNICATIONS
ART
EXHIBITION
COMMUNITY
CAMPUS EDGE
PROMINENCE

ACADEMIC ZONE
BLACK BOX THEATER
THEATER
ART
CORE
MUSIC
COMMUNITY
PROMINENCE
PROMINENCE
PARKING
CONNECTION
ACADEMIC ZONE
CAMPUS EDGE

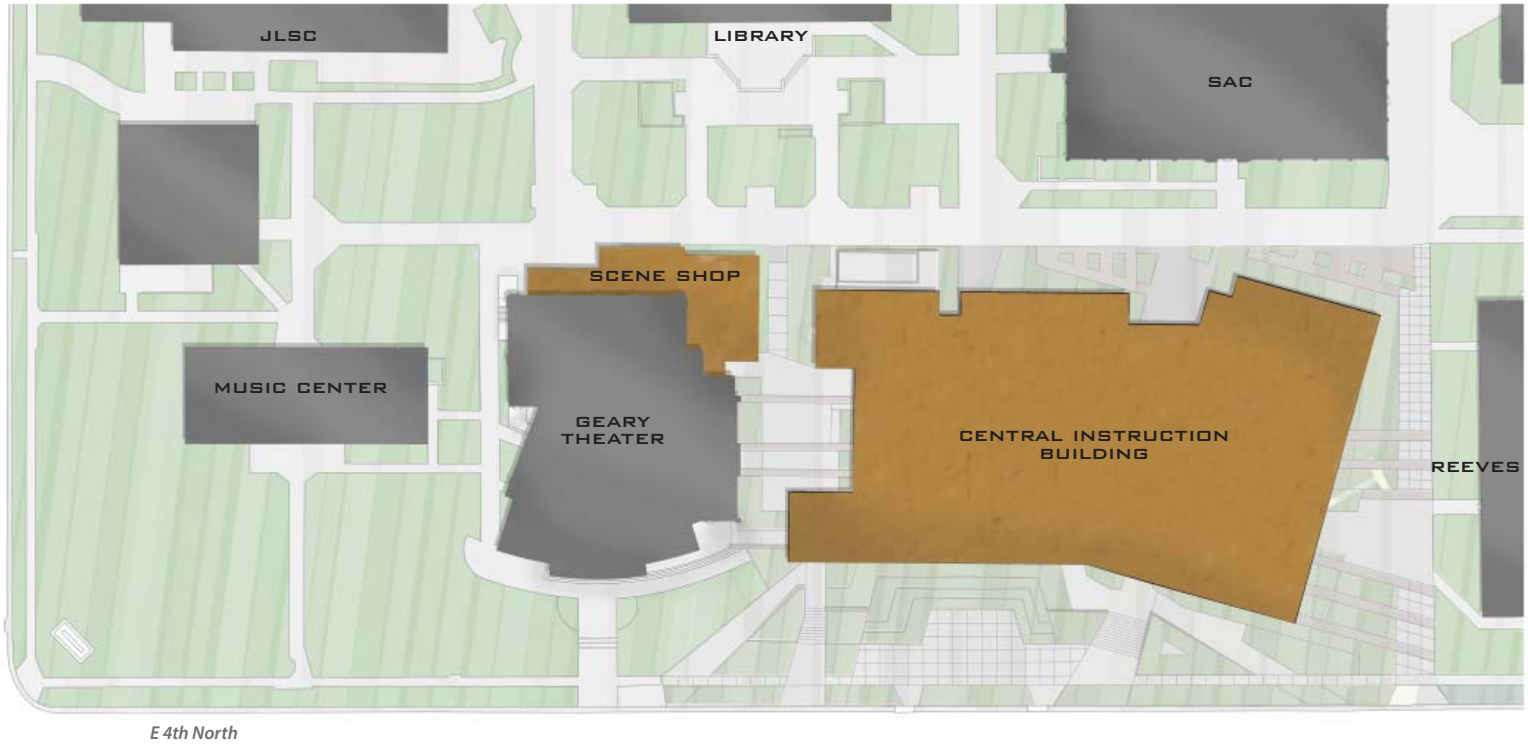
First Floor Relationship Diagram



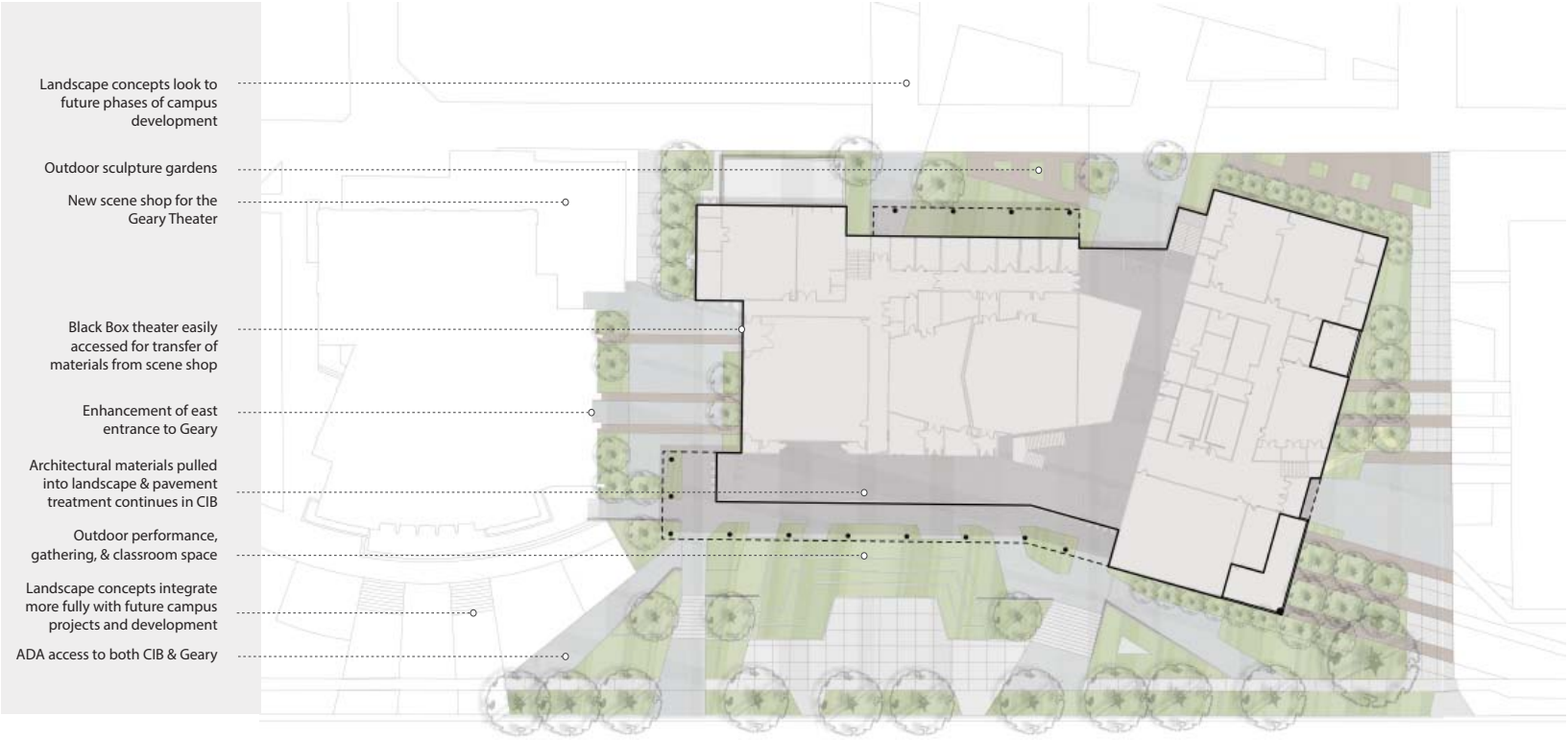
Second Floor Relationship Diagram

04 Building Planning

Site Overview



Site Plan


Landscape concepts look to future phases of campus development
Outdoor sculpture gardens
New scene shop for the Geary Theater
Black Box theater easily accessed for transfer of materials from scene shop
Enhancement of east entrance to Geary
Architectural materials pulled into landscape & pavement treatment continues in CIB
Outdoor performance, gathering, & classroom space
Landscape concepts integrate more fully with future campus projects and development
ADA access to both CIB & Geary

CJ101 TEACHING LAB

Space Requirements

Space Summary:

Type of Space:	IVC Capable Classroom
Number Required:	1
Total Number:	1
Occupants:	32-36 students, 1 instructor
Area:	1500 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Clean, Professional, Interesting

Finishes:

Floor:	Stain-resistant, washable linoleum
Walls:	Painted gypsum board
Ceiling:	Acoustical Lay-in, durable panels. Removed frequently for A/V access
Specialty Finishes:	Sound absorption wall panels
Sound:	Sound and vibration isolation required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 10'-0"

Privacy/Security:

Provide motorized roller shades and blackout panels if any windows are present. Card access and/or keypad control.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Lockable base cabinets w/ counter top
-Whiteboard, tack board
-Instructor console with A/V racks

Moveable Furnishings:

-6 Tables (w/ A/V & power ports), 36 student chairs, 1 Instructor desk/chair

Equipment:

-80" LCD screen, 60" LCD screen, touch panel
-Ceiling mounted document camera, digital clock, (2) wall cameras, surround sound ceiling mounted speakers, ceiling microphones
-Computer at instructor console
-Sympodium 24" screen
-Flat screen monitor and phone at console
-2 refrigerators
-1 projector & screen

Technical Requirements

Mechanical:

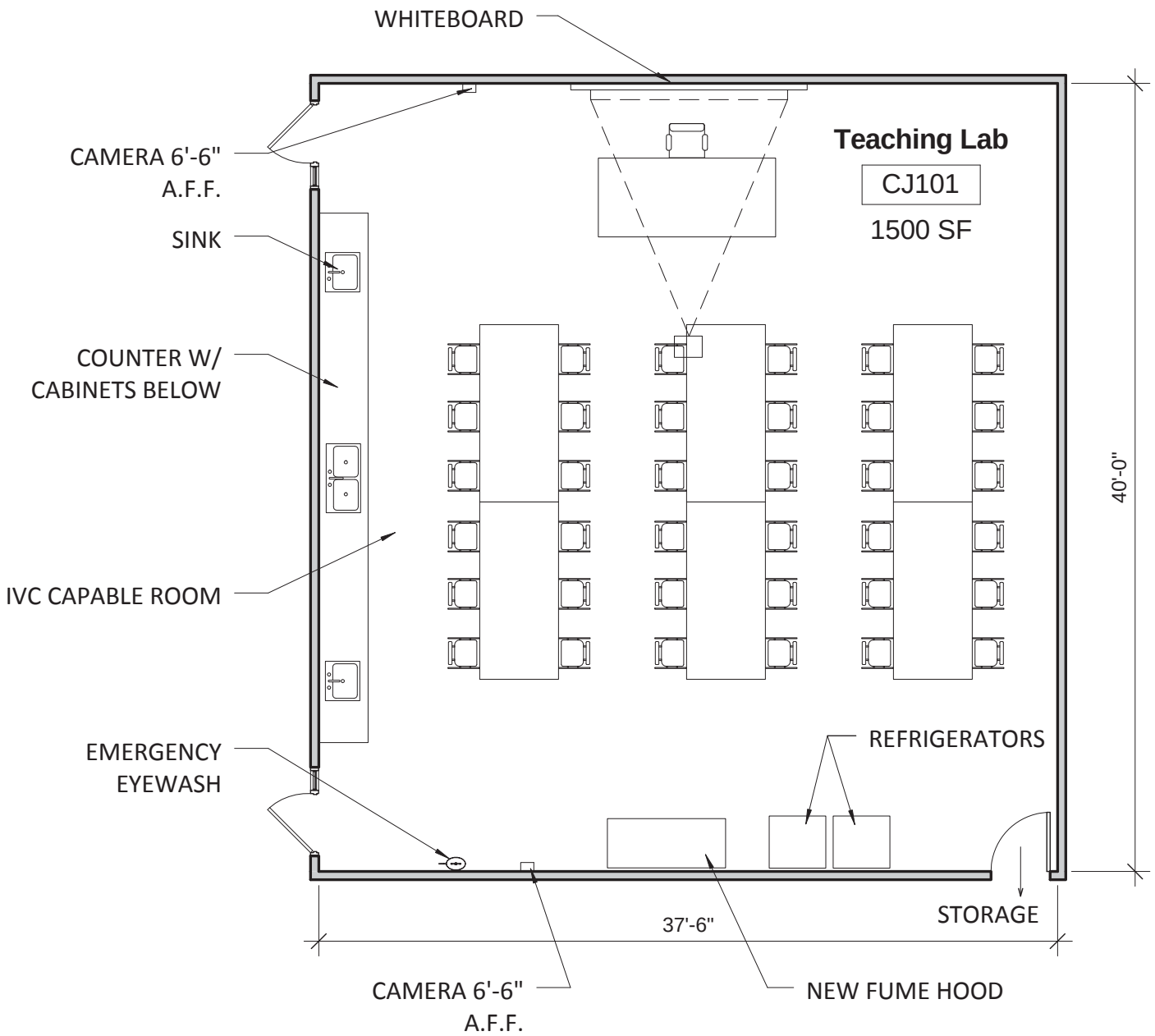
Ventilation:	10 CRM/person + 0.18 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	15-20 (NC/RC) required for recording room quality
Special Systems:	Adequate ventilation for instructor console A/V equipment, fume hood
Plumbing:	2 hand wash sinks, 1 large sink, 1 eye-wash sink, floor drain

Electrical:

Power:	1 fourplex at console; 1 fourplex at each student table; 1 fourplex at each monitor; duplex outlets 12' oc along walls. Additional power for equipment listed.
Phone/Data:	1 drop at console; 1 drop per each student row; 1 drop at each monitor; 1-2 additional drops along wall.
Video:	A/V system with internet connection
Audio:	Ceiling speakers with volume control

Lighting:

Fixture Type:	T-5 Fluorescent or LED lay-in indirect, dimmable
Accent Lighting:	None required
Foot Candles:	40-45
Controls:	Vacancy sensor; zoned lighting for distance learning origination rooms


WHITEBOARD
CAMERA 6'-6"
A.F.F.
SINK
COUNTER W/
CABINETS BELOW
IVC CAPABLE ROOM
EMERGENCY
EYEWASH
Teaching Lab
CJ101
1500 SF
40'-0"
REFRIGERATORS
STORAGE
37'-6"
CAMERA 6'-6"
A.F.F.
NEW FUME HOOD

CJ102 STORAGE

Space Requirements

Space Summary:

Type of Space:	Storage
Number Required:	1
Total Number:	1
Occupants:	1-2
Area:	100 SF
Primary Function:	Storage

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Efficient storage

Finishes:

Floor:	VCT with 4” rubber base
Walls:	Painted gypsum board
Ceiling:	Suspended 2’x4’ ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9’-0”

Privacy/Security:

Interior window with blinds

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Lockable door

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Wall mounted shelves

Moveable Furnishings:

-Amunition locker, gun safe

Equipment:

-None required

Technical Requirements

Mechanical:

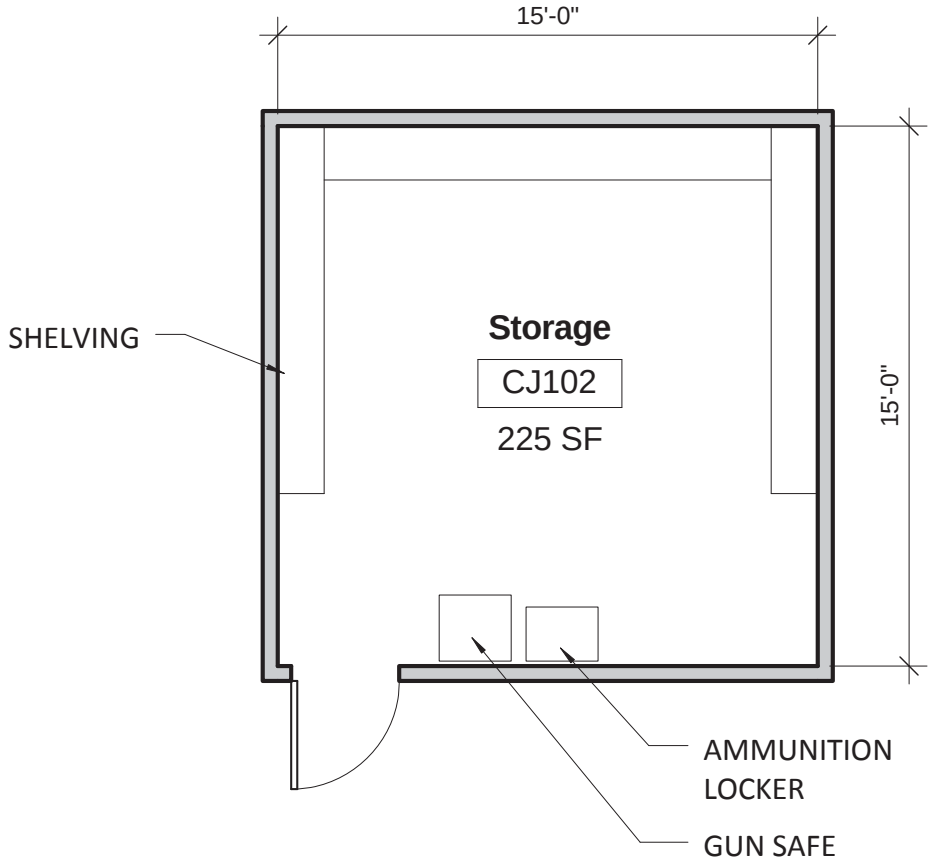
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	74 ° F (72 ° if occupied)
Winter Design Temp:	74 ° F (68 ° if occupied)
Controls:	Individual direct digital controls
Sound Criteria:	None required
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall.
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-8 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	10
Controls:	Vacancy sensor


15'-0"
15'-0"
SHELVING
Storage
CJ102
225 SF
AMMUNITION
LOCKER
GUN SAFE

CJ103 CONFERENCE/LIBRARY

Space Requirements

Space Summary:

Type of Space:	Meeting room
Number Required:	1
Total Number:	1
Occupants:	7-12
Area:	300 SF
Primary Function:	Meeting space, study

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x2' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

Secured access to entire office suite.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound Isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Wall mounted shelves

Moveable Furnishings:

-Conference table; 6 rolling chairs

Equipment:

-Flat panel TV

Technical Requirements

Mechanical:

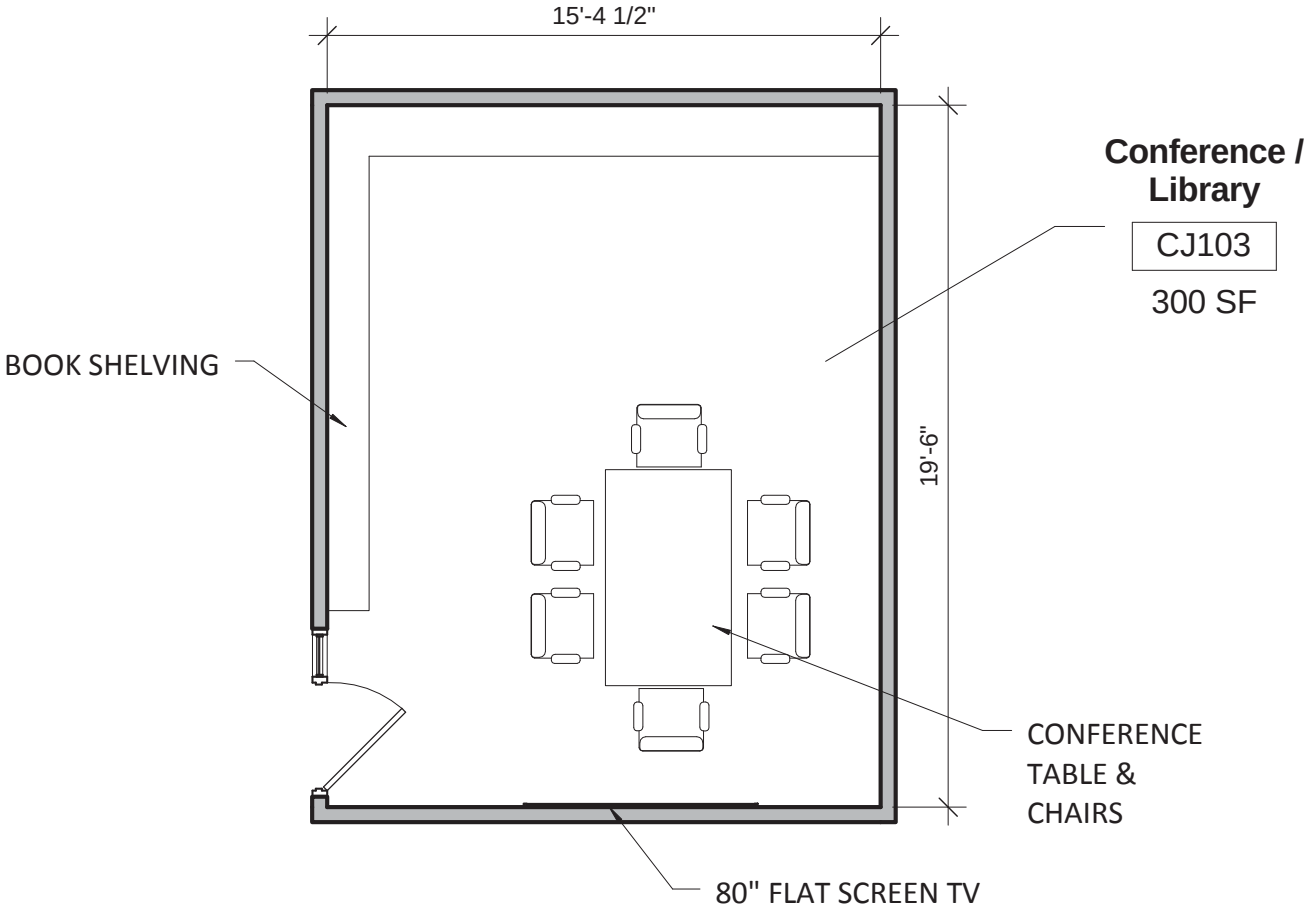
Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall, 1 four-plex floor box under table. Additional capacity for quipment listed.
Data:	1 device on opposing walls and 1 floor box under table.
Phone:	1 device on opposing walls and 1 floor box under table.
Video:	Rough-in for future capacity.
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	None required
Foot Candles:	40
Controls:	Vacancy sensor, dimming


15'-4 1/2"
19'-6"
Conference / Library
CJ103
300 SF
BOOK SHELVING
CONFERENCE TABLE & CHAIRS
80" FLAT SCREEN TV

CJ104 LARGE FACULTY OFFICE

Space Requirements

Space Summary:

Type of Space:	Office
Number Required:	1
Total Number:	1
Occupants:	5 people/1000 SF
Area:	140 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x2' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Windows with blinds, secured access to entire office suite

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Interior locking door

Windows:

Type:	Exterior
Glazing:	Insulated Low-E
Natural Light:	Desirable

Casework/Fixed Equipment:

-Base cabinets with workable surface
-Lateral files
-Overhead storage
-Coat rack

Moveable Furnishings:

-1 adjustable chair, 2 guest chairs

Equipment:

-Whiteboard, tackboard, computer

Technical Requirements

Mechanical:

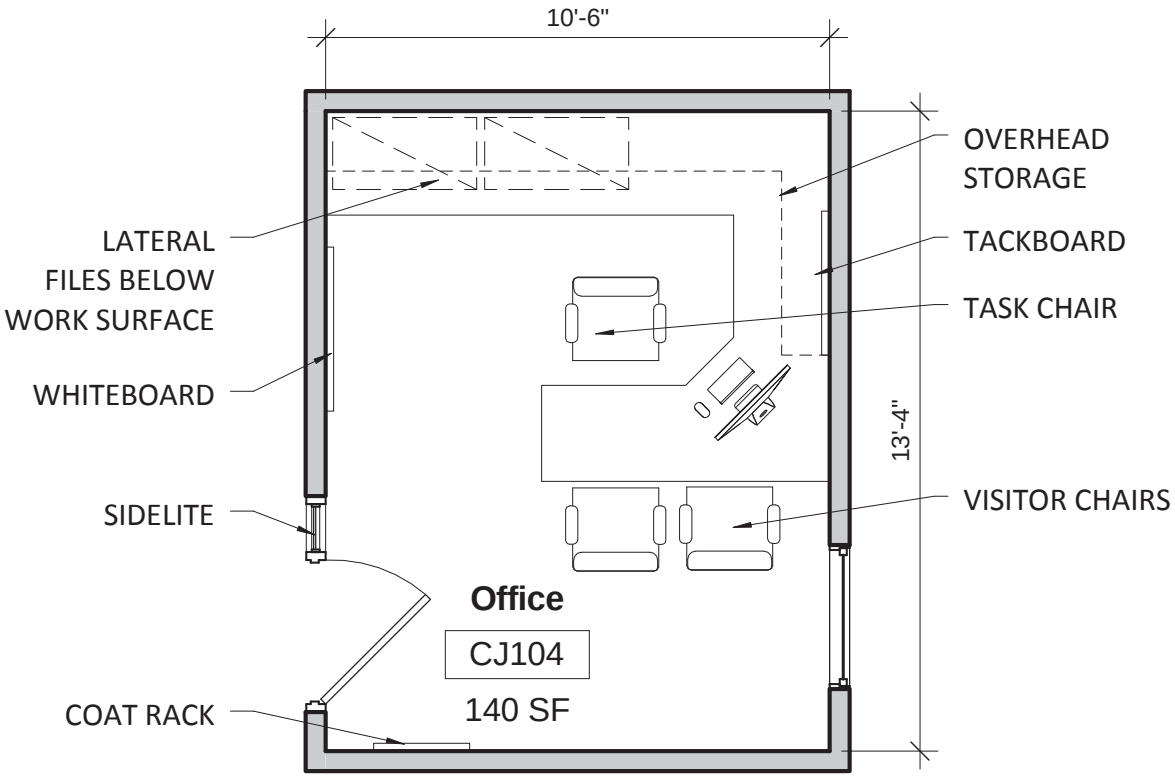
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall. Additional capacity for equipment listed.
Data:	2 devices on opposing walls.
Phone:	2 devices on opposing walls.
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	Task light at work surface
Foot Candles:	20 ambient, 40/50 task
Controls:	Vacancy sensor


10'-6"
13'-4"
OVERHEAD STORAGE
TACKBOARD
TASK CHAIR
VISITOR CHAIRS
LATERAL FILES BELOW WORK SURFACE
WHITEBOARD
SIDELITE
COAT RACK
Office
CJ104
140 SF

CJ105 SMALL FACULTY OFFICE

Space Requirements

Space Summary:

Type of Space:	Office
Number Required:	3
Total Number:	3
Occupants:	2-6
Area:	120 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x2' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Windows with blinds, secured access to entire office suite

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidlite
Special:	Sound Isolation

Windows:

Type:	Exterior
Glazing:	Insulated Low-E
Natural Light:	Desirable

Casework/Fixed Equipment:

-Base cabinets with workable surface
-Lateral files
-Overhead storage
-Coat rack

Moveable Furnishings:

-1 adjustable chair & desk, 2 guest chairs

Equipment:

-Whiteboard, tackboard, computer

Technical Requirements

Mechanical:

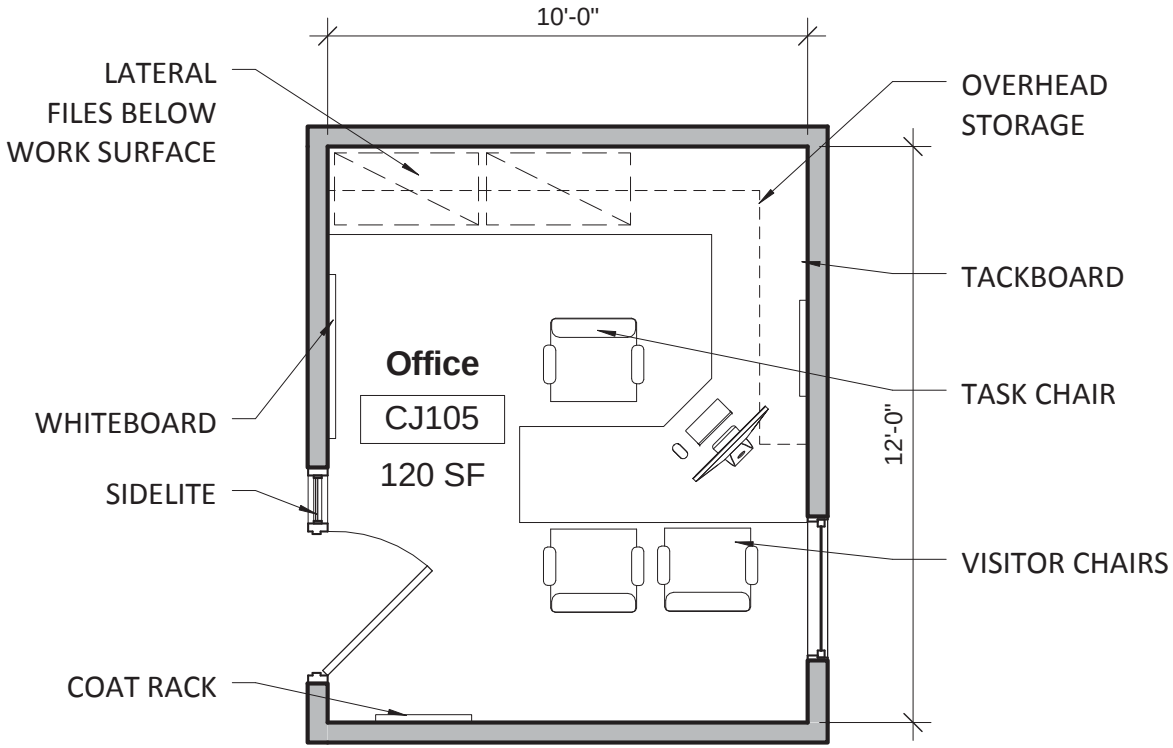
Ventilation:	5 CFM/person + 0.06 SFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall. Additional capacity for equipment listed.
Data:	2 devices on opposing walls.
Phone:	2 devices on opposing walls.
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	Task light at work surface
Foot Candles:	20 ambient, 40/50 task
Controls:	Vacancy sensor


10'-0"
LATERAL
FILES BELOW
WORK SURFACE
OVERHEAD
STORAGE
TACKBOARD
TASK CHAIR
Office
CJ105
120 SF
WHITEBOARD
SIDELITE
12'-0"
VISITOR CHAIRS
COAT RACK

CJ108 CRIME SCENE ROOM

Space Requirements

Space Summary:

Type of Space:	Simulation Lab
Number Required:	1
Total Number:	1
Occupants:	6-10
Area:	270 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Professional, Modern, Quiet

Finishes:

Floor:	Sealed concrete
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

2 doors into space, 1 from exterior; 1 from main corridor

Doors:

Type:	Interior- solid core wood with clear finish; Exterior- aluminum with full lite
Frame:	Interior- painted hollow metal with glazed sidelite; Exterior- anodized aluminum
Special:	

Windows:

Type:	Exterior
Glazing:	Insulated Low-E glass
Natural Light:	Desirable

Casework/Fixed Equipment:

-

Moveable Furnishings:

-

Equipment:

-

Technical Requirements

Mechanical:

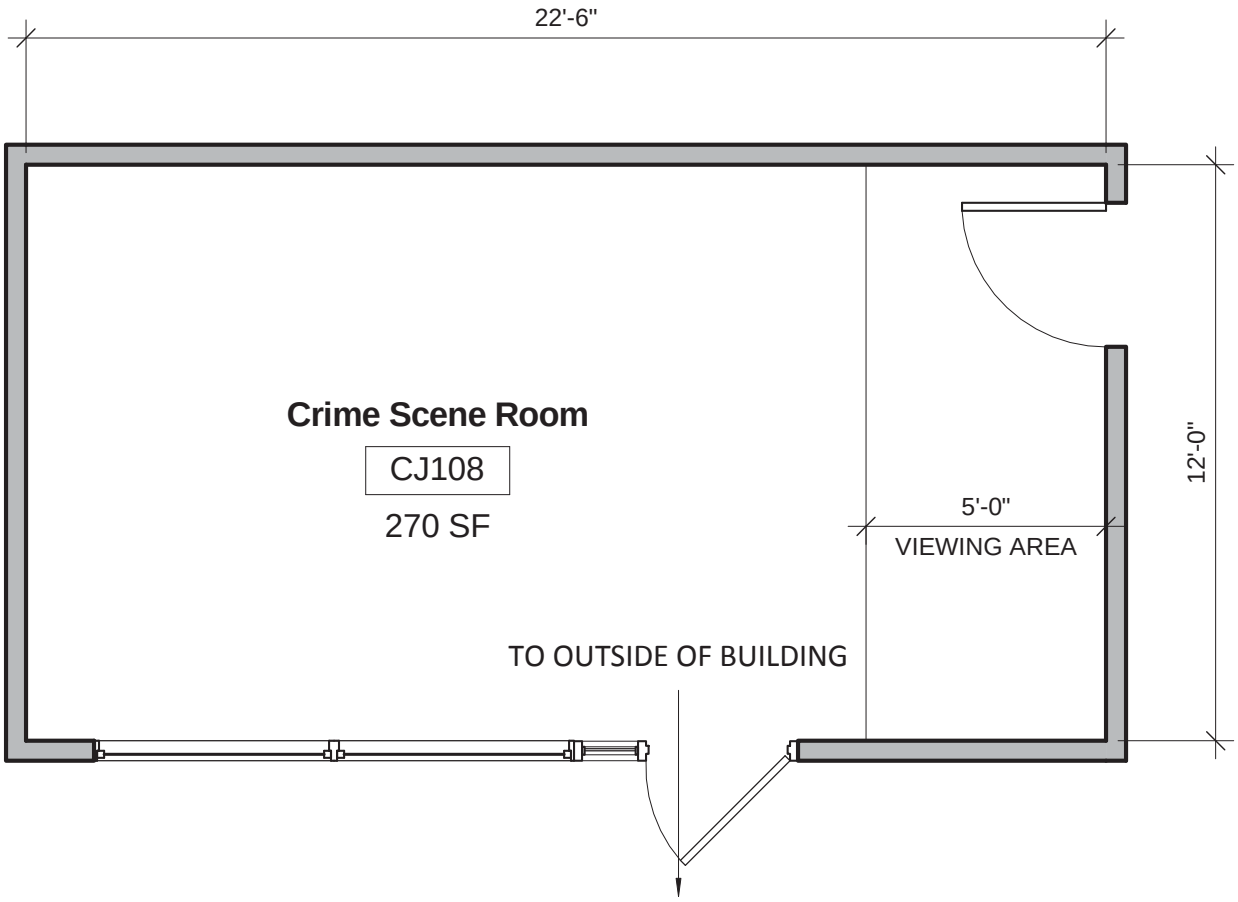
Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall
Data:	1 device
Phone:	1 device
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	50
Controls:	Vacancy sensor, dimming


22'-6"
Crime Scene Room
CJ108
270 SF
5'-0"
VIEWING AREA
12'-0"
TO OUTSIDE OF BUILDING

C101 COMPUTER WORK SPACE

Space Requirements

Space Summary:

Type of Space:	Computer Lab
Number Required:	1
Total Number:	1
Occupants:	20
Area:	1650 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation:	Equipment and Mechanical rooms; Noisy public space and public gathering areas

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	Sound insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Secured access to entire office suite, 2 doors on either side of suite.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed side lite
Special:	Sound Isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Base cabinets with work surface
-Lateral file cabinets
-Overhead storage
-White board, tack board

Moveable Furnishings:

-19 task chairs, 16 cubicles, 3 side desks

Equipment:

-19 Computers

Technical Requirements

Mechanical:

Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacles per wall and 120V distributed to systems furniture. Additional capacity for equipment listed.
Data:	2 devices on opposing walls distributed to systems furniture.
Phone:	2 devices on opposing walls distributed to systems furniture.
Video:	Rough-in for future capacity
Intercom:	Ceiling speakers with volume control

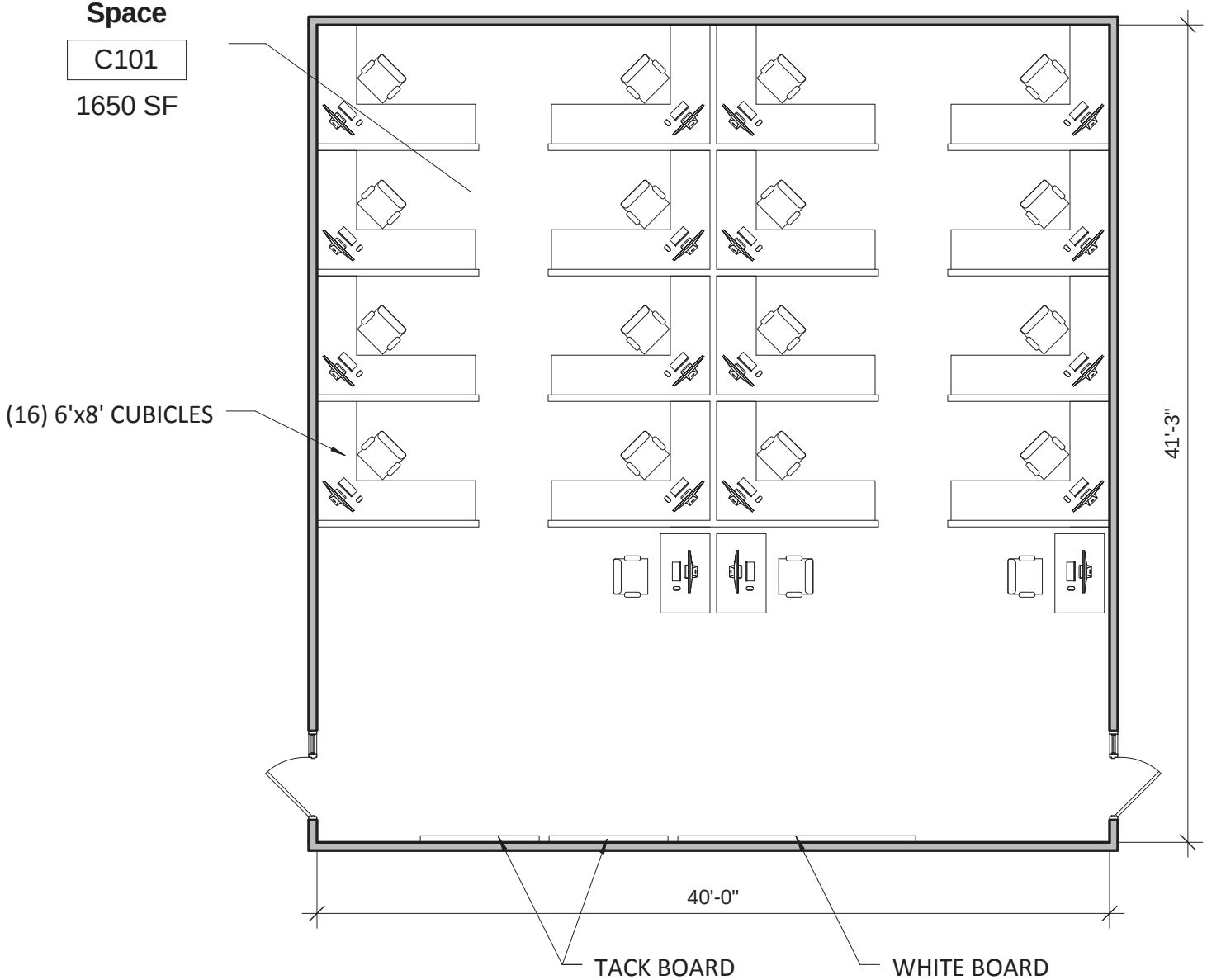
Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	Task lights at work surfaces
Foot Candles:	40
Controls:	Vacancy sensor

Computer Work Space

C101

1650 SF



C102 THINK TANK AREA

Space Requirements

Space Summary:

Type of Space:	Meeting room
Number Required:	1
Total Number:	1
Occupants:	7-12
Area:	300 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation:	None required

Architectural Requirements

Design/Aesthetic:

Clean, Professional, Interesting

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Locking Door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Interior locking door, sound isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Counter top
-Base cabinets with adjustable shelving
-Whiteboard

Moveable Furnishings:

-2 sofas, 2 lounge chairs
-1 coffee table

Equipment:

-1 refrigerator
-1 microwave

Technical Requirements

Mechanical:

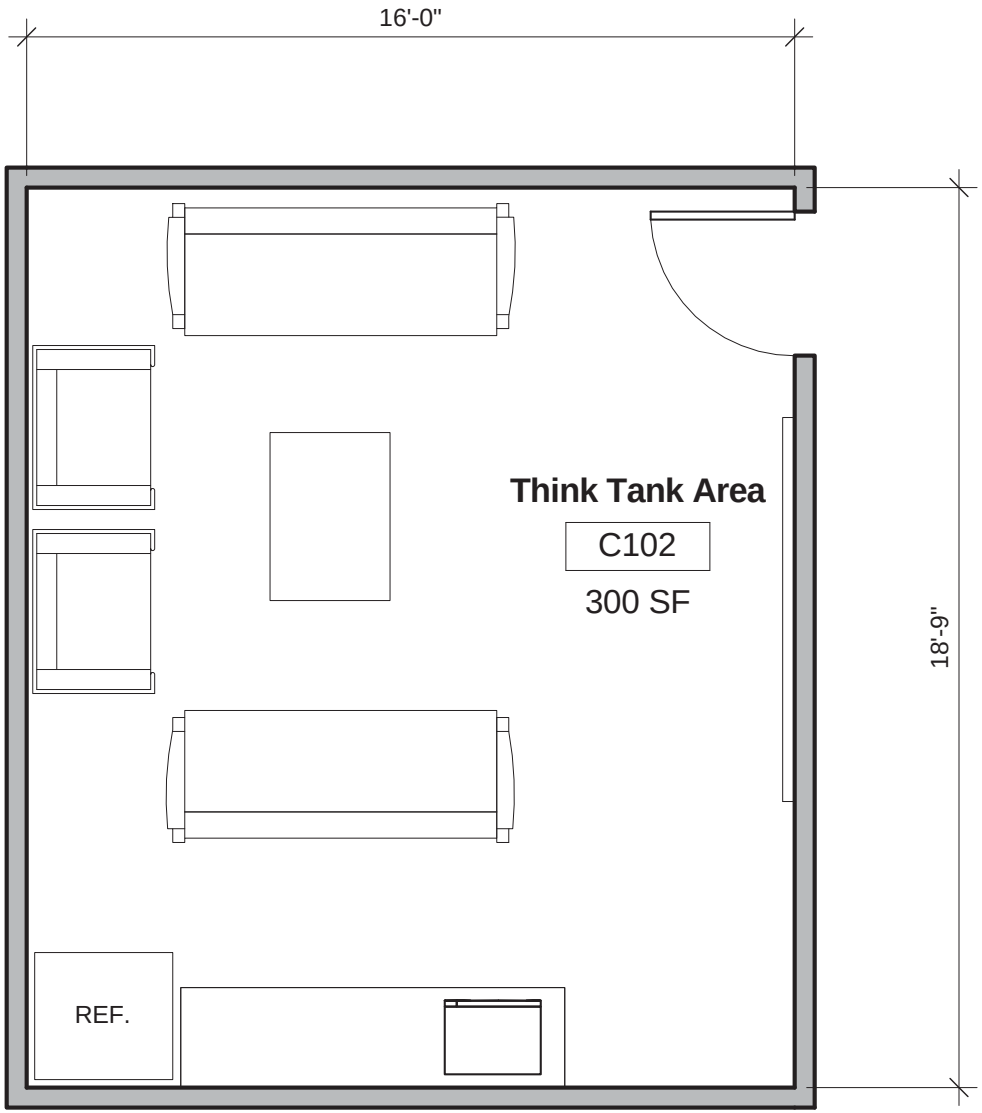
Ventilation	10 CFM/person + 0.12 CFM/sq.ft
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	25-30 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall. Additional capacity for equipment listed.
Data:	Rough-in for future capacity
Phone:	Rough-in for future capacity
Video:	Rough-in for future capacity
Intercom:	Rough-in for future capacity

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	None required
Foot Candles:	40
Controls:	Vacancy sensor


16'-0"
18'-9"
Think Tank Area
C102
300 SF
REF.

C103 OFFICE

Space Requirements

Space Summary:

Type of Space:	Office
Number Required:	3
Total Number:	3
Occupants:	2-6
Area:	120 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Blinds in windows, secured access to entire office suite.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound Isolation

Windows:

Type:	Exterior
Glazing:	Insulated Low-E
Natural Light:	Desirable

Casework/Fixed Equipment:

-Base cabinets with workable surface
-Lateral Files
-Overhead Storage
-Coat Rack

Moveable Furnishings:

-1 Adjustable chair
-2 Fixed chairs for guests

Equipment:

-Whiteboard, Tack board, Computer

Technical Requirements

Mechanical:

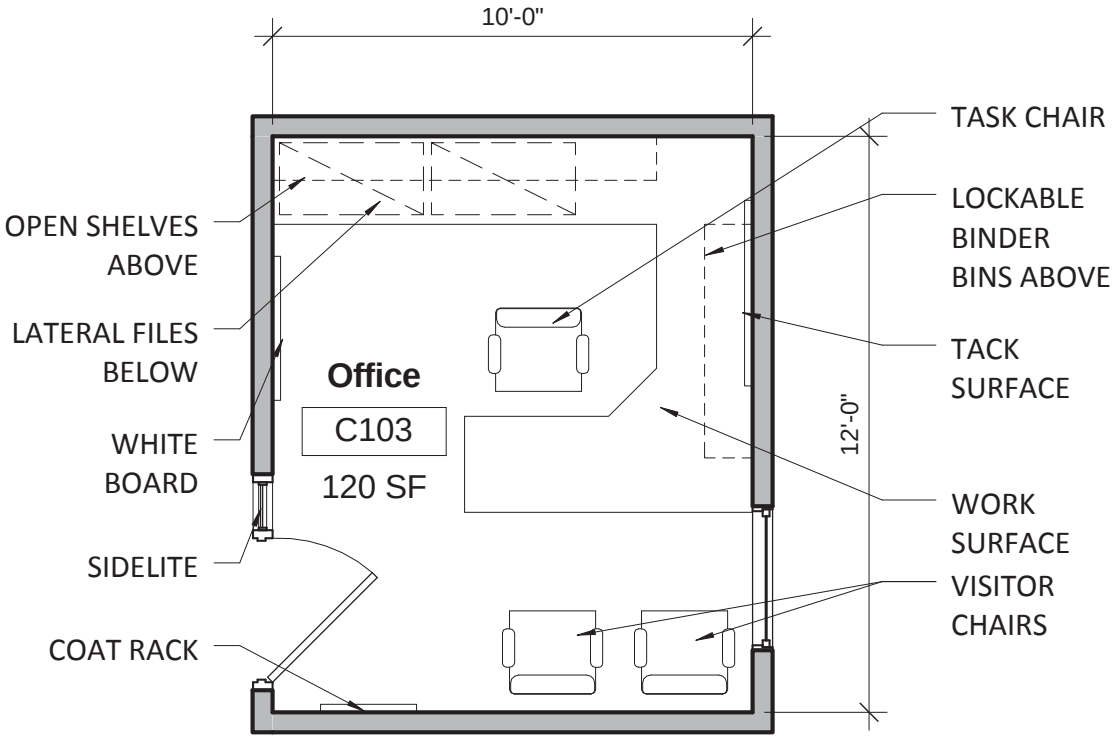
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall. Additional capacity for equipment listed.
Data:	2 devices on opposing walls.
Phone:	2 devices on opposing walls.
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	Task light at work surface
Foot Candles:	20 ambient, 40-50 task
Controls:	Vacancy sensor


10'-0"
12'-0"
Office
C103
120 SF
OPEN SHELVES ABOVE
LATERAL FILES BELOW
WHITE BOARD
SIDELITE
COAT RACK
TASK CHAIR
LOCKABLE BINDER BINS ABOVE
TACK SURFACE
WORK SURFACE
VISITOR CHAIRS

C104 CONFERENCE

Space Requirements

Space Summary:

Type of Space:	Conference room
Number Required:	1
Total Number:	1
Occupants:	7-12
Area:	300 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Blinds in windows, secured access to entire office suite

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-None required

Moveable Furnishings:

-Large conference table, 10 chairs

Equipment:

-Flat panel TV

Technical Requirements

Mechanical:

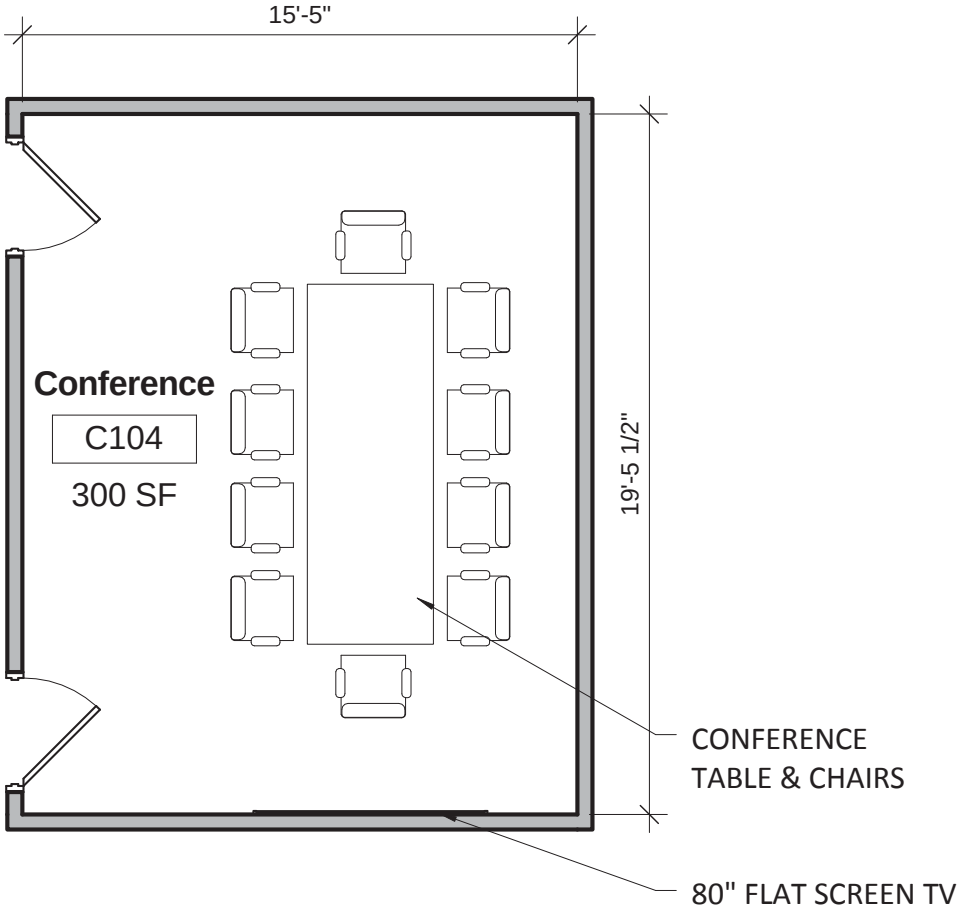
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	25-30 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall, 1 four-plex floor box under table. Additional capacity for equipment listed.
Data:	1 device on opposing walls and 1 floor box under table.
Phone:	1 device on opposing walls and 1 floor box under table.
Video:	Rough-in for future capacity
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	None required
Foot Candles:	40
Controls:	Vacancy sensor, dimming


15'-5"
19'-5 1/2"
Conference
C104
300 SF
CONFERENCE
TABLE & CHAIRS
80" FLAT SCREEN TV

C105 STORAGE

Space Requirements

Space Summary:

Type of Space:	Secure storage
Number Required:	1
Total Number:	1
Occupants:	1-2
Area:	100 SF
Primary Function:	Storage for communications program

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Efficient storage

Finishes:

Floor:	VCT with 4” rubber base
Walls:	Painted gypsum board
Ceiling:	Suspended 2’x4’ ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

Lockable door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Lockable door

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Wall mounted shelves

Moveable Furnishings:

-None required

Equipment:

-None required

Technical Requirements

Mechanical:

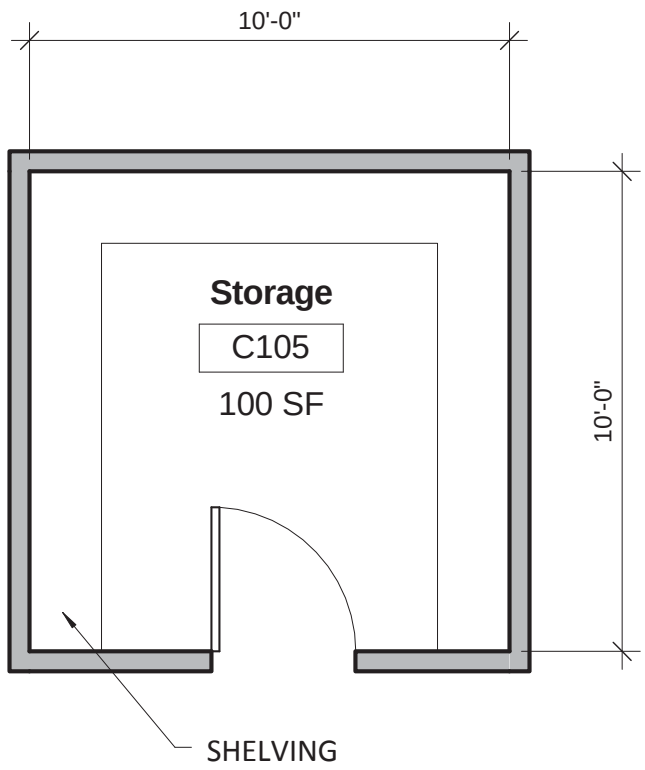
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	None required
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall.
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-8 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	10
Controls:	Vacancy sensor


10'-0"
Storage
C105
100 SF
10'-0"
SHELVING

C106 BROADCAST ROOM

Space Requirements

Space Summary:

Type of Space:	Control
Number Required:	1
Total Number:	1
Occupants:	1-2
Area:	100 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Efficiency & accessibility

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

Lockable door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	None required

Windows:

Type:	Interior
Glazing:	Clear glass
Natural Light:	None required

Casework/Fixed Equipment:

-None required

Moveable Furnishings:

-1 chair and desk

Equipment:

-Computer/broadcast stack
-Broadcast microphone
-Computer

Technical Requirements

Mechanical:

Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	15-20 NC required for recording room quality
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	2 duplex receptacles per wall. Additional capacity for equipment listed.
Data:	Capacity for equipment listed.
Phone:	Capacity for equipment listed
Video:	None required
Intercom:	None required

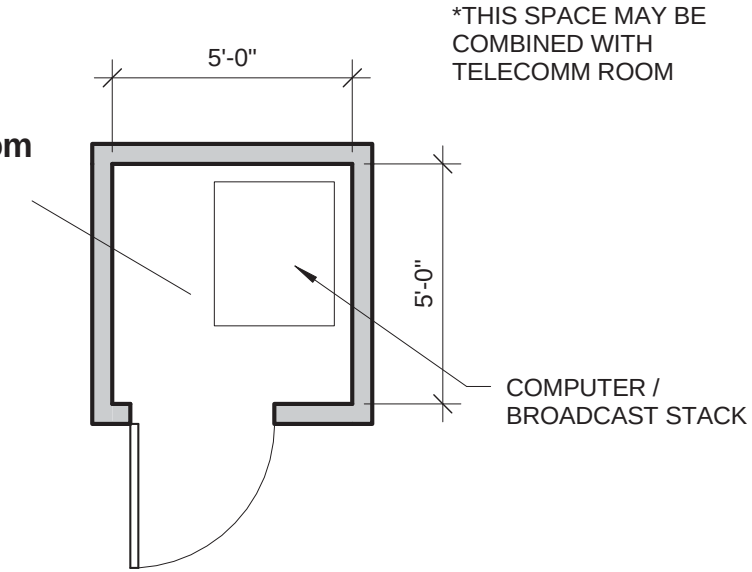
Lighting:

Fixture Type:	T-8 Fluorescent lay-in
Accent Lighting:	None required
Foot Candles:	40
Controls:	Vacancy sensor

Broadcast Room

C106

25 SF



C107 GRAPHICS/MAC LAB

Space Requirements

Space Summary:

Type of Space:	Computer Lab
Number Required:	1
Total Number:	1
Occupants:	20-24 students
Area:	1000 SF
Primary Function:	Distance learning classroom

Relationships:

Location:	
Adjacencies:	(Shared space w/ Art Program)
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Clean, Professional, Interesting

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Acoustical Lay-in, durable panels. Removed frequently for A/V access
Specialty Finishes:	Sound absorption wall panels
Sound:	Sound and vibration isolation required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	10’-0”

Privacy/Security:

Provide motorized roller shades and blackout panels if any windows are present. Card access and/or keypad control.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Sound isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Whiteboard
-Instructor console with A/V racks

Moveable Furnishings:

-12 desks (with A/V and power ports), 24 student chairs

Equipment:

-Projector & screen
-Ceiling mounted document camera, digital clock, (2) wall cameras, surround sound ceiling mounted speakers, ceiling microphones
-24 computers
-A/V equipment

Technical Requirements

Mechanical:

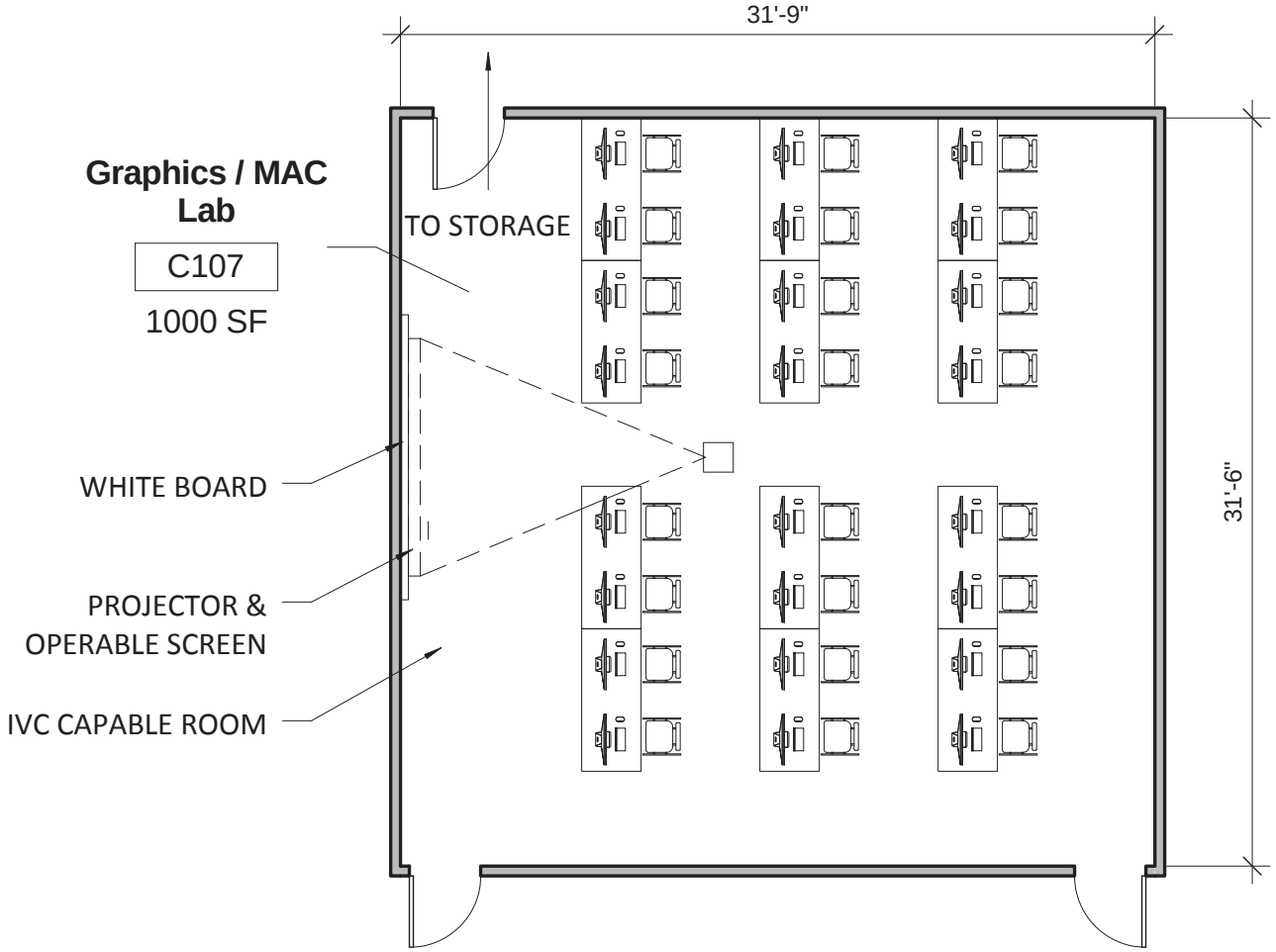
Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	15-20 NC required for recording room quality
Special Systems:	Adequate venting for instructor console A/V equipment
Plumbing:	None required

Electrical:

Power:	1 fourplex at console; 1 fourplex at each student row; 1 fourplex at each monitor; duplex outlets 12’ oc along walls
Phone/Data:	1 drop at console; 1 drop per each student row; 1 drop at each monitor; 1-2 additional drops along wall.
Video:	A/V system with internet connection
Intercom:	Ceiling speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent or LED lay-in indirect
Accent Lighting:	None required
Foot Candles:	40-45
Controls:	Vacancy sensor, dimming; zoned lighting for distance learning origination rooms


31'-9"
Graphics / MAC Lab
C107
1000 SF
TO STORAGE
WHITE BOARD
PROJECTOR &
OPERABLE SCREEN
IVC CAPABLE ROOM
31'-6"

A101 2-D STUDIO

Space Requirements

Space Summary:

Type of Space:	Lab
Number Required:	1
Total Number:	1
Occupants:	
Area:	800 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	Photo Lab, storage
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Practical, Serviceable, Durable

Finishes:

Floor:	Polished/sealed concrete
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Floor Finish (AFF):	9'-0"

Privacy/Security:

2 lockable doors

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Solid surface counter top
-Lockable base & upper cabinets with adjustable shelving
-20" x 40" vertical storage

Moveable Furnishings:

-2 Work tables, 24 stools
-Waste cans

Equipment:

-(28) 18" stacking lockers

Technical Requirements

Mechanical:

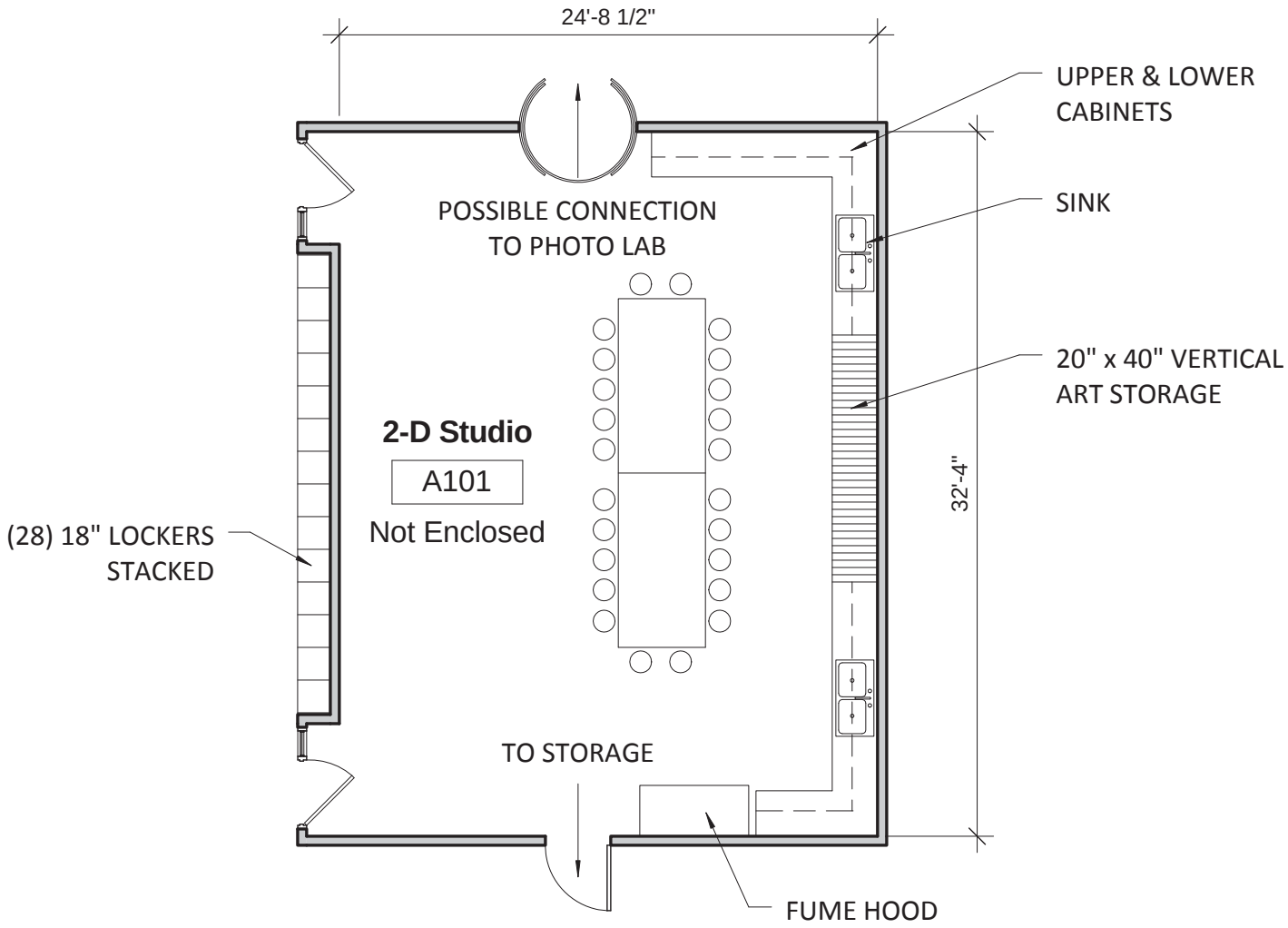
Ventilation:	10 CFM/person + 0.18 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	Fume hood, 0.7 CFM/sq. ft. general exhaust
Plumbing:	2 large sinks, supply, waste and vents

Electrical:

Power:	2 duplex receptacles per wall. 2 GFCI duplex outlets above counter near sinks. 2 duplex receptacles on drop chords above work tables. Additional capacity for equipment listed.
Data:	Rough-in for future capacity
Phone:	Rough-in for future capacity
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-8 or LED or other high efficiency 100 CRI system
Accent Lighting:	Task lights at work stations
Foot Candles:	100 ambient, 150 for display
Controls:	Vacancy sensor, dimming


24'-8 1/2"
UPPER & LOWER CABINETS
SINK
POSSIBLE CONNECTION TO PHOTO LAB
20" x 40" VERTICAL ART STORAGE
2-D Studio
A101
Not Enclosed
32'-4"
(28) 18" LOCKERS STACKED
TO STORAGE
FUME HOOD

A102 3-D STUDIO

Space Requirements

Space Summary:

Type of Space:	Work shop
Number Required:	1
Total Number:	1
Occupants:	
Area:	2800 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Practical, Serviceable, Durable

Finishes:

Floor:	Sealed concrete
Walls:	CMU, concrete, or equiv. durable surface
Ceiling:	Unfinished, fireproofed
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Floor Finish (AFF):	n/a

Privacy/Security:

4 Lockable doors

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Lockable doors

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Wall-mounted adjustable shelving

Moveable Furnishings:

-3 welding booths
-(1) 4' x4' work table
-2 group work tables
-20 student ceramics sations, 1 instructor station

Equipment:

-Table saw, belt & disc sander, compound miter saw, chop saw, band saw (wood & metal), & grinding table.

Technical Requirements

Mechanical:

Ventilation:	10 CFM/person 0.18 CFM/sq.ft. 0.5 general exhaust
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	NC=50-55
Special Systems:	Possible welding exhaust hood, saw dust collection system
Plumbing:	None required

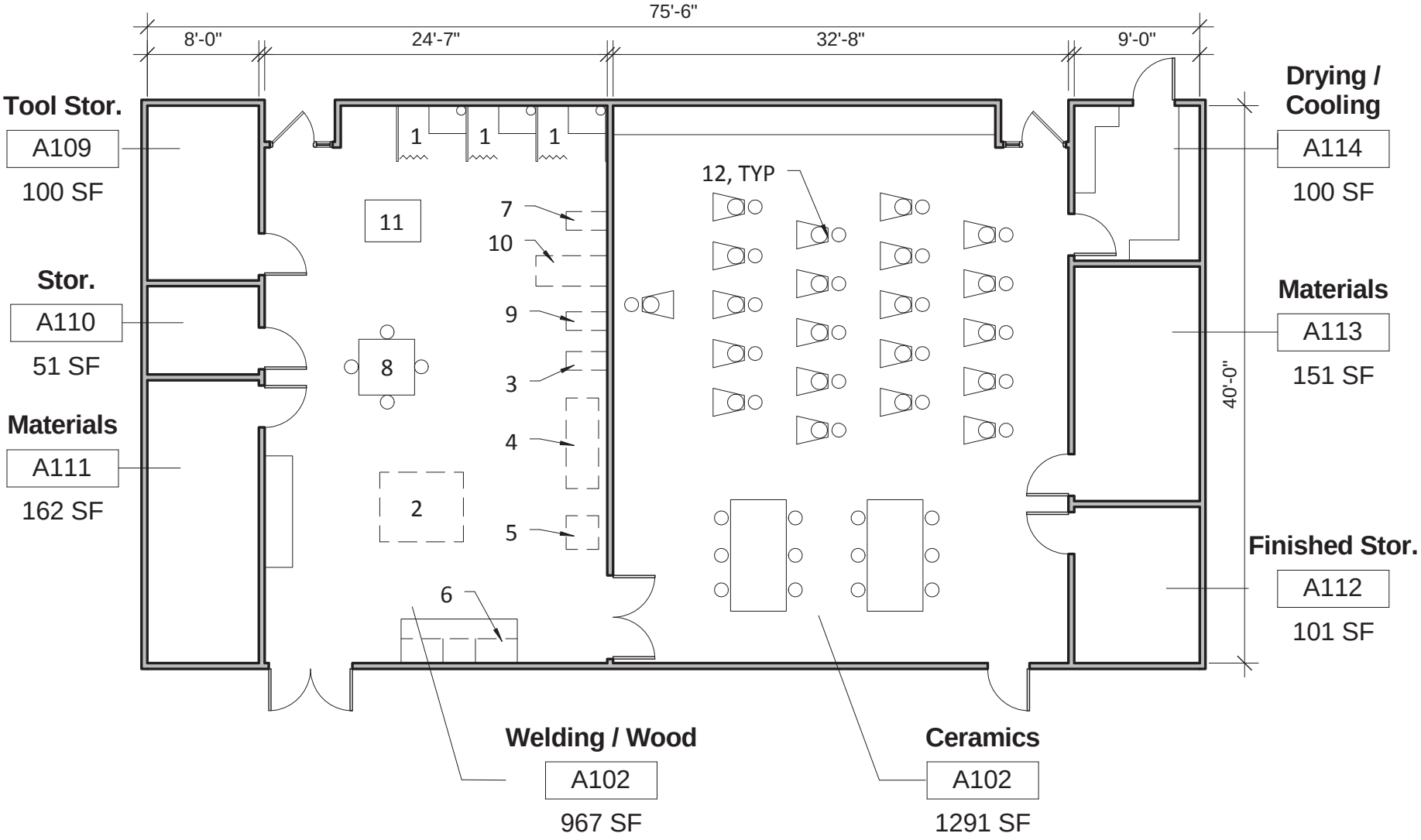
Electrical:

Power:	2 duplex receptacle per wall. Wall mounted 208VAC 3-phase buss system w/ drop cords for welding equipment. Panic systems througout lab. 208VAC outlets/hanging cords w/ Metric Decontactor. 110VAC, 20A duplex receptacle per welding booth. Additional capacity for equipment listed.
Data:	Rough-in for future capacity
Phone:	Rough-in for future capacity
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-8 or LED or other high efficiency 100 CRI system
Accent Lighting:	None required
Foot Candles:	100 in lab areas, 140 in inspection areas, 150 for display
Controls:	Switch

1. WELDING BOOTH
2. TABLE SAW
3. DRILL PRESS
4. BELT SANDER
5. DISC SANDER
6. COMPOUND MITER SAW & TABLE
7. CHOP SAW
8. 4' x 4' WORK TABLE
9. BAND SAW
10. BAND SAW (METALS)
11. GRINDING TABLE
12. CERAMICS STATION



A103 PHOTO LAB

Space Requirements

Space Summary:

Type of Space:	Lab
Number Required:	1
Total Number:	1
Occupants:	
Area:	300 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	A101 2-D Studio
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Efficiency & accessibility

Finishes:

Floor:	VCT 4” rubber base
Walls:	Painted gypsum board
Ceiling:	Suspended 2’x 4’ ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

None required

Doors:

Type:	ADA accessible dark door
Frame:	Specialized
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Lockable lower cabinets; counter top
-Dividers on counter top surface for 8 photo devolment stations

Moveable Furnishings:

-1 large work table

Equipment:

-None required

Technical Requirements

Mechanical:

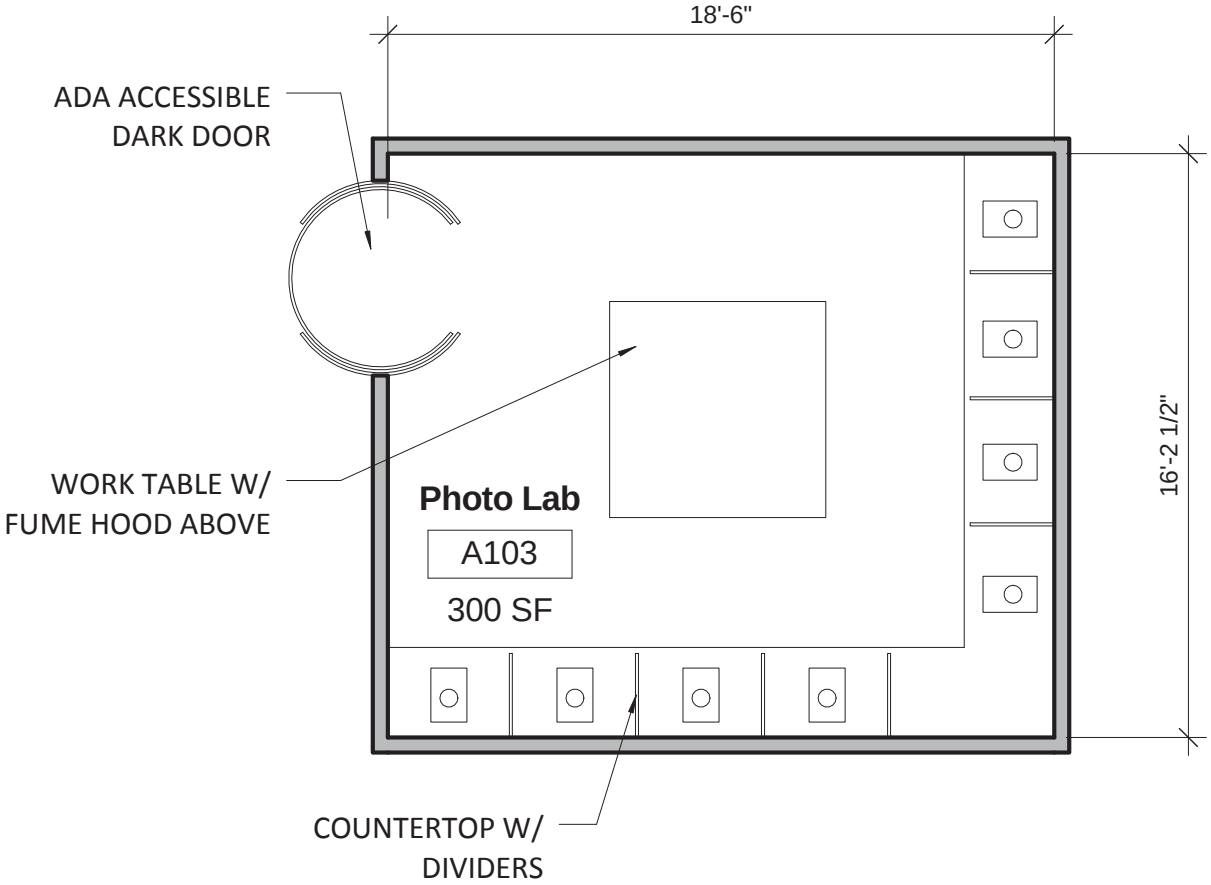
Ventilation:	10 CFM/person + 0.18 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	30 (NC/RC)
Special Systems:	Fume hood, 1.0 CFM/sq. ft. exhaust
Plumbing:	None required

Electrical:

Power:	2 duplex receptacles per wall.
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	Safelights w/ filters for photo paper, T-5 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	40-45
Controls:	Vacancy sensor


18'-6"
ADA ACCESSIBLE
DARK DOOR
WORK TABLE W/
FUME HOOD ABOVE
Photo Lab
A103
300 SF
16'-2 1/2"
COUNTERTOP W/
DIVIDERS

A104 OFFICE

Space Requirements

Space Summary:

Type of Space:	Office
Number Required:	3
Total Number:	3
Occupants:	
Area:	120 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x 4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Windows with blinds, secured access to entire office suite

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidlite
Special:	Sound Isolation

Windows:

Type:	Exterior
Glazing:	Insulated Low-E
Natural Light:	Desirable

Casework/Fixed Equipment:

-Base cabinets with workable surface
-Lateral files
-Overhead storage
-Coat rack

Moveable Furnishings:

-1 adjustable chair & desk, 2 guest chairs

Equipment:

-Whiteboard, tackboard, computer

Technical Requirements

Mechanical:

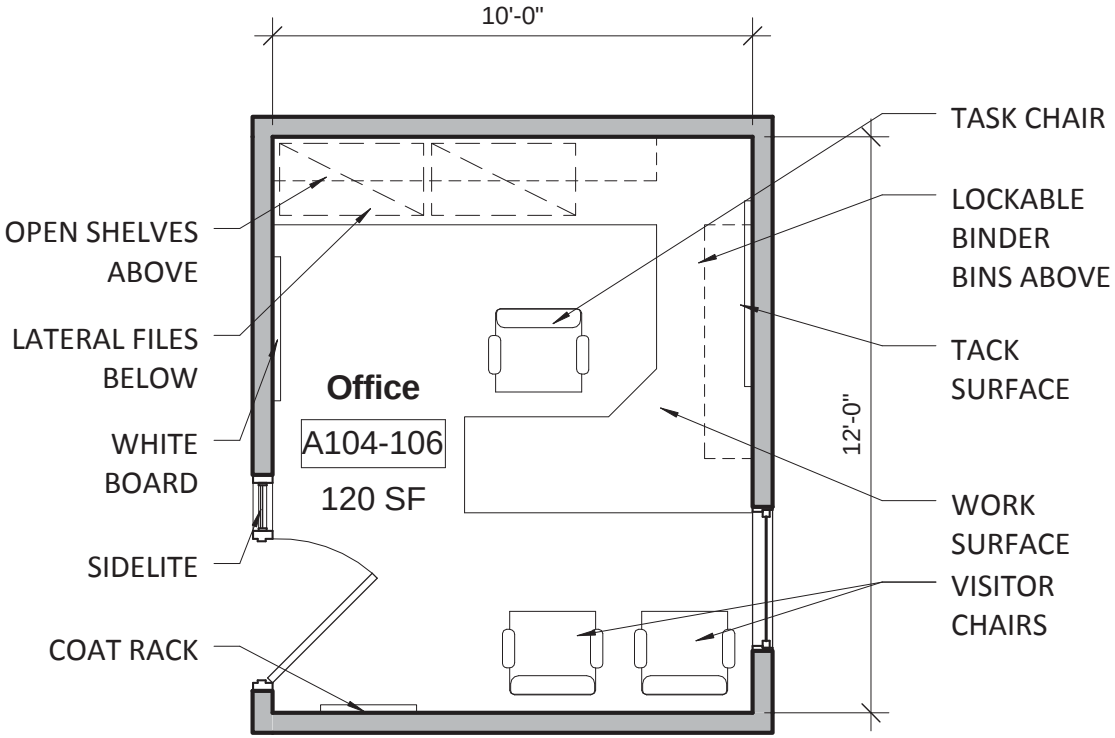
Ventilation:	5 CFM/person + 0.06 SFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall. Additional capacity for equipment listed.
Data:	2 devices on opposing walls.
Phone:	2 devices on opposing walls.
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	Task light at work surface
Foot Candles:	20 ambient, 40-50 task
Controls:	Vacancy sensor


10'-0"
12'-0"
Office
A104-106
120 SF
OPEN SHELVES ABOVE
LATERAL FILES BELOW
WHITE BOARD
SIDELITE
COAT RACK
TASK CHAIR
LOCKABLE BINDER BINS ABOVE
TACK SURFACE
WORK SURFACE
VISITOR CHAIRS

A105 ART SUPPLY STORAGE

Space Requirements

Space Summary:

Type of Space:	Storage
Number Required:	2
Total Number:	2
Occupants:	
Area:	200 SF
Primary Function:	Storage for supplies in use by art program

Relationships:

Location:	
Adjacencies:	
Separation:	Lockable storage area

Architectural Requirements

Design/Aesthetic:

Efficient storage

Finishes:

Floor:	VCT 4” rubber base
Walls:	Painted gypsum board
Ceiling:	Suspended 2’x 4’ ACT
Specialty Finishes:	All surfaces must be cleanable.
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

Lockable door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Locking hardware

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Flat storage space
-Wall mounted shelving

Moveable Furnishings:

-None required

Equipment:

-None required

Technical Requirements

Mechanical:

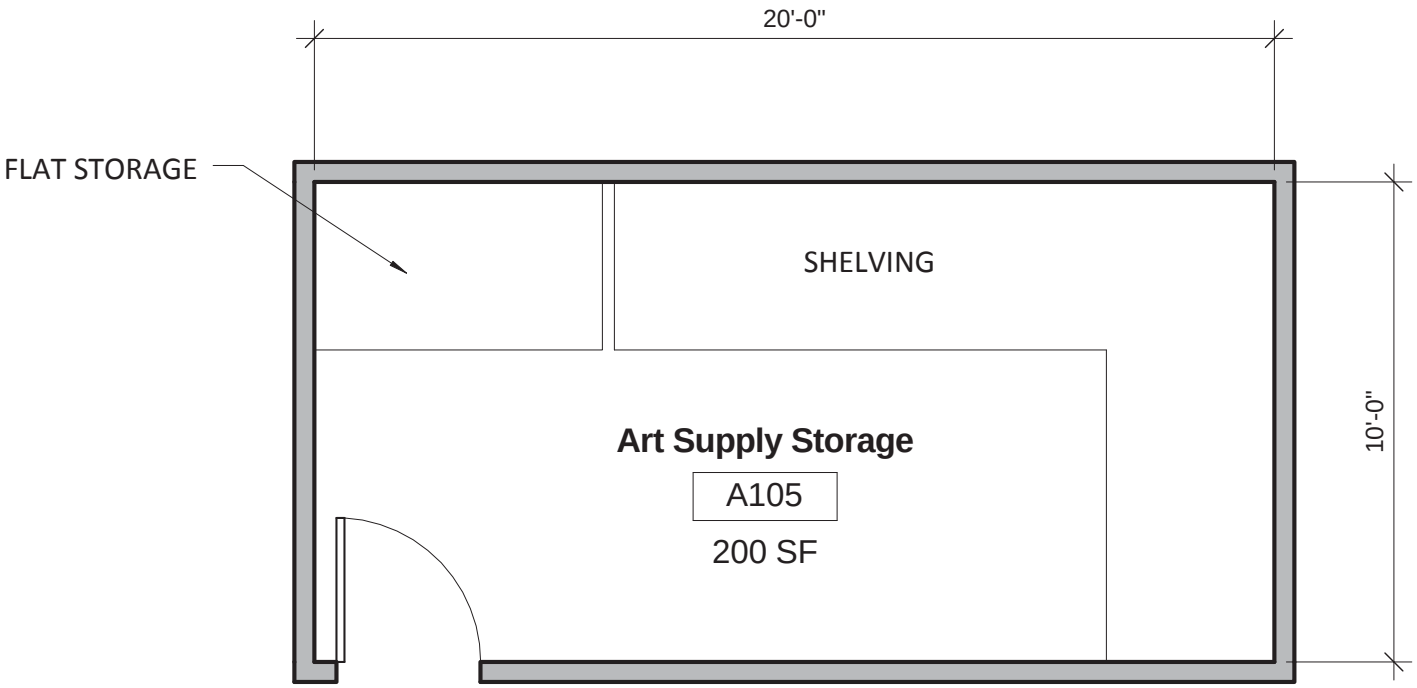
Ventilation:	7.5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	None required
Sound Criteria:	30 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall.
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-8 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	30
Controls:	Vacancy sensor


20'-0"
FLAT STORAGE
SHELVING
Art Supply Storage
A105
200 SF
10'-0"

A106 FINISHED ART STORAGE

Space Requirements

Space Summary:

Type of Space:	Storage
Number Required:	1
Total Number:	1
Occupants:	
Area:	250 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	Lockable storage area

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	VCT 4” rubber base
Walls:	Painted gypsum board
Ceiling:	Suspended 2’x4’ ACT
Specialty Finishes:	All surfaces must be cleanable.
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

Lockable door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Locking hardware

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Wall mounted shelving

Moveable Furnishings:

-None required

Equipment:

-None required

Technical Requirements

Mechanical:

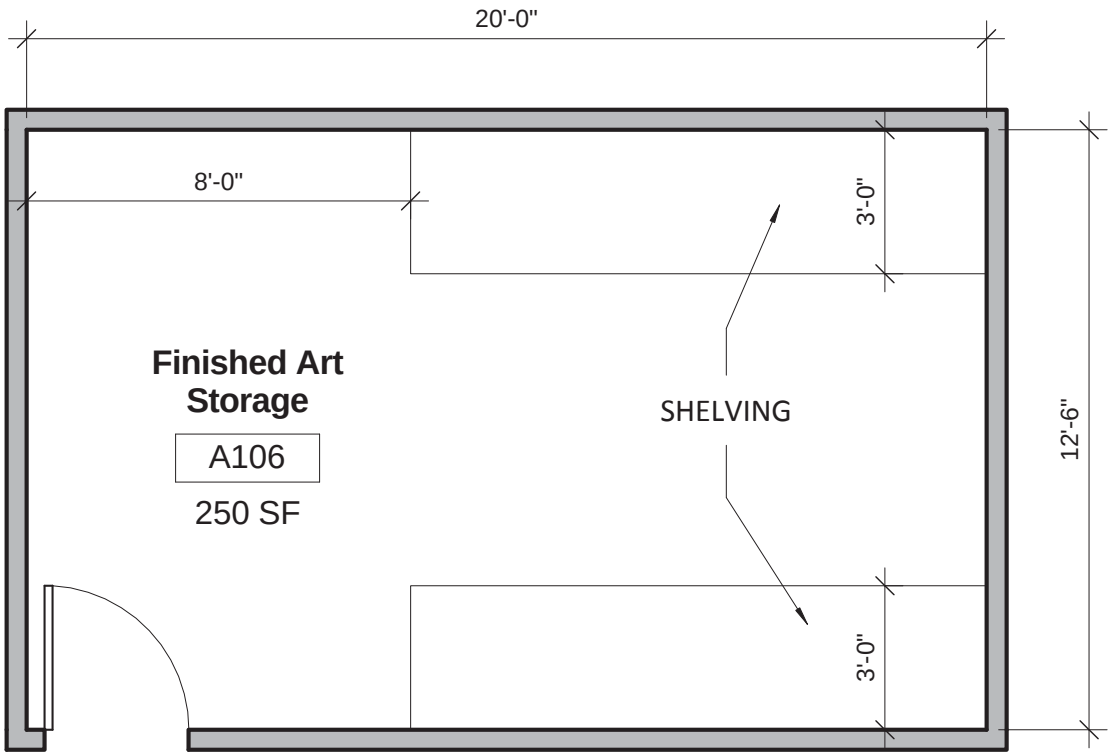
Ventilation:	0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	None required
Sound Criteria:	30 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall.
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-8 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	30
Controls:	Vacancy sensor


20'-0"
8'-0"
3'-0"
Finished Art Storage
A106
250 SF
SHELVING
12'-6"
3'-0"

A107 GALLERY WORK ROOM

Space Requirements

Space Summary:

Type of Space:	Work Room
Number Required:	1
Total Number:	1
Occupants:	
Area:	250 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	A108 Exhibition Gallery
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Practical, Serviceable, Durable

Finishes:

Floor:	Polished/sealed concrete
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	All surfaces must be cleanable.
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

General security against unauthorized access

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Locking upper and lower cabinets
-Counter top
-Lockable drawers and doors
-Tall locking storage cabinet

Moveable Furnishings:

-1 work table
-Waste cans

Equipment:

-None required

Technical Requirements

Mechanical:

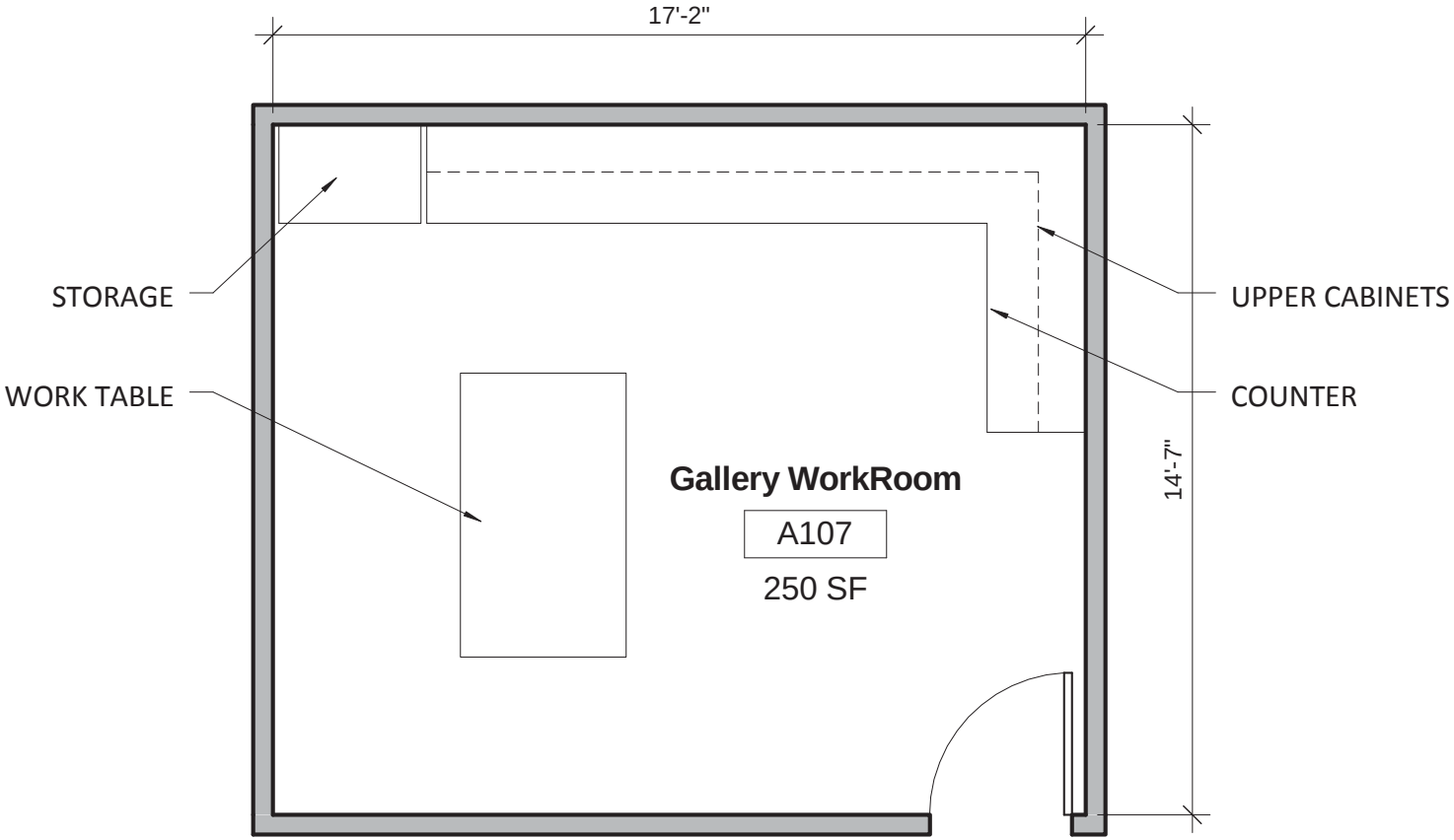
Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	6 duplex receptacles throughout. Additional capacity for equipment listed.
Data:	2 devices on opposing walls
Phone:	2 devices on opposing walls
Video:	Rough-in for future capacity
Intercom:	Ceiling speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in direct >90 CRI
Accent Lighting:	Task light at work surface
Foot Candles:	40-60
Controls:	Vacancy sensor


17'-2"
STORAGE
WORK TABLE
UPPER CABINETS
COUNTER
Gallery WorkRoom
A107
250 SF
14'-7"

A108 EXHIBITION GALLERY

Space Requirements

Space Summary:

Type of Space:	Gallery
Number Required:	1
Total Number:	1
Occupants:	40 people/1000 SF
Area:	1000 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Ceramic Tile
Walls:	Ceramic Tile
Ceiling:	Suspended 2’x 4’ ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

-

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-None required

Moveable Furnishings:

-Display surfaces
-Waste cans

Equipment:

-None required

Technical Requirements

Mechanical:

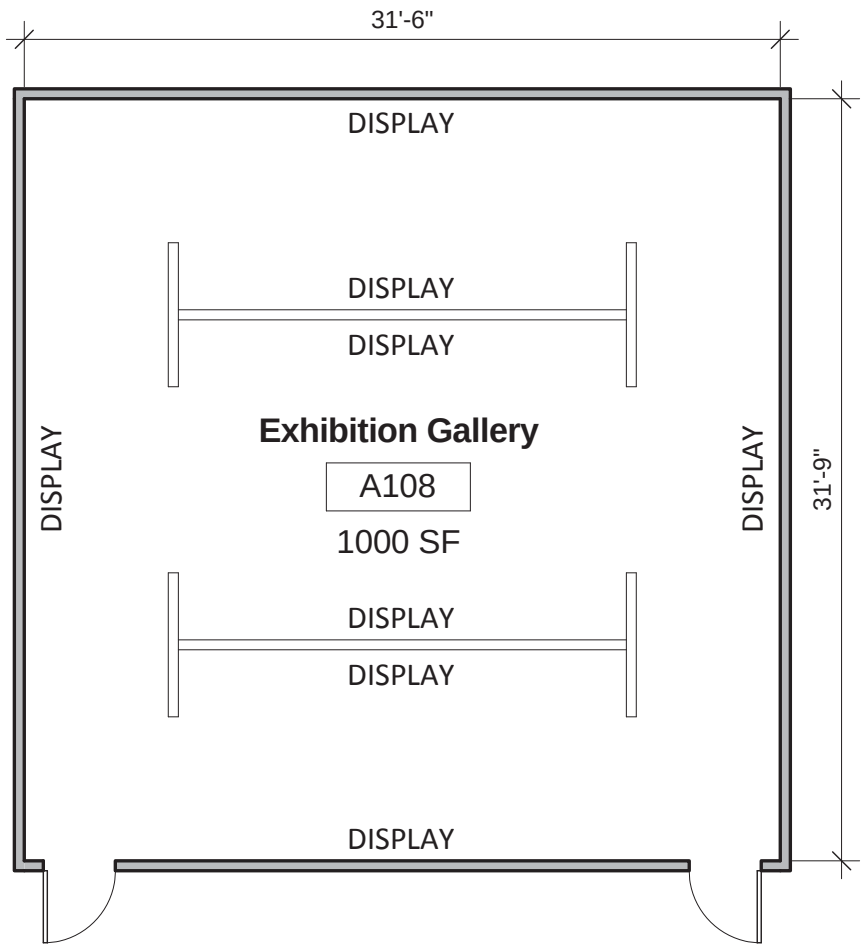
Ventilation:	7.5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	70 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	40 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall.
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	Museum quality display lighting with UV/IR filtering, 100 CRI
Accent Lighting:	None required
Foot Candles:	30 ambient, 100-150 for display
Controls:	Lighting relays, dimming


31'-6"
DISPLAY
DISPLAY
DISPLAY
DISPLAY
Exhibition Gallery
A108
1000 SF
DISPLAY
DISPLAY
DISPLAY
DISPLAY
DISPLAY
31'-9"

G101 LARGE CLASSROOM

Space Requirements

Space Summary:

Type of Space:	Classroom
Number Required:	1
Total Number:	1
Occupants:	65 people/1000 SF
Area:	2000 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Acoustical Lay-in, durable panels. Removed frequently for A/V access
Specialty Finishes:	Sound absorption wall panels
Sound:	Sound and vibration isolation required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

Provide motorized roller shades and blackout panels if any windows are present. Card access and/or keypad control. 2 Lockable doors

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound isolation

Windows:

Type:	Interior
Glazing:	Clear Glass
Natural Light:	None required

Casework/Fixed Equipment:

-Built-in tables (with A/V power ports)
-Tiered floor
-Instructor console with A/V racks
-Whiteboard

Moveable Furnishings:

-Student chairs; 1 instructor desk & chair

Equipment:

-80” LCD screen, 60” LCD screen, touch panel
-Ceiling mounted document camera, digital clock, (2) wall cameras, surround sound ceiling mounted speakers, ceiling microphones
-Computer at instructor console
-2 projectors and screens
-Sympodium 24” screen
-Flat screen monitor and hpone at console

Technical Requirements

Mechanical:

Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	15-20 NC required for recording room quality
Special Systems:	Adequate venting for instructor console A/V equipment
Plumbing:	None required

Electrical:

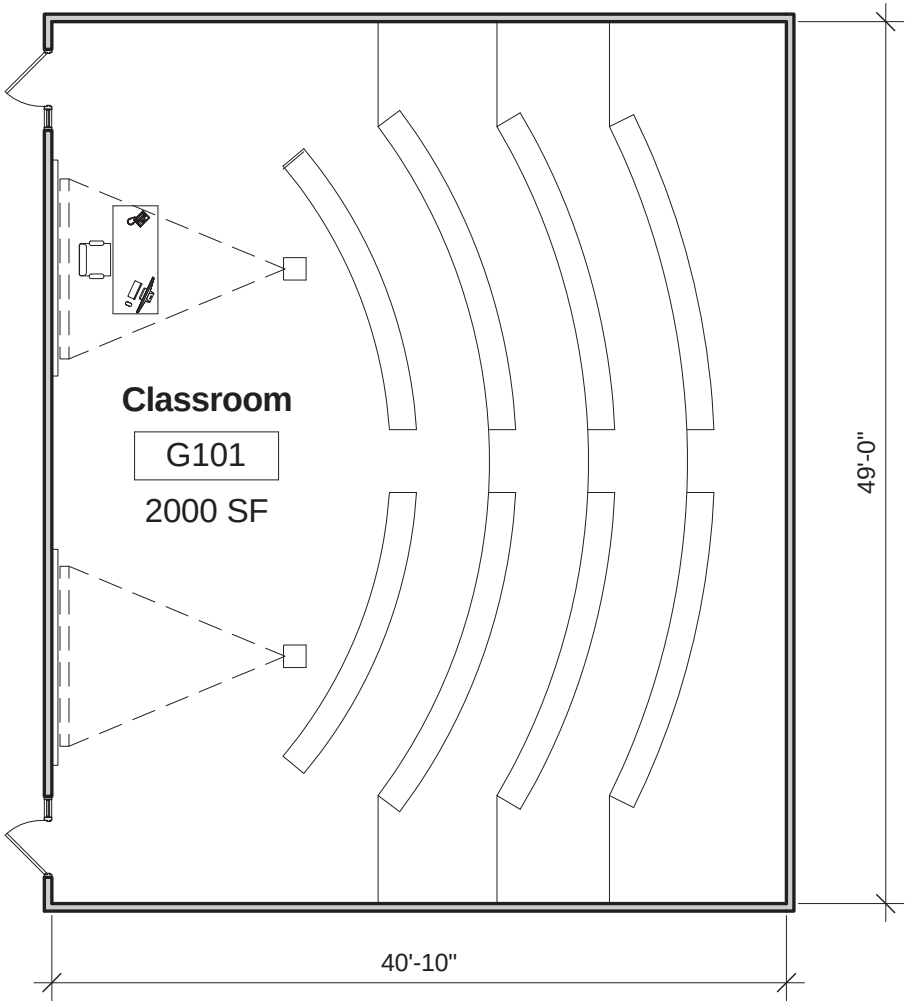
Power:	2 duplex receptacles per wall. Additional capacity for equipment listed.
Data:	1 device at instructor station
Phone:	1 device at instructor station
Video:	A/V system w/ internet connection
Intercom:	Ceiling speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent or LED lay-in direct/indirect
Accent Lighting:	None required
Foot Candles:	40-45
Controls:	Vacancy sensor, dimming; zoned lighting for distance learning origi-nation rooms

GENERAL IVC ROOM NOTES:

- DUCTS OVER MICS Ø
- NO NATURAL LIGHT BEHIND INSTRUCTOR STATION
- COLOR OF PAINT BEHIND INSTRUCTION STATION TO NOT WASH OUT ON CAMERA
- LIMIT NATURAL LIGHT, TYP



G102 SMALL CLASSROOM

Space Requirements

Space Summary:

Type of Space:	Classroom
Number Required:	6
Total Number:	6
Occupants:	28-32 students, 1 instructor, 1 facilitator
Area:	1000 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Acoustical Lay-in, durable panels. Removed frequently for A/V access
Specialty Finishes:	Sound absorption wall panels
Sound:	Sound and vibration isolation required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	10'-0"

Privacy/Security:

Provide motorized roller shades and blackout panels if any windows are present. Card access and/or keypad control.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Instructor console with A/V racks
-Whiteboard

Moveable Furnishings:

-16 student desks, 32 student chairs; 1 instructor desk & chair

Equipment:

-80" LCD screen, 60" LCD screen, touch panel
-Ceiling mounted document camera, digital clock, (2) wall cameras, surround sound ceiling mounted speakers, ceiling microphones
-Computer at instructor console
-2 projectors and screens
-Sympodium 24" screen
-Flat screen monitor and hpone at console

Technical Requirements

Mechanical:

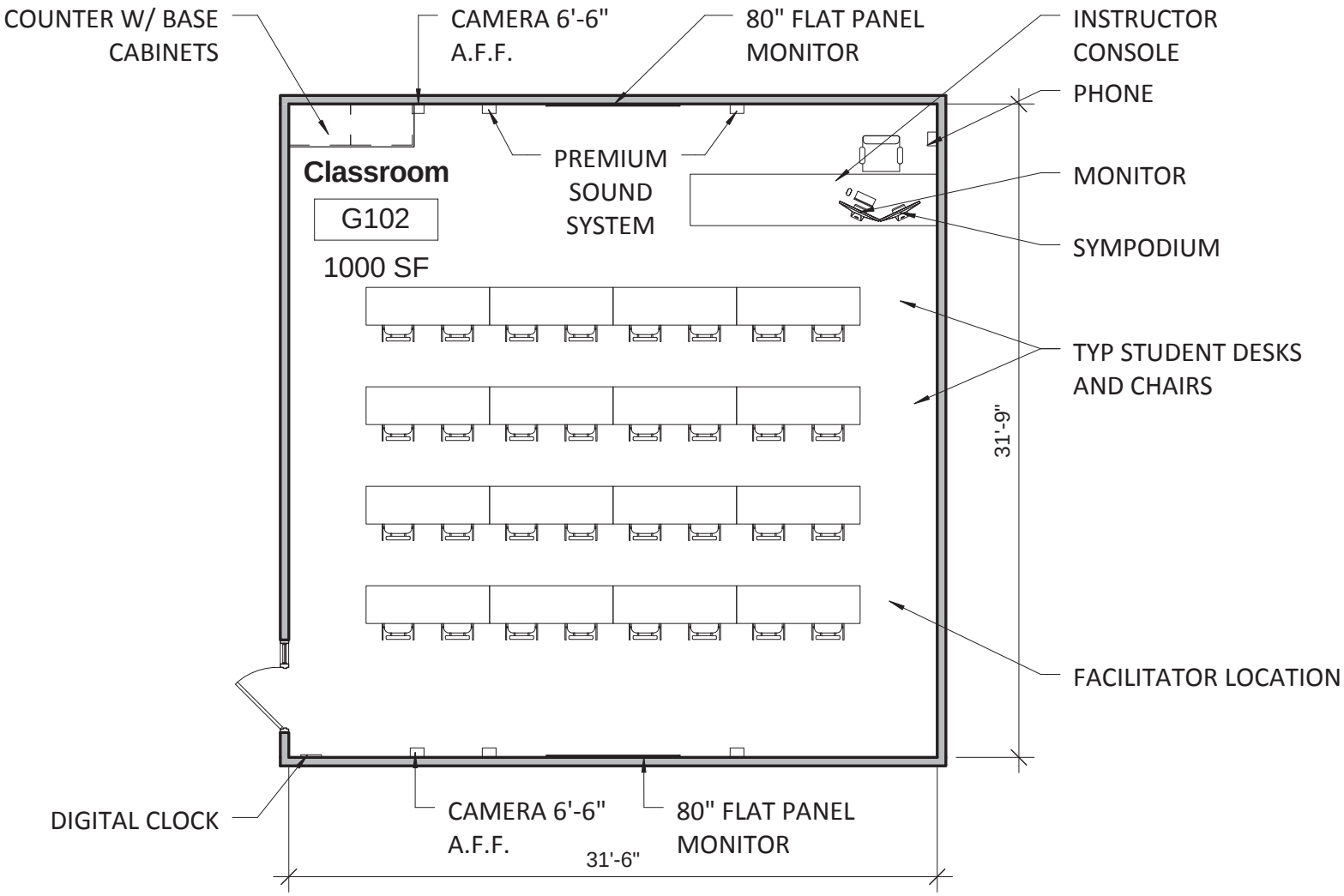
Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	15-20 NC required for recording room quality
Special Systems:	Adequate venting for instructor console A/V equipment
Plumbing:	None required

Electrical:

Power:	1 fourplex at console; 1 fourplex at each student row; 1 fourplex at each monitor; duplex outlets 12' oc along walls
Phone/Data:	1 drop at console; 1 drop per each student row; 1 drop at each monitor; 1-2 additional drops along wall.
Video:	A/V system with internet connection
Audio:	Ceiling speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent or LED lay-in direct/indirect
Accent Lighting:	None required
Foot Candles:	40-45
Controls:	Vacancy sensor, dimming; zoned lighting for distance learning origination rooms


COUNTER W/ BASE CABINETS
CAMERA 6'-6" A.F.F.
80" FLAT PANEL MONITOR
INSTRUCTOR CONSOLE
PHONE
Classroom
G102
1000 SF
PREMIUM SOUND SYSTEM
MONITOR
SYMPODIUM
TYP STUDENT DESKS AND CHAIRS
31'-9"
FACILITATOR LOCATION
DIGITAL CLOCK
CAMERA 6'-6" A.F.F.
80" FLAT PANEL MONITOR
31'-6"

G103 LOBBY

Space Requirements

Space Summary:

Type of Space:	Entry space
Number Required:	1
Total Number:	1
Occupants:	
Area:	6000 SF
Primary Function:	Circulation

Relationships:

Location:

Adjacencies:

Separation:

Architectural Requirements

Design/Aesthetic:

Professional, Efficient

Finishes:

Floor:

Walls:

Ceiling:

Specialty Finishes:

Sound:

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	15'-0"

Privacy/Security:

None required

Doors:

Type:	-
Frame:	
Special:	

Windows:

Type:	-
Glazing:	
Natural Light:	

Casework/Fixed Equipment:

-

Moveable Furnishings:

-

Equipment:

-

Technical Requirements

Mechanical:

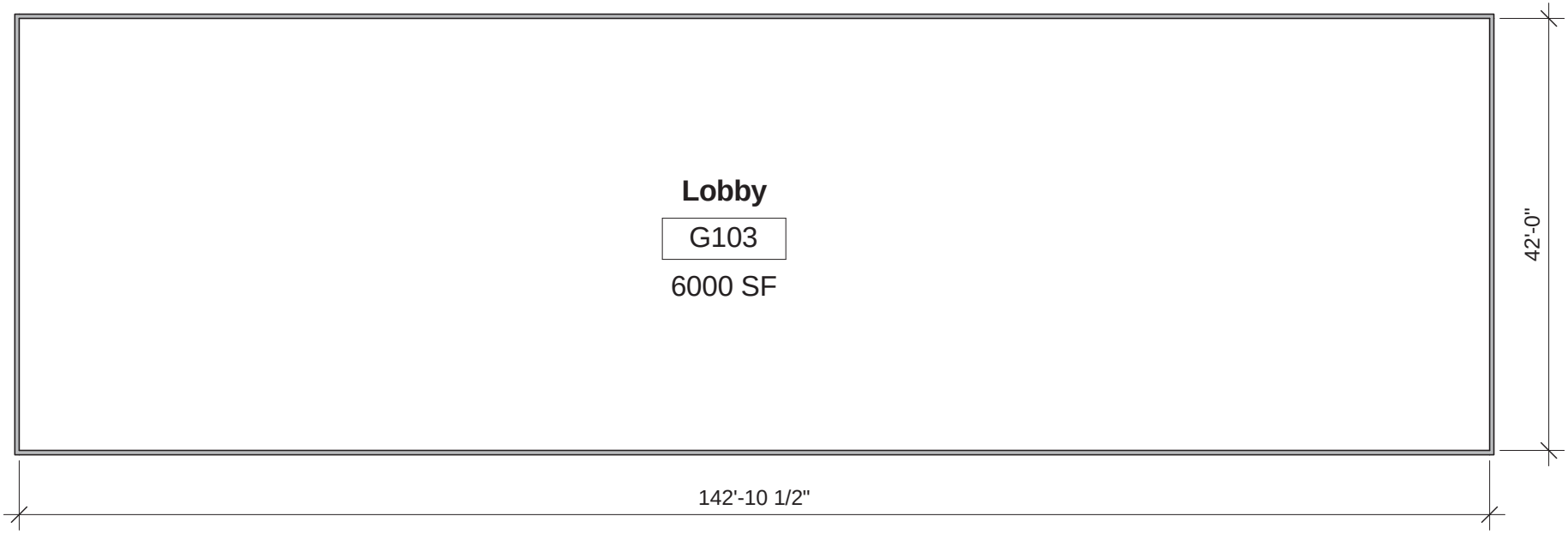
Ventilation:	7.5 CFM/person, 0.06 CFM/sq. ft. 6-10 AC/hr (Per ANSI Z9.5)
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	2 duplex receptacles per wall. Additional capacity for equipment listed.
Data:	2 devices
Phone:	1 device
Video:	Rough-in for future capacity
Intercom:	None required

Lighting:

Fixture Type:	Decorative T-5 or T-8 Fluorescent or LED
Accent Lighting:	None required
Foot Candles:	20
Controls:	Lighting relay w/ daylighting


Lobby
G103
6000 SF
42'-0"
142'-10 1/2"

G104 TICKETING

Space Requirements

Space Summary:

Type of Space:	Office
Number Required:	1
Total Number:	1
Occupants:	
Area:	140 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Professional, Efficient

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Lockable

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Lockable Door

Windows:

Type:	Transaction window
Glazing:	Interior
Natural Light:	None required

Casework/Fixed Equipment:

-Lockable closet
-Transaction counter

Moveable Furnishings:

-1 small desk; 2 chairs
-Storage cabinets
-Moveable ticket stand
-Safe with combination lock

Equipment:

-2 computers
-1 cash register

Technical Requirements

Mechanical:

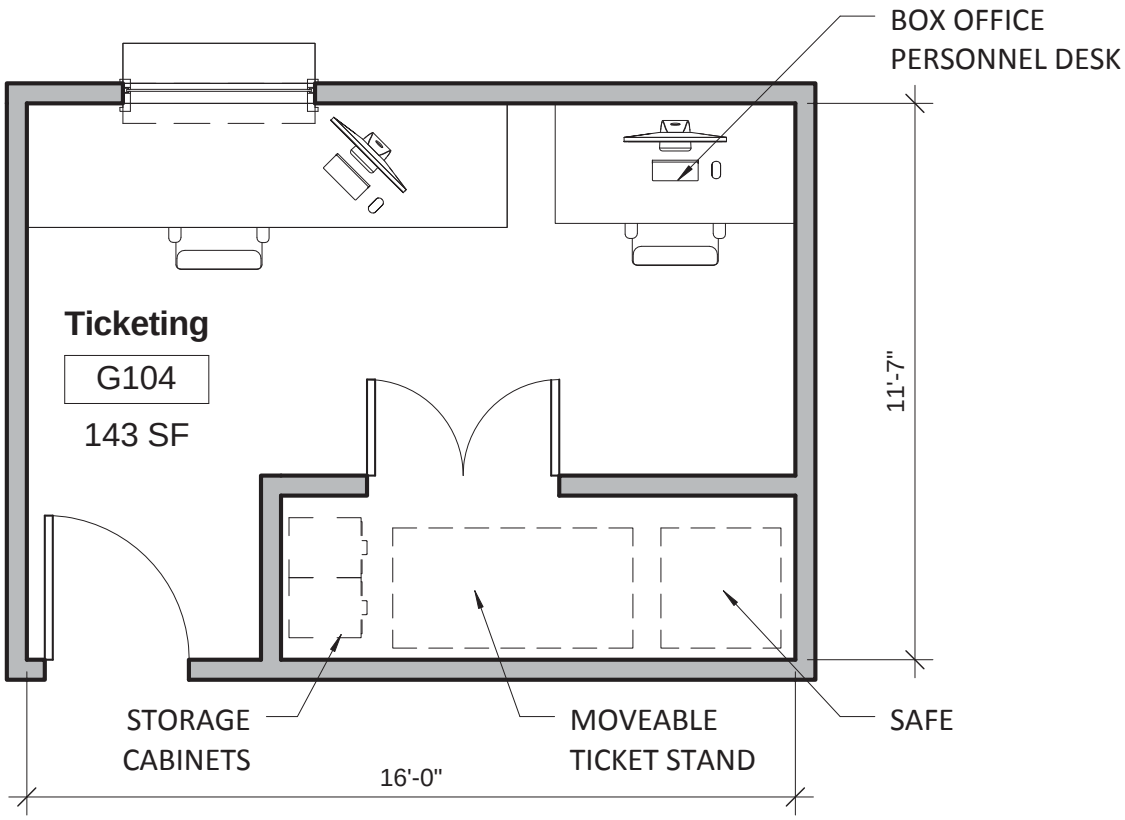
Ventilation:	5 CFM/person, 0.06 CFM/sq. ft. 6-10 AC/hr (Per ANSI Z9.5)
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex recepticle per wall. Additional capacity for equipment listed.
Data:	2 devices on opposing walls.
Phone:	2 devices on opposing walls.
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	Task light at work surface
Foot Candles:	20 ambient, 40-50 task
Controls:	Vacancy sensor


BOX OFFICE
PERSONNEL DESK
Ticketing
G104
143 SF
11'-7"
STORAGE
CABINETS
MOVEABLE
TICKET STAND
SAFE
16'-0"

G105 PUBLIC REST ROOMS

Space Requirements

Space Summary:

Type of Space:	Enclosed Public Rest room
Number Required:	1 per gender
Total Number:	2
Occupants:	3
Area:	600 SF
Primary Function:	General Building Space

Relationships:

Location:

Adjacencies:

Separation:

Architectural Requirements

Design/Aesthetic:

None required

Finishes:

Floor:	Ceramic Tile, slope to floor drain
Walls:	Ceramic Tile
Ceiling:	Suspended 2'x2' ACT
Specialty Finishes:	None required
Sound:	Sound proof insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Separated/private stalls

Doors:

Type:	Solid core wood with clear finish.
Frame:	Painted hollow metal
Special:	Sound Isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Water closet; Urinal; Lavatory; Toilet Partition; Urinal Screen; Mirror; Grab Bars; Dispensers; Waste Receptacles

Moveable Furnishings:

None required

Equipment:

None required

Technical Requirements

Mechanical:

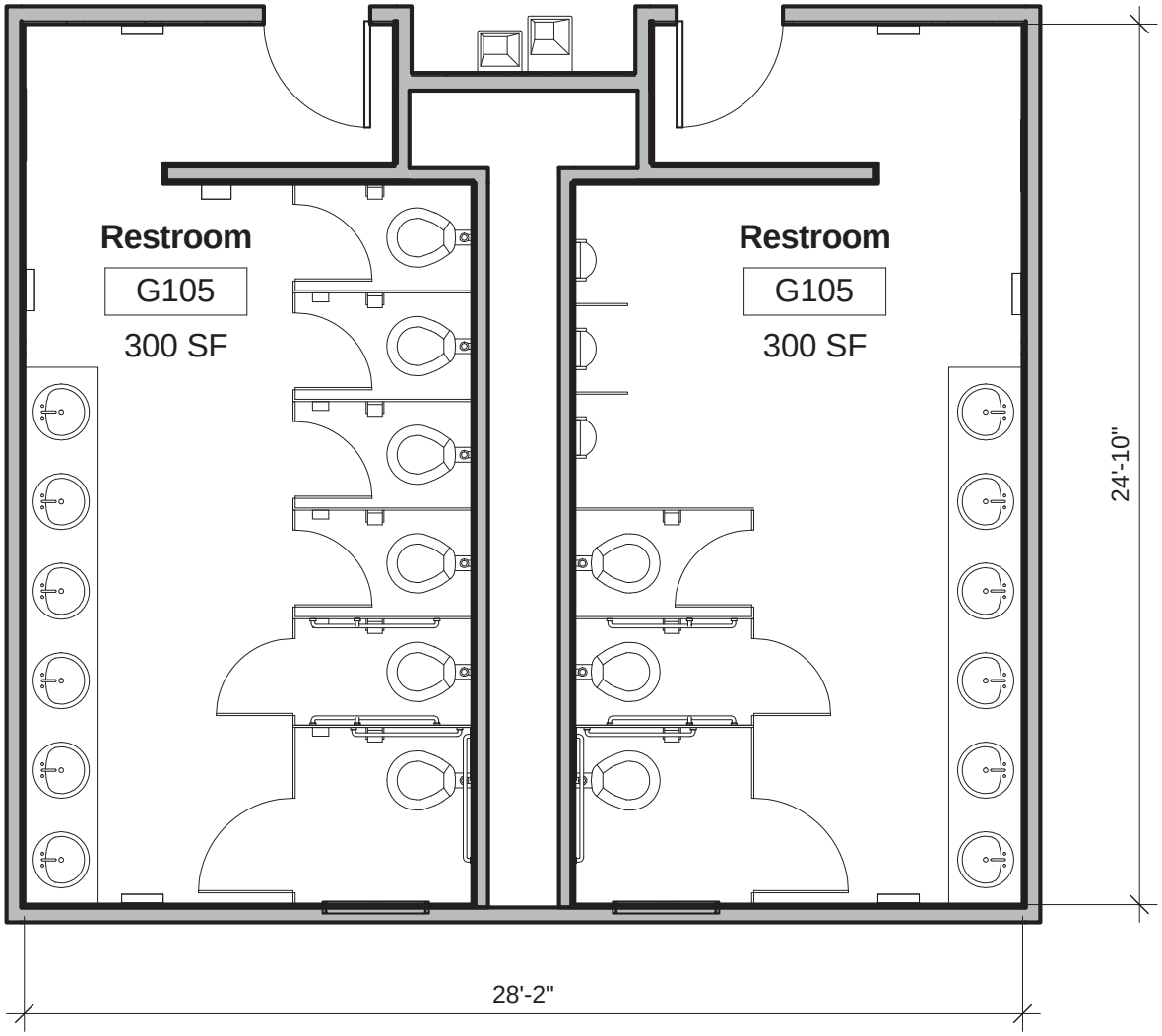
Ventilation:	1.0 CFM/sq.ft. (100% Exhaust)
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	40 (NC/RC)
Special Systems:	5 min. air exchange exhaust, 50-70 CFM/WC or urinal
Plumbing:	Wall hung flush valve water closets and urinals; wall hung lavatories; floor drains; water, waste & venting

Electrical:

Power:	2 GFCI duplex along vanity wall, power for hand dryers
Data:	None required
Phone:	None required
Video:	None required
Intercom:	Ceiling speaker with volume control

Lighting:

Fixture Type:	T-8 Fluorescent lay-in direct/indirect
Accent Lighting:	Required at mirrors
Foot Candles:	30
Controls:	Occupancy sensor


Restroom
G105
300 SF
Restroom
G105
300 SF
24'-10"
28'-2"

G106 CONCESSIONS

Space Requirements

Space Summary:

Type of Space:	Kitchen
Number Required:	1
Total Number:	1
Occupants:	
Area:	184 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Efficiency and accessibility

Finishes:

Floor:	VCT with 4” rubber base
Walls:	Painted gypsum board
Ceiling:	Suspended 2’x 4’ ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

Lockable door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Lockable door, roll-up door at service counter

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Lower lockable cabinets w/ adjustable shelving
-Service counter with roll-up door

Moveable Furnishings:

-None required

Equipment:

-1 full size refrigerator

Technical Requirements

Mechanical:

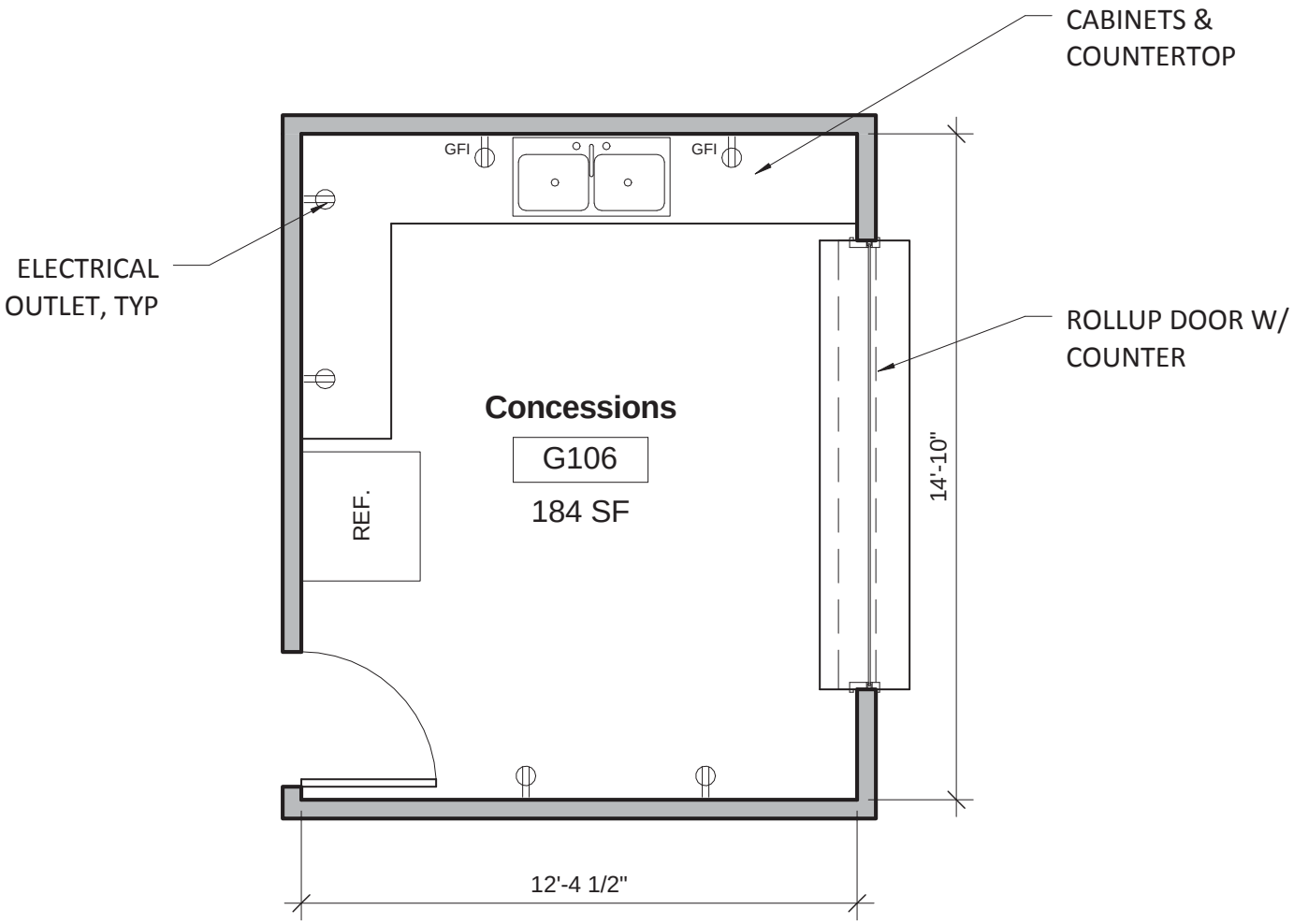
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	74 ° F
Winter Design Temp:	72 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	1 large sink; water, waste & venting

Electrical:

Power:	2 duplex receptacle per wall. 2 GFCI duplex outlets near sink. Additional capacity for equipment listed.
Data:	1-2 for POS?
Phone:	Rough-in for future capacity
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-8 Fluorescent or LED lay-in indirect
Accent Lighting:	None required
Foot Candles:	50
Controls:	Vacancy sensor


CABINETS &
COUNTERTOP
GFI
GFI
ELECTRICAL
OUTLET, TYP
ROLLUP DOOR W/
COUNTER
Concessions
G106
184 SF
REF.
14'-10"
12'-4 1/2"

G107 FACULTY WORK ROOM

Space Requirements

Space Summary:

Type of Space:	Work room
Number Required:	1
Total Number:	1
Occupants:	
Area:	475 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Linoleum
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	10'-0"

Privacy/Security:

Secure acess from public

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Sound isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Lockable lower & upper cabinets & countertop
-Work table w/ lockable lower cabinets
-Whiteboard

Moveable Furnishings:

-1 task chair

Equipment:

-Combination printer, copier, fax machine
-1 telephone
-1 computer, 2 monitors

Technical Requirements

Mechanical:

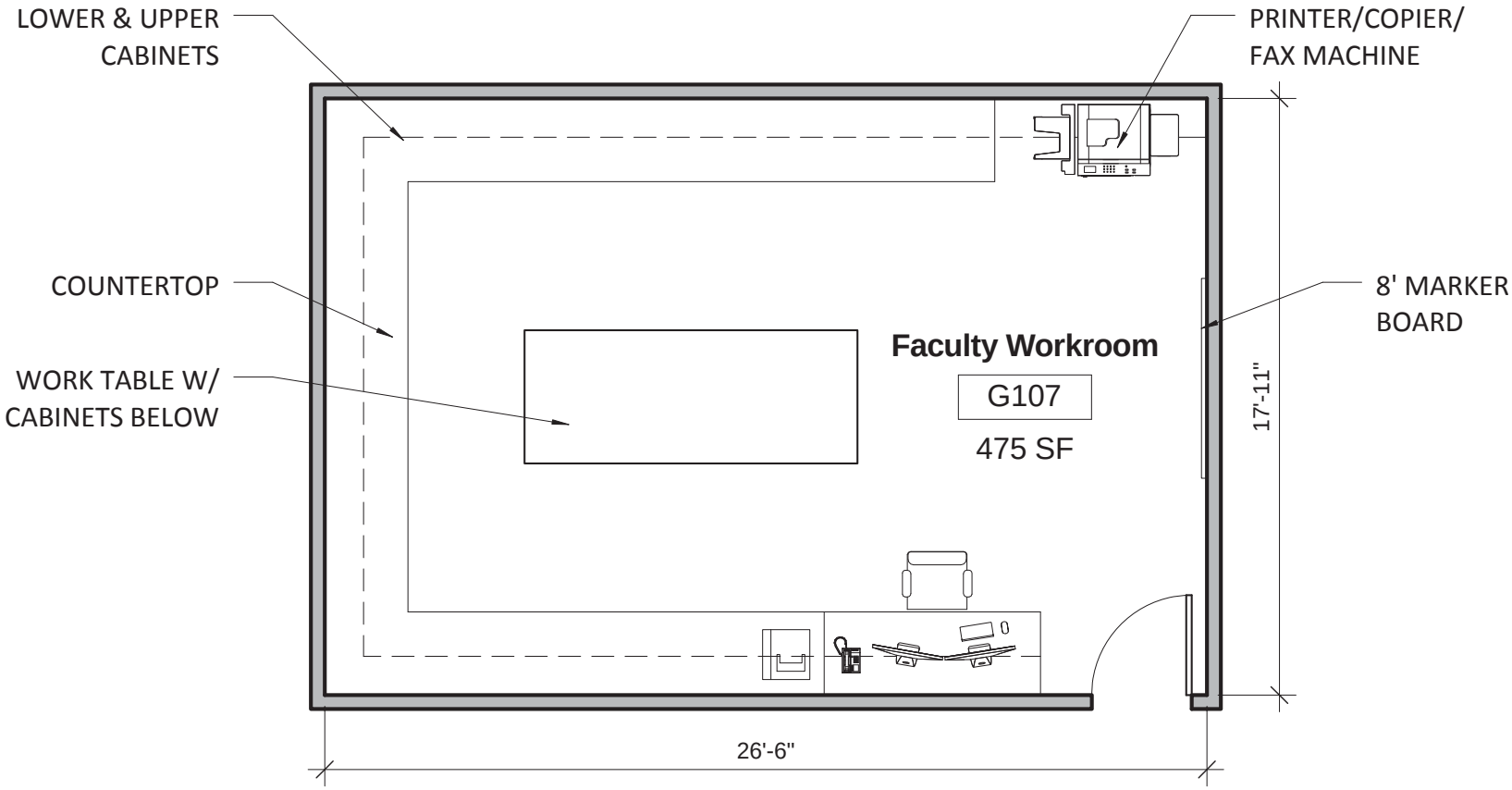
Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	Exhaust 0.5 CFM/sq.ft, negative pressurization, no recirculation air
Plumbing:	None required

Electrical:

Power:	2 duplex receptacles per wall. Additional capacity for equipment listed.
Phone/Data:	2 devices on opposing walls; networked photocopier/printer
Video:	Rough-in for future capacity
Intercom:	Ceiling Speakers with volume control

Lighting:

Fixture Type:	T-8 Fluorescent or LED lay-in indirect
Accent Lighting:	None required
Foot Candles:	40
Controls:	Vacancy sensor


LOWER & UPPER CABINETS
PRINTER/COPIER/ FAX MACHINE
COUNTERTOP
8' MARKER BOARD
WORK TABLE W/ CABINETS BELOW
Faculty Workroom
G107
475 SF
17'-11"
26'-6"

M101 BAND ROOM

Space Requirements

Space Summary:

Type of Space:	Rehearsal
Number Required:	1
Total Number:	1
Occupants:	35 people/1000 SF
Area:	2100 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Inviting, Invigorating, Flexible

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x 4' ACT
Specialty Finishes:	Sound attenuating baffles
Sound:	Sound proof insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 10'-0"

Privacy/Security:

2 double doors

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Sound isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Tiered floor

Moveable Furnishings:

-30 student chairs; 1 instructor desk/chair

Equipment:

-None required

Technical Requirements

Mechanical:

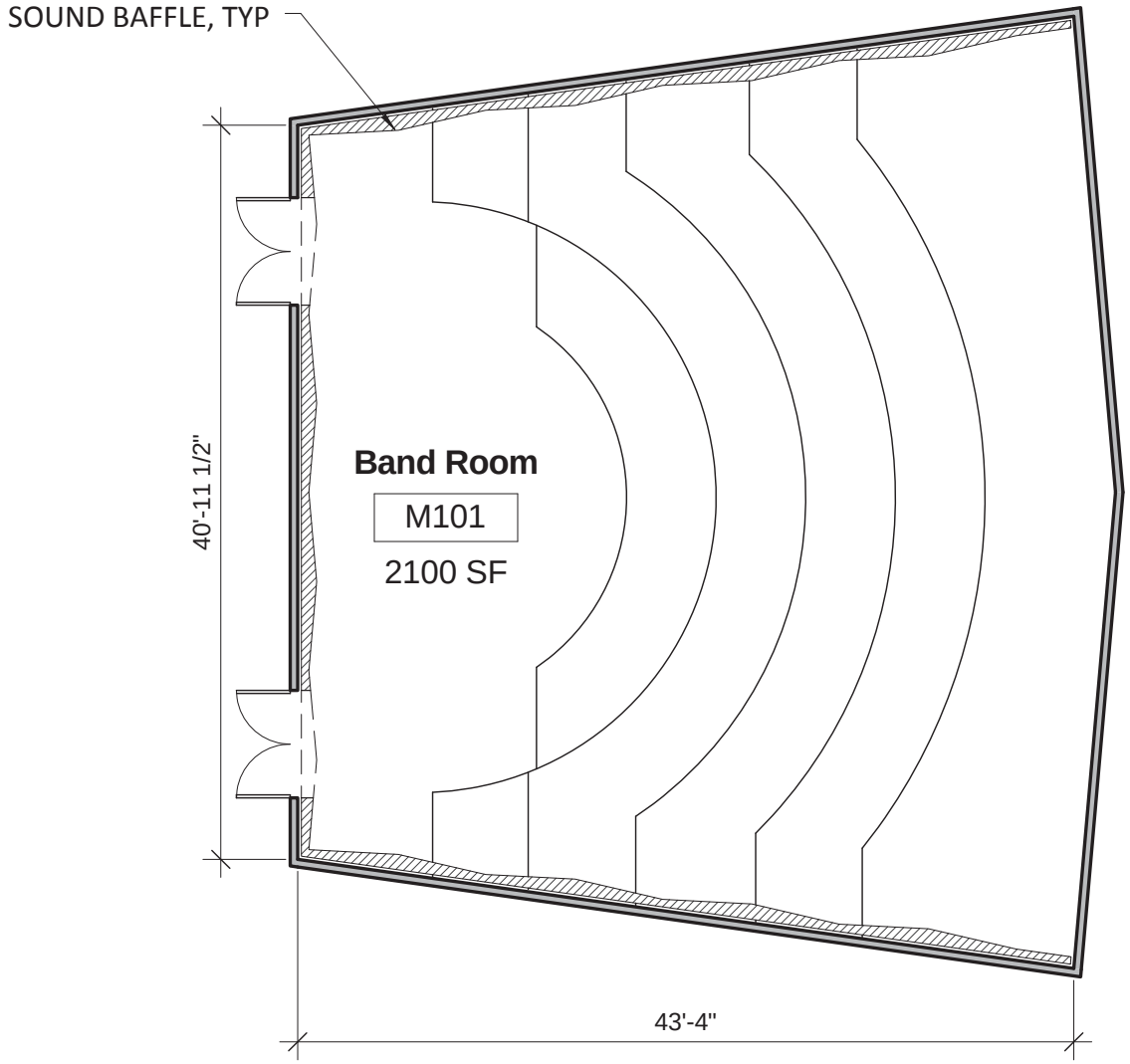
Ventilation:	10 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	15-20 NC
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	2 duplex receptacles per wall.
Data:	1-2 device per room?
Phone:	Rough-in for future capacity
Video:	Rough-in for future capacity
Intercom:	Speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in direct, lighting for recitals/small concerts?
Accent Lighting:	None required
Foot Candles:	40-45
Controls:	Vacancy sensor, dimming; Zoned


SOUND BAFFLE, TYP
Band Room
M101
2100 SF
40'-11 1/2"
43'-4"

M102 CHORAL ROOM

Space Requirements

Space Summary:

Type of Space:	Rehearsal
Number Required:	1
Total Number:	1
Occupants:	35 people/1000 SF
Area:	1300 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Inviting, Invigorating, Flexible

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x 4' ACT
Specialty Finishes:	Sound attenuating baffles
Sound:	Sound proof insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	10'-0"

Privacy/Security:

4 double doors (2 vestibules)

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Sound isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-None required

Moveable Furnishings:

-Student chairs; 1 instructor desk/chair
-Collabsible tiers

Equipment:

-None required

Technical Requirements

Mechanical:

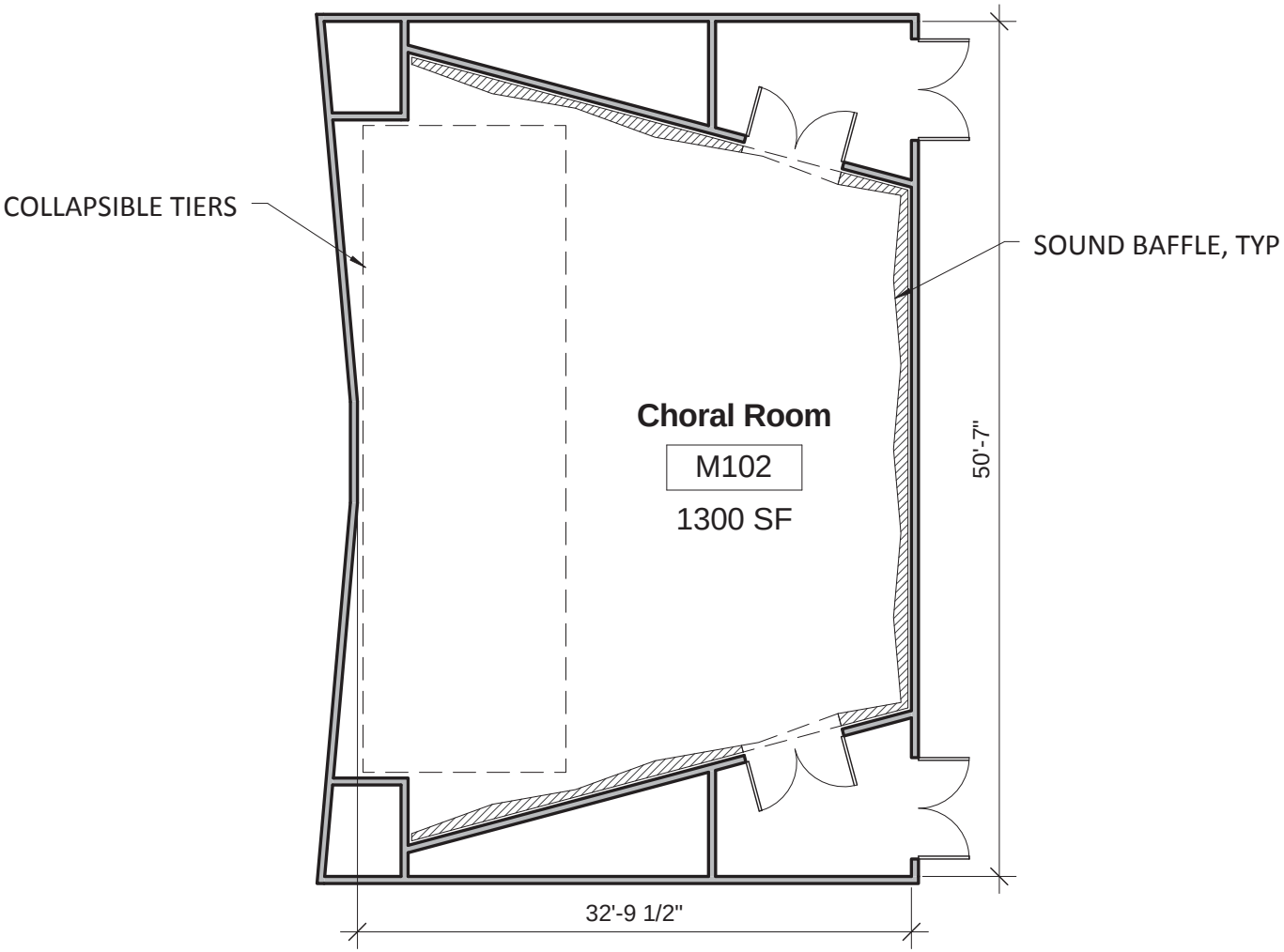
Ventilation:	10 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	15-20 NC required for recital halls
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	2 duplex receptacles per wall.
Data:	Rough-in for future capacity
Phone:	Rough-in for future capacity
Video:	Rough-in for future capacity
Intercom:	Speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in direct, lighting for recitals/small concerts?
Accent Lighting:	None required
Foot Candles:	40-45
Controls:	Vacancy sensor, dimming; Zoned


COLLAPSIBLE TIERS
SOUND BAFFLE, TYP
Choral Room
M102
1300 SF
50'-7"
32'-9 1/2"

M103 PRACTICE ROOM

Space Requirements

Space Summary:

Type of Space:	Private rehearsal
Number Required:	5
Total Number:	5
Occupants:	
Area:	80 SF
Primary Function:	Practicing

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Professional, Efficient

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	Sound proof insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

None required

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound Isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-None required

Moveable Furnishings:

-Chairs

Equipment:

-None required

Technical Requirements

Mechanical:

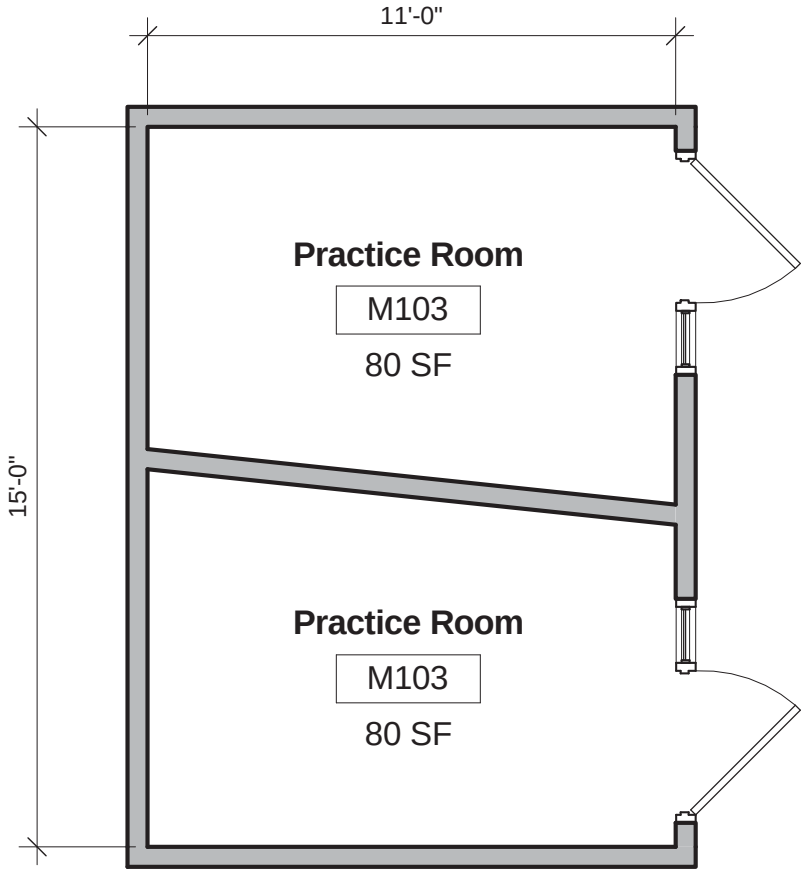
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall. Additional capacity for equipment listed.
Data:	None required
Phone:	None required
Video:	Rough-in for future capacity
Intercom:	Speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	None requried
Foot Candles:	50
Controls:	Vacancy sensor


11'-0"
15'-0"
Practice Room
M103
80 SF
Practice Room
M103
80 SF

M104 PIANO INSTRUCTION & OFFICE

Space Requirements

Space Summary:

Type of Space:	Office/Rehearsal
Number Required:	1
Total Number:	1
Occupants:	
Area:	170 SF
Primary Function:	Instructor Office

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	Sound proof insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Blinds in windows, secured access to entire office suite.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound Isolation

Windows:

Type:	Exterior
Glazing:	Insulated Low-E
Natural Light:	Desirable

Casework/Fixed Equipment:

-Base cabinets with workable surface
-Lateral Files
-Overhead Storage
-Coat Rack

Moveable Furnishings:

-1 task chairs
-2 chairs for guests
-Waste can
-1 piano with banch

Equipment:

-Whiteboard, Tack board, 1 Computer

Technical Requirements

Mechanical:

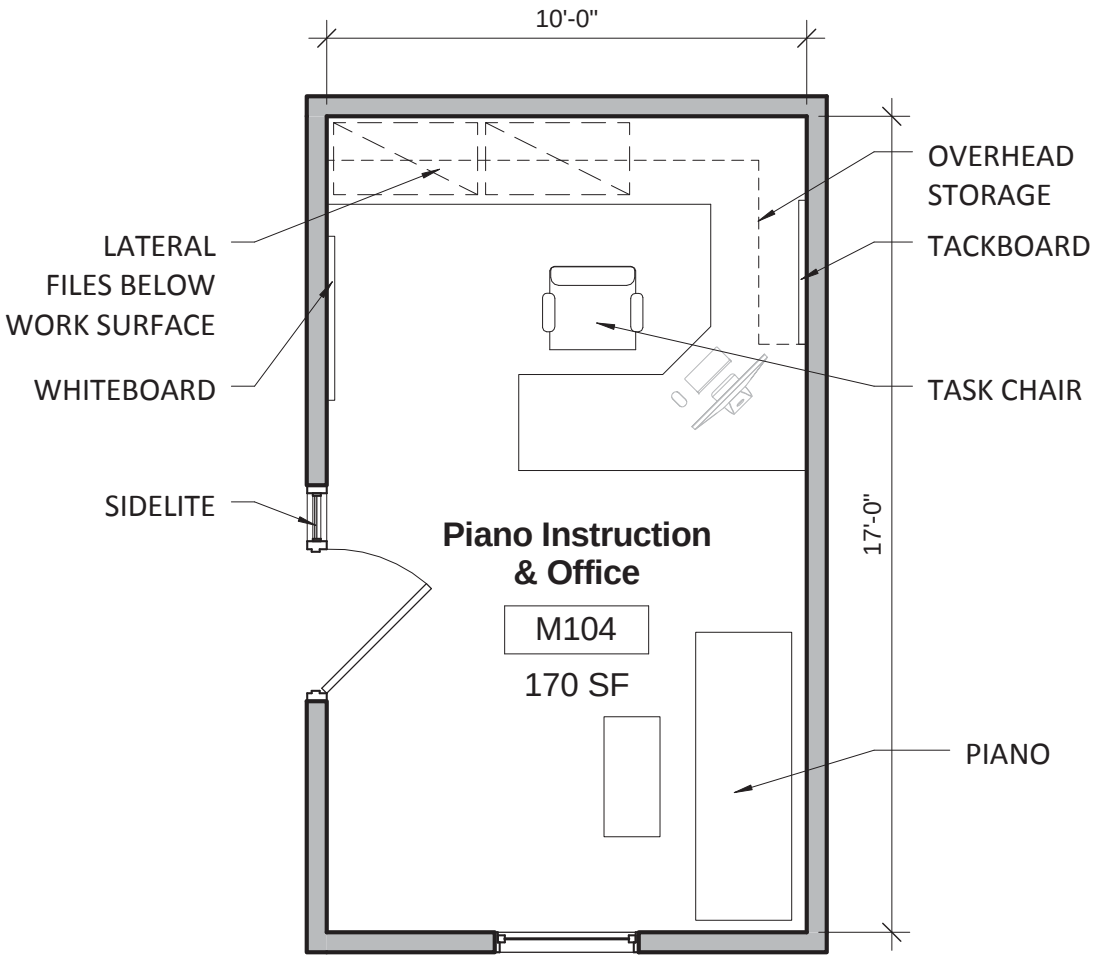
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall and 120V distributed to systems furniture. Additional capacity for equipment listed.
Data:	2 devices on opposing walls distributed to systems furniture.
Phone:	2 devices on opposing walls distributed to systems furniture.
Video:	Rough-in for future capacity
Intercom:	Speakers with volume control

Lighting:

Fixture Type:	T-5 Fluorescent lay-in indirect
Accent Lighting:	Task light at work surface
Foot Candles:	50
Controls:	Vacancy sensor


10'-0"
OVERHEAD
STORAGE
TACKBOARD
LATERAL
FILES BELOW
WORK SURFACE
WHITEBOARD
TASK CHAIR
SIDELITE
Piano Instruction
& Office
M104
170 SF
17'-0"
PIANO

M105 FACULTY OFFICE

Space Requirements

Space Summary:

Type of Space:	Office
Number Required:	2
Total Number:	2
Occupants:	
Area:	170 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Blinds in windows, secured access to entire office suite, 2 doors on either side of suite.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound Isolation

Windows:

Type:	Interior
Glazing:	Clear glass
Natural Light:	None required

Casework/Fixed Equipment:

-Whiteboard

Moveable Furnishings:

-Large table; 10 chairs

Equipment:

Flat panel television

Technical Requirements

Mechanical:

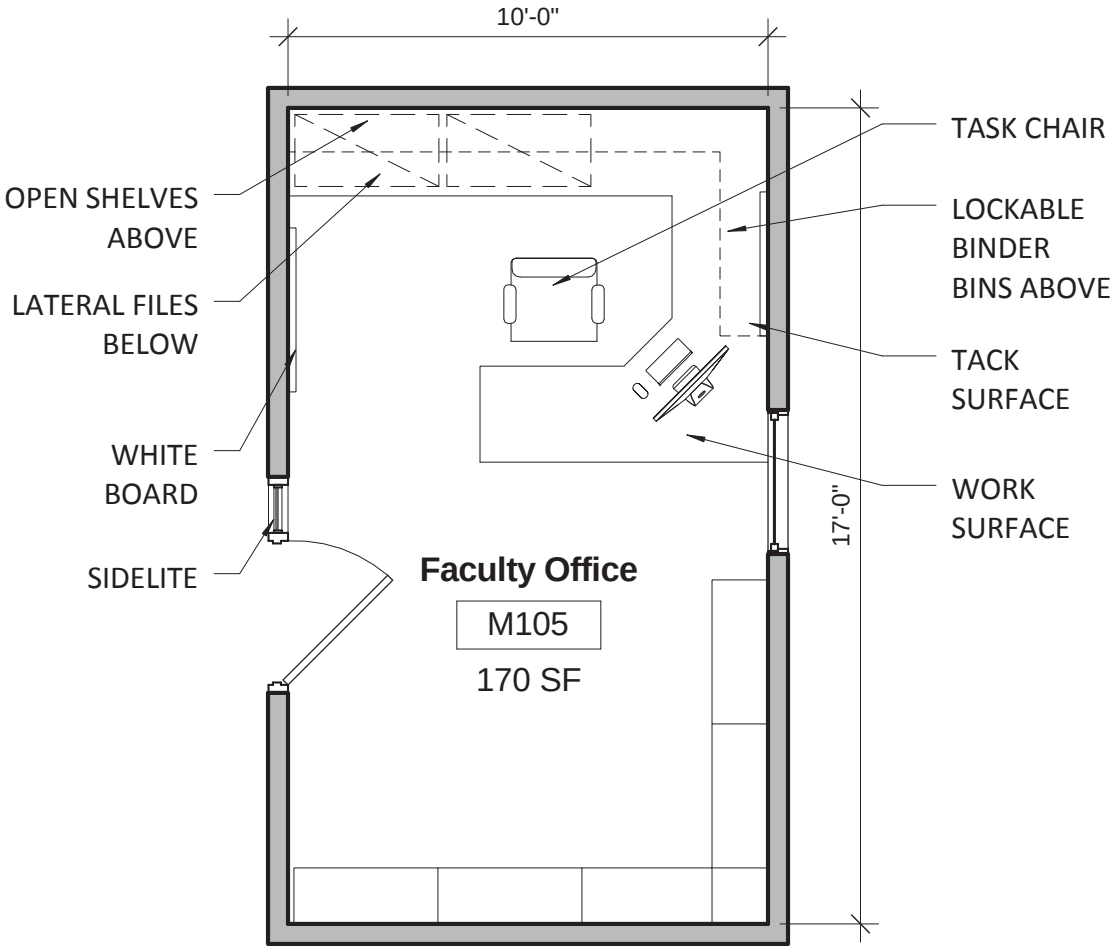
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall, 1 four-plex floor box under table. Additional capacity for equipment listed.
Data:	1 device on opposing walls and 1 floor box under table
Phone:	1 device on opposing walls and 1 floor box under table
Video:	Rough-in for future capacity
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	None required
Foot Candles:	40
Controls:	Vacancy sensor


10'-0"
17'-0"
OPEN SHELVES ABOVE
LATERAL FILES BELOW
WHITE BOARD
SIDELITE
TASK CHAIR
LOCKABLE BINDER BINS ABOVE
TACK SURFACE
WORK SURFACE
Faculty Office
M105
170 SF

M106 INSTRUMENT STORAGE

Space Requirements

Space Summary:

Type of Space:	Storage
Number Required:	1
Total Number:	1
Occupants:	
Area:	380 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Efficient storage

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

Lockable door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Wall mounted shelving

Moveable Furnishings:

-None required

Equipment:

-None required

Technical Requirements

Mechanical:

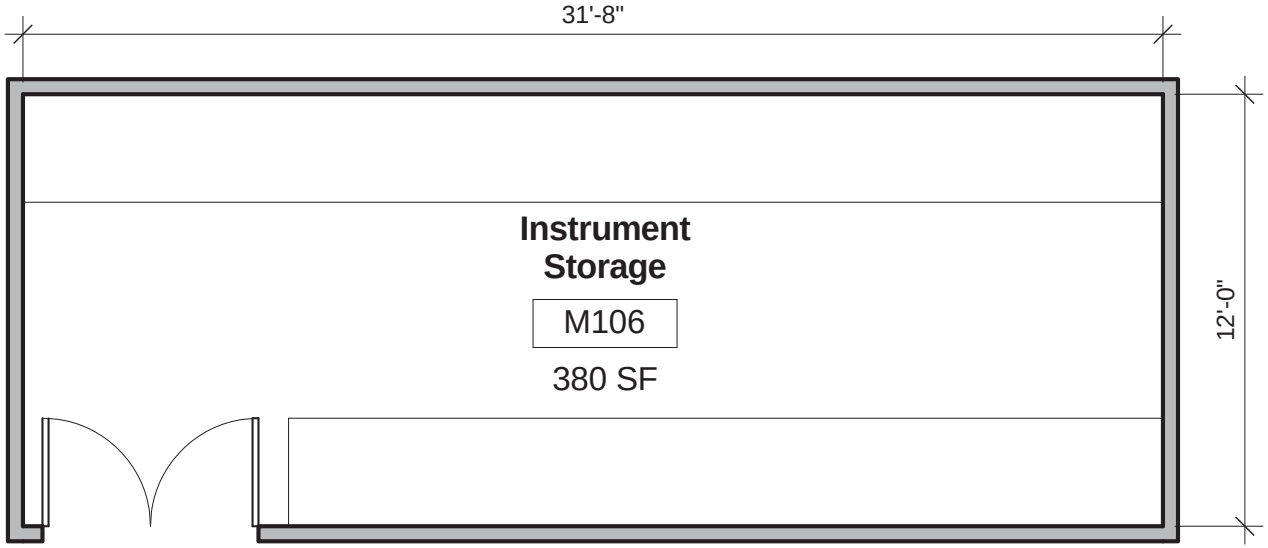
Ventilation:	0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	None required
Sound Criteria:	None required
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	10
Controls:	Vacancy sensor


31'-8"
12'-0"
Instrument
Storage
M106
380 SF

M107 CHOIR ROBE STORAGE

Space Requirements

Space Summary:

Type of Space:	Storage
Number Required:	1
Total Number:	1
Occupants:	
Area:	150 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Efficient storage

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2’x4’ ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

Locakble door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-None required

Moveable Furnishings:

-4 rollable clothing racks

Equipment:

-None required

Technical Requirements

Mechanical:

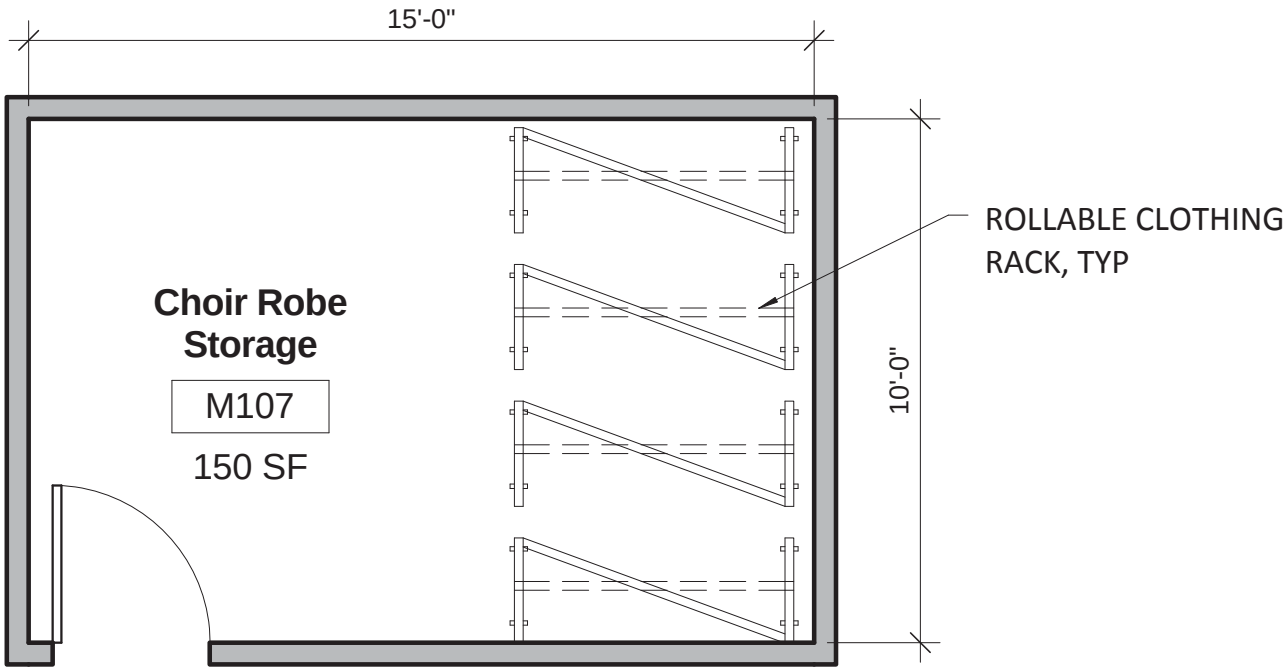
Ventilation:	0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	None required
Sound Criteria:	None required
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	10
Controls:	Vacancy sensor


15'-0"
10'-0"
ROLLABLE CLOTHING
RACK, TYP
Choir Robe
Storage
M107
150 SF

M108 GENERAL STORAGE

Space Requirements

Space Summary:

Type of Space:	Storage
Number Required:	1
Total Number:	1
Occupants:	
Area:	50 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Efficient storage

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Lockable door

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	None required

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-None required

Moveable Furnishings:

-None required

Equipment:

-None required

Technical Requirements

Mechanical:

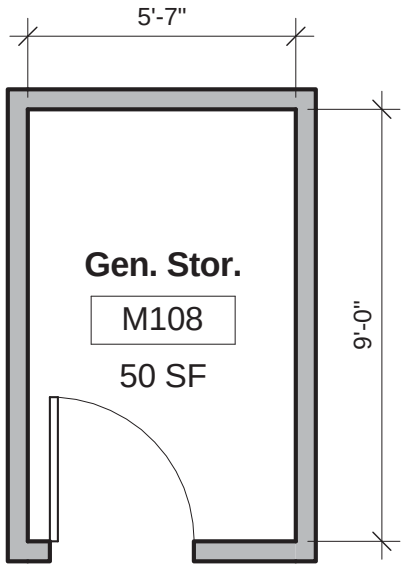
Ventilation:	0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	None required
Sound Criteria:	None required
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per
Data:	None required
Phone:	None required
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in direct
Accent Lighting:	None required
Foot Candles:	10
Controls:	Vacancy sensor


5'-7"
Gen. Stor.
M108
50 SF
9'-0"

M109 PIANO LAB

Space Requirements

Space Summary:

Type of Space:	Rehearsal
Number Required:	1
Total Number:	1
Occupants:	
Area:	300 SF
Primary Function:	Piano instruction

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Professional, Efficient

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	Sound proof insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

None required

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound Isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-1 tall, locking storage cabinet

Moveable Furnishings:

-10 piano benches

Equipment:

-10 weighted-action electronic piano keyboards

Technical Requirements

Mechanical:

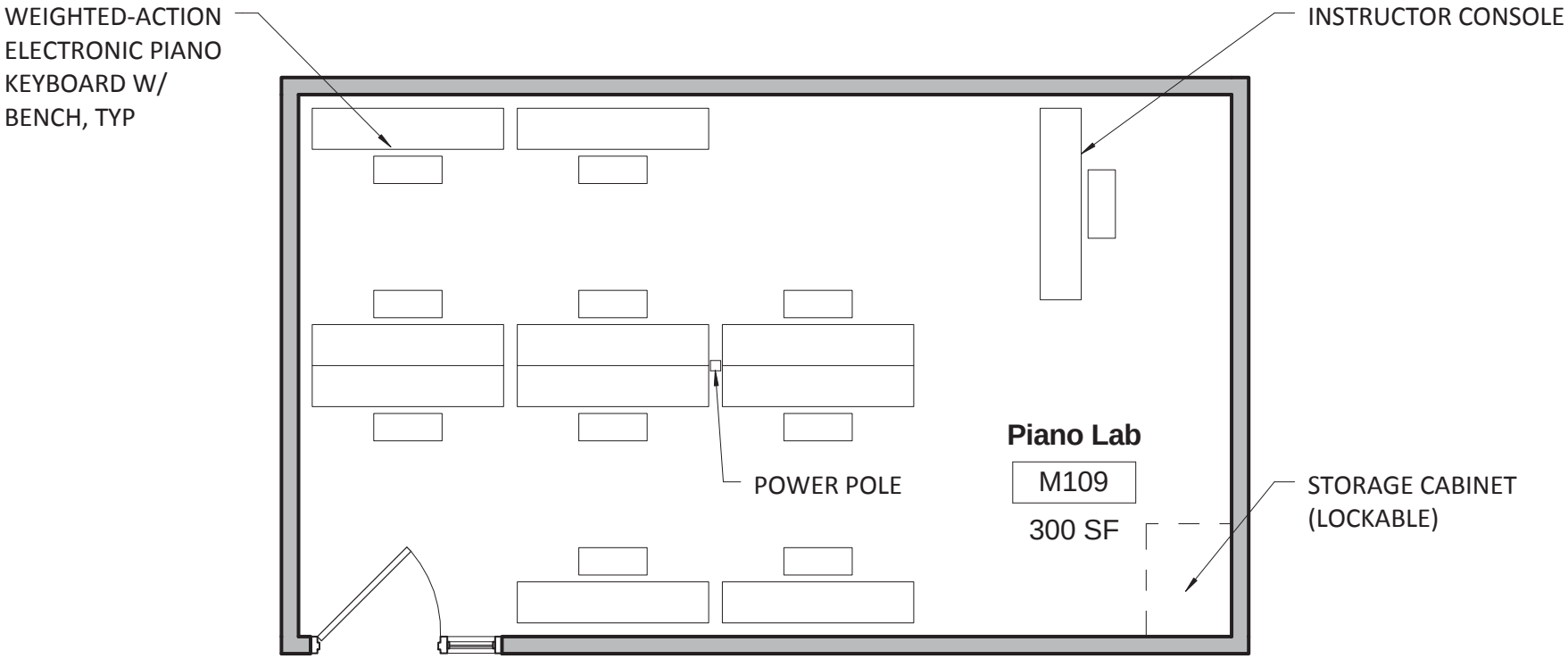
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex receptacle per wall. 1 power pole. Additional capacity for equipment listed.
Data:	None required
Phone:	None required
Video:	Rough-in for future capacity
Intercom:	Speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	None requried
Foot Candles:	50
Controls:	Vacancy sensor


WEIGHTED-ACTION ELECTRONIC PIANO KEYBOARD W/ BENCH, TYP
INSTRUCTOR CONSOLE
POWER POLE
Piano Lab
M109
300 SF
STORAGE CABINET (LOCKABLE)

T101 SCENE SHOP

Space Requirements

Space Summary:

Type of Space:	Shop
Number Required:	1
Total Number:	1
Occupants:	
Area:	3000 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	Loading dock, stage
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Tile or Linoleum
Walls:	Painted gypsum board
Ceiling:	Painted gypsum board
Specialty Finishes:	None required
Sound:	Needs to be insulated for sound control

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

2 locking doors

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Interior Locking Door

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-2 locking flammable liquids cabinets
-1 flat storage industrial rack

Moveable Furnishings:

-2 welding boothes, 16 shop stools, (4) 4’x4’ work tables, 1 painting frame, 1 grinding table

Equipment:

-Welding equipment
-1 table saw
-1 wood lathe
-1 belt, 1 disc sander
-1 compound miter saw & table
-Painting equipment
-1 band saw

Technical Requirements

Mechanical:

Ventilation	10 CFM/person - 0.18 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	None required
Special Systems:	Sawdust collection system
Plumbing:	None required

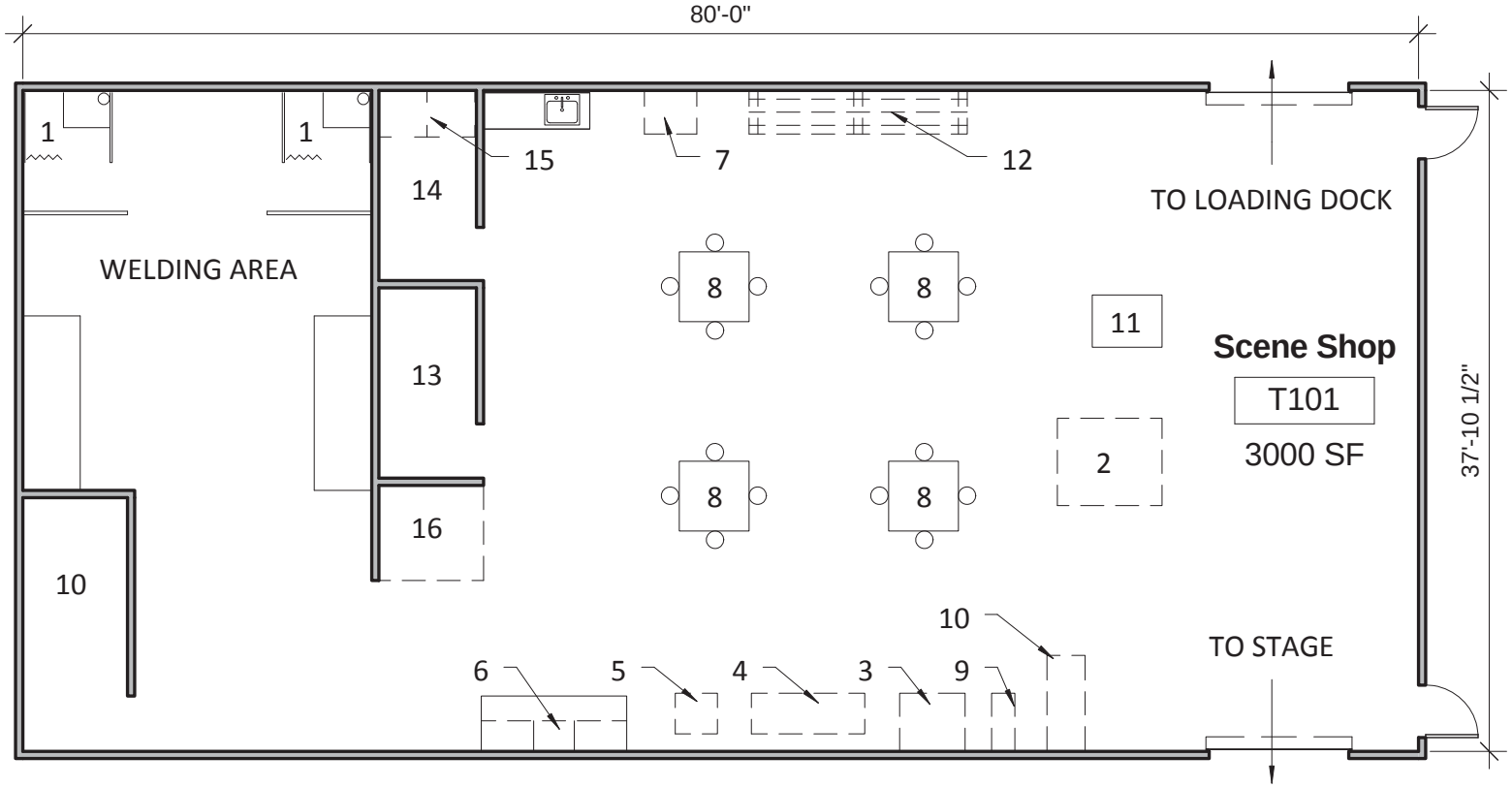
Electrical:

Power:	1 duplex receptacle per wall. Additional capacity for equipment listed.
Data:	1 device
Phone:	1 device
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-8 Fluorescent lay-in, >90 CRI
Accent Lighting:	Task lighting on select machines
Foot Candles:	75
Controls:	Switch

1. WELDING BOOTH
2. TABLE SAW
3. WOOD LATHE
4. BELT SANDER
5. DISC SANDER
6. COMPOUND MITER SAW & TABLE
7. PAINTING EQUIPMENT
8. 4' x 4' WORK TABLE
9. BAND SAW
10. LUMBER & METAL STORAGE
11. GRINDING TABLE
12. PAINTING FRAME
13. TOOL STORAGE
14. PAINT STORAGE
15. FLAMMABLE LIQUIDS CAB.
16. FLAT STORAGE (INDUSTRIAL RACK)



- SCENE SET UP AREA -

T102 COSTUME SHOP

Space Requirements

Space Summary:

Type of Space:	Shop
Number Required:	1
Total Number:	1
Occupants:	20 people/1000 SF
Area:	800 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Practical, Serviceable, Durable

Finishes:

Floor:	Tile or polished/sealed concrete
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

Windows and doors into hallway and workroom/ classroom. Needs to secure paper and computer based student records.

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound Isolation

Windows:

Type:	Interior
Glazing:	Clear Glass
Natural Light:	None required

Casework/Fixed Equipment:

-Countertop, base cabinets
-Tall, lockable storage cabinets

Moveable Furnishings:

-1 fitting stand
-2 cutting tables, 1 designer's work table,
-13 stools
-3 rolling costume racks
-2 ironing stations

Equipment:

-2 washers, 2 dryers
-3 heavy-duty sewing machines

Technical Requirements

Mechanical:

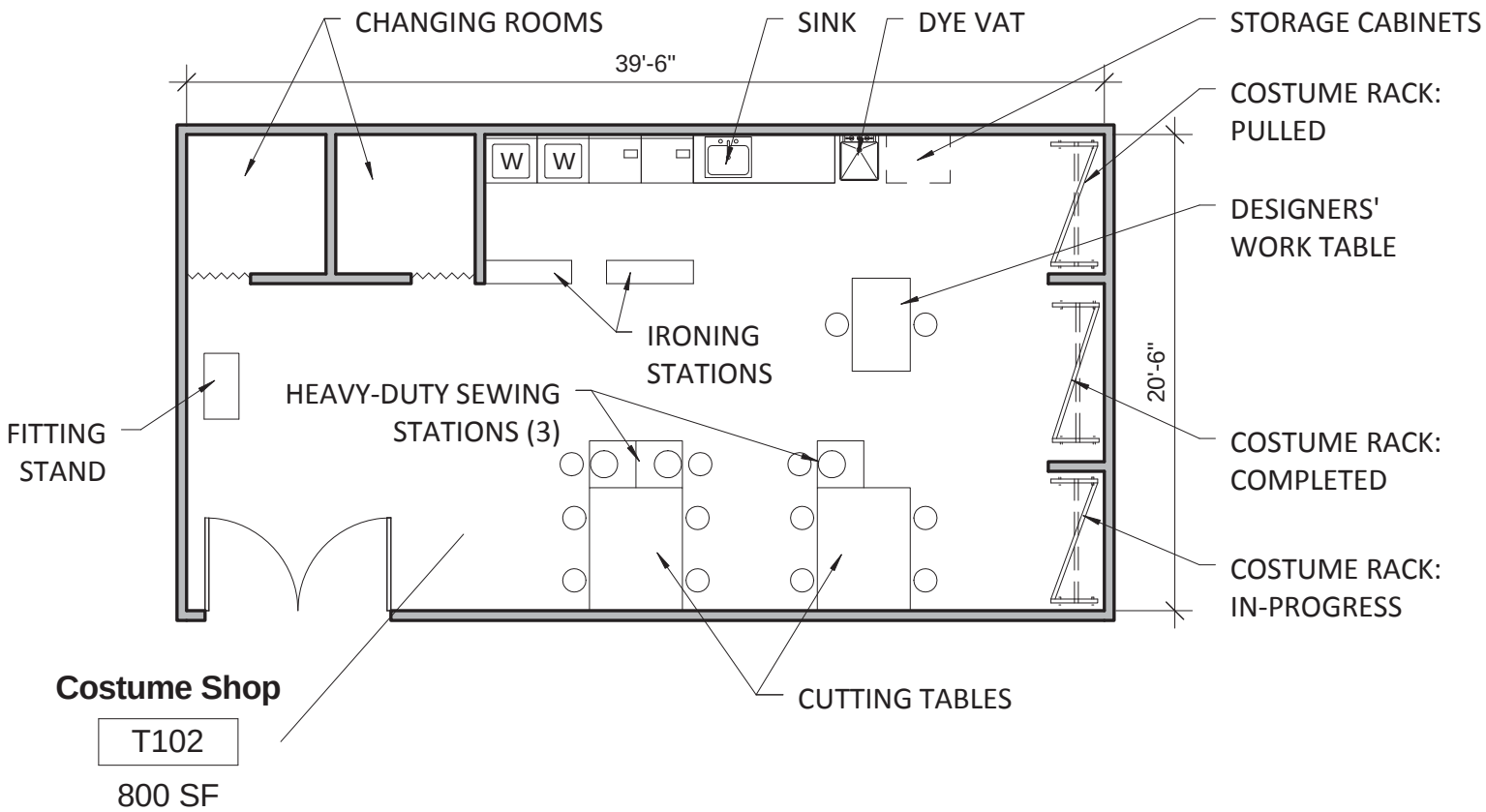
Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	1 handwash sink, 1 dye vat sink

Electrical:

Power:	1 duplex receptacle per wall. (2) Double duplex receptacles adjacent to desk. Additional capacity for equipment listed.
Data:	2 devices on opposing walls
Phone:	2 devices on opposing walls
Video:	Rough-in for future capacity
Intercom:	Ceiling Speakers with volume control

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect, >90 CRI
Accent Lighting:	Task light at work surfaces
Foot Candles:	75
Controls:	Switch



Costume Shop

T102

800 SF

T103 REHEARSAL ROOM

Space Requirements

Space Summary:

Type of Space:	Rehearsal
Number Required:	1
Total Number:	1
Occupants:	35 people/1000 SF
Area:	800 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Inviting, Invigorating, Flexible

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x4' ACT
Specialty Finishes:	None required
Sound:	Sound proof insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9'-0"

Privacy/Security:

General security against unauthorized access

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal
Special:	Sound Isolation, folding partition

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-Lockable base cabinets w/ counter top
-Whiteboard, tack board
-Instructor console with A/V racks

Moveable Furnishings:

-6 Tables (w/ A/V & power ports), 36 student chairs, 1 Instructor desk/chair

Equipment:

-80" LCD screen, 60" LCD screen, touch panel
-Ceiling mounted document camera, digital clock, (2) wall cameras, surround sound ceiling mounted speakers, ceiling microphones
-Computer at instructor console
-Sympodium 24" screen
-Flat screen monitor and phone at console
-2 refrigerators
-1 projector & screen

Technical Requirements

Mechanical:

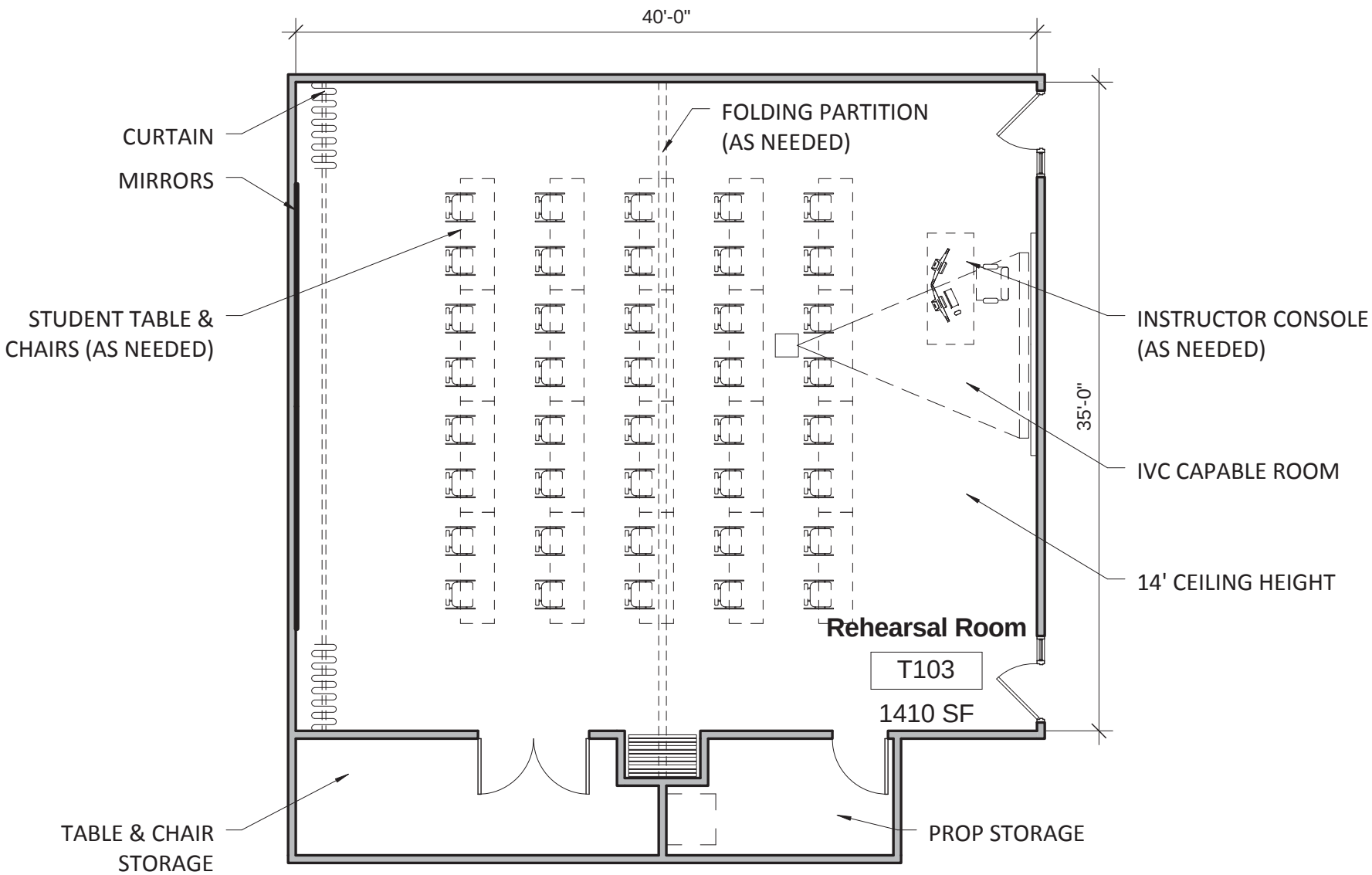
Ventilation:	10 CFM/person + 0.12 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	15-20 NC required for recording room quality
Special Systems:	Adequate venting for instructor console A/V equipment
Plumbing:	None required

Electrical:

Power:	1 fourplex at console; 1 fourplex at each student row; 1 fourplex at each monitor; duplex outlets 12' oc along walls
Phone/Data:	1 drop at console; 1 drop per each student row; 1 drop at each monitor; 1-2 additional drops along wall.
Video:	A/V system with internet connection
Intercom:	Ceiling speakers with volume control

Lighting:

Fixture Type:	T-5 Fluorescent or LED lay-in indirect, theatrical hoist with 6 dimmed circuits
Accent Lighting:	None required
Foot Candles:	50
Controls:	Vacancy sensor, dimming; zoned controls


40'-0"
CURTAIN
MIRRORS
STUDENT TABLE &
CHAIRS (AS NEEDED)
FOLDING PARTITION
(AS NEEDED)
INSTRUCTOR CONSOLE
(AS NEEDED)
35'-0"
IVC CAPABLE ROOM
14' CEILING HEIGHT
Rehearsal Room
T103
1410 SF
TABLE & CHAIR
STORAGE
PROP STORAGE

T104 BLACK BOX THEATER

Space Requirements

Space Summary:

Type of Space:	Theater
Number Required:	1
Total Number:	1
Occupants:	
Area:	2400 SF
Primary Function:	

Relationships:

Location:	
Adjacencies:	Exterior of buliding, scene shop
Separation:	None required

Architectural Requirements

Design/Aesthetic:

Practical, Serviceable, Durable

Finishes:

Floor:	Polished/sealed concrete
Walls:	CMU, Concrete, or equiv. durable surface painted black
Ceiling:	Unfinished, painted black
Specialty Finishes:	None required
Sound:	Sound insulated walls

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF):	9’-0”

Privacy/Security:

General security considerations

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Sound Isolation

Windows:

Type:	None required
Glazing:	None required
Natural Light:	None required

Casework/Fixed Equipment:

-None required

Moveable Furnishings:

-4 level risers

Equipment:

-Suspended woven wire grid, modular audience seats for 175, panelized black masking curtains

Technical Requirements

Mechanical:

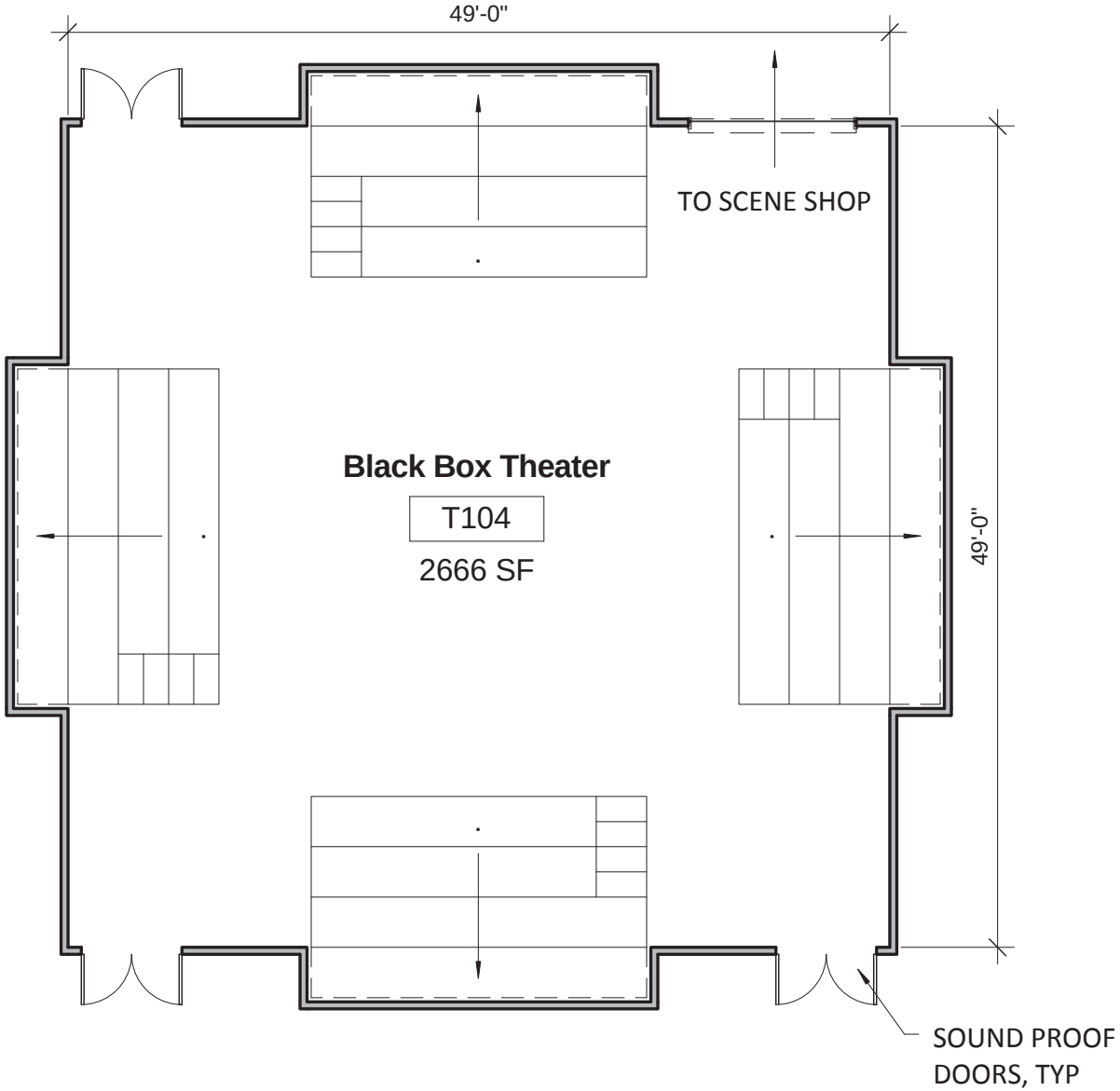
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft.
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	Surround Sound
Plumbing:	None required

Electrical:

Power:	2 duplex receptacles per wall. Additional capacity for equipment listed.
Data:	None required
Phone:	None required
Video:	Rough-in for future capacity
Intercom:	Ceiling Speakers with volume control

Lighting:

Fixture Type:	Theatrical lighting and controls for 100 stage lights, T5HO suspended above grid
Accent Lighting:	Dimming task lights in control balcony, black exit signs
Foot Candles:	50, >90 CRI
Controls:	Vacancy sensor


49'-0"
TO SCENE SHOP
Black Box Theater
T104
2666 SF
49'-0"
SOUND PROOF
DOORS, TYP

T105 LARGE OFFICE

Space Requirements

Space Summary:

Type of Space:	Office
Number Required:	1
Total Number:	1
Occupants:	5 people/1000 SF
Area:	140 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x2' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

Windows with blinds, secured access to entire office suite

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Interior locking door

Windows:

Type:	Exterior
Glazing:	Insulated Low-E
Natural Light:	Desirable

Casework/Fixed Equipment:

-Base cabinets with workable surface
-Lateral files
-Overhead storage
-Coat rack

Moveable Furnishings:

-1 adjustable chair, 2 guest chairs

Equipment:

-Whiteboard, tackboard, computer

Technical Requirements

Mechanical:

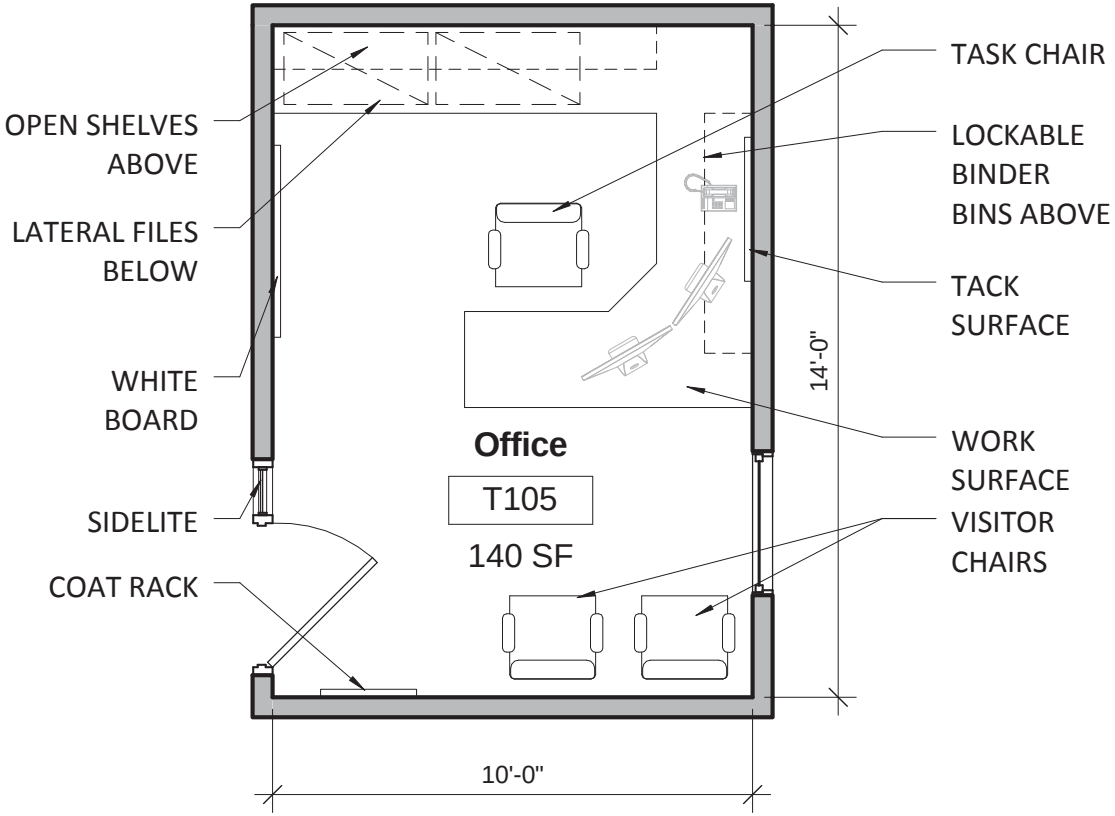
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex recepticle per wall. Additional capacity for equipment listed.
Data:	2 devices on opposing walls.
Phone:	2 devices on opposing walls.
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	Task light at work surface
Foot Candles:	20 ambient, 40-50 task
Controls:	Vacancy sensor


OPEN SHELVES ABOVE
LATERAL FILES BELOW
WHITE BOARD
SIDELITE
COAT RACK
TASK CHAIR
LOCKABLE BINDER BINS ABOVE
TACK SURFACE
WORK SURFACE
VISITOR CHAIRS
Office
T105
140 SF
14'-0"
10'-0"

T106 SMALL OFFICE

Space Requirements

Space Summary:

Type of Space:	Office
Number Required:	1
Total Number:	1
Occupants:	5 people/1000 SF
Area:	120 SF
Primary Function:	

Relationships:

Location:

Adjacencies:

Separation: None required

Architectural Requirements

Design/Aesthetic:

Calm, Attractive, Professional

Finishes:

Floor:	Carpet
Walls:	Painted gypsum board
Ceiling:	Suspended 2'x2' ACT
Specialty Finishes:	None required
Sound:	None required

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 19'-0"

Privacy/Security:

Windows with blinds, secured access to entire office suite

Doors:

Type:	Solid core wood with clear finish
Frame:	Painted hollow metal with glazed sidelite
Special:	Interior locking door

Windows:

Type:	Exterior
Glazing:	Insulated Low-E
Natural Light:	Desirable

Casework/Fixed Equipment:

-Base cabinets with workable surface
-Lateral files
-Overhead storage
-Coat rack

Moveable Furnishings:

-1 adjustable chair, 2 guest chairs

Equipment:

-Whiteboard, tackboard, computer

Technical Requirements

Mechanical:

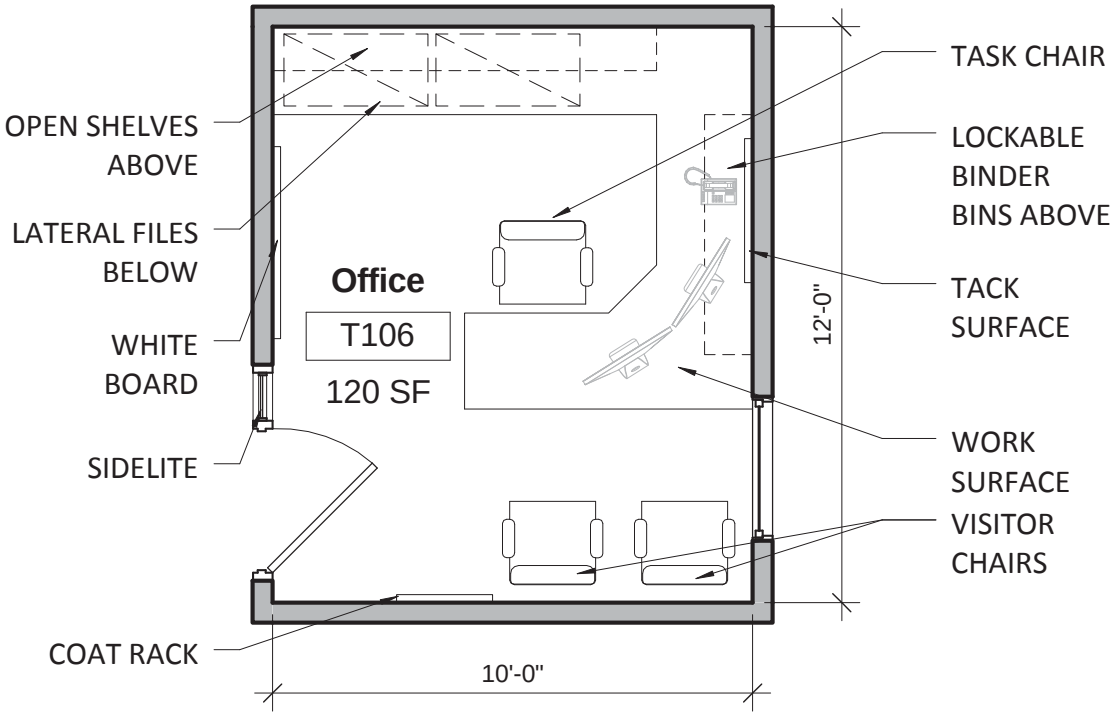
Ventilation:	5 CFM/person + 0.06 CFM/sq.ft
Summer Design Temp:	72 ° F
Winter Design Temp:	68 ° F
Controls:	Individual direct digital controls
Sound Criteria:	35 (NC/RC)
Special Systems:	None required
Plumbing:	None required

Electrical:

Power:	1 duplex recepticle per wall. Additional capacity for equipment listed.
Data:	2 devices on opposing walls.
Phone:	2 devices on opposing walls.
Video:	None required
Intercom:	None required

Lighting:

Fixture Type:	T-5 or T-8 Fluorescent lay-in indirect
Accent Lighting:	Task light at work surface
Foot Candles:	20 ambient, 40-50 task
Controls:	Vacancy sensor


OPEN SHELVES ABOVE
LATERAL FILES BELOW
WHITE BOARD
SIDELITE
COAT RACK
Office
T106
120 SF
TASK CHAIR
LOCKABLE BINDER BINS ABOVE
TACK SURFACE
WORK SURFACE
VISITOR CHAIRS
12'-0"
10'-0"

BS101 ELECTRICAL/COMM ROOM

Space Requirements

Space Summary:

Type of Space: -

Number Required: 1

Total Number: 1

Occupants:

Area: 1000 SF

Primary Function:

Relationships:

Location: -

Adjacencies:

Separation:

Architectural Requirements

Design/Aesthetic:

None required

Finishes:

Floor: -

Walls:

Ceiling:

Specialty Finishes:

Sound:

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

Separated/private stalls

Doors:

Type: -

Frame:

Special:

Windows:

Type: -

Glazing:

Natural Light:

Casework/Fixed Equipment:

-

Moveable Furnishings:

None required

Equipment:

-

Technical Requirements

Mechanical:

Ventilation: 5 CFM/person + 0.06/sq.ft.

Summer Design Temp: 75 ° F

Winter Design Temp: 75 ° F

Controls: Individual direct digital controls

Sound Criteria: 40 (NC/RC)

Special Systems: None required

Plumbing: None required

Electrical:

Power: 1 duplex outlet per wall

Data: None required

Phone: None required

Video: None required

Intercom: None required

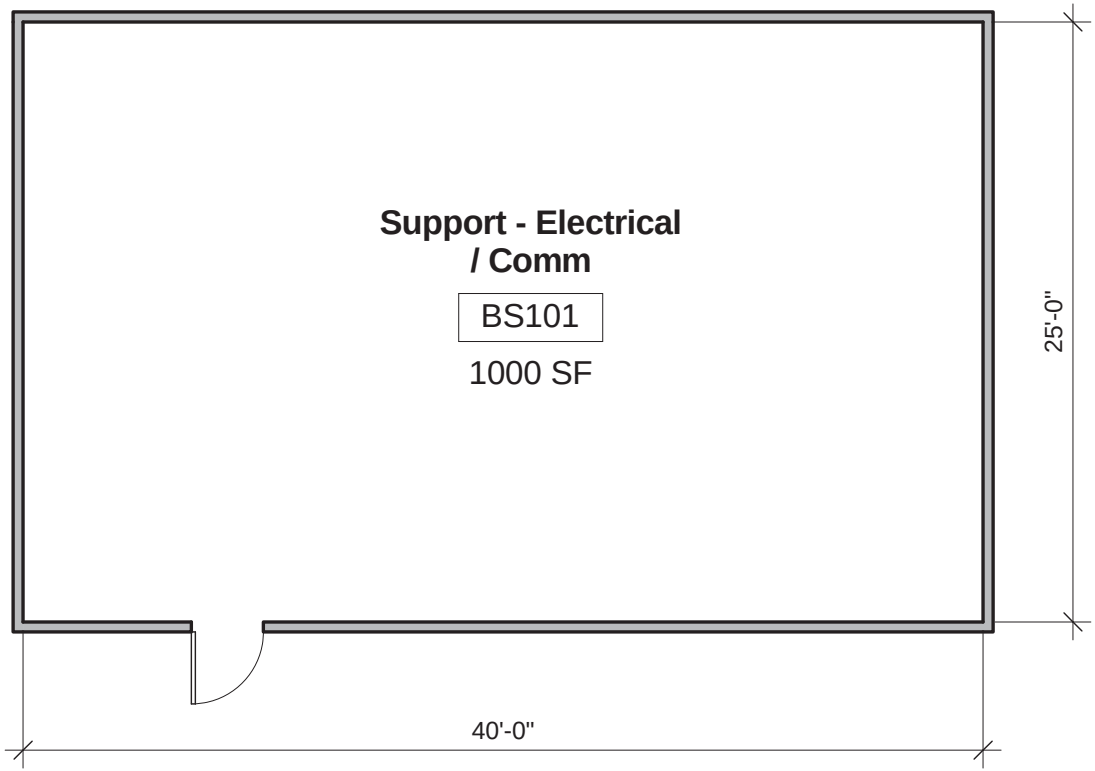
Lighting:

Fixture Type: T-8 Fluorescent direct

Accent Lighting: None required

Foot Candles: 30

Controls: Switch


Support - Electrical
/ Comm
BS101
1000 SF
25'-0"
40'-0"

BS102 MECHANICAL ROOM

Space Requirements

Space Summary:

Type of Space: -

Number Required: 1

Total Number: 1

Occupants:

Area: 2500 SF

Primary Function:

Relationships:

Location: -

Adjacencies:

Separation:

Architectural Requirements

Design/Aesthetic:

None required

Finishes:

Floor: -

Walls:

Ceiling:

Specialty Finishes:

Sound:

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

Separated/private stalls

Doors:

Type: -

Frame:

Special:

Windows:

Type: -

Glazing:

Natural Light:

Casework/Fixed Equipment:

-

Moveable Furnishings:

None required

Equipment:

-

Technical Requirements

Mechanical:

Ventilation: None required

Summer Design Temp: 85 ° F

Winter Design Temp: 60 ° F

Controls: Individual direct digital controls

Sound Criteria: 40 (NC/RC)

Special Systems: None required

Plumbing: None required

Electrical:

Power: 1 duplex outlet per wall

Data: 1-2 devices

Phone: None required

Video: None required

Intercom: None required

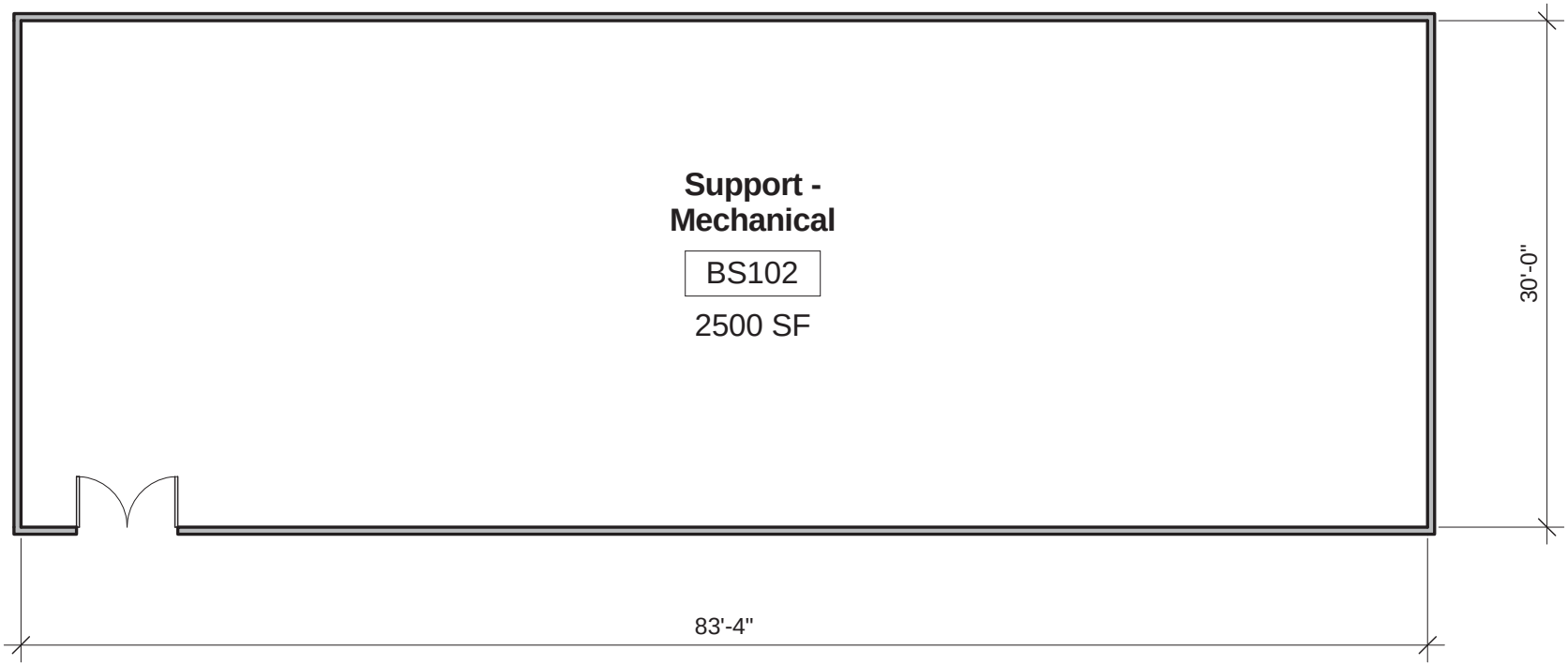
Lighting:

Fixture Type: T-8 Fluorescent lay-in indirect

Accent Lighting: None required

Foot Candles: 30

Controls: Switch


Support -
Mechanical
BS102
2500 SF
30'-0"
83'-4"

BS103 JANITOR CLOSET

Space Requirements

Space Summary:

Type of Space: -

Number Required: 2

Total Number: 2

Occupants:

Area: 80 SF

Primary Function:

Relationships:

Location: -

Adjacencies:

Separation:

Architectural Requirements

Design/Aesthetic:

None required

Finishes:

Floor: -

Walls:

Ceiling:

Specialty Finishes:

Sound:

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

Separated/private stalls

Doors:

Type: -

Frame:

Special:

Windows:

Type: -

Glazing:

Natural Light:

Casework/Fixed Equipment:

-Wall mounted shelving

Moveable Furnishings:

None required

Equipment:

-

Technical Requirements

Mechanical:

Ventilation: 1.0 CFM/sq.ft. (100% Exhaust)

Summer Design Temp: 72 ° F

Winter Design Temp: 68 ° F

Controls: Individual direct digital controls

Sound Criteria: 40 (NC/RC)

Special Systems: 10 min. air exchange exhaust

Plumbing: Floor drains; water, waste & venting; 1 mop sink

Electrical:

Power: 1 GFCI duplex outlet

Data: None required

Phone: None required

Video: None required

Intercom: None required

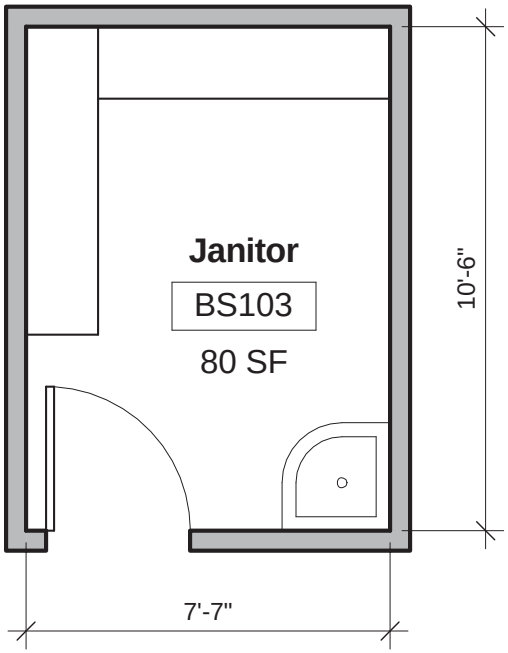
Lighting:

Fixture Type: T-8 Fluorescent direct

Accent Lighting: None required

Foot Candles: 30

Controls: Vacancy sensor


Janitor
BS103
80 SF
10'-6"
7'-7"

BS104 ELEVATOR

Space Requirements

Space Summary:

Type of Space: -

Number Required: 1

Total Number: 1

Occupants:

Area: 160 SF

Primary Function:

Relationships:

Location: -

Adjacencies:

Separation:

Architectural Requirements

Design/Aesthetic:

None required

Finishes:

Floor: -

Walls:

Ceiling:

Specialty Finishes:

Sound:

Architectural Requirements

Ceiling Height:

Above Finish Floor (AFF): 9'-0"

Privacy/Security:

Separated/private stalls

Doors:

Type: -

Frame:

Special:

Windows:

Type: -

Glazing:

Natural Light:

Casework/Fixed Equipment:

-

Moveable Furnishings:

None required

Equipment:

-

Technical Requirements

Mechanical:

Ventilation: 1.0 CFM/sq.ft. (100% Exhaust)

Summer Design Temp: 72 ° F

Winter Design Temp: 70 ° F

Controls: Individual direct digital controls

Sound Criteria: 40 (NC/RC)

Special Systems: 5 min. air exchange exhaust

Plumbing: None required

Electrical:

Power: 1 GFCI duplex outlet

Data: None required

Phone: 1 for elevator

Video: None required

Intercom: None required

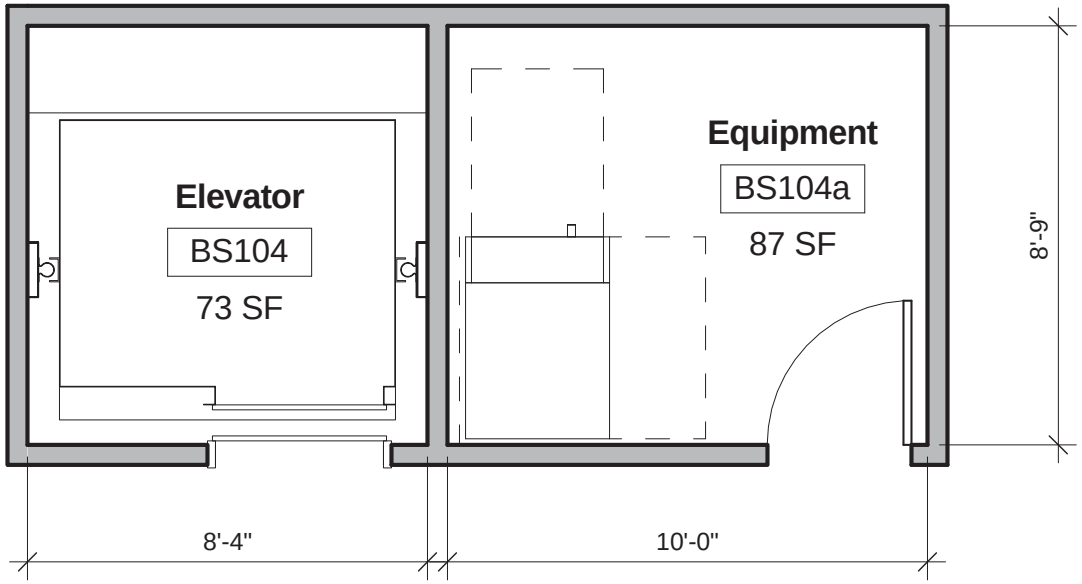
Lighting:

Fixture Type: T-8 Fluorescent direct

Accent Lighting: None required

Foot Candles: 30

Controls: Switch


Elevator
BS104
73 SF
Equipment
BS104a
87 SF
8'-9"
8'-4"
10'-0"

2012 Baseline City Population Projections

2010-2060

Geography	Census 2010	2020	2030	2040	2050	2060
			POPULATION Projections			
Carbon County	21,403	21,602	22,092	22,860	23,582	24,384
East Carbon city	1,301	1,313	1,343	1,390	1,433	1,482
Helper city	2,201	2,221	2,272	2,351	2,425	2,508
Price city	8,715	8,796	8,996	9,308	9,602	9,929
Scofield town	24	24	25	26	26	27
Sunnyside city	377	381	389	403	415	430
Wellington city	1,676	1,692	1,730	1,790	1,847	1,909
Balance of Carbon County	7,109	7,175	7,338	7,593	7,833	8,099
Emery County	10,976	11,230	11,930	12,207	12,016	12,141
Castle Dale city	1,630	1,668	1,772	1,813	1,784	1,803
Clawson town	163	167	177	181	178	180
Cleveland town	464	475	504	516	508	513
Elmo town	418	428	454	465	458	462
Emery town	288	295	313	320	315	319
Ferron city	1,626	1,664	1,767	1,808	1,780	1,799
Green River city	952	974	1,035	1,059	1,042	1,053
Huntington city	2,129	2,178	2,314	2,368	2,331	2,355
Orangeville city	1,470	1,504	1,598	1,635	1,609	1,626
Balance of Emery County	1,836	1,878	1,996	2,042	2,010	2,031
Grand County	9,225	10,300	11,300	12,147	13,098	14,301
Castle Valley town	319	356	391	420	453	495
Moab city	5,046	5,634	6,181	6,644	7,164	7,823
Balance of Grand County	3,860	4,310	4,728	5,083	5,481	5,984
Sanpete County	27,822	31,637	35,279	37,879	40,689	45,494
Centerfield town	1,367	1,554	1,733	1,861	1,999	2,235
Ephraim city	6,135	6,976	7,779	8,353	8,972	10,032
Fairview city	1,247	1,418	1,581	1,698	1,824	2,039
Fayette town	242	275	307	329	354	396
Fountain Green city	1,071	1,218	1,358	1,458	1,566	1,751
Gunnison city	3,285	3,735	4,165	4,472	4,804	5,372
Manti city	3,276	3,725	4,154	4,460	4,791	5,357
Mayfield town	496	564	629	675	725	811
Moroni city	1,423	1,618	1,804	1,937	2,081	2,327
Mount Pleasant city	3,260	3,707	4,134	4,438	4,768	5,331
Spring City city	988	1,123	1,253	1,345	1,445	1,616
Sterling town	262	298	332	357	383	428
Wales town	302	343	383	411	442	494
Balance of Sanpete County	4,468	5,081	5,666	6,083	6,534	7,306
TOTALS	69,426	74,769	80,601	85,093	89,385	96,320
GROWTH		8%	16%	23%	29%	39%

Source: http://governor.utah.gov/DEA/projections.html
The State of Utah and Counties
Subcounty Population Projections (Total Population)

II. Enrollment History

USU-Eastern
(College of Eastern Utah)
Fall FTE, Headcount and Annualized FTE

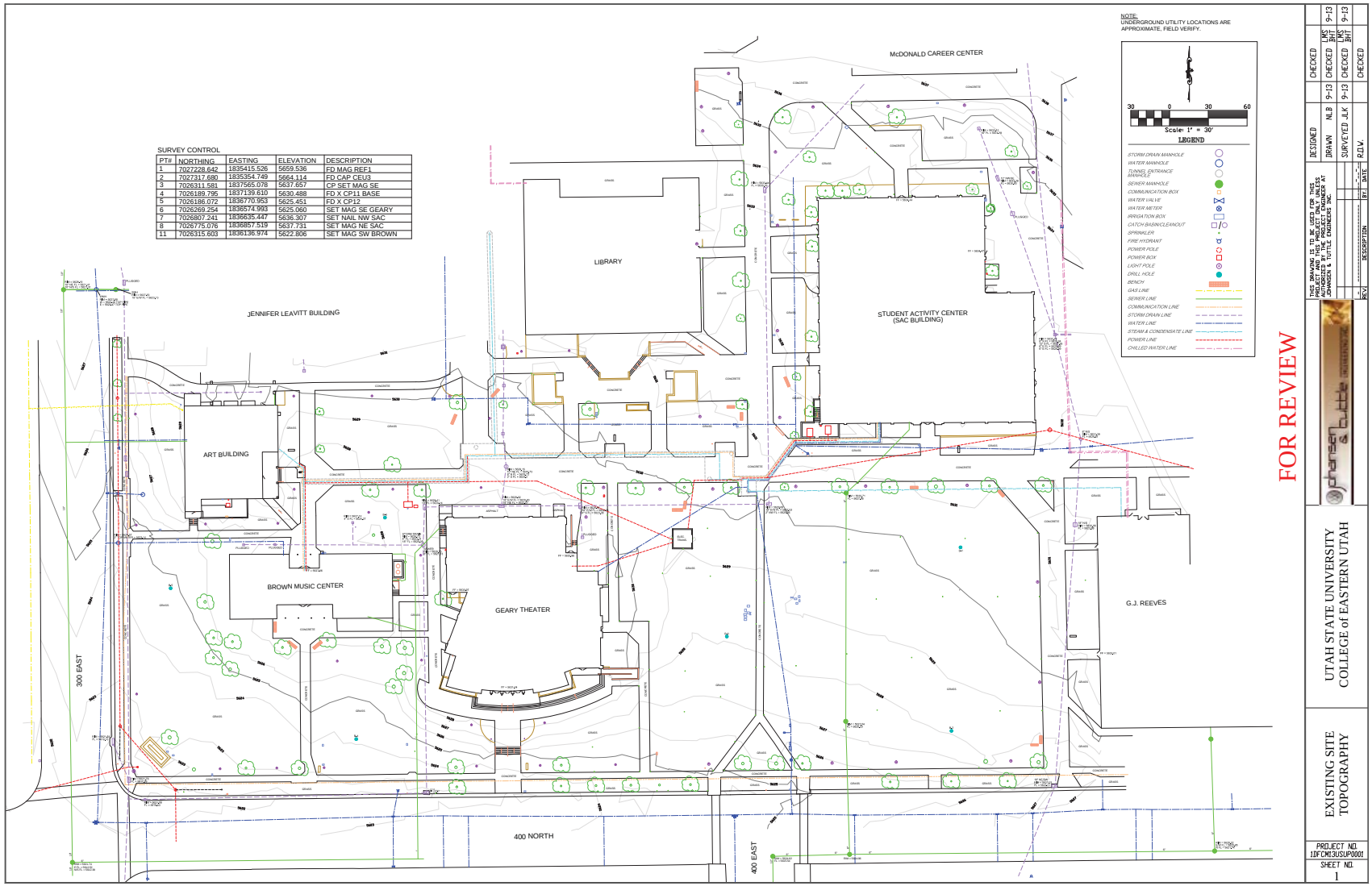
Year	Fall Headcount	Fall FTE	Annualized FTE
1977 -1978	985	680	650
1978 -1979	1076	687	660
1979 -1980	950	676	625
1980 -1981	1218	750	753
1981 -1982	1290	863	829
1982 -1983	1298	874	922
1983 -1984	1359	996	1065
1984 -1985	1412	1121	1162
1985 -1986	1371	1059	1141
1986 -1987	1771	1268	1309
1987 -1988	2147	1296	1281
1988 -1989	2063	1395	1354
1989 -1990	2341	1525	1420
1990 -1991	2960	1800	1683
1991 -1992	2766	1833	1693
1992 -1993	2746	1875	1772
1993 -1994	2849	2029	1901
1994 -1995	3135	2145	1939

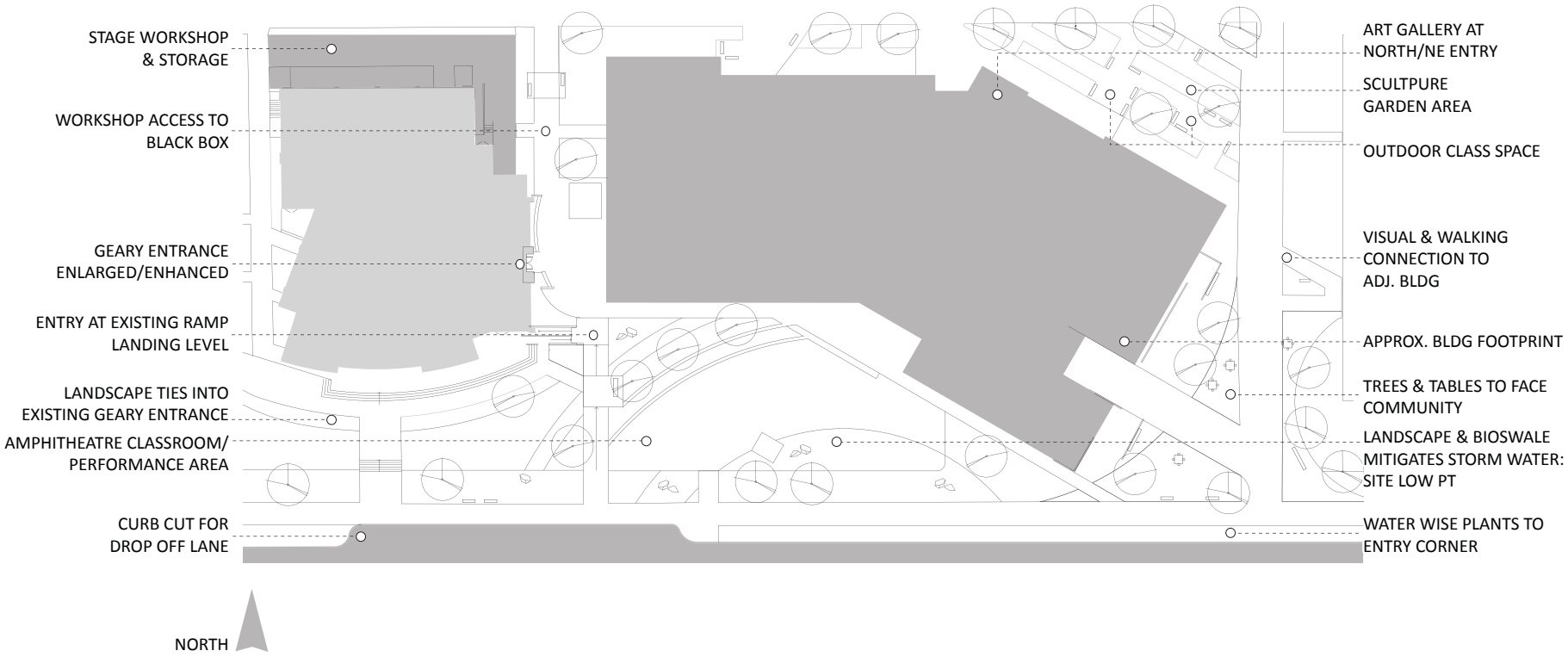
Year	Fall Headcount	Fall FTE	Annualized FTE
1995 -1996	3067	2029	1914
1996 -1997	3170	2126	1913
1997 -1998	3564	2140	1976
1998 -1999	2617	1827	2027
1999 -2000	2688	1957	2087
2000 -2001	2704	1941	2089
2001 -2002	2746	2082	2197
2002 -2003	2646	2020	2135
2003 -2004	2692	1902	2094
2004 -2005	2471	1870	1945
2005 -2006	2179	1662	1797
2006 -2007	2220	1478	1595
2007 -2008	2078	1449	1531
2008 -2009	2082	1420	1473
2009 -2010	2173	1532	1461
2010 -2011	2634	1772	1718
2011 -2012	2323	1523	
2012 -2013	1847	1284	

Enrollment goals:	
Fall 2014:	2100
Fall 2015:	3100
Fall 2016:	3600
Fall 2017:	4100

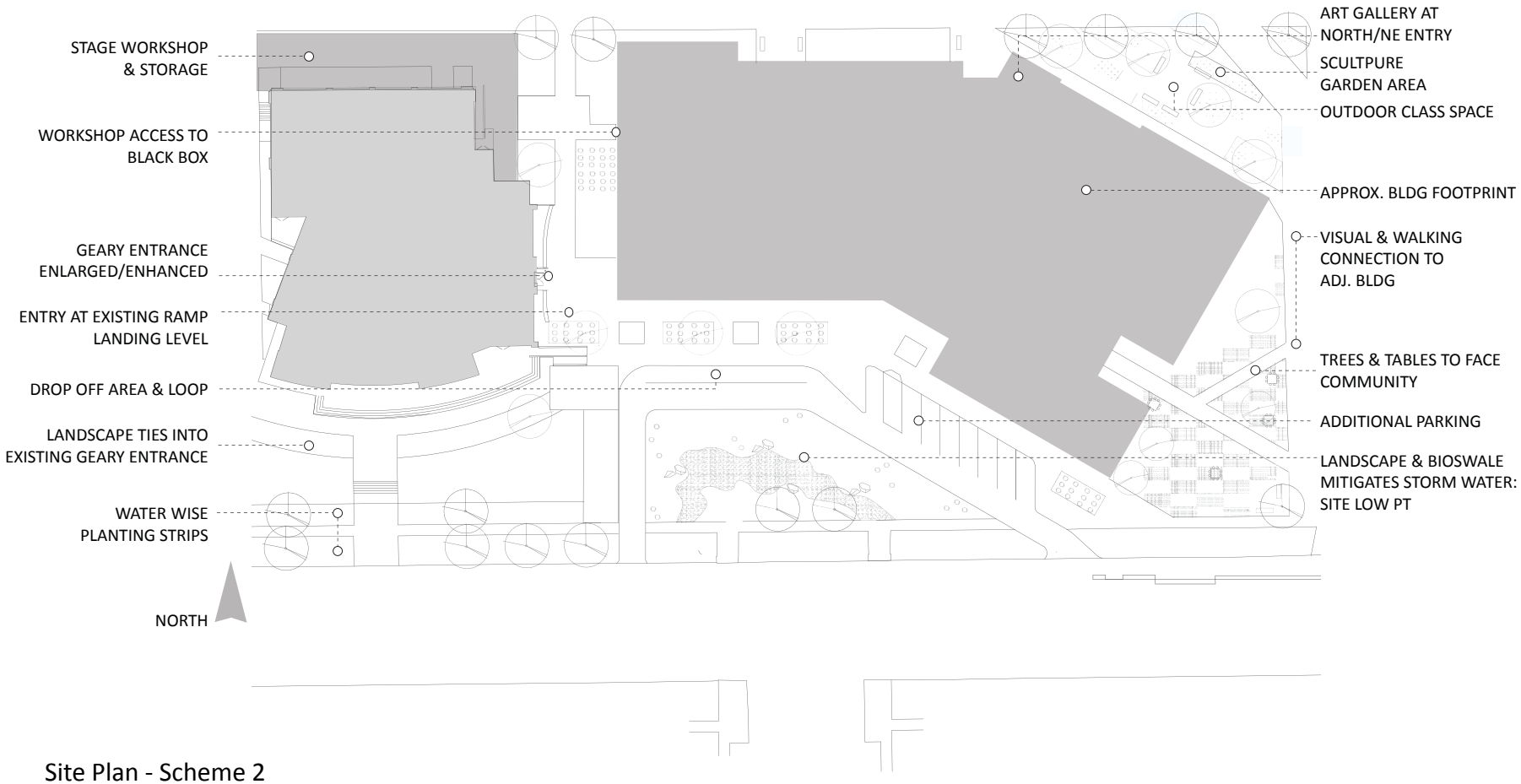
12 Appendices

III. Site Topography



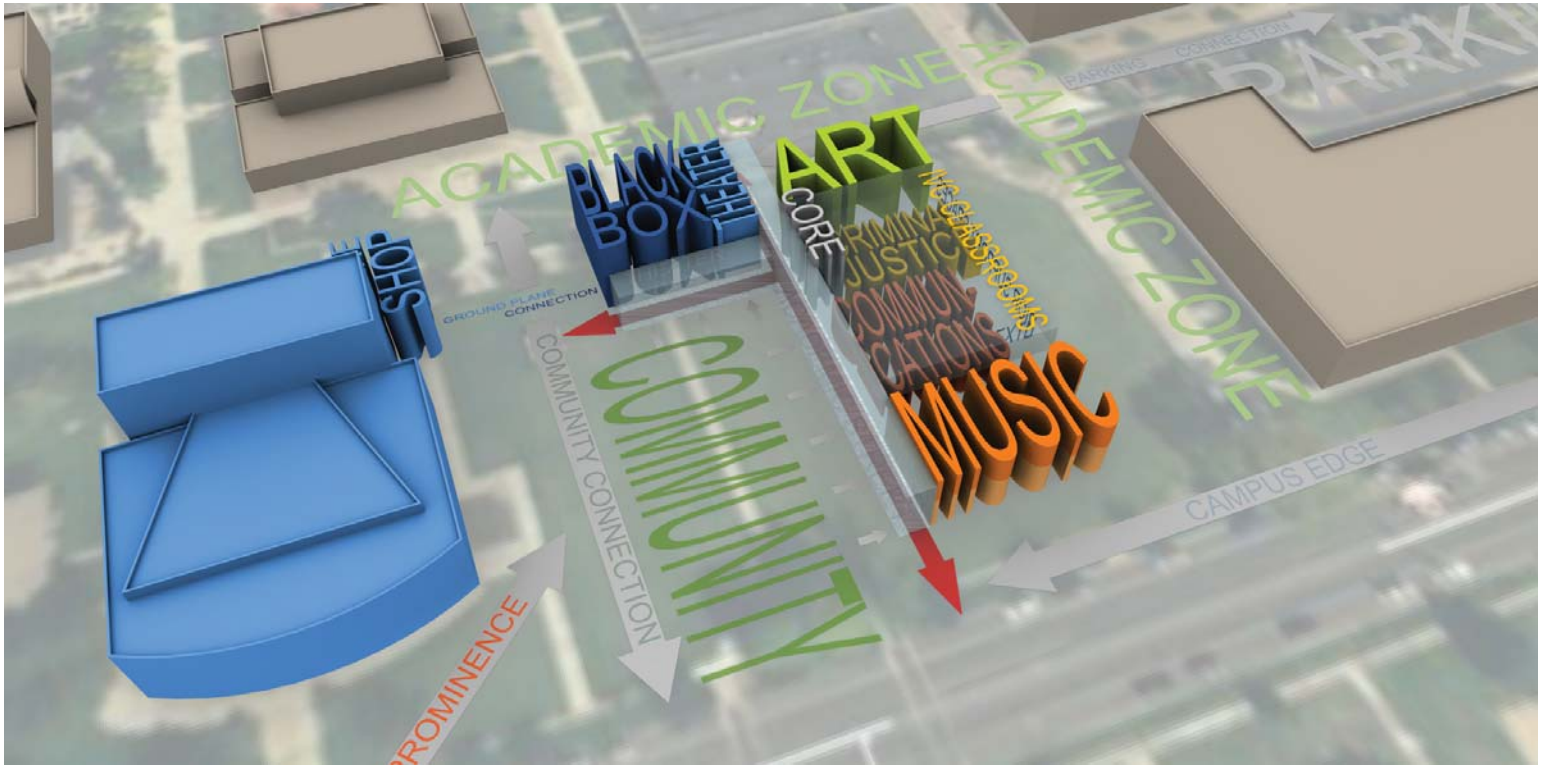


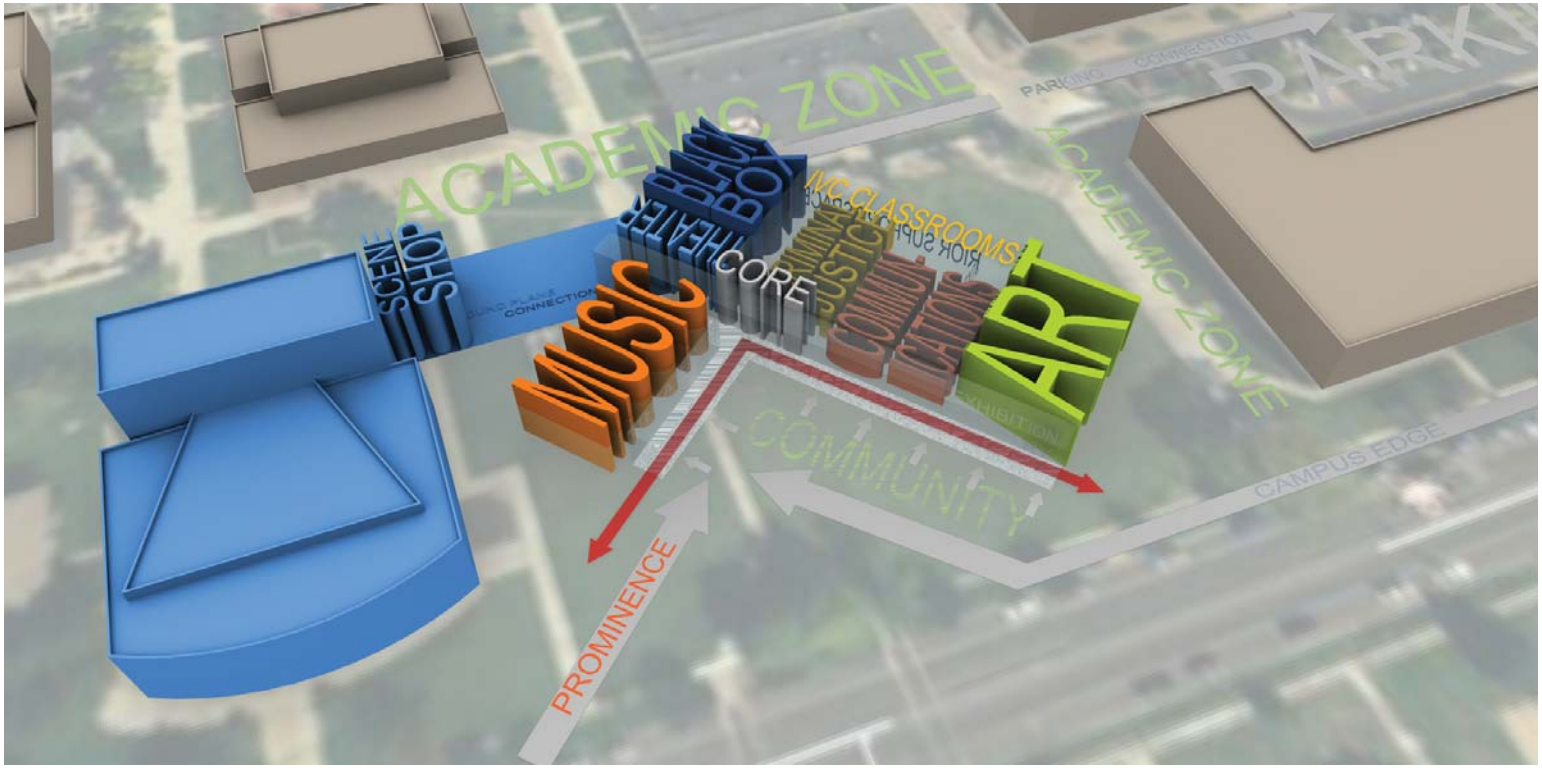
Site Plan - Scheme 1



Site Plan - Scheme 2

V. Stacking Diagram Studies


ACADEMIC ZONE
ACADEMIC ZONE
PARKING CONNECTION
PARK
BLACK BOX THEATER
ART
CORE
CRIMINAL JUSTICE
COMMUNICATIONS
MUSIC
SHOP
GROUND PLANE CONNECTION
COMMUNITY
COMMUNITY CONNECTION
CAMPUS EDGE
PROMINENCE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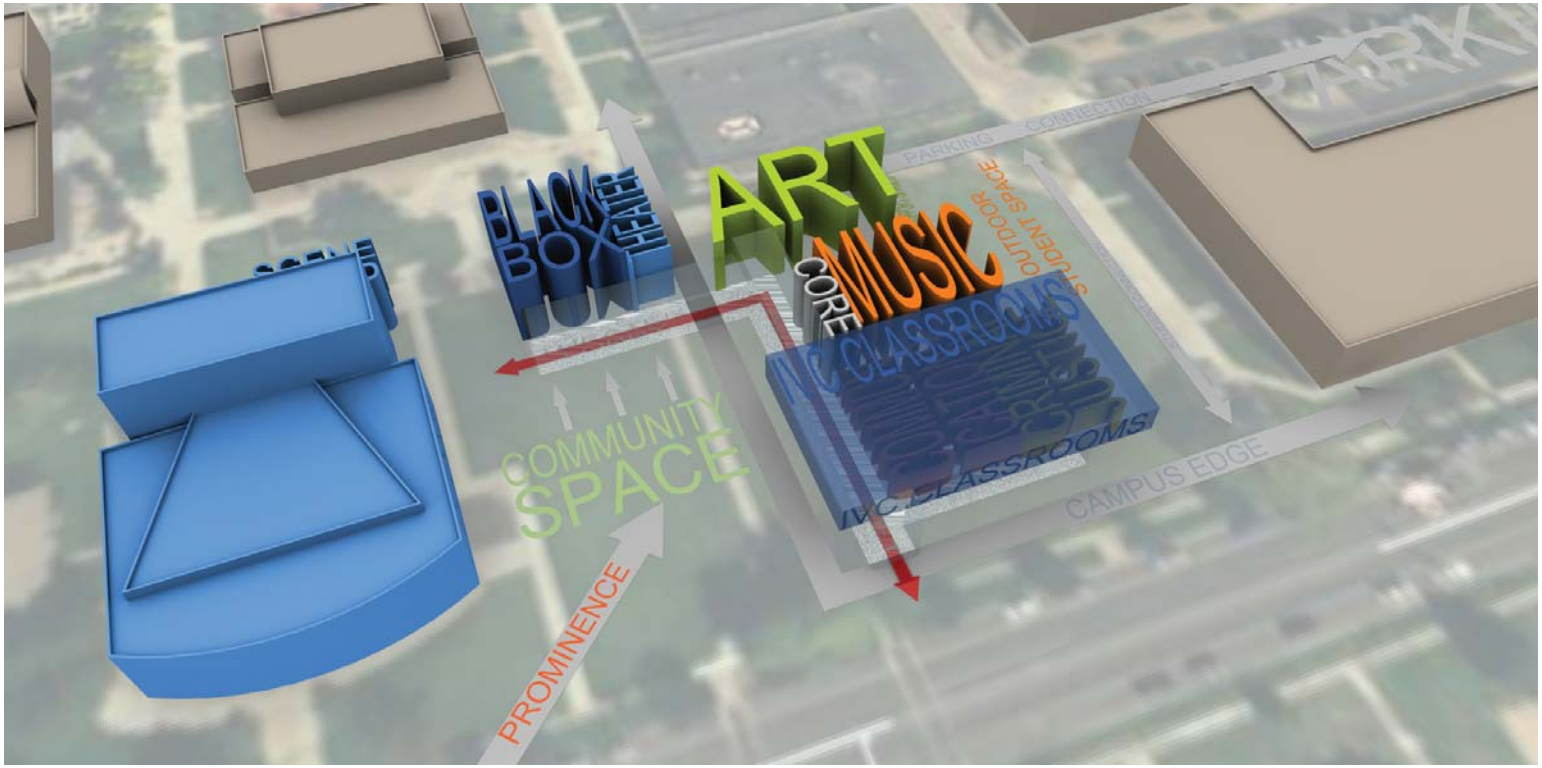
PARK
ACADEMIC ZONE
SCENE SHOP
CONNECTION
HEATER
BLACK BOX
CORE
A/C CLASSROOMS
MUSIC
ART
EXHIBITION
COMMUNITY
CAMPUS EDGE
PROMINENCE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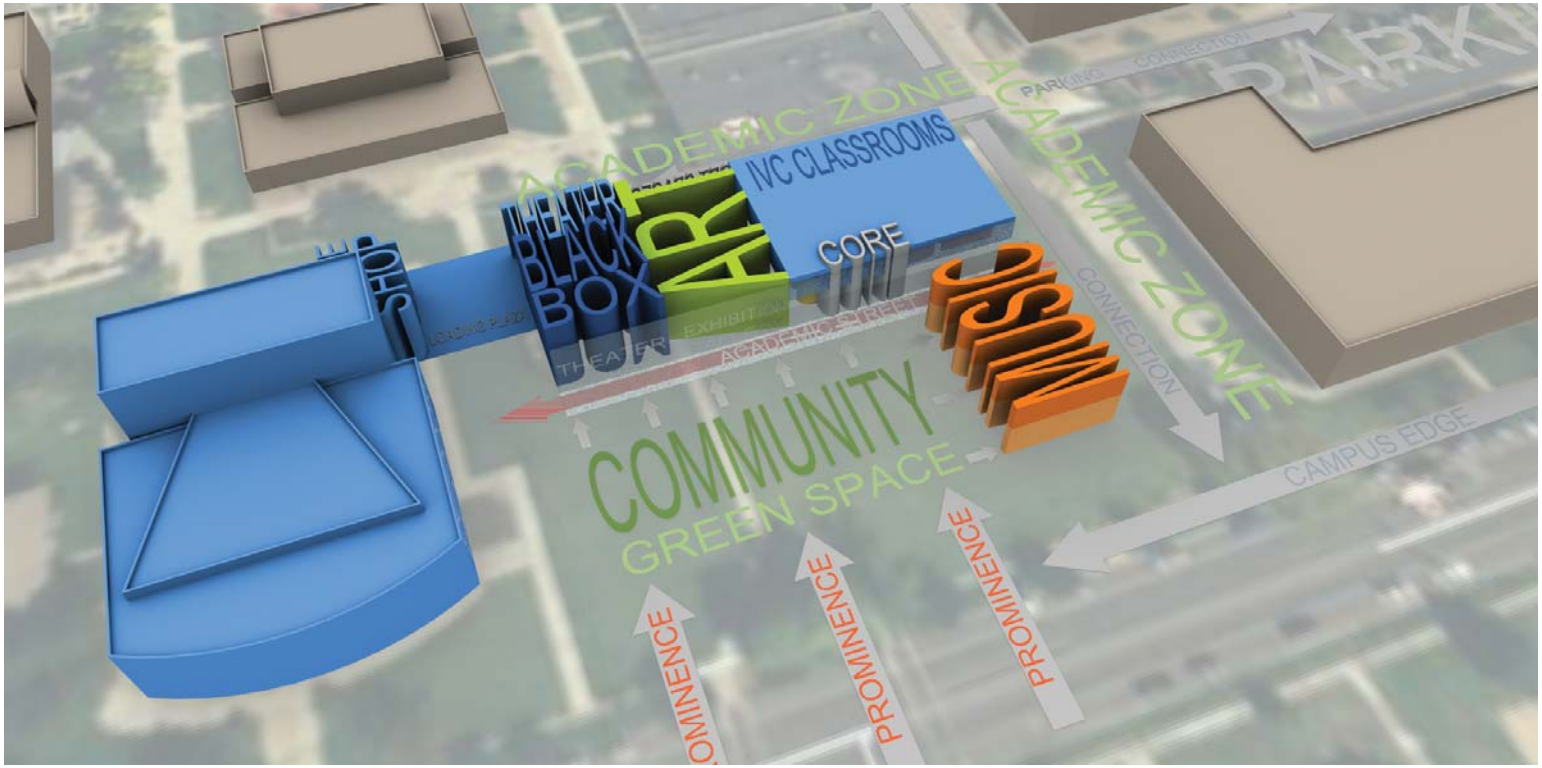
ART
MUSIC
CORE
OUTDOOR STUDENT SPACE
PARKING
CONNECTION
NC CLASSROOMS
IVC CLASSROOMS
COMMUNITY SPACE
CAMPUS EDGE
PROMINENCE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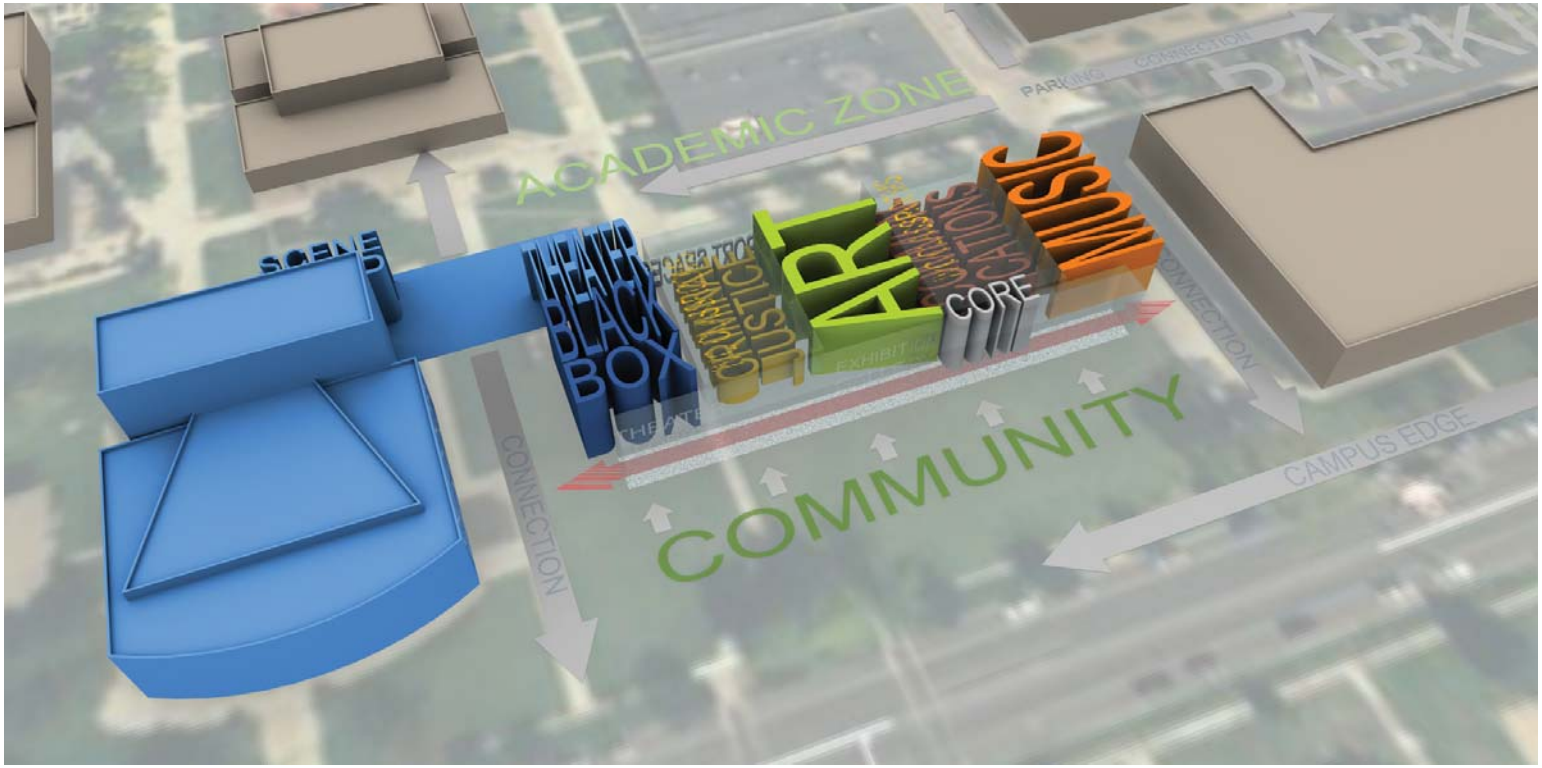
IVC CLASSROOMS
CORE
BLACK BOX
THEATER
EXHIBITION
ACADEMIC ZONE
PARKING
CONNECTION
ACADEMIC ZONE
CONNECTION
COMMUNITY
GREEN SPACE
CAMPUS EDGE
PROMINENCE
PROMINENCE
PROMINENCE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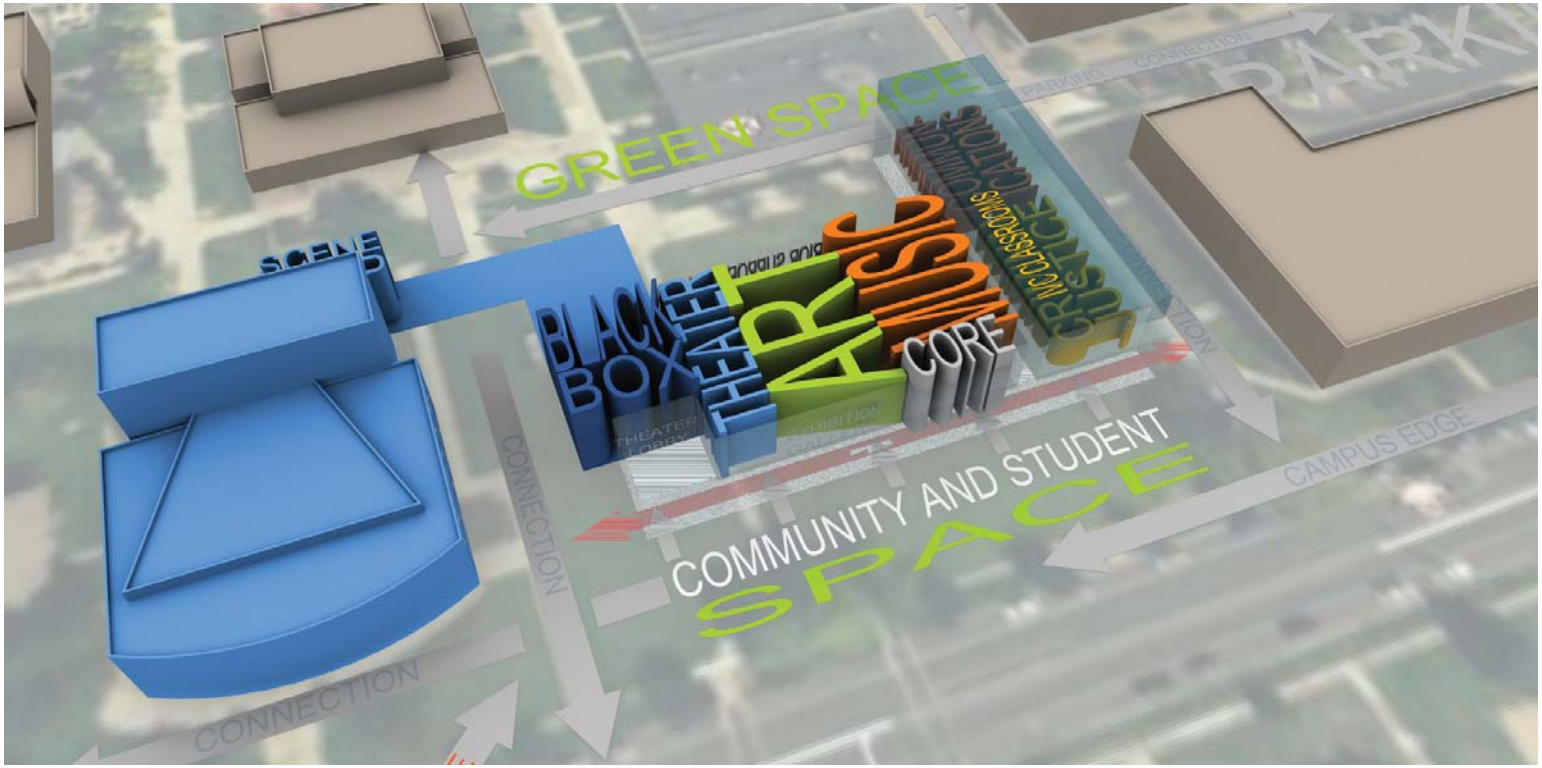
PARKING
CONNECTION
THEATER
BLACK
BOX
CRAFTS
JUSTICE
ART
CORE
MUSIC
CONNECTION
CONNECTION
CAMPUS EDGE
COMMUNITY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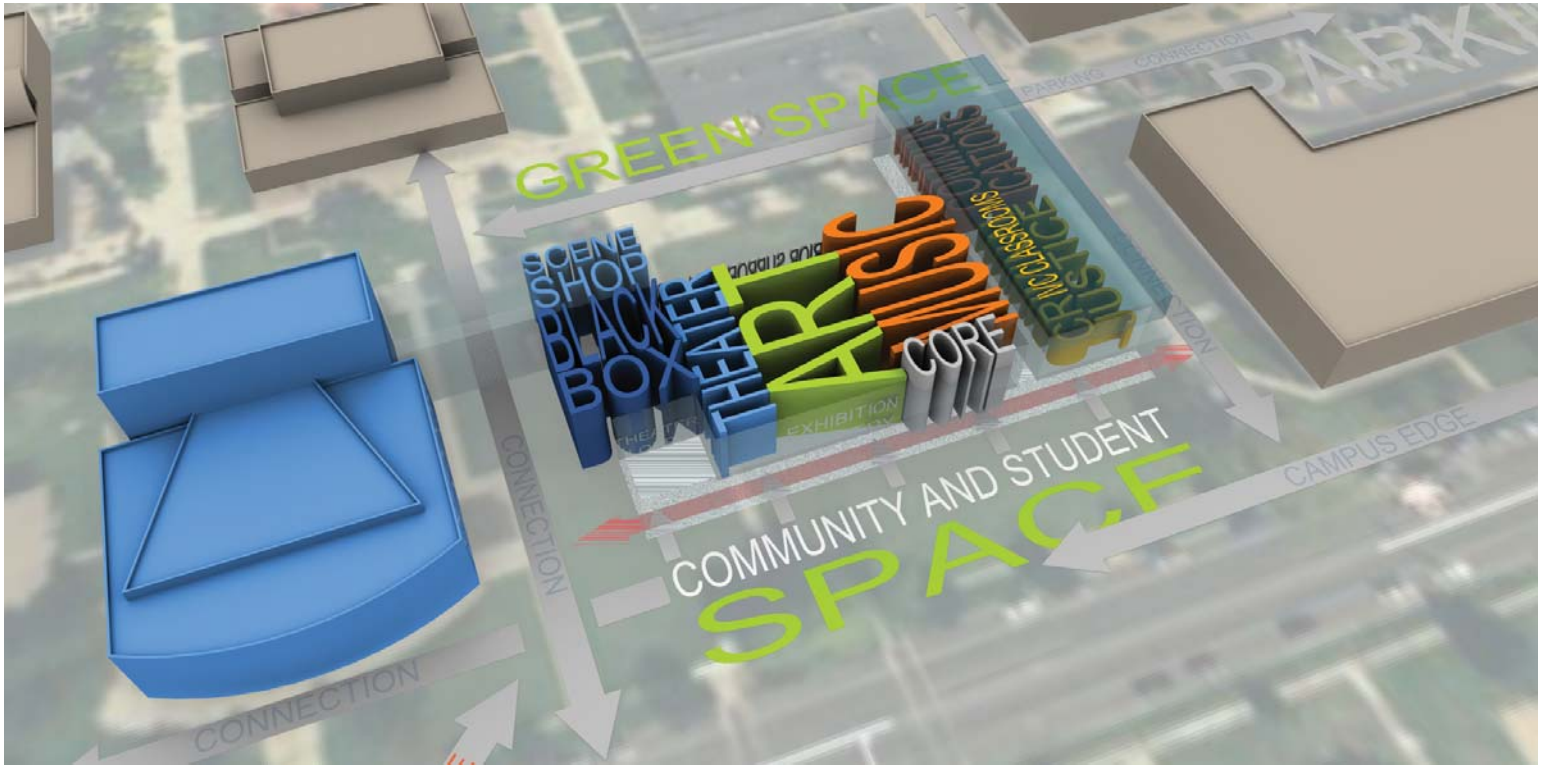
BLACK BOX THEATER
CORE
COMMUNITY AND STUDENT
SPACE
CONNECTION
CONNECTION
CAMPUS EDGE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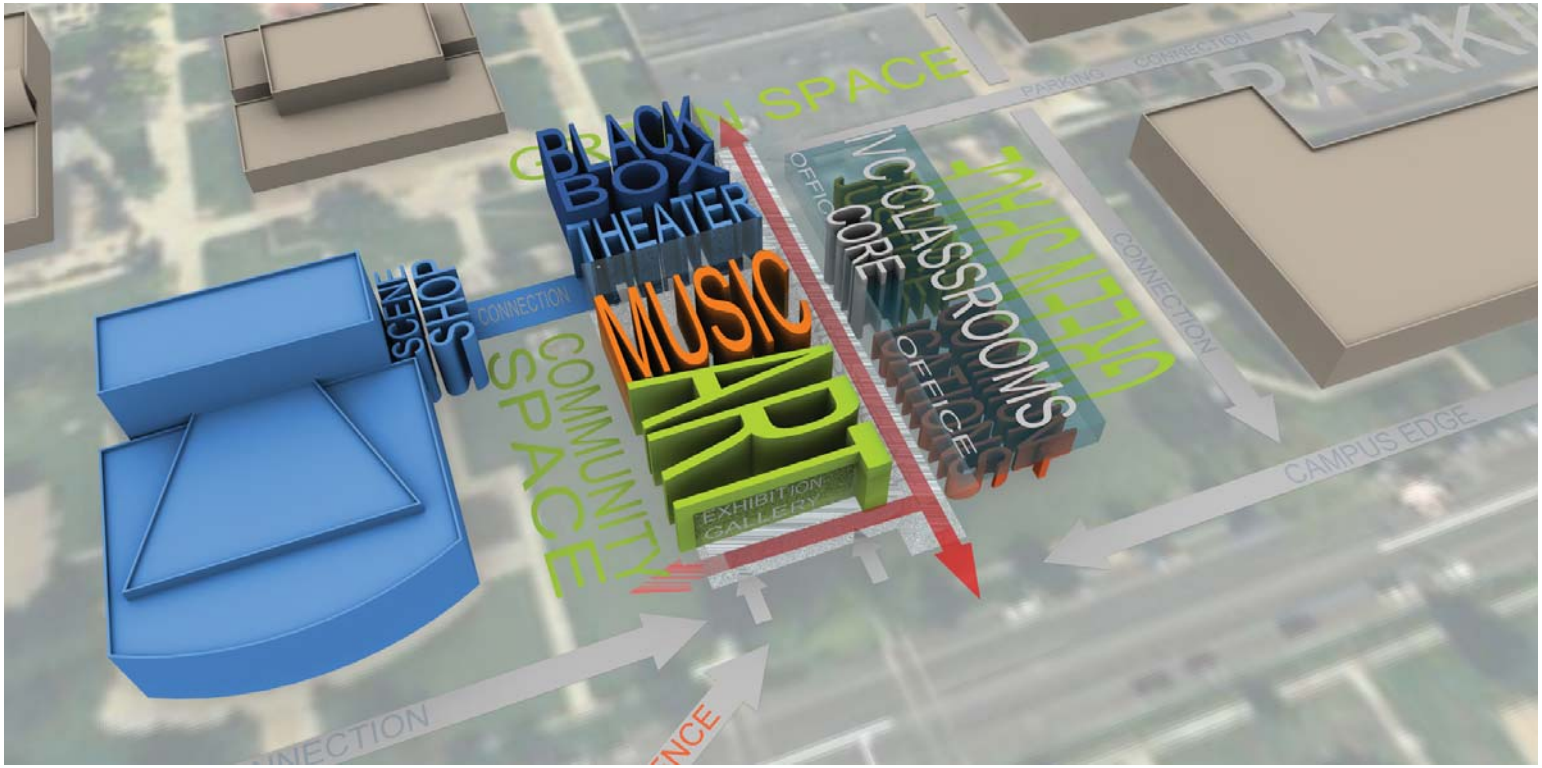
SCENE SHOP
BLACK BOX
THEATER
ART
MUSIC
CORE
EXHIBITION
CONNECTION
CONNECTION
COMMUNITY AND STUDENT
SPACE
CAMPUS EDGE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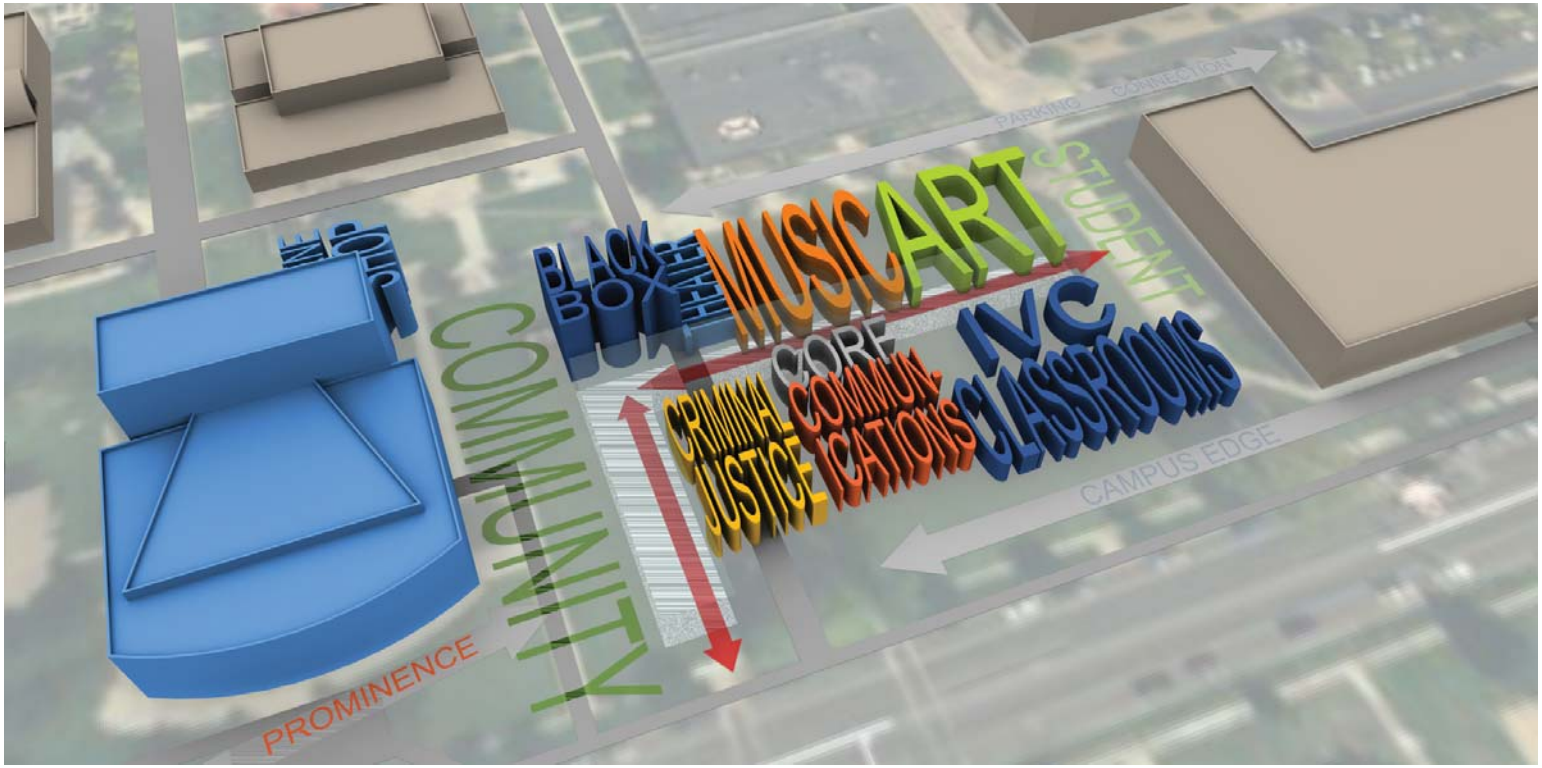
BLACK BOX THEATER
MUSIC
SCENE SHOP
CONNECTION
COMMUNITY SPACE
VC CLASSROOMS
CORE
OFFICE
OPEN SPACE
EXHIBITION GALLERY
PARKING
CONNECTION
CAMPUS EDGE

SCENE SHOP
BLACK BOX
MUSIC
CRIMINAL JUSTICE
ART
THEATER
CORE
IVC
COMMUN-ICATIONS
CLASSROOMS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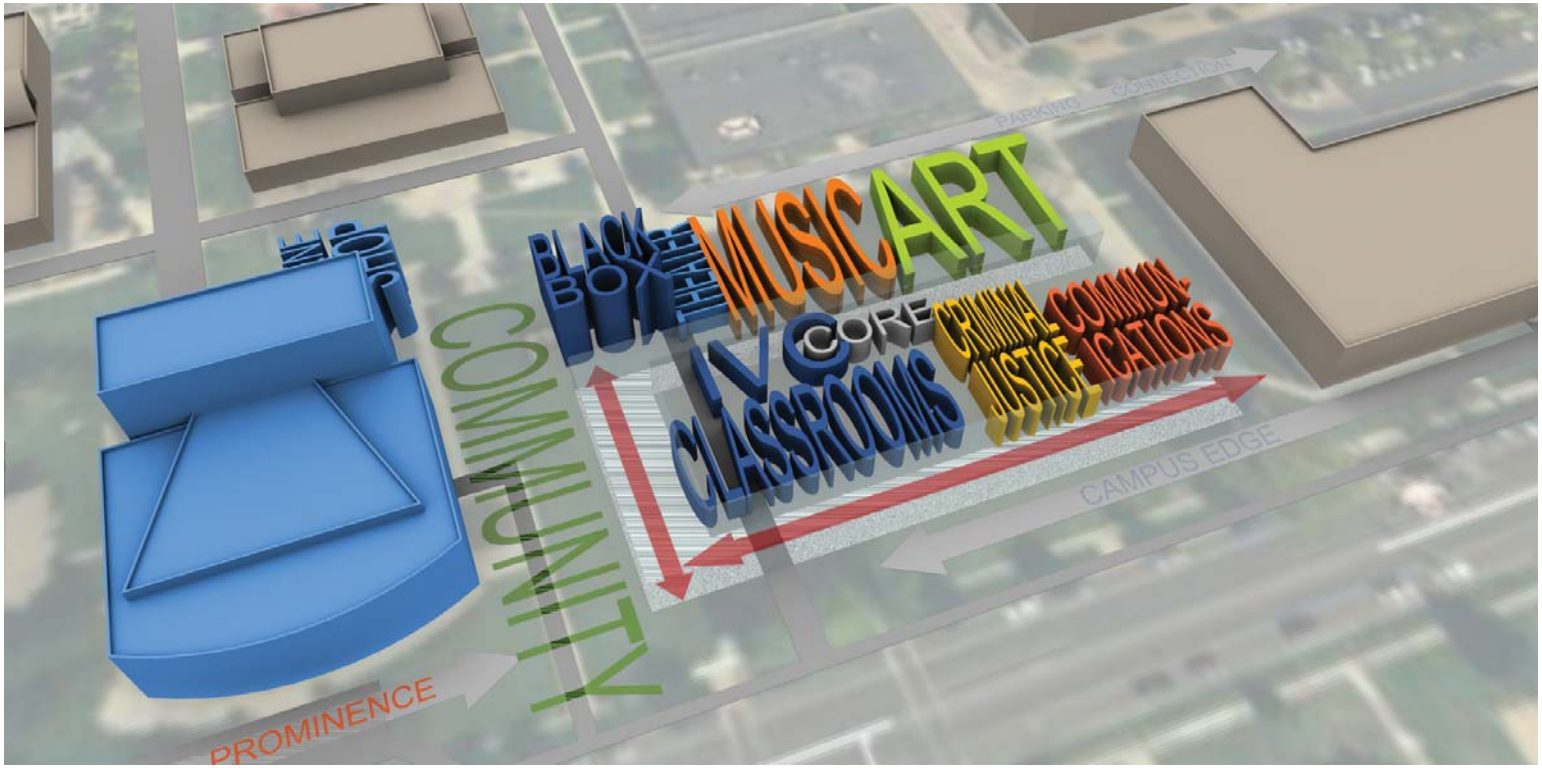
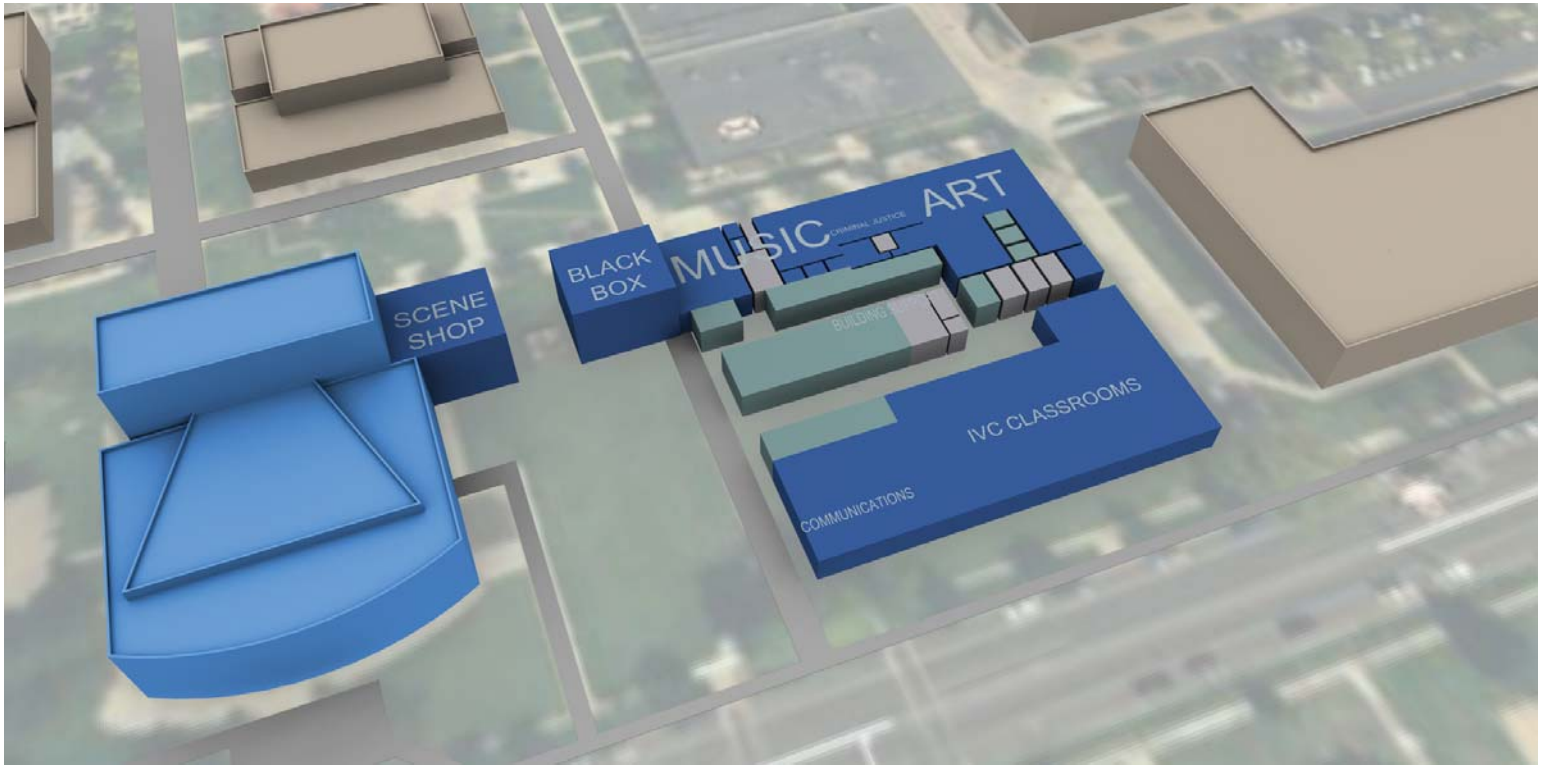
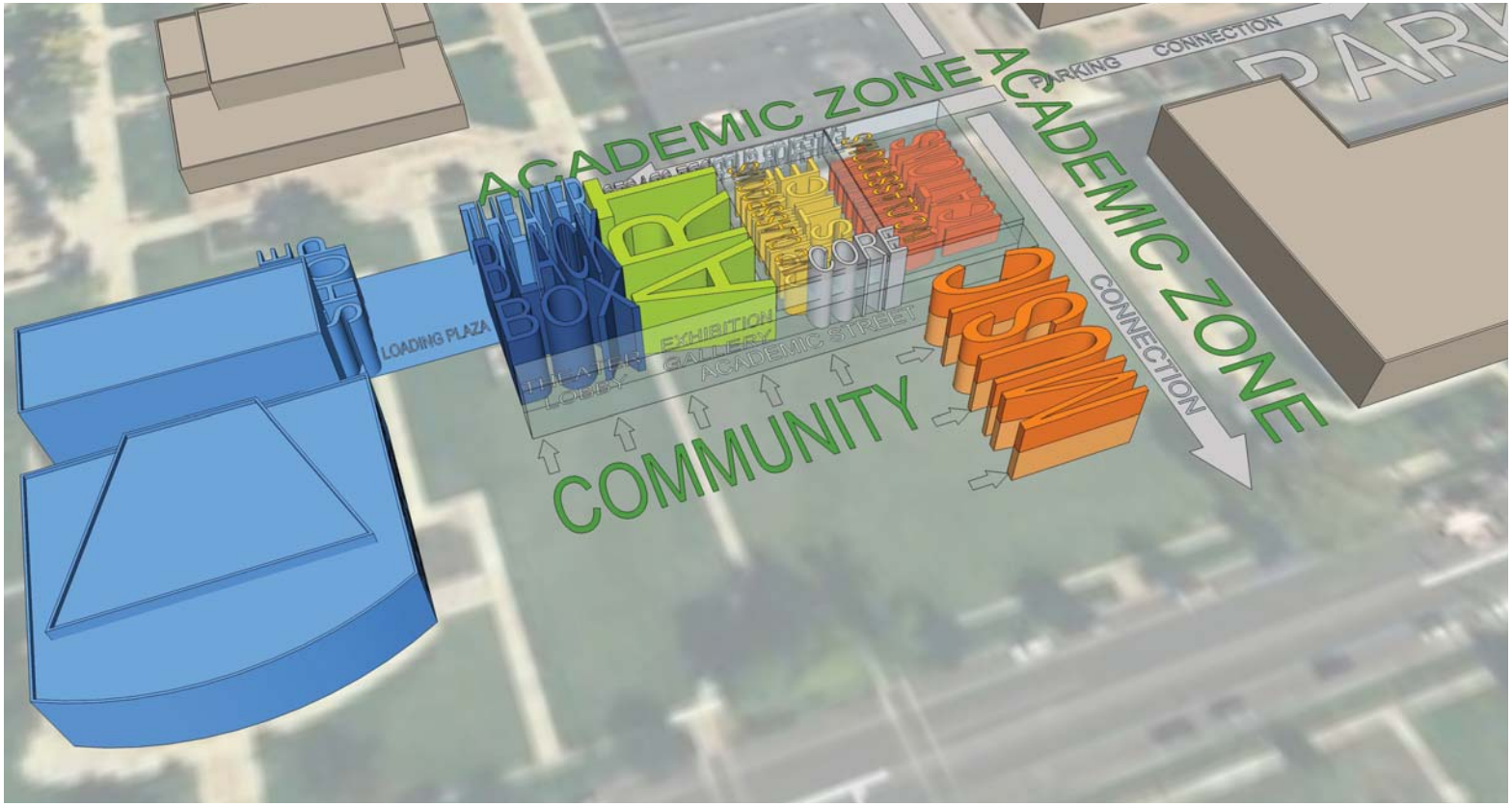
STUDENT
MUSIC
ART
BLACK BOX THEATRE
CORE
AVC
CLASSROOMS
CRIMINAL JUSTICE
COMMUN-ICATIONS
COMMUNITY
CAMPUS EDGE
PROMINENCE


PARKING
CONNECTION
MUSIC
ART
BLACK BOX THEATRE
COMMUNITY
CORE
CLASSROOMS
CRIMINAL JUSTICE
COMMUNICATIONS
CAMPUS EDGE
PROMINENCE


SCENE SHOP
BLACK BOX
MUSIC
ART
IVC CLASSROOMS
COMMUNICATIONS

ACADEMIC ZONE
PARKING CONNECTION
ACADEMIC ZONE
NCC CLASSROOMS
SCENE SHOP
SOUND PLANE CONNECTION
CORE
MUSIC
ART
ACADEMIC STREET
EXHIBITION GALLERY
COMMUNITY
COMMUNITY CONNECTION
COMMUNITY CONNECTION


ACADEMIC ZONE
ACADEMIC ZONE
PARKING
CONNECTION
CONNECTION
LOADING PLAZA
BLACK BOX
CORE
EXHIBITION GALLERY
ACADEMIC STREET
COMMUNITY

PRELIMINARY
GEOTECHNICAL INVESTIGATION

USU EASTERN CLASSROOM BUILDING SITES

Price, Utah

Prepared for:
DFCM

September 2013

RB&G
ENGINEERING, INC.

201301-033

RB&G
ENGINEERING, INC.

September 24, 2013

David A. McKay, Architect
Program Director
DFCM
4110 State Office Building
Salt Lake City, UT 84114

Re: USU Eastern Classroom Building Sites

Dear Mr. McKay:

A Preliminary Geotechnical Investigation has been completed at two potential sites for the proposed new Central Instructional Building to be located on the USU Eastern Campus in Price, Utah. The results of the study are summarized in the report transmitted herewith.

We appreciate the opportunity of providing this service for you. If there are any questions relating to the information contained herein, please call.

Sincerely,

RB&G ENGINEERING, INC.

REGISTERED PROFESSIONAL ENGINEER
NO.162291
BRADFORD E.
PRICE
9/24/13
STATE OF UTAH

Bradford E. Price, P.E., President

bep/jal

1435 WEST 820 NORTH, PROVO, UTAH 84601-1343
PROVO 801-374-5771 SALT LAKE CITY 801-521-5771 FAX 801-374-5773

RB&G ENGINEERING, INC.

USU EASTERN
CLASSROOM BUILDING SITES
Price, Utah

Preliminary Geotechnical Investigation

INTRODUCTION

This report outlines the results of a preliminary geotechnical investigation performed for two potential sites for the proposed new Classroom Building to be located on the USU Eastern Campus in Price, Utah. Site A is located at the northeast corner of the intersection of 400 North and 300 East, extending about 250 feet east. Site B extends from about 400 to 700 feet east of the intersection on the north side of 400 North Street. Figure 1 is an aerial Vicinity Map and Figure 2 is an aerial Site Plan showing the site locations relative to the surrounding area.

The purpose of this investigation was to evaluate the characteristics of the subsurface material throughout the sites to determine if one site is superior to the other with regard to foundation support.

The information contained in the report is discussed under the following headings: (1) Geological and Existing Site Conditions, (2) Field and Laboratory Testing Procedures, (3) Subsurface Soil and Water Conditions, (4) Foundation Considerations and Recommendations, (5) Site Preparation and Compacted Fill Requirements, and (6) and Flexible Pavement Design.

I. GEOLOGICAL AND EXISTING SITE CONDITIONS

The natural deposits in the Price area typically consist of alluvial silt and sand underlain by clay and weathered shale, transitioning into more competent bedrock associated with the Mancos Formation. Experience has shown that the silt, residual clay soils, and weathered Mancos Shale in the area are often moisture sensitive and experience significant volume change upon wetting and drying.

The site is located within 25 miles of three potentially active fault zones, including (1) the Pleasant Valley fault zone, (2) the Joes Valley fault zone, and (3) the Price River Area faults. The Pleasant Valley fault zone is the nearest, and is located approximately 18 miles northwest of

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the site. The Pleasant Valley and Joes Valley fault zones are capable of generating earthquakes with magnitudes in the range of 7.0 to 7.5.

The topography throughout the sites slopes gently down from northeast to southwest. The vegetative cover consists of landscaped grass, trees and sidewalks. An underground drainage system exists throughout the campus.

Buildings are located north, east and west of Site B. The SAC building to the north has frequent cracks in the mortar joints of the wall facing the Site B grassy area. A building was previously located on this site and was demolished in about 2002.

Cracks were observed in the foundation and west wall of the Brown Music Center east of Boring 13-5.

No major water conveyance facilities or other water bodies exist in the immediate vicinity, which would influence the groundwater level at this site. Other than the information provided above, no conditions appear to exist at this site which would adversely affect foundation performance.

II. FIELD AND LABORATORY TESTING PROCEDURES

The subsurface investigation was performed using a CME 55 rotary drill rig with a tri-cone rock bit and NW casing to advance the boring and water as the drilling fluid. During the subsurface investigation, sampling was performed at one- to five-foot intervals in the overburden material and continuous sampling was performed in the bedrock. Both disturbed and undisturbed samples were obtained during the field investigations. Disturbed samples were obtained in the overburden material by driving a 2-inch split spoon sampling tube through a distance of 18 inches using a 140-pound weight dropped from a height of 30 inches. The number of blows required to drive the sampling spoon through each 6 inches of penetration is shown on the boring logs. The sum of the last two blow counts, which represents the number of blows to drive the sampling spoon through 12 inches, is defined as the standard penetration value. The standard penetration value, corrected for overburden and hammer energy, provides a good indication of the in-place density of sandy material; however, it only provides an indication of the relative stiffness of the cohesive material, since the penetration resistance of materials of this type is a function of the moisture content.

Undisturbed samples were obtained at select locations by pushing a thin-walled sampling tube into the subsurface material using the hydraulic pressure on the drill rig. The location at which the undisturbed samples were obtained is shown on the boring logs.

Miniature vane shear tests, which provide an indication of the undrained shearing strength of cohesive materials, were performed on samples of the clay soil during the field investigations. The results of these tests are shown on the boring logs as the torvane value in tsf.

Continuous coring was performed in the bedrock using an NQ sized core barrel with water as the drilling fluid. The core was characterized by determining the percent recovery and the Rock Quality Designation (RQD) for each core interval. Both the percent recovery and the RQD are shown on the boring logs. The RQD is defined as the percent of material within the core interval which has unfractured core lengths greater than 4 inches.

Each sample obtained in the field was classified in the laboratory according to the Modified Unified Soil Classification System. The symbol designating the soil type according to this system, is presented on the boring logs. A description of the Modified Unified Soil Classification System is presented in the appendix, and the meaning of the various symbols shown on the logs can be obtained from this figure.

Laboratory tests performed during this investigation to define the characteristics of the subsurface material throughout the proposed site included in-place dry unit weight, natural moisture content, Atterberg Limits, mechanical analyses, unconfined compressive strength, and consolidation tests.

Testing was performed following procedures outlined in the American Society for Testing and Materials (ASTM) standards.

III. SUBSURFACE SOIL AND WATER CONDITIONS

The characteristics of the subsurface material were evaluated by drilling three borings on Site B to depths of between 25 and 33 feet and two borings on Site A to a depth of 53 feet at the locations shown in Figure 2.

The boring numbers each include the prefix "13" on the site plan and boring logs to indicate the year drilling was completed; however, the prefix will generally be omitted in the discussion below for simplicity. The boring logs and core photos are presented in the appendix.

Site B – It will be observed that the subsurface profile at Site B (Borings 1, 2 and 3) consist predominantly of very soft to firm sandy lean clay with occasional sand and silt layers and highly weathered shale extending to depths of between 15 and 18 feet. Competent claystone was encountered between about 17 and 20 feet and extending to the bottom of the borings between 25 and 33 feet. Temporary PVC pipes were installed in the borings and groundwater levels were measured one day following drilling. Groundwater was measured at a depth of 8 feet in Boring 1, 14.7 feet in Boring 2 and 10.2 feet in Boring 3.

Site A – It will be observed that the subsurface profile at Site A (Borings 5 and 6) consist predominantly of very soft to firm sandy lean clay, underlain by highly weathered shale extending to depths of 38 and 39 feet, respectively. Competent claystone was encountered below about 40 feet and extending to the bottom of the borings at 53feet. Groundwater was measured at 7.2 feet below the surface in Boring 5 and 8.3 feet below the surface in Boring 6. Due to the depth to bedrock in Borings 5 and 6, Boring 4 was not drilled.

The results of classification, density and moisture tests are presented on the boring logs, and the results of all laboratory tests, with exception of the consolidation tests, are summarized in Table 1, Summary of Test Data, in the appendix. It will be noted from Table 1 that the Liquid Limit of the lean clay ranges from 25 to 33 and the Plasticity Index from 7 to 15. The dry unit weight ranges from 96.9 to 110.6 pcf and the moisture content varied from 9.1 to 27.3%. Several of the samples tested exhibited very low unconfined compressive strength with values between 240 and 520 psf. The unconfined compressive strength of the firm to stiff layers ranged from 1400 to 8920 psf.

Testing was performed on two samples of the mudstone bedrock. The samples had dry unit weights of 134.6 and 144.3 pcf and moisture contents of 3.2 and 3.8%. Unconfined compressive strengths of 6500 psi and 3820 psi were obtained. The samples had low plasticity characteristics, classifying as CL-ML-type material when pulverized.

The compressibility characteristics of the subsurface material were evaluated by performing consolidation tests on samples obtained at 3, 6, and 9 feet in Borings 2, at 9 feet in Boring 5 and at 6 and 25 feet in Boring 6. The results of these tests are also presented in the appendix.

During the performance of the consolidation tests, each sample was loaded at the natural moisture content until a load intensity of 0.58 tsf had been reached. At this point in the loading cycle, each sample was permitted to absorb water without any increase in the load intensity. Soils having collapsible characteristics always settle without any increase in the load when they become wet or saturated. It will be observed that the soils did not collapse upon wetting. None of the samples exhibited expansive characteristics. Several of the samples exhibited moderate compressibility characteristics for load intensities greater than about 1000 psf.

IV. FOUNDATION CONSIDERATIONS AND RECOMMENDATIONS

A. FOUNDATION TYPES AND BEARING CAPACITIES

It is assumed that the new classroom building will be a multi-level masonry type structure. The building dimensions and structural loads are not known as of the preparation of this report.

Due to the very low bearing capacity of the soft lean clay layers encountered at both sites, the soils will not support structural loads using spread footings on the existing soils without substantial adverse settlement. Options for foundation support include spread footings on compacted fill and deep foundations.

Spread Footings on Compacted Fill

Site B - This option would require removal of the soft clay extending to depths ranging between 9 and 15 feet below the existing ground surface. The width of the excavation should extend at least 6 feet beyond the building perimeter. With groundwater measured at about 8, 10 and 15 feet below the ground surface in the three borings, dewatering of the excavation would be required. The soils have relatively low permeability and it is anticipated that dewatering could be accomplished using shallow sumps and drainage trenches.

We recommend that the structural fill be relatively well-graded sandy gravel with a maximum size of 4 inches and with less than 15% passing a No. 200 sieve. The fill should be placed in lifts not exceeding 12 inches loose and compacted to an in-place density equal to at least 95% of the maximum density as determined by ASTM D 1557.

To ensure that compaction requirements are met, each lift should be tested, with testing performed at 50 foot intervals along continuous footing lines and at each spot footing. Testing should be performed in accordance with ASTM D 6938 (nuclear method), or ASTM D 1556 (sand cone method).

We recommend that all exterior foundations be located at a depth below finished grade sufficient to provide frost protection, which is about 3 feet in this area.

It should be recognized that the allowable soil bearing pressure for granular material is a function of the width of the footing and the depth of the footing below finished grade. We recommend that the foundations be sized using the bearing capacity chart presented in Figure 3, except that in no case should the width of any footing be less than 24 inches. In preparing Figure 3, consideration has been given to both shear failure and differential settlement. The lines sloping upward to the right define the allowable soil bearing pressure with respect to shear failure using a factor of safety of 2.5. The line sloping downward to the right defines the allowable soil bearing pressure such that the maximum settlement of any footing will not exceed 1 inch. If the foundations for the proposed facility are sized in accordance with Figure 3, differential settlement throughout the structure should not exceed 0.5 inch.

Site A - This option would require removal of the soft clay extending to depths ranging between 29 and 33 feet below the existing ground surface. The width of the excavation should extend at least 12 feet beyond the building perimeter. With groundwater measured at about 7.2 and 8.3 feet below the ground surface in the two borings, dewatering of the excavation would be required. The soils have relatively low permeability and it is anticipated that dewatering could be accomplished using shallow sumps and drainage trenches. Structural fill options listed above are applicable to this site. Due to the depth of very soft clay layers, it is our opinion that this is not an efficient option for this site.

Deep Foundations

Supporting the structure on foundations extending into the competent claystone also eliminates the risk of settlement associated with vary soft clay layers. It is our opinion that the most efficient type of deep foundation for this site is drilled caissons extending at least 5 feet into the competent claystone bedrock. This would require the shafts extending to depths of between 20 and 25 feet at Site B, and to about 43 feet at Site A. The

allowable bearing capacity for this foundation type using a design strength for the claystone of 3500 psi and a factor of safety of 5.0 is shown in the following table:

CAISSONS

Base Diameter (feet)	Allowable Capacity (kips)
2.0	316
2.5	495
3.0	712

Since the caissons are designed based on end bearing, all loose material should be cleaned from the base. It is recommended that the borings be cased through the soft clay layers and that the soils engineer be present during placement to verify that the foundations extend through the weathered shale and into competent shale. Concrete should be placed using tremie techniques.

If the foundations for the proposed facility are designed in accordance with the recommendations outlined above, the maximum settlement of any footing should not exceed one inch and differential settlement throughout the structure should not exceed 0.5 inch, which should be satisfactory for the proposed facility. For this option, consideration should also be given to supporting the floors on deep foundations to prevent adverse floor settlement.

While either of the options outlined above will provide adequate foundation support, it is our opinion that Spread Footings on Compacted Fill is not a viable option for Site A.

B. SEISMIC CONSIDERATIONS

Site B will classify as Site Class C if the compacted fill option is used and Site Class D if the drilled caisson option is used as per Section 1613 of the 2009 and 2012 International Building Code and Chapter 20 of ASCE 7. We recommend that Site Class E be used for Site A. The site is located at latitude 39.6072° North and longitude 110.8042° West. Probabilistic peak ground acceleration (PGA) values are tabulated below:

Probabilistic ground motion values in %g.

	10%PE in 50 yr	2%PE in 50 yr
PGA	9.36	21.91
0.2 sec SA	21.00	46.84
1.0 sec SA	7.11	15.36

recommend a passive earth pressure coefficient of 3.8 be used where the granular soil is used to restrain lateral movement.

The additional active earth pressure due to ground acceleration equal to two thirds of the MCE may be estimated using a coefficient of 0.07. The seismic ground motion will reduce the available passive resistance. This reduction may be accounted for as an earth pressure acting in the direction opposite the passive resistance, and computed using a coefficient of 0.22. The pressure diagrams for these forces may be roughly approximated as inverted triangles, such that the resultant forces of the seismic components act at heights of approximately 2H/3 above the base of the wall.

It should be recognized that the pressures calculated by the above equation are earth pressures only and do not include hydrostatic pressures. Where hydrostatic pressures may exist behind a retaining structure, we recommend either the wall be designed to resist hydrostatic pressure, or that a drainage system be placed behind the wall to prevent the development of hydrostatic pressures.

D. FLOOR SLABS

We recommend that one foot of imported granular fill and a free-draining granular layer be placed beneath all floor slabs. The free-draining granular layer should be at least 6 inches thick and should have a maximum size less than 1 inch and not more than 5% passing a 200 sieve. The free-draining material should be densified using at least 4 passes of a smooth drum 5-ton vibratory roller or equivalent. If the above specifications are followed, the granular layer will prevent the accumulation of moisture beneath the floor slab and will also serve adequately as a base beneath the floor slabs. Where moisture sensitive flooring, such as tile flooring systems, is planned, it is recommended that a vapor retarder/barrier be placed directly beneath the concrete floor, in lieu of the free-draining granular layer. It is recommended that the vapor barrier conform to ASTM E 1745 Class A requirements. A subgrade modulus of 150 pci can be used for design.

V. SITE PREPARATION AND COMPACTED FILL REQUIREMENTS

As indicated above, the vegetative cover throughout the building site consists of lawn grass and trees. We recommend that tree roots be grubbed and that the upper 6 inches be stripped from the area to remove the excess organic matter in the upper portion of the soil profile. We also

recommend that sidewalks be removed. Uncontrolled fill and concrete debris associated with demolition of structures previously occupying the site should be removed from beneath building areas.

We recommend that imported structural fill meet the requirements outlined in Section IV. Imported fill used to establish final grade outside of building areas, if required, should consist of granular soil having a maximum size of 6 inches with less than 30% passing a No. 200 sieve. We recommend that the material passing a No. 200 sieve have a plasticity index less than 6. The fill should be compacted to an in-place density equal to at least 92% of the maximum density as determined by ASTM D 1557.

Grading around the structure should be performed in such a manner that all surface water will flow freely from the area and that no ponding will occur adjacent to the structure which will permit deep percolation into the foundation area. Roof drains should extend well beyond the building lines to prevent seepage into the foundation soils. Sprinkler heads located adjacent to the building should be directed away from the structure to prevent the percolation of water into the foundation zone.

Backfilling around foundation walls should be performed using granular material densified to an in-place unit weight equal to at least 90% of the maximum laboratory density indicated above.

VI. FLEXIBLE PAVEMENT DESIGN

In providing recommendations for flexible pavement design for driveways and parking areas, an equivalent single axle load (ESAL) of 10,000 has been used. This value is comparable to 600 passenger cars and light trucks per day and 10 heavy trucks per month over a design life of 20 years. If traffic loading is significantly different than what has been assumed, it is requested that we be notified so that appropriate modifications can be made in pavement design. The flexible pavement thickness has been determined using the AASHTO Structural Number Procedure. The following additional assumptions have been made in determining the flexible pavement thickness:

Design E-18's	= 10,000
Reliability	= 85%
Overall Deviation	= 0.45
Resilient Modulus	= 4,500 psi
Initial Serviceability	= 4.2
Terminal Serviceability	= 2.0

The results of the analysis indicates that a flexible pavement consisting of 3 inches of an asphalt surface course plus 6 inches of untreated granular base and 8 inches of granular borrow will be adequate to support the contemplated traffic. In performing the analysis, it has been assumed that the upper 8 inches of the natural material will be scarified and re-densified to an in-place unit weight equal to 90% of the maximum laboratory density, as determined by ASTM D 1557, resulting in a CBR value of at least 3 for the natural material. The fine grained native soils are susceptible to frost heave if they become wet during freezing conditions. Since the groundwater level is at a substantial depth below the surface, saturation of the near surface native soils would be from surface water. Providing good drainage and sealing surface cracks in the pavement as they develop will reduce the risk of frost heave. If it is desired to minimize the risk, we recommend placing an additional 6 inches of non-frost susceptible granular soil (minus 3 inch sandy gravel with less than 8% non-plastic fines) beneath the pavement section.

The flexible pavement design indicated above is adequate to support the traffic distribution as indicated. It should be recognized, however, that if construction is performed during periods when the subsurface material throughout the site is in a wet condition, the subsurface material will not be capable of supporting the wheel loads associated with construction equipment. As a consequence of this condition, the pavement cannot be constructed as designed. It is recommended, therefore, that the pavement for the development be constructed during the summer months when the surface moisture content is at a minimum. If the pavement must be constructed during periods when the surface moisture is high, it may be necessary to stabilize the subgrade prior to construction of the pavement section. Stabilization techniques are dependent upon the conditions encountered and construction methods. An additional 1-foot of granular subbase plus a geotextile fabric may be required if wet conditions exist at the subgrade level such that compaction of the subgrade is not feasible.

All base material should be densified to an in-place unit weight equal to 95% of the maximum laboratory density indicated above and all untreated granular base and granular borrow should conform to Utah Department of Transportation Specifications. Mineral aggregates used in the asphalt surface course should conform to Section 02741 of the standard specifications of the Utah State Department of Transportation. Mixing, placing, and densification of all asphalt materials should also conform to UDOT standards.

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Figure 1 VICINITY MAP
USU Eastern Classroom Building Sites
Price, Carbon County, Utah

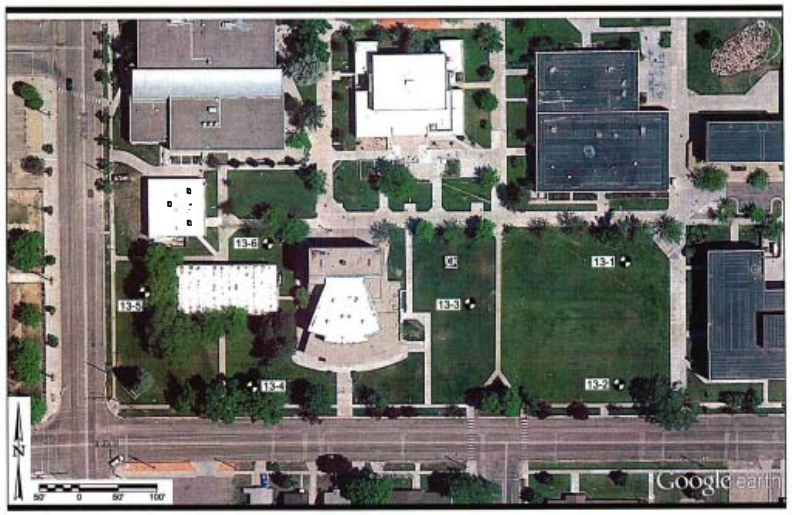

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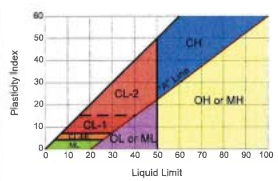
Figure 2 SITE PLAN & TEST HOLE LOCATIONS
USU Eastern Classroom Building Sites
Price, Carbon County, Utah

Unified Soil Classification System

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria		
COARSE-GRAINED SOILS *more than half of material is larger than No. 200 sieve*	Gravels *more than half of coarse fraction is larger than No. 4 sieve size*	Clean Gravels *little or no fines*	GW	Well graded gravels, gravel-sand mixtures, little or no fines	*For laboratory classification of coarse-grained soils*	$C_u = \frac{D_{60}}{D_{10}}$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$	Greater than 4; Between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Determine percentage of gravel and sand from grain-size curve. Depending on percentage of fines (*fraction smaller than No. 200 sieve size*), coarse-grained soils are classified as follows: **Less than 5%** GW, GP, SW, SP **More than 12%** GM, GC, SM, SC **5% to 12%** Borderline cases requiring use of dual symbols**	Not meeting all gradation requirements for GW	
		Gravels With Fines *appreciable amount of fines*	GM* d / u	Silty gravels, poorly graded gravel-sand-silt mixtures		Atterberg limits below "A" line, or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring uses of dual symbols
			GC	Clayey gravels, poorly graded gravel-sand-clay mixtures		Atterberg limits above "A" line, or PI greater	
	Sands *more than half of coarse fraction is smaller than No. 4 sieve size*	Clean Sands *little or no fines*	SW	Well graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$	Greater than 6; Between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines		Not meeting all gradation requirements for SW	
		Sands with Fines *appreciable amount of fines*	SM* d / u	Silty sands, poorly graded sand-silt mixtures		Atterberg limits below "A" line, or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring uses of dual symbols
			SC	Clayey sands, poorly graded sand-clay mixtures		Atterberg limits above "A" line, or PI greater	
FINE-GRAINED SOILS *more than half of material is smaller than No. 200 sieve*	Silts and Clays *liquid limit is less than 50*		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	*For laboratory classification of fine-grained soils*		
			CL 1 / 2	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
			OL	Organic silts and organic silt-clays of low plasticity			
	Silts and Clays *liquid limit is greater than 50*		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts			
			CH	Inorganic clays of high plasticity, fat clays			
			OH	Organic clays of medium to high plasticity, organic silts			
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils			



Plasticity Chart

NOTE: USCS Modified to include CL-type subcategories

*Division of GM and SM groups into subdivisions of d and u for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when liquid limit is 28 or less and the PI is 6 or less, the suffix u used when liquid limit is greater than 28.

***Borderline classification*: Soils possessing characteristics of two groups are designated by combinations of group symbols. (For example GW-GC, well graded gravel-sand mixture with clay biner.)

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DRILL HOLE LOG

BORING NO. 13-1

SHEET 1 OF 1

PROJECT: USU EASTERN CLASSROOM BUILDING SITES
CLIENT: DFCM
LOCATION: SEE SITE PLAN
DRILLING METHOD: 96-CME-55
DRILLER: S. CHAFFIN, T. JONES
DEPTH TO WATER - INITIAL: ▽ N.M. **AFTER 24 HOURS:** ▼ 8.1' 9/6/13

PROJECT NUMBER: 201301.033
DATE STARTED: 9/4/13
DATE COMPLETED: 9/4/13
GROUND ELEVATION: 5630.2'
LOGGED BY: C. SANBORN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description		Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
5630				2	2,1,2,(6) *T 0.50*	SC	brown, moist, loose	CLAYEY SAND W/GRAVEL trace organics								
				5	0,0,1,(2) *T 0.31*	CL	brown, moist, firm	SANDY LEAN CLAY								
5625	5			18	0,0,0,(0) *T 0.12*	CL	brown, wet, very soft									
				10	0,0,0,(0) *T 0.14*	ML	brown, wet, soft to very soft	SANDY SILT very slightly plastic								
5620	10			12	0,0,1,(2) *T 0.12* *T 0.32*	CL-ML	brown, wet, soft to firm	SANDY SILTY CLAY some gravels								
5615	15			10	1,3,15,(28)	CL	brown, moist, very stiff	SANDY LEAN CLAY very highly weathered shale								
5610	20			7	42,70/5"	-	gray-brown, slightly moist									
				30	Core *96,43*	CL-1	gray-brown, slightly moist, very soft rock				32	12				
				14	Core *80,44*	-	gray, slightly moist, soft rock	SHALE (CLAYSTONE) plastic, very highly weathered at top, becoming more competent w/depth								
5605	25			26	Core *63,33*	-	gray, slightly moist, average hard rock									
5600	30			58	Core *97,85*	-	gray, slightly moist, average hard rock									
								BOH								

DH_LOG\HAA_USU_ECBS.GPJ US EVAL.GDT 9/20/13

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LEGEND:
DISTURBED SAMPLE: 2,3,4(6) ◄ Blow Count per 6" (N)60 Value; T 0.45 ◄ Torvane (tsf); PP 0.90 ◄ Pocket Penetrometer (tsf)
CORE: Core 90,65 ◄ Percent Sample Recovery, Rock Quality Designation (% RQD)
UNDISTURBED SAMPLE: Pushed; T 0.45 ◄ Torvane (tsf); PP 0.90 ◄ Pocket Penetrometer (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
Chem. = pH, Resistivity, Sulfate, Chloride
Org. = Organic Content

DRILL HOLE LOG — BORING NO. 13-2

SHEET 1 OF 1

PROJECT: USU EASTERN CLASSROOM BUILDING SITES
CLIENT: DFCM
LOCATION: SEE SITE PLAN
DRILLING METHOD: 96-CME-55
DRILLER: S. CHAFFIN, T. JONES
DEPTH TO WATER - INITIAL: ▽ 13.8'
AFTER 24 HOURS: ▼ 14.7' 9/6/13

PROJECT NUMBER: 201301.033
DATE STARTED: 9/5/13
DATE COMPLETED: 9/5/13
GROUND ELEVATION: 5628.1'
LOGGED BY: C. SANBORN, J. BOONE

Elev. (ft)	Depth (ft)	Sample Type	Rec. (in)	See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			8	3,5,4,(19) *T 0.87*	CL-ML	brown, moist, stiff — SANDY SILTY CLAY								
5625	5		14	Pushed *T 0.13* *T 0.24*	CL-1	brown, moist, soft — SANDY LEAN CLAY	102.6	21.0	28	10				CT
			10	Pushed *T 0.32*	CL-1	brown, moist, firm	105.3	20.7	30	13				CT UC
5620	10		12	Pushed *T 2.23*	CL-1	brown, moist, hard	110.6	16.4	33	14				CT
			9	10,15,24,(64)	CL	brown, slightly moist, hard								
5615			11	19,32,37,(99+)	CL	brown, slightly moist, hard — SANDY LEAN CLAY very highly weathered shale								
	15		10	20,33,43,(99+)	CL	brown, slightly moist, hard								
5610														
	20		7	25,70/5"	CL	gray-brown, slightly moist, hard soil/ext. soft rock								
			30	Core *104,61*	CL-ML	gray-brown to gray, slightly moist, soft rock			26	7				
5605	25		58	Core *96,55*	-	gray, slightly moist, soft rock — SHALE (CLAYSTONE)								
5600	30		60	Core *100,85*	-	gray, slightly moist, soft rock								
5595						BOH								

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LEGEND:
DISTURBED SAMPLE — 2,3,2,(6) Blow Count per 6" ; (N_{60}) Value ; *T 0.45* Torvane (tsf) ; *PP 0.90* Pocket Penetrometer (tsf)
CORE — Core *90,65* Percent Sample Recovery, Rock Quality Designation (% RQD)
UNDISTURBED SAMPLE — Pushed *T 0.45* Torvane (tsf) ; *PP 0.90* Pocket Penetrometer (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
Chem. = pH, Resistivity, Sulfate, Chloride
Org. = Organic Content

DH_LOGVHAA_USU_ECBS.GPJ US EVAL.GDT 9/2/13

DRILL HOLE LOG — BORING NO. 13-3

SHEET 1 OF 1

PROJECT: USU EASTERN CLASSROOM BUILDING SITES
CLIENT: DFCM
LOCATION: SEE SITE PLAN
DRILLING METHOD: 96-CME-55
DRILLER: S. CHAFFIN, T. JONES
DEPTH TO WATER - INITIAL: ▽ N.M.
AFTER 24 HOURS: ▼ 10.2' 9/6/13

PROJECT NUMBER: 201301.033
DATE STARTED: 9/5/13
DATE COMPLETED: 9/5/13
GROUND ELEVATION: 5628.1'
LOGGED BY: C. SANBORN, J. BOONE

Elev. (ft)	Depth (ft)	Sample Type	Rec. (in)	See Legend	USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
			12	2,7,7,(30)	ML	brown, moist, med. dense — SANDY SILT W/GRAVEL								
5625	5		14	Pushed	SM	brown, very moist — SILTY SAND	105.6	15.8		NP	1	55	44	CT
			10	Pushed *T 0.12*	CL-ML	brown, wet, very soft — SANDY SILTY CLAY	101.4	23.2	23	6				CT
5620	10		17	Pushed *T 0.10*	CL-1	brown, wet, very soft	96.9	24.9	28	13				CT UC
						SANDY LEAN CLAY shale gravels in 12' sample								
5615			7	0,3,4,(11) *T 0.12*	CL	brown, wet, soft								
	15		7	Pushed *T 1.75*	CL-2	brown, slightly moist, very stiff		13.8	35	15				
			18	15,33,60,(99+)	CL	brown, slightly moist, hard soil/ext. soft rock								
5610						SHALE (CLAYSTONE) very highly weathered on top, becoming more competent with depth								
	20		9	34,43,50/3"	CL	brown, slightly moist, hard soil/ext. soft rock								
5605					CL	gray-brown, slightly moist, very soft rock								
	25		1.5	63/1.5"		BOH								
5600														

RB&G ENGINEERING, INC.

LEGEND:
DISTURBED SAMPLE — 2,3,2,(6) Blow Count per 6" ; (N_{60}) Value ; *T 0.45* Torvane (tsf) ; *PP 0.90* Pocket Penetrometer (tsf)
UNDISTURBED SAMPLE — Pushed *T 0.45* Torvane (tsf) ; *PP 0.90* Pocket Penetrometer (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
Chem. = pH, Resistivity, Sulfate, Chloride
Org. = Organic Content

DH_LOGVHAA_USU_ECBS.GPJ US EVAL.GDT 9/2/13

DRILL HOLE LOG — BORING NO. 13-5

SHEET 1 OF 1

PROJECT: USU EASTERN CLASSROOM BUILDING SITES
CLIENT: DFCM
LOCATION: SEE SITE PLAN
DRILLING METHOD: 96-CME-55
DRILLER: S. CHAFFIN, T. JONES
DEPTH TO WATER - INITIAL: ▽ 5.5' **AFTER 24 HOURS:** ▼ 7.2' 9/8/13

PROJECT NUMBER: 201301.033
DATE STARTED: 9/6/13
DATE COMPLETED: 9/6/13
GROUND ELEVATION: 5624.6'
LOGGED BY: C. SANBORN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				8	2,2,2,(9) *T 0.18* *T 0.21*	CL	brown, moist to very moist, soft — SANDY LEAN CLAY, trace organics								
5620	5			12	Pushed *T 0.17*	CL	brown, wet, soft								
				13	Pushed *T 0.12*	CL	brown, wet, soft to very soft								
5615	10			18	Pushed *T 0.35*	CL-2	brown, wet, firm	97.7	27.9	28	13				CT
				18	0,0,0,(0) *T 0.22*	CL	brown, wet, soft								
5610	15			18	Pushed *T 0.22* *T 0.13*	CL	brown, wet, soft — SANDY LEAN CLAY								
5605	20			14	0,0,2,(3) *T 0.15*	CL	brown, wet, soft								
5600	25			0	Pushed	-	no recovery								
				12	Pushed *T 0.13*	CL-ML	brown, wet, soft — SANDY SILTY CLAY								
5595	30			13	0,2,3,(6) *T 0.30* *T 0.33*	CL	brown, moist, firm — SANDY LEAN CLAY, shale gravels								
5590	35			11	5,7,10,(19)	CL	brown, moist, stiff — SANDY LEAN CLAY W/GRAVEL, very highly weathered shale								
5585	40			6	31,50/2", *T 0.80*	CL	brown-gray, slightly moist, hard soil/ext. soft rock								
				33	Core *98,82*	CL-1	gray, slightly moist, soft rock			33	14				
5580	45			62	Core *99,97*	-	gray to gray-brown, slightly moist, soft rock — SHALE (CLAYSTONE)								
5575	50			41	Core *100,82*	-	gray, slightly moist, soft rock								
5570							BOH								

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LEGEND:
DISTURBED SAMPLE — 2,3,2,(6) Blow Count per 6" (N)60 Value; *T 0.45* Torvane (tsf); *PP 0.90* Pocket Penetrometer (tsf)
CORE — *90,65* Percent Sample Recovery, Rock Quality Designation (% RQD)
UNDISTURBED SAMPLE — Pushed *T 0.45* Torvane (tsf); *PP 0.90* Pocket Penetrometer (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
Chem. = pH, Resistivity, Sulfate, Chloride
Org. = Organic Content

DH_LOGV1AA USU_EC85.GPJ US EVAL.GDT 9/20/13

DRILL HOLE LOG — BORING NO. 13-6

SHEET 1 OF 1

PROJECT: USU EASTERN CLASSROOM BUILDING SITES
CLIENT: DFCM
LOCATION: SEE SITE PLAN
DRILLING METHOD: 96-CME-55
DRILLER: S. CHAFFIN, T. JONES
DEPTH TO WATER - INITIAL: ▽ 5.4' **AFTER 24 HOURS:** ▼ 8.3' 9/8/13

PROJECT NUMBER: 201301.033
DATE STARTED: 9/5/13
DATE COMPLETED: 9/6/13
GROUND ELEVATION: 5627.8'
LOGGED BY: C. SANBORN, J. BOONE

Elev. (ft)	Depth (ft)	Lithology	Sample Type	Sample Rec. (in)	Sample See Legend	Sample USCS (AASHTO)	Material Description	Dry Density (pcf)	Moisture Content (%)	Atter. Liquid Limit	Atter. Plast. Index	Gradation Gravel (%)	Gradation Sand (%)	Gradation Silt/Clay (%)	Other Tests
				10	2,3,3,(4) *T 0.47* *T 0.39*	CL-ML	brown, moist, firm — SANDY SILTY CLAY W/GRAVEL								
5625				16	Pushed *T 0.08*	CL	brown, very moist, very soft								
	5			15	Pushed *T 0.06*	CL-1	brown, wet, very soft	97.2	26.1	24	9				CT
5620															
	10			16	Pushed *T 0.11*	CL	brown, wet, very soft								
5615				18	0,0,2,(4) *T 0.38*	CL	brown, very moist, firm								
	15			10	Pushed *T 0.52* *T 0.40*	CL	brown, moist, firm to stiff — SANDY LEAN CLAY								
5610															
	20			18	0,0,0,(0) *T 0.35*	CL	brown, very moist, firm								
5605															
	25			18	Pushed *T 0.05* *T 0.12*	CL-1	brown, wet, very soft	98.7	27.3	25	10				CT
5600															
	30			16	0,1,2,(4) *T 0.10*	CL	brown, wet, very soft								
5595															
	35			11	6,11,9,(24) *T 0.50*	CL	brown, slightly moist, very stiff — SANDY LEAN CLAY, shale gravels, very highly weathered shale								
5590															
	40			9	15,63/6"	CL	brown, slightly moist, hard soil/ext. soft rock								
5585				26	Core *100,55*	CL-1	gray-brown, slightly moist, ext. soft to very soft rock			32	14				
	45			58	Core *100,68*	-	gray, slightly moist, soft rock — SHALE (CLAYSTONE), highly weathered on top, becoming more competent w/depth								
5580															
	50			62	Core *100,65*	-	gray & gray-brown, slightly moist, very soft to soft rock								
5575							BOH								

RB&G ENGINEERING, INC.

LEGEND:
DISTURBED SAMPLE — 2,3,2,(6) Blow Count per 6" (N)60 Value; *T 0.45* Torvane (tsf); *PP 0.90* Pocket Penetrometer (tsf)
CORE — *90,65* Percent Sample Recovery, Rock Quality Designation (% RQD)
UNDISTURBED SAMPLE — Pushed *T 0.45* Torvane (tsf); *PP 0.90* Pocket Penetrometer (tsf)

OTHER TESTS
UC = Unconfined Compression
CT = Consolidation
DS = Direct Shear
UU = Unconsolidated, Undrained
CU = Consolidated, Undrained
Chem. = pH, Resistivity, Sulfate, Chloride
Org. = Organic Content

DH_LOGV1AA USU_EC85.GPJ US EVAL.GDT 9/20/13

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PHOTO SHEET 1
Core Photos
USU Eastern Classroom Building Site

RB&G ENGINEERING, INC.

Table 1

SUMMARY OF TEST DATA

PROJECT: USU Eastern Classroom Building Sites
LOCATION: see site plan
PROJECT NO.: 201301-033
FEATURE: Foundations

HOLE NO.	DEPTH BELOW GROUND SURFACE (ft)	IN-PLACE		UNCONFINED OR UU TRIAXIAL COMPRESSIVE STRENGTH (psf)	ATTERBERG LIMITS			MECHANICAL ANALYSIS			PERCENT FINER THAN 0.005 mm	UNIFIED SOIL CLASSIFICATION SYSTEM / (AASHTO CLASSIFICATION)
		DRY UNIT WEIGHT (pcf)	MOISTURE (%)		LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX (%)	PERCENT GRAVEL	PERCENT SAND	PERCENT SILT & CLAY		
13-01	21-22		9.1		32	20	12					CL-1
	23-24	134.6	3.2	uc 6500 psi								
13-02	3-4.5	102.6	21.0	520*	28	18	10					CL-1
	6-7.5	105.3	20.7	uc 874	30	17	13					CL-1
	9-10	110.6	16.4	8920*	33	19	14					CL-1
	23-24.5	144.3	3.8	uc 3820 psi	26	19	7					CL-ML
13-03	3-4.5	105.6	15.8				NP	1	55	44		SM
	6-7.5	101.4	23.2	480*	23	17	6					CL-ML
	9-10.5	96.9	24.9	uc 396	28	15	13					CL-1
	15-15.5		13.8	7000*	35	20	15					CL-2
13-05	9-10.5	97.7	27.9	1400*	28	15	13					CL-2
	40.5-41			3200*	33	19	14					CL-1
13-06	6-7.5	97.2	26.1	240*	24	15	9					CL-1
	25-26.5	98.7	27.3	480*	25	15	10					CL-1
	42-43				32	18	14					CL-1

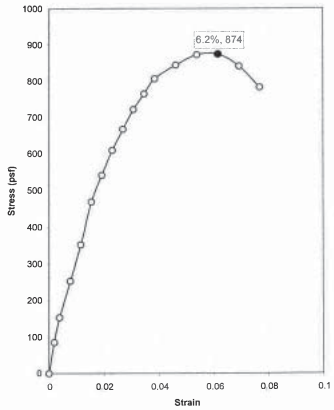
*Torvane value used to estimate unconfined compressive strength.
NP=Non-Plastic

H:\2013\033_USU Eastern Classroom Bldg Site\Lab Testing\Testing Summary

RB&G ENGINEERING, INC.

UNCONFINED COMPRESSION TEST ON COHESIVE SOILS

Project	USU Eastern Classroom Building Site	Boring No.	13-02
Project No.	201301-033	Sample	1
Location	see site plan	Depth / Elev. (ft)	6-7.5'
Date	Wednesday, September 18, 2013	Sample Description	Lean Clay
Tested By	S Neil	Sample Type	Undisturbed (shelby)
Apparatus No.	UC - 1	Proving Ring No.	5552



Total Strain	Stress (psf)
0.0%	0
0.2%	85
0.4%	153
0.8%	253
1.2%	352
1.5%	468
1.9%	541
2.3%	609
2.7%	667
3.1%	722
3.5%	765
3.8%	806
4.6%	844
5.4%	873
6.2%	874
6.9%	841
7.7%	783

Sketch of Specimen After Failure

Initial Sample Data

Initial height of specimen	L_o	5.2	(in)	Liquid limit	LL	30
Initial diameter of specimen	D_o	2.6	(in)	Plastic index	PI	13
Height-to-diameter ratio	L_o / D_o	2.00		Moisture content*	w	20.7%
Dry unit weight	γ_d	105.7	(pcf)			

Test Results

Unconfined compressive strength	q_u	874	(psf)
Shear strength	c_u	437	(psf)
Average strain rate to failure		1%	/ min
Strain at failure		6.2%	

Remarks

*Moisture content obtained from cuttings and or excess material

ASTM D 2166

H:\2013\033_USU Eastern Classroom Bldg Site\Lab Testing\13-02 @ 6-7.5' UC

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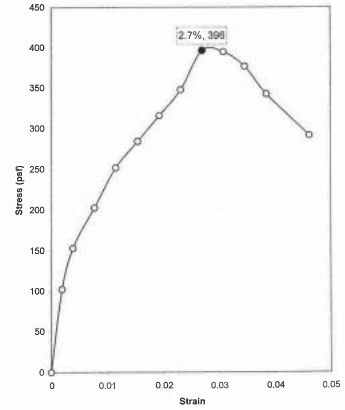
UNCONFINED COMPRESSION TEST ON COHESIVE SOILS

Project	USU Eastern Classroom Building Site	Boring No.	13-03
Project No.	201301-033	Sample	1
Location	see site plan	Depth / Elev. (ft)	9-10.5'
Date	Wednesday, September 18, 2013	Sample Description	Lean Clay
Tested By	S Neil	Sample Type	Undisturbed (shelby)
Apparatus No.	UC - 1	Proving Ring No.	5552



Total Strain	Stress (psf)
0.0%	0
0.2%	102
0.4%	153
0.8%	203
1.2%	252
1.5%	284
1.9%	316
2.3%	348
2.7%	396
3.1%	395
3.5%	377
3.8%	342
4.6%	291

Sketch of Specimen After Failure

Initial Sample Data

Initial height of specimen	L_o	5.2	(in)	Liquid limit	LL	28
Initial diameter of specimen	D_o	2.6	(in)	Plastic index	PI	13
Height-to-diameter ratio	L_o / D_o	2.00		Moisture content*	w	24.9%
Dry unit weight	γ_d	98.2	(pcf)			

Test Results

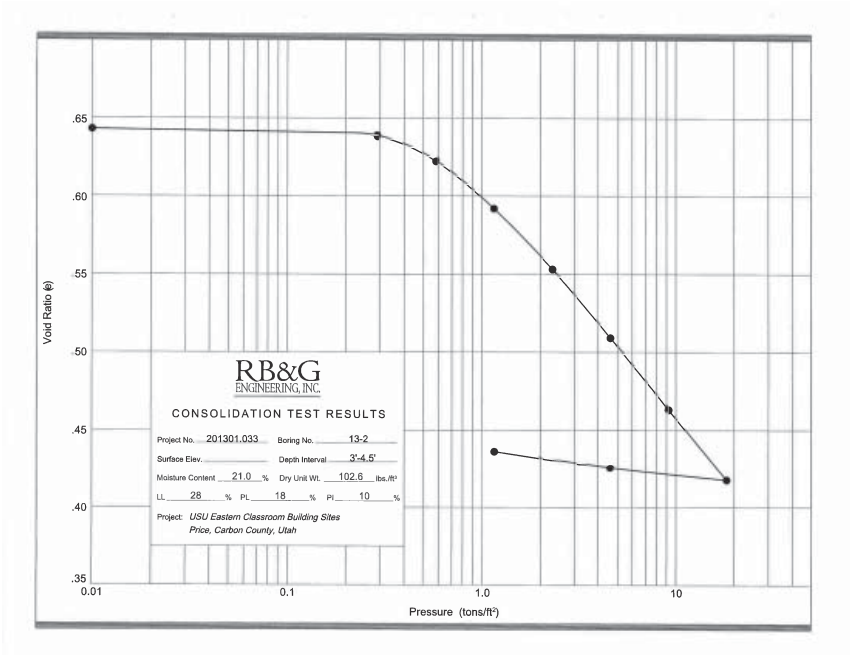
Unconfined compressive strength	q_u	396	(psf)
Shear strength	c_u	198	(psf)
Average strain rate to failure		1%	/ min
Strain at failure		2.7%	

Remarks

*Moisture content obtained from cuttings and or excess material

ASTM D 2166

H:\2013\033_USU Eastern Classroom Bldg Site\Lab Testing\13-03 @ 9-10.5' UC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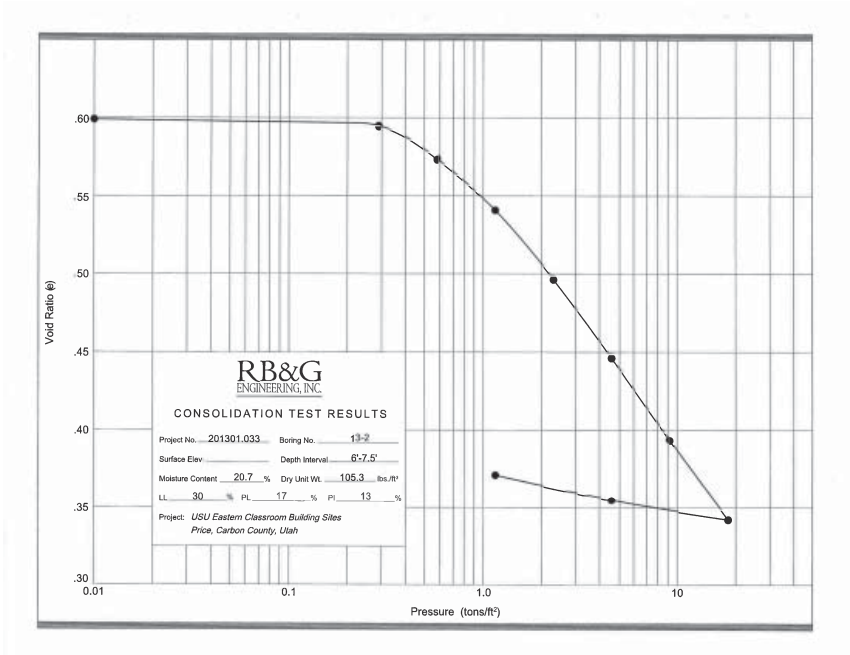
.50
.45
.40
.35
Void Ratio (e)
0.01
0.1
1.0
10
Pressure (tons/ft²)
RB&G
ENGINEERING, INC.
CONSOLIDATION TEST RESULTS
Project No. 201301.033
Boring No. 13-2
Surface Elev.
Depth Interval 3'-4.5'
Moisture Content 21.0 %
Dry Unit Wt. 102.6 lbs./ft³
LL 28 % PL 18 % PI 10 %
Project: USU Eastern Classroom Building Sites
Price, Carbon County, Utah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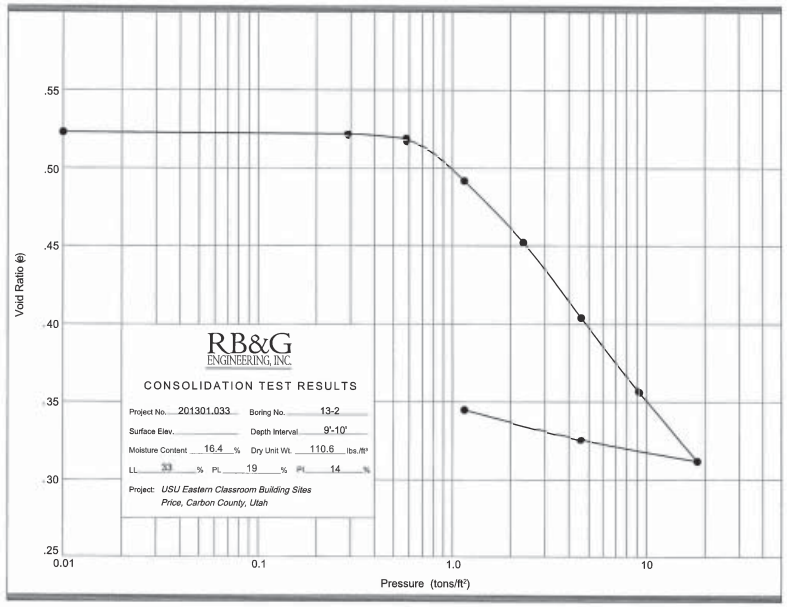
Void Ratio (e)
0.01
0.1
1.0
10
Pressure (tons/ft²)
RB&G
ENGINEERING, INC.
CONSOLIDATION TEST RESULTS
Project No. 201301.033
Boring No. 13-2
Surface Elev.
Depth Interval 6'-7.5'
Moisture Content 20.7 %
Dry Unit Wt. 105.3 lbs./ft³
LL 30 % PL 17 % PI 13 %
Project: USU Eastern Classroom Building Sites
Price, Carbon County, Utah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Void Ratio (e)
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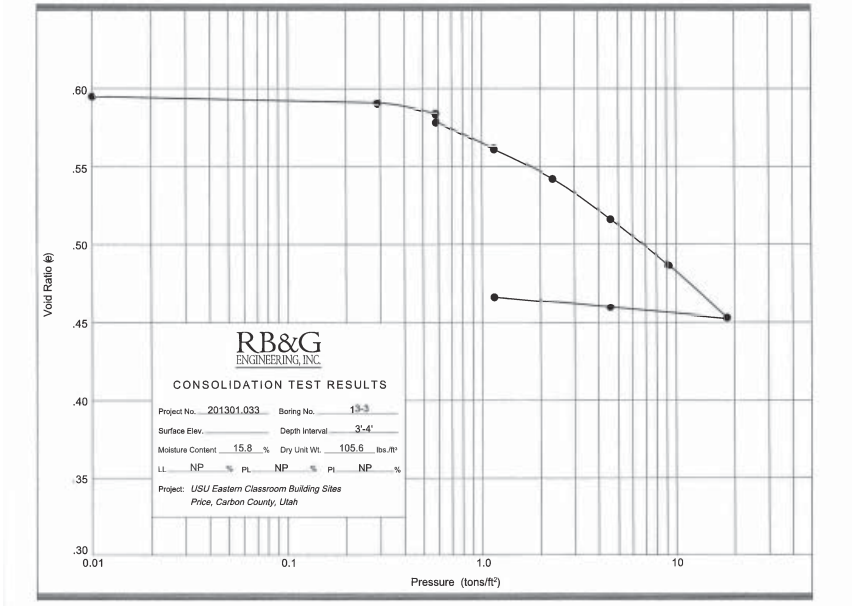
0.1
1.0
10
Pressure (tons/ft²)
RB&G
ENGINEERING, INC.
CONSOLIDATION TEST RESULTS
Project No. 201301.033
Boring No. 13-2
Surface Elev.
Depth Interval 9'-10'
Moisture Content 16.4 %
Dry Unit Wt. 110.6 lbs./ft³
LL 33 % PL 19 % PI 14 %
Project: USU Eastern Classroom Building Sites
Price, Carbon County, Utah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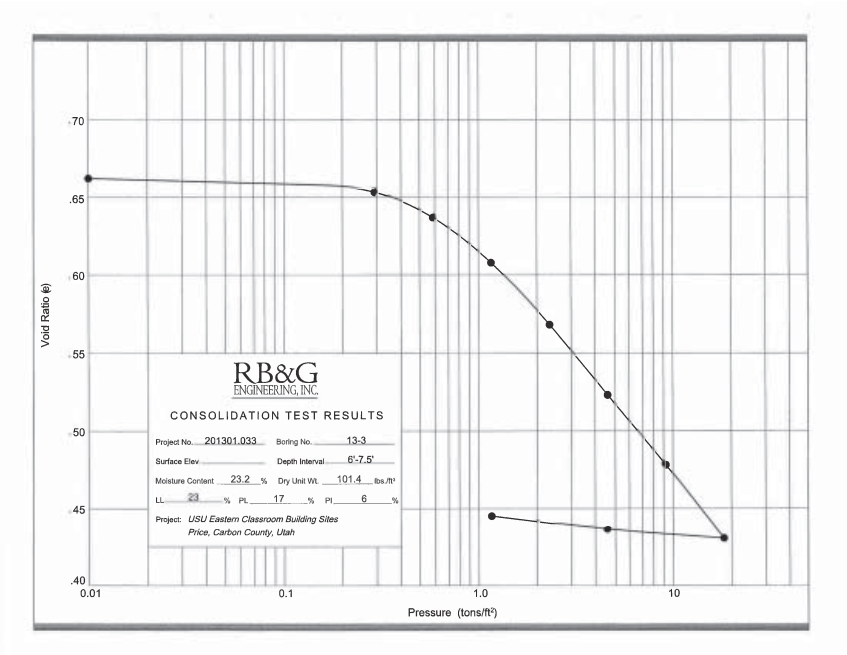
Void Ratio (e)
0.01
0.1
1.0
10
Pressure (tons/ft²)
RB&G
ENGINEERING, INC.
CONSOLIDATION TEST RESULTS
Project No. 201301.033
Boring No. 13-3
Surface Elev.
Depth Interval 3'-4'
Moisture Content 15.8 %
Dry Unit Wt. 105.6 lbs./ft³
LL NP % PL NP % PI NP %
Project: USU Eastern Classroom Building Sites
Price, Carbon County, Utah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Void Ratio (e)
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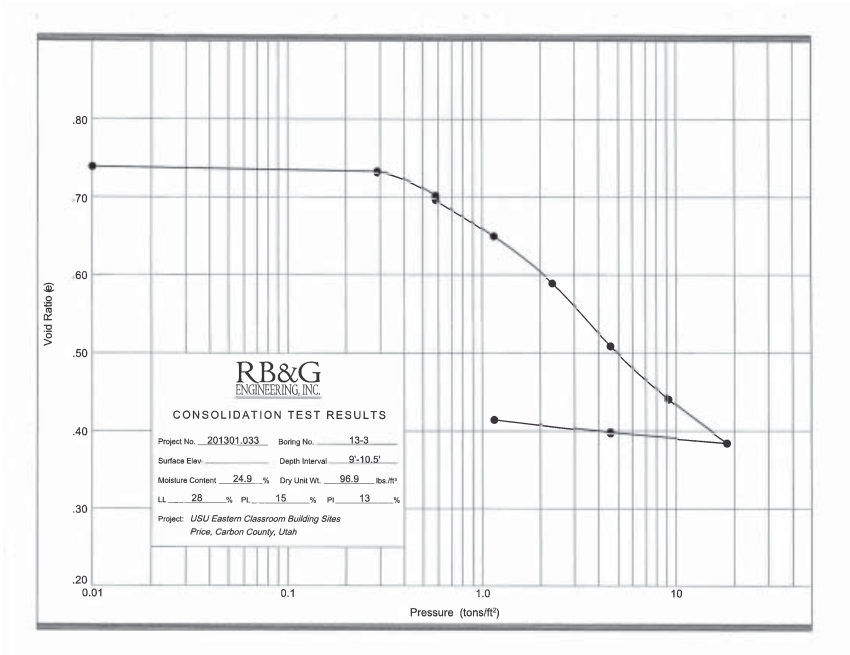
0.1
1.0
10
Pressure (tons/ft²)
RB&G
ENGINEERING, INC.
CONSOLIDATION TEST RESULTS
Project No. 201301.033
Boring No. 13-3
Surface Elev.
Depth Interval 6'-7.5'
Moisture Content 23.2 %
Dry Unit Wt. 101.4 lbs./ft³
LL 23 % PL 17 % PI 6 %
Project: USU Eastern Classroom Building Sites
Price, Carbon County, Utah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Void Ratio (e)
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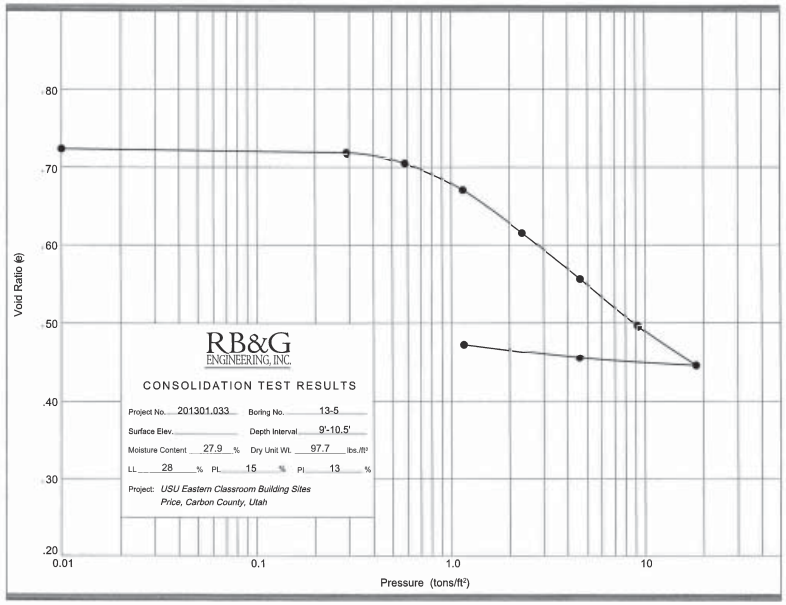
0.1
1.0
10
Pressure (tons/ft²)
RB&G
ENGINEERING, INC.
CONSOLIDATION TEST RESULTS
Project No. 201301.033
Boring No. 13-3
Surface Elev.
Depth Interval 9'-10.5'
Moisture Content 24.9 %
Dry Unit Wt. 96.9 lbs./ft³
LL 28 % PL 15 % PI 13 %
Project: USU Eastern Classroom Building Sites
Price, Carbon County, Utah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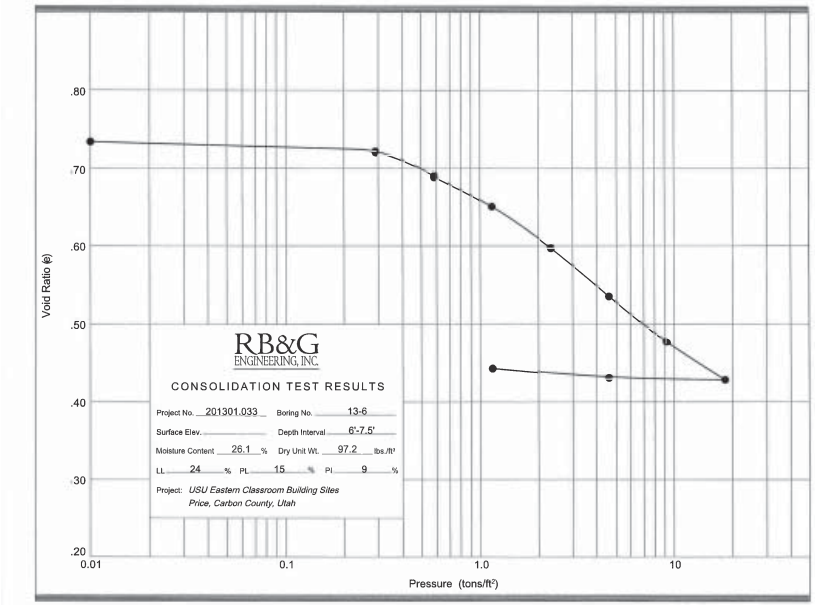
.30
.20
Void Ratio (e)
0.01
0.1
1.0
10
Pressure (tons/ft²)
RB&G
ENGINEERING, INC.
CONSOLIDATION TEST RESULTS
Project No. 201301.033
Boring No. 13-5
Surface Elev.
Depth Interval 9'-10.5'
Moisture Content 27.9 %
Dry Unit Wt. 97.7 lbs./ft³
LL 28 % PL 15 % PI 13 %
Project: USU Eastern Classroom Building Sites
Price, Carbon County, Utah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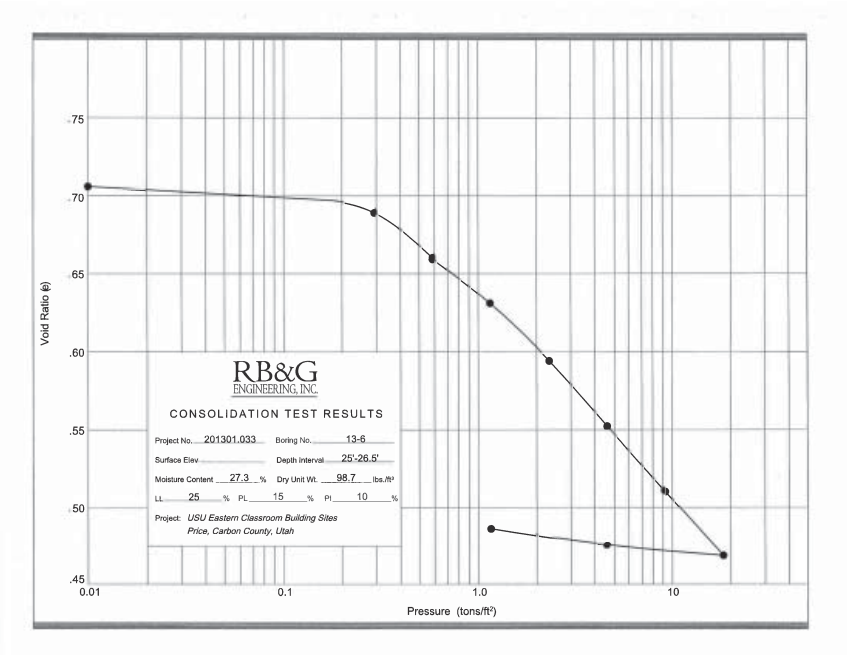
Void Ratio (e)
0.01
0.1
1.0
10
Pressure (tons/ft²)
RB&G
ENGINEERING, INC.
CONSOLIDATION TEST RESULTS
Project No. 201301.033
Boring No. 13-6
Surface Elev.
Depth Interval 6'-7.5'
Moisture Content 26.1 %
Dry Unit Wt. 97.2 lbs./ft³
LL 24 % PL 15 % PI 9 %
Project: USU Eastern Classroom Building Sites
Price, Carbon County, Utah



RB&G
ENGINEERING, INC.

USU EASTERN
CLASSROOM BUILDING SITES
Price, Utah

Preliminary Geotechnical Investigation
September 24, 2013

ADDENDUM NO. 1
October 9, 2013

IV.A – FOUNDATION TYPES AND BEARING CAPACITIES

- Replace the first paragraph of this section on page 5 with the following:

  "It is our understanding that the new classroom building will be a multi-level structure. It is not known at this time whether the building will be a steel frame or masonry-type structure.

- The third paragraph on page 6 references a bearing capacity chart as Figure 3 of the report. This figure was inadvertently left out of the report and is included herewith.

- Add the following to the end of the **"Deep Foundations"** section on page 7:

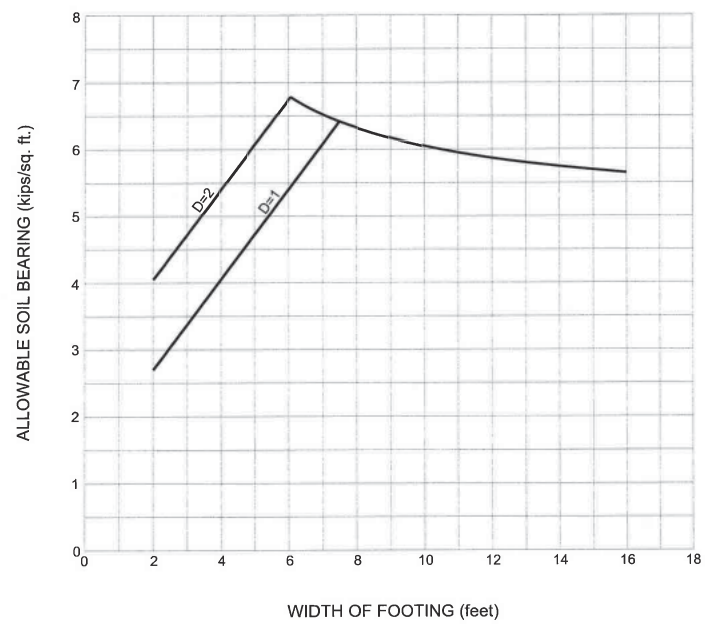
  "Micropiles are an alternate to caissons (drilled shafts) where relatively small loads are anticipated. Micropiles should be installed by an experienced micropile specialty contractor, and are typically designed by an experienced micropile designer retained by that specialty contractor. For this project, we recommend that the micropiles be designed to carry all loads by adhesion of the micropile grout body against the mudstone bedrock. There is a potential for settlement of the very soft overburden soils. The micropiles should either be sleeved through the soil above the rock to isolate the piles from potential down drag movement, or designed to have sufficient strength in the structural pile section and sufficient adhesion in the mudstone to resist both the structural loads and the potential drag loads that could be induced by the overburden.

1435 WEST 820 NORTH, PROVO, UTAH 84601-1343
PROVO 801-374-5771 SALT LAKE CITY 801-521-5771 FAX 801-374-5773

For the purposes of preliminary design by the project architect and structural engineer, an estimated ultimate adhesion of 7 psi is recommended for the overburden soil, and an estimated ultimate adhesion of 50 psi is recommended for the portion of the pile bonded in the mudstone. The actual values may vary significantly from these estimates, and there is a likelihood that substantially greater adhesion will be developed in the rock. The actual micropile capacities should be determined by pre-production load tests of sacrificial micropiles. We recommend a minimum of one pre-production load test be performed if the number of piles is not greater than 50, and a minimum of two pre-production test piles if the number of piles is greater than 50. Proof testing to at least 1.3 times the design load should be conducted on approximately 5 percent of the production piles.

If the final micropile design is verified using a testing program as described above and consistent with established practices (FHWA publication FHWA-NHI-05-039 is recommended as a design and construction standard), a factor of safety of 2.0 may be used for the design loads.

It is recommended that the micropiles extend at least 10 feet into the shale bedrock which was encountered at depths varying from 15 to 18 feet below the existing ground surface. Based on the estimated adhesion values recommended in the paragraph above, the ultimate geotechnical capacity of 4-inch to 8-inch diameter micropiles bonded to 10 feet of bedrock would be in the order of 75 to 150 kips, and would support design loads in the range of 37 to 75 kips. If the upper portions of the piles extending through the overburden are not sleeved or otherwise isolated from the soil, an unfactored drag load in the range of 14 kips (4-inch diameter pile) to 28 kips (8-inch pile) should be added to the structural loads."



Recommended allowable soil bearing pressures on:
- ☐ natural material
- ☒ compacted fill

Type of footings:
- ☒ spread (where D=Depth of surcharge adjacent to bottom of footing)
- ☒ spot
- ☒ continuous

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Figure 3 BEARING CAPACITY CHART

USU Eastern Classroom Building Sites
Price, Carbon County, Utah

LEED Energy Performance Summary Report
By CEA

Section 1.1 - General Information

Simulation Program:	TRACE™ 700 v6.2.10
Energy Code Used:	ASHRAE 90.1-2007
New Construction Percent:	100 %
Existing Renovation Percent:	0 %
Quantity of Stories:	2
Principle Heating Source:	Fossil/Electric Hybrid
Weather File:	TMY3_VERNAL, UTAH (Full Year - 8760)
Climate Zone:	6B
Proposed:	Alternative 2 - Hypothetical Proposed Design
Baseline:	Alternative 1 - 90_1-2007 Baseline (Sys #7 & #3)

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013

LEED Energy Performance Summary Report
By CEA

Section 1.2 - Space Summary

Building Use (Occupancy Type)	Conditioned Area (ft²)	Unconditioned Area (ft²)	Total Area (ft²)
@ Class Music/Theater/Dance 2007	7,248	0	7,248
@ Comp Clsrm-Lab 90_1 2007 >30%	2,917	0	2,917
@ Conference 90_1-2007 >30%	737	0	737
@ Corridor 90_1-2007 >30%	9,621	0	9,621
@ Data/Comm 90_1-2007 >30%	263	0	263
@ Lecture Clsrm 90_1 2007 > 30%	6,173	0	6,173
@ Lobby Entry 90_1 2007 >30%	12,066	0	12,066
@ Mech/Elec 90_1-2007 >30%	2,604	0	2,604
@ Open Office 90_1-2007 >30%	1,989	0	1,989
@ Private Office 90_1-2007 >30%	2,233	0	2,233
@ Restroom 90_1-2007	1,553	0	1,553
@ Shaft 2010	158	0	158
@ Stor (Cond) 90_1-2007 >30%	2,241	0	2,241
@ Private Rehearsal 90_1-2007 >30%	2,521	0	2,521
@ Museum Exhibit 2007 > 30%	1,114	0	1,114
@ Workshop 2007 > 30%	2,848	0	2,848
Total	**56,286**	**0**	**56,286**

Section 1.3 - Advisory Messages

Advisory Messages	Proposed Building	Baseline Building (0 deg rotation)
Number of hours heating load not met:	210	261
Number of hours cooling load not met:	0	0
Total	210	261

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

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LEED Energy Performance Summary Report
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Section 1.4 - Comparison of Proposed Design Versus Baseline Design

Input Parameter	Proposed Design Input	Baseline Design Input
Exterior Wall Construction	Frame Wall, 4" Ins U-factor: 0.050 Btu/h·ft²·°F	Frame Wall, 4" Ins U-factor: 0.064 Btu/h·ft²·°F
Roof Construction	2" HW Conc, 5" Ins U-factor: 0.032 Btu/h·ft²·°F Reflectivity: 0.10	2" HW Conc, 5" Ins U-factor: 0.048 Btu/h·ft²·°F Reflectivity: 0.10
Window-to-gross wall ratio	40.3 %	40.3 %
Fenestration Type	90_1 2007 5B Metal Frame (storefront) U-factor: 0.400 Btu/h·ft²·°F SHGC: 0.27 Visible Transmissivity: 0.640	90_1 2007 5B Metal Frame (storefront) U-factor: 0.450 Btu/h·ft²·°F SHGC: 0.40 Visible Transmissivity: 0.640
Shading Devices	Overhang - Questar Bldg Typ	
Interior Light Power Density	Lighting Compliance: Space-By-Space Method Daylighting Controls: No 0.90 W/ft²	Lighting Compliance: Space-By-Space Method Daylighting Controls: No 1.17 W/ft²
Slab-on-grade or Exposed Floor	12" LW Conc Slab-On-Grade F-Factor: 0.540 Btu/hr·ft·°F	12" LW Conc Slab-On-Grade F-Factor: 0.540 Btu/hr·ft·°F
Slab-on-grade or Exposed Floor	90.1-07 Min Floor Nonres Zone 4-7 Exposed Floor U-Factor: 0.038 Btu/h·ft²·°F	90.1-07 Min Floor Nonres Zone 4-7 Exposed Floor U-Factor: 0.038 Btu/h·ft²·°F
Receptacle Equip Power Density	0.52 W/ft²	0.52 W/ft²
HVAC System Type	Sys #3 - PSZ-AC < 65k Btu/h Single Zone Uses: DB Econ Supply vol: 18405 cfm Fan power: 1.57 kW	Sys #3 - PSZ-AC < 65k Btu/h Single Zone Uses: DB Econ Supply vol: 29114 cfm Fan power: 22.34 kW

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013

LEED Energy Performance Summary Report
By CEA

Section 1.4 - Comparison of Proposed Design Versus Baseline Design

Input Parameter	Proposed Design Input	Baseline Design Input
HVAC System Type	AH-1 IDEC VAV w/rh Variable Volume Reheat (30% Min Flow Default) Uses: DB Econ, Evap clg Supply vol: 26855 cfm Fan power: 32.59 kW	Sys #7 - VAV w/RH Level 1 Variable Volume Reheat (30% Min Flow Default) Uses: DB Econ Supply vol: 18380 cfm Fan power: 19.29 kW
HVAC System Type		Sys #7 - VAV w/RH Level 2 Variable Volume Reheat (30% Min Flow Default) Uses: DB Econ Supply vol: 15900 cfm Fan power: 16.69 kW
Cooling Equipment	Plant: DES Purchased CHW Type: Purchased Chilled Water Category: Water-cooled chiller Clg Cap: Design Engy Rate: 1 COP (compressor only)	Plant: Sys #7 - DES Purchased CHW Type: Purchased Chilled Water Category: Water-cooled chiller Clg Cap: Design Engy Rate: 1 COP (compressor only)
Cooling Equipment	Plant: Split DX Type: 90.1-07 Min AC, SS/SP < 65 MBh Category: Air-cooled unitary Clg Cap: Design Engy Rate: 10.8 Packaged EER	Plant: Sys #3 - DX Type: 90.1-07 Min AC, SS/SP < 65 MBh Category: Air-cooled unitary Clg Cap: Design Engy Rate: 11.1 Packaged EER
Chilled Water Pump	Type: Cnst vol chill water pump Full load consumption: 19 Watt/gpm	Type: Cnst vol chill water pump Full load consumption: 22 Watt/gpm
Condenser Water Pump	Type: 90.1-10 Min Var Vol Cond Water Pump Full load consumption: 18 Watt/gpm	
Secondary Distribution Pump	Type: 90.1 Min CV Chilled Water pump Full load consumption: 19 Watt/gpm	Type: 90.1 Min CV Chilled Water pump Full load consumption: 22 Watt/gpm
Heat Rejection Parameters	Type: 90.1 Min Air Cooled Condenser HR Type: Air-cooled condenser Energy Consumption: 0.055290 kW/ton	Type: 90.1 Min Air Cooled Condenser HR Type: Air-cooled condenser Energy Consumption: 0.055290 kW/ton
Heat Rejection Parameters	Type: Cooling Tower VFD SLCC IAB HR Type: Optimized tower (DOE) Energy Consumption: 0.094120 hp/ton	
Heating Equipment	Plant: Furnace Type: 90.1-07 Min Gas Furnace < 225 MBh Category: Gas-fired heat exchanger Capacity: Design Energy Rate: 80 Percent efficient	Plant: Sys #7 - DES Purchased Steam Type: Purchased District Steam Category: Boiler Capacity: Design Energy Rate: 100 Percent efficient

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

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LEED Energy Performance Summary Report
By CEA

Section 1.4 - Comparison of Proposed Design Versus Baseline Design

Input Parameter	Proposed Design Input	Baseline Design Input
Heating Equipment	Plant: DES Purchased Steam Type: Purchased District Steam Category: Boiler Capacity: Design Energy Rate: 100 Percent efficient	Plant: Sys #3 - Furnace Type: 90.1-07 Min Gas Furnace < 225 MBh Category: Gas-fired heat exchanger Capacity: Design Energy Rate: 80 Percent efficient
Hot Water Pump	Type: 90.1 Min CV Hot Water pump Full load consumption: 16 Watt/gpm	Type: 90.1 Min CV Hot Water pump Full load consumption: 19 Watt/gpm
Thermal Energy Storage	No	No
Base Utility	Type: Elevator Load Description: Elevator Load Energy Type: Electricity Hourly Consumption: 14.9 kW Schedule: Base Util - Elevator Dee Glen	Type: Elevator Load Description: Elevator Load Energy Type: Electricity Hourly Consumption: 14.9 kW Schedule: Base Util - Elevator Dee Glen
Base Utility	Type: Exterior Lighting Description: Exterior Lighting Energy Type: Electricity Hourly Consumption: 2.5 kW Schedule: Parking lot lights	Type: Exterior Lighting Description: Exterior Lighting Energy Type: Electricity Hourly Consumption: 2.5 kW Schedule: Parking lot lights

Section 1.5 - Energy Type Summary (Proposed)

Energy Type	Utility Rate Description	Units
Electric Consumption	Price City Elec - GS - Large - 5/1/13	kWh
Electric Demand	Price City Elec - GS - Large - 5/1/13	kW
Gas	Questar Gas GS - 9/1/12	therms
Purchased Chilled Water	USU DES Virtual Rates - Programming	therms
Purchased Steam		therms

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

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LEED Energy Performance Summary Report
By CEA

Section 1.8.1 Baseline Performance - Performance Rating Method Compliance

End Use	Process	Baseline Design Energy Type	Units of Annual Energy & Peak Demand	Baseline (0 deg rotation)	Baseline (90 deg rotation)	Baseline (180 deg rotation)	Baseline (270 deg rotation)	Baseline Design
Lighting - Conditioned	No	Electricity	Energy Use (kWh)	194964.25	194,964	194,964	194964	194,964
			Demand (kW)	61.2	61.2	61.2	61.2	61.2
Space Heating	No	Electricity	Energy Use (kWh)	971.02	994	1,002	1068	1,009
			Demand (kW)	0.2	0.2	0.2	0.2	0.2
Space Cooling	No	Electricity	Energy Use (kWh)	7998.43	8,889	5,588	9367	7,961
			Demand (kW)	13.3	15.2	8.7	12.0	12.3
Pumps	No	Electricity	Energy Use (kWh)	74698.55	76,705	77,538	79867	77,202
			Demand (kW)	15.8	17.1	16.4	16.5	16.5
Heat Rejection	No	Electricity	Energy Use (kWh)	1097.24	1,184	785	1422	1,122
			Demand (kW)	2.3	2.5	1.3	2.0	2.0
Fans - Conditioned	No	Electricity	Energy Use (kWh)	159554.00	167,109	120,238	149813	149,179
			Demand (kW)	57.8	61.7	49.9	56.7	56.5
Receptacles - Conditioned	Yes	Electricity	Energy Use (kWh)	85132.65	85,133	85,133	85133	85,133
			Demand (kW)	27.0	27.0	27.0	27.0	27.0
Stand-Alone Base Utilities	Yes	Electricity	Energy Use (kWh)	33603.80	33,604	33,604	33604	33,604
			Demand (kW)	11.4	11.4	11.4	11.4	11.4
Space Heating	No	Gas	Energy Use (kWh)	30121.99	63,480	90,133	55570	59,826
			Demand (kW)	162.1	162.8	163.0	160.9	162.2
Space Heating	No	Purchased Steam	Energy Use (kWh)	294703.81	283,721	272,874	292910	286,052
			Demand (kW)	530.5	556.3	546.0	546.8	544.9
Space Cooling	No	Purchased Chilled V	Energy Use (kWh)	174041.38	194,926	179,085	186112	183,541
			Demand (kW)	305.6	327.4	322.3	325.0	320.1
Baseline Energy Totals:			**Energy Use (kWh)**	**1,056,887**	**1,110,709**	**1,060,944**	**1,089,829**	**1,079,592**
			Demand (kW)	**1,187.4**	**1,242.9**	**1,207.3**	**1,219.6**	**1,214.3**

Section 1.8.2 Proposed Performance - Performance Rating Method Compliance

End Use	Process	Baseline Design Energy Type	Units of Annual Energy & Peak Demand	Proposed Design
Lighting - Conditioned	No	Electricity	Energy Use (kWh)	151,250
			Demand (kW)	47.4

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

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LEED Energy Performance Summary Report
By CEA

Section 1.8.2 Proposed Performance - Performance Rating Method Compliance

End Use	Process	Baseline Design Energy Type	Units of Annual Energy & Peak Demand	Proposed Design
Space Heating	No	Electricity	Energy Use (kWh)	736
			Demand (kW)	0.1
Space Cooling	No	Electricity	Energy Use (kWh)	10,377
			Demand (kW)	20.7
Pumps	No	Electricity	Energy Use (kWh)	41,176
			Demand (kW)	13.6
Heat Rejection	No	Electricity	Energy Use (kWh)	24,649
			Demand (kW)	7.7
Fans - Conditioned	No	Electricity	Energy Use (kWh)	83,296
			Demand (kW)	29.1
Receptacles - Conditioned	Yes	Electricity	Energy Use (kWh)	85,133
			Demand (kW)	27.0
Stand-Alone Base Utilities	Yes	Electricity	Energy Use (kWh)	33,604
			Demand (kW)	11.4
Space Heating	No	Gas	Energy Use (kWh)	39,807
			Demand (kW)	150.1
Space Heating	No	Purchased Steam	Energy Use (kWh)	278,789
			Demand (kW)	428.1
Space Cooling	No	Purchased Chilled W	Energy Use (kWh)	50,515
			Demand (kW)	256.7
Proposed Energy Totals:			**Energy Use (kWh)**	**799,332**
			Demand (kW)	**992.0**

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

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LEED Energy Performance Summary Report
By CEA

Table 1.8.2(b) - Proposed Energy Costs

Energy Type	Proposed Cost
Electric Consumption	$ 43,089.00
Gas	$ 1,314.00
Purchased Steam	$ 18,012.00
Purchased Chilled Water	$ 1,248.00

Section 1.8.3(a) - Baseline Energy Costs

Energy Type	Baseline Cost (0° rotation)	Baseline Cost (90° rotation)	Baseline Cost (180° rotation)	Baseline Cost (270° rotation)	Average
Electric Consumption	$ 55,868	$ 56,914	$ 52,105	55186.00	$ 55,018
Gas	$ 1,058	$ 1,905	$ 2,551	1716.00	$ 1,808
Purchased Steam	$ 19,040	$ 18,331	$ 17,630	18924.00	$ 18,481
Purchased Chilled Water	$ 4,300	$ 4,816	$ 4,424	4598.00	$ 4,535

Proposed building economic cost improvement over baseline building: 20.26 %

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013

MONTHLY ENERGY CONSUMPTION

By CEA

------- Monthly Energy Consumption -------

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Alternative: 1	**90_1-2007 Baseline (Sys #7 & #3)**												
Electric													
On-Pk Cons. (kWh)	45,680	40,331	46,762	42,234	47,887	49,742	48,951	52,609	42,110	45,181	44,347	44,336	550,169
On-Pk Demand (kW)	148	148	154	163	173	174	175	174	169	164	148	148	175
Gas													
On-Pk Cons. (therms)	539	317	99	53	11	0	0	0	1	71	351	601	2,042
On-Pk Demand (therms/hr)	6	6	5	5	3	0	0	0	0	5	6	6	6
Purchased Steam													
On-Pk Cons. (therms)	2,272	1,694	740	366	140	10	7	14	68	470	1,640	2,341	9,763
On-Pk Demand (therms/hr)	18	13	7	7	5	1	0	2	5	9	19	15	19
Purchased Chilled Water													
On-Pk Cons. (therms)	54	35	25	142	714	1,274	1,766	1,573	460	130	39	54	6,264
On-Pk Demand (therms/hr)	1	1	1	5	9	9	11	11	8	4	1	1	11

Energy Consumption		
Building	65,451	Btu/(ft2-year)
Source	135,574	Btu/(ft2-year)
Floor Area	56,296	ft2

Environmental Impact Analysis	
CO2	1,080,107 lbm/year
SO2	739 gm/year
NOX	1,918 gm/year

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013
Alternative - 1 Monthly Energy Consumption report Page 1 of 2

MONTHLY ENERGY CONSUMPTION

By CEA

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
	------- Monthly Energy Consumption -------												
Alternative: 2	**Hypothetical Proposed Design**												
Electric													
On-Pk Cons. (kWh)	36,559	32,657	37,279	32,388	36,250	37,191	37,801	40,646	33,812	34,903	35,642	35,089	430,217
On-Pk Demand (kW)	119	119	119	120	138	137	140	139	135	120	119	119	140
Gas													
On-Pk Cons. (therms)	365	204	67	73	24	0	0	0	0	43	207	373	1,359
On-Pk Demand (therms/hr)	5	5	5	5	5	0	0	0	0	5	5	5	5
Purchased Steam													
On-Pk Cons. (therms)	2,049	1,590	723	439	201	99	75	105	147	479	1,477	2,130	9,515
On-Pk Demand (therms/hr)	15	11	6	8	5	1	0	1	4	8	15	13	15
Purchased Chilled Water													
On-Pk Cons. (therms)	52	40	20	7	54	121	546	276	514	12	37	47	1,724
On-Pk Demand (therms/hr)	0	1	0	0	2	4	9	5	7	0	1	0	9
Water													
Cons. (1000gal)	3	3	5	11	20	30	52	39	35	10	3	3	214

Energy Consumption		
Building	48,460	Btu/(ft2-year)
Source	105,687	Btu/(ft2-year)
Floor Area	56,296	ft2

Environmental Impact Analysis	
CO2	832,737 lbm/year
SO2	570 gm/year
NOX	1,479 gm/year

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013
Alternative - 2 Monthly Energy Consumption report Page 2 of 2

MONTHLY UTILITY COSTS

By CEA

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
					------- Monthly Utility Costs -------								
Alternative 1 - 0° Rotation													
Electric													
On-Pk Cons. ($)	2,751	2,442	2,847	2,560	2,883	2,973	2,915	3,180	2,561	2,748	2,681	2,673	33,213
On-Pk Demand ($)	1,730	1,738	1,781	1,892	2,020	2,042	2,044	2,050	1,986	1,904	1,734	1,735	22,655
Total ($):	4,481	4,179	4,628	4,452	4,903	5,014	4,958	5,231	4,547	4,652	4,415	4,408	55,868
Gas													
On-Pk Cons. ($)	252	140	49	49	29	21	21	21	21	40	149	266	1,058
Purchased Steam													
On-Pk Cons. ($)	4,371	3,301	1,503	751	272	19	13	27	133	937	3,191	4,523	19,040
Purchased Chilled Water													
On-Pk Cons. ($)	41	28	19	99	482	874	1,211	1,070	318	88	30	41	4,300
Monthly Total ($):	9,145	7,647	6,199	5,351	5,685	5,928	6,203	6,349	5,019	5,716	7,785	9,238	80,266

Building Area = 56,296 ft²
Utility Cost Per Area = 1.43 $/ft²

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013
Monthly Utility Costs report Page 1 of 5

MONTHLY UTILITY COSTS

By CEA

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
					------- Monthly Utility Costs -------								
Alternative 1 - 90° Rotation													
Electric													
On-Pk Cons. ($)	2,799	2,452	2,841	2,589	2,979	3,114	3,070	3,271	2,569	2,729	2,709	2,722	33,843
On-Pk Demand ($)	1,750	1,747	1,840	1,974	2,052	2,068	2,082	2,064	2,015	1,973	1,748	1,758	23,070
Total ($):	4,550	4,199	4,681	4,563	5,031	5,181	5,152	5,335	4,584	4,702	4,456	4,481	56,914
Gas													
On-Pk Cons. ($)	477	273	81	46	25	21	21	21	21	70	322	526	1,905
Purchased Steam													
On-Pk Cons. ($)	4,303	3,192	1,343	657	256	21	16	28	124	855	3,095	4,441	18,331
Purchased Chilled Water													
On-Pk Cons. ($)	39	23	14	107	557	988	1,377	1,208	346	91	27	40	4,816
Monthly Total ($):	9,369	7,686	6,120	5,374	5,868	6,212	6,566	6,591	5,074	5,717	7,900	9,487	81,965

Building Area = 56,296 ft²

Utility Cost Per Area = 1.46 $/ft²

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013
Monthly Utility Costs report Page 2 of 5

MONTHLY UTILITY COSTS

By CEA

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
					------- Monthly Utility Costs -------								
Alternative 1 - 180° Rotation													
Electric													
On-Pk Cons. ($)	2,584	2,285	2,660	2,384	2,650	2,742	2,690	2,912	2,373	2,580	2,515	2,499	30,873
On-Pk Demand ($)	1,628	1,624	1,720	1,770	1,877	1,882	1,898	1,902	1,852	1,830	1,625	1,624	21,232
Total ($):	4,212	3,909	4,380	4,154	4,527	4,624	4,589	4,814	4,225	4,410	4,140	4,123	52,105
Gas													
On-Pk Cons. ($)	569	416	185	84	33	21	21	21	22	111	434	633	2,551
Purchased Steam													
On-Pk Cons. ($)	4,119	3,058	1,328	690	271	19	13	26	126	843	2,937	4,200	17,630
Purchased Chilled Water													
On-Pk Cons. ($)	34	22	20	105	499	877	1,222	1,132	346	109	25	32	4,424
Monthly Total ($):	8,934	7,405	5,913	5,034	5,330	5,541	5,844	5,994	4,719	5,474	7,535	8,988	76,711

Building Area = 56,296 ft²
Utility Cost Per Area = 1.36 $/ft²

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013
Monthly Utility Costs report Page 3 of 5

MONTHLY UTILITY COSTS

By CEA

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
					------- Monthly Utility Costs -------								
Alternative 1 - 270° Rotation													
Electric													
On-Pk Cons. ($)	2,741	2,418	2,786	2,518	2,890	3,017	2,981	3,167	2,520	2,699	2,651	2,659	33,047
On-Pk Demand ($)	1,696	1,685	1,728	1,842	1,986	2,004	2,029	1,995	1,927	1,850	1,694	1,703	22,139
Total ($):	4,437	4,103	4,513	4,359	4,877	5,021	5,010	5,162	4,447	4,549	4,345	4,362	55,186
Gas													
On-Pk Cons. ($)	422	251	80	53	27	21	21	21	22	59	278	461	1,716
Purchased Steam													
On-Pk Cons. ($)	4,412	3,273	1,432	676	260	20	14	27	129	922	3,197	4,564	18,924
Purchased Chilled Water													
On-Pk Cons. ($)	43	27	19	101	528	949	1,303	1,144	322	88	30	43	4,598
Monthly Total ($):	9,314	7,654	6,045	5,189	5,693	6,011	6,347	6,354	4,919	5,619	7,849	9,430	80,424

Building Area = 56,296 ft²

Utility Cost Per Area = 1.43 $/ft²

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013
Monthly Utility Costs report Page 4 of 5

MONTHLY UTILITY COSTS

By CEA

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
					------- Monthly Utility Costs -------								
Alternative 2													
Electric													
On-Pk Cons. ($)	2,174	1,941	2,217	1,925	2,155	2,212	2,248	2,418	2,010	2,075	2,119	2,086	25,580
On-Pk Demand ($)	1,368	1,362	1,362	1,383	1,588	1,575	1,610	1,597	1,551	1,383	1,364	1,366	17,509
Total ($):	3,542	3,303	3,579	3,308	3,744	3,786	3,858	4,015	3,561	3,458	3,484	3,452	43,089
Gas													
On-Pk Cons. ($)	310	183	74	72	38	21	21	21	21	51	185	316	1,314
Purchased Steam													
On-Pk Cons. ($)	3,879	3,010	1,368	831	381	188	141	200	278	908	2,796	4,032	18,012
Purchased Chilled Water													
On-Pk Cons. ($)	38	29	14	5	39	87	395	200	372	9	26	34	1,248
Monthly Total ($):	7,769	6,524	5,035	4,216	4,201	4,082	4,415	4,435	4,233	4,425	6,491	7,834	63,662

Building Area = 56,296 ft²
Utility Cost Per Area = 1.13 $/ft²

Project Name: USU Eastern CIB
Dataset Name: USU_E_CIB_01.trc

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013
Monthly Utility Costs report Page 5 of 5

System Checksums

By CEA

Sys #3 - PSZ-AC < 65k Btu/h **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 9 / 15
Outside Air: OADB/WB/HR: 80 / 53 / 28

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	10,910	0	10,910	3
Glass Solar	332,302	0	332,302	86
Glass/Door Cond	-3,126	0	-3,126	-1
Wall Cond	2,992	70	3,062	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	157		157	0
Sub Total ==>	343,235	70	343,305	89
Internal Loads				
Lights	21,341	256	21,597	6
People	6,460	0	6,460	2
Misc	8,571	0	8,571	2
Sub Total ==>	36,372	256	36,628	9
Ceiling Load	1,676	-1,676	0	0
Ventilation Load	0	0	45	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		0	0	0
Sup. Fan Heat			6,039	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	381,284	-1,350	386,017	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	10,910	3
Glass Solar	332,449	87
Glass/Door Cond	-3,123	-1
Wall Cond	2,953	1
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	1,710	0
Sub Total ==>	344,899	91
Internal Loads		
Lights	21,348	6
People	3,749	1
Misc	8,585	2
Sub Total ==>	33,682	9
Ceiling Load	1,829	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Dehumid. Ov Sizing		
Ov/Undr Sizing	0	0
Exhaust Heat		
Sup. Fan Heat		
Ret. Fan Heat		
Duct Heat Pkup		
Underflr Sup Ht Pkup		
Supply Air Leakage		
Grand Total ==>	380,409	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 3

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	-15,845	-15,845	4.32
Glass Solar	0	0	0.00
Glass/Door Cond	-172,036	-172,036	46.93
Wall Cond	-3,133	-3,285	0.90
Partition/Door	0	0	0.00
Floor	-8,121	-8,121	2.22
Adjacent Floor	0	0	0
Infiltration	-124,264	-124,264	33.90
Sub Total ==>	-323,399	-323,551	88.26
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	4,500	4,500	-1.23
Sub Total ==>	4,500	4,500	-1.23
Ceiling Load	-5,214	0	0.00
Ventilation Load	0	-47,600	12.98
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		54	-0.01
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-324,112	-366,597	100.00

TEMPERATURES

	Cooling	Heating
SADB	62.0	83.0
Ra Plenum	92.2	24.0
Return	78.0	67.9
Ret/OA	78.1	66.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	29,114	29,114
Terminal	29,114	29,114
Main Fan	29,114	29,114
Sec Fan	0	0
Nom Vent	789	789
AHU Vent	789	789
Infil	1,027	2,054
MinStop/Rh	0	0
Return	30,141	31,167
Exhaust	1,816	2,843
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	2.7	2.7
cfm/ft²	5.13	5.13
cfm/ton	786.46	
ft²/ton	153.24	
Btu/hr·ft²	78.31	-80.70
No. People	53	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB/WB/HR °F	Enter DB/WB/HR °F	Enter DB/WB/HR gr/lb	Leave DB/WB/HR °F	Leave DB/WB/HR °F	Leave DB/WB/HR gr/lb
Main Clg	37.0	444.2	444.2	29,114	78.1	52.9	31.0	61.8	46.3	30.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	37.0	444.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	5,673		
Part	0		
Int Door	0		
ExFlr	233		
Roof	5,133	0	0
Wall	6,845	5,971	87
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-457.8	29,114	66.2	83.0
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-457.8			

Project Name: USU Eastern CIB

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013

System Checksums

By CEA

Sys #7 - VAV w/RH Level 1 **Variable Volume Reheat (30% Min Flow Default)**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 89 / 58 / 36

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	16,936	207	17,143	3
Glass Solar	71,090	0	71,090	14
Glass/Door Cond	11,182	0	11,182	2
Wall Cond	7,877	5,664	13,542	3
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	16,339		16,339	3
Sub Total ==>	123,425	5,872	129,297	25
Internal Loads				
Lights	66,380	22,647	89,028	17
People	46,723	0	46,723	9
Misc	20,667	0	20,667	4
Sub Total ==>	133,770	22,647	156,418	31
Ceiling Load	5,778	-5,778	0	0
Ventilation Load	0	0	206,587	40
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	48,468		48,468	9
Exhaust Heat		-48,621	-48,621	-9
Sup. Fan Heat			20,563	4
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	311,441	-25,880	512,711	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 13
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	10,116	3
Glass Solar	67,872	22
Glass/Door Cond	5,845	2
Wall Cond	5,144	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	13,657	4
Sub Total ==>	102,634	33
Internal Loads		
Lights	64,186	21
People	56,321	18
Misc	32,792	11
Sub Total ==>	153,299	50
Ceiling Load	4,248	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	47,767	16
Grand Total ==>	307,948	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 3

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	-22,845	-23,129	1.53
Glass Solar	0	0	0.00
Glass/Door Cond	-88,347	-88,347	5.83
Wall Cond	-21,989	-32,444	2.14
Partition/Door	0	0	0.00
Floor	-21,703	-21,703	1.43
Adjacent Floor	0	0	0
Infiltration	-192,922	-192,922	12.74
Sub Total ==>	-347,804	-358,544	23.67
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	321	321	-0.02
Sub Total ==>	321	321	-0.02
Ceiling Load	-6,032	0	0.00
Ventilation Load	0	-1,231,172	81.28
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	55,008	55,008	-3.63
Exhaust Heat		22,119	-1.46
OA Preheat Diff.		-63	0.00
RA Preheat Diff.		-2,447	0.16
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-298,507	-1,514,779	100.00

TEMPERATURES

	Cooling	Heating
SADB	58.0	83.3
Ra Plenum	79.4	66.3
Return	80.1	67.0
Ret/OA	89.2	3.6
Fn MtrTD	0.1	0.0
Fn BldTD	0.3	0.0
Fn Frict	0.9	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	18,380	20,510
Terminal	18,380	20,510
Main Fan	18,380	20,510
Sec Fan	0	0
Nom Vent	20,443	20,443
AHU Vent	20,443	20,443
Infil	1,776	3,188
MinStop/Rh	11,555	20,510
Return	21,446	22,926
Exhaust	23,508	22,858
Rm Exh	773	773
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	100.0	99.7
cfm/ft²	0.67	0.75
cfm/ton	378.75	
ft²/ton	565.92	
Btu/hr·ft²	21.20	-62.63
No. People	365	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB/WB/HR °F	Enter DB/WB/HR °F	Enter DB/WB/HR gr/lb	Leave DB/WB/HR °F	Leave DB/WB/HR °F	Leave DB/WB/HR gr/lb
Main Clg	48.5	582.4	564.5	17,350	89.2	58.1	36.3	56.7	44.0	30.5
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	48.5	582.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	27,464		
Part	0		
Int Door	0		
ExFlr	622		
Roof	7,549	0	0
Wall	10,982	3,065	28
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-572.3	18,380	56.7	83.3
Aux Htg	0.0	0	0.0	0.0
Preheat	-1,147.8	18,380	3.4	56.7
Reheat	-263.3	20,510	56.7	67.7
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1,720.1			

Project Name: USU Eastern CIB

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013

System Checksums

By CEA

Sys #7 - VAV w/RH Level 2 | **Variable Volume Reheat (30% Min Flow Default)**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 89 / 58 / 36

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	5,365	43,377	48,741	11
Glass Solar	58,247	0	58,247	13
Glass/Door Cond	8,405	0	8,405	2
Wall Cond	8,431	5,438	13,869	3
Partition/Door	0		0	0
Floor	7		7	0
Adjacent Floor	0	0	0	0
Infiltration	16,840		16,840	4
Sub Total ==>	97,294	48,815	146,109	32
Internal Loads				
Lights	52,139	12,769	64,908	14
People	43,501	0	43,501	9
Misc	22,166	0	22,166	5
Sub Total ==>	117,806	12,769	130,575	28
Ceiling Load	18,779	-18,779	0	0
Ventilation Load	0	0	180,354	39
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	36,808		36,808	8
Exhaust Heat		-51,340	-51,340	-11
Sup. Fan Heat			17,584	4
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	270,686	-8,535	460,089	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 13
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	3,049	1
Glass Solar	58,802	22
Glass/Door Cond	4,160	2
Wall Cond	6,990	3
Partition/Door	0	0
Floor	-198	0
Adjacent Floor	0	0
Infiltration	12,197	5
Sub Total ==>	84,999	31
Internal Loads		
Lights	49,765	18
People	46,303	17
Misc	33,433	12
Sub Total ==>	129,500	48
Ceiling Load	12,996	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	43,168	16
Grand Total ==>	270,663	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 3

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	-6,936	-66,722	5.18
Glass Solar	0	0	0.00
Glass/Door Cond	-72,442	-72,442	5.63
Wall Cond	-21,571	-33,143	2.57
Partition/Door	0	0	0.00
Floor	-7,250	-7,250	0.56
Adjacent Floor	0	0	0
Infiltration	-194,301	-194,301	15.09
Sub Total ==>	-302,500	-373,858	29.03
Internal Loads			
Lights	483	604	-0.05
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	483	604	-0.05
Ceiling Load	-20,452	0	0.00
Ventilation Load	0	-1,022,803	79.43
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	53,311	53,311	-4.14
Exhaust Heat		57,470	-4.46
OA Preheat Diff.		-1	0.00
RA Preheat Diff.		-2,409	0.19
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-269,158	-1,287,685	100.00

TEMPERATURES

	Cooling	Heating
SADB	58.0	83.8
Ra Plenum	81.0	64.6
Return	81.0	64.1
Ret/OA	89.2	3.9
Fn MtrTD	0.1	0.0
Fn BldTD	0.3	0.0
Fn Frict	0.9	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	15,900	17,305
Terminal	15,900	17,305
Main Fan	15,900	17,305
Sec Fan	0	0
Nom Vent	17,151	17,151
AHU Vent	17,151	17,151
Infil	1,738	3,288
MinStop/Rh	9,982	17,305
Return	18,114	19,818
Exhaust	19,365	19,664
Rm Exh	775	775
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	100.0	99.1
cfm/ft²	0.69	0.75
cfm/ton	364.41	
ft²/ton	530.80	
Btu/hr·ft²	22.61	-64.59
No. People	317	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB/WB/HR °F	Enter DB/WB/HR °F	Enter DB/WB/HR gr/lb	Leave DB/WB/HR °F	Leave DB/WB/HR °F	Leave DB/WB/HR gr/lb
Main Clg	43.6	523.6	493.0	14,836	89.2	58.1	36.3	56.7	43.2	27.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	43.6	523.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	23,160		
Part	0		
Int Door	0		
ExFlr	1,073		
Roof	22,938	0	0
Wall	10,954	2,562	23
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-503.0	15,900	56.7	83.8
Aux Htg	0.0	0	0.0	0.0
Preheat	-992.9	15,900	3.4	56.7
Reheat	-209.4	17,305	56.7	67.1
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-1,495.9			

Project Name: USU Eastern CIB

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013

System Checksums

By CEA

AH-1 IDEC VAV w/rh — **Variable Volume Reheat (30% Min Flow Default)**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 89 / 58 / 36

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	14,867	29,788	44,655	5
Glass Solar	73,607	0	73,607	9
Glass/Door Cond	17,402	0	17,402	2
Wall Cond	12,741	8,735	21,475	3
Partition/Door	0		0	0
Floor	7		7	0
Adjacent Floor	0	0	0	0
Infiltration	31,461		31,461	4
Sub Total ==>	150,085	38,523	188,608	23
Internal Loads				
Lights	92,517	27,469	119,987	14
People	90,224	0	90,224	11
Misc	42,833	0	42,833	5
Sub Total ==>	225,574	27,469	253,043	30
Ceiling Load	19,865	-19,865	0	0
Ventilation Load	0	0	277,776	33
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	131,589		131,589	16
Exhaust Heat		-67,430	-67,430	-8
Sup. Fan Heat			52,038	6
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	527,112	-21,302	835,624	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 13
OADB: 86

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	8,776	2
Glass Solar	75,326	14
Glass/Door Cond	8,930	2
Wall Cond	9,479	2
Partition/Door	0	0
Floor	-198	0
Adjacent Floor	0	0
Infiltration	25,854	5
Sub Total ==>	128,168	25
Internal Loads		
Lights	88,988	17
People	102,623	20
Misc	66,225	13
Sub Total ==>	257,836	49
Ceiling Load	14,243	3
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	122,449	23
Grand Total ==>	522,697	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 3

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	-19,854	-60,722	2.83
Glass Solar	0	0	0.00
Glass/Door Cond	-143,054	-143,054	6.66
Wall Cond	-34,031	-51,362	2.39
Partition/Door	0	0	0.00
Floor	-28,953	-28,953	1.35
Adjacent Floor	0	0	0
Infiltration	-387,223	-387,223	18.03
Sub Total ==>	-613,114	-671,314	31.25
Internal Loads			
Lights	363	453	-0.02
People	0	0	0.00
Misc	321	321	-0.01
Sub Total ==>	684	774	-0.04
Ceiling Load	-20,651	0	0.00
Ventilation Load	0	-1,707,901	79.50
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	183,327	183,327	-8.53
Exhaust Heat		50,200	-2.34
OA Preheat Diff.		-37	0.00
RA Preheat Diff.		-3,269	0.15
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-449,754	-2,148,219	100.00

TEMPERATURES

	Cooling	Heating
SADB	56.0	84.2
Ra Plenum	79.9	65.8
Return	80.3	66.0
Ret/OA	89.2	3.4
Fn MtrTD	0.2	0.0
Fn BldTD	0.5	0.0
Fn Frict	1.5	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	26,855	28,553
Terminal	26,855	28,553
Main Fan	26,855	28,552
Sec Fan	0	0
Nom Vent	28,552	28,552
AHU Vent	28,552	28,552
Infil	3,514	6,477
MinStop/Rh	21,537	28,552
Return	30,513	33,476
Exhaust	32,210	33,476
Rm Exh	1,554	1,554
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	100.0	100.0
cfm/ft²	0.53	0.56
cfm/ton	355.69	
ft²/ton	670.48	
Btu/hr·ft²	17.90	-46.17
No. People	682	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	75.5	906.0	878.0	25,089	89.2	58.1	36.3	53.8	42.8	30.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	75.5	906.0								

AREAS

	Gross Total ft²	Glass ft²	Glass (%)
Floor	50,623		
Part	0		
Int Door	0		
ExFlr	1,695		
Roof	30,487	0	0
Wall	21,936	5,626	26
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-879.8	26,855	53.8	84.2
Aux Htg	0.0	0	0.0	0.0
Preheat	-1,457.5	26,855	3.4	53.8
Reheat	-414.4	28,552	53.8	67.3
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2,337.3			

Project Name: USU Eastern CIB

TRACE® 700 v6.2.10 calculated at 05:17 PM on 11/13/2013

System Checksums

By CEA

Sys #3 - PSZ-AC < 65k Btu/h **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 9 / 15
Outside Air: OADB/WB/HR: 80 / 53 / 28

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	7,273	0	7,273	3
Glass Solar	202,407	0	202,407	81
Glass/Door Cond	-2,810	0	-2,810	-1
Wall Cond	2,307	11	2,318	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	3,467		3,467	1
Sub Total ==>	212,644	11	212,655	85
Internal Loads				
Lights	16,011	193	16,203	6
People	6,462	0	6,462	3
Misc	8,585	0	8,585	3
Sub Total ==>	31,058	193	31,250	12
Ceiling Load	1,595	-1,595	0	0
Ventilation Load	0	0	2,557	1
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		0	0	0
Sup. Fan Heat			3,818	2
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	245,297	-1,391	250,281	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	7,273	3
Glass Solar	202,407	84
Glass/Door Cond	-2,810	-1
Wall Cond	2,307	1
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	1,710	1
Sub Total ==>	210,887	88
Internal Loads		
Lights	16,011	7
People	3,749	2
Misc	8,585	4
Sub Total ==>	28,345	12
Ceiling Load	1,595	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	240,827	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: 3

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	-10,563	-10,563	3.09
Glass Solar	0	0	0.00
Glass/Door Cond	-153,060	-153,060	44.81
Wall Cond	-2,448	-2,601	0.76
Partition/Door	0	0	0.00
Floor	-8,121	-8,121	2.38
Adjacent Floor	0	0	0
Infiltration	-124,264	-124,264	36.38
Sub Total ==>	-298,456	-298,610	87.43
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	4,500	4,500	-1.32
Sub Total ==>	4,500	4,500	-1.32
Ceiling Load	-4,507	0	0.00
Ventilation Load	0	-47,600	13.94
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		154	-0.05
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-298,463	-341,556	100.00

TEMPERATURES

	Cooling	Heating
SADB	62.0	89.8
Ra Plenum	91.5	30.0
Return	78.1	67.9
Ret/OA	78.1	65.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	18,405	18,405
Terminal	18,405	18,405
Main Fan	18,405	18,405
Sec Fan	0	0
Nom Vent	789	789
AHU Vent	789	789
Infil	1,027	2,054
MinStop/Rh	0	0
Return	19,432	20,459
Exhaust	1,816	2,843
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	4.3	4.3
cfm/ft²	3.24	3.24
cfm/ton	767.36	
ft²/ton	236.51	
Btu/hr·ft²	50.74	-75.08
No. People	53	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB/WB/HR °F	Enter DB/WB/HR °F	Enter DB/WB/HR gr/lb	Leave DB/WB/HR °F	Leave DB/WB/HR °F	Leave DB/WB/HR gr/lb
Main Clg	24.0	287.8	281.4	18,405	78.2	51.7	25.9	61.8	44.7	25.1
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	24.0	287.8								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	5,673		
Part	0		
Int Door	0		
ExFlr	233		
Roof	5,133	0	0
Wall	6,845	5,971	87
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-425.9	18,405	65.1	89.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-425.9			

Project Name: USU Eastern CIB

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