Administration Building Feasibility Study

Metropolitan State University of Denver

FINAL DRAFT

8 JUNE 2016

acknowledgements

metropolitan state university of denver

michael erskine
sandra haynes
elizabeth hinde
stephen m. jordan
steve kreidler
ann murphy
sean nesbitt
mark potter

ahec

carl meese
jeff stamper
barb weiske

rnl

jordan block
fritz gale
josh gould
sydney hamilton
maggi hattman
amy tabor
stephanie wood

mk think

allan donnelly

shaffer baucom engineering and consulting

cody johnson
jason ridl

rimrock group

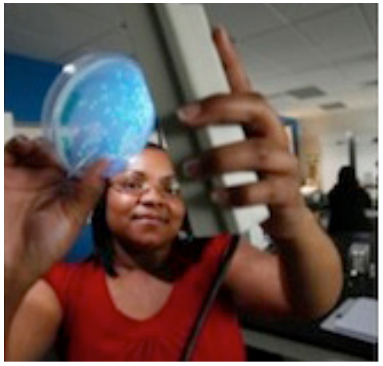
john worgan

jones lange lasalle

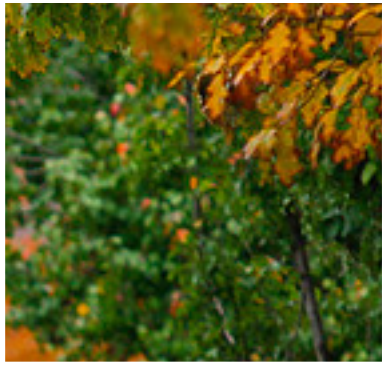
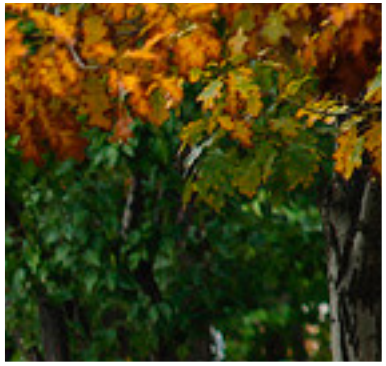
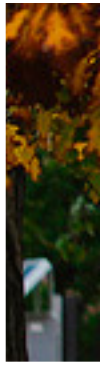
brad boyle
krista trofka

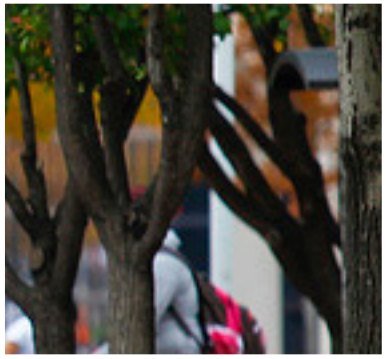
the names of student participants have been kept anonymous

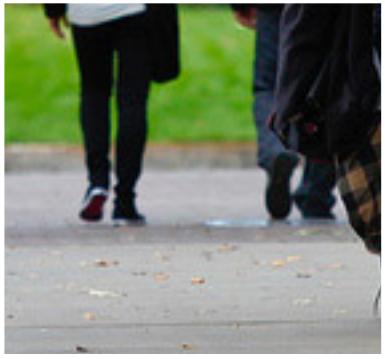
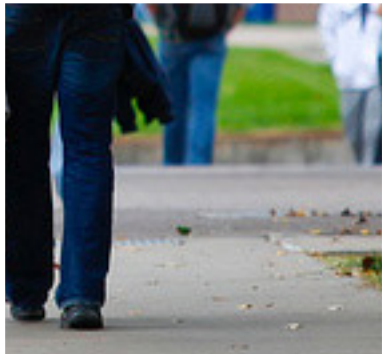
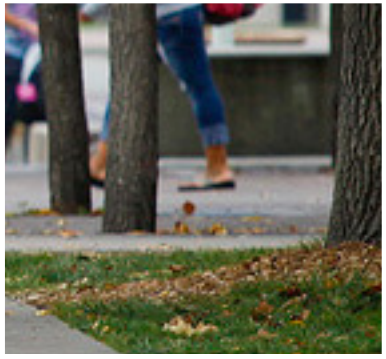
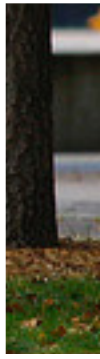
table of contents



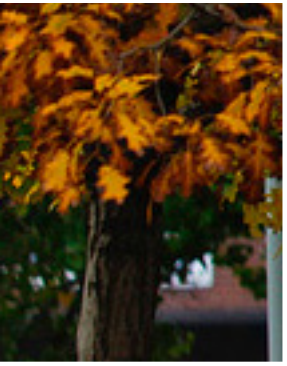


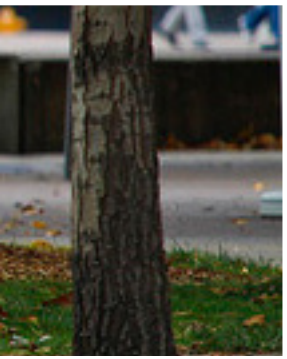




METROPOLITAN STATE UNIVERSITY℠ OF DENVER







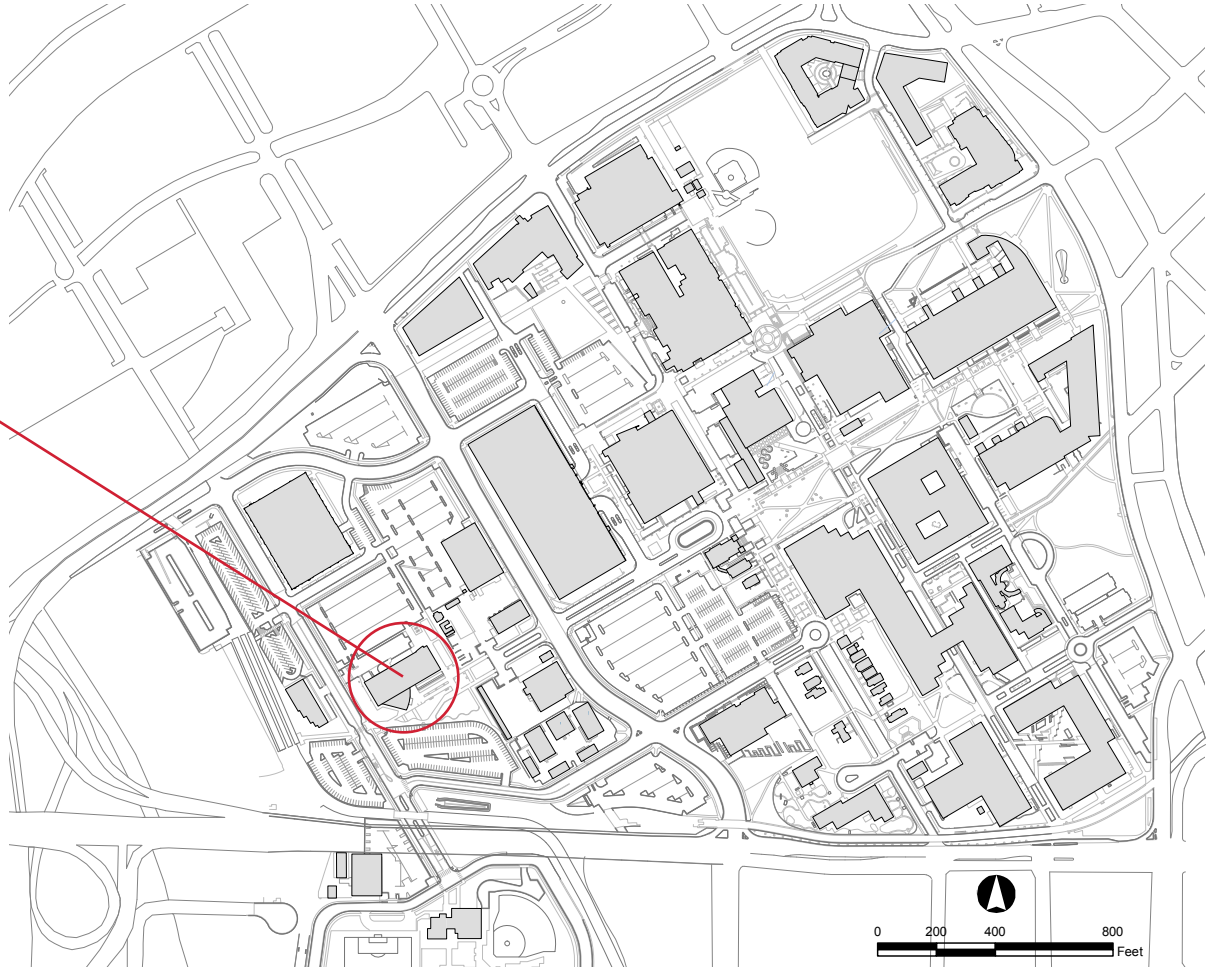

VERVIEW

executive summary

The Administration Building presents a number of interesting challenges as it transitions from being a tri-institutionally shared building to one that is occupied solely by Metropolitan State University of Denver (MSU Denver). Among these challenges are its relatively remote location with respect to the rest of campus and the MSU Denver neighborhood, and its original purpose as an office building.

Constructed in 1999, the Administration Building is a five-story building with a variety of space types including office space, data centers, the campus police station, computer labs, a café, and classroom and lab spaces, located on the Auraria Higher Education Center (AHEC) campus.

Currently, the Administration Building is shared among all of the three Auraria institutions - MSU Denver, the University of Colorado Denver (CU Denver), and the Community College of Denver (CCD). As part of a long-term campus master plan that aims to better define neighborhoods for each of the individual institutions, the building will soon be dedicated solely to MSU Denver functions. As this transition takes place, it is critical that the best inhabitants be selected to backfill the building in order to meet the institution's strategic goals.



the Administration Building

This study proposes to address these challenges through a series of critical strategies:

- place the most appropriate user groups in the building to satisfy affinity and space needs and use the building as efficiently as possible
- align with both the Neighborhood and Campus Master Plans
- consider both long- and short-term needs to meet MSU Denver's needs

Through the course of this study, a variety of investigative strategies have been employed to arrive at two alternative options for the Administration Building. These have included interviews and surveys with user groups including students, faculty, staff, and Auraria representatives, workshops, visioning sessions, open houses, test fits, alternatives analyses, and third party reviews. Through this iterative process, the study arrived at the alternatives described in the following pages.

Both alternatives concentrate classrooms and areas with high public access needs on the first and second floors, while offices and secure areas remain on the third, fourth, and fifth floors. Both alternatives provide space on level 1 for much needed student study lounge and collaboration space.

The first alternative (Scenario A) prioritizes the more immediate need to consolidate the Nursing program's office and instructional space and to provide it with adequate space in terms of both size and quality.

The second alternative (Scenario B) prioritizes the long-term goal of consolidating the College of Business into the Administration Building along with non-student facing administrative functions currently housed in various locations throughout campus.

Total project cost is estimated to be approximately $11.4 M for Scenario A and $10.4M for Scenario B.

After considering the advantages and disadvantages of each option, the recommended alternative is Scenario B because it better aligns with long-term institutional goals.

The tables on the following page describe the space requirements of the departments slated to occupy space in the Administration Building in each alternative. The current assumption is that all of the non-MSU Denver functions will be moving out of the Administration Building, although the timeline for relocation is not certain for all user groups.

SCENARIO A

Applied Learning Center	3,799 ASF
Athletics	5,530 ASF
Center for Individualized Learning	1,987 ASF
International Studies	1,499 ASF
IT	21,146 ASF
MSU Denver general use computer lab	2,979 ASF
College of Business	35,442 ASF
Food Vendor	418 ASF
Nursing	10,407 ASF
unassigned office space available	10,100 ASF
TOTAL	93,307 ASF
total available space in Admin Building	94,818 ASF

SCENARIO B

Applied Learning Center	3,799 ASF
Athletics	6,055 ASF
Center for Individualized Learning	1,987 ASF
International Studies	1,499 ASF
IT	21,968 ASF
MSU Denver general use computer lab	2,979 ASF
College of Business	36,642 ASF
Food Vendor	418 ASF
Education Technology Center	3,551 ASF
unassigned office space available	14,475 ASF
TOTAL	93,373 ASF
total available space in Admin Building	94,818 ASF

description of programs being affected

CCD functions slated for relocation from the Administration Building include Budget and Finance, Human Resources, and IT. The AHEC central offices, building services, and the campus police are also slated to be relocated.

The following MSU Denver departments are candidates for relocation to or consolidation in the Administration Building.

Current MSU Denver occupants most likely to remain:

Applied Learning Center
Athletics
Center for Individualized Learning
Office of International Studies
CIO/AVP of Information Technology Services (ITS)
MSU Denver General Use Computer Lab
College of Business
Food Vendor

Potential new occupants:

Career Services
Center for Faculty Excellence (CFE)
Nursing
Education Technology Center (ETC)
Additional College of Business Classrooms
Additional Athletics Offices
Office Functions Currently Housed in Modular Structures

The School of Education was also considered for relocation to the Administration Building but was deemed to be better suited elsewhere. A full description of the School of Education is provided in the Appendix.

The following pages provide descriptions of each of these departments along with their current space needs. Detailed space needs assessments are included in the Appendix.

Additional description of the methodologies used to project future space needs is provided in the Program Requirements and Projections section on page 29.

COLLEGE OF PROFESSIONAL STUDIES

Departments Being Affected

- Nursing

Current Locations

- West Building – Nursing Faculty
- Boulder Creek Building – Nursing Class/ Labs

Existing Conditions

- Nursing currently needs twice the lab space to support its current enrollment. If additional programs are added (e.g. Nurse Practitioner program), additional faculty and classroom space will be required. The Nursing staff attribute some of the recent drops in enrollment to the poor condition of their space compared with competitors' facilities in the region. Conditions can also impact faculty recruitment. The Boulder Creek Building has older space, safety and security issues and is remote from the rest of the University. The Nursing office suite is located in the West Building and has no growth space. Ideally this program would be consolidated and in a location more central to the MSU Denver neighborhood.

Emerging Issues

- The preferred location for Nursing if relocated out of Boulder Creek would be in Central with Health Professions and Nutrition. A second possible location is in the Administration Building. Nursing programs nationally are beginning to use more simulation lab time to replace time in actual clinical settings. This trend could influence plans for MSU Denver to add simulation lab space.
- Ideally, Nursing would be housed with the rest of the functions slated to belong to the Healtcare Institute

Nursing
faculty: 25
existing ASF: 5,954
current required ASF: 10,407
2030 projected ASF: 11,656

UNDERGRADUATE STUDIES

Programs Being Affected

- Career Services
- Applied Learning Center (ALC)
- Center For Individualized Learning (CIL)

Current Locations

- Administration Building – Applied Learning Center, Center for Individual Learning and International Studies
- Tivoli – Career Services

Existing Conditions

- The Applied Learning Center, Center for Individual Learning and International Studies functions in the Administration Building all have adequate and appropriate space. They share reception and meeting room spaces.
- Career Services in the Tivoli needs at least two interview rooms and a conference room that is suitable for hosting potential employers. Currently this suite is configured poorly creating some cramped areas and other areas that are underutilized but difficult to use. This office uses some of the common area in the Tivoli for career fairs and other events.

Emerging Issues

- Future programs that have been proposed and have no space currently include a Multi-Cultural Center and an International Center for inbound study abroad students. If the International Center were created in the Administration Building, the Individualized Learning function would be a candidate to relocate to make room for that.
- Career Services works closely with Advising, First Year Success and the ALC so while the Tivoli is a good location, space for this group in the Administration Building or SSB would be appropriate as well.
- The Access Center relocated to the Plaza Building when some hospitality programs moved to the HLC. The first floor location works well for students with disabilities. Their current square footage is adequate.
- The Applied Learning Center has indicated that is does not need to be colocated with the Center for Individualized Learning or the Office of International Studies, as it is now in the Administration Building. It would like to consolidate all of its campus functions into a single location and would prefer to be colocated with functions currently housed in the SSB.

Career Services
staff: 14
existing ASF: 2,525
current required ASF: 3,042
2030 projected ASF: 3,269

Applied Learning Center
staff: 18
existing ASF: 3,799
current required ASF: 3,881
2030 projected ASF: 4,531

Center Individualized Learning
staff: 12
existing ASF: 1,987
current required ASF: 1,950
2030 projected ASF: 2,241

COLLEGE OF BUSINESS

Departments

- Accounting
- Computer Information Systems
- Economics
- Finance
- Management
- Marketing

Current Locations

- Faculty offices - Administration Building
- Classrooms – Administration Building, Facility Annex, 7th Street, King Center, and one fo the Modular Buildings

Existing Conditions

- The Administration Building can feel remote from the rest of the academic departments
- The classrooms in the Admin. Building work well, but those in other buildings are less well equipped, furnished and configured. With the exception af Admin room 135, which is too large, all of the existing classrooms are right-sized
- The CIS Lab on the 2nd Floor of the Admin. Building is unique and has its own network. Accounting/Finance has a computer lab and a general student computer lab (that all MSU Denver students can use) in the Admin. Building
- Many of the programs host events on campus working with organizations such as the Small Business Development Council
- Office space in the Admin. Building has some vacancies
- Other than the lobby, which is not particularly conducive to study or group work in its current configuration, there is no student lounge/ study space in the Admin. Building

Emerging Issues

- This College would like to be consolidated in one building, whether that is the Administration Building or elsewhere
- There are some affinities to the new AES Building and Health Professions and other Professional Studies programs
- An MBA program will be added by Spring 2017 which will increase demand for afternoon and evening classes
- A BA in Entrepreneurship will be offered potentially by Fall 2017
- Enrollment overall, however, has declined. Any future increases would increase need for Faculty and classrooms
- It is a goal to be competitive with CSU Global for online education offerings

College of Business
faculty: 147
existing ASF: 38,390
current required ASF: 37,242
2030 projected ASF: 45,300

INFORMATION TECHNOLOGY SERVICES/EDUCATION TECHNOLOGY CENTER

Departments

- Education Technology Center (ETC)
- Application Services
- Business Services
- User Support Services
- Infrastructure Services

Current Locations

- Administration Building – Administrative functions (App. Services, Business Services, User Support Services, Infrastructure Services), Help Desk, Main Data Center
- Central Building – Education Tech Department, Production Suite

Existing Conditions

- The space in the Administration Building is in the process of being remodeled to optimize use of their space. A 25 seat conference room in the building is needed.
- The data center in the Administration Building is in good condition and has adequate square footage.

Emerging Issues

- Ideally the ETC could move into the Administration building if the Athletics Department moves their offices out. If this move occurs, the Production Studio should also move with Education Tech. The Department would like to make this resource more available to faculty and students in the future.

Information Technology Services
staff: 79
existing ASF: 21,146
current required ASF: 21,968
2030 projected ASF: 22,838

above figures apply to ETC and Admin Building locations only

DEPARTMENT OF INTERCOLLEGIATE ATHLETICS

Current Locations Being Affected

- Administration Building – Staff and Coaching Offices
- Tivoli (coaches offices)

Existing Conditions

- Some of the coaches are housed in offices at the Tivoli, but should be with the other coaches in the Administration Building.
- Student study space is provided in the office suite in the Administration Building, but would likely be used more frequently if it was more centrally located.

Emerging Issues

- If the coaches in the Tivoli relocated, that space is envisioned as a “Fan Zone” for the school, increasing visibility and team spirit for the University within the Tivoli.
- Consideration has been given to creating a Field House on campus that would house the offices currently in the Administration Building, along with additional indoor practice and training space.

Athletics
staff: 31
existing ASF: 5,530
current required ASF: 5,400
2030 projected ASF: 6,055

MSU Denver Women's Golf (photo courtesy of MSU Denver)

relationship to the facilities master plan

Public Realm Considerations

An active first floor should include the building's primary entrances, prioritization of uses geared around gathering (such as study lounges and collaborative spaces), signage, and building presence and articulation that is human-scaled and inviting. The existing lobby café could be an opportunity to add additional layers of activation and vibrancy to the building's public realm.

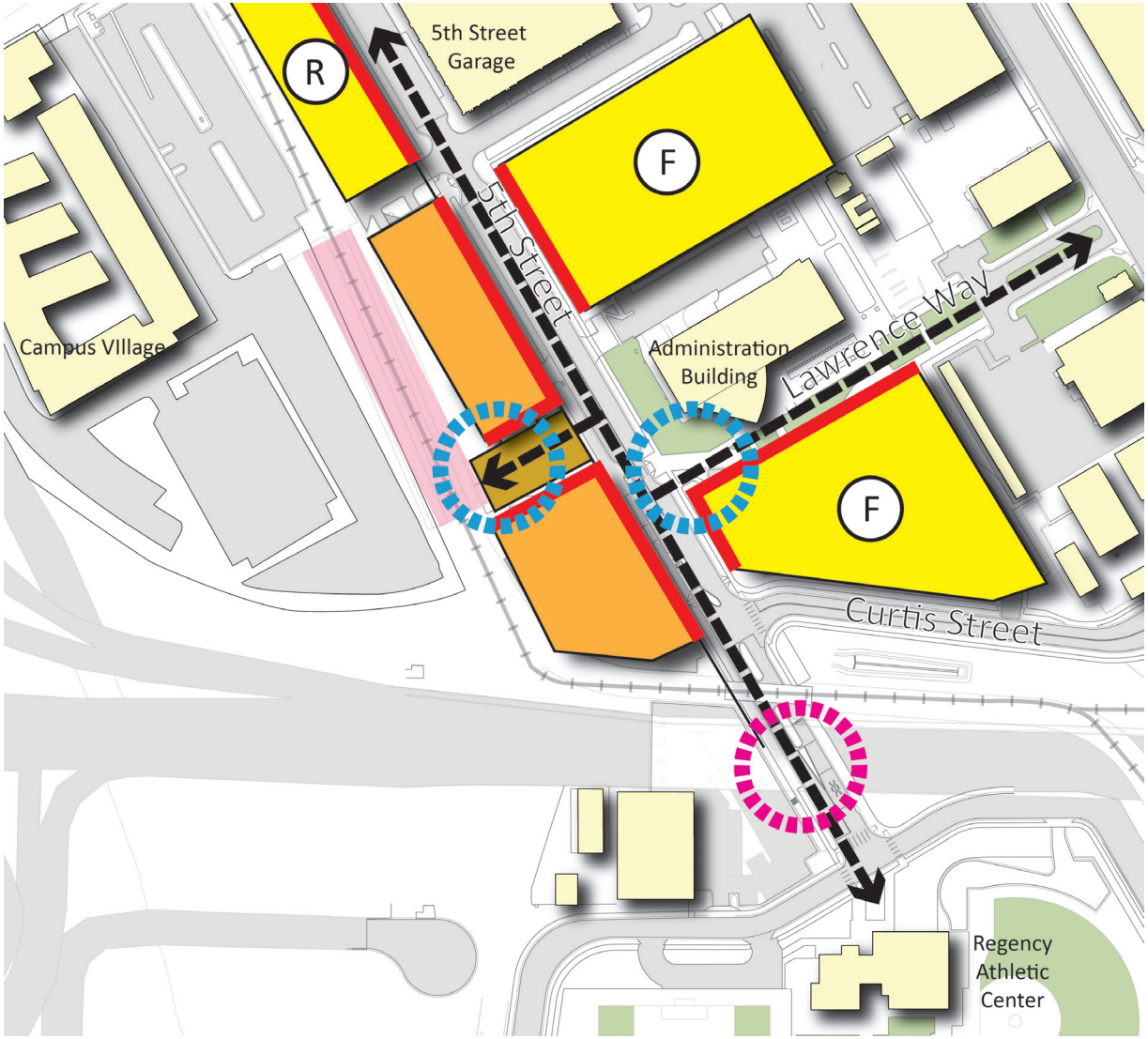
Landscape treatments are similarly important. Expanded café zones, walkways, and plaza spaces may be included in forthcoming neighborhood design guidelines and should be considered for the Administration Building, which already has a plaza-like entrance at its exterior, although it is not currently well utilized. Integrating planting and green amenities will help soften this environment. Enhancing the plaza environment in front of the Administration Building can help activate the building entrance and make it feel more lively and welcoming. This plaza feeling can be enhanced by elements such as flexible seating, string lighting, and high levels of programming. The SSB offers an example of this transition from hard to softscape areas as it relates to its entrance plaza.

Gateways and Connections to Campus

Renovation of the building should be designed to respond to and make a comfortable experience for users as they approach the building from the campus center or from the light rail station and nearby parking areas. Building massing, use of fenestration, and programming should all be geared towards these edges. While the surrounding area is composed mostly of parking lots and small buidings, as this zone continues to be redeveloped and activated over time, the importance of the user experience outside of this gateway will become more crucial. Proposed buildings in this zone include a field house, residential buildings, and a satellite student union.

In previous master plans, including the 2012 plans, 5th Street to the west of the Administration Building was targeted as a more pedestrian friendly but urban corridor with high levels of walkability. The recent streetscaping work as well as the inclusion of (currently unused) retail space in the recently-completed 5th Street Garage help with this experience. Connecting to this street experience from outside and inside the campus is very important for its success.

One major gateway for the area is at the intersection of 5th Street and Lawrence Way which coincides with the arrival area for the light rail. This site is a primary point of passage for those entering or leaving the campus from transit. In the future, it will likely act as the intersection through which those travelling to classes, offices, or living spaces in the new 5th Street neighborhood center will pass. The Administration Building is one of the first buildings encountered by campus visitors using this light rail station. As such, it serves as a secondary gateway into the Auraria campus and the MSU Denver neighborhood. This connection should be strengthened and enhanced to better reflect this role. In particular, the connection along Lawrence Way past the Administration Building can be enhanced as a more generous pedestrian environment. A future building on the site directly adjacent to the Administration building to the south should further support this connection by providing an active ground floor and other amenities along this passageway. Likewise, the transit station on the other side of 5th Street could have an expanded plaza area that will create



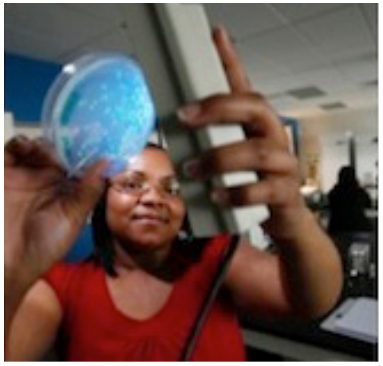
Important Relationships and Design Considerations Diagram

LEGEND

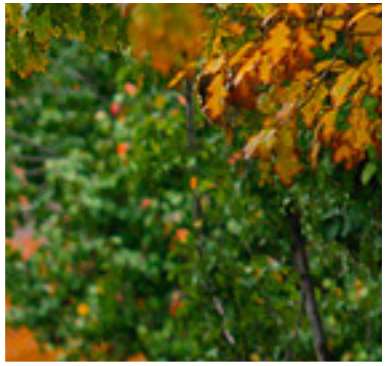
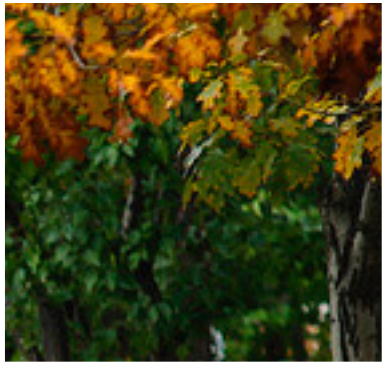
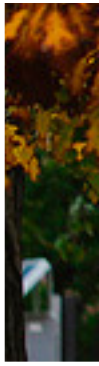
- Future Building Site
- Future Shared Building Site
- Potential Transit Plaza
- Key Activated Edges
- (F) Potential Field House Site
- (R) Potential Site with Residential
- Pedestrian Gateway
- Viaduct Gateway
- Transit Platform
- Primary Pedestrian Path

a more pleasant and interesting connection to 5th Street and beyond. This plaza can be supported and strengthened by the uses around it with retail or other active uses abutting it.

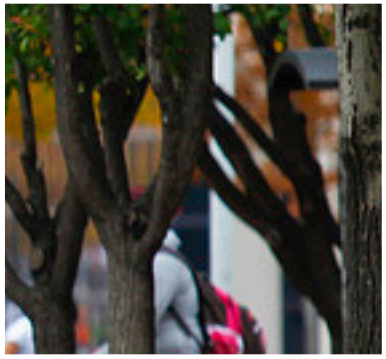
Additional discussion of the Administration Building and surrounding 5th Street neighborhood zone is provided in the Neighborhood Master Plan, published separately.

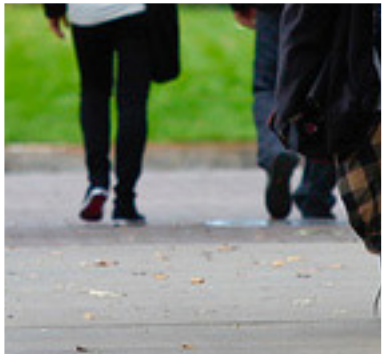


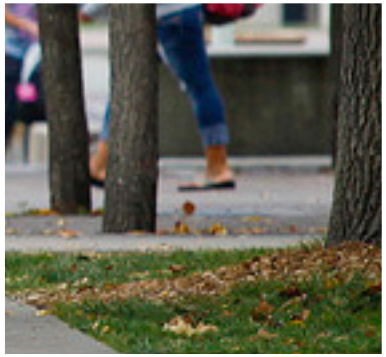




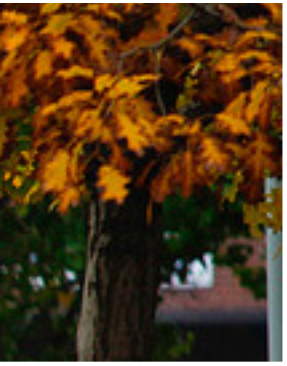




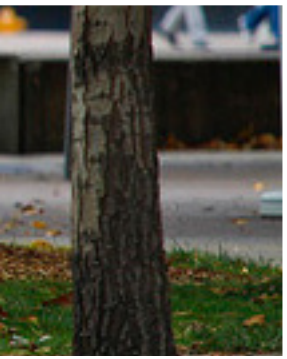




METROPOLITAN STATE UNIVERSITY[SM] OF DENVER






JUSTIFICATION

Vision

The mission and institutional vision of MSU Denver are the fundamental drivers for both the Neighborhood Master Plan and this Program Plan, each of which must support and reflect these overarching ideals.

"MSU Denver's mission is to provide a high-quality, accessible, enriching education that prepares students for successful careers, post-graduate education and lifelong learning in a multicultural, global and technological society. To fulfill its mission, MSU Denver's diverse university community engages the community at large in scholarly inquiry, creative activity and the application of knowledge." (University website)

Goals and Objectives

Specific criteria for success for the Neighborhood Master Plan, published separately, were defined by the Steering Committee during the visioning session for the Neighborhood Master Plan. These criteria included the following six ideals, which have guided this study as well:

- Space use considerations should include:
  - » Efficient use of space
  - » Specific space use recommendations
  - » Safe and accessible space solutions
  - » Improved adjacencies
  - » Prioritization
- A well-presented visual document that clearly outlines and communicates the path forward
- A process and plan that is inclusive and reflective of all constituents
- A plan that reflects Tri-Institutional goals and embraces campus planning to date
- An actionable grounded plan that is:
  - » Realistic and implementable
  - » Accurate and measurable
  - » Affordable

Six primary goals were defined by the steering committee and informed by input from student focus groups, user group interviews, and workshop discussions. Each goal has multiple objectives as outlined below. The top two priorities focus on creating a sense of place and identity for the Neighborhood and optimizing efficiencies and flexibility in space use.

Goal #1 (top priority): Create a sense of place/be a welcoming urban environment/Strengthen MSU Denver's Identity

- Provide user-friendly outdoor spaces
- Provide adequate study spaces for students
- Provide additional food locations/options
- Facilitate a great level of activity on campus through social/event activities
- Find a way to tie the disparate buildings within MSU Denver's Neighborhood together
- Create a satellite student hub ("commons") space for MSU Denver only
- Provide a graduate school student friendly environment

Goal #2 (top priority): Use space efficiently to meet priorities and provide flexibility to accommodate growth

- Address office and classroom/lab deficits
- Backfill space vacated (or to be vacated) by CU Denver and CCD in the Administration Building
- Find an appropriate use for the Center for Innovation space and underutilized lobby space in Student Success Building
- Address deficiencies within existing space where possible
- Identify strategies to provide growth space
- Work towards achieving benchmarked targets for each space type
- Bring more classrooms and buildings under MSU Denver's control/ownership
- Expand the Hotel Learning Center

Goal #3: Improve Adjacencies

- Find a new home for the World Indoor Airport - preferably Phase II of the AES Building
- Consolidate College of Business
- Find a new home for School of Education
- Consolidate student facing functions to the extent possible

Goal #4: Maintain/increase a cohesive campus organization

- Maintain ease of access and way-finding to different academic departments
- Activate west end of the Neighborhood
- Improve signage
- Improve ability to find building and neighborhood "front doors"
- Create areas of higher activity in core areas

Goal #5: Improve feeling of safety on campus

- Improve access to safe parking at night/early AM
- Improve lighting and landscaping
- Create areas of higher activity in core areas

Goal #6: Adhere to the campus master plan

- Establish a clear Gateway or gateways into the MSU Denver Neighborhood
- Eliminate use of the Modular Buildings
- Create parking easily accessible from each neighborhood
- Identify short and long term sites for new construction

The two alternative solutions for the Administration Building both aim to address each of these goals.

current space utilization

The Administration Building is currently occupied by user groups from both CCD and MSU Denver. AHEC offices and some campus services such as the police are also housed in the building. Spaces that were recently occupied by CU Denver have been vacated but are in use for temporary staging purposes. Most of the building is dedicated to office space but it does house classrooms, labs, and other uses as described in the previous section.

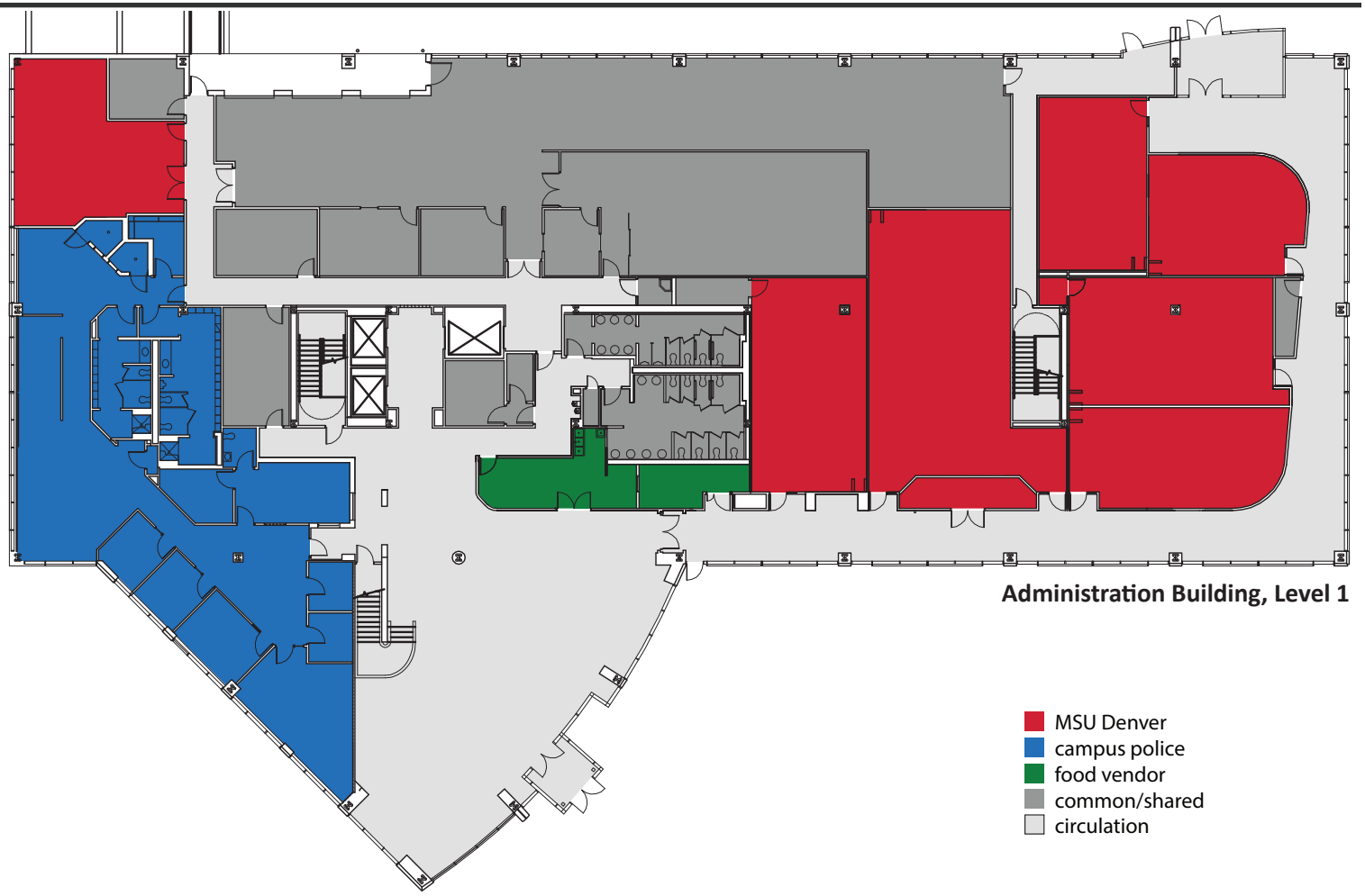
The following table outlines existing space use by floor and potential status with respect to relocation.

Current occupancy drawings are provided on pages 20-24.

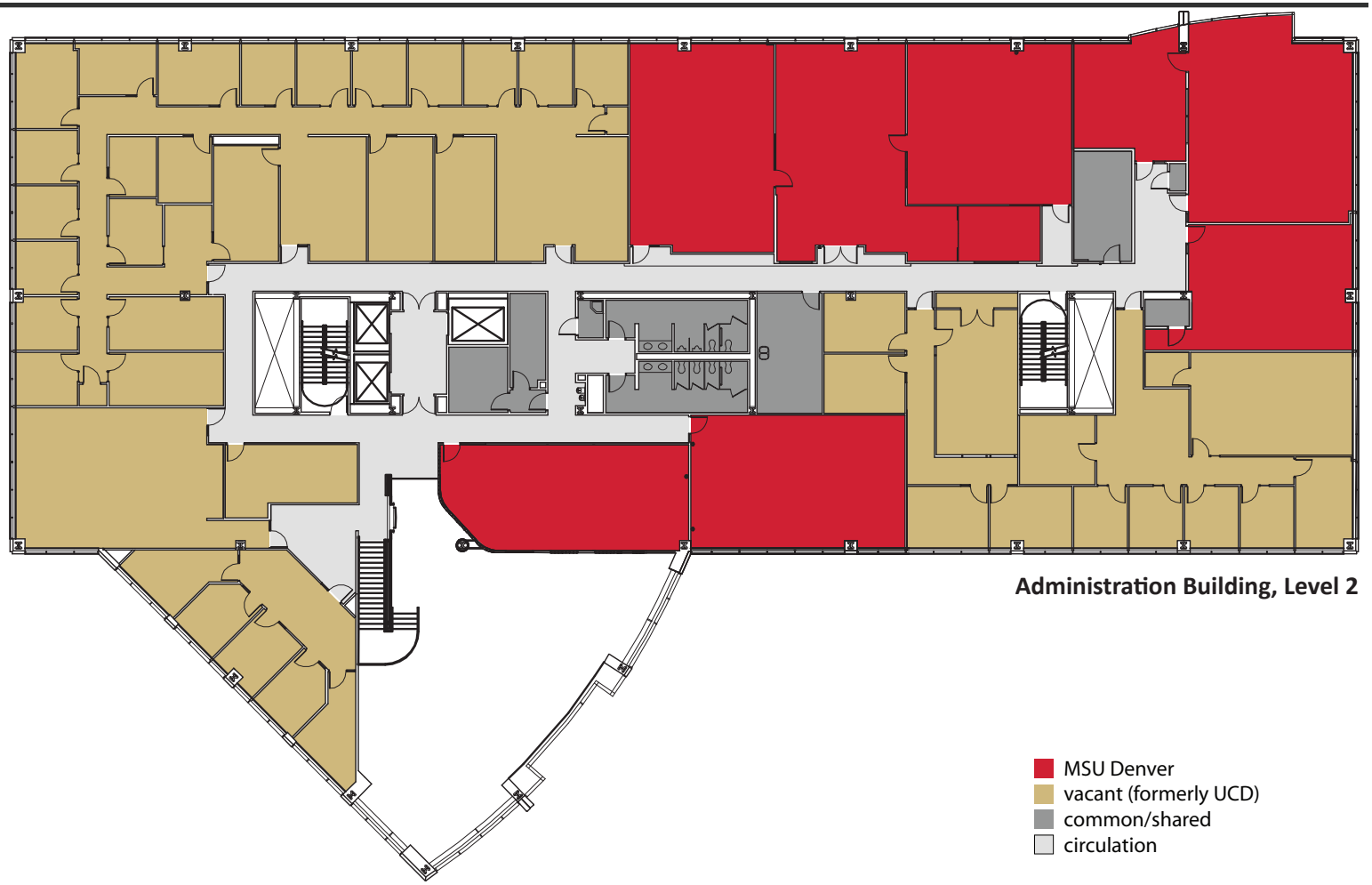
CURRENT SPACE UTILIZATION

		Program	AREA		AREA	Notes
1st Floor		School of Business classrooms	1,577			rooms 140, 145, & 145A
		General use classrooms (School of Business priority)	3,383			rooms 130, 135, 150, & 155
		MSU Denver IT Storage & Staging	736			room 180
		Food vendor	418			
		Building Services	4,738			includes AHEC mail service
		Police	3,467			
		total 1st floor ASF	14,319	ASF becoming available	8,205	
2nd Floor		Vacant areas	10,403			formerly UCD space, some areas still in use for UCD staging
		MSU Denver general use computer lab	2,979			
		School of Business classrooms/labs	3,944			
		total 2nd floor ASF	17,326	ASF becoming available	10,403	
3rd Floor		Center for Individualized Learning	1,987			
		Office of International Studies	1,682			
		Applied Learning Center	3,799			
		CCD Budget & Finance	3,049			
		CCD HR	1,477			
		CCD IT	2,149			
		AHEC Offices	6,924			
		total 3rd floor ASF	21,067	ASF becoming available	13,599	
4th Floor		MSU Denver IT	16,502			
		MSU Denver Athletics	4,554			could relocate within the building to a different floor, or could relocate elsewhere
		total 4th floor ASF	21,056	ASF becoming available	0	4,555 will become available if Athletics relocates
5th Floor		College of Business faculty offices	20,707			
		Career Services liaison & interview rooms	343			
		total 5th floor ASF	21,050	ASF becoming available	0	
		total building ASF	**94,818**	**ASF becoming available**	**32,207**	
Building Common		1st Floor	8,880			
(NSF)		2nd Floor	3,736			
		3rd Floor	2,406			
		4th Floor	2,612			
		5th Floor	2,224			
		total building common NSF	19,858			excludes vertical circulation and mech shafts, includes lobby
TOTALS		**total building NSF**	**114,676**			

Programs to remain
Programs to relocate
Programs to remain or relocate (undetermined)

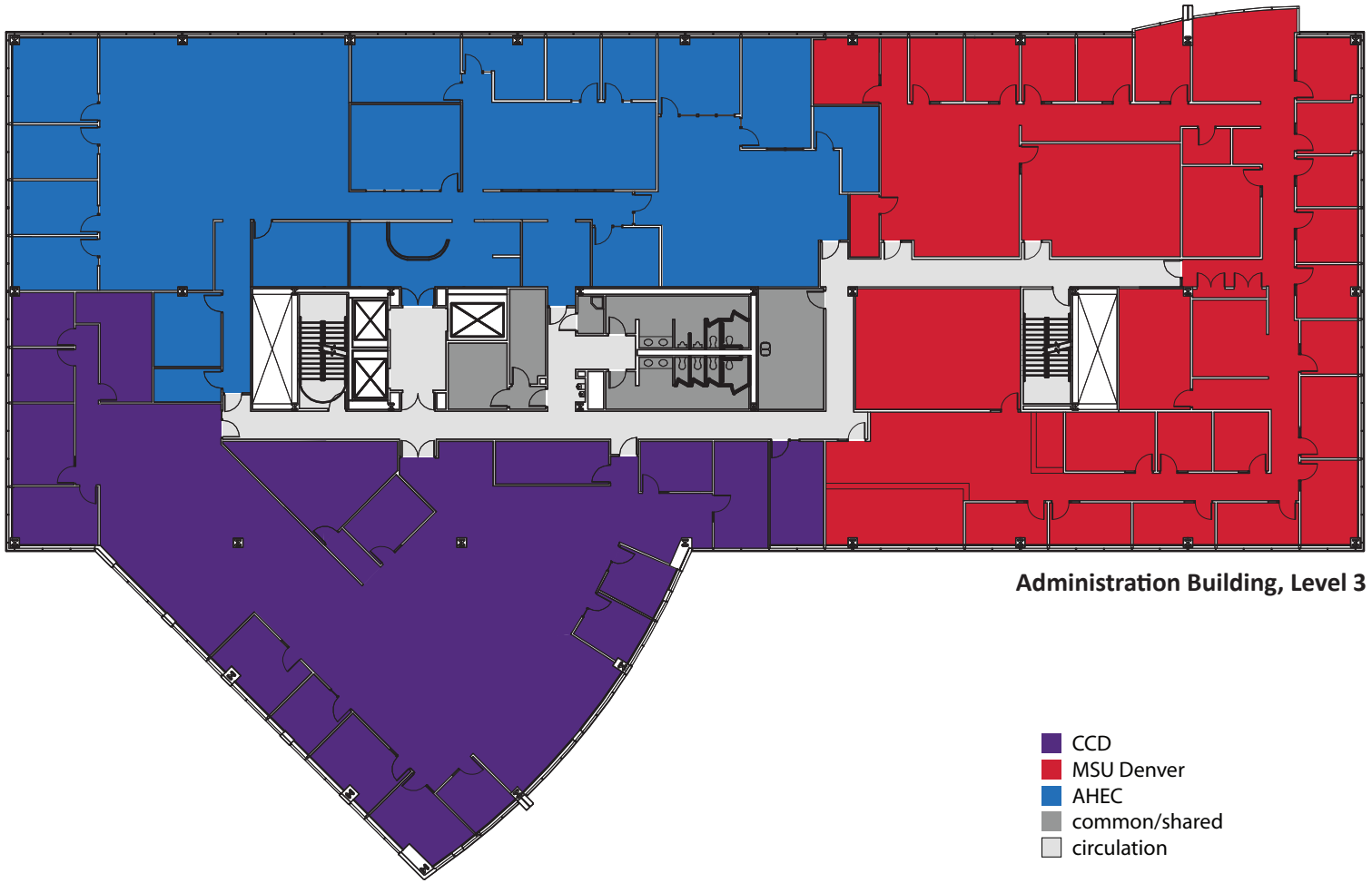


Administration Building, Level 1

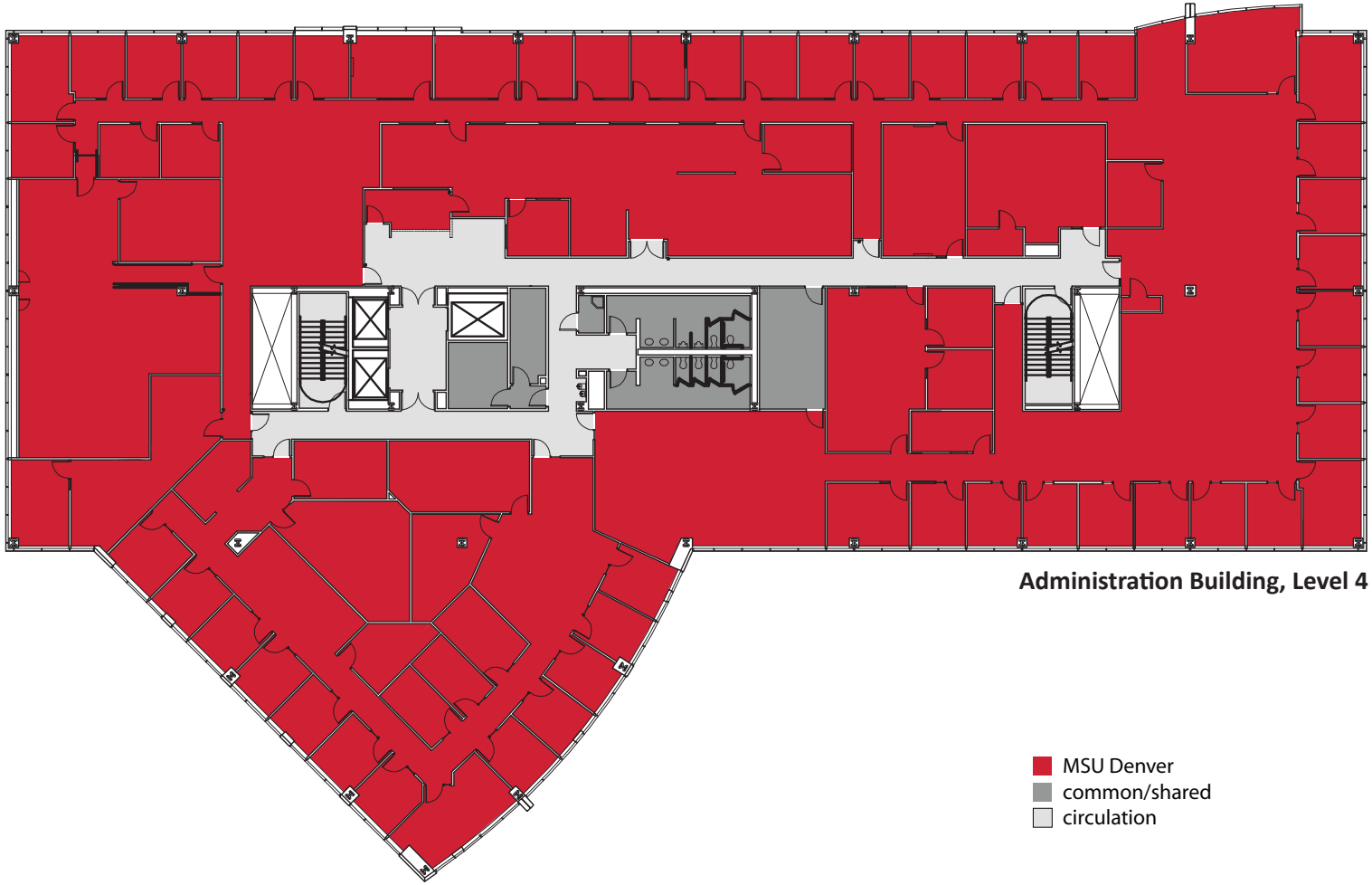


Administration Building, Level 2

MSU Denver
vacant (formerly UCD)
common/shared
circulation

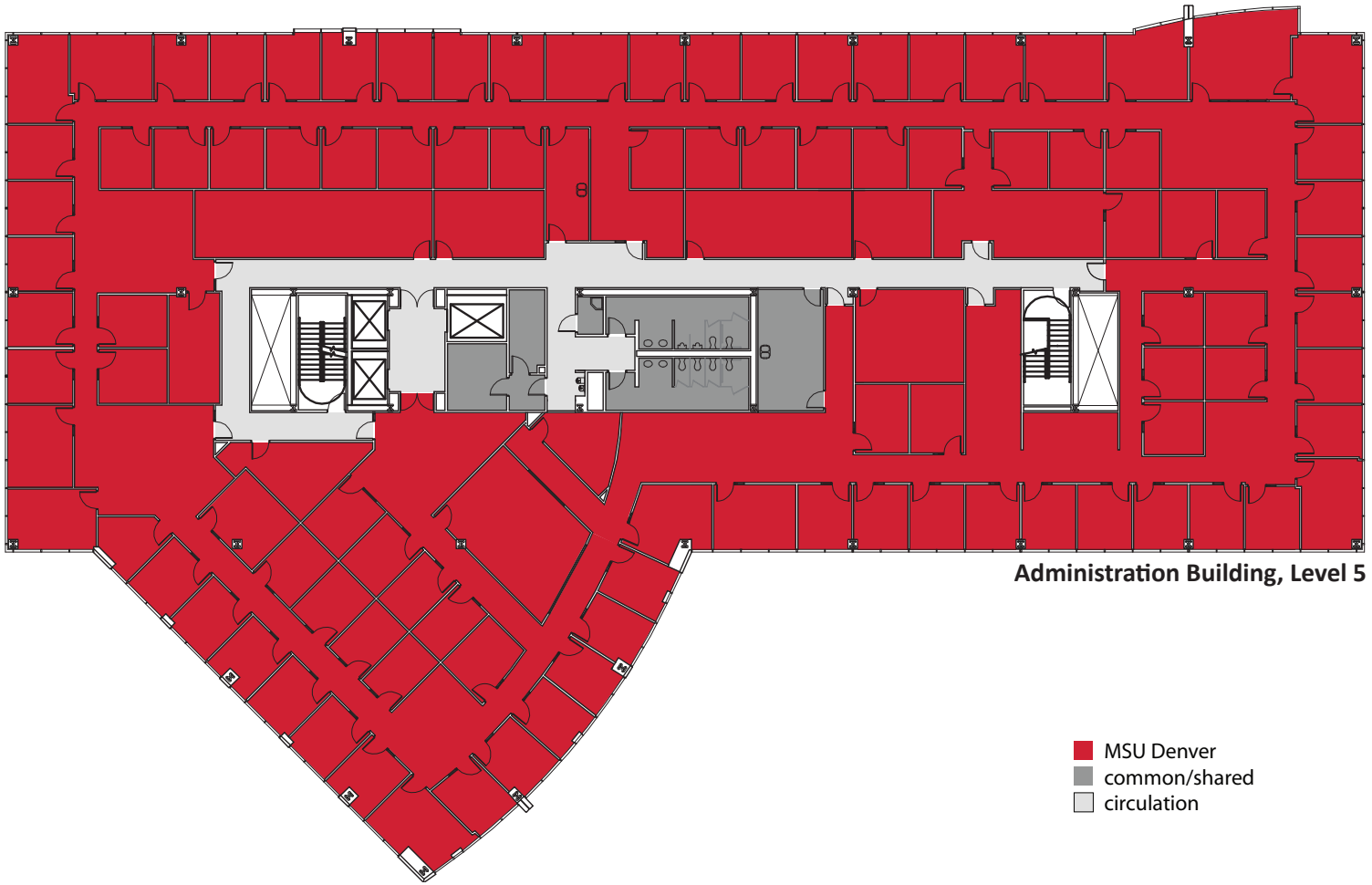


Administration Building, Level 3



Administration Building, Level 4

MSU Denver
common/shared
circulation



Administration Building, Level 5

MSU Denver
common/shared
circulation

enrollment and staffing projections

Enrollment Projections

The space needs analysis relies in part on the enrollment trends and projections. Since school facilities can take years to build, projections must look ten to twenty years in advance to assess needs. The data used for the MSU Denver enrollment projections was derived from the Metropolitan State University of Denver Enrollment Goals Report delivered by SEM works in September 2015. The report provides projections from 2015-2020 for enrollment in each department and division of the university. Data from the SEM works projections were modified in some cases based on more detailed projections from MSU Denver's division leader. Further projections for the Neighborhood Master Plan used a projected growth rate equal to the rate of growth for each department from 2019 to 2020 as calculated from the Enrollment Growth Report. If, for example, the enrollment of a given department grew from 100 students in 2019 to 102 students in 2020, the growth rate of 2% would be applied to future years for that department, meaning that growth the following year (2021) would result in 104 students, and in 106 students in 2022, and so on. The table at right shows current and projected enrollment growth used for the Neighborhood Master Plan analysis.

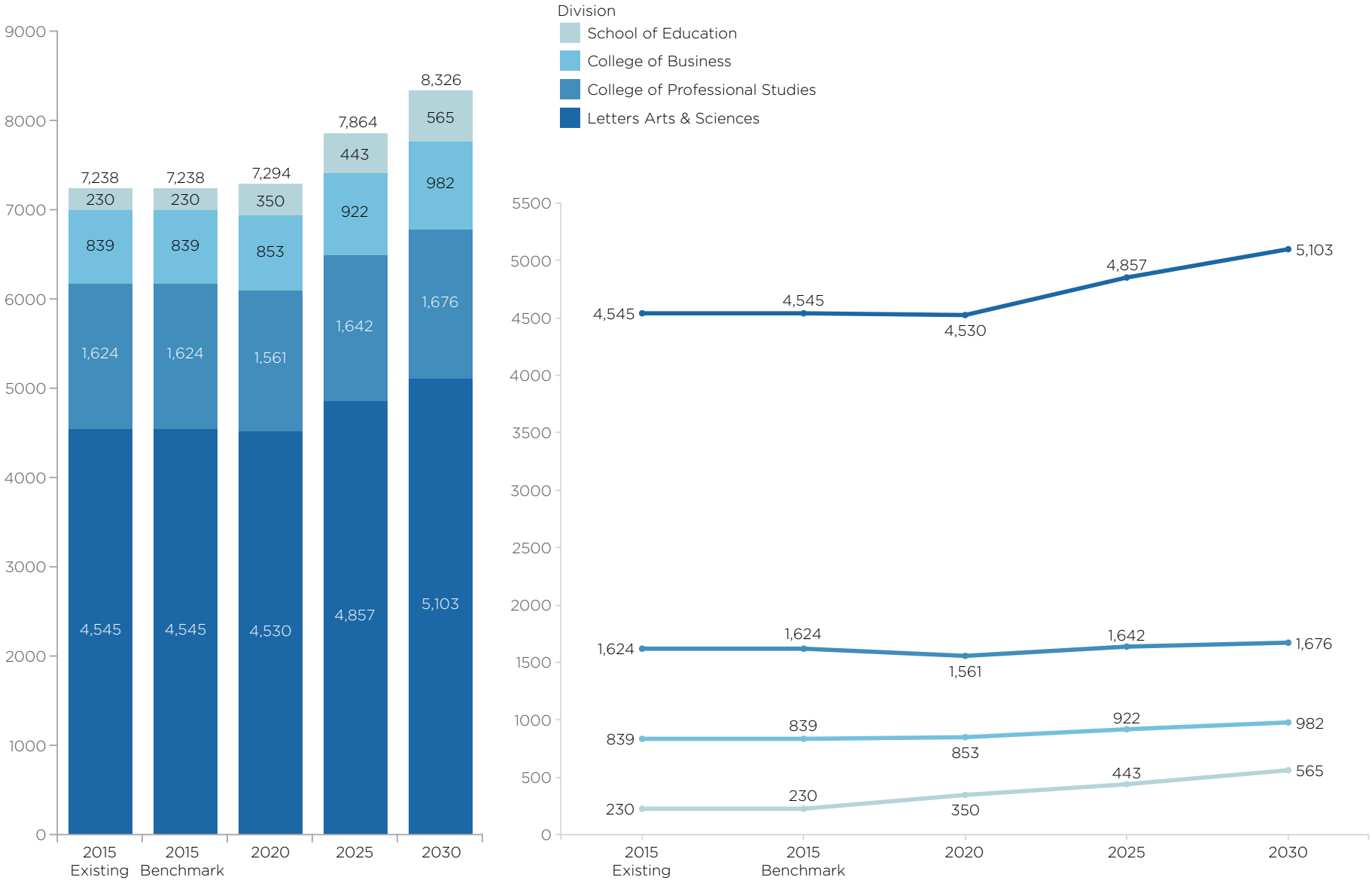
Student FTE Enrollment Projections

DIVISION	2015	2020	2025	2030
Letters, Arts and Sciences	4,545	4,530	4,857	5,103
College of Business	839	853	922	982
School of Education	230	350	443	565
College of Professional Studies	1,624	1,561	1,642	1,676
TOTAL	7,237	7,293	7,864	8,326

The projections indicate a 15% growth in enrollment institution wide between 2015 and 2030

Current student headcount is approximately 20,940

Metropolitan State University of Denver
FTE Enrollment Projections By Division



Staffing Projections

Employee data detailing the number of employees in each department was taken from the IPEDS Human Resources Survey for Fall 2012 provided by MSU Denver. Thus data was updated based on information provided by MSU Denver's division leaders. Employee projections were calculated in two different ways, depending on whether the employees were associated with an academic or an administrative department. For academic departments, a student to faculty ratio was calculated for 2013 and applied to departmental enrollment projections to determine the number of employees in future years, For administrative divisions, staff projections were calculated in three steps. First, a student to administrative staff ratio was calculated (1:0.026). Next, a proportion was calculated determining the relative size of a given administrative department relative to the total number of administrative staff. If, for example, an administrative department consisted of 50 employees, then that staff ratio and the departmental proportion were both applied to future university enrollment figures to determine future staff projections. The following table details the FTE employment projections used for the Neighborhood Master Plan.

FTE Staff and Faculty Projections

Center	2015	2020	2025	2030
Letters Arts & Sciences	700	698	748	786
College of Business	124	126	136	145
School of Education	71	108	137	175
College of Professional Studies	300	288	303	310
President's Office	58	58	62	66
Vice President of Academics and Student Affairs	248	248	267	283
Vice President of Information Technology	70	70	75	80
Vice President of Admin, Finance & Facilities	66	66	71	75
Vice President of Advancement & External Relations	23	23	25	26
Total FTE Staff	1,660	1,685	1,824	1,946

These projections indicate a 17% growth in faculty/staff by 2030

facility and site conditions

The Administration Building requires moderate modifications in order to achieve either of the proposed program options. Each of the options considers the reuse of office space for new office functions, reserving space to be converted to classroom space (a slightly costlier undertaking) for areas where space is more conducive to that conversion and where classroom space is most needed.

Restroom capacities will need to be expanded on the second and third floors in order to accommodate additional building occupants and to meet code requirements. This is described in further detail in the Implementation and Design Criteria section.

Upgrades to the building's student study amenities, which are currently lacking, are proposed within the existing lobby spaces and on various upper floor depending on the proposed scenario. This, too, is described in further detail in the Implementation and Design Criteria section.

Interior finishes such as flooring and drywall need varying degrees of maintenance and repair throughout the building. The option selected and the level of renovation proposed per that option will dictate the level to which such maintenance and repairs are required.

A major consideration for either option will be the mechanical systems, particularly with regard to increased occupancy loads. Phased renovation is possible without disrupting the building's overall mechanical functions.

Classroom and assembly space technology varies throughout the building. Regardless of the option selected, upgrades to the A/V and other instructional and presentation technology are required throughout the building. The existing server room on the fourth floor is sufficient for current and projected uses.

As both scenarios propose security levels that reflect more public areas on the lower floors and more secure areas on the second floors, the building's security systems will need to be upgraded to manage these levels of access control.

A full building conditions assessment is provided in the Appendix.

program requirements and projections

Space Standards

Space standards have been developed through the use of CDHE guidelines, benchmark comparisons to comparable institutions, utilization analysis data, and surveys and interviews with various user groups including faculty, staff, students, and AHEC representatives. Standards used for planning purposes are detailed in the table below. A detailed description of the benchmarking methodology used for this project is included in the Neighborhood Master Plan, published separately. Note: standards have not been proposed for space not included in the Administration building.

Space Type	CDHE Standard	Proposed Standard
OFFICE/SUPPORT SPACE		
President	300	n/a
Vice President	250	n/a
Dean	250	250
Department Chair/Manager	200	180
Faculty	120-160	120
Supervisor	120-160	120
Adjunct Faculty	n/a	60
Professional/Non-Faculty	120-160	120
Technical/Paraprofessional	100-140	100
Clerical/Secretarial	75-140	75
Standard Workstation	n/a	60
Shared Office	n/a	120
Graduate Student	40-80	n/a
Work/Study Employee	n/a	60

Adjunct faculty = 2 individuals per work station
Classrooms under 50 seats = 25 ASF per student
Classrooms over 50 seats = 20 ASF per student
Laboratories and specialized instructional spaces vary based on type
Office circulation = 30% of total ASF for private offices/50% of total ASF for open workstations

Methodology

The development of space needs is a multi-layered analysis that includes considering current space distribution and utilization, and future needs based on projected enrollment, staffing and academic/institutional growth or change. The bulk of the data used to assess existing space conditions was provided by MSU Denver through existing AHEC or Facility Department records and/or specific information relayed to the consultant team by faculty/staff representatives. Data verification took place through in-person building and space tours of those programs being affected by this program plan.

Space need projections were based on two primary sets of data: First, enrollment projections provided by MSU Denver and extrapolated by the consultant team to reflect growth beyond 2020; and second, benchmark data from a variety of sources that provides a means to compare MSU Denver to other institutions and/or national higher education guidelines. In addition, compensation was given to the fact that a tri-institutional campus has a unique distribution of space as a result of sharing common amenities, support space, physical plant etc. This creates some challenges when comparing on an "apples to apples" basis. On the one hand this makes a more efficient campus. Relative to MSU Denver, however, it actually provides some spaces, or more space in certain categories, than would typically be available on a community college campus (e.g. a full recreation center or large library). Overall, guidelines developed are on the conservative side of the available benchmark data to reflect the efficiencies, and recognize the funding challenges of building new space in the higher education economic environment in the state.

The end result is a quantification of space needs for each individual user group. These space needs are defined at relative space category levels for plannig purposes and do not negate the need for future detailed planning of individual spaces as the master plan phases are implemented.

Data Provided

The following data was provided by MSU Denver:

- Room inventory by building and ownership status from AHEC
- Color coded block plans indicating current occupancy by owner from AHEC
- Class scheduling data from the Registrar's office and AHEC for a typical week in the fall semester of 2014
- Historical student enrollment figures from the institutional research office
- Projected student enrollment figures from an independent study conducted by a separate consultant for MSU Denver
- Current staffing numbers from Human Resource records
- Anecdotal surpluses and deficits as communicated by departmental representatives during programming interviews
- Observations of existing conditions during building walk-throughs by the consultant team

It should be noted that the occupancy/ownership data and drawings provided were outdated in some cases. Where possible, RNL modified the data to reflect actual conditions based on available information.

Definitions and Acronyms

Assignable Square Feet (ASF):

In general, space models, standards and guidelines for institutions of higher education analyzed in terms of “assignable square feet (ASF)”. This refers to space that is directly assignable to a particular end user in a building. Typically this does not include primary building corridors, stairwells, elevators, mechanical space, bathrooms, and service spaces such as IT or janitor closets.

For new construction assignable square feet is translated to gross square feet (GSF) as an efficiency ratio, typically where the ASF is 55-70% of the GSF. Where a net square foot (NSF) number is needed for proposed interior remodels, the factor used to convert ASF to NSF is indicated.

Student and Faculty/Staff FTE:

Typically, space needs are based on full-time equivalents (FTE) for both students and employees. This is differentiated from “headcount” which accounts for the total number of people regardless of full time or part time status. For commuter schools that have a substantial number of part-time students and faculty, the difference between headcount and FTE counts can be significant.

Recommendations

Overall, the two proposed alternatives support the Neighborhood Master Plan through the following key means:

- Each plan backfills the Administration Building with the most appropriate long-term occupants (Scenario B more than Scenario A)
- Each plan helps activate the west core of the neighborhood
- Each plan creates office space options to allow student-facing functions to be collocated in a more central location
- Each plan supports the long term Campus Master Plan goals to strengthen the neighborhood identities of the individual institutions on campus

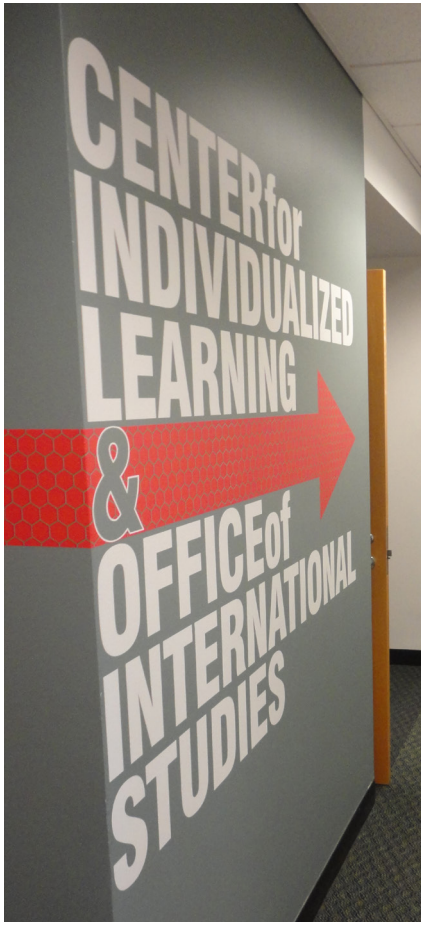
The space needs of each of the programs discussed in the two proposed scenarios are summarized on the following pages.

Nursing currently has the greatest space deficiency, with a need to nearly double their current space. Because of this, finding appropriate space for them in the short-term is critical. From an adjacency standpoint, the Administration Building is not an ideal location for this program in the long-term, however relocating to that building meets their short- and long-term square footage requirements.

The need to consolidate the College of Business office and instructional space, currently spread among 5 buildings throughout campus, is a long -term goal for the University. After considering a variety of options for the best location, including construction of a new building and renovation of space in other existing buildings, it has been determined that the Administration Building is the best location for the College for both practical and strategic reasons. The building requires minimal renovation to accommodate the College, particularly because the faculty offices and several classrooms and labs are already located there. Their offices would not be disrupted by moving classrooms to the building, therefore avoiding an otherwise expensive and time-consuming move. The building's location in the west core of the neighborhood suits the College because of its adjacency to light rail and other campus amenities. As the College's graduate program continues to grow, this location will become even more advantageous. Finally, the building offers branding opportunities for the College.

The Applied Learning Center, Office of International Studies, and Center for Individualized Learning are all student-facing academic functions that would be better suited in a more centralized location on campus. Ideally, non-student facing functions in the Student Success Building would move to the Administration Building to allow these groups to be housed there. While these relocations are not specifically outlined in either of the proposed alternatives, the opportunity to backfill office space with non-student functions has been identified. This could trigger the ability for ALC, OIS, and CIL to relocate to the SSB.

Athletics office space is currently divided between the Tivoli and the Administration Building. It would be ideal to collocate their offices in a location that supports frequent visits from athletic recruits, parents, and prospective student athletes. It would also be advantageous if such a location could serve as a hub for sporting event promotions. Until a Field House becomes available, the Administration Building is an appropriate solution to meet these needs.



The Education Technology Center falls under the operational structure of ITS, but it's primary customer is the faculty. It is heavily used by the Center for Faculty Excellence and would ideally remain in a central location near CFE. However, as space in centralized buildings such as Central and West is better suited for departmental instructional and office space, the recommendation is being made to relocate ETC and possiblY CFE to the Administration building.

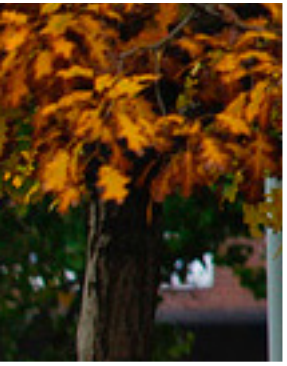
Adding instructional space and student activity functions to the Administration Building contributes to the activation of the west core of the neighborhood. To further enhance this effort, existing lobby and corridor space on the building's first floor should be renovated to better serve student study lounge and collaboration activity. This can be achieved by creating a variety of spaces - both enclosed and open - to house such functions, and would be further enhanced by the presence of the existing food vendor. A graduate student hub may also be appropriate in this location.

Appropriate occupants to backfill the Administration Building were determined through investigation of several metrics:

- comparison of current and projected space needs to available square footage in the building
- alignment of placement in the building with short- and long-term institutional goals - particularly those related to consolidating academic departments and to centralizing student-facing administrative functions
- phased sequencing of individual moves in order to minimize the need for temporary staging space such that department could be relocated once only if possible
- reuse of existing space type to minimize renovation costs; i.e. office space reused as office space and instructional space reused as instructional space

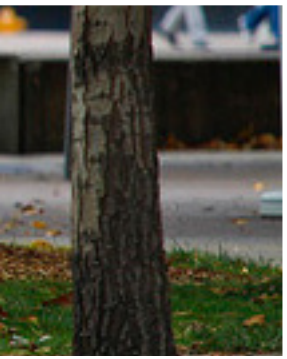
Detailed program requirements are provided in the Appendix.

METROPOLITAN
STATE UNIVERSITY[SM]
OF DENVER










MPLEMENTATION and DESIGN CRITERIA

alternatives analysis and recommendations

Through workshops conducted with steering committee members, faculty, staff, and AHEC representatives, project goals were identified and prioritized. These goals and priorities are outlined in detail in the Justification section. The proposed solutions for the Administration Building address these identified project goals, as described in the following pages.

Two distinct options are offered for the Administration Building. Both options concentrate classrooms and areas with high public access needs on the first and second floors, while offices and secure areas remain and the third, fourth, and fifth floors. Scenario A includes some Nursing instructional space on the third floor, as well.

Both scenarios also provide space on level 1 in the existing lobby for much needed student study lounge and collaboration space.

Scenario A consolidates all of Nursing in one building and consolidates most of the instructional space needed for the College of Business with its faculty offices, already located in the building. This scenario requires significant stair modifications to meet egress requirements.

Scenario B consolidates 20 of 23 of the College of Business classrooms in the building with their existing faculty offices. It allows the ETC to be collocated with the rest of ITS on the fourth floor and allows Athletics to be consolidated on the second floor in a publicly-accessible location. Additional office space on levels 2 and 3 is available for a variety of groups currently housed in dispersed locations throughout campus. This scenario requires no stair modifications as it takes advantage of existing conditions to meet egress requirements.

Both scenarios take into consideration the locations of existing walls in order to maximize efficiency and reduce renovation costs.

Scenario A

This option accommodates 9 additional classrooms on the first floor for the College of Business, for a total of 14 first floor classrooms.

Nursing instructional space is located on the second floor in space that is primarily office space currently. Remaining on the second floor are the existing MSU Denver general use computer lab and 5 existing College of Business classrooms and labs. Restroom expansion space is included to meet increased fixture count requirements on this floor. Initial code reviews indicate that the existing egress stairs do not accommodate the increased egress loads created by the additional instructional spaces. The open stair in the lobby will need to be enclosed and fire rated OR an additional fire rated stair will need to be constructed between the first and second floors.

Veterans Upward Bound will temporarily occupy office space on this floor, as will a small CU Denver department. Once these groups vacate, the office space will become available for MSU Denver administrative uses such as departments currently housed in the modular buildings or non-student facing functions in the SSB.

The Nursing simulation suite and faculty offices are located on the third floor. Remaining on this floor are the existing offices for International Studies, the Applied Learning Center, and Individualized Studies. Restroom expansion space is included to meet increased fixture count requirements on this floor.

The fourth floor remains occupied by ITS and a portion of Athletics.

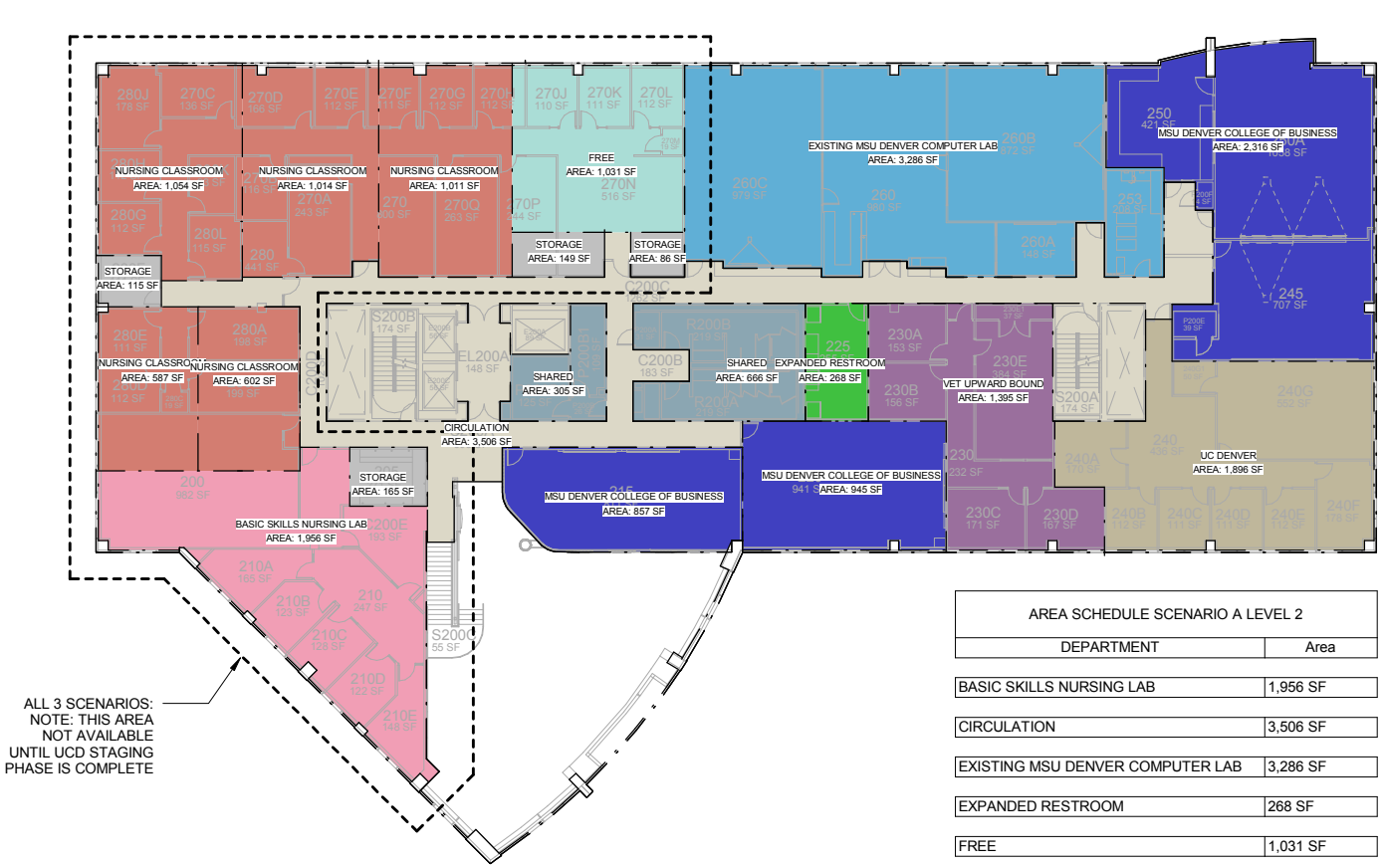
The fifth floor remains as office space for College of Business faculty. As the faculty grow in the long term, sections such as advising and College of Business Career Services could relocate to office areas on levels two and three to accommodate this growth.

This scenario addresses the Project Goals as described below:

- Goal #1 - improved lobby and exterior plaza spaces, additional study spaces
- Goal #2 - office and classroom/lab deficits addressed, backfill of vacated space, space deficiencies addressed, benchmark targets utilized, building control under MSU Denver
- Goal #3 - College of Business partially consolidated
- Goal #4 - Ease of access and wayfinding improved for Nursing and College of Business, west end of Neighborhood activated
- Goal #5 - improved feeling of safety through increased activity
- Goal #6 - Gateway condition improved

The diagrams on the following pages illustrate Scenario A.

LEVEL 1 - SCENARIO A



ALL 3 SCENARIOS:
NOTE: THIS AREA
NOT AVAILABLE
UNTIL UCD STAGING
PHASE IS COMPLETE

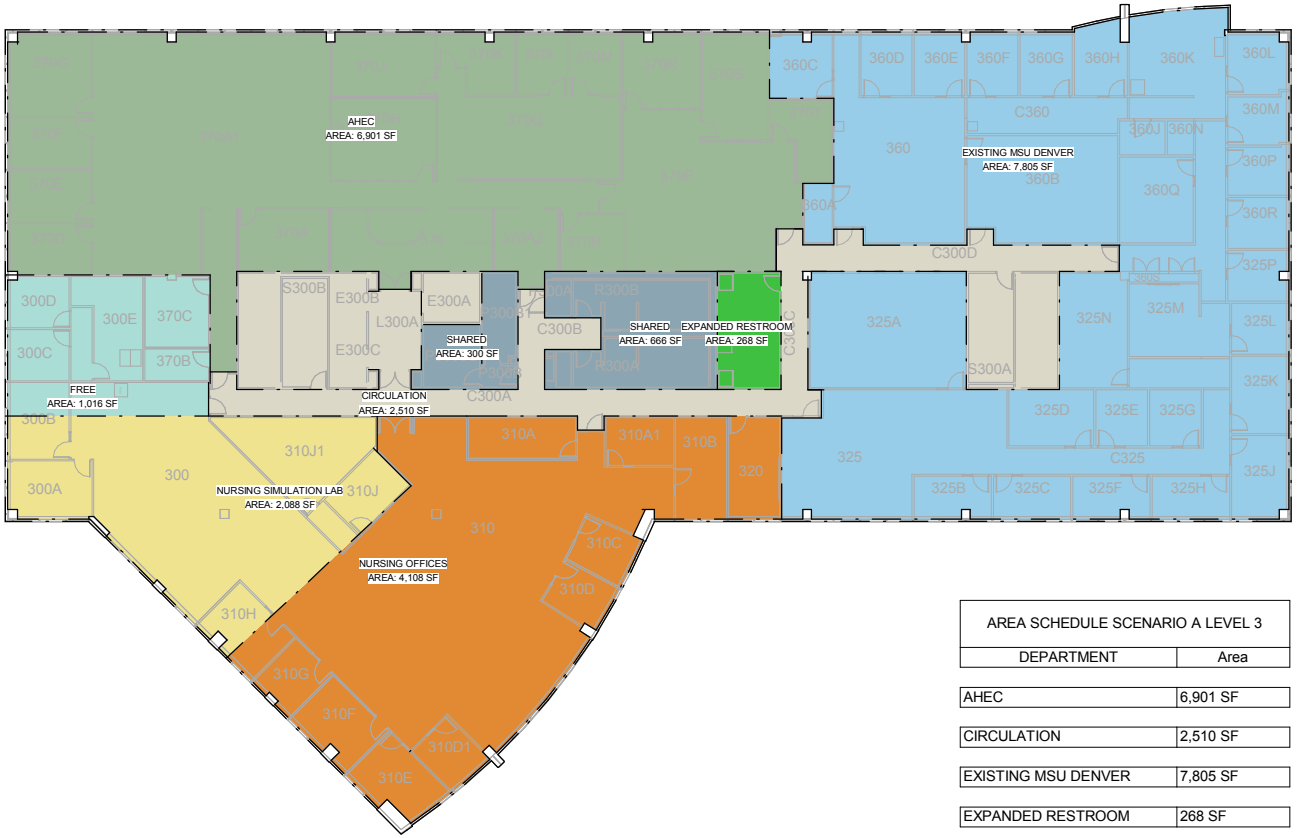
SCENARIO A
DEPARTMENTS

- BASIC SKILLS NURSING LAB
- CIRCULATION
- EXISTING MSU DENVER COMPUTER LAB
- EXPANDED RESTROOM
- FREE
- MSU DENVER COLLEGE OF BUSINESS
- NURSING CLASSROOM
- SHARED
- STORAGE
- UC DENVER
- VET UPWARD BOUND

AREA SCHEDULE SCENARIO A LEVEL 2

DEPARTMENT	Area
BASIC SKILLS NURSING LAB	1,956 SF
CIRCULATION	3,506 SF
EXISTING MSU DENVER COMPUTER LAB	3,286 SF
EXPANDED RESTROOM	268 SF
FREE	1,031 SF
MSU DENVER COLLEGE OF BUSINESS	4,118 SF
NURSING CLASSROOM	4,268 SF
SHARED	970 SF
STORAGE	515 SF
UC DENVER	1,896 SF
VET UPWARD BOUND	1,395 SF
Grand total: 21	23,210 SF

LEVEL 2 - SCENARIO A



SCENARIO A DEPARTMENTS

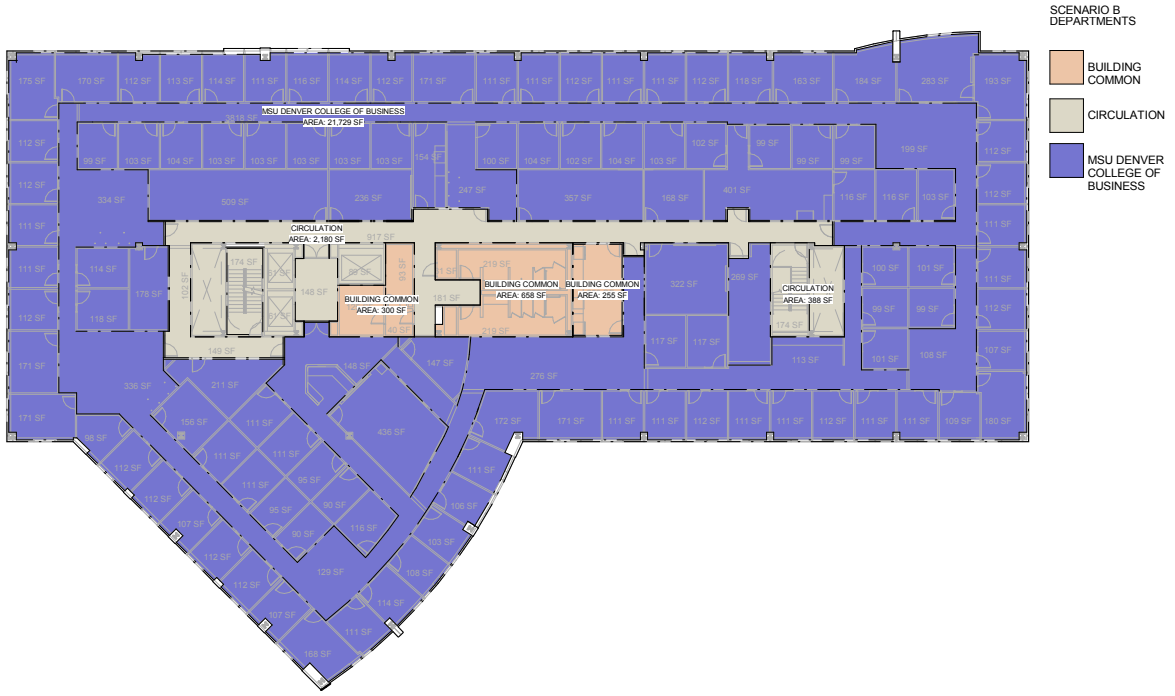
- AHEC
- CIRCULATION
- EXISTING MSU DENVER
- EXPANDED RESTROOM
- FREE
- NURSING OFFICES
- NURSING SIMULATION LAB
- SHARED

AREA SCHEDULE SCENARIO A LEVEL 3

DEPARTMENT	Area
AHEC	6,901 SF
CIRCULATION	2,510 SF
EXISTING MSU DENVER	7,805 SF
EXPANDED RESTROOM	268 SF
FREE	1,016 SF
NURSING OFFICES	4,108 SF
NURSING SIMULATION LAB	2,088 SF
SHARED	965 SF
Grand total: 9	25,661 SF

LEVEL 3 - SCENARIO A

LEVEL 4 - SCENARIO A



LEVEL 5 - SCENARIO A

Scenario B

This option accommodates 9 additional classrooms on the first floor and 1 additional classroom on the second floor for the College of Business. Combined with the remaining 10 classrooms housed on levels 1 and 2, this accommodates nearly all of the current classroom needs for the College of Business, thereby consolidating almost all of their space in a single location on campus. 3 additional classrooms would be needed within the building to fully consolidate. Remaining space on the second floor is office space, occupied primarily by Athletics. This allows all of their offices to be consolidated from both the current fourth floor location as well as the Tivoli, and provides better public access for student athletes to use academic support services and for recruiting.

Veterans Upward Bound will temporarily occupy office space on this floor, as will a small CU Denver department. Once these groups vacate, the office space will become available for MSU Denver administrative uses such as departments currently housed in the modular buildings or non-student facing functions in the SSB.

The third floor remains primarily office space, with some flexibility as to what user groups can be placed there. Remaining on this floor are the existing offices for International Studies, the Applied Learning Center, and Individualized Studies. Restroom expansion space is included to meet increased fixture count requirements on this floor.

The fourth floor is occupied entirely by ITS, including the ETC, which is relocated to the space currently occupied by athletics.

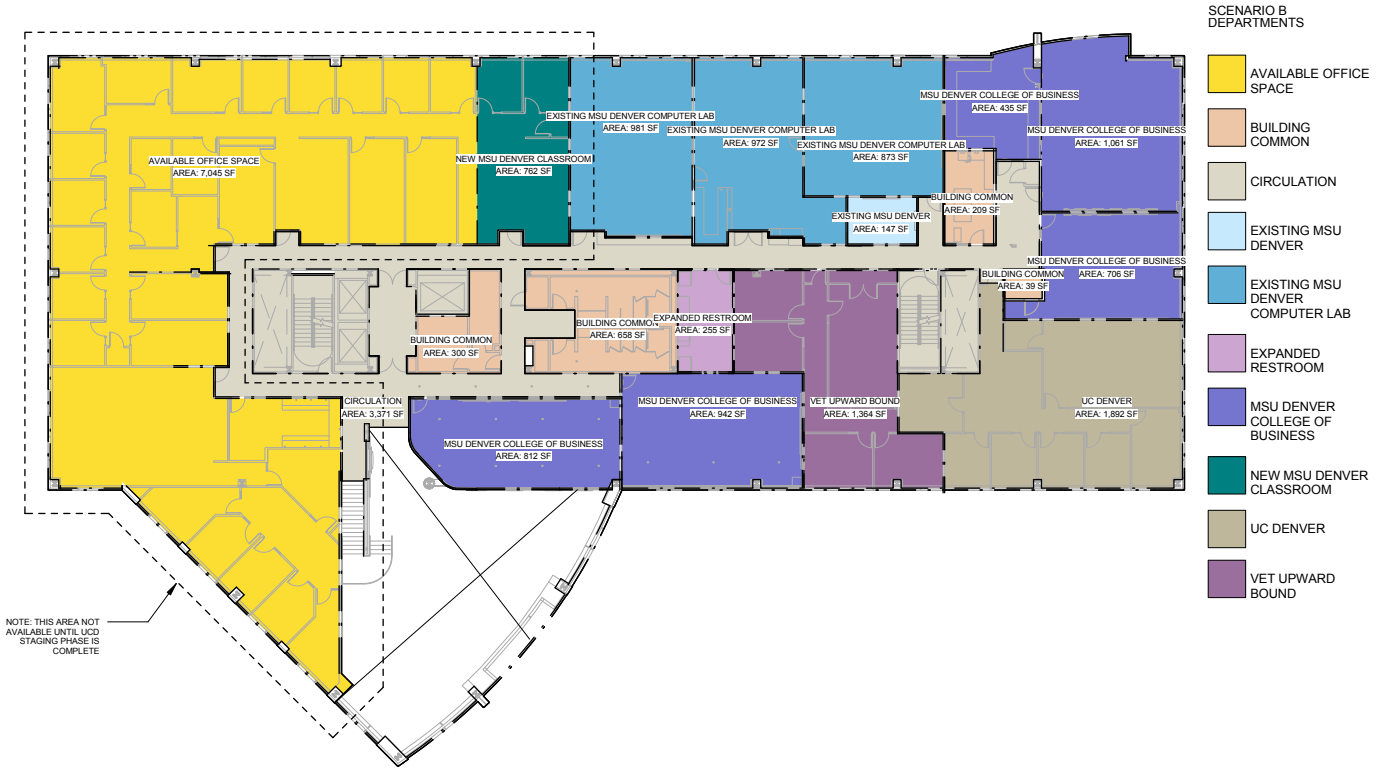
The fifth floor remains as office space for College of Business faculty. As the faculty grow in the long term, sections such as advising and College of Business Career Services could relocate to office areas on levels two and three to accommodate this growth.

This scenario addresses the Project Goals as described below:

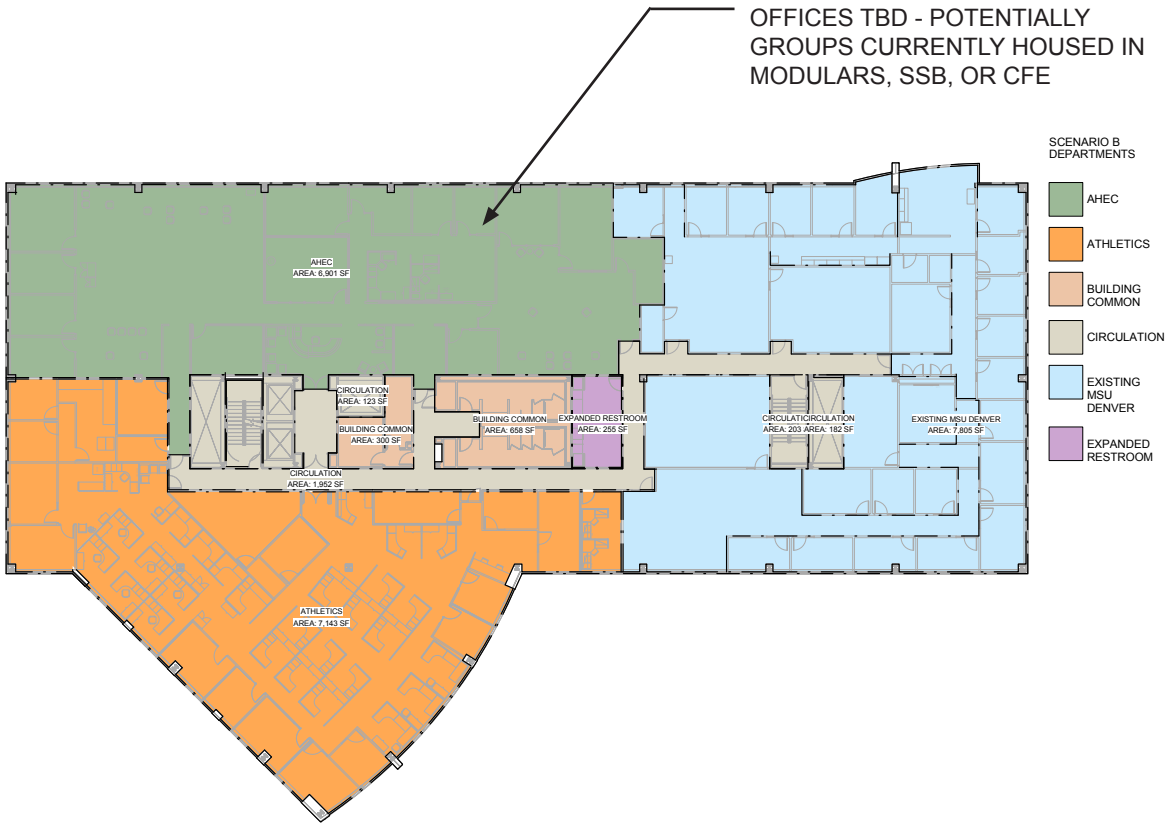
- Goal #1 - improved lobby and exterior plaza spaces, additional study spaces, potential for grad school friendly environment created through consolidated College of Business functions
- Goal #2 - office and classroom/lab deficits addressed, backfill of vacated space, space deficiencies addressed, growth space identified, benchmark targets utilized, building control under MSU Denver
- Goal #3 - College of Business consolidated (moreso than in Scenario A)
- Goal #4 - Ease of access and wayfinding improved for College of Business and Athletics, west end of Neighborhood activated
- Goal #5 - improved feeling of safety through increased activity
- Goal #6 - Gateway condition improved

The diagrams on the following pages illustrate Scenario B.

LEVEL 1 - SCENARIO B

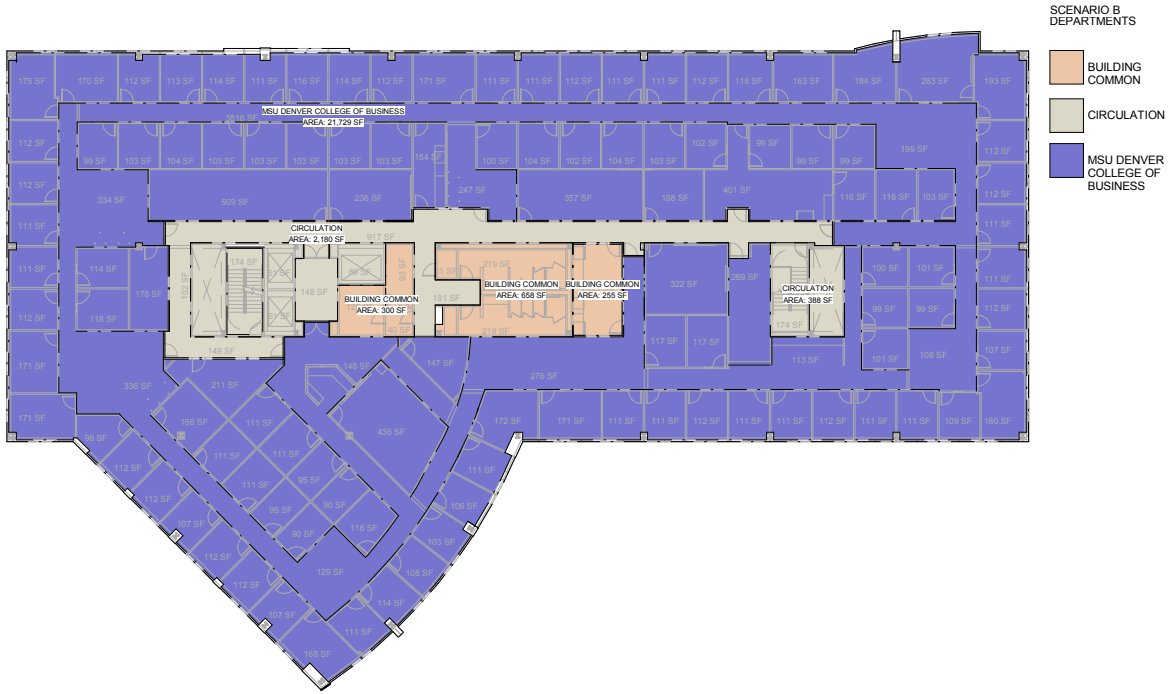


LEVEL 2 - SCENARIO B



LEVEL 3 - SCENARIO B

LEVEL 4 - SCENARIO B



LEVEL 5 - SCENARIO B

design requirements

Through the design of its most recent buildings (including the Student Success Building, HLC, and the forthcoming Aerospace Engineering Sciences building), MSU Denver has begun to establish a design language and identity that should be analyzed and distilled in order to provide guidance for future building designs, including the renovations to the Administration Building. Though MSU Denver currently does not have their own set of design standards and guidelines, the starting point of such standards can be taken from the design elements of the institution's existing buildings. A set of standards and guidelines should be considered. These guidelines should provide direction on growing and bolstering MSUD's emerging design language in order to create an environment that is attractive and inviting and instantly identifiable as part of the MSU Denver campus. These guidelines should be compatible and complementary with Auraria Campus's existing guidelines while maintaining the flexibility to allow for creative uses of the emerging design language.

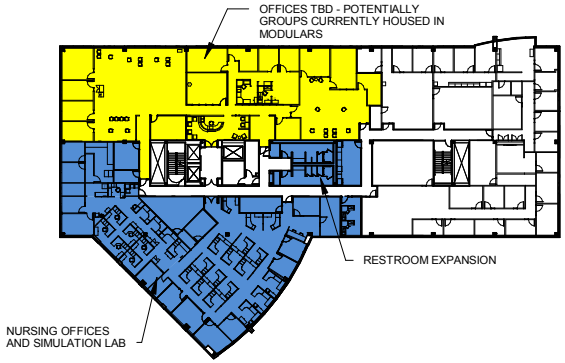
project schedule, cost estimate, and financial analysis

Budget approval is presumed for the following estimates, which apply to both proposed scenarios. A standard Construction Manager/ General Contractor (CM/GC) project delivery method has been assumed for scheduling and pricing purposes. Following design and construction for the initial phase, move-in date is expected to be in the fall of 2018 through the spring of 2019. Anticipated milestones are as follows:

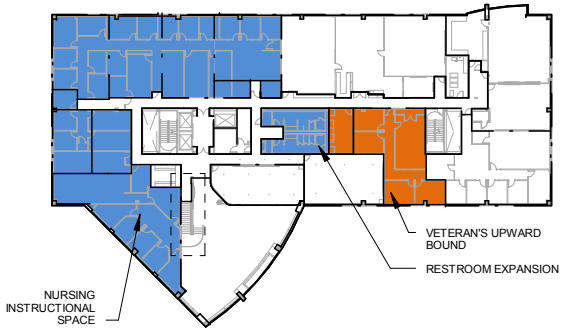
Design start - fall 2016
Construction start - beginning of 2018
Occupancy - fall 2018 and spring 2019

The total estimated project cost is $11,421,584 for Scenario A and $10,413,706 for Scenario B, and assumes an average rate of construction inflation of 5% per year. A 10% project contingency is assumed within the budget. A detailed cost breakdown is included in the appendix.

Phasing diagrams are provided on the following pages.



LEVEL 3



LEVEL 2

LEVEL 1

SCENARIO A
PHASE LEGEND

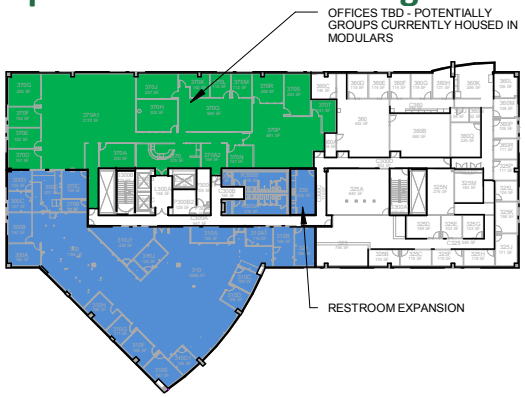
- PHASE 0 -SHORT TERM
- PHASE B - SHORT TERM
- PHASE E - LONG TERM
- PHASE J - LONG TERM

SEE PHASING DIAGRAM ON PAGE 53 FOR FULL PHASING

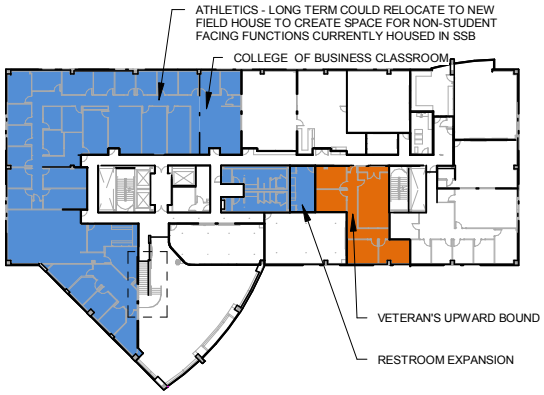
LEVEL 5

LEVEL 4

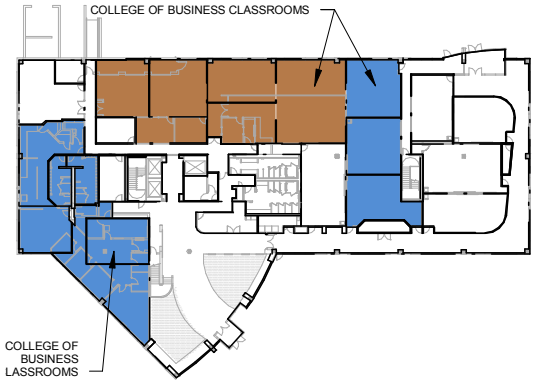
implementation and design criteria



LEVEL 3



LEVEL 2

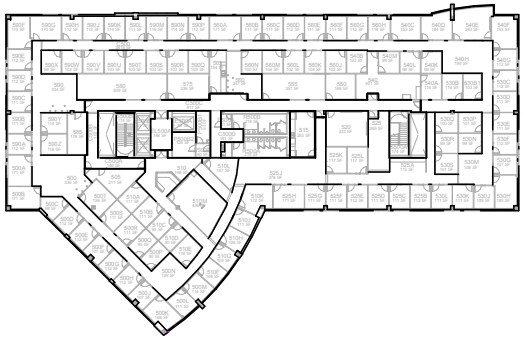


LEVEL 1

SCENARIO B
PHASE LEGEND

- PHASE 0 -SHORT TERM
- PHASE B - SHORT TERM
- PHASE E - LONG TERM
- PHASE J - LONG TERM

SEE PHASING DIAGRAM ON PAGE 54 FOR FULL PHASING

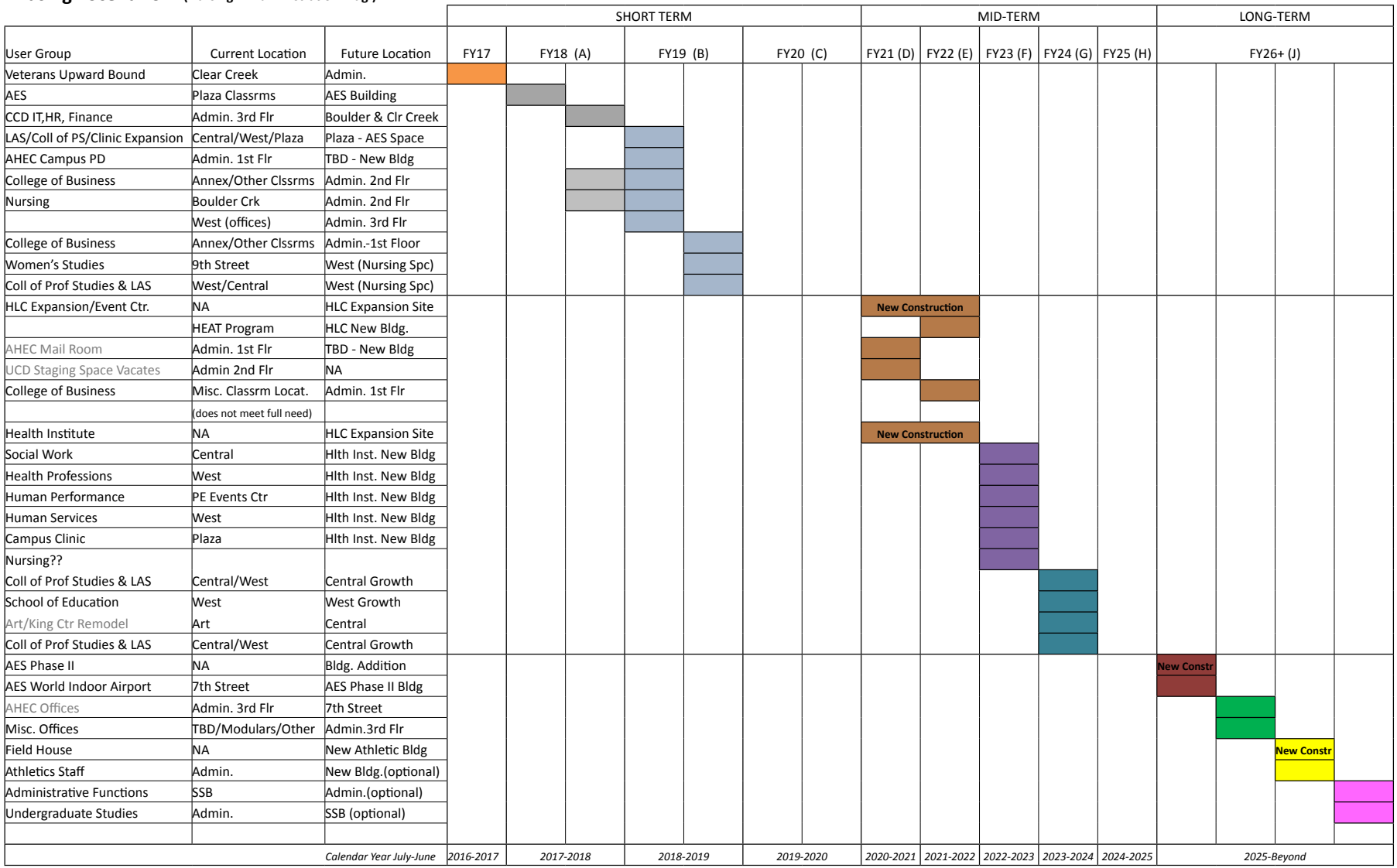


LEVEL 5

LEVEL 4

MSU Denver

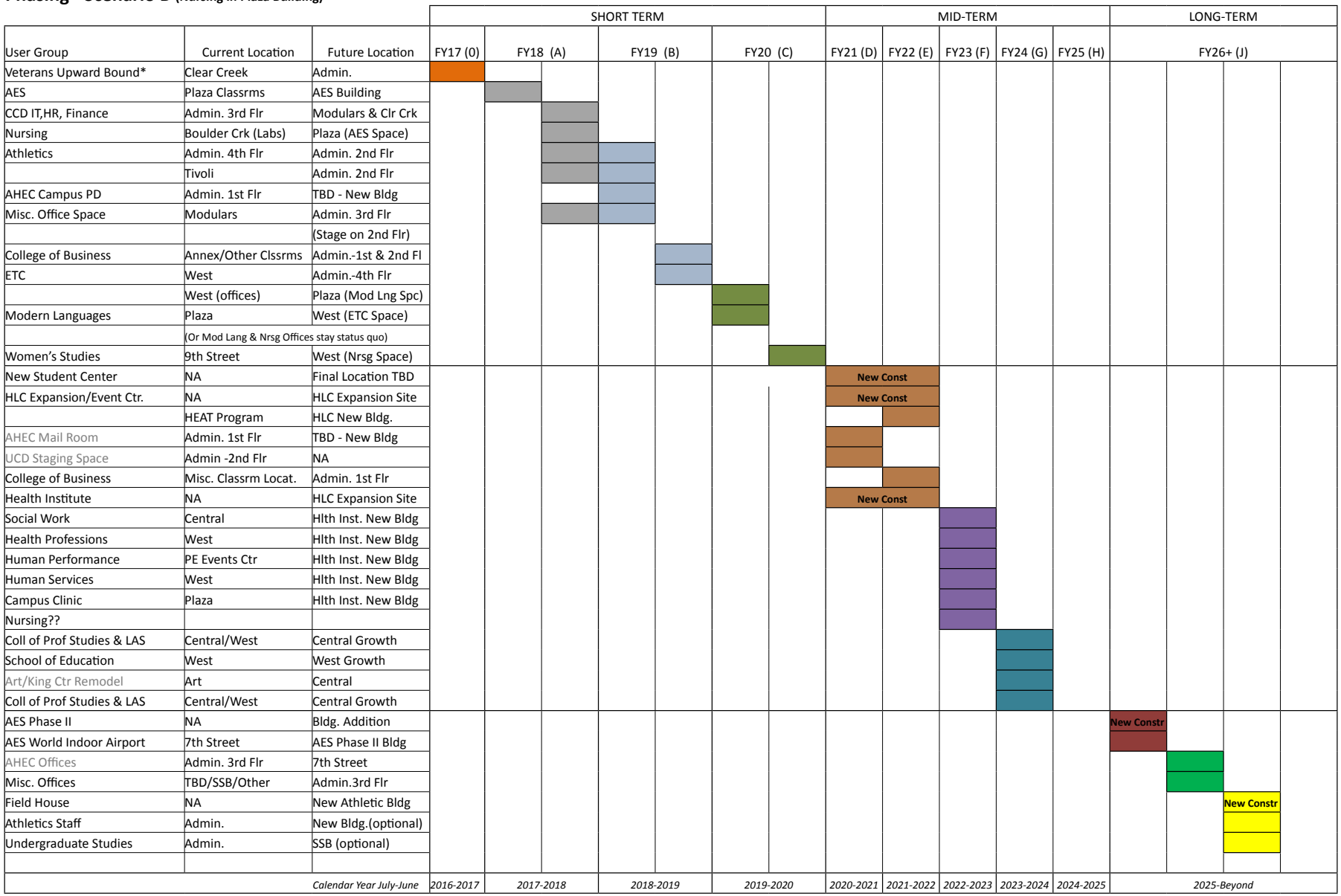
Phasing - Scenario A (Nursing in Administration Bldg.)



implementation and design criteria

MSU Denver

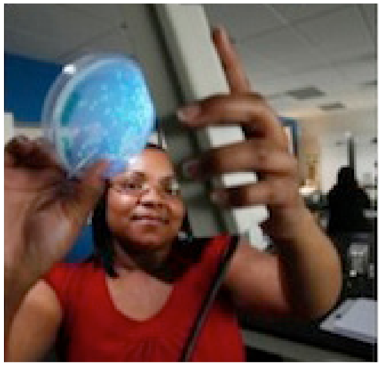
Phasing - Scenario B (Nursing in Plaza Building)

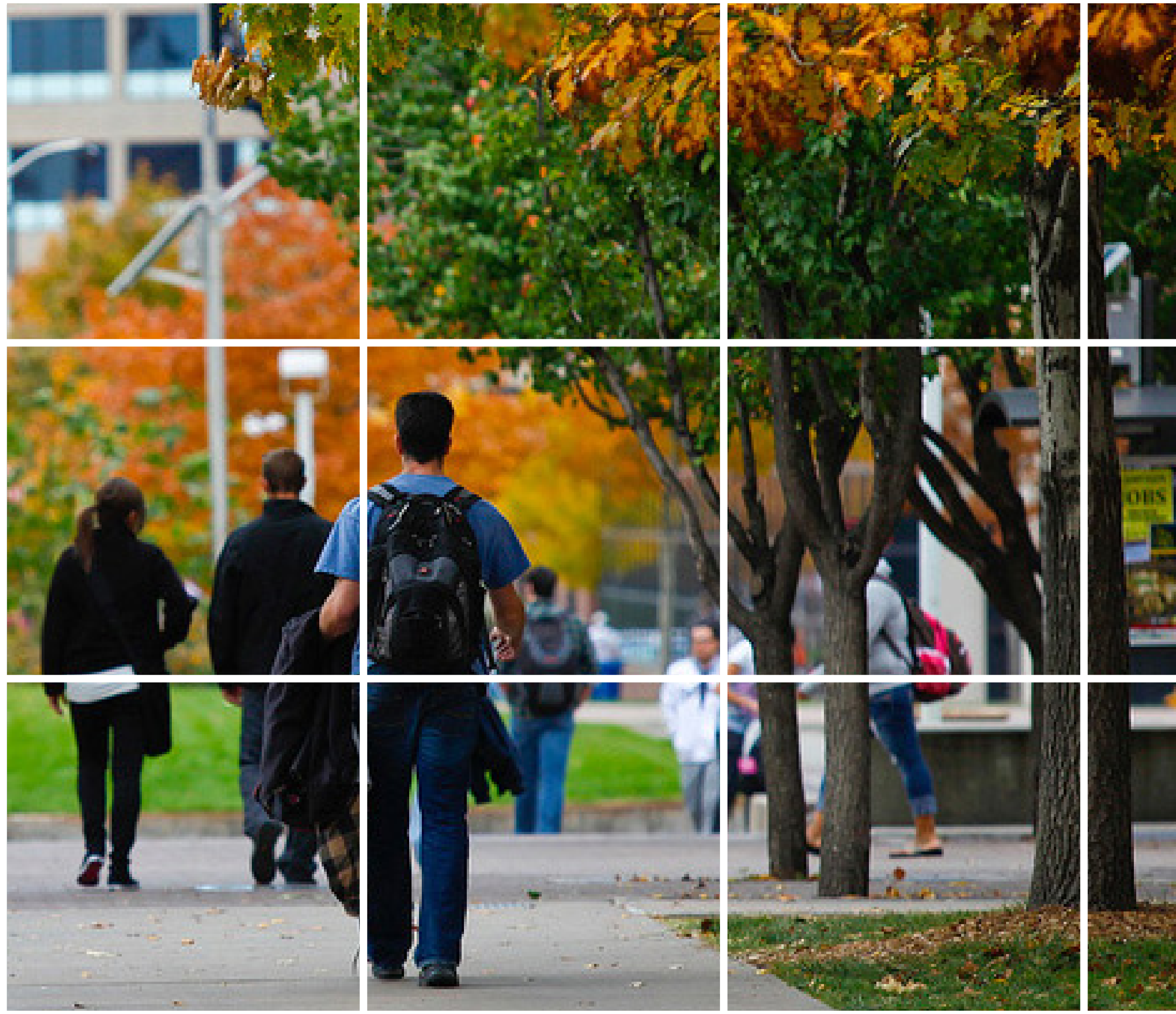


			SHORT TERM				MID-TERM					LONG-TERM
User Group	Current Location	Future Location	FY17 (0)	FY18 (A)	FY19 (B)	FY20 (C)	FY21 (D)	FY22 (E)	FY23 (F)	FY24 (G)	FY25 (H)	FY26+ (J)
Veterans Upward Bound*	Clear Creek	Admin.										
AES	Plaza Classrms	AES Building										
CCD IT,HR, Finance	Admin. 3rd Flr	Modulars & Clr Crk										
Nursing	Boulder Crk (Labs)	Plaza (AES Space)										
Athletics	Admin. 4th Flr	Admin. 2nd Flr										
	Tivoli	Admin. 2nd Flr										
AHEC Campus PD	Admin. 1st Flr	TBD - New Bldg										
Misc. Office Space	Modulars	Admin. 3rd Flr										
		(Stage on 2nd Flr)										
College of Business	Annex/Other Clssrms	Admin.-1st & 2nd Fl										
ETC	West	Admin.-4th Flr										
	West (offices)	Plaza (Mod Lng Spc)										
Modern Languages	Plaza	West (ETC Space)										
	(Or Mod Lang & Nrsg Offices stay status quo)											
Women's Studies	9th Street	West (Nrsg Space)										
New Student Center	NA	Final Location TBD					New Const					
HLC Expansion/Event Ctr.	NA	HLC Expansion Site					New Const					
	HEAT Program	HLC New Bldg.										
AHEC Mail Room	Admin. 1st Flr	TBD - New Bldg										
UCD Staging Space	Admin -2nd Flr	NA										
College of Business	Misc. Classrm Locat.	Admin. 1st Flr										
Health Institute	NA	HLC Expansion Site					New Const					
Social Work	Central	Hlth Inst. New Bldg										
Health Professions	West	Hlth Inst. New Bldg										
Human Performance	PE Events Ctr	Hlth Inst. New Bldg										
Human Services	West	Hlth Inst. New Bldg										
Campus Clinic	Plaza	Hlth Inst. New Bldg										
Nursing??												
Coll of Prof Studies & LAS	Central/West	Central Growth										
School of Education	West	West Growth										
Art/King Ctr Remodel	Art	Central										
Coll of Prof Studies & LAS	Central/West	Central Growth										
AES Phase II	NA	Bldg. Addition										New Constr
AES World Indoor Airport	7th Street	AES Phase II Bldg										
AHEC Offices	Admin. 3rd Flr	7th Street										
Misc. Offices	TBD/SSB/Other	Admin.3rd Flr										
Field House	NA	New Athletic Bldg										New Constr
Athletics Staff	Admin.	New Bldg.(optional)										
Undergraduate Studies	Admin.	SSB (optional)										
		Calendar Year July-June	*2016-2017*	*2017-2018*	*2018-2019*	*2019-2020*	*2020-2021*	*2021-2022*	*2022-2023*	*2023-2024*	*2024-2025*	*2025-Beyond*

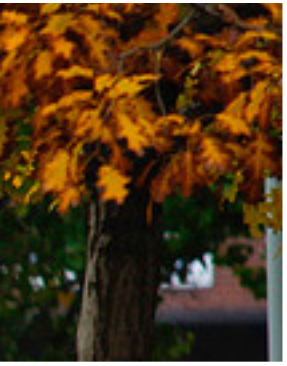
**NOTE: Veterans Upward Bound may be relocated to the vacated Tivoli Athletics Suite, allowing additional Coll. Of Business Classrooms to be created.*

page intentionally left blank



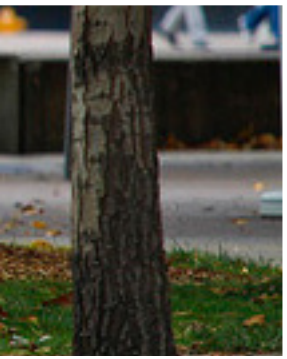


METROPOLITAN
STATE UNIVERSITY℠
OF DENVER








APPENDIX

detailed conditions assessment - architecture

This section describes the current physical condition of the Administration Building, including the interior and exterior finishes, the mechanical and electrical systems, and the building technology.

Recommendations to address concerns, if any, are provided following the description of each item.

Signage:

Building and wayfinding signage are inadequate.

Recommendations – Install new building and directional signage.

Accessibility:

The handrail at the monumental stair between Level 1 and Level 2 is too wide (1 ¾" in diameter). Classroom 220 does not meet exiting requirements. Storage Room 230E is not sprinklered and contains non-fire-treated wafer board shelving.

Recommendations – Replace the handrail with a rail that meets regulations. Provide an additional exit from Classroom 220 or limit the room's occupancy. If Storage Room 230E is to continue to be used for storage, sprinklers should be added or fire-rated shelving should be provided.

Finishes:

- Drywall – Most of the drywall is in fair to good shape, needing only patching and paint in areas targeted for renovation
- *Recommendations – Patch and paint drywall in areas targeted for renovation*
- Wall Base – Sections of resilient base are loose or missing in some areas.
- *Recommendations – Repair resilient base. Any new base should be installed in the longest practical sections to minimize seams*.
- Flooring – Broadloom carpet in many areas of the building is torn, worn, stained, stretched, and/or peeling from the floor, creating tripping hazards. Composite tile in most areas is in good condition, however there are some cracked and missing areas in the back-of-house on Level 1. The terrazzo in the lobby is cracked in several areas.
- *Recommendations – remove and replace carpet that is torn or unglued. Replace composite tile on an as-needed basis. Repair lobby terrazzo.*
- Ceiling Tile – Ceiling tile in most areas is in good condition, however there are some

areas of damage in the back-of-house on Level 1.

- *Recommendations – Replace ceiling tiles on an as-needed basis.*
- General note: several areas, including but not limited to the AHEC office suite on the 3rd Floor and the School of Business faculty suites on the 5th Floor, have relatively new finishes in good condition and require little to no modifications.

Mechanical Equipment:

Refer to page 39 for mechanical equipment assessment.

Facility personnel noted that pipes in the Mail and Storage Room 180 have frozen and burst due to poor exterior insulation in the room.

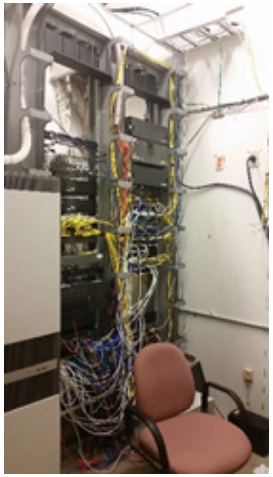
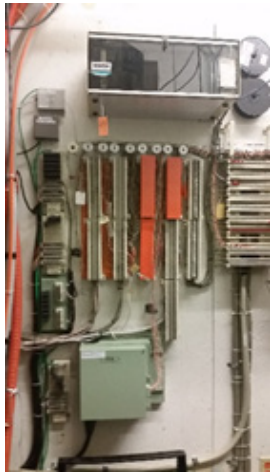
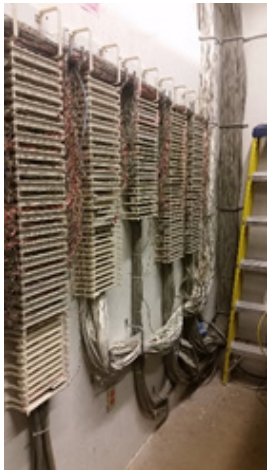
Employees in office areas on level 3 noted temperature control issues.

Recommendations – insulate exterior walls and water pipes throughout the building. Address temperature control issues throughout the building.

detailed conditions assessment - technology

This section provides an overview of the technology systems assessed. Because 'technology' is such a broad term, for the purposes of this document the term 'technology' will be used to collectively refer to the systems below:

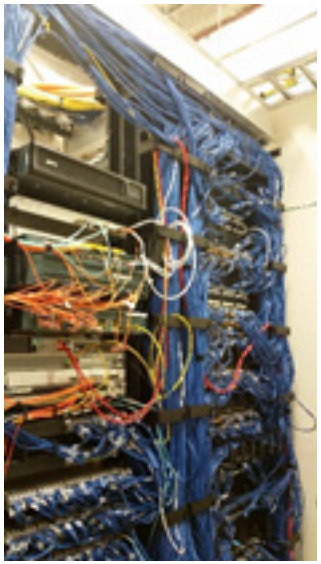
- Communications Infrastructure
- Audiovisual Systems
- Security Systems
- Other Low Voltage
- Networks
- Electrical Infrastructure

Telecommunications Entrance Facility (TEF):

P100E2. The existing TEF is located on the 1st floor, centrally, in a room measuring approximately 10'-6" x 11'-9" with gypsum board and metal stud walls and a door that opens into the room. Two walls have plywood backer board that is painted. The Outside Plant (OSP) cabling, both copper and fiber come into the building here via (6) underground conduits and connect the Local Area Network within the building to the Campus Network and Telephone service provider. An Avaya telephone system is mounted in the center of the room at the end of the network racks. There is an USWest (CenturyLink) panel on the wall with the phone field and punch blocks with copper cabling to telephones throughout. Cables are bundled and dressed carefully attached with D-Rings to the wall. Altronix, Ilco and Porta panels are also mounted on the walls. There is a Bogen unit mounted on a small shelf on one of the walls too. There are two computer towers located on the floor in one corner of the room.

This room also serves as a Telecommunications Room (TR) / Intermediate Distribution Frame (IDF) for the first floor. The network switches are mounted in the center of the room in a row of two 2-post equipment racks. There are vertical cable managers between each rack and ladder rack runs overhead above the racks from wall to wall and another section runs perpendicular wall-to-wall to form a Tee. There are four conduit sleeves in the floor above by which backbone and other cabling connect the TEF to the MDF and other IDFs; three are full, but the fourth still has some room. An HVAC unit is suspended overhead which provides cooling to the room. Fire sprinklers were observed in the room. A telecommunications grounding system was observed too.
Recommendations – A card reader should be added to record access.



Main Distribution Frame (MDF):

P400D2. The existing MDF is located on the 4th floor, centrally, in a room measuring approximately 10'-6" x 11'-9" with gypsum board and metal stud walls and a door that opens into the room. Two walls have plywood backer board that is painted. The phone field is mounted on one wall with punch blocks and copper cabling to telephones serving this floor. Cables are bundled and dressed carefully attached with D-Rings to the wall. The fiber and copper network switches are mounted in a row of three 2-post equipment racks. There are vertical cable managers between each rack and ladder rack runs overhead above the racks from wall to wall and another section runs perpendicular wall-to-wall to form a Tee. There are three conduit sleeves in the floor above and four in the floor by which backbone and other cabling connect to the IDFs above and below; all are full, but there is still one conduit sleeve above and below which has some room. The network and cabling systems have maxed out the capacity of the room. HVAC ductwork and transfer grille provide ventilation to the room. Fire sprinklers were observed in the room. A telecommunications grounding system was observed too.

Recommendations – An addition 2-post rack with vertical cable managers should be provided to support any future equipment, but it will not fit in the center of the room; perhaps it can be mounted perpendicular to the wall immediately to the right of the door as you enter the room. A card reader should be added to record access.

Telecommunications Rooms (TRs) / Intermediate Distribution Frames (IDFs):

P200B2, P300D2, P500D2. In addition to the TEF and MDF there are three existing TRs/ IDFs measuring approximately 10'-6" x 11'-9" stacked vertically one on top of the other in line with the TEF and MDF. The walls are gypsum board with metal stud. There is a single door that opens into the room. Two walls have plywood backer board that is painted. Fiber backbone cabling connects the TRs/IDFs to the MDF via the cable riser that passes through the conduit sleeves in the floors above and below. Each TR/IDF has a small phone field mounted on the wall with punch blocks and copper cabling to telephones serving the floor the TR/IDF is located on. Cables are bundled and dressed carefully attached with D-Rings.

The network switches are mounted in a row of three 2-post equipment racks. There are vertical cable managers between each rack and ladder rack runs overhead above the racks from wall to wall and another section runs perpendicular wall-to-wall to form a Tee. With the exception of P500D2 on the 5th floor, there are four conduit sleeves in the floor above by which backbone and other cabling connect to the MDF; all are full, but there is still one conduit sleeve above and below which has some room. HVAC ductwork and transfer grille provide ventilation to the room. Fire sprinklers were observed in the room. A telecommunications grounding system was observed too.

In P200B2 there is an additional 4-post rack in a corner of the room with Nortel Junglemux equipment. In P300D2 there are two additional panels mounted on the wall; one is a Honeywell Intrusion Detection system that appears to serve suite 325; the other is an Avaya Merlin Magix phone system.

Recommendations – A card reader should be added to each TR/IDF to record access. If the reconfiguration of the spaces on the floor adds more workstations, then an additional 2-post equipment rack and vertical cable manager may be required to support the additional owner provided network electronics.

Computer Equipment Room (ER):

480A. In addition to the TEF, MDF and TRs/ IDFs there is an ER located on the 4th floor that serves as a Data Center for Metropolitan State University Denver which some of the other buildings on Campus connect to for redundancy. There is a Cold-Aisle containment system where the main servers are located within cabinets. Fiber backbone cabling connects this ER to the MDF. There are no phone field or punch-down blocks. Overhead ladder rack is provided for cable management. A raised floor air distribution system is part of the HVAC system.

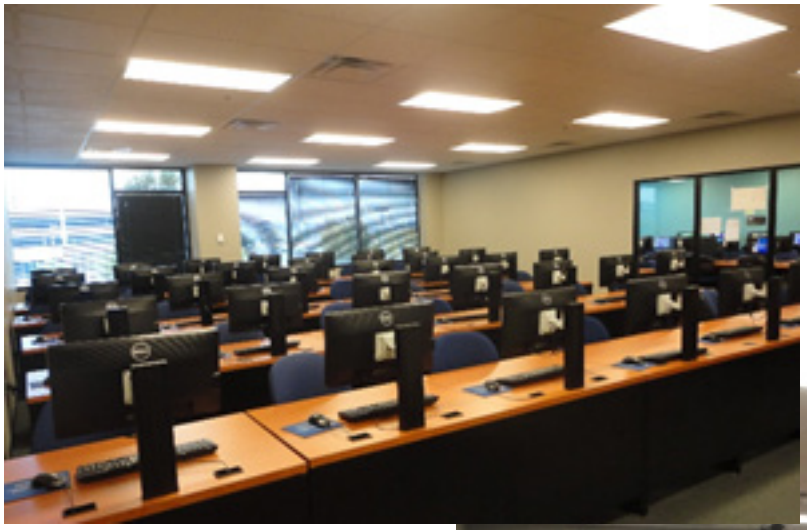
Recommendations – None.

Computer Equipment Room (ER):

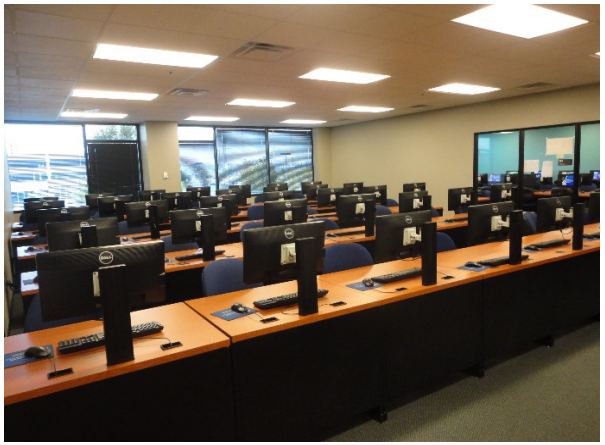
253. In addition to the ER on the 4th floor there is another ER located on the 2nd floor that has additional server equipment for Auraria Higher Education Campus (AHEC). There are three 4-post equipment racks and one 2-post with vertical cable managers and overhead ladder rack. There are no phone field or punch-down blocks. A telecommunications grounding system was not observed. A dedicated HVAC ventilation system is provided within the room.




Computer Labs:



260, 260B, 260C. The power and data is cleanly distributed to each workstation through the furniture and no cabling is observed. Wall mounted, manual, 3x4 format, projection screens are combined with ceiling mounted projectors. A pair of wall or ceiling mounted speakers are used to reinforce sound.

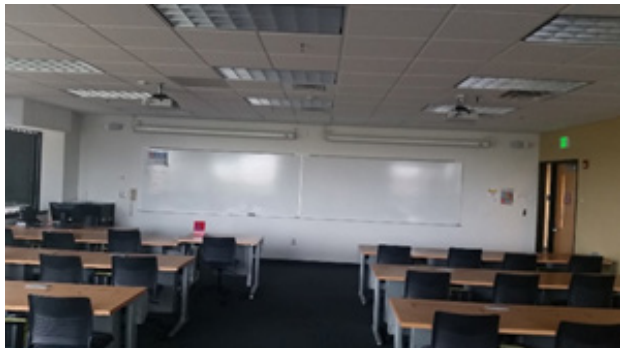


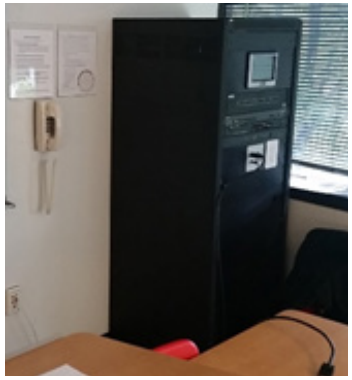
Recommendations – Refer to Audiovisual recommendations below.

Cabling:

The backbone fiber cabling appears to be in good condition. The existing horizontal station cabling appears to be a mix of Category 3, Category 5e, and Category 6 cabling. Existing data outlets have a mix of faceplate styles and terminations, some angled and others flush.

Recommendations – Replace all of the Category 3 and 5e cable with Category 6 to take advantage of higher throughput. Test all existing Category 6 and replace any that does not meet requirements. Select one style of faceplate and replace those that do not match that style.





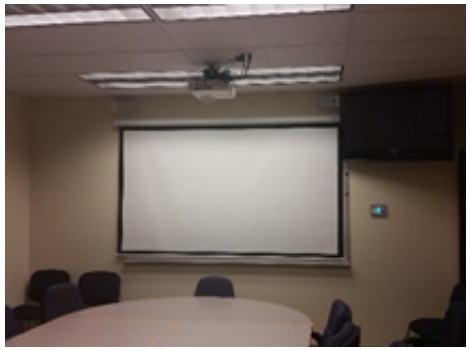
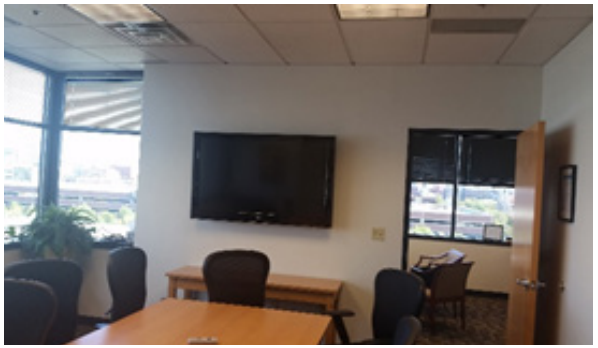
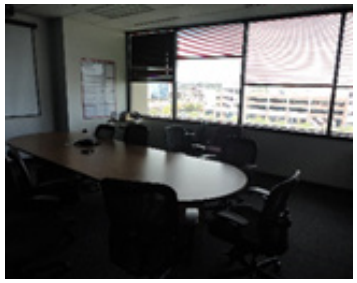
Classrooms:

The existing classrooms use wall mounted, manual, 3x4 format, projection screens combined with ceiling mounted projectors. A pair of wall or ceiling mounted speakers are used to reinforce sound. And a rack-mounted amplifier and AMX control system to control input sources such as PCs, DVD, CD, Document Camera, or other Auxiliary AV input devices.

Recommendations – Replace the projection screens and projectors with large 80 or 90 inch, High Definition, flat panel displays whose format is 10:16. Update input interface plates to include HDMI.

Conference Rooms:

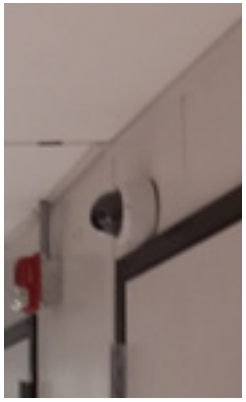
The existing conference rooms use either a wall mounted, manual, projection screen combined with short-throw ceiling mounted projector and pair of wall or ceiling mounted speakers or medium-sized flat panel displays. Some have an AMX control system with various inputs like VGA, some with HDMI.



and projectors with 60 inch, High Definition, flat panel displays.

SECURITY SYSTEMS



Access Control System:

Currently there are card readers installed on the exterior doors and several rooms inside the building.

Video Surveillance System:

There appears to be one exterior security camera mounted on the roof parapet on the northeast corner of the building. Additional ceiling mounted cameras were observed inside at various locations.

Intrusion Detection System:

There is an existing Honeywell intrusion detection system in the 3rd floor TR/IDF that appears to serve room 325.

Recommendations – Add card readers in the cabs of elevators if after-hours access will be desired while limiting access to other floors. Add card readers at the TEF, MDF and TRs/IDFs. Install cameras to observe all entrances/exits. Auraria Campus Safety (Police) should be consulted to determine whether additional exterior cameras should be added.

In-building Wireless System / Distributed Antenna System (IWS/DAS):

It does not appear there is any type of radio or cell phone amplification system in the building.

Recommendations – A professional wireless subcontractor should conduct a physical signal strength survey within the existing building to determine which frequencies, if any require amplification. Until such survey is performed it should be assumed that at a minimum the Public Safety / First Responder radios will require an amplification system in order to comply with current fire code.

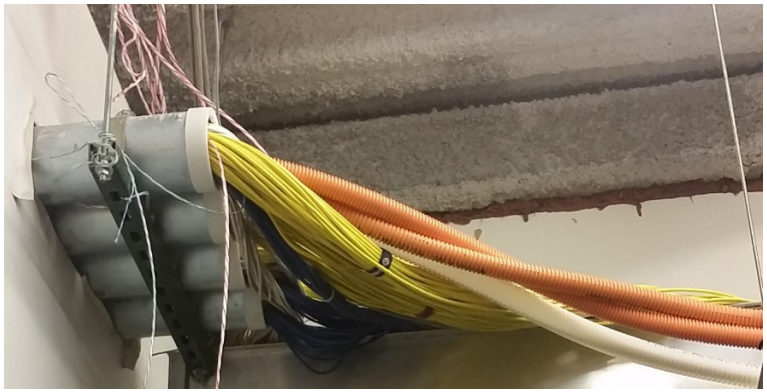
Networks:

Network Systems will be designed, procured, and installed by the Owner, and will make use of the Communications Infrastructure described previously in this narrative. These systems include:

- Data Network
- Wireless Network (including Wireless Survey to determine WAP locations)
- Power-over-Ethernet (part of the Data Network)
- Voice Network/PBX (including Intercom)
- Data (IT) Equipment (such as computers, notebooks, and servers)

Currently there is equipment to provide both wired and wireless data network service throughout the building. Some wireless access points were observed attached to the ceiling.

Recommendations – If any of the spaces are repurposed or reconfigured, especially where spaces become more densely occupied, a wireless survey should be performed again to check the existing WiFi coverage.



Cable Pathway and Supports:

Currently fiber cabling is contained in innerduct. Many of the existing conduit sleeves through walls were observed to be completely full. Pathways above ceilings in corridors were not observed.

Recommendations – In any of the areas that are renovated cable tray should be suspended overhead wide enough to properly support all the fiber and copper communications cabling. Add additional conduit sleeves to enable cabling to penetrate walls where necessary to relieve already congested sleeves; consider use of such devices like EZ-Path where smoke and fire protection may be required.

detailed conditions assessment - mechanical and electrical systems

Within this narrative, the following system characteristics are addressed:

1. General
2. Applicable Codes and Standards
3. Summary of Existing Mechanical Systems
4. Summary of Existing Plumbing Systems
5. Summary of Existing Fire Protection System
6. Summary of Existing Electrical Systems
7. Mechanical Systems Recommendations
8. Plumbing Systems Recommendations
9. Fire Protection System Recommendations
10. Electrical System Recommendations

The physical condition of building components are typically defined as being in one of three categories: Good, Fair, and Poor. For the purposes of this condition assessment, the following definitions are used:

- Good: Satisfactory as is, requiring routine maintenance as applicable. The equipment has operated for less than half of its expected service life.
- Fair: Generally satisfactory as is, but requiring some maintenance or repairs in the future to retain an effective service life. The equipment has operated half or more of its expected service life.
- Poor: Requires immediate repair, replacement, or significant maintenance. This category shall also apply to functional equipment that is more than 5 years beyond the estimated service life.

Applicable Codes and Standards:

1. International Building Code (IBC), 2012
2. International Existing Building Code (IEBC), 2012
3. International Mechanical Code (IMC), 2012
4. International Energy Conservation Code (IECC), 2012
5. International Plumbing Code (IPC), 2012
6. International Fuel Gas Code (IFGC), 2012
7. National Electrical Code (NEC), 2014
8. National Fire Protection Association (NFPA) 13-2002, Standard for the Installation of Sprinkler Systems.
9. ANSI A117.1, Accessibility requirements, 2009
10. ASHRAE Handbooks, Current Editions
11. ASHRAE Standard 62.1-2010, Ventilation for Acceptable Indoor Air Quality
12. ASHRAE Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings
13. ASHRAE Standard 55-2010, Thermal Environmental Conditions for Human Occupancy

Overall Mechanical System:

1. Based on existing plans, cooling is provided by a 340 nominal ton York, air cooled chiller, circa 1999, located on the roof. Chilled water is pumped to coils located in each of the air handling units. Additionally, the air handling units have pumped hot water heating coils. The 4,000.0 MBH input hot water boiler plant is located in the penthouse mechanical room on the roof and only provides heating water to the penthouse air handling unit pumped coils.
2. Based on existing plans, the main HVAC system in the building consists of two (2) built-up air handling units located in the roof penthouse. Each of the units is designed to distribute 90,000 cubic feet per minute (cfm) air flow. The system is variable air flow (VAV) with variable frequency drives (VFDs) controlling the supply and return fans based on duct static pressure. The air handling units have outside air capability for ventilation and economizer cooling.
3. Medium pressure supply air is distributed to and returned from the five floors through duct shafts located in the center core area of the building.
4. The main system duct design utilizes a medium pressure main duct loop routed around the center core area of each floor. Air is distributed from the main medium pressure duct to terminal units for zone control. Terminal units include VAV boxes for the interior zones, and parallel type fan powered boxes (FPB) for the exterior zones. Electric reheat coils are provided at each FPB to offset building envelope loads. Low pressure duct and diffusers distribute air from VAVs and FPBs. Return air is non-ducted through the ceiling plenum.

Exhaust Air System:

Exhaust fans serve restrooms, janitor closets, electrical rooms, and other support areas.

Figure III-1. Support space ceiling exhaust grilles.

Figure III-2. Dedicated CRAC unit.

Figure III-3. Wall temperature sensor.

Dedicated HVAC Systems:

High density cooling load areas, such as the main server room located on the fourth level and a dedicated server room located on the second level, are served by a minimum of N+1 redundant Liebert, Computer Room Air Conditioning (CRAC) units of various capacities. CRAC units utilize direct expansion (DX) refrigerant cooling and dry coolers located on the roof.

Temperature Control System:

1. The existing Johnson Control temperature control system is a mixture of existing Direct Digital Control (DDC) system and pneumatic controls. There is a wide range of different types of wall sensors used throughout the building.
2. It was reported at the time of the site walk that the tenant on the third level within the newly remodeled office spaces (Rooms 325s & 360s) was experiencing poor thermal comfort issues.

Recommendations

Overall Office Space Mechanical System:

1. *In general, the HVAC system medium pressure ductwork from the roof mounted AHUs to each floor and the loops on each floor, is in good condition and appears to be adequately sized to accommodate similar space types, occupant densities, and usage.*
2. *In order to provide adequate temperature control to the new spaces, modifications to VAVs, FBPs, low pressure ductwork and air devices will be required to provide appropriate zoning. In general, new perimeter zones (spaces with exterior walls) will be served by FPBs, and new interior zones will be served by VAVs. Typically terminal units throughout the building are in good to fair condition and is recommended that any interior VAV terminal unit serving interior spaces be added with reheat coils in order to maintain current code required ventilation rates.*
3. *Where possible, existing terminal units in good to fair condition will be re-used as much as possible; however, where existing units are not appropriately sized or located for new zone layout, they will be removed. New terminal units will be added where necessary.*
4. *Where new VAV and FPB terminal units are required, new medium pressure branch ductwork will be used to connect the new units to the existing main medium pressure ductwork.*
5. *Where ceilings are modified due to the new space layouts, new diffusers, new lined rectangular low pressure ductwork downstream of the existing terminal units and new round branch ductwork to diffusers will be provided. New ceiling return grilles will be provided.*

Exhaust Air System:

1. *The existing exhaust system appears to be in fair condition and recommendations would include re-balancing of the existing system to comply with current ventilation code requirements and to provide adequate heat removal from electrical rooms, etc.*
2. *It is recommended that rooms where odors are typically generated such as spaces with microwaves, refrigerators, and sinks; exhaust should be added to avoid recirculation of odors throughout the floor and building. Additionally, the storage of cleaning supplies and equipment require exhaust. New exhaust branches will connect to the existing exhaust system.*

Dedicated HVAC Systems:

There are no recommendations for the existing server room CRAC units the existing systems appear to be of adequate size and good condition for the dedicated spaces and there is no anticipated scope in these areas.

Balance Work & Temperature Control System:

1. *The new VAV terminal units will utilize direct digital control (DDC) and be fully integrated into the existing DDC system. Damper position, zone temperature, and discharge air temperature points will be provided.*
2. *The new FPB terminal units will utilize direct digital control (DDC) and be fully integrated into the existing DDC system. Damper position, heating/cooling mode, fan status, room temperature, and discharge air temperature points will be provided.*
3. *New ventilation requirements and minimum outdoor air requirements will be established by the balancer and incorporated into the control system. Local CO2 sensors will be incorporated for densely occupied spaces (i.e. conference rooms, etc.)*
4. *New VAV and FPB terminal units, and existing VAV and FPB terminal units that are within the area of work will be rebalanced. New air devices/diffusers will be included in the test and balance scope of work.*
5. *Rooms 325s & 360s should be reviewed for proper air flows to condition HVAC loads. Additionally, a review sequence of operation for the terminal units with this space should be reviewed to diagnose thermal comfort issues.*

Overall Plumbing System:

1. The plumbing system includes main plumbing groups (men's and women's toilet rooms) located on each floor. There are also miscellaneous plumbing fixtures including mop service basins and break room sinks located throughout the building.
2. Domestic hot water is provided by two (2) gas-fired storage tank type water heaters. Each gas-fired water heater is atmospherically vented. Domestic hot water is re-circulated throughout the building via a hot water inline circulation pump located in the penthouse mechanical room.

Figure IV-1. Typical breakroom.

Recommendations

1. *Where plumbing demolition is required, hot water, cold water, waste, and vent piping associated with removed fixtures will be removed back to nearest tee (or main branch) and capped. Walls and floors will be patched as necessary.*
2. *New plumbing fixtures will require new branch piping. Piping will include hot water, cold water, waste, and vent connections to fixtures. New branches will be connected to the nearest main or main branch of adequate capacity.*

Figure V-1. FM200 system components.

Fire Protection System:

1. Based on the existing Administrative Building plans, the building is currently being served with a 6" fire service. The building fire protection is a wet suppression system and appears to be fully sprinkled.
2. There are two (2) existing stand pipes with hose cabinets shown on each level at both the main stairwells.

Dedicated Fire Protection Systems:

It was observed that there are two (2) FM 200, gaseous type, fire protection systems for the main server room located on the fourth level and a smaller dedicated server room located on the second level.

Recommendations

Fire Protection System:

The modifications to the fire protection will include removing, replacing and relocating sprinkler heads throughout the new spaces to accommodate new wall locations and new ceiling layouts. The revised sprinkler head layout will comply with NFPA 13 requirements.

Dedicated Fire Protection Systems:

There are no recommendations for the existing FM 200 gaseous type systems. Existing systems appear to be adequate size and in good condition for the dedicated spaces and there is no anticipated scope in these areas.

Main Electrical Service:

1. Based on existing plans and the site survey conducted on the Administration Building, it is presently served by an Xcel Energy pad mounted transformer, located in the utility yard on the north side of the building. This utility transformer feeds the Main Distribution Center MDC. MDC is located in the main electrical room on the first floor and is 4,000 Amp, 480Y/277 Volt, 3 Phase, 4 Wire, 4,000A3P Main Circuit Breaker with Surge Suppression.
2. The Main Distribution Center MDC is manufactured by Cutler-Hammer with an AIC rating of 65,000 Amps.
3. MDC has a 1,200 Amp distribution section that feeds panelboards H1A (200A3P), HELDP (400A3P – Elevators), H1C (200A3P), L1A (200A3P – 208Y/120V), L1B (125A3P – 208Y/120V), L1C (125A3P – 208Y/120V).
4. MDC has a 2,000 Amp distribution section that feeds a 2,000 Amp Bus Duct Riser from the first floor through the fifth floor electrical rooms for power distribution on each floor.
5. A 40KW Diesel Generator for emergency loads is located in the utility yard on the north side of the building.

Figure VI-1. 2,000 Amp Bus Duct Overcurrent in MDC

Figure VI-2. Typical Bus Duct Riser in Electrical Rooms

Electrical Distribution System:

1. 1st Floor Electrical Room - Bus Duct feeds the following disconnect switches: H1B (250A3P), L1B (150A3P). H1B is a 480Y/277V, 3 Phase, 4 Wire, 250 Amp MLO panelboard. L1B is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard fed via a 75kVA transformer.
2. 2nd Floor Main Electrical Room - Bus Duct feeds the following disconnect switches: H2A (400A3P), H2B (225A3P), L2A (150A3P), L2B (150A3P). H2A is a 480Y/277V, 3 Phase, 4 Wire, 400 Amp MLO 2-Section panelboard. H2B is a 480Y/277V, 3 Phase, 4 Wire, 225 Amp MLO panelboard. L2A is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard fed via a 75kVA transformer. L2B is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard fed via a 75kVA transformer.
3. 3rd Floor Main Electrical Room - Bus Duct feeds the following disconnect switches: H3A (400A3P), L3A (150A3P), L3B (150A3P). H3A is a 480Y/277V, 3 Phase, 4 Wire, 400 Amp MLO panelboard. Panelboard H3A feeds Panelboard H3A1 (480Y/277V, 3 Phase, 4 Wire, 250A). L3A is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard fed via a 75kVA transformer. L3B is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard fed via a 75kVA transformer. L3B feeds Panelboard L3C (208Y/120V, 3 Phase, 4 Wire, 225A MCB.
4. 4th Floor Main Electrical Room - Bus Duct feeds the following disconnect switches: H4A (400A3P), H4A-2 (250A3P), H4DC (400A3P), L4A (150A3P), L4B (150A3P). H4A is a 480Y/277V, 3 Phase, 4 Wire, 400 Amp MLO panelboard. H4A feeds Panelboard H4A1 (480Y/277V, 3 Phase, 4 Wire, 250A MLO. L4A is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard fed via a 75kVA transformer. L4B is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard fed via a 75kVA transformer.
5. 5th Floor Main Electrical Room - Bus Duct feeds the following disconnect switches: H5A (400A3P), HP (250A3P), L5A (150A3P), L5B (150A3P). H5A is a 480Y/277V, 3 Phase, 4 Wire, 400 Amp MLO 2-Section panelboard. L5A is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard fed via a 75kVA transformer. L5B is a 208Y/120, 3 Phase, 4 Wire, 400 Amp MCB 2-Section panelboard via a 75kVA transformer.

6. Server Room 253 - 2nd Floor – This Server Room has multiple server racks, (2) HVAC CRAC Units fed by 100A3P and 30A3P disconnect switches, Panelboard L2G (208Y/120V, 3 Phase, 4 Wire, 100A3P Main Circuit Breaker). The room is equipped with FM-200 Fire Suppression System and EPO Switch adjacent to entry door. Isolated Ground receptacles are installed in the room.
7. Data Center Room 480A1 – 4th Floor – This Data Center contains panelboard H4A-2 (480Y/277V, 3 Phase, 4 Wire, 250A MLO), Panelboard H4DC 480Y/277V, 3 Phase, 4 Wire, 400A MLO. Panelboard H4A2 feeds Panelboard PDU (208Y/120V, 3 Phase, 4 Wire, 450A) via a 480V-208Y/120V uninterruptible power supply (UPS#1). Panelboard PDU feeds Panelboards PDU-1 (208Y/120V, 3 Phase, 4 Wire, 175A MCB), PDU-2 (208Y/120V, 3 Phase, 4 Wire, 175A MLO), PDU-3 (208Y/120V, 3 Phase, 4 Wire, 175A MLO). Panelboard H4DC feeds a 120kVA UPS#1 and Panelboard L4DCA (208Y/120V, 3 Phase, 4 Wire, 150A) via a 45kVA transformer. Panelboard H4DC feeds panelboard L4DCB (208Y/120V, 3 Phase, 4 Wire, 600A, 2-section) via a 120kVA, 480V-208Y/120V UPS (UPS#1). The room is equipped with a CRAC Unit.

Figure VI-3. FM-200 Fire Suppression System

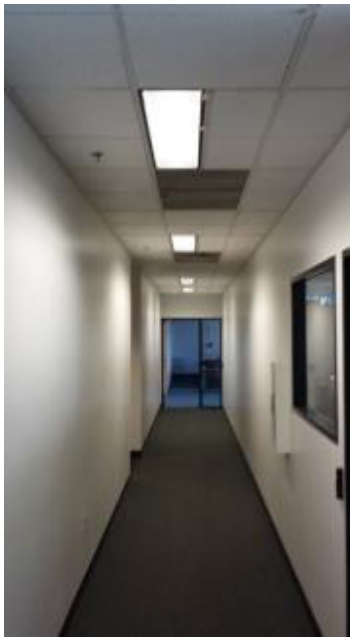


Figure VI-4. Typical Corridor Lighting

Lighting System:

1. Corridors are illuminated with 1'x4' fluorescent recessed lay-in parabolic luminaires with (2) T-8 lamps, circuited at 277 volt.
2. Offices are typically illuminated with 2'x4' fluorescent recessed lay-in parabolic luminaires with (3) T-8 lamps, and/or 2'x2' fluorescent recessed lay-in parabolic luminaires with (2) T-8 lamps, circuited at 277 volt.
3. Conference & Training Rooms are typically illuminated with 1'x4' pendant mounted, fluorescent direct/indirect perforated basket luminaires with (2) T-8 lamps, circuited at 277 Volt. The lighting is supplemented with 6" recessed downlight with 150 Watt Incandescent lamp, circuited at 120 volt.
4. Egress Lighting: Exit Signs and battery back-up luminaires throughout the building. Emergency branch circuits are connected to the generator?)

Figure VI-5. Typical Office Lighting

Lighting Controls:

1. Corridors are controlled with Low Voltage Pushbutton Type manual switches for control via a relay-based lighting control panel.
2. Offices are provided with dual level manual switching.
3. Conference & Training Rooms are provided with single pole switches for fluorescent luminaires and manual dimmer switches for incandescent downlights.

Branch Power System:

1. Offices have a typical power layout with a combination of duplex and four-plex receptacles.
2. Conference Rooms have a floor box with power and data in addition to wall-mounted devices.
3. Open Office areas have powered furniture with integral receptacles and tele/data jacks.

Figure VI-6. Typical Conference Room Lighting

Figure VI-7. Fire Alarm Control Panelboard

Fire Alarm System:

1. The building's Fire Alarm control panel is located in room P100D (Main Electrical Room).

2. The building is provided with manual fire alarm notification and annunciation devices.
3. The fire alarm system manufacturer is Simplex.

Recommendations

Electrical Distribution System:

1. *The existing electrical switchboard, panelboards, and step-down dry-type transformers appear to be in good condition. Based upon the existing 4,000 Amp electrical service and square footage the building should have adequate ampacity for office remodel work.*
2. *Electrical panelboards on each floor have spaces available for future equipment.*

Lighting System:

1. *The current luminaires located throughout the building are in good condition.*
2. *Based on lighting watts per square footage requirements reducing the lamps in the current luminaires may be required for remodel work.*
3. *Exit Signs appear to be in good condition. Based on new egress layout additional exit signs may be required.*
4. *Conference Room incandescent downlight should be retrofitted to LED downlights.*

Lighting Controls:

Current lighting controls were acceptable during original construction. Any modifications to the lighting will require the space to be compliant with current IECC recommendations.

Branch Power System:

No recommendations required. Modifications to branch power will be required for remodel work.

Fire Alarm System:

The building's current Fire Alarm system is in good working condition. Based on remodel work additional fire alarm equipment may be required.

detailed space needs assessments

Applied Learning Center

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Director	1					1		1		1		
FT Staff	10					12		13		14		
PT Staff	1					1		1		1		
Student Staff/Interns	6					6		6		7		currently using 5 desks
	18					**20**		**21**		**23**		
OFFICE/SUPPORT SPACE												
Office & Office Support		1,677	see page 29		1,800		2,040		2,170		2,300	
Conference Room		169			220		220		220		220	
Reception/waiting		298			300		300		300		300	
Break Room		276			-		-		-		-	included in bldg common
Storage		21			25		25		25		25	
Orientation Room		640			640		640		640		640	
office circulation		718	30%		878		950		989		1,028	existing circ factor = 24%
TOTAL OFFICE/SUPPORT		**3,799**			**3,881**		**4,193**		**4,362**		**4,531**	
Total ASF		**3,799**			**3,881**		**4,193**		**4,362**		**4,531**	
NOTES												

Athletics (office & office support space only)

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Director of Athletics	1					1		1		1		
Staff	30					30		32		34		
Student Staff/Interns	0					0		0		0		
	31					31		33		35		
OFFICE/SUPPORT SPACE												
Office & Office Support in Admin		3,240	see page 29		3,600		3,600		3,852		4,104	
Office & Office Support in Tivoli		811			-		-		-		-	assumes relocation to Admin
Student Support		311			400		400		400		400	
Conference Room		0			200		200		200		200	
office circulation		1,168	30%		1,200		1,200		1,276		1,351	existing circ factor = 27%
TOTAL OFFICE/SUPPORT		5,530			5,400		5,400		5,728		6,055	
Total ASF		**5,530**			**5,400**		**5,400**		**5,728**		**6,055**	
NOTES												

Career Services

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection Count	2020 Projection ASF	2025 Projection Count	2025 Projection ASF	2030 Projection Count	2030 Projection ASF	Notes
STAFFING												
Director	1					1		1		1		
FT Staff	5					5		5		6		includes School of Business liaison
PT Staff	0					1		1		1		
Student Staff/Interns	8					8		9		9		
TOTAL HEADCOUNT	**14**					**15**		**16**		**17**		
OFFICE/SUPPORT SPACE												
Office & Office Support		638	see page 29		940		1,000		1,053		1,107	
Group Interview Room		229			250		250		250		250	doubles as a conference room
Small Interview Rooms (2 total)		0			250		250		250		250	3 seats each
Career Services computer lab		197			120		120		120		120	3 computer stations
"Job Spot"		172			150		150		150		150	
Counselors' Library		80			200		200		200		200	
Reception		130			130		130		130		130	seating for 2
Small Interview Rooms in Admin		232			240		240		240		240	2 total
Liaison office in Admin		111			-		-		-		-	included in office total
Storage		0			60		60		64		68	
Break Room		127			-		-		-		-	included in building common
office circulation		609	30%		684		702		719		736	existing circ factor = 28%
TOTAL OFFICE/SUPPORT		**2,525**			**3,042**		**3,120**		**3,194**		**3,269**	
Total ASF		**2,525**			**3,042**		**3,120**		**3,194**		**3,269**	
NOTES												

Center for Faculty Excellence

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Director	1					1		1		1		
Staff	4					5		5		6		adding 1 online instructional designer
Administrative Assistant	0					1		1		1		
Student Staff/Interns	0					1		1		1		
TOTAL HEADCOUNT	**5**					**8**		**8**		**9**		
OFFICE/SUPPORT SPACE												
Office & Office Support		611	see page 29		730		970		1,009		1,048	assumes 250 sf per person
office circulation		71	30%		219		291		303		314	existing circ factor = 12%
TOTAL OFFICE/SUPPORT		**682**			**949**		**1,261**		**1,312**		**1,362**	
DEDICATED CLASS/LAB SPACE												
Classroom		989			989		1,000		1,000		1,000	
Classrm/Lab and Lab		n/a			n/a		n/a		n/a		n/a	
Classrm and Lab Support		241			241		250		250		250	
TOTAL CLASS/LAB		**1,230**			**1,230**		**1,250**		**1,250**		**1,250**	
Total ASF		**1,912**			**2,179**		**2,511**		**2,562**		**2,612**	
NOTES												

Center for Individualized Learning

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Director	1					1		1		1		
Staff	4					5		5		6		
Student Staff/Interns	7					7		7		8		
	12					**13**		**14**		**15**		
OFFICE/SUPPORT SPACE												
Offices		713	see page 29		800		920		972		1,024	
Break Room		148			-		-		-		-	shared with OIS
Seminar Room		280			280		280		280		280	shared with OIS
Conference Room		113			120		120		120		120	shared with OIS
Storage		197			200		200		200		200	
Waiting Area		84			100		100		100		100	shared with OIS
office circulation		389	30%		432		468		484		499	
TOTAL OFFICE/SUPPORT		**1,924**			**1,950**		**2,106**		**2,173**		**2,241**	
Total ASF		**1,924**			**1,950**		**2,106**		**2,173**		**2,241**	
NOTES												

Office of International Studies

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Director	1					1		1		1		
New Internat'l student support	0					2		2		2		
Full-time Staff	3					5		5		5		
Student Staff/Interns	2					3		3		3		
TOTAL HEADCOUNT	**6**					**11**		**11**		**11**		
OFFICE/SUPPORT SPACE												
Office & Office Support		485	see page 29		580		1,080		1,080		1,080	assumes 250 sf per person
Break Room		148			-		-		-		-	room 360K, currently shared with CIL
Seminar Room		280			280		280		280		280	room 360B, currently shared with CIL
Conference Room		113			120		120		120		120	room 360Q, currently shared with CIL
Waiting Area		84			100		100		100		100	currently shared with CIL
New International student lounge		0			0		500		500		500	able to accommodate 20-30 people
office circulation		389	30%		306		606		606		606	
TOTAL OFFICE/SUPPORT		**1,499**			**1,404**		**2,704**		**2,704**		**2,704**	
Total ASF		**1,499**			**1,404**		**2,704**		**2,704**		**2,704**	

NOTES

Break room included in building common. Note, square footage of rooms shared with OIS has been divided between the two departments (AKA the waiting area is actually 168 sf total). Growth for office space, instructional space, and personnel head counts are based on overall projections by division as outlined in the Neighborhood Master Plan.

CIO/AVP of Information Technology Services (including Education Technology Center)

	Current Count	Existing Current ASF			Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Director	1					1		1		1		
Staff in Admin	65					65		70		74		
Staff to relocate to Admin	2					2		2		2		
Student Staff/Interns	11					11		12		13		
TOTAL HEADCOUNT	**79**					**79**		**85**		**90**		
OFFICE/SUPPORT SPACE												
Office & Office Support in Admin		8,604	see page 29		8,440		8,440		9,031		9,596	
Server Room		1,680			1,680		1,680					
Education Technology in Central		931			-		-					included in overall req'd staffing figures
Conference Room		345			345		345					
Conference Room		280			0		0					combined with meeting room
Meeting Room		489			862		862					based on plans in place
Training Room		470			470		470					
Workroom/staging		418			500		500					
Deployment		600			600		600					
Secure Storage		132			132		132					
Storage		100			100		100					
office circulation		3,382	50%		5,030		5,030					
TOTAL OFFICE/SUPPORT		**17,431**			**18,099**		**18,099**				**0**	
NON-OFFICE SUPPORT SPACE												
Equipment Delivery & Storage		736			800		800					currently on 1st floor of Admin
General Use Computer Lab		2,979			2,979		2,979					
TOTAL SUPPORT		**3,715**			**3,779**		**3,779**					
Total Headcount	79						0		85		90	
Total ASF		**21,146**			**21,968**		**21,968**		**21,992**		**22,838**	
NOTES												

Nursing

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Department Chair	1					1		1		1		
FT (Tenure & Visiting) Faculty	9					9		10		10		
Adjunct/PT Faculty	8					8		8		8		
Staff	7					7		7		7		
Student Staff/Interns	0					0		0		0		
TOTAL HEADCOUNT	**25**					**25**		**26**		**27**		seat count equivalent = 22
OFFICE/SUPPORT SPACE												
Faculty Offices & Office Support		1,963	see page 29		2,280		2,323		2,432		2,443	
Conference Room		0	20 sf pp		500		500		500		500	seating to accommodate 25
Storage		305	n/a		300		300		300		300	
office circulation		620	30%		924		937		970		973	existing circ factor = 32%
TOTAL OFFICE/SUPPORT		**2,888**			**4,004**		**4,060**		**4,202**		**4,216**	
DEDICATED CLASS/LAB SPACE												
50-seat Classrooms	1	692	1,000	0	0							
32-seat Classrooms	1	498	800	0	0							
24-seat Classrooms	0	0	600	2	1,200							needs 2
Basic Skills Lab	1	702	2,000	1	2,000							
Computer Lab	1	464	25 sf pp	1	625							
Simulation Suite	1	506	2,000	1	2,000							2 beds, control room, support rooms
Class/Lab Support & Storage	2	204			500							
TOTAL CLASS/LAB		**3,066**			**6,325**		**6,889**		**7,056**		**7,352**	
Total ASF		**5,954**			**10,329**		**10,949**		**11,259**		**11,568**	12% growth overall
NOTES												

College of Business

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Dean	1					1		1		1		
FT (Tenure & Visiting)Faculty	71					74		77		83		
Adjunct/PT Faculty	48					48		52		56		currently sharing 509 ASF in Room 580
Staff	21					23		23		25		includes 5 advisors
Student Staff/Interns	6					6		7		7		mostly 1/2 to 1/3 time, reception
TOTAL HEADCOUNT	**147**					**152**		**160**		**172**		seat count equivalent = 123
OFFICE/SUPPORT SPACE												
Dean's Office		193	see page 29		250		250		250		250	
Office & Office Support		14,170			12,600		13,200		13,734		14,742	
Dean's Conference Room		193			200		200		200		200	
Conference Room		793			500		500		500		500	based on plans in place
Advising Center		401			400		400		400		400	excludes offices
Storage		229			230		269		315		368	existing storage is adequate
Tutoring Lab		322			350		410		479		561	growth based on enrollment projections
office circulation		4,406	30%		4,284		4,494		4,688		5,031	existing circ factor = 27%
TOTAL OFFICE/SUPPORT		**20,707**			**18,564**		**19,472**		**20,316**		**21,802**	
DEDICATED CLASS/LAB SPACE												
55-seat Classrooms	1	1,373	1,100	0	0							
48-seat Classrooms	5	4,007	1,200	0	0							
44-seat Classrooms	1	814	1,100	0	0							
40-seat Classrooms	3	2,119	1,000	4	4,000							
37-seat Classrooms	2	1,196	925	0	0							
32-seat Classrooms	1	685	800	0	0							

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection Count	2020 Projection ASF	2025 Projection Count	2025 Projection ASF	2030 Projection Count	2030 Projection ASF	Notes
30-seat Classrooms	3	1,402	750	12	9,000							
24-seat Classrooms	1	941	600	1	600							
20-seat Classrooms	1	810	600	1	600							
Accounting Lab	1	707		1	707							28-seat capacity
CIS Lab	1	427		1	427							13-seat capacity
CIS Lab	1	1,058		1	1,058							33-seat capacity
Trading Classroom	1	811		1	811							20-seat capacity
Computer classlab	1	1,308		1	1,300							
Sales Center	1	0		1	150							space w/ A/V for mock pitches, etc.
Classroom storage/support	1	25		1	25							
TOTAL CLASS/LAB		**17,683**			**18,678**		**19,302**		**21,913**		**23,498**	
Total ASF		**38,390**			**37,242**		**38,774**		**42,229**		**45,300**	18% growth overall

NOTES

Existing Admin Building ASF = 29,611. Needs a dedicated conference room for a minimum of 20 people. Growth for office space, instructional space, and personnel head counts are based on overall projections by division as outlined in the Neighborhood Master Plan; see Appendix.

School of Education

	Current Count	Existing Current ASF	Proposed Standard	Required Count	Required Current ASF	2020 Projection		2025 Projection		2030 Projection		Notes
						Count	ASF	Count	ASF	Count	ASF	
STAFFING												
Dean	1					1		1		1		
FT (Tenure & Visiting) Faculty	35					53		74		86		
Adjunct/PT Faculty	18					27		38		44		
Staff	11					17		23		27		includes advisors
Student Staff/Interns	10					15		21		25		
TOTAL HEADCOUNT	75					112		156		184		seat count equivalent = 175
OFFICE/SUPPORT SPACE												
Dean's Office		295	see page 29		250		250		250		250	
Office & Office Support		6,787			6,260		9,390		13,146		15,462	
Conference Room		221			500		500		500		1,000	currently needs seating for 20
Resource Center		191			250		250		263		295	
Storage		305			600		600		630		708	
office circulation		2,051	30%		2,283		3,297		4,437		5,315	existing circ factor = 26%
TOTAL OFFICE/SUPPORT		9,850			10,143		14,287		19,225		23,030	
DEDICATED CLASS/LAB SPACE												
Classrooms in West		5,779			5,779							
Computer Classlab in West		875			875							
TOTAL CLASS/LAB		6,654			6,654		5,518		4,706		14,104	
Total ASF		**16,504**			**16,797**		**19,805**		**23,931**		**37,134**	125% growth overall

NOTES

Office space assumes 120 sf per FT faculty/staff and 60 sf per 2 Adjunct/PT staff. Current classrooms are right-sized and configured/equipped appropriately. Growth for office space, instructional space, and personnel head counts are based on overall projections by division as outlined in the Neighborhood Master Plan; see Appendix.

additional program descriptions

SCHOOL OF EDUCATION

Departments

- Elementary Education and Literacy
- Special Education, Early Childhood and Culturally and Linguistically Diverse Education
- Secondary Education, K-12 Education, and Educational Technology

Current Locations

- The entire Department, with the exception of a few classrooms used elsewhere, is housed in the West Building

Existing Conditions

- The West Building has ADA challenges, that while compliant create a very difficult path of accessibility
- Classrooms have all been upgraded recently to meet the School's needs in terms of flexibility and technology
- There are no vacant offices and very limited adjunct faculty space. As faculty are added, staff will begin to need to double up. Four to five additional staff are expected in the next five years.

Emerging Issues

- Early Childhood and Special Education as well as STEM focused programs and the graduate programs are growing areas, though the remainder of the programs are flat or declining in enrollment.
- The School is adding classes that don't lead to licensure and undergraduate programs that don't require field placement. There is more flexibility as to where these classes can be held if the program had to expand beyond West's capacity.
- The West Building feels separated from the rest of the MSU Denver Neighborhood, so some way to make this School feel more a part of that community would be beneficial. However, since this School is all upper division courses and most students spend substantial time in community classrooms, it may be as critical as for some other programs.

School of Education:
staff: 75
existing ASF:16,504
current required ASF: 16,797

METROPOLITAN STATE UNIVERSITY OF DENVER

Project: **MSU Neighborhood Master Plans** 6/6/2016

Basis of Cost Estimate:
Estimate has been prepared at the request of RNL Design and is to provide a programmatic estimate of construction cost the the Community College of Denver and Metro State Neighborhood Master Plans.

The estimates are based upon program information, phasing, and renovation scope as provided by RNL Design which are included as an appendix.

Information at this time is conceptual. Estimates for the Boulder Creek Renovation and Admin Building Renovation are highly dependent on the scope renovation definitions of Minor, Moderate, and Extensive as defined on the following page.

Mid-term and long term new construction estimates are based entirely on historical cost data for similar projects and benchmark data. These estimates do not include material site preparation and site improvement, abatement, contingency, or design costs. These costs should be evaluated as design and program scopes evolves.

Pricing is based on April 2016 costs and escalation allowances, equal to 5% per annum, are assumed. An estimating contingency of 10% has been included.

Cost Estimates for Metro State University Administration Building are presented in the form of the Capital Construction Request document with further detail attached for the Administration Building, Plaza Building, West Building, and long term projects.

Estimates assumes the full cost of the project is bought and funds allocated at construction start date regardless if the project spans more than one fiscal year.

Exclusions include the following elements:

Hazardous materials abatement
Excavation, unless otherwise noted
Work to structural components within renovation scope, unless otherwise noted
Out of hours work
Construction management costs unless otherwise noted.
Utility upgrades tap fees and charges
Permits & plan review fees
Owner's contingency
Land and legal costs
Environmental and remediation expenses, including but not limited to asbestos and subsurface conditions
Geotechnical, environmental, surveys, traffic, and all other studies

MSU Denver Master Plans Cost
Estimates 6/6/2016

The following definitions were used to determine the renvoation levels required to meet the program outlined by RNL. Cost per square foot assumptions were utilized for Finishes, Electrical, and Mechanical depending on the renovation level.

MINOR RENOVATION
Up to 20% remodel
Reconfigured partitions
Same use
Patch/repair flooring/base/paint
Selective replacement of ACT
Repair casework as needed

Minor Renovation Cost Per Square Foot Assumptions		
Finishes	$	12.50
Electrical	$	6.00
Mechanical	$	10.00

MODERATE RENOVATION
20- 50% remodel
Reconfigured partitions
Similar or new use
New flooring/base/paint
50% new ACT and grid
50% new light fixtures
50% new casework

Moderate Renovation Cost Per Square Foot Assumptions		
Finishes	$	31.00
Electrical	$	12.00
Mechanical	$	15.00

MAJOR RENOVATION
50-90% remodel
New partitions/doors/borrowed lights
New use
New flooring/base/paint
New ACT and grid
New light fixtures
New casework

Extensive Renovation Cost Per Square Foot Assumptions		
Finishes	$	50.00
Electrical	$	15.00
Mechanical	$	25.00

Additional Renovation Costs per Institution and Building [1]

Institution	Building	Total GSF	Est. NSF by Level of Renovation: Minimal	Moderate	Extensive	Renovation Cost (April 2016)	Hard Cost PSF (April 2016)	Estimators Contingency 10%	Indirects 15%	Total Cost (April 2016)	Construction Start Date	Escalation Allowance [2] 5% per annum	Total Cost with Escalation	Escalated Cost PSF
Metro State University - Denver (Scenario A)														
	Plaza Building	13,099	4,429	-	8,670	$ 949,877	$ 72.52	$ 94,988	$ 156,730	$ 1,201,594	Jul-18	$ 123,163	$ 1,324,757	$ 101.13
	West Building	6,702	2,888	-	3,814	$ 444,638	$ 66.34	$ 44,464	$ 66,696	$ 555,798	Jan-19	$ 87,608	$ 643,405	$ 96.00
	Subtotal:	19,801								$ 1,757,391			$ 1,968,162	$ 99.40
	Subtotal A&E Costs (10%)												$ 132,476	
	Subtotal Materials Testing (1%)												$ 13,248	
	Subtotal State Art Requirement (1%)												$ 40,820	
	Grand Total MSU Projects:	**19,801**											**$ 2,154,706**	**$ 108.82**
Metro State University - Denver (Scenario B) [4]														
	Plaza Building	13,099	4,429	-	8,670	$ 949,877	$ 72.52	$ 94,988	$ 156,730	$ 1,201,594	Jul-18	$ 123,163	$ 1,324,757	$ 101.13
	West Building	6,702	2,888	-	3,814	$ 444,638	$ 66.34	$ 44,464	$ 66,696	$ 555,798	Jul-19	$ 103,497	$ 659,294	$ 98.37
	Subtotal:	19,801								$ 1,757,391			$ 1,984,051	$ 100.20
	Subtotal A&E Costs (10%)												$ 198,405	
	Subtotal Materials Testing (1%)												$ 19,841	
	Subtotal State Art Requirement (1%)												$ 22,023	
	Grand Total MSU Projects:	**19,801**											**$ 2,224,320**	**$ 112.33**

(1) Renovation levels per Minor, Moderate, and Extensive defination provided by RNL.

(2) Escalation allowance is based on 5% escalation rate compounded annually through construction start date per RNL program dated 4/13/2016.

(3) Furniture, Fixtures, and Equipment not included in costs. Construction Management costs not included.

(4) Scenario B assumes West Building renovation begins 6 months following Scenario A; July 2019 vs. January 2019.

(5) See cover sheet for full list of exclusions and basis of estimate.

Metro State University - Denver
Admin Building (Scenario A)

6/6/2016

Admin Building Renovation Scenario A - Cost Estimate Summary

		Renovation Scope (SF)			117,975
Item No.	**Description**	**$/SF**			**Total**
A10	Foundations	Excluded			
A20	Basement	Excluded			
B10	Superstructure	Excluded			
B20	Exterior Closure	Excluded			
B30	Roofing	Excluded			
C10	Interior Construction	Included in Finishes			
C20	Staircases	Excluded			
C30	Interior Finishes[1]	$	27.66	$	3,262,828
D10	Conveying Systems	Excluded			
D20	Plumbing[2]	$	2.94	$	346,500
D30	HVAC[3]	$	15.14	$	1,785,946
D50	Electrical[4]	$	9.91	$	1,168,950
E10	Equipment[5]	$	0.38	$	45,000
E20	Furnishings[6]	$	6.78	$	800,000
F10	Special Construction & Equipment	Excluded			
F10	Selective Building Demolition	Included in Finishes			
G10	Site Preperation	Excluded			
G20	Site Improvements	Excluded			
H10	General Conditions / Requirements (15%)[7]			$	991,384
	Subtotal Direct Construction Costs	$	71.21	$	8,400,608
	Estimators Contingency (10%)			$	840,061
	Total Direct Construction Costs	$	78.33	$	9,240,668
	Escalation Cost Through Anticipated Construction Start Date of July 2018 (FY 2019)		8.03	$	947,169
			5%		
	Total Estimated Cost of Admin Building Renovation (Scenario A):	$	86.36	$	10,187,837
	Architectural and Engineering Design Fee (10% of Escalated Construction Cost)	$	8.64	$	1,018,784
	Materials Testing and Special Inspections (1% of Escalated Construction Cost)	$	0.86	$	101,878
	Art in Public Places (1% of State Total Costs)[8]	$	0.96	$	113,085
	Total Cost (Art, Escalation, Construction, Design, FFE)	**$**	**96.81**	**$**	**11,421,584**

Comments:

(1) Finish renovation levels per Minor, Moderate, and Extensive renovation levels as outlined by RNL program.

(2) Assumes full restroom replacement and expansion of 1,386 square feet.

(3) Mechanical renovation levels per Minor, Moderate, and Extensive renovation levels as outlined by RNL program.

(4) Electrical renovation levels per Minor, Moderate, and Extensive renovation levels as outlined by RNL program.

(5) Equipment includes allowance for Access Control and Signage.

(6) Furnishings includes $20 psf for FF&E and $15 psf for AV/IT upgrades to conference rooms totalling $407,000. Additional network, cabling, FF&E upgrades to building totalling $600,000 are carried in allowance.

(7) General Conditions / Requirements does not include Furnishings cost. This cost to be assumed by owner and outside of General Contractor scope.

(8) Assumes State funding for full cost of project including architectural and engineering design fee, materials testing, and construction cost.

(9) See cover sheet for full list of exclusions and basis for estimate.

Metro State University - Denver **6/6/2016**
Admin Building (Scenario B)

Admin Building Renovation Scenario B - Cost Estimate Summary

		Renovation Scope (SF)			117,975
Item No.	**Description**	**$/SF**			**Total**
A10	Foundations	Excluded			
A20	Basement	Excluded			
B10	Superstructure	Excluded			
B20	Exterior Closure	Excluded			
B30	Roofing	Excluded			
C10	Interior Construction	Included in Finishes			
C20	Staircases	Excluded			
C30	Interior Finishes[1]	$	25.18	$	2,970,066
D10	Conveying Systems	Excluded			
D20	Plumbing[2]	$	2.94	$	346,500
D30	HVAC[3]	$	14.15	$	1,668,841
D50	Electrical[4]	$	9.31	$	1,098,687
E10	Equipment[5]	$	0.38	$	45,000
E20	Furnishings[6]	$	6.78	$	800,000
F10	Special Construction & Equipment	Excluded			
F10	Selective Building Demolition	Included in Finishes			
G10	Site Preperation	Excluded			
G20	Site Improvements	Excluded			
H10	General Conditions / Requirements (15%)[7]			$	919,364
	Subtotal Direct Construction Costs	$	66.53	$	7,848,458
	Estimators Contingency (10%)			$	784,846
	Total Direct Construction Costs	$	73.18	$	8,633,303
	Escalation Cost Through Construction Start Date of January 2018 (FY 2018)	5%	5.56	$	655,525
	Total Estimated Cost of Admin Building Renovation (Scenario B):	$	78.74	$	9,288,829
	Architectural and Engineering Design Fee (10% of Escalated Construction Cost)	$	7.87	$	928,883
	Materials Testing and Special Inspections (1% of Escalated Construction Cost)	$	0.79	$	92,888
	Art in Public Places (1% of State Total Costs)[8]	$	0.87	$	103,106
	Total Cost (Escalation, Construction, Design, FFE)	**$**	**88.27**	**$**	**10,413,706**

Comments:

(1) Finish renovation levels per Minor, Moderate, and Extensive renovation levels as outlined by RNL program.

(2) Assumes full restroom replacement and expansion of 1,386 square feet.

(3) Mechanical renovation levels per Minor, Moderate, and Extensive renovation levels as outlined by RNL program.

(4) Electrical renovation levels per Minor, Moderate, and Extensive renovation levels as outlined by RNL program.

(5) Equipment includes allowance for Signage and Access Control.

(6) Furnishings includes $20 psf for FF&E and $15 psf for AV/IT upgrades to conference rooms totalling $407,000. Additional network, cabling, FF&E upgrades to building totalling are carried in allowance.

(7) General Conditions / Requirements does not include Furnishings cost. This cost to be assumed by owner and outside of General Contractor scope.

(8) Assumes State funding for full cost of project including architectural and engineering design fee, materials testing, and construction cost.

(9) See cover sheet for full list of exclusions and basis for estimate.

Mid and Long Term New Construction - Order of Magnitude Estimates

Institution	Building	Total GSF	Total Construction Cost PSF (Today)		Total Construction Cost (Today)		Year of Construction	Escalation Allowance (5% per annum)		Total Cost Range with Escalation		Escalated Cost Range (PSF)	
Metro State University - Denver													
	Health Institute[1]	50,000	$ 250	$ 300	$ 12,500,000	$ 15,000,000	Jul-20	$ 3,453,520	$ 4,144,223	$ 15,953,520	$ 19,144,223	$ 319	$ 383
	Student Center Building[2]	25,000	$ 375	$ 425	$ 9,375,000	$ 10,625,000	Jul-20	$ 2,590,140	$ 2,935,492	$ 11,965,140	$ 13,560,492	$ 479	$ 542
	Aerospace Phase II / Building Addition[3]	120,000	$ 367	$ 383	$ 44,000,000	$ 46,000,000	2026+	$ 27,671,364	$ 28,929,153	$ 71,671,364	$ 74,929,153	$ 597	$ 624
	Athletic Field House[4]	120,000	$ 208	$ 292	$ 25,000,000	$ 35,000,000	2026+	$ 15,722,366	$ 22,011,312	$ 40,722,366	$ 57,011,312	$ 339	$ 475

Comments:

(1) Health Institute new construction assumes construction cost based on $275 per square foot per benchmark data.

(2) Student Center Building assesumed new construction cost based on $400 per square foot per benchmark data. Anticipated program to include café, lounge and pool hall, meeting space and programming for student services.

(3) Aerospace Phase II assumes new construction cost of $315 psf (today) based on estimated cost of Aerospace Phase I ($45m) over 143,000 sf.

(4) Anticipated program for field house includes sport performance and varsity athletic facilities, weight room and fitness center, indoor track.

(5) All cost estimates are based off of benchmark data and do not contain costs for abatement, contingency, design, or material site improvements. Construction cost varies greatly by type and costs should be refined as design and program needs evolve. FFE, relocation, or other owners expenses are not included in estimate.