

University of Colorado at Boulder Program Plan for Willard Hall and Hallett Hall Residential Re-Commissioning

A Program Plan For
The Department of Housing & Dining Services

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1. Preface and Summary

1.1 Executive Summary

Willard and Hallett halls were developed in the 1950's as dormitory facilities with three full stories above grade and a basement that is partially underground or "garden level". The buildings were originally designed with double occupancy rooms plus two small "Social Director" apartments on the first floor and two "Head of House" apartments in the fourth floor attic level. The buildings are constructed with a cast-in-place concrete frame and are enclosed by the traditional materials of the Boulder campus – Lyons sandstone with limestone trim, steel-sash windows, and clay tile roofing. Beginning in the 1970s, portions of the Willard building were converted to offices for a variety of administrative functions, such that only about 40% of the building's original residential capacity is used for student housing. Housing and Dining Services (HDS) currently provides housing for 196 students (98 double occupancy rooms) in Willard Hall.

This program plan proposes the re-commissioning of the Willard Hall Administrative Center as well as the Hallett Hall Department of Housing administrative offices to residence hall use. It is Housing and Dining Services' intention to capture living space within the Willard Hall for at least 230 more students, for a minimum total of 426 student residents. Hallett Hall would recapture space for an additional 136 student residents. Significant improvements to building systems are not included as part of this program. HDS does not have Willard Hall scheduled for significant building systems upgrades until 2022 as part of an overall master plan for their facilities.

The total project budget for Willard Hall is \$7,175,000 for 85,795 gross square feet of renovation work. The renovation would include two types of work: 1.) Upgrades to existing residence hall space totaling approx. 36,560 gross sq. ft.; 2.) Renovation of space currently used for administrative offices for residence hall use of approx. 49,235 gross sq. ft. In Hallett Hall, the project budget is \$3,750,000 to remodel 22,201 gross square feet converting office space to residence hall space. Combined cost of the projects is \$10,925,000 for an additional 366 beds.

The proposed relocation of Housing and Dining Services administrative offices from Hallett Hall will not reduce any program space in the Center for Community or other academic facilities on campus. Plans for Hallett Hall would not go forward if space is not created in the Center for Community for HDS administration.

1.2 Description of Program Being Affected

The program that will occupy the primary portion of the facility is the Department of Housing and Dining Services. Both Hallett and Willard Halls have combined residential and administrative communities. The combining of these two very different types of occupancies within the same building has not been found to be ideal for either of the communities.

The Hallett Hall community is currently 358 beds. The additional 136 beds proposed will join an already vibrant student community with sufficient residential life facilities to support the increase in population. As a residence hall, the existing Willard Hall community of 198 beds is a relatively small with limited residence life amenities. The large percentage of building space currently dedicated to offices presents an image to the campus community of Willard Hall as solely an administrative center. These factors combine to provide the current residents an 'identity crisis' that has led to a low ratio of students that return to the community from year to year. By more than doubling the number of students in the Willard Hall community, removing the administrative offices and increasing the residence life amenities, it is believed that Willard Hall can be reshaped to become a strong residence community. The close proximity to the new Center for Community with new dining and student service spaces will help to support and strengthen both of these functions.

1.3 Relationship to the Facilities Master Plan

The *Campus Master Plan* outlines a goal of providing additional housing to maintain or increase the percentage of students housed on campus. The plan projected a need for an additional 1900 beds by 2010 with a significant portion of these beds being needed for freshmen. Willard and Hallett Halls are part of the Farrand complex which is the most centrally located residential community on campus, additional beds in this part of campus are ideal for freshmen students to help involve them in the campus community.

2. Facility Needs

2.1 Current Building Use

The Willard Hall Administrative Center occupies the north wing, a majority of the central core area and existing assignable space in the fourth floor of Willard Hall. The Willard Administrative Center houses offices for various student and academic support departments. The majority of the office spaces are to be relocated to the new Center for Community, or to space in Kittredge Commons that is to become available after the opening of the new dining facilities. The residence function of Willard Hall is located in the west wing of the building with a limited amount of space supporting the residence life activities reaching into the center core of the building on the lower two floors. Willard is home to the McNeill program housed on the 3rd floor. The McNeill Academic Program is dedicated to creating a living and learning community for students who participated in the University of Colorado's Pre-Collegiate Development Programs, as well as other students identified by the admissions office who would benefit from participation in a strong academic program with a supportive professional staff.

Housing administration is located in garden level of Hallett Hall. These offices are to be relocated to the Center for Community. The remaining floors of Hallett are dedicated to residence hall use. The Hallett Hall Diversity Program offers a living and learning community committed to promoting diversity, both socially and academically. Students enjoy a supportive environment for acquiring personal awareness of their own-and others'-values as they relate to multicultural issues. The program offers a variety of social and educational activities, including films moderated by faculty and staff, field trips, speaker panels, and other programs guaranteed to raise awareness and challenge societal assumptions of underrepresented peoples.

2.2 Assessment of Space Functionality

The residence hall portion of the Willard building is adequately functional. General layout of the floor plate and size of the double rooms is within current design parameters for residence halls. Layout of common bathroom facilities and general building finishes suffer from functional obsolescence. Bathrooms have had minimal renovation since the original construction in 1954 and many include the original fixtures and finishes. Restrooms that have been refurbished have been designed with the needs of office uses as the design and would require modifications to restore fixtures required for housing uses.

Office space in Willard has largely been occupied with little or no remodeling from the original dormitory floor plan. In limited areas, rooms have either been combined to create a larger space or divided to create two smaller spaces. This creates inefficient offices space with either offices being larger or smaller than current standards. Bathrooms in the office areas are largely as originally designed and equipped, with the shower areas being used for storage space, often without the removal of the shower fixtures.

The Hallett facilities are in better condition than those located in Willard Hall. The garden level offices were converted from student rooms to office space in 1999-2000. Office space is adequate, but some issues exist with mixing student residence with the administrative functions. The nature of the building footprint also creates some inefficiency in the office layout.

2.3 Current Space Utilization

A review of the existing Willard Hall building profile indicates that there are approximately 58,530 sq. ft. of assignable space in the current building at a grossing factor of 68% utilization. Circulation and mechanical, electrical and IT support spaces were not included in this ASF calculation. The Fourth Floor Attic Level is not being included in any of the building square footage calculations. There is anticipated to be as much as 31,500 assignable square feet / 47,000 gross square feet space vacated from Willard Hall with

the Administrative Center functions moving to the Center for Community, scheduled for completion in the summer of 2010.

For Hallett Hall, the move of Housing Administration to the Center for Community will make available 14,875 assignable square feet /22,200 gross square feet for student resident use. This re-commissioning project will not have a significant alteration of the usable space in the buildings.

2.4 Facilities Condition Index

Auxiliary Services at the University of Colorado at Boulder does not receive controlled maintenance funds from the State, so there are no controlled maintenance projects for Housing & Dining Services. The existing FCI is estimated at .72 for Willard Hall. The proposed work on the facility is projected to raise the FCI to above .85. For Hallett Hall, the existing FCI is estimated at .58. The proposed work on the facilities is projected to raise the FCI, but due to the limited scope of the projects it will not raise the FCI to above .85.

2.5 Specific Health/life Safety Deficiencies - Willard Hall

Health/Sanitation – Existing plumbing fixtures within the Willard building do not meet requirements for minimum fixture counts base on current code occupant load factor for dormitories of 50 sq. ft. per occupant. Based on discussions with university building officials, it has been determined that fixtures requirements could be based on anticipated occupancy of programmed bed counts. This approach would require limited additions of plumbing fixtures.

Life Safety – Egress from the occupied space on the fourth floor does not currently meet code requirements. Improvements required to maintain occupancy of these spaces include developing a corridor through the attic areas from the occupied areas to the central stair area.

Accessibility – The existing accessible entrance point is on east side of basement near the central elevator, no other entrances meet accessibility requirements. Most of the common bathrooms are not designed to be accessible and the design of the existing residence shower areas includes ramps with slope in excess of accessibility of requirements. The north and south wings of the second and third floors have ramps in excess of accessibility requirements from the center core area to the wing that limits access to center portion only. The American Disabilities Act does not require that all building areas be made accessible; public areas should be designed to be fully accessible including fully accessible public restrooms. Student bedrooms and bathrooms can meet the requirements of the Fair Housing Act within the areas that are fully accessible.



- Hallett Hall

Health/Sanitation – Existing plumbing fixtures within the work area of the Hallett building would not meet the requirements for dormitories. Community bathrooms would need to be re-developed with the conversions of the area to student rooms. Based on discussions with university building officials, it has been determined that fixtures requirements could be based on anticipated occupancy of programmed bed counts. This approach would require limited additions of plumbing fixtures.

Life Safety – No significant life safety issues have been identified.

Accessibility – The facility has previously been renovated to address accessibility issues. New public spaces would be developed with accessible facilities.

2.6 Housing Needs & Projections

This renovation project fits neatly into the framework of campus improvements defined in the *Campus Master Plan*. The plan recognizes the need both to renovate and update all of the older on-campus residence halls as well as to expand the living-learning opportunities for undergraduates. In the first five year period the master plan identifies approximately \$30 million worth of housing renovation while essentially maintaining the same gross area of housing.

The University indicates that the freshmen class has increased to 5,833 with the fall 2008 semester and a total approaching 30,000 students. A goal of the Flagship 2030 plan and Housing and Dining Services is to increase the number of upper classmen students living in on-campus housing. With the continuing trend of increases in freshman, this goal of increasing non-freshman students is impossible without significant increases in the number of beds provided by the campus. The *Residential 2020 Strategic Plan* report recommends that 24.5% of the housing system be occupied by non-freshman students. Ideally each residential academic program will also attract faculty-in-residences to live in the halls and provide academic support. With the state's predicted population growth over the next 25 years, the university is expecting to continue the same growth rate it has maintained over the past 25 years. Under this model, the university will have approximately 6,500 more students in 2030 than it does today.

The additional rooms provided by this project will address the overall need for additional student rooms created by the retention of students beyond the first year as well as room losses generated by other renovation projects with new RAP programs and additional amenities designed to attract and maintain upper classmen students.

Table C2-a Enrollment Trends

Enrollment Category	Actual FY 2000-01	Actual FY 2001-02	Actual FY 2002-03	Actual FY 2003-04	Actual FY 2004-05	Current FY 2005-06
Campus-Wide Full-Time Equivalent Undergrad Students						
a. Master Plan Projection	21,175	21,340	21,510	21,802	21,802	21,802
b. Legislative Authorized FTE						
c. Enrollment FTE *	19,661	20,271	21,456	22,683	22,619	22,087
d. Enrollment (Headcount) **	22,014	22,545	23,743	24,799	24,895	24,601
e. Resident FTE *	13,065	13,379	14,231	15,128	15,234	15,171
f. Non- Resident FTE *	6,596	6,892	7,225	7,555	7,385	6,916
g. Residence Hall beds	6136	6136	6136	6123	5912	5744
h. Family Housing Units	844	844	844	844	844	844
i. Students in RAP's	1214	1281	1337	1333	1399	1450 (est)

	Projected 2006-07	Projected 2007-08	Projected 2008-09	Projected 2009-10	Projected 2010-11	Maximum Campus Capacity
a. Master Plan Projection	21802	21802	21802	21802	21802	
b. Legislative Authorized FTE						
c. Enrollment FTE *	22,000	22,000	22,000	22,000	22,000	22,700
d. Enrollment (Headcount) **	24,600	24,600	24,600	24,600	24,600	24,900
e. Resident FTE *	15,170	15,170	15,170	15,170	15,170	15,430
f. Non- Resident FTE *	6,830	6,830	6,830	6,830	6,830	7,270
g. Residence Hall beds	5,740	5,500	5,434	5,403	5,403	
h. Family Housing Units	844	844	844	844	844	
i. Students in RAP's	1600	1750	2000	2250	2500	5500

* Undergraduate AY

** Undergraduate fall count

2.7 New or Modified Housing Programs

There are no new programs that are to be added or existing programs to be modified as the direct result of this program plan. The additional student beds provided by this program plan will replace beds that are programmed to be lost through the development of other programs and housing renovation projects previously approved.

2.8 Space Requirements

The majority of the student rooms will have the same configuration; double occupancy bedrooms with shared community bathrooms centrally located in each wing room cluster. There will also be a small percentage of single occupancy rooms. Ideally, rooms of the same type will be as close to identical to each other as possible. Single rooms will be provided for resident assistants, the goal is to have one resident assistant (RA) for a maximum of 35 students. RA's will use the community bathrooms.

Housing has generally found that triple rooms negatively impact student socialization, so no triples have been included in this program plan. Students like the idea of flexible movable furniture and built-in closets with shelves to maximize storage capability.

Community Bathrooms

Improving the bathroom spaces is high on the list of student priorities. Students would like to see improved finishes, increased privacy, better lighting and control over the heating. New bathrooms should be designed to improve privacy by providing a changing area within each shower stall and compartmentalized bathrooms where possible. Bathrooms shall be designed to meet the social and developmental needs of students, as well as accessibility requirements.

Each floor community will have two common bathrooms so that residents of opposite gender can live on the same floor. In addition to the shared community bathrooms, there should be a semi-private accessible bathroom on each floor for students requiring more privacy and meet required plumbing fixture counts.

Apartments

No new Hall Director's Apartment is to be provided in Willard Hall at this time. A Hall Director's apartment may be considered at the time of the planned significant renovation of the building.

No Faculty in Residence or Graduate apartments are planned at this time. Should re-analysis of the academic program needs find that this type of apartment would be desirable, one potential for this type of graduate apartments may be the use of the fourth floor tower spaces for this use. This is not being considered for this program plan due to budget constraints, but may be considered by the design team if they can resolve issues regarding egress and accessibility for these areas.

Great Room/Main Lounge

The Great Room/Main Lounge should be adjacent to a primary building entrance, possibly on the first floor in the same locations as existing meeting room spaces. This lounge should serve as the social heart of the building and have a strong connection both to the circulation patterns within the building and the outside.

Food/Beverage Location

This space is currently provided on the lower level of the building near the central stair and elevator and adjacent to the existing Kitchen. This location works well and also would serve the office and classrooms space for the SASC program.

Kitchen

One public kitchen will be included in the renovated building. It may re-use the existing kitchen located in the basement. The Kitchen is to have upper and lower cabinets, sink, and full sized residential appliances including a range, exhaust hood, refrigerator, dishwasher and microwave. Should the basement kitchen be re-used, it should have access to a lounge or other large space for social functions. This room should be secured to facilitate its management.

Reception/Information Desk

This space needs to be within easy view of the main building entrance and will serve hall visitors as well as provide a place to store and check out vacuum cleaners, games, etc. during high service hours for residents. There will be a desk or counter and storage closet adjacent to the room. An intern desk area should also be provided in this space. The Hall Director's Office should be located close by.

Floor Lounge/Study Lounge

Students noted that small floor lounges are more frequently used than large ones that serve the entire hall. These rooms will function as both social and study spaces. This program plan recommends adding smaller floor lounges to each floor of each wing as part of each student room clusters. These spaces should be equipped and furnished to support both study and social functions.

Providing glass or significant open portions of the walls from the corridors into these lounges will achieve several things; it enhances the social functionality by being able to see whether there are students in the lounge, it will provide some modest amount of natural light into the corridors, and it provides views through the lounge to the outside which provides a sense of orientation that is currently lacking in the circulation spaces. It would be desirable to have these spaces adjacent to and incorporate the small "ironing alcoves" at the end of each hall.

Laundry Rooms

A single laundry room is currently provided in the basement level of the Willard building. This space will need to be expanded to provide capacity for the new residents. One set of Washer/dryer equipment should be provided for every 45 residents. A central Laundry allows for the room to become a more social space. An acceptable alternative will be multiple laundry rooms distributed among the floors of the building. However the floor area associated with these spaces may be required for other program requirements, such as the improvements to the community bathrooms. Maintenance is also easier with one room rather than multiple rooms. Proximity to a Lounge area for student used during laundry activities could be considered.

Offices

Offices will be provided for residential Academic Program Faculty and Residence Life staff. The offices will be clustered in a suite area along with the majority of the Classroom/Seminar Rooms. Office spaces and classrooms should be located with easy access to visiting students, but should require visitors to pass by the main reception area.

Telecomm Rooms

Rooms and closets for the distribution of phone and data services will be provided based on the needs of the project as determined during the initial design phase of the work. Existing Telecomm rooms are to be re-used where possible. New telecomm rooms may be required in addition to the existing closets.

Custodial Closets

Each floor of each wing will have a custodial closet with a mop sink and storage capability. It is anticipated that existing custodial closets will be utilized. As the Housing Department moves toward just-in-time delivery there is less need for larger central storage spaces for custodial supplies and linens. However, a larger central storage room, located near the service entrance is desired in this program.

Custodial Break Room

A break room should be provided for custodial staff. Break room should be close to main service entry and public circulation. Break room should have a private toilet room; sink for washing dishes, microwave and refrigerator as well as a table area for staff and small workstation.

Storage

In addition to the custodial storage described above, general building storage will be provided. Spaces which cannot be utilized for other program use, such as existing fourth floor and attic areas, should be used for this function. A student storage area should be provided at a minimum of one square foot per resident.

2.9 Alternatives Analysis

Housing and Dining Services examined alternative solutions to their need for additional beds as well as the space needs of the Housing Administrative offices. Alternatives consisted of maintaining the status of the office spaces, finding other spaces for these programs, and a more comprehensive remodeling of the two buildings. No other solution was determined acceptable to HDS.

Option A: Maintain offices within Hallett & Willard Hall.

Housing administration could potentially remain in the current location in Hallett Hall. As a long range solution this presents problems with logistics for the renovation and maintenance projects scheduled for the summer of 2010 as well as a significant renovation of Hallett Hall in 2018. The opportunity to relocate offices to C4C with other student services as well as provide additional bed space was attractive to Housing and Dining Services.

The possibility of providing office and classroom space for Student Academic Services (SASC) in the basement of Willard hall was also explored. This would have required significant remodeling of the north wing of the basement level to accommodate the SASC programs. This was deemed too expensive as it would add an estimated \$1,000,000 to the renovation cost and reduce the bed count by 50 beds. Other space is being looked at for the SASC program.

Option B: Construct new Residence Hall space.

Construction of new residence hall space is being considered. The projected demand for additional beds may justify a new residence hall complex or developing an addition to an existing residence hall. The recovery of residence hall space in Willard and Hallett Halls is seen as a solution to an immediate need that could be fulfilled in a shorter time frame and lower cost than development of a new facility.

Option C: Comprehensive Renovation of Residence Hall Space.

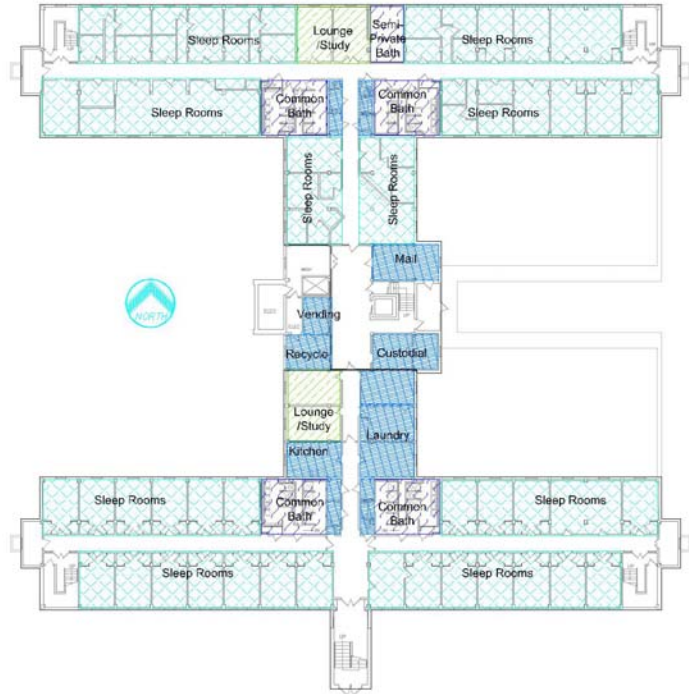
A comprehensive renovation of the building systems and finishes, including potential for reconfiguration of the space to create more single rooms with private baths, or suites with shared baths was considered. This option was deemed too costly as well as taking significantly longer to execute. There is an immediate need for additional beds on campus to relieve pressures from increasing freshman enrolment, assist in the transition of other residence hall renovations and bed count reductions associated with development of RAP programs. A comprehensive renovation of Hallett Hall is planned for 2018; Willard Hall is planned for comprehensive renovation in 2022.

3. Project Description

3.1 Facility Improvements/Scope of Work - Willard Hall

First Basement:

The First Basement is to be the secondary entrance to the residence hall along with the handicap accessible entrance for the facility. The center portion of the building is suggested to house most of the Residence Life and service support functions, including the Laundry, Student Kitchen, vending and custodial areas. North and south wings would be student rooms with common bathroom facilities.



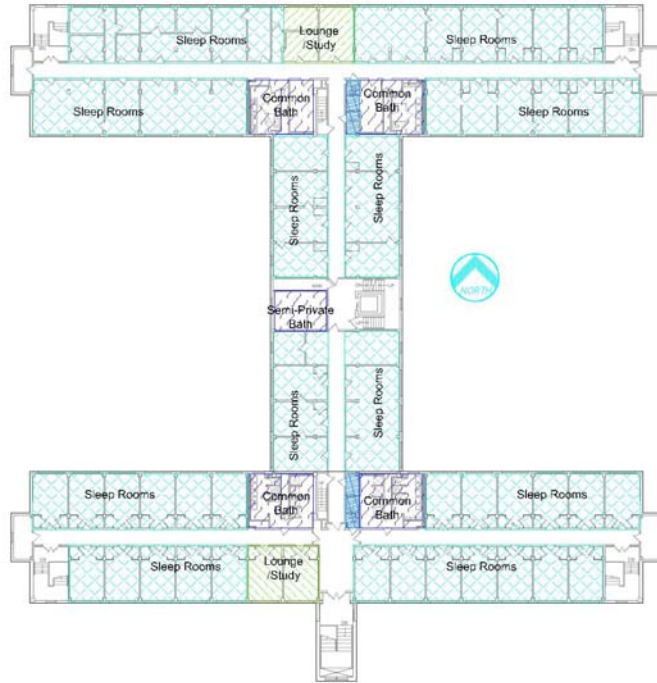
First Floor:

The First Floor is to be the primary entrance to the residence hall and core social area. The center portion of the building is suggested to house most of the Residence Life support functions, including the Reception Desk, Hall Director's office, Main Lounge and other common classroom and study functions. North and south wings would be student rooms with common bathroom facilities.



Second & Third Floors:

These two levels are anticipated to be nearly identical in layout. The room layout would consist of single and double rooms with a new accessible semi-private bath in the core area.



Fourth Floor:

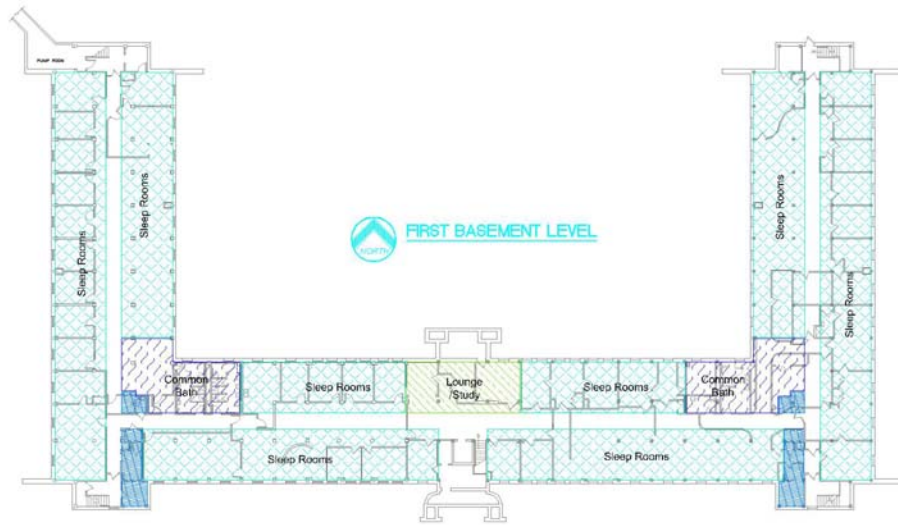
The Fourth Floor is primarily an attic type space. Due to egress and accessibility issues, much of the fourth floor space is not considered to be usable space other than for mechanical & storage type uses. There are two areas of approx. 1,060 sq. ft. each above the north and south wings of the building that were originally designed as 'Head of House' apartments. These spaces could possibly be occupied if a secondary egress route could be defined through the attic area to the central stair. Accessibility issues would limit the type of use for these spaces. An additional concern for occupying these spaces is that they would be difficult to supervise due to the remote nature of the locations.

One possibility for these areas would be to develop the two former Head of House spaces as faculty or graduate student apartments. This use would require improvements to the space for egress as well as adding amenities for kitchen and bathroom facilities for each apartment. Preliminary cost for this would be \$117,000 per unit. It was decided that resolving egress and accessibility issues for these spaces was not appropriate for the intended limited scope of the project.

- Hallett Hall

First Basement:

The First Basement is currently configured as general office space. The remodeling is planned to provide a student room layout similar to the existing layout of the upper floors of the Hallett building.



First, Second & Third Floors:

The First Floor is the primary entrance to the residence hall with the reception and main lounge areas along with a Hall Director apartment and student rooms. No work is anticipated on these upper levels as part of the program plan. Existing residence life amenities on these floors will assist in supporting the new student population to be located on in the first basement level.

Room Area Table - Willard Hall Residential Re-Commissioning

	unit mix	no.	Beds/Unit	Total Beds	Area asf	upgrade asf	remodel asf	total asf
resident areas	single rooms (comm. bath)	14	1	14	120	660	960	1620
	double rooms (comm. bath)	207	2	414	185	19200	22200	41400
	community bathrooms	16			350	2800	2800	5600
	Semi-private bath (accessible)	4			200		800	800
	sink niches (1 per wing)	8			20		160	160
	floor lounge (1 per wing)	8			400		3200	3200
	custodial closet (1per wing)	8			30	240		240
	custodial storage (1per wing)	8			20	160		160
	total sleeping rooms / beds	221	/	428		23060	30120	53180
common areas	main lounge	1			600		600	600
	classroom/study lounge	1			600		600	600
	reception/info w/ closet	1			250	250		250
	public restroom	2			75		150	150
	hall director/res life office	2			150		300	300
	vending machine area	1			75	75		75
	mail room	1			400	400		400
	kitchen	1			200	200		200
	laundry	1			400		400	400
	custodial storage (central)	1			100		100	100
	Custodial break room	1			125		125	125
	recycle holding area	1			100		100	100
						925	2375	3300
	Totals	total net area (asf)					23985	32495
net/gross*								66%
total gross area								85795

* Grossing factor accounts for stairs, elevators, halls, wall thicknesses along with mechanical rooms, electrical rooms, and communication rooms.

Room Area Table - Hallett Hall Residential Re-Commissioning

	unit mix	no.	Beds/Unit	Total Beds	Area asf	remodel asf	total asf
resident areas	single rooms (comm. bath)	4	1	4	120	480	480
	double rooms (comm. bath)	66	2	132	185	12210	12210
	community bathroom (accessible)	2			725	1450	1450
	sink niches (1 per wing)	2			20	40	40
	floor lounge	1			600	600	600
	custodial closet (1per wing)	2			30	60	60
	custodial storage (1per wing)	2			20	40	40
	total sleeping rooms / beds	68	/	136			14880
Totals	total net area (asf)						14880
	net/gross*						67%
	total gross area						22201

* Grossing factor accounts for stairs, elevators, halls, wall thicknesses along with mechanical rooms, electrical rooms, and communication rooms.

3.2 Site Improvements and Requirements

With the development of the Center for Community to the south of these facilities, it is anticipated that site work for new trash facilities and other service access improvements will be required. The full scope of this work will need to be defined as the plans for the Center for Community are developed. This work may also require modification to bike rack facilities that service these residence halls.

3.3 Design Requirements

i. Architectural Design Features

The intent of the program plan is to largely restore Willard and Hallett Halls to the original building layout. Notable exceptions to the original layout would be the development of additional Residence Life amenities. In the Willard building, interior finishes are to be refreshed with new fixtures, paint, carpet and tile throughout the building. Areas in the buildings that have been had floor plan changes to accommodate offices will be reconstructed to fit dormitory rooms or be utilized for Residence Life amenity spaces. No significant upgrades or replacement of building systems, or improvements to site utilities is anticipated at this time.

Willard Hall was designed in 1953 as the Fifth Dormitory Building for the University of Colorado by Troutwein & Howard, the firm which took over the practice of Charles Klauder. Hallett hall was the Seventh Dormitory and designed in 1955 by the same firm. The style and palette of materials used continues to set the tone for buildings on the Campus and provide for a strong identity for the facilities on the Boulder Campus. The exterior of the buildings and their relationship with the campus fabric is to be maintained with the re-commissioning of the residence halls. These buildings do not have documented historic significance.

ii. Energy Conservation and Environmental Sustainability

The process of renovation in itself preserves natural resources and saves energy due to the reuse rather than replacement of systems and materials. In cases where replacement or new construction is necessary, sustainable and recyclable materials are to be considered throughout the design and construction process in conjunction with functionality, maintenance, and cost issues. These structures are built with local native stone and clay tile roofing which have a low embodied energy and a very long life span. The housing of additional students within the core area of campus helps to reduce the need for

parking and other transportation infrastructures. It is not the intent to achieve certification of the facility under the USGBC LEED process; however the design and construction process should look to this program as a guide for appropriate practices. Interior materials will be selected on the basis of durability, low maintenance and low toxicity to ensure high indoor air quality.

The University created one of the first on campus recycling programs in the country; it received the 1995 Campus Recycler of the Year award as the best University recycler in the nation, from the National Recycling Coalition. The renovation of this building will create locations to collect recyclable materials and the construction contractor will be encouraged to recycle construction waste during the renovation work.

3.4 Project Schedule

The goal of the Housing and Dining Services is to re-commission the residence hall as soon as possible following the opening of the new Center for Community. An additional goal is that the improvements to the existing residence hall area are to be completed during the summer so as not to reduce available beds during the academic year. To that end the following schedule is desirable:

Complete Program Plan	August, 2008
BCPC Program Plan Approval	September, 2008
BOR Program Plan Approval	November, 2008
CCHE Program Plan Approval	January, 2009
CDC Budget Request Approval	February, 2008
JBC Budget Request Approval	March, 2009
BOR Architect Selection Approval	May, 2009
Construction Documents complete	February, 2010
Open Bids	March, 2010
Construction Start – existing Residence Hall space	May, 2010
Construction Completion – existing Residence Hall space	August, 2010
Vacancy of existing Administrative Center space- C4C opening	August, 2010
Construction Start – existing Administrative Center space	September, 2010
Construction Completion – existing Administrative Center space	May, 2011
Occupancy	July, 2011
Open – Full Residence Hal	August, 2011

Prerequisites

- A. BCPB Plan Approval
- B. CEC Plan Approval
- C. Board of Regents Plan Approval

- D. CCHE Plan Approval
- E. Capitol Development Committee Approval
- F. Joint Budget Committee Approval

3.5 Cost Estimates

The cost estimate was prepared based on drawings of the existing building and the general scope of renovations and quality level of the final project as defined during the program process. This is intended to determine a reasonable budget for the project rather than an accurate cost of each individual system. The following table summarizes the total project costs including construction cost, FF&E and owner's soft costs. The total construction cost varies depending on the amount of total reconfiguration of the existing spaces.

Willard Hall	\$ 7,175,000
Hallett Hall	\$ 3,750,000
<u>Project total</u>	<u>\$10,925,000</u>

Cost Estimate Tables

University of Colorado at Boulder

Willard Hall Residential Re-Commissioning (428 Beds) September 3, 2008 Project Cost and Financing

	Cost per GSF	Total Project Cost	Prior Appropriation	Future Request FY 2009 - 2010	Future Request FY 2010 - 2011	Future Request FY 2011 - 2012	Other Future Requests
A. Land Acquisition		\$0					\$0
B. Professional Services							
1. Master or Program Planning		\$0		\$0			\$0
2. Architect / Engineer (bldg.)		\$295,483		\$295,483			\$0
3. Architect / Engineer (other)		\$0		\$0			\$0
4. Construction Management		\$76,292		\$76,292			\$0
5. Code Review		\$0		\$0			\$0
6. Site Information and Tests		\$45,380		\$45,380			\$0
7. Other ()		\$4,000		\$4,000			\$0
8. Total Professional Services		\$421,155	\$0	\$421,155	\$0	\$0	\$0
C. Construction							
1. Building							
a. New (0 GSF)		\$0		\$0			\$0
b. Renovate (85,795 GSF)	\$51.70	\$4,435,903		\$4,435,903			\$0
c. Demolish (0 GSF)		\$0		\$0			\$0
d. Hazardous Materials		\$350,000		\$350,000			\$0
e. Other		\$90,049		\$90,049			\$0
2. Site Work		\$5,000		\$5,000			\$0
3. Landscaping		\$0		\$0			\$0
4. Utilities		\$0		\$0			\$0
5. Other ()		\$0		\$0			\$0
6. Total Construction Cost		\$4,880,951	\$0	\$4,880,951	\$0	\$0	\$0
D. Equipment and Furnishings							
1. Equipment		\$165,300		\$165,300			\$0
2. Furnishings		\$842,042		\$842,042			\$0
3. Communications		\$174,540		\$174,540			\$0
4. Other ()		\$3,416		\$3,416			\$0
5. Total Equipment Cost		\$1,185,298	\$0	\$1,185,298	\$0	\$0	\$0
E. Miscellaneous							
1. Art in Public Places		\$0		\$0			\$0
2. Relocation Costs		\$38,855		\$38,855			\$0
3. Project Contingency		\$648,740		\$648,740	\$0	\$0	\$0
4. Total Miscellaneous Costs		\$687,596	\$0	\$687,596	\$0	\$0	\$0
F. Total Cost		\$7,175,000	\$0	\$7,175,000	\$0	\$0	\$0
Source of Funds:							
Capital Construction Funds							
Capital Construction Funds -- Exempt							
Cash Funds							
Cash Funds -- Exempt		\$7,175,000	\$0	\$7,175,000	\$0	\$0	\$0
Federal							

Hallett Hall Residential Re-Commissioning (136 Beds)

September 3, 2008

Project Cost and Financing

	Cost per GSF	Total Project Cost	Prior Appropriation	Future Request FY 2009 - 2010	Future Request FY 2010 - 2011	Future Request FY 2011 - 2012	Other Future Requests
A. Land Acquisition		\$0					\$0
B. Professional Services							
1. Master or Program Planning		\$0		\$0			\$0
2. Architect / Engineer (bldg.)		\$160,973		\$160,973			\$0
3. Architect / Engineer (other)		\$0		\$0			\$0
4. Construction Management		\$39,501		\$39,501			\$0
5. Code Review		\$0		\$0			\$0
6. Site Information and Tests		\$26,959		\$26,959			\$0
7. Other ()		\$0		\$0			\$0
8. Total Professional Services		\$227,433	\$0	\$227,433	\$0	\$0	\$0
C. Construction							
1. Building							
a. New (0 GSF)		\$0		\$0			\$0
b. Renovate (23,201 GSF)	\$113.88	\$2,642,236		\$2,642,236			\$0
c. Demolish (0 GSF)		\$0		\$0			\$0
d. Hazardous Materials		\$0		\$0			\$0
e. Other		\$53,637		\$53,637			\$0
2. Site Work		\$0		\$0			\$0
3. Landscaping		\$0		\$0			\$0
4. Utilities		\$2,000		\$2,000			\$0
5. Other ()		\$0		\$0			\$0
6. Total Construction Cost		\$2,697,873	\$0	\$2,697,873	\$0	\$0	\$0
D. Equipment and Furnishings							
1. Equipment		\$56,500		\$56,500			\$0
2. Furnishings		\$324,360		\$324,360			\$0
3. Communications		\$51,800		\$51,800			\$0
4. Other ()		\$980		\$980			\$0
5. Total Equipment Cost		\$433,640	\$0	\$433,640	\$0	\$0	\$0
E. Miscellaneous							
1. Art in Public Places		\$0		\$0			\$0
2. Relocation Costs		\$55,160		\$55,160			\$0
3. Project Contingency		\$335,895		\$335,895	\$0	\$0	\$0
4. Total Miscellaneous Costs		\$391,054	\$0	\$391,054	\$0	\$0	\$0
F. Total Cost		\$3,750,000	\$0	\$3,750,000	\$0	\$0	\$0
Source of Funds:							
Capital Construction Funds							
Capital Construction Funds -- Exempt							
Cash Funds							
Cash Funds -- Exempt		\$3,750,000	\$0	\$3,750,000	\$0	\$0	\$0
Federal							

3.6 Project Funding

The Willard hall project is to be Cash financed per previous agreements made with the approval of the Center for Community. Hallett Hall will be funded by revenue bonds issued by the University with interest to be capitalized at time of construction and paid for out of room and board revenues from Auxiliary Services. Modest annual rent increases spread across the entire housing system will pay for the renovation projects. Rent increases will recognize the effects of increases at comparable institutions and the rates within the City of Boulder rental market.

Vicinity Map



Proposed Site
Willard & Hallett Halls

Appendix B

Applicable Codes

APPROVED STATE BUILDING CODES (July 2007)

The following approved building codes and standards have been adopted by State Buildings Programs (SBP) as the minimum requirements to be applied to all state-owned buildings and physical facilities including capital construction and controlled maintenance construction projects.

The 2006 edition of the International Building Code (IBC)

(as adopted by the Colorado State Buildings and Real Estate Programs as follows: Chapters 2-35 and Appendices C and I)

The 2006 edition of the International Mechanical Code (IMC)

(as adopted by the Colorado State Buildings and Real Estate Programs as follows: Chapters 2-15 and Appendix A)

The 2006 edition of the International Energy Conservation Code (IECC)

(as adopted by the Colorado State Buildings and Real Estate Programs)

The 2005 edition of the National Electrical Code (NEC)

(National Fire Protection Association Standard 70) (as adopted by the Colorado State Electrical Board)

The 2003 edition of the International Plumbing Code (IPC)

(as adopted by the Colorado Examining Board of Plumbers as follows: Chapter 1 Section 101.2, 102, Chapters 2-13 and Appendices B, D, E, F and G)

The 2003 edition of the International Fuel Gas Code (IFGC)

(as adopted by the Colorado Examining Board of Plumbers as follows: Chapter 1 Section 101, 102, Chapters 2-8 and Appendices A, B, C and D)

The National Fire Protection Association Standards (NFPA)

(as adopted by the Department of Public Safety/Division of Fire Safety as follows with editions shown in parentheses: NFPA-1 (2006), 11 (2005), 12 (2005), 12A (2004), 13 (2002), 13D (2002), 13R (2002), 14 (2003), 15 (2001), 16 (2003), 17 (2002), 17A (2002), 20 (2003), 22 (2003), 24 (2002), 25 (2002), 72 (2002), 409 (2004), 423 (2004), 750 (2003), 2001 (2004)) and 45 (latest edition).

(as adopted by the Department of Labor and Employment/Boiler Inspection Section as follows: sections I, IV, VIII-Divisions 1 and 2 and 3, X and B31.1)

The 2004 edition of the National Boiler Inspection Code (NBIC)

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

The 2004 edition of the Controls and Safety Devices for Automatically Fired Boilers CSD-1

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

The 2004 edition of the Boiler and Combustion Systems Hazards Code, NFPA 85

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

The current edition of the Rules and Regulations Governing the Sanitation of Food Service Establishments

(as adopted by the Department of Public Health and Environment/Colorado State Board of Health)

The 2003 edition of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities

(as adopted by the Colorado General Assembly as follows: CRS 9-5-101, as amended, for accessible housing)

Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG).

In case of a conflict between references applicable codes, the one having the more stringent requirements shall govern. Where governing codes indicate that the drawings or specifications do not comply with the minimum requirements of the codes, the Contractor shall be responsible for providing an installation, which will comply with code requirements. Drawings and specifications shall be followed where they are superior to code requirements.

Appendix C

List of Source Documents

"Draft" Residential Campus Report, January 13, 2006
Residential Campus Study Group

University of Colorado, Campus Master Plan
Approved by the Board of Regents in February of 2000
<http://www.colorado.edu/masterplan/>

Willard Hall Space Study,
Root Rosenman Architects
October 15, 2007

Housing Audit Summary – Requirement List Report
VFA, Inc. August 10, 2004

Code Review

This code review is based on the 2006 International Building Code (IBC) which will be the code in effect for the project. Codes may be updated prior to the renovations; therefore, the most current codes should be confirmed with the University prior to the start of the project.

7.1 The Building

7.1.1 Building height and area

Willard Hall:

Building Height: Approx. 45' / 4 stories. Area: 87,915 square feet. (IBC 502.1)
1st Basement. Area: 21,796 square feet. (IBC 502.1)
First Floor. Area: 21,333 square feet. (IBC 502.1)
Second Floor. Area: 21,333 square feet. (IBC 502.1)
Third Floor. Area: 21,333 square feet. (IBC 502.1)
Fourth Floor. Area: 2,120 square feet. (IBC 502.1)

Hallett Hall:

Building Height: Approx. 45' / 4 stories. Area: 93,467 square feet. (IBC 502.1)
1st Basement. Area: 22,201 square feet. (IBC 502.1)
First Floor. Area: 21,710 square feet. (IBC 502.1)
Second Floor. Area: 21,607 square feet. (IBC 502.1)
Third Floor. Area: 21,607 square feet. (IBC 502.1)
Fourth Floor. Area: 6,342 square feet. (IBC 502.1)

7.1.2 Building occupancy and use groups

Occupancy: R-2, dormitory (IBC 310.1)

Incidental use areas with one hour separation: Laundry room, storage rooms. (IBC 302.1.1)

Accessory use areas: Lounges (assembly) no separation required if less than 750 SF. (IBC 302.2.1)

7.1.3 Building location with respect to adjacent properties and roads

Willard Hall:

All of the adjacent building and roads are on University property.

North: 35 feet to midpoint between adjacent building

South: 45 feet to midpoint of road, 60 feet to midpoint between adjacent building

East: 58 feet to midpoint between adjacent building

West: 95 feet to midpoint between adjacent building

Hallett Hall:

All of the adjacent building and roads are on University property.

North: 20 feet to midpoint between adjacent building

South: 45 feet to midpoint of road

East: 100 feet to midpoint of road, 90 feet to midpoint between adjacent building

West: 58 feet to midpoint between adjacent building

7.2 Building Fire Resistance

7.2.1 Type of construction

The construction type for the renovated buildings shall be determined by the design team during the design phase of the project, working with code authority. One possible strategy is to consider the building type III-A which would allow a four story building up to 55' tall and 16,000 square feet

(per table 503.) Height increases for sprinklered buildings would allow for a four story building up to 60' tall per IBC 504.2. Area increases per IBC 506 are calculated here per equations 5-1 and 5-2:

Increase due to frontage = $100[1-.25]1 = .75$

Increase due to sprinklers = 200%

Allowable Area = $16000+[16000*75]100+[16000*200]100 = 60000$ SF

7.2.2 Fire resistance of structural members (include sprinklered building exceptions)

See above: No fire ratings are established for the structural members. (IBC Table 601)

7.2.3 Fire resistance of all exit routes including stairs, corridors, and ramps

Corridors shall be ½ hour fire rated (IBC Table 1016.1) assuming fully sprinklered building.
Stairs and ramps shall have a 1 hour fire rated enclosure. (IBC 1019.1)

7.2.4 Fire resistance of vertical openings and shafts

Shafts shall have a one hour rating. (IBC 707.4)

7.2.5 Fire resistance of special occupancy enclosures such as storage rooms and hazardous areas

Incidental use areas with one hour separation: Laundry room, storage rooms. (IBC 302.1.1)

7.2.6 Fire resistance of other building elements such as partitions, doors, and exterior wall openings.

Corridor doors: 20 minute rating (IBC Table 715.3)

Other walls & partitions non-rated (IBC Table 601 Type VB)

No limits on opening in exterior walls due to fire separation distance. (IBC Table 704.8)

7.2.7 Sealing of penetrations.

Penetrations through fire-rated assemblies shall be protected by the requirements of the IBC Section 712.

7.3 Ignition Prevention

7.3.1 Identify potential ignition sources and related code requirements.

See 7.1.2 above for incidental storage use.

7.3.2 Identify hazardous locations and the required classifications

There are no hazardous (Group H occupancy) components in this program.

7.4 Fuel Control

7.4.1 List amount and type of combustible material, e.g., fire retardant treated wood that may be used.

(See also 7.9, Special Hazards.)

The roof structure and decking is made of wood with wood ceiling and soffits on the top floors.

The rest of the structure is non-combustible consisting of steel columns, concrete slabs and concrete masonry. Type V construction allows for the use of any building materials permitted by code. (IBC 602.5)

7.4.2 Identify and list interior finish classifications in exit paths, places of assembly, and all other areas.

All spaces in the building including vertical exits and exit passageways, exit access corridors and other exitways, and rooms and enclosed spaces shall have a Class C flame spread rating as long as the building is fully sprinklered. (IBC Table 803.5)

7.4.3 Identify allowable types of furniture.

7.5 Means of Egress

7.5.1 Determine and list occupant load factors and occupant loads for each floor and for each major space within a floor, e.g., assembly areas.

Occupant load factor for a dormitory is 50 gross square feet per person. (IBC Table 1004.1.2)
Occupant load factor for lounges and classrooms/seminar rooms is 15 net square feet per person. Public spaces shall be less than 750 square feet each.
Each floor of each wing requires two means of egress. Worst case is the central wing which is 8092 gross square feet total including 988 net square feet of public areas. Total occupant load is 208 which will require two exits. (IBC Table 1018.1)
Occupant load calc: $(8092-988)/50+988/15=208$.

7.5.2 Determine the minimum number of exits required for each floor and for each major room, e.g., assembly areas and labs, within a floor.
All individual rooms and spaces in the program require only one exit access door. (IBC Table 1014.1)

7.5.3 Determine the minimum width of exits required for each floor and for each major room, e.g., assembly areas within a floor, ADA requirements.
Minimum door width required: 32" clear. (IBC 1008.1.1/ANSI 117.1 - 404.2.3)
Egress width requirements for fully sprinklered R Occupancy: 0.2" per occupant for stairs, 0.15" per occupant for other egress components. (IBC Table 1005.1) Minimum requirements for components shall govern: 44" minimum width for stairs (IBC 1009.1) and corridors. (IBC 1016.2)

7.5.4 Determine the maximum allowable travel distance.
Maximum travel distance (with sprinklers) is 250 feet. (IBC Table 1015.1)

7.5.5 Determine the maximum allowable dead-end.
Maximum allowable dead end is 20 feet. (IBC 1016.3)

7.5.6 Determine the maximum common path of travel allowed.
The maximum allowable common path of travel is 75 feet. (IBC 1013.3)

7.5.7 Determine the swing direction requirements.
All doors to individual spaces may swing into the space since no spaces in the program have an occupant load greater than 50. All doors in corridors and doors from the corridors to the outside shall swing in the direction of egress. (IBC 1008.1.2)

7.5.8 Determine the place of refuge requirements; number, size, and location.
Areas of refuge are not required since the building will be fully sprinklered. (IBC 1007.3 Exception 3)

7.5.9 Determine exit signage requirements.
Exit signs required in corridors. (IBC 1011.1 exceptions 1 & 3)

7.5.10 Determine exit lighting requirements.
Exit lighting required in corridors and stairs, not in student suites. Provide 1 foot-candle at the floor. (IBC 1006.1 Exception 3)

7.5.11 Determine emergency power supply requirements.
Exit lighting will require emergency power. (IBC 1006.3)

7.6 Smoke Management Systems

7.6.1 Determine smoke resistance requirements for corridors, lobbies, etc. N/A

7.6.2 Determine any active and/or passive smoke extract requirements. N/A

7.6.3 Determine locations and sequence of operations for all smoke and fire/smoke dampers and duct detectors.

Fire smoke dampers at rated shaft penetrations and corridors walls per IBC 716.5.3 through 716.5.4.

Make-up air from central AHU: Supply duct smoke detectors (no return ducts, 100% outside air)

- 7.6.4 Determine stair pressurization requirements. N/A
- 7.6.5 Determine high-rise building requirements. N/A
- 7.6.6 Determine basement requirements. N/A

7.7 Fire Suppression Systems

- 7.7.1 Determine portable fire extinguisher requirements: type, spacing, and location.
Portable fire extinguishers required per IFC 906.1. Provide extinguishers per IFC section 906 and NFPA 10.
- 7.7.2 Determine automatic sprinkler system requirements: type, hazard classification, water supply, drainage, fire department connection, zone limitations, test equipment, exempt areas, and supervision.
Automatic sprinkler system to be designed and installed per the IBC Section 903.3 and NFPA 13.
- 7.7.3 Determine standpipe system requirements: type/class, number, location, minimum pressure, supervision, and fire department connection.
Standpipe not required per IBC 905.3.1
- 7.7.4 Determine fire department access and suppression provisions: hydrant locations, fire department access roads, and fire lanes.
Paved access for fire trucks is available on the north, east and west sides of the building.
Hydrants to be provided per 2003 IFC Appendix C.

7.8 Fire Detection and Alarm Systems

- The new fire alarm system will be design to meet the requirements of the 2003 IBC, IFC, UCB standards and NFPA.
- 7.8.1 Determine manual pull station requirements: type, spacing, and location.
Manual pull stations will be located at each exit, and at each floor. Additional pull stations will be provided if the travel distance exceeds code allowed maximum distance.
 - 7.8.2 Determine automatic detector requirements: type, spacing, and location.
Ionization and thermal detectors will be provided in elevator lobbies, elevator machine room and shafts, electrical and telecommunications rooms and at the location of fire alarm panel. Duct detectors will be provided in all AHU equipment with a supply and return cfm exceeding the minimum code requirements.

Single station smoke detectors connected to the building power system and supervised by the fire alarm system will be provided in each resident room.
 - 7.8.3 Determine occupant notification and alarm requirements: type (horn, horn/strobe, speaker strobe) and location. (Verify impact of interior rooms.)
Audio and visual notifications appliances, horn/strobes, will be located in corridors, common spaces and resident rooms. All strobes will be synchronized. Speaker/strobes in the student rooms and in the corridors/public areas should be on separate circuits. Areas for public notification via the integrated public address system should be segregated by floor, wing and all-call.
 - 7.8.4 Determine sequence of operation of all systems, e.g., that are connected to or monitored by the building detection and alarm system. Examples include, fan shutdown, smoke management systems, and stairwell pressurization systems.

In general the sequence of operation of the system will be as follows:

Activation of any initiating device, detector, pull station, flow switch, will activate the alarm throughout and the exterior horn/strobe; will report the status at the FACP and FAA and to the Campus main FACP.

Detector in the elevator lobby, elevator machine room and elevator shaft activation will recall the elevator, report status to the FACP, FAA and Campus main FACP and sound the alarm in the building.

Smoke detectors will shut down the served AHU and report as Supervisory signal at the FACP, FAA and Campus main FACP. The thermal detector will shunt trip the elevator circuit breaker.

Flow switch activation will sound the alarm throughout; will activate the exterior horn/strobe and fire department connection bell/strobe.

7.9 Special Hazards

No special hazards are included in this program plan.

7.9.1 Limits of flammable liquids and other hazardous material (chemical/gas inventory)

7.9.2 Hazardous material spill control

7.9.3 Hazardous material containment

7.9.4 Explosion protection and venting

7.9.5 Hazardous material detection systems

7.9.6 Hazardous labs ventilation systems, hoods and chemical and gas storage cabinets.

7.9.7 Special suppression systems for special hazard areas.

7.10 Building Services

7.10.1 Emergency generator.

Emergency system is not required. Exit and egress lighting is provided with self testing 90 minutes battery back up.

7.10.2 Elevators.

Hoistway enclosures per IB Section 3002

One hour rated shaft (IBC 707.4)

7.10.3 Access to space and functions by persons with disabilities.

Public areas will meet the requirements of the ADA as defined in the ANSI 117.1 standard. This will include accessible routes throughout the public spaces and corridors as well as fully accessible public restrooms.

Student bedrooms and suites will meet the requirements of the Fair Housing Act. The scope of these requirements is defined in the IBC Section 1107. Seven of the units shall be fully accessible (Type A) and two of those shall have roll-in showers. (IBC Table 1107.6.1.1) Type B units will not be required in this building. (IBC3409.1 Exception)

7.11 Plumbing

Minimum number of plumbing fixtures required per IBC table 2902.1: One water closet and lavatory per 10 occupants, one shower per 8 occupants, one drinking fountain per 100 occupants, and a minimum of one service sink.

Domestic water supply and distribution piping shall be sized in accordance with Chapter 6 and Appendix E of the IBC.

Sanitary drainage and vent piping per Chapter 7 of the IBC.

7.12 Ventilation and Exhaust

Ventilation systems to be designed in accordance with Chapter 4 of the IMC.

Exhaust to be designed in accordance with Chapter 5 of the IMC.

7.13 Electrical

Electrical Systems will be designed per the 2005 NEC.

7.14 Other Issues identified by the design team

Access and service space clearances around appliances to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of any required fire-resistance-rated assembly. In accordance with the IMC 306.1

Condensate disposal: Condensate from all cooling coils and evaporators shall be conveyed from the drain pan outlet to an approved place of disposal per IMC 307.2.1.

Outside air intakes shall be located in accordance with IMC 401.5.

Steam and hydronic piping shall be design in accordance with Chapter 12 of the IMC.

Ductwork construction shall be designed in accordance with SMACNA HVAC duct construction standards.

Information Technology Requirements

Communication Standards and Codes

- 1) Comply with University of Colorado standards at <http://fm.colorado.edu/construction/standards/> with follow-up with Information Technology Services (ITS) department for any Addendums.
- 2) Comply with industry standards, which include but are not limited to ANSI/TIA/EIA, BICSI, NEC, ASTM, FCC, IEEE, ISO, UL, etc.

Engineering

- 1) All projects that include or affect communication at the University of Colorado shall be engineered by a communication consultant and certified by BICSI as an RCDD.
- 2) All engineering will follow UCB Division 27 and most current CSI communication standard format including both "T" AutoCAD files for the Information Technology Services (ITS) department at completion and follow Division specification from the CSI Master Format.
- 3) Engineering will address affects of both existing and new infrastructure. The engineering and construction must also address removing all temporary lines.
- 4) The engineering will address all cabling for both the Information Technology Services (ITS) department and Qwest cabling (ISP and OSP) with parallel infrastructure.
- 5) Consultants will work with at least four departments within ITS which will include Media services, Plant, Computing center, and Voice/Data services.
- 6) Projects will be turnkey with the understanding that only ITS contractors will be splicing and/or removing into the backbone cabling and will also be connecting the services (MAC) to the infrastructure at the cost of the projects. All patch cords are project costs and to be provided prior to completion as ITS requests.
- 7) All new communication rooms shall comply with ANSI/TIA/EIA 569 for sizing, spacing and stacked.
- 8) The communication rooms shall not be located next to electrical or elevator rooms.
- 9) Pathways will be crosschecked with other utilities existing and new for the project to confirm spacing and future access by engineers and consultants of the project.
- 10) Removals will be documented and provided to ITS and specified to be completed by certified communication contractors. Once cabling is removed others can remove the pathways.
- 11) No other service will share Communication rooms or pathways which include but are not limited to Qwest, Ccure, security, intercom, alliance networks, etc.
- 12) Special services such as Andover, Fire alarms, Qwest, Elevators, card readers, and Labs need to be addressed and infrastructure provided for when needed. Extra time will be required for testing prior to service installation and all labeling is to be completed at testing walk.
- 13) All cabling will be specified to run back to the communication rooms with the exception of some special Labs which can not mix voice and data in the same faceplates. All cabling in a faceplate will home to the same communication room.
- 14) All riser and tie fiber or copper cables within the building will home back to the MDF communication room.
- 15) No liquid piping or electrical panels other then what is requested by ITS is allowed within the communication rooms. Fire sprinkler legs are required and installed per codes.
- 16) Fire stopping will be specified to Electrical contractor for pathway installations and for communication contractor for pathway closure.
- 17) Specifications should plan for card readers to be active 3 weeks prior to completion for all communication rooms to secure all equipment and access.
- 18) Data equipment may not be specified at construction CD's as equipment may be outdated by time of installation. Comply with timeframe of specification of equipment

- with ITS and housing staff.
- 19) Typical cabling is two category 5e cables to a faceplate, with only one cable to wall phones and wireless boxes.
 - 20) All fiber projects need to include schematic drawing per UCB-ITS standard.
 - 21) Power needs should include but not be limited to dedicated and isolated 20 amp circuits per TIA/EIA, Grounding bus bar with connections and lighting for each communication room.
 - 22) All communication rooms are to be tied into the common building ventilation.
 - 23) The communications pathways shall be a horizontal system.
 - 24) The communication back boxes shall not be nipped.

Contractors

- 1) All communication contractors will be certified to the current cabling standards for both cabling and hardware.
- 2) Electrical contractors are to provide the pathways per the standards listed above. Communication contractors will provide all voice and data cabling.
- 3) The communication contractor must comply with all ITS division specifications including but not limited to testing, labeling, inspections, jack numbering, etc. of which need to be supplied directly to the ITS department.
- 4) Contractors must use construction phone and data service through Qwest communications or other providers.
- 5) The communications contractor must provide faceplate numbers to ITS 4 weeks prior to completion and per current ITS division standards.
- 6) In addition to the prints with jack numbers that need to be provided to ITS prior (4 weeks see specifications) to completion ITS will also need prints with highlighted changes provided at the walk through for testing one week prior to turnover.
- 7) Keys to the communication rooms need to be provided to ITS during construction.
- 8) A project schedule needs to be included and provided prior to construction with a set date for completion and turnover. The schedule must also allow commissioning time for testing of all the jacks prior to the completion date with all jacks pre-tested.
- 9) Elevators, Andover and fire alarm must be tested and labeled prior to owner occupancy and will require adequate scheduling for these services to be installed prior to other services in the building.
- 10) Electrical circuits must be installed 3 weeks prior to installing and testing of electronics in communication rooms.
- 11) 24 hour contacts must be supplied to ITS.

Appendix F

Third Party Review

(to be provided at a future date)