

LIVING | LEARNING



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INCLUSIVE DESIGN GRADUATE RESEARCH GROUP
SCHOOL OF ARCHITECTURE AND PLANNING
STATE UNIVERSITY OF NEW YORK AT BUFFALO

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All photographs, drawings, and diagrams are the author's unless otherwise noted.

¹ Courtesy of Cannon Design

² University at Buffalo North Campus map, <http://www.buffalo.edu/buildings/>

³ University at Buffalo Campus Living, <http://www.ub-housing.buffalo.edu/residencehalls.php>

⁴ Society for College and University Planning, <http://www.scup.org/page/awards/2008/award13>

⁵ EHDD Architecture website, <http://www.ehdd.com/#/ResidenceHallsUnits1and2InfillStudentHousingUniversityofCaliforniaBerkeley>

⁶ www.flickr.com

⁷ Morphosis Architects' Morphopedia, <http://morphopedia.com/projects/university-of-toronto-graduate-student-h>

⁸ Propst, R. L., Claudia G. Propst. (1973). *The University of Massachusetts Dormitory Experiment*. Ann Arbor, MI: Herman Miller Research Corp.

⁹ *Building UB: the comprehensive physical plan*. (2009). University at Buffalo the State University of New York: Buffalo, NY.

¹⁰ Boccella Precast, <http://www.boccellaprecast.com>

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SCHOOL OF ARCHITECTURE AND PLANNING
Graduate Program in Architecture

SPECIAL PROJECT ABSTRACT

Special Project Title: *Living-Learning Quarter: An Inclusively Designed Residence Hall for University at Buffalo's North Campus*

Student Name: Lauren Marí Massari

Statement of Issue/Problem:

How can inclusive design approaches improve the design of residence halls to support the academic, social, and personal needs of university students? The Inclusive Design Graduate Research Group Studio consulted past research and conducted focus groups with current university students to create a body of evidence for designing a positive living and learning experience, which has largely been lacking in on-campus housing. The site chosen for the result of this evidence-based design is designated as the "Living-Learning Quarter" in the University at Buffalo's comprehensive physical plan for North Campus.

Statement of Significance of Issue:

Universities have to compete with many off-campus housing options to attract students to campus residential settings. On-campus housing has traditionally been seen as inflexible, restrictive, and unsupportive of key issues such as privacy, socialization, and independence. The University at Buffalo has implemented a number of innovative options in the past to accommodate the needs of its students, but as part of the new master plan, wants to build new residence halls in order to increase enrollment at the school. Through the implementation of the master plan, the university hopes to foster a closer community and create an urban living environment on North Campus. The focal point has been designated as the Living-Learning Quarter, a mixed-use building at the heart of the campus. A major goal of the studio is to use the information that is learned from literature reviews, interviews, and focus groups to improve upon the on-campus residences currently offered to students as a way to support their needs as well as the desires of the university.

Method of Inquiry:

Traditional and inclusive design methods were utilized for the projects. These included architectural precedent studies, literature reviews of research conducted on on-campus housing, interviews with university officials and architects involved with designing university facilities, and user input including focus groups. The Seven Principles of Universal Design and the Universal Design Focus Areas were used as design guides and evaluation criteria. Additionally, more traditional design approaches such as site analysis, circulation diagramming, formal operations, building systems, and material investigations were used as well.

Expected Outcome:

This project resulted in research, analyses, case studies, and projects that were presented in poster, model, and digital forms. Ultimately, the material was compiled and published in bound book and digital formats consistent with the requirements of the Department of Architecture, School of Architecture and Planning, University at Buffalo, State University of New York.

SEMESTER PROJECT DESCRIPTION

This semester, the Inclusive Design Graduate Research Group, under the instruction of Dr. Ed Steinfeld, professor and Director of the Center for Inclusive Design and Environmental Access, will be making design proposals to the University at Buffalo for a new residence hall on UB's North Campus as part of UB's recent comprehensive physical plan. The semester is being conducted in three parts: architectural precedents and literature reviews; post-occupancy evaluations in the form of focus groups; and the development of individual design projects.

Before beginning the design process, the studio was tasked with finding appropriate precedents in architecture periodicals. The focus was on larger-scale projects that incorporated any combination of study, classroom, commercial, and recreational facilities into residential buildings or complexes, creating living-learning environments for students. The studio also conducted literature reviews to discern what scientific research has discovered about the influence of the physical environment on residence hall occupants. As part of this initial research, the studio also went on tours of three vastly different on-campus housing options available to University at Buffalo undergraduates; Greiner Hall, Ellicott Complex, and Governors.

To complement what was learned from the scientific studies, the studio also conducted focus groups with residents of the Governors Complex on UB's North Campus. As the Inclusive Design research group, the studio is focused on the users of buildings and strives to design to improve human performance, health and wellness, and social participation. As occupants of on-campus housing, these students can provide us with valuable information about what works and what needs improvement in their environment, and their concerns can be addressed in our design proposals.

The last step will be to synthesize what was learned from the precedents, tours, literature, and focus groups into a design that meets both the studio's goals of Inclusive Design and the university's expectations for a living-learning environment for UB's comprehensive physical plan.

UNIVERSITY AT BUFFALO NORTH CAMPUS LIVING OPTIONS

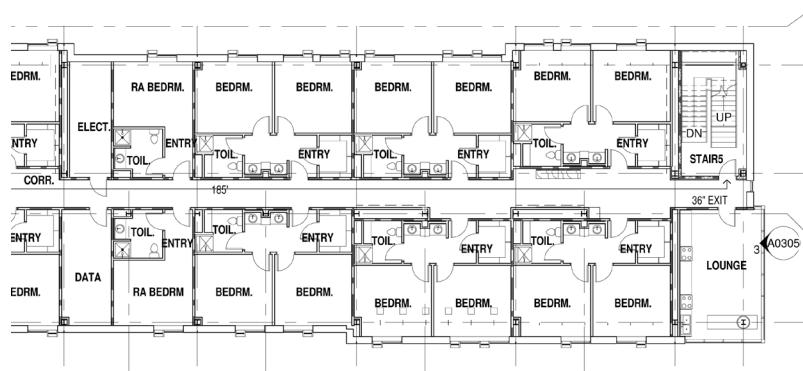
Before beginning the design process, the studio took tours of three undergraduate dorm complexes located on University at Buffalo's North Campus: Greiner Hall, Ellicott Complex, and Governors Complex. Each provides a different living and learning opportunity, with advantages and disadvantages found in each. North Campus is also home to several other residential areas, open to both undergraduates and graduates, but these apartment complexes were excluded from the tours.

GREINER HALL

Opened for the 2011-2012 academic year, Greiner Hall houses 600 sophomore students in a suite-style layout. It boasts a gold LEED rating, and some of its sustainable features include recycled materials, a reflective roof, and bioswales in the surrounding landscape. All floors have statistics and other information to educate students and encourage them to lead sustainable lifestyles. The Center for Inclusive Design and Environmental Access was also consulted in an effort to include some universally designed features, such as accessible in-suite bathrooms and raised electrical outlets. The first floor includes a café, a variety of study spaces, and classrooms, and is accessible to everyone during the day. However, one must be a resident of the building and have their student ID to gain access to the residential floors, providing a safe environment. Greiner offers students not only a place to sleep, but also convenient access to other amenities that support their academic and social development. It also serves as a way to bridge the distance between the Ellicott complex and the rest of the campus.



Clockwise from top:
West elevation of
Greiner; example
of floor/unit layout;
footprint of Greiner
Hall

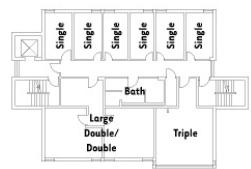
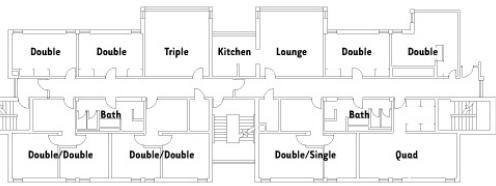


PROJECT ONE_PRECEDENTS

ELLICOTT COMPLEX

Ellicott Complex was completed in 1974 and was intended to be a residential college where students lived and had their classes. When this idea failed, many of the classrooms were converted to administrative offices, though some academic departments remain at Ellicott. Other non-residential areas include a theater, dining facilities, and convenience stores. Students live in six residential towers, which are connected to one another through the main spine of the complex. The towers are also connected by a large outdoor terrace at the second level. Students have access to lounges, kitchens, recreation areas, and laundry, but not on every floor.

The layout of the residences follows the traditional double-loaded corridor with common bathrooms located on each floor. Most students live in double occupancy rooms, although there are singles, triples, and quadruples. Wayfinding has proven to be an issue in the complex: there is little visual access to the outdoors while in the main spine; some rooms are only accessible by certain staircases/elevators; and poor signage. During the tour, renovations made some areas nearly inaccessible and required residents to detour and go outside to get to their destinations; temporary signs gave detailed directions on how to get to the laundry room. Another issue is the complex's distance from the main academic area, a result of Ellicott no longer being used as a residential college.

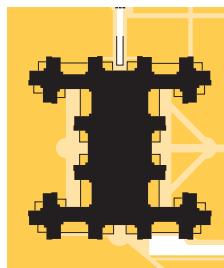


Clockwise from top:
Spaulding and Richmond Quadrangles; Sample
floorplans; footprint of Ellicott Complex.

PROJECT ONE_PRECEDENTS

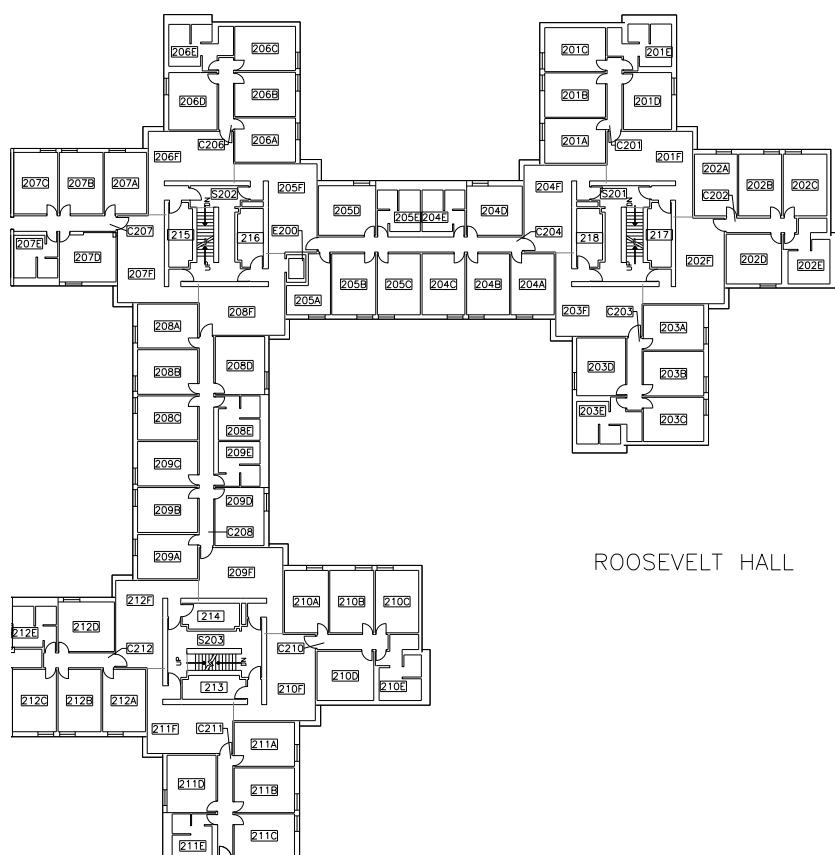
GOVERNORS COMPLEX

Governors complex was completed in 1972 and designed by I.M. Pei and Associates. It houses first year and returning undergraduate students, as well as first-year Honors Scholars. It offers residents a dining hall, a late-night cafe, a fitness center, an academic center, a computer center, and different-sized lounges. Residents have the option of painting their floor lounges. It is also located much closer to the academic spine than Ellicott and Greiner. Students live in double occupancy rooms and share a common bathroom. Governors is divided into four identical inter-connected houses; each house consists of three cores with circulation and lounges, surrounded by double-loaded corridors in a cruciform pattern. As a result of this complicated circulation pattern, wayfinding is difficult in this complex. The basement level houses most of the amenities, such as the fitness center and dining hall. Overall, the building appears to lack adequate light (both natural and artificial) and comfortable public spaces. Narrow hallways and cramped lounges contribute to the unpleasant environment found on the residential floors.



Clockwise from top:
East elevation of
Governors Complex;
Floorplan of Roosevelt
Hall; footprint of
Governors.

(Note: All footprints are to scale for size comparison between complexes)



ROOSEVELT HALL

PROJECT ONE_PRECEDENTS

ARCHITECTURAL PRECEDENTS

INFILL STUDENT HOUSING (UNITS 1 + 2)

UC Berkeley
EHDD Architecture
Completed 2004-05

- The new buildings step down to tie the 1960s high-rise towers with the surrounding neighborhood
- The narrow facades, and different textures, colors, and bays, break up the size of the buildings
- LEED silver
- Project included demolishing existing dining facility and reconstructing the basement



Figure 10: New student housing at Units 1 and 2



Figure 11: Aerial view of housing complex



Figure 12: Site plan of existing and infill housing

SITE PLAN

- Added 267,500 sq. ft. of space
- 884 beds (3 buildings are dormitories, 1 is apartments)
- Infill - located on two heavily developed city blocks
- Two new residential towers on each block

PROJECT ONE_PRECEDENTS



Figure 13: Triple occupancy bedroom

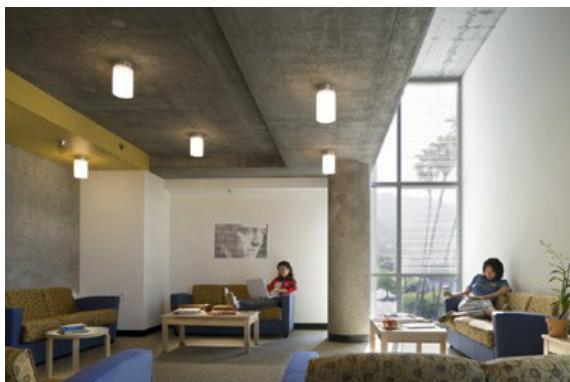


Figure 14: Lounge

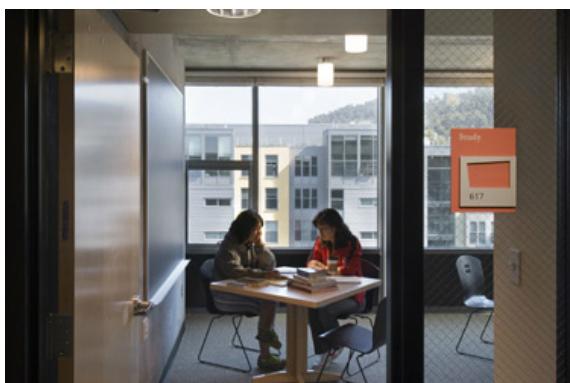


Figure 15: Study room



Figure 16: Entrance lobby

UNIT 1: CHRISTIAN + SLOTTMAN HALLS

- o Mini-suites
- o Approximately 215 students per hall
- o Double and triple occupancy rooms
- o Each suite has bathroom
- o Christian Hall contains the African American Theme Program
- o Slottman Hall contains the Native American Theme Program

UNIT 2: TOWLE + WADA HALLS

- o Towle Hall - mini-suites
 - 215 students
 - Double and triple occupancy rooms
 - Each suite has bathroom
- o Wada Hall - apartments
 - Transfer and upper-division students only
 - Double and triple occupancy bedrooms in two and three bedroom apartments
 - Each apartment has kitchen, living/dining area, and bathroom

PROJECT ONE_PRECEDENTS

STATE STREET VILLAGE

Illinois Institute of Technology, Chicago, IL
Murphy/Jahn
Completed 2003

- o Three five-story buildings face State Street and back up to the Chicago Transit Authority's Green Line elevated train
- o Entry courts formed between U-shaped buildings
- o Continuous screen connects all buildings along State Street, making courtyards appear semi-public
- o Two suite-style buildings (two students per bedroom) and one apartment-style building (one student per bedroom)
- o Offers theme communities such as Sustainable Living and Recreation and Wellness

COMMON SPACES

- o Communal lounge located at each elevator group on connecting bridges
- o Each wing has a common room at the top floor as well as a roof terrace for resident use

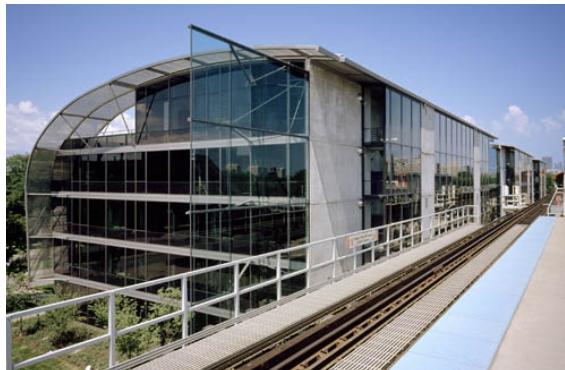


Figure 17, top: Overall view

Figure 18, middle: View from el

Figure 19, bottom: Courtyard

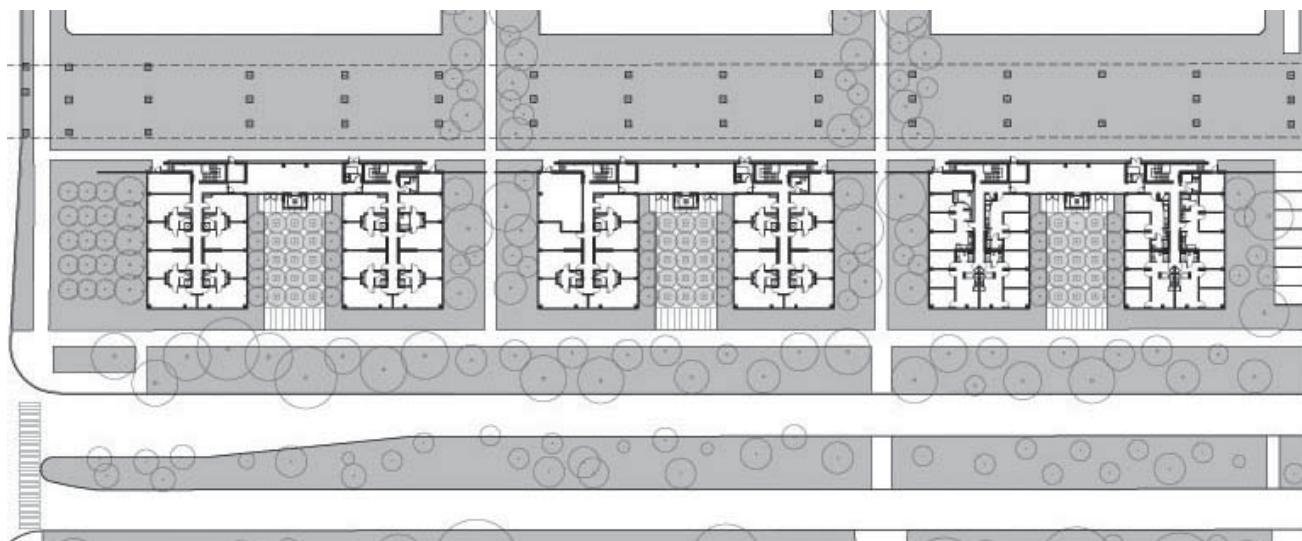


Figure 20: Ground floor plan

GRADUATE HOUSING

University of Toronto, Ontario, Canada
 Thom Mayne of Morphosis Architects
 Completed 2000

- o "University of Toronto" sign is a cantilever that physically and visually connects the university to the city
- o Ground floor retail connects living environment to urban environment
- o Co-ed, shared-apartment suites; 360 double occupancy single-sex rooms; 281 single rooms for upper year and graduate students

COMMON SPACES

- o Convenient access to public transportation
- o Good daylighting in outdoor courtyard
- o Common areas for recreation on first level; little public space on upper floors
- o Common living spaces within units are minimal size



Figure 21: Overall view



Figure 22: Interior courtyard

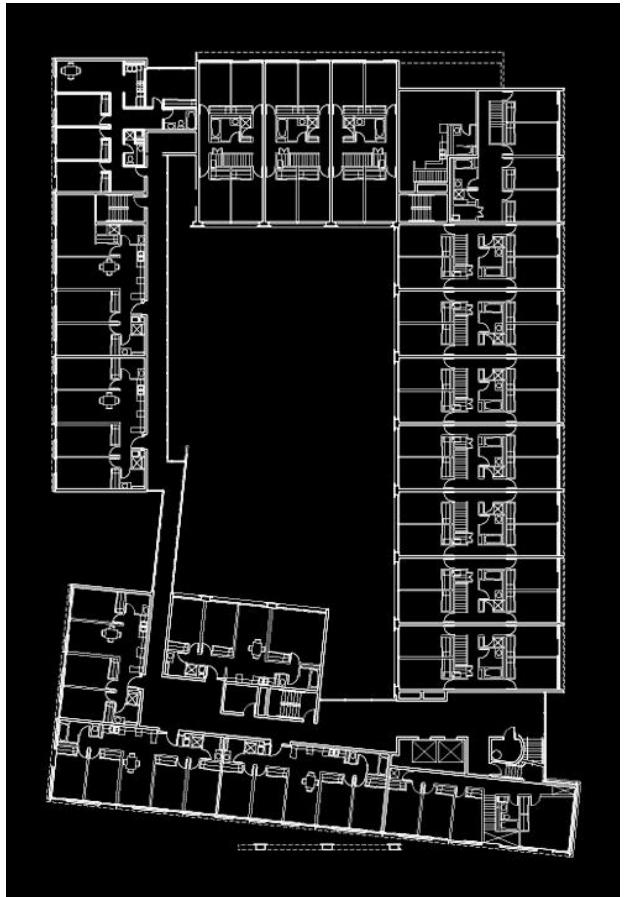


Figure 23: Level 5 plan

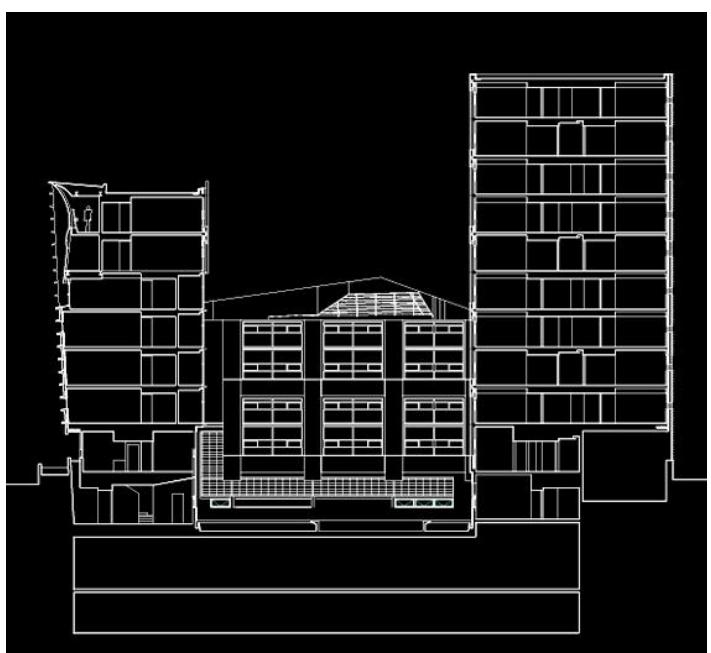


Figure 24: Section 3, through central courtyard

PROJECT ONE_PRECEDENTS

LITERATURE REVIEW:

THE UNIVERSITY OF MASSACHUSETTS DORMITORY EXPERIMENT

BACKGROUND:

The University of Massachusetts Dormitory Experiment, conducted by Robert and Claudia Propst through the Herman Miller Research Corporation in 1971-1972, focused on the Southwest Residential College on the Amherst campus. Designed by Hugh Stubbins, Jr. and built between 1964 and 1968, the complex was described in a student brochure as a "compact living-learning environment." At the time of the study, it consisted of twenty buildings and housed approximately 5600 students; there were twelve 4-story low-rise residence halls, five 22-story residence towers, and three dining commons.

Each high rise tower housed approximately 576 students, which were broken down into three houses of 192 students each. Each house consisted of six residence floors (32 students per floor) and one lounge floor. The residence floors each had a smaller study lounge as well. The lounge floors had an apartment for a member of the staff or faculty, lounges, a music room, an office, a kitchen, and other services. Seminars and classes were held in multi-purpose areas. Each house had its own Head of Residence, counselors, student government, faculty Preceptor, and faculty Fellows.

The dormitory complex experienced problems soon after opening. The buildings saw heavy vandalism; there were student complaints about conditions, dirt, and loneliness; and there were reports of psychological problems. In the 1971-1972 school year, the complex saw \$24,529.83 in damages (including normal repair and replacement); approximately \$136,240 in today's money. Seventy-five percent of the cost was from public spaces, not student rooms. The university assumed 86% of the total damage costs, as they could only assess 14% to individual students or groups.

Ray Werbe was appointed as the Environmental Factors Consultant to the University, and published a 1969 report called Environmental Factors in Southwest. He assessed that the space was not being used in the way it was originally designed. Some spaces and equipment were no longer used, such as the kitchens in men's dormitories and round tables in TV lounges; there were changes in use, such as seminar rooms used for study, floor study lounges used for recreation, and a constant moving and theft of furniture. He also noticed that though there was damage to public spaces and individual rooms, students stopped short of damaging their own property. His finding was that "there seems to be some correlation between the behavior patterns and the lack of any feeling of ownership or proprietorship."

PROJECT ONE_PRECEDENTS

RESEARCH APPROACH:

Herman Miller Research Corporation was hired by the university to perform an experiment at Southwest. Earlier research into educational, office, and hospital facilities had led them to the conclusion that institutions needed more humane, yet logical and manageable, surroundings. Based on earlier college visits and published information, the company had already built a prototype room mock-up at their headquarters in Michigan and found that it was a "systematic environment, expressive and individualistic for the student resident." They would incorporate their earlier research and ideas into a much larger experiment at Southwest Residential College.

The experimental premise that the researchers worked with was: the well-being of the student is significantly affected by the physical environment of the dormitory rooms, hallways, and lounges.

Seven key concepts formed their approach:

- Possession of Place – concentrate on room and floor
- Responsiveness – provide a highly responsive environment with many options
- Negotiation – establish a Resource General Store to act as an agent of negotiation with the University
- Variable Society Place – provide more flexible surroundings
- Economic Cause-and-Effect – propose program of writing off a wear-outable environment with reasonable returns on items and services provided
- Manageability –test a new management format
- Retrieval of Committed Facilities – test possibilities of major restatement of function without tearing down buildings

The researchers used five methods of gathering data over a two-year, two-phase study:

- Photo-documentation
- Focused informal interviewing
- Graphic plotting of changes in room arrangement
- Documentation of interactions with the Resource General Store
- Formal post-event interviewing

The 13th floor of John Adams Tower, with 30 residents, was chosen as the test site. The 13th floor of Kennedy Tower, also with 30 residents, was chosen as the control. These two floors typified the problematic all-male floors located on the upper floors of the high-rise buildings. The first year of the study consisted of control observation of both floors, while the second year would compare the experimental environment with the control environment.

YEAR ONE:

The researchers made five visits to the floors and gathered data from interviews, photo-documentation of rooms, and graphic plotting of room arrangements. Observations supported the researchers' basic premise that the well-being of the students was affected by the direct physical characteristics of Southwest. They found that only 2 of the 60 students observed accepted their rooms as provided by the University; the remainder made drastic changes in an attempt to build a new identity. The researchers also found that both the outdoor and indoor public spaces were impersonal and seen as untouchable, leaving

PROJECT ONE_PRECEDENTS

students' rooms to overcompensate as social spaces, losing the function of a private space. Students also improvised where University-provided furnishings failed by using cardboard boxes and crates for storage and furniture, leading to unkempt surroundings. Researchers found that there was an excessive loss of community among floors- the only common thread was resentment at being billed as a group for floor damages.



Figure 25: Control room - unchanged

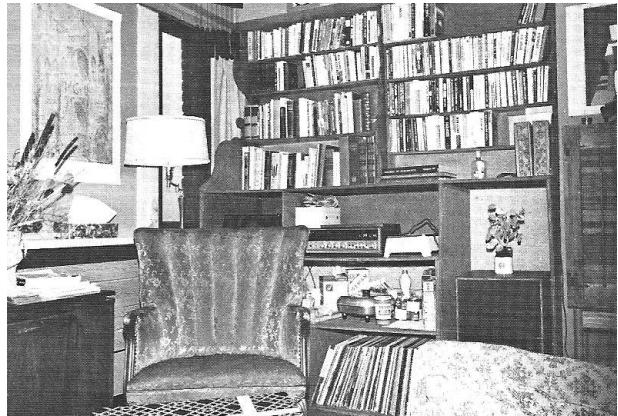


Figure 26: Control room - changed

YEAR TWO:

In preparation for the study, the 13th floor of John Adams Tower was stripped of its furnishings and paint. Student rooms were painted, refurbished, and floors carpeted, in an attempt to make use of the floor as a living surface. The walls were equipped with horizontal hanger rails at three heights, and rooms were supplied with basic furniture. The Resource General Store was located one floor below on the main lounge floor, and students could go there to rent additional furniture, turn in unwanted furniture, borrow tools and magazines, and other services. The new furniture was sleeker and less bulky than typical dorm room furniture, and could be used in many ways- much of the furniture and lights could be hung from the walls, placed on the floor, or be stacked. Much of the furniture was lower to the ground so residents would use the floor as an occupiable surface. A Self-Making Bed converted into a couch, and Soft Separators (fabric panels) could be mounted on the walls to provide privacy, define space, or act as decoration. Residents were provided with a "How-To-Use-It" handbook, showing them what furniture options were available and showing possible configurations.

The hallways and doors of the floor were painted by residents, who chose from several alternatives presented by the research team after discussing the effects of color, lighting, carpeting, etc. on the tone of the space. Low-level incandescent pool lighting transformed overly-bright halls, and colorful graphics were hung in the hallways.

The floor lounge was stripped of its old furnishings and movable hinged partitions were brought in that could be used to break the space into smaller, more private spaces, accommodating several diverse activities simultaneously.

The researchers also created the Domi-Suite by removing the non-structural walls of two double rooms to make one large open apartment suite. Movable partitions were placed in the suite so residents could create semi-private sleeping and study spaces and leave space for a living room and dry kitchenette.

PROJECT ONE_PRECEDENTS



Figure 27: Example of an experimental room.

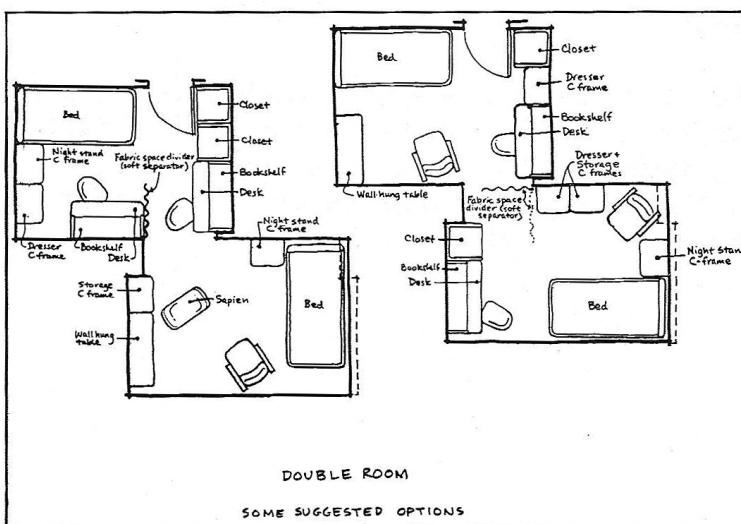


Figure 28: Suggested double room layouts and furniture options from the handbook provided to students on the experimental floor.

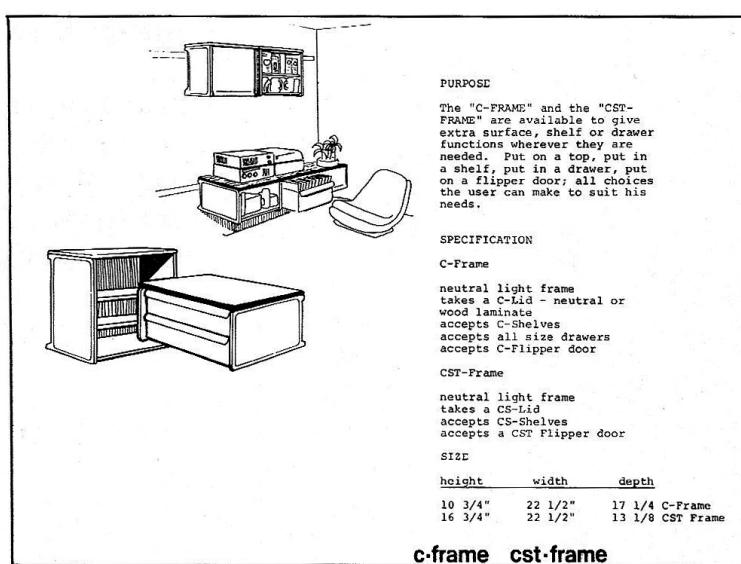


Figure 29: Example of a furniture component description and compatible pieces from the handbook provided to students on the experimental floor.

PROJECT ONE_PRECEDENTS

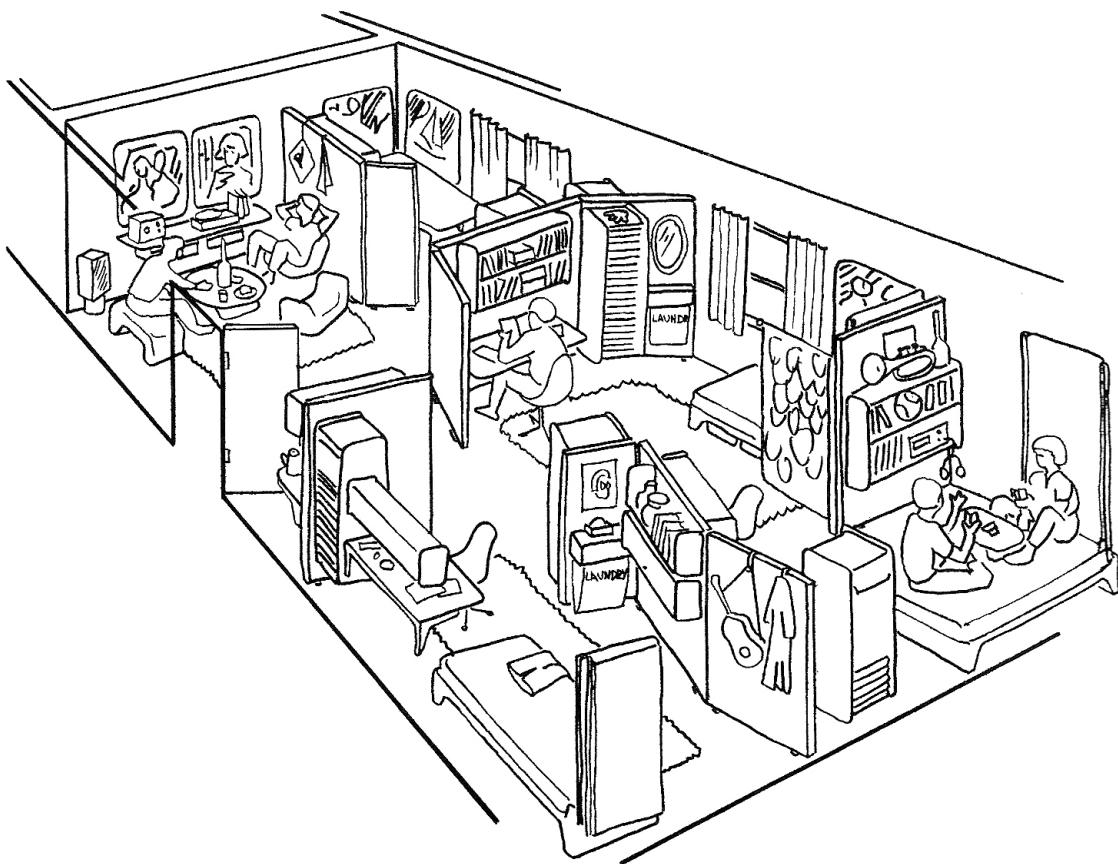


Figure 30: Drawing of the Domi-Suite with semi-private spaces created by partitions instead of walls.

RESULTS:

The researchers evaluated the experiment based on two major issues, the environment's provision of satisfaction and proficiency. They selected four characteristics to provide an index to satisfaction and proficiency. The response index comparison showed the degree to which the environment could be manipulated to suit the desires of the user. The negotiation index comparison rated the environment's access to a "landlord" to negotiate changes with, instead of providing a status quo condition. The protection index comparison evaluated the extent to which the environment was protected and saved, based on the assumption that a useful and satisfying place will be protected. The time index comparison was based on the assumption that a satisfying place will be occupied for a greater proportion of time than an unpleasant one.

The researchers discovered that students on both the control and the experimental floors showed an intense desire to manipulate their rooms over the academic year. The majority of the changes occurred at the beginning of the academic year and tapered off until the end of the first semester. At the beginning of the next semester, changes increased, but were not as high as at the beginning of the fall, and again tapered off. It was found that test area residents produced a greater variety and diversity of room arrangements. The experimental furniture offered students diverse components that better supported the realities of the dorm room as a multi-purpose space, allowing residents to easily and quickly change the appearance and mood of a room. Students in the control tried to achieve the same effect by improvising with crates and cardboard boxes, and taking furniture from the lounges or their homes. Test area residents also made smaller scale modifications by renting and exchanging furniture, while the controls

PROJECT ONE_PRECEDENTS

did large-scale modifications in an effort to make the original room disappear. Test area residents also appeared to have an increased awareness of space and their ability to influence it. Post-event interviewing showed that there was general enthusiasm for the more responsive nature of the test area.

Negotiation was seen in both a positive and negative context. Negatively, students took furniture from the public lounges to be used in their rooms when their need was ignored by the University. A more positive form of negotiation with the University was offered through the Resource General Store. Students actively used the store and were willing to spend their own money to rent furniture for their rooms. Students rented furniture and exchanged for new color options at the store, and also traded amongst themselves. Students also reacted positively to the other services offered by the Resource General Store. Periodic documentation of rooms found that there was a sharp decrease in the percentage of test area residents that participated in taking furniture from the lounge; the lounge remained as a self-protected resource for the floor. When test area residents were asked why they no longer took furniture from the lounge, they cited that they could get all they wanted from the store. Also, while test area residents could trade in furniture they didn't want, control floor residents discarded unwanted furniture in the abandoned lounges, the hall, or laundry room, where it was damaged.

Researchers evaluated the protection index by examining damage costs for the 1971/1972 and 1972/1973 school years, using the measure of damage costs as an indicator of residents' feelings of ownership and protectiveness over a place or lack thereof. The average damage rate per students on the experimental floor was 55% lower than that for other all-male high-rise floors. The experimental floor rate was also lower than the average rate for all Southwest residents (male, female, low-rise, high-rise). The researchers identified several possible factors: the residents actively used the lounge and community pressure developed to keep it in good condition; a stronger sense of ownership, and awareness of what the furniture costs and consequences of ruining it through rental agreements from the Resource General Store; the opportunity to pass ideas, information, and complaints along to the University through the store; the perception that the furniture was more expensive and durable, and should therefore be taken care of; and the changing subculture of the floor, where students felt closer and were less rowdy.

The researchers felt that a successful living facility would allow students to split their time amongst several optional places. Their analysis of the control floor suggested that students were over-utilizing their rooms and under-utilizing the spaces provided for small group interaction. The researchers looked at two issues: would the experimental floor encourage students to use the floor facilities in a more balanced way, and would the students seek to return to the same floor the next year. The researchers found that with the test area, the lounge and the Resource General Store provided new places that the students could spend time in. Personal interviews revealed that test area residents utilized the lounge more often, and for a variety of individual, small group, and larger group activities. It was also discovered that the test area residents also became active users of other recreation options open to the entire high-rise, such as the weight-room, recreation area, snack bar, and the general services at the Resource General Store. Studying return rates of students, it was found that students typically leave the high-rises after their sophomore year, a problem for the University as the dorms were built to house all students through their senior year. While the control floor lost 63% of its sophomores returning to the floor in their junior year, the experimental floor actually increased the number of juniors living on the floor, suggesting that the experimental floor was a desirable place to live.

It was found that during the first semester, the Domi-Suite did not work out as intended. When four random students were assigned to it, there was conflict and the common spaces were under-utilized. They chose to move out after one semester, and the researchers made some adjustments to the room (new furniture, larger separators, more area lighting) before new

PROJECT ONE_PRECEDENTS

students moved in. They found the space more desirable and used the common areas. Learning from their positive experience, other students already living on the experimental floor decided to move into the Domi-Suite the following year. Researchers concluded over the long-term that the Domi-Suite would be more successful if the occupants had chosen to live together there, instead of being randomly assigned.

Propst, R. L., Claudia G. Propst. (1973). The University of Massachusetts Dormitory Experiment. Ann Arbor, MI: Herman Miller Research Corp.

DESIGN IMPLICATIONS:

Overwhelmingly, the students occupying the experimental floor in the study thought that the new arrangement was beneficial to the college student's way of life. The opportunity to personalize the space increased satisfaction and social interaction, and even decreased vandalism. When students feel ownership over a space, they feel the need to maintain it.

However, applying the findings of this study to contemporary residential living presents some difficulty. The cost, space, and logistics to run a store for hundreds, if not thousands, of students to rent many different options of furnishings does not seem practical on a large scale at a major university. The desire for personalization in college dorms to a large extent has been satisfied by retailers that have specialized in dorm living- extra-long bedding, myriad storage units, etc.

Technology and culture have vastly changed since this study was conducted, and more relevant and up-to-date research has likely been done regarding dorm rooms. For example, the dependency on electrical outlets and internet jacks for laptops/computers, cell phones, stereos, etc. would limit furniture configurations in a modern dorm setting. Requirements for storage and different types of spaces have also changed as technology changes. From personal experience and taking tours of several dorm complexes, I have never seen anywhere near the extent of vandalism described in this study, despite the majority of the dorm complexes being built during the same era as the ones at University at Massachusetts.

What can be taken from this study is that the rooms provided for students should support customization. Students in the study opposed the heavy, bulky furniture that was provided by the university, and that still holds true. Provided furniture should be light-weight so it can be easily moved. The university can provide the basics, such as a bed, desk, chair, and dresser, while leaving plenty of space for personal furniture and items. The items could be adjustable, so students can raise and lower them at will. Surfaces in the rooms should be conducive to decorating. What may be needed is a local independent service that contracts with a university from which students can rent or buy furniture for the school year, and that will deliver to and pick up from the dorm. In an area like Buffalo that has several colleges and universities with thousands of students living on campus and renting off campus, a business providing these services could do well.

RELATED RESEARCH

When one contemplates living in temporary on-campus housing, it is usually expected that the conditions provided will not be ideal living situations. Some important aspect of the idea of "home" – privacy, control, safety, quality – will be lacking. In order to attract students to on-campus housing, universities need to know what the end users look for in a potential residence and how the built environment can influence a student's well-being. Based on the following research, I will devise design recommendations on which to base my design for the new residence hall on North Campus.

Psychologists have defined home to be a place to which people attach a cultural, demographic, or psychological meaning, which becomes part of their identity. Kenyon studied "young people in transition" (i.e. university undergraduates) to investigate how an adult's definition of home evolves over time, and how the home supports the transition to adulthood (Kenyon 1999). She found that students typically described three homes: the parental home, which was swiftly losing its status as a significant home because students did not plan on returning there for an extended period of time, making it not worthy of any more investment; student housing, which was seen as a short-term living situation not worthy of commitment or investment; and the future home, which would be worthy of investment and would provide autonomy and independence, a place that reflects the student's needs and personalities through personalization (Kenyon 1999).

The students Kenyon interviewed offered important insights into how they perceive temporary housing. They found student housing to be too unstable, and believed that a home should be "a permanent and stable base from which life could be conducted" (Kenyon 1999). They also described the homes as not being aesthetically pleasing, lacking comfort, and said they were too dirty to be real homes and had facilities that would normally be unacceptable. They also described their housing as being unsafe and unhealthy, largely due to landlord neglect. From her interviews, Kenyon concluded that "term-time" homes were seen as a temporary stepping-stone between the parental home and the future home, and that they offered sub-standard conditions that students put up with only because they did not plan on living there for an extended period.

Thomsen also researched home experiences in student housing, comparing two Norwegian student housing projects; Bjølsen in Oslo by Telje-Torp-Aasen, and Mosvangen in Stavanger, a youth hostel converted into 19 individual student residences by Helen & Hard, both completed in 2003. Thomsen writes that one's first home of their own can be seen as a "physical manifestation in the transition to adulthood, supporting the development of an adult identity and independence" and that, despite temporariness, a "feeling of home is important for student housing satisfaction" (Thomsen 2007). By conducting interviews with residents of both projects, Thomsen was able to discover a lot about what aspects of the built environment were important to the residents. Students emphasized that it was important to them that the building was new or newly renovated; being able to make individual adjustments in the apartments is important; and the students' desire to personalize was low if they appreciated the design and furnishings of the apartment. Regarding institutionalization, Thomsen discovered the following: a large building (one that would typically be labeled as institutional) was not perceived as such if it was well-integrated with the surroundings; a building is perceived as institutional if the corridors lack decoration and color as well as natural light, and it does not support other activities; and there needs to be a focus on communal spaces. Thomsen concluded that student housing is not simply a temporary place to live because it plays an important role in the transition to adulthood, and it typically does not support the identity-building that students need; to attract residents, student housing should offer more varied choices like the private market; and that cluster situations, or layouts with communal spaces, stimulate social interaction more than corridor layouts (Thomsen 2007).

PROJECT ONE_PRECEDENTS

Countless studies have also been done in group living situations to investigate territoriality, control, privacy, and personalization. Many studies have found that students who extensively decorate their dormitory rooms with a variety of decorations (showing commitment to their school and claiming the space as their own) are less likely to drop out of school, and that successful students use a variety of direct contact-seeking and contact-avoiding mechanisms to regulate their privacy in dense living situations (Hansen and Altman 1976; Vinsel, Brown, Altman, and Foss 1980). Edney and Buda were able to distinguish a difference between territoriality and privacy by creating four hypothetical situations: (1) home territory with privacy; (2) home territory without privacy; (3) privacy without territory; (4) neither privacy nor territory. The researchers devised five categories of activities; basic biological functions, personal, work, relaxation, and unconventional. They found that subjects preferred the privacy and territory condition for all personal and work activities, 2/3 of biological functions, "thinking, about anything," and "singing out loud." Subjects preferred territory without privacy for five activities, "eating" and most relaxing activities, and chose no territory and no privacy for only two activities, "drinking" and "doing something very different and unconventional." Edney and Buda also conducted a second, related study, in which they hypothesized that people in social situations recognize the influence and constraints of others on their behavior, and consequently will attribute their actions more to the influence of others when they do not have privacy. They discovered through a series of activities that subjects in a room that they had territorialized (decorated) attributed their behavior more to their own personality; subjects with privacy were more creative; subjects with privacy felt they were more free; subjects who had both privacy and territory felt more secure; and subjects with privacy found their rooms more stimulating. Edney and Buda concluded that "physical marking, possession, and future expectations about a place may have psychologically fortifying effects on the occupant...the fullest benefits probably derive from having a combination of both territory and privacy in one's environment" (Edney and Buda, 1976).

DESIGN RECOMMENDATIONS

- Flexible units can accommodate a resident's preferred living situation, especially when what is already offered by the university is taken into consideration
 - UB mainly offers students corridor-style, cluster-style, and suite-style accommodations – recently built low-rise apartment units
 - Two-bedroom, one-bedroom and studio units offer students the opportunity to live by themselves or with another chosen or randomly-assigned student
 - Depending on university demand, apartments are more suited for accommodating the different social, academic, and personal needs of undergraduates, graduate students, PhD candidates, and faculty
- Privacy, territoriality, and personalization are vital for occupants' well-being and satisfaction
 - Units and overall building should provide occupants with varying levels of privacy and social interaction – personal room, small shared communal space, larger communal space, completely public space
 - Allow occupants to personalize their spaces by providing varied furniture options, enough space for reorganization or addition of furniture, ability to decorate walls, etc.
 - Provide occupants with adequate storage space
 - Provide occupants with year-leases so the apartment is a more stable home; occupant would not have to move out at the end of every academic year only to move back in the following year
- Maintenance is important for occupants' views of themselves, the building, and the administration
 - Occupants are more satisfied with living conditions when it appears that the administration cares about them
 - Occupants perceive the building as a reflection of themselves – younger people are attracted to a brighter, more unique, "in-style" building
 - Regular upkeep and improvements (such as replacing worn furniture and repainting) can satisfy occupants' desire to personalize a space
 - Cleanliness, safety, and health concerns are major factors when considering where to live

PROJECT TWO_POST-OCCUPANCY EVALUATION

FOCUS GROUP - LEHMAN HALL, GOVERNORS COMPLEX

On February 23rd, the three researchers met with two upperclassmen, a junior and a senior, in the large lounge on the first floor of Lehman Hall at Governors Complex. They were asked their opinion on current conditions of Lehman Hall and Governors Complex overall, as well as what they would like to see in a new residence hall as part of University at Buffalo's Comprehensive Physical Plan. The students gave their opinions on wayfinding; various amenities provided in Governors; comfort, both thermal and biomechanical; the grounds surrounding Governors; and aesthetics.

The first topic discussed was wayfinding and circulation in Governors Complex. One student said he had been there for over a year and still occasionally had trouble finding his way around. He said that sometimes he had to go outside to look at the building to pinpoint his location. He said that part of the problem was that the entire complex looks the same. The other student said that she found the wayfinding system in the building confusing, and that the color-coding system of the stairways in each hall was not very helpful. When asked if there were elevators in each Hall, one student replied that he thought that there were, but that he didn't really use them and that they were hard to find. He was of the opinion that one should be able to find the elevator and stairs as soon as you enter the building. In discussing safety, one student said that fire drills were often conducted and that one benefit in Governors is that there are many exits; both students agreed that in case of emergency, they would be able to safely exit the complex.

Discussion then moved on to the amenities provided in Governors, namely dining, the fitness center, the recreation center, and the large lounges. One student said that he used the dining facilities located in the basement. He said that the food was okay, but that it was expensive and there were limited options. However, he did appreciate that there was a dining facility within the complex. The student also said that he preferred using the small fitness center located in the basement of Governors over going to Alumni. He said that Alumni is too far and that it is often crowded. He believes that the fitness center located in Governors is not well publicized, and he rarely finds it crowded. The student said that he has used the recreation area (which the lounge we were in was open to below) a few times, but he finds the space and equipment to be outdated. In discussing the lounge and acoustics, he said that when people were using the recreation area below, the lounge became very noisy. He also said that Governors has nicer lounges, some with large TVs, but that they were usually locked and people rarely used them. He responded positively when the interviewer described the lounges in Greiner Hall.

When discussing comfort, both students found the temperature of the lounge and lower floor comfortable, but did not discuss thermal comfort further. For biomechanical comfort, both students found no difficulty in taking the stairs. One student commented that it was nice that the building was spread out horizontally rather than vertically. He believed that as a result, students were more likely to take the stairs, and that it was one way to stay in shape. When stairs were discussed in more detail, both students agreed that if they had to climb more than three flights of stairs at a time, they would likely take an elevator. One student stated that if she lived in a taller building, she would choose to live on the third or fourth floor and would take the stairs. If the elevator was more accessible than the ones found in Governors, she would not have an issue living on a higher floor.

Both students reacted negatively to the aesthetics of Governors Complex. One student did not find the brick aesthetically pleasing, and said that it made the building feel outdated and "not like home." However, he said that the brick was better than concrete, which he found boring. Both students did not like the paint color choices used to paint over the concrete in Governors. Overall, the one student said that Governors was boring and bland. However, he also said that aesthetics weren't as important to him as comfort.

The students also found the light to be unsatisfactory. One student said the lights were outdated (perhaps a reference to both the fixtures and the type of light- fluorescent tubes). Artificial lights were lacking in some areas, such as overhead in the lounge. The students agreed that there was sufficient natural light on

PROJECT TWO_POST-OCCUPANCY EVALUATION

the lower level, but that natural light was lacking on the resident levels, particularly the small lounges.

The interviewer asked the students if they ever used the sunken courtyards surrounding Governors Complex, or if they ever saw anyone in them. Both students said that they never really saw anyone using them. One student commented that she saw a snowman in one of the courtyards, so someone must have been out there. One student said that while organized events were sometimes held in larger rooms in Governors, it would be nice if there were organized cultural or recreational events that were held in the courtyards. He commented that it would be a nice way to meet other residents.

Discussion then moved to the upper floors of Governors. One student said that the rooms were very small, and that there wasn't enough storage space. He felt that all of the small lounges on each floor were compensating for the small size of the bedrooms. He said that it was nice that the lounges were there, and that they provide a place to go if there is a conflict with a roommate; he said that it would be better if the lounges were larger.

The students also discussed the kitchens provided to Governors residents. Small kitchens are located on each floor near the stair cores. One student said that he would use a kitchen to prepare his own meals to cut down on food costs. The other student replied that she doesn't see the kitchens used very often. They agreed that if the kitchens were more accessible (and probably better quality) that they would probably see more use.

Discussion then moved to UB's plan for North Campus and the interviewers asked the students questions about potential ideas for a new residence hall located on Lee Road. The students expressed ambivalence about having classes in their residence hall; one student said that he would like a separation between where he lived and where he had classes. The other student said that having some classes in the same building would be nice, but that she would also like to get out of the building sometimes. One student said that it would be okay to hold classes on the lower levels, as long as the residence levels were comfortable and he didn't have to see other students going to class; he also wouldn't like the potential congestion that holding classes in a dormitory might bring. He offered the solution that maybe there could be a secondary entrance that led directly to the resident levels, to avoid having to walk through a crowded public space.

In reference to the location of the new residence hall and its multi-purpose use, the students were asked if they would use lockers located in the building. One student responded positively, saying that off-campus and commuter students and students who spend all day on campus could use the lockers to store belongings during the day; he gave the example of a student having one class in the morning and one in the afternoon with a long break in between.

Both students interviewed were upperclassmen; the interviewers asked the students what housing options they would consider as graduate students. Both said they would not choose to live in a typical dormitory or suite-style residence hall such as Governors. One student said that he would live in an apartment, ideally with two or three roommates who shared similar interests; he would not like to live alone. He said he would consider living on-campus if apartments were available. As long as there was enough space in his unit, he would not care what the overall layout of the building was (small houses, a larger building, a high-rise, etc.). His ideal apartment would have private bedrooms for each person, with common spaces like a kitchen and living room.

The students were also asked about food options near the future living-learning quarter, and the demolition of The Commons. One student said that he doesn't mind spending money for food at The Commons, but wished they had more diversity. He said that the tables are never clean and it's too noisy to do work, so he gets food from there and then goes to the adjacent Student Union. Both students said that the location of The Commons near the center of campus was important, and that in removing it, food options and the other services it offers should still be located nearby. Both students preferred that the food options be concentrated in one building, rather than spread across multiple buildings. One student also responded positively to the idea of a convenience store located within the residence hall, and said he would use it even if it were over-priced for emergencies, but not regular grocery trips.

PROJECT TWO_POST-OCCUPANCY EVALUATION

Good Features:

- Dining facilities located in complex
- Fitness facility located in the complex
- Building is low-rise – more likely to take stairs
- Lots of natural light on lower levels
- Lots of lounges on upper floors
- Close to main campus

Poor Features:

- Complicated wayfinding
 - Vertical circulation poorly located
 - Color-coding system ineffectual
- Nice, larger lounges often inaccessible by students
- Poor acoustics on first floor
- Artificial light on first floor and natural/artificial light on upper floors is poor
- Building materials and furnishings are outdated
- Outdoor spaces underutilized
- Rooms are too small and lack storage
- Lack of adequate kitchens

CONCLUSION + RECOMMENDATIONS:

Overall, the poor features of Governors outweigh the good. The biggest issue appeared to be wayfinding – once the students had lived in the building for awhile, individual wayfinding was less of a problem, but it was still difficult to give directions to visitors. Focus group participants felt that the building was difficult to understand because each house looks the same, both on the interior and from the exterior, and that vertical circulation posed a problem. Recommendations for wayfinding include simplifying vertical circulation by decreasing the number of cores and by locating main vertical circulation near defined main entrances. Each wing and/or floor could also be defined from one another through colors, materials, or furniture types.

Another issue is the type and size of the room provided to students. Our participants were dissatisfied with the small size of the rooms and the lack of storage provided to students. One participant said that he wanted to be able to cook more easily in order to cut down on expenses. He also said that if he were to live on campus as a graduate, he would only live in an apartment so he had more space and privacy and better access to a kitchen and storage. Recommendations for student rooms include more space allocated per student, and providing more storage. The types of rooms provided in Greiner Hall may meet student needs in these areas. Greiner also provides more access to higher quality food preparation areas and lounges.

Overall, students felt that Governors was outdated and everything was worn and dirty. The choice of building materials (specifically brick and concrete) were not liked by the students. They felt that the furniture was old and undesirable. They also disliked the artificial lighting provided, saying that both the light quality and the physical features were poor. One student said that the complex did not feel like home because it was so run down, and that for him, comfort was the most important thing in an on-campus residence. The majority of these issues would be addressed by building a new dorm complex, with close attention paid to choice and quality of materials, placement of artificial and natural light, and the quality of furnishings. The administration would need to come up with a plan to properly maintain the building and periodically update it to meet student expectations.

PROJECT THREE _ DESIGN DEVELOPMENT

UB COMPREHENSIVE PHYSICAL PLAN

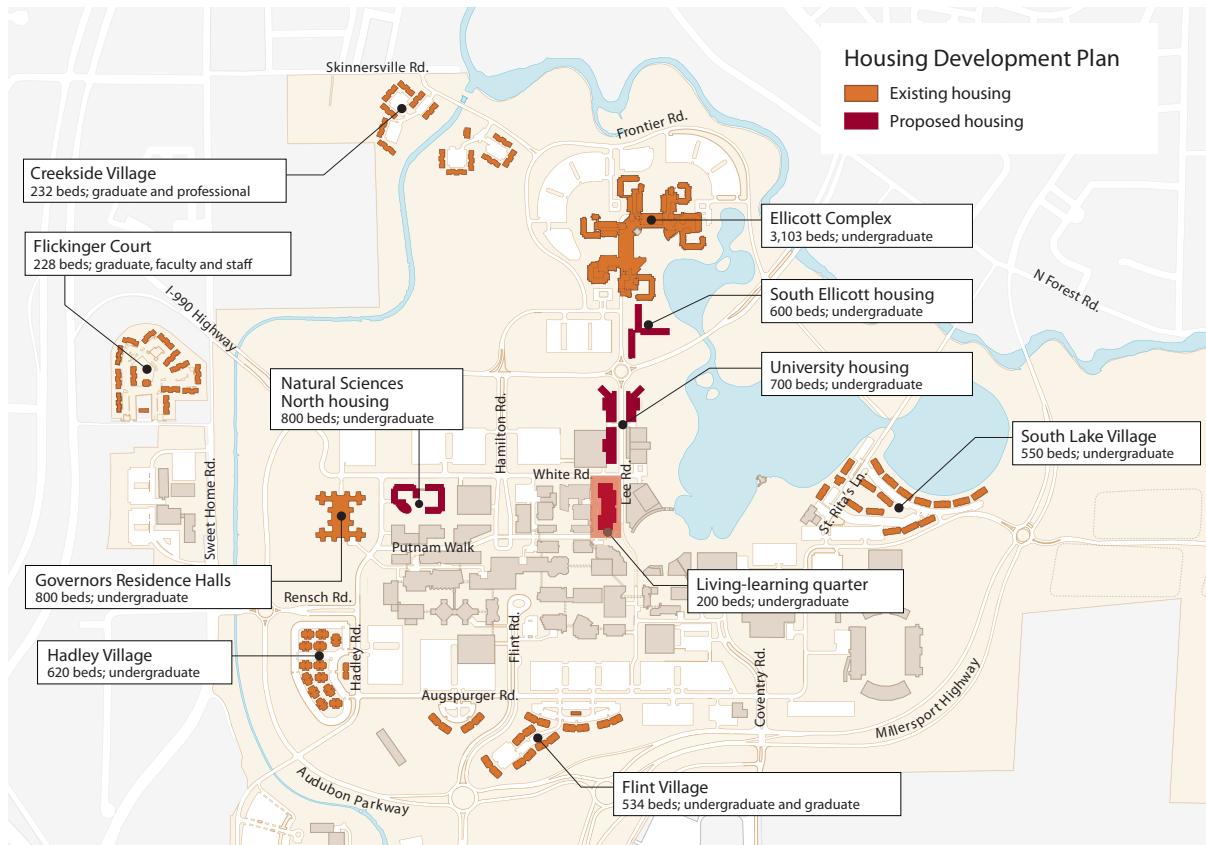


Figure 31

Prototype for a Living-Learning Quarter

This conceptual diagram illustrates the potential programmatic relationships within a new mixed-use campus life facility. It is designed to maximize shared academic and social activity across multiple populations.

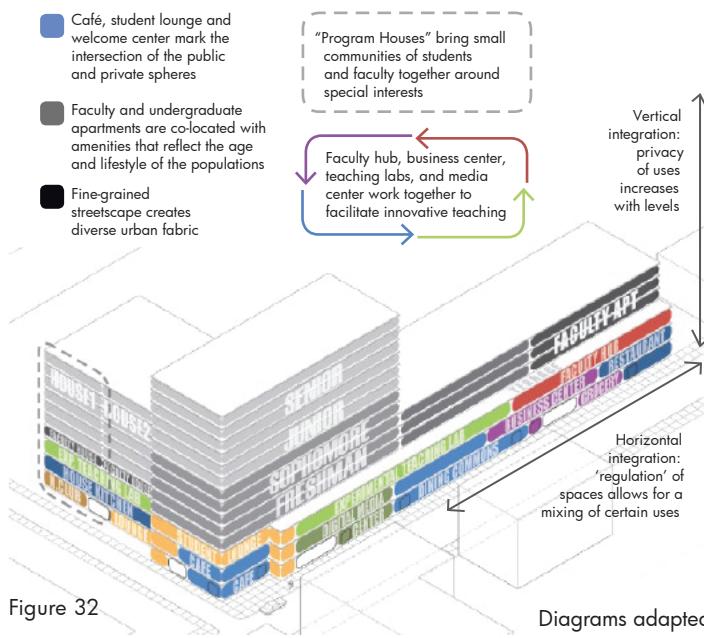


Figure 32

UB's goal for the comprehensive physical plan is to increase on-campus housing by nearly 40% on North Campus. The University plans on doing this by building dormitory and suite-style residences targeted at undergraduate students in two locations, the Natural Sciences North Precinct and Lee Road between the Academic Spine and Ellicott Complex. These will be mixed-use buildings, with the first floor occupied by dining, retail, and educational spaces. The overall goal is to bring a density and liveliness to North Campus to create an urban streetscape.

Diagrams adapted from *Building UB: The Comprehensive Physical Plan*, 102-103.

PROJECT THREE_DESIGN DEVELOPMENT

SITE PLAN

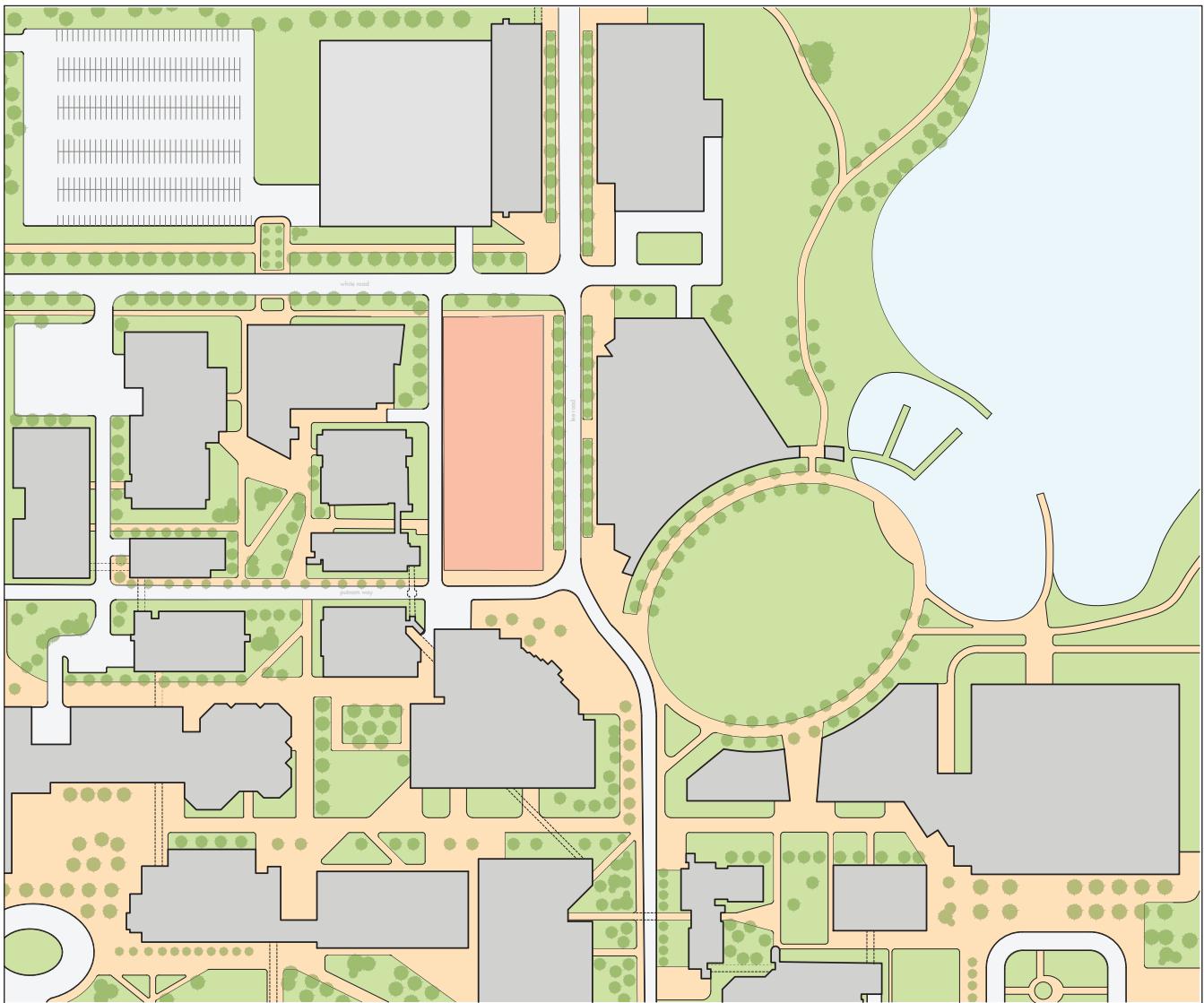
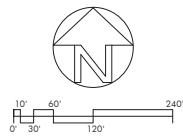


Figure 33: Site plan focusing on Living-Learning Quarter

LIVING LEARNING QUARTER

The model proposed for the Living-Learning Quarter, located on Lee Road adjacent to the Student Union, is to house freshmen and sophomores on the lower levels in dormitory and suite-style accommodations, and upperclassmen in apartments on the upper floors. Faculty apartments would also be located in the building, with a separate entrance. The lowest levels would have dining, retail, and academic spaces, and informal study spaces would be dispersed throughout the building.



Other amenities proposed to be housed in the Living-Learning Quarter include a multi-modal transit pavilion, the University Bookstore, and retail and dining previously located in The Commons.

The Living-Learning Quarter, along with other proposed buildings such as additional student housing, a hotel and conference center, and a recreation and wellness center, will both unify North Campus with the Ellicott Complex, and create a new center of campus. The anticipated result will be an urban "main street" that attracts both students and visitors to create a dense and lively atmosphere.

SITE ANALYSIS

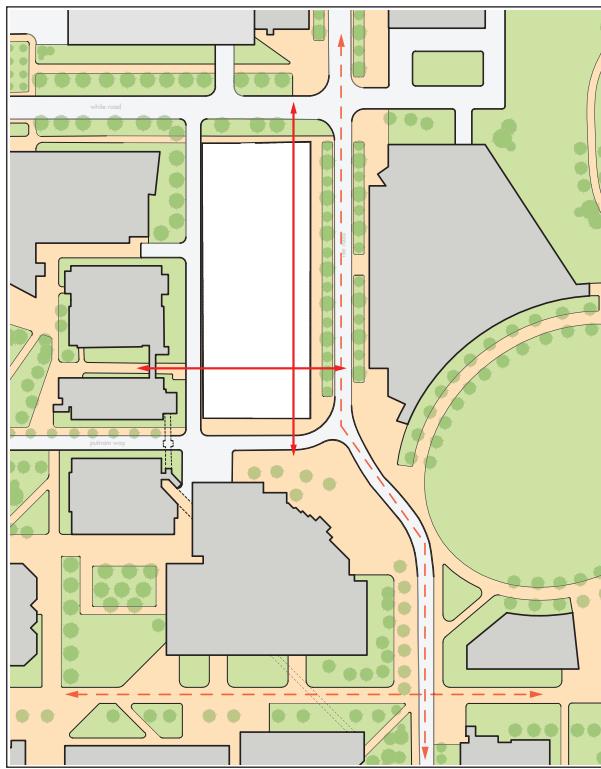


Figure 34: Main axes through site at ground level

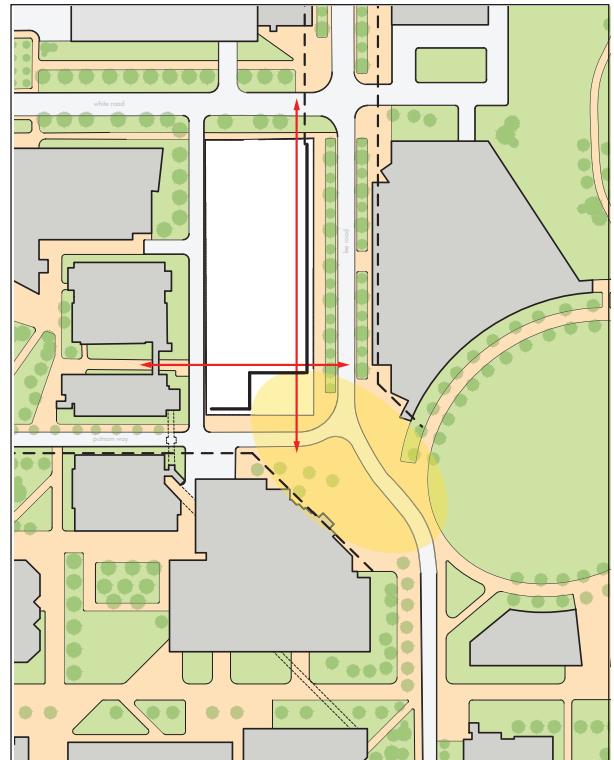


Figure 36: Edge conditions

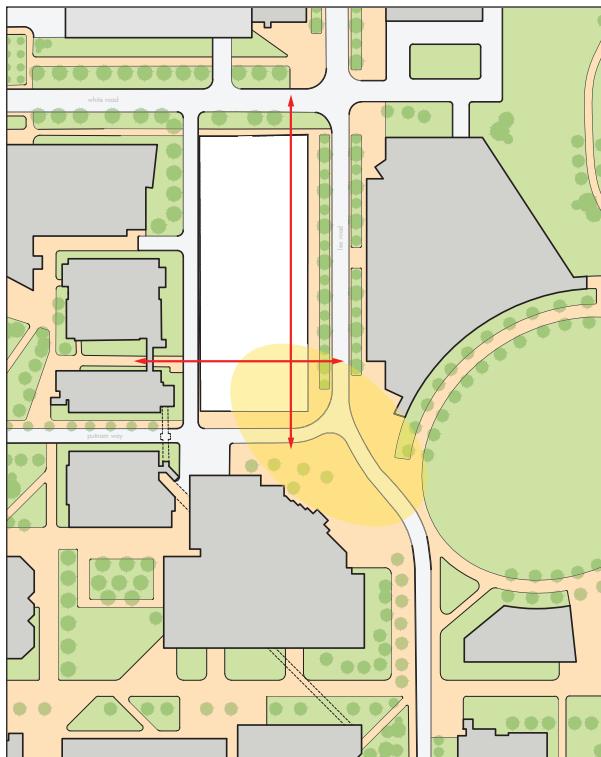


Figure 35: Public / Private

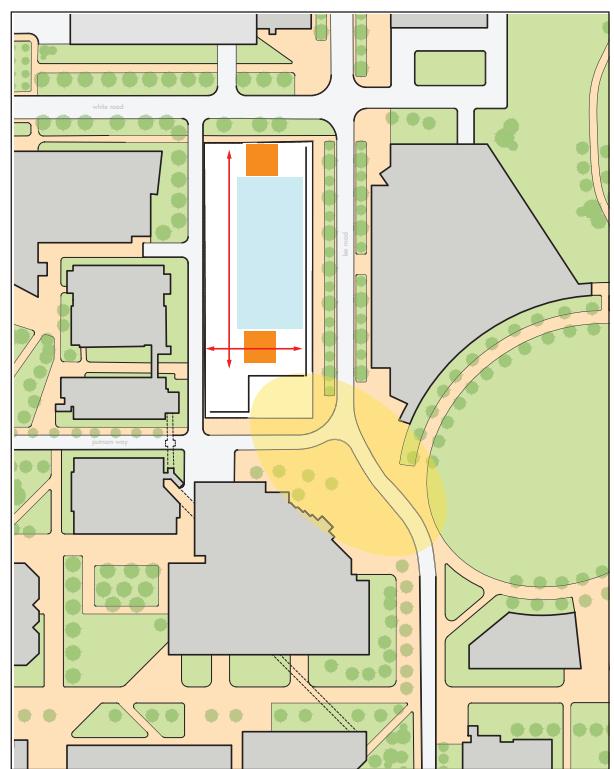


Figure 37: Program and circulation layout based on site analysis

PROJECT THREE DESIGN DEVELOPMENT

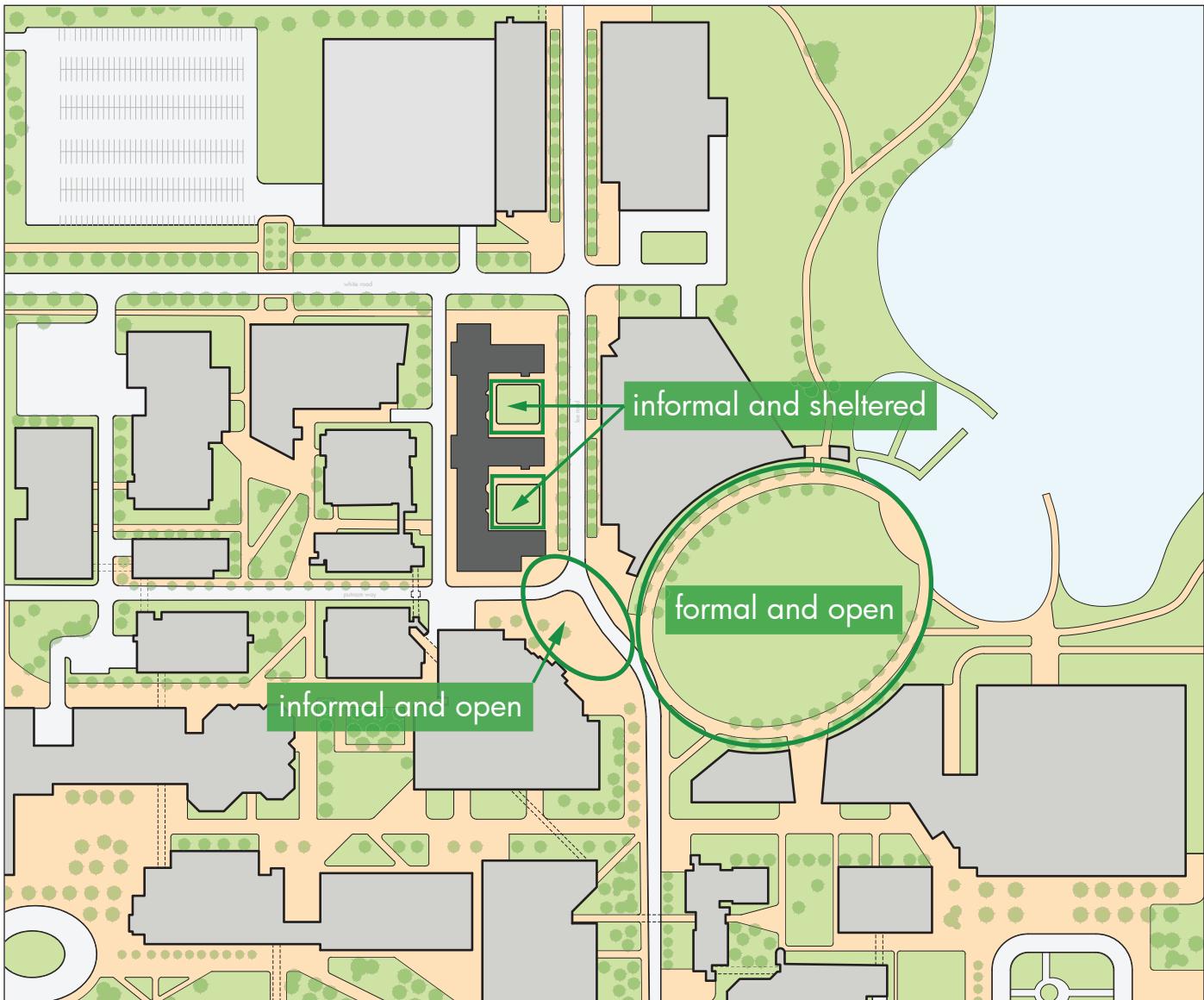


Figure 38: Outdoor gathering spaces

Looking at North Campus overall, there is a need for active intimate outdoor spaces for recreation and leisure in the heart of campus. Currently, the university offers students vast open spaces on the outskirts of campus or barren paved areas along the academic spine, neither of which are used for any meaningful social interaction - they are just spaces to pass through, not linger. The proposed courtyards along Lee Road will become destinations and gathering spots for the cohesion and community-building lacking on North Campus.

PROJECT THREE DESIGN DEVELOPMENT

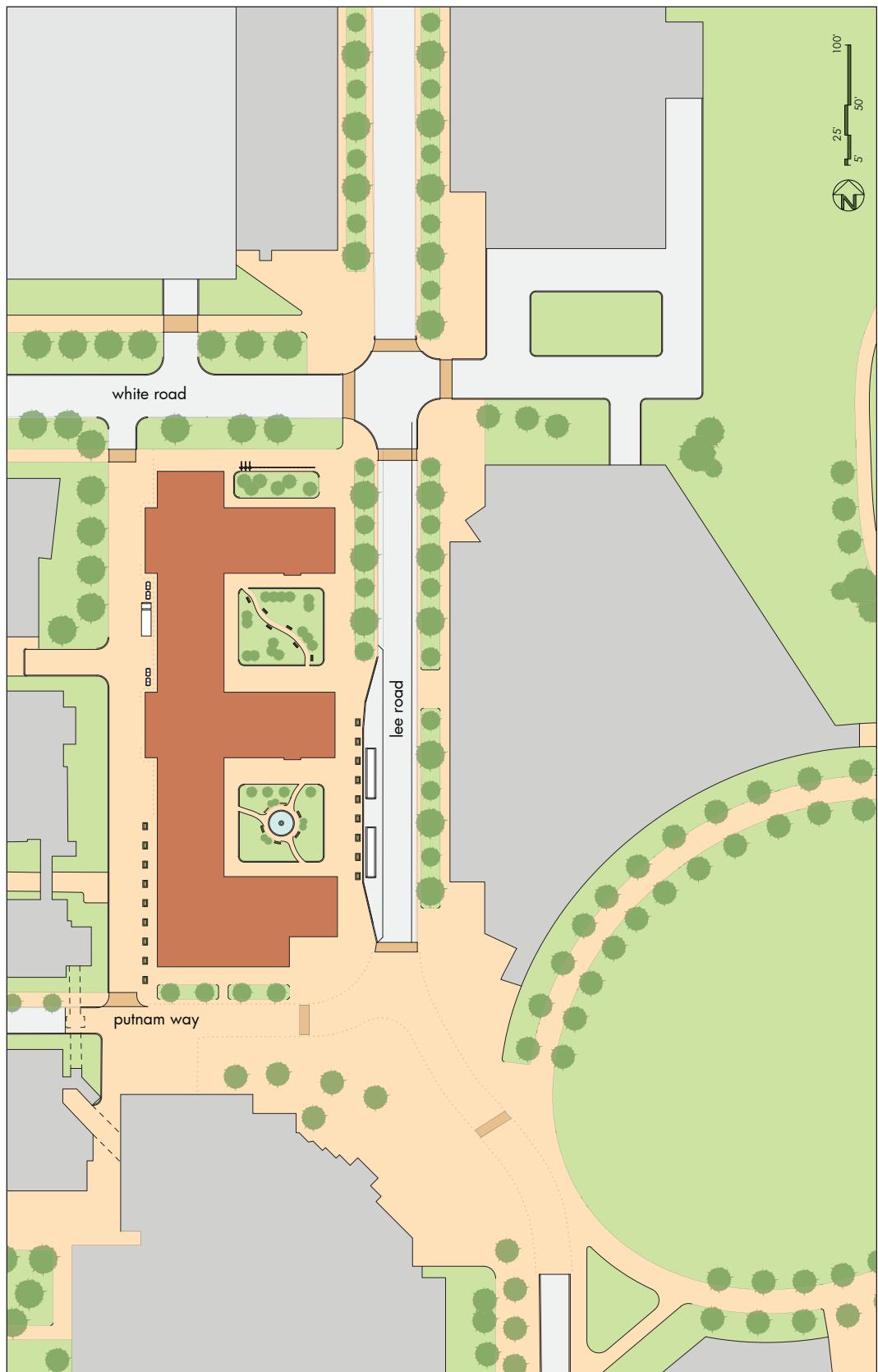


Figure 39: Site plan showing proposed landscaping and woonerf

PROJECT THREE_DESIGN DEVELOPMENT

VISION STATEMENT

According to *Building UB: the Comprehensive Physical Plan*, the proposed Living-Learning Quarter will be the heart of the reimagined North Campus. By absorbing the functions of existing buildings adjacent to the site, the new facility will open up space in the center of campus for new public spaces such as a formal lawn and a recreation center. The living-learning quarter will house all of the services needed for the urban streetscape atmosphere University at Buffalo wants to create on North Campus.

I envision the first floor of the new living-learning quarter acting as an indoor public throughway, lined with dining and retail (including the bookstore), providing lounge space, and an indoor area to park bikes and wait for buses. There will also be a visitor and information center, for the building, the university, and the greater Buffalo area. This indoor pedestrian street will provide a north-south axis for students to travel along during Buffalo's inclement weather. This was influenced not only by the character of the site, but also by nearby Greiner Hall as well as HUB International at the University of Alberta. I envision the living-learning quarter to be the building on campus that students spend their time in during the day between classes. The form of the building also creates two large outdoor courtyards, which will contain dining space as well as create a green space for students and residents to spend their downtime in. Small inviting outdoor spaces are something that is missing on UB's sprawling North Campus.

The second floor will also be public, albeit to a lesser extent. There will also be quieter lounge space open to the public away from the distractions of the street, as well as offices for faculty and university programs on this level. The second level will also contain recreation space, an area for students to access the internet and print, and rooms that can be reserved for student activities.

Access to upper floors will be limited to residents of the building, as in Greiner Hall. Based on literature and feedback from university officials, my design will include two bedroom, one bedroom, and studio apartments for students, and larger two bedroom and one bedroom apartments for faculty. Students are beginning to expect more privacy in on-campus housing, so bedrooms will be singles. The target population is made up of graduate students, PhD candidates, and faculty, because they have been under-served by on-campus housing. However, apartments are flexible and can accommodate undergraduate students if housing demand changes. Faculty and student apartments will be separated; faculty apartments are larger and are located on the upper three stories on the north end of the building.

The user group I am interested in is older and independent, and expects more privacy and fewer rules. They do not rely on the same services, such as dining facilities, as undergraduates, as each apartment will have a kitchen. The student occupants will be provided with study spaces for group and individual study outside of their rooms as well. Space will also be provided for larger gatherings for socialization and study and recreation on each level, and each level will also have access to an outdoor terrace. Public spaces on resident levels are located at important junctions such as near vertical circulation and hallway intersections, to increase interaction between residents.

The types of apartments I envision are two-bedroom, one-bedroom, and studio units. The majority of the units will be accessible, with the rest being visitable. Each unit will have a kitchen, bathroom, and living/dining area. The apartments will be spacious enough to make it possible for multiple furniture arrangements. The building will be more like a mixed-use development than a university residence hall. Both faculty and student apartments could be rented by mixed-sex residents, couples, families, or individuals. For example, a university professor with a spouse and a child could rent an apartment and use both bedrooms, or a single professor could rent a two-bedroom apartment and convert one bedroom to an office. In another apartment, a married graduate student and his spouse could reside in one bedroom while the other bedroom is rented by a single graduate student. This format provides potential residents with options for the amount of rent they pay and their living

PROJECT THREE _DESIGN DEVELOPMENT

environments, while it offers the university flexibility in how the building is occupied. Unlike traditional residence halls, occupants could remain in the building long-term and personalize their spaces more than would be acceptable in a dormitory.

DESIGN CONCEPTS + GOALS:

COURTYARDS:

- Create intimate outdoor spaces lacking on North Campus
- Provide more surface area for retail exposure to Lee Road
- Direct access from courtyards to retail, dining, and university store will contribute to urban streetscape

GROUND-FLOOR CIRCULATION:

- Design provides continuous indoor route for students using building as a shortcut or as protection from inclement weather
- Direct access to retail from both indoor and outdoor route
- Direct access to retail invites public usage of courtyards

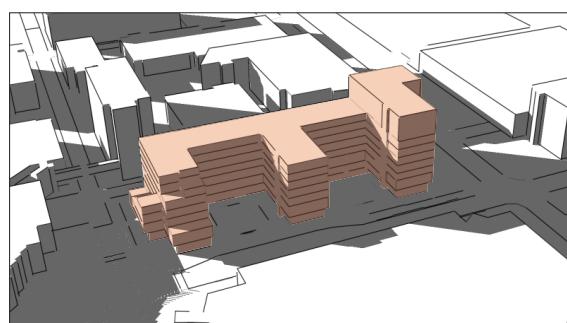
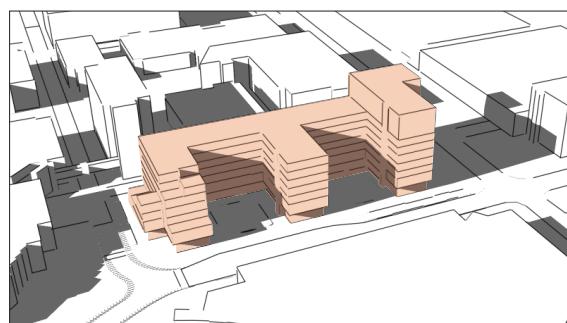
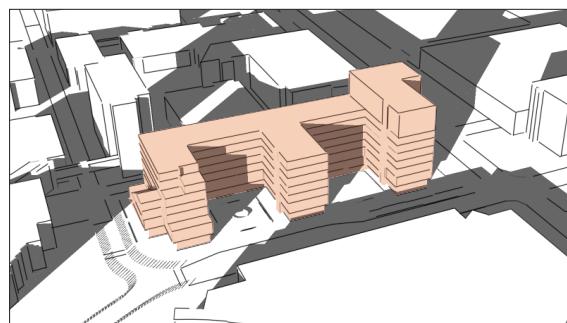
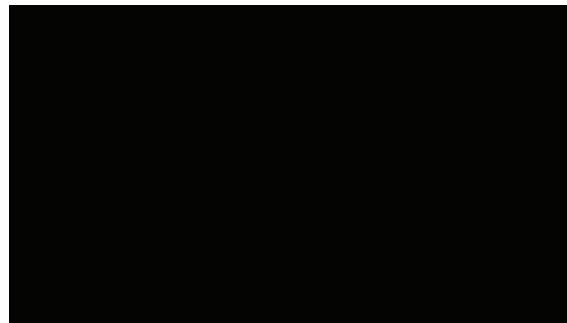
FLEXIBILITY:

- Target population: graduate students, PhD candidates, and faculty (under-served populations in on-campus housing)
- Apartment units can accommodate any type of resident if housing demand changes
- Majority of apartments are fully accessible, the rest are visitable
- Size of rooms and units allow multiple furniture arrangements

PROJECT THREE DESIGN DEVELOPMENT

BUILDING LAYOUT

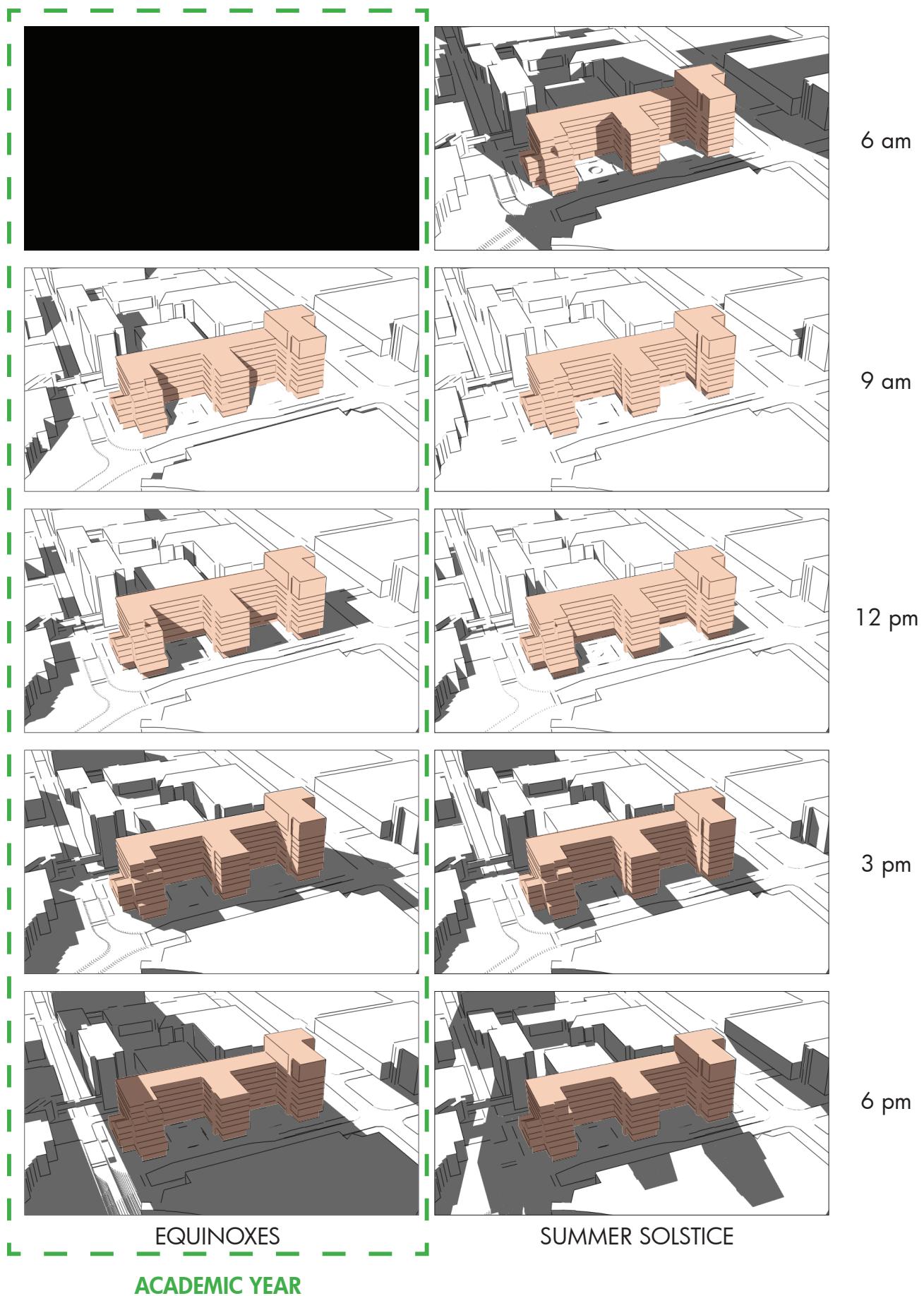
The site is oriented primarily along a north-south axis, making it a challenge to provide units with southern exposure. In an effort to provide many of the units with southern exposure, the building is laid out in an E-shaped plan, framing two courtyards that open onto Lee Road. The nature of the layout provides a more enclosed, intimate outdoor space compared to the nearby Oval facing Lake La Salle. In order to provide the courtyards with as much sun exposure as possible, the three floors of faculty-only housing are located at the northern end of the site. The plan also creates more surface area for retail exposure to Lee Road; direct access to individual stores from Lee Road will draw people into the courtyards.



WINTER SOLSTICE

Figure 40: lighting study

PROJECT THREE_DESIGN DEVELOPMENT



PROJECT THREE_DESIGN DEVELOPMENT

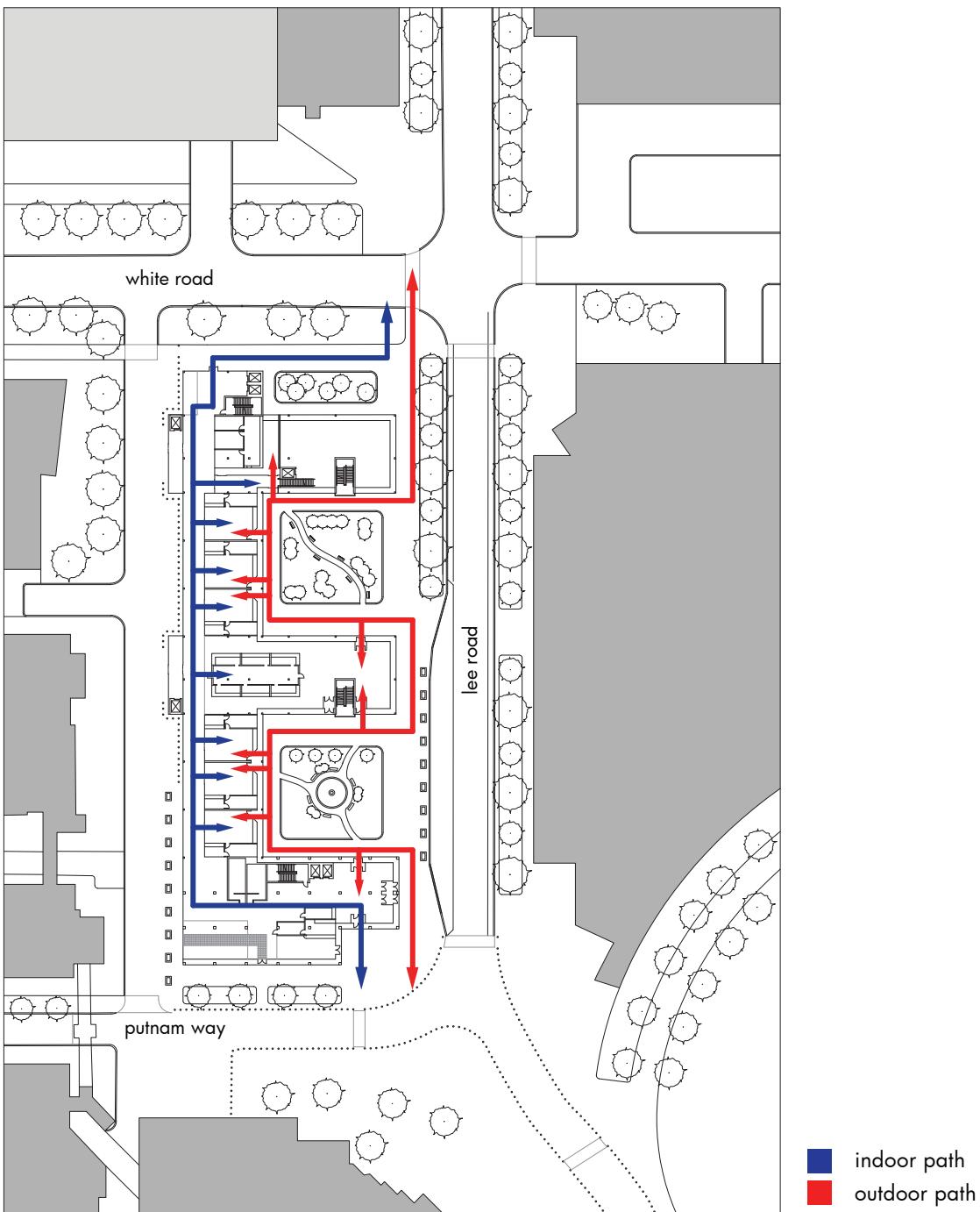


Figure 41: North-south circulation paths through site and access to first floor program

GROUND-LEVEL CIRCULATION

All public spaces on the first floor are directly accessible from the inside corridor or the outside courtyards. Access to retail, the university store, and dining from the street will ideally draw people into the courtyards and create active outdoor public spaces more intimate than The Oval. The indoor corridor will provide weather protection to students using the building as a pathway to and from the Academic Spine, while the outdoor courtyard path can be used during good weather.

PROPOSED STRUCTURE

Steel columns and beams with pre-cast hollowcore concrete planks

- o 10" planks - public area
- o 12" planks - apartments, approximately 30' maximum span



Figure 42: Pre-stressed hollowcore concrete planks

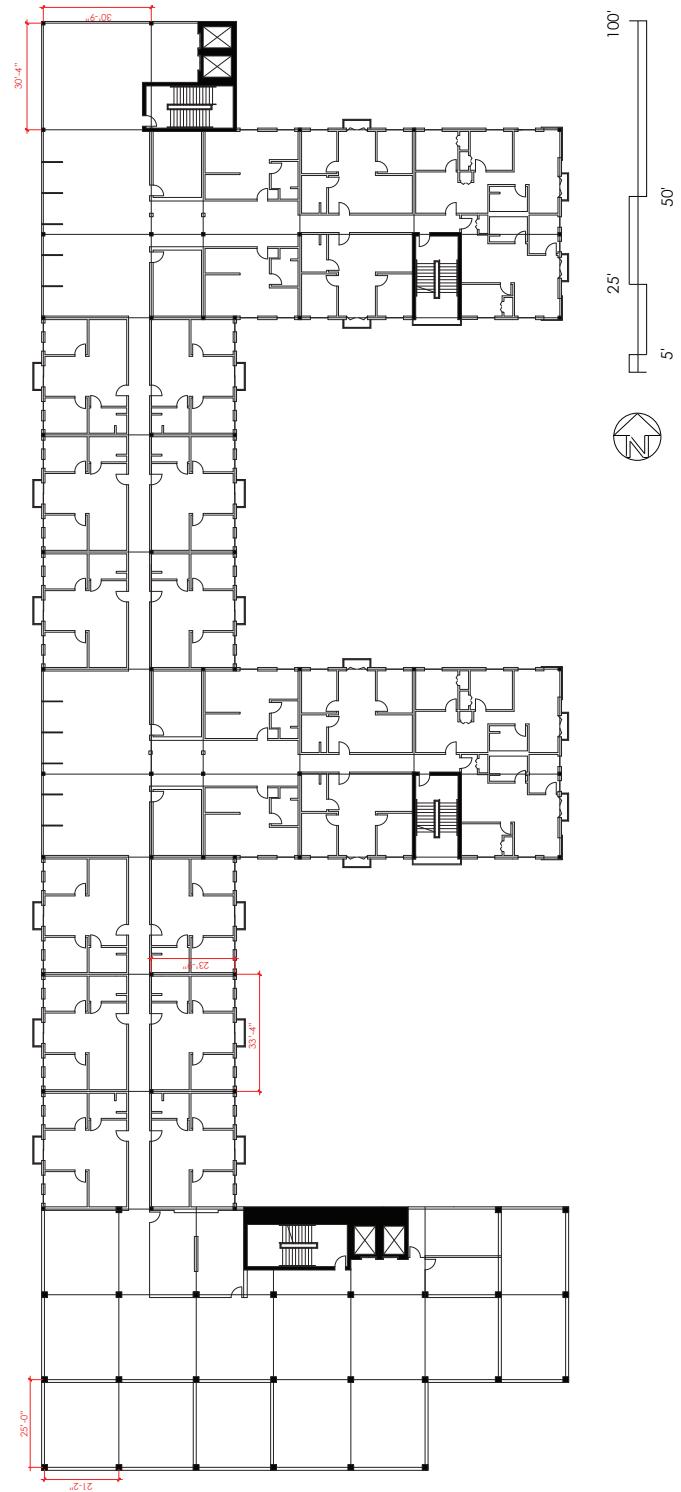
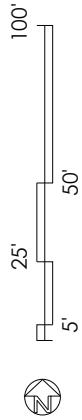
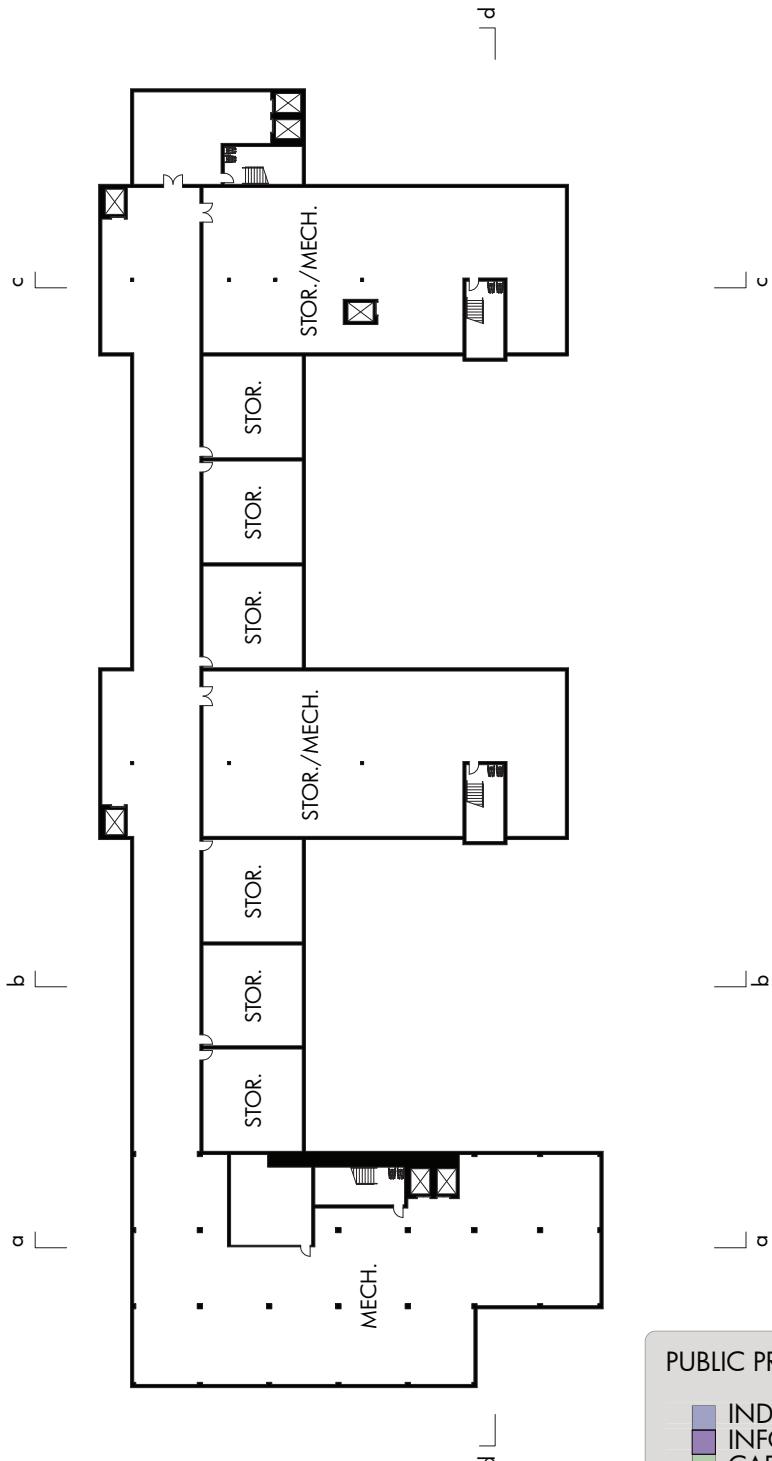


Figure 43: Framing plan, levels 3 - 7

PROJECT THREE DESIGN DEVELOPMENT

L0



PUBLIC PROGRAM, FIRST FLOOR:

- INDOOR TRANSPORTATION WAITING AREA
- INFORMATION DESK + VISITOR CENTER
- CAFÉ
- BIKE RENTAL + INDOOR STORAGE
- RENTABLE STORES:

Number: 6 units

Square area: 1154 sq. ft. (not including basement storage)

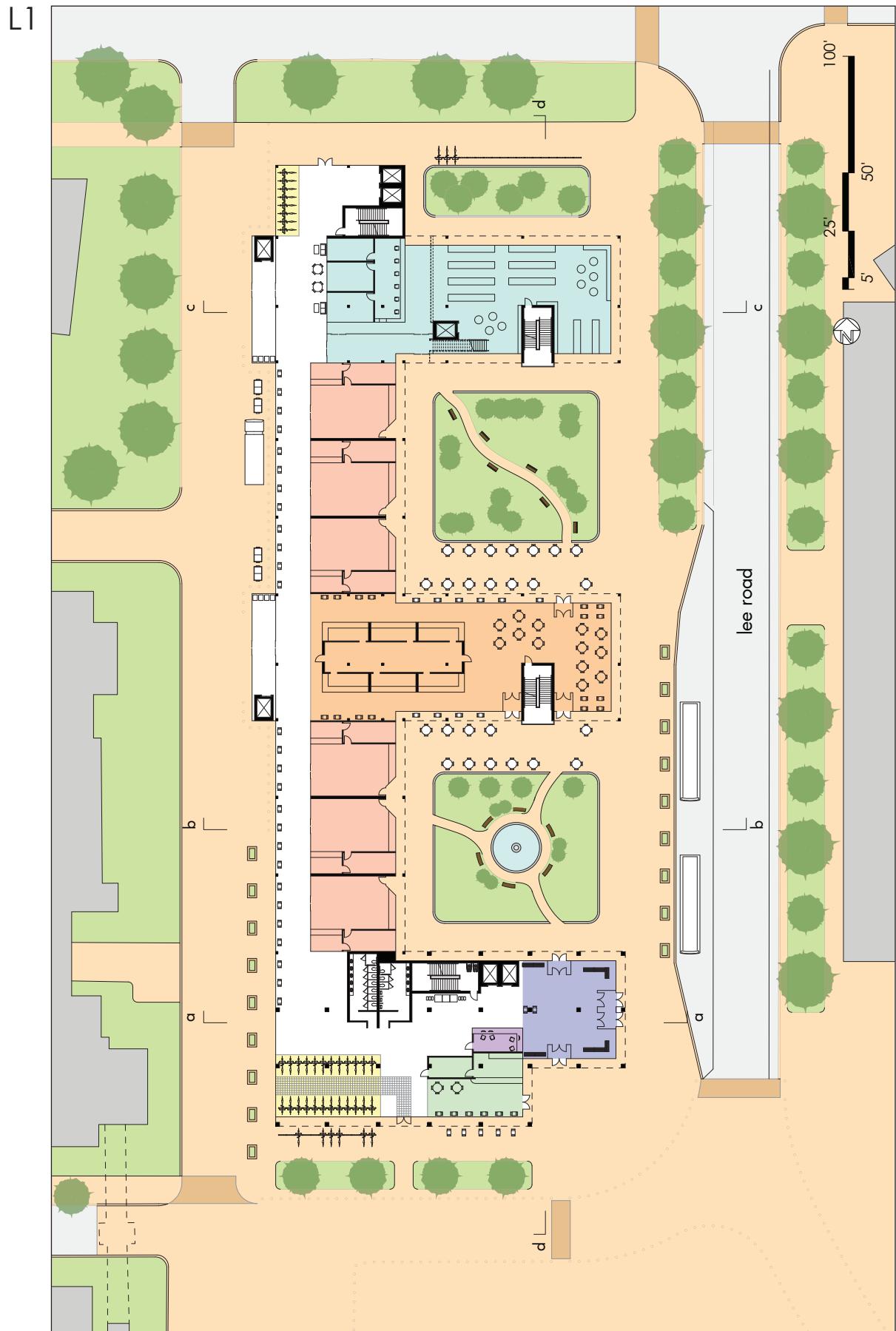
- DINING FACILITIES

- UNIVERSITY STORE + MARKET

Figure 44, above: L0, basement

Figure 45, opposite: L1, ground floor

PROJECT THREE DESIGN DEVELOPMENT



PROJECT THREE DESIGN DEVELOPMENT

L2

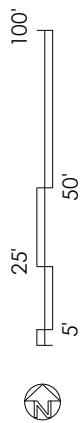
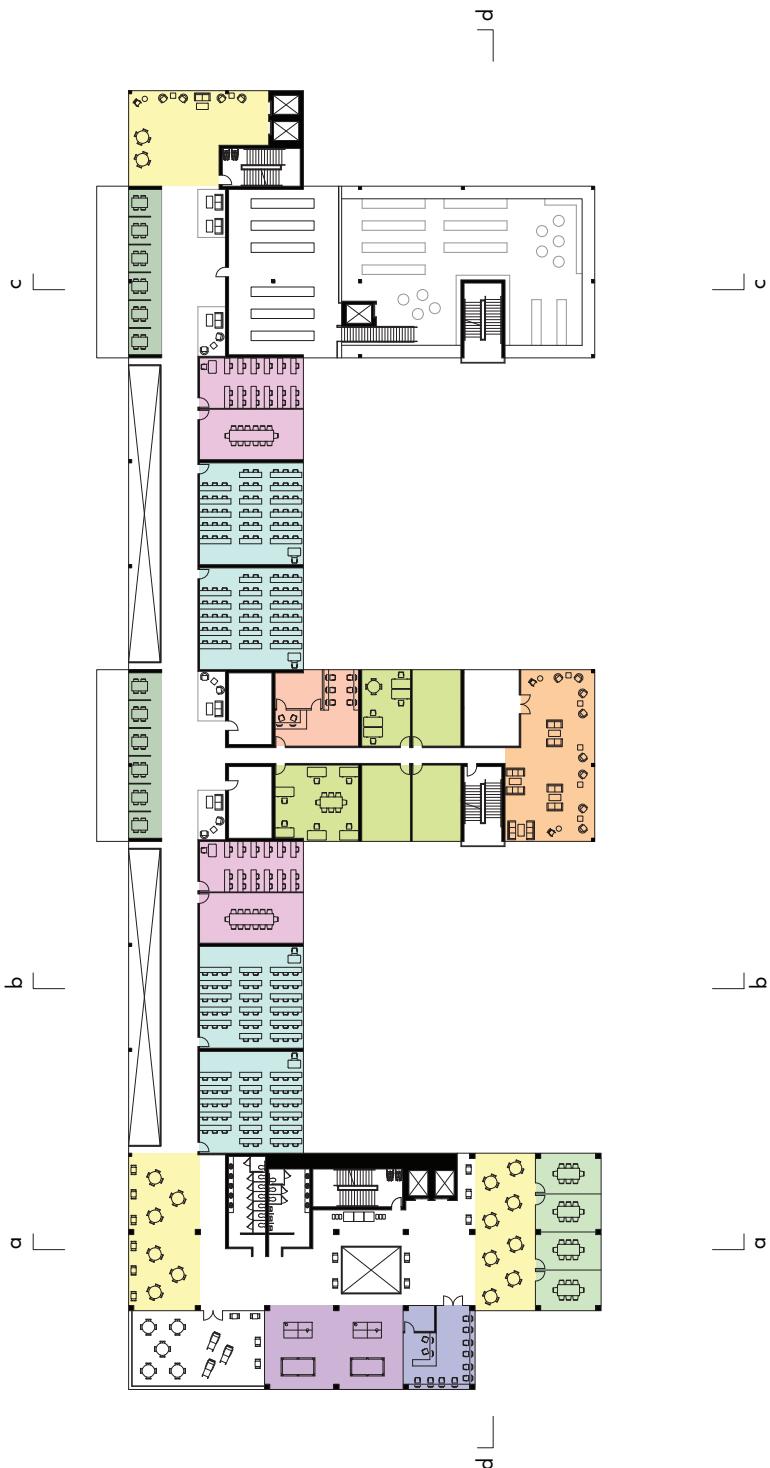


Figure 46, above: L2, second story

Figure 47, opposite: L3, student apartment level, representative of L3-L7

PUBLIC PROGRAM, SECOND FLOOR:

- | |
|--|
| ■ COMPUTER LAB |
| ■ RECREATION AREA |
| ■ STUDY ROOMS |
| ■ STUDY NOOKS |
| ■ LOUNGES |
| ■ FACULTY HUB |
| ■ MULTIPURPOSE ROOM |
| ■ CLASSROOMS:
Number: 4 units
Class size: 45 seats
Square area: 1067 sq. ft. |
| ■ SEMINAR ROOMS:
Number: 4 units
Class size: 14-18 seats
Square area: 525 sq. ft. |
| ■ OFFICES:
Number: 4 units
Square area: 376 sq. ft. |

PROJECT THREE DESIGN DEVELOPMENT

L3



TYPICAL STUDENT APARTMENT FLOOR:

- STUDIO UNIT
- ONE-BEDROOM UNIT
- TWO-BEDROOM UNIT

PROJECT THREE_DESIGN DEVELOPMENT

OUTDOOR TERRACES

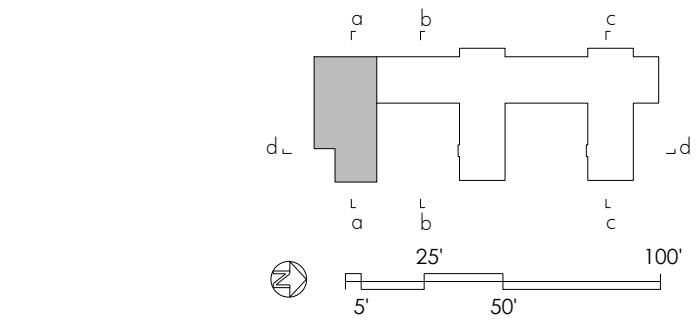
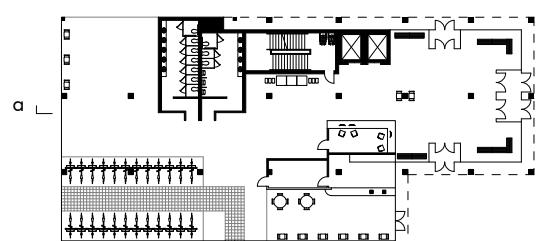
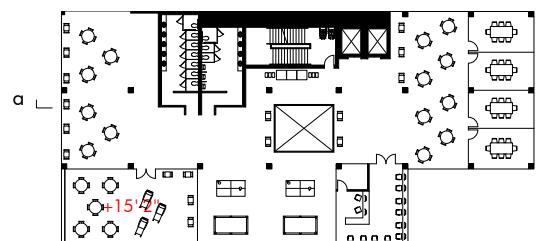
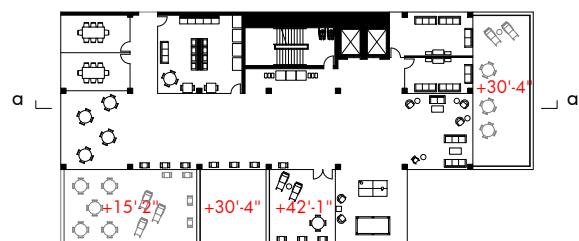
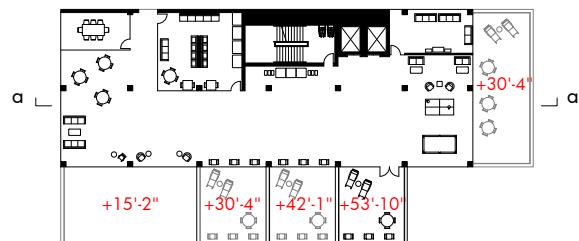


Figure 49: Rendering showing outdoor terraces in full sunlight at noon on the equinoxes

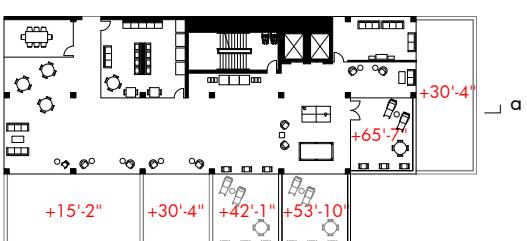
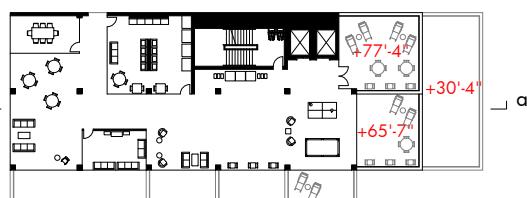
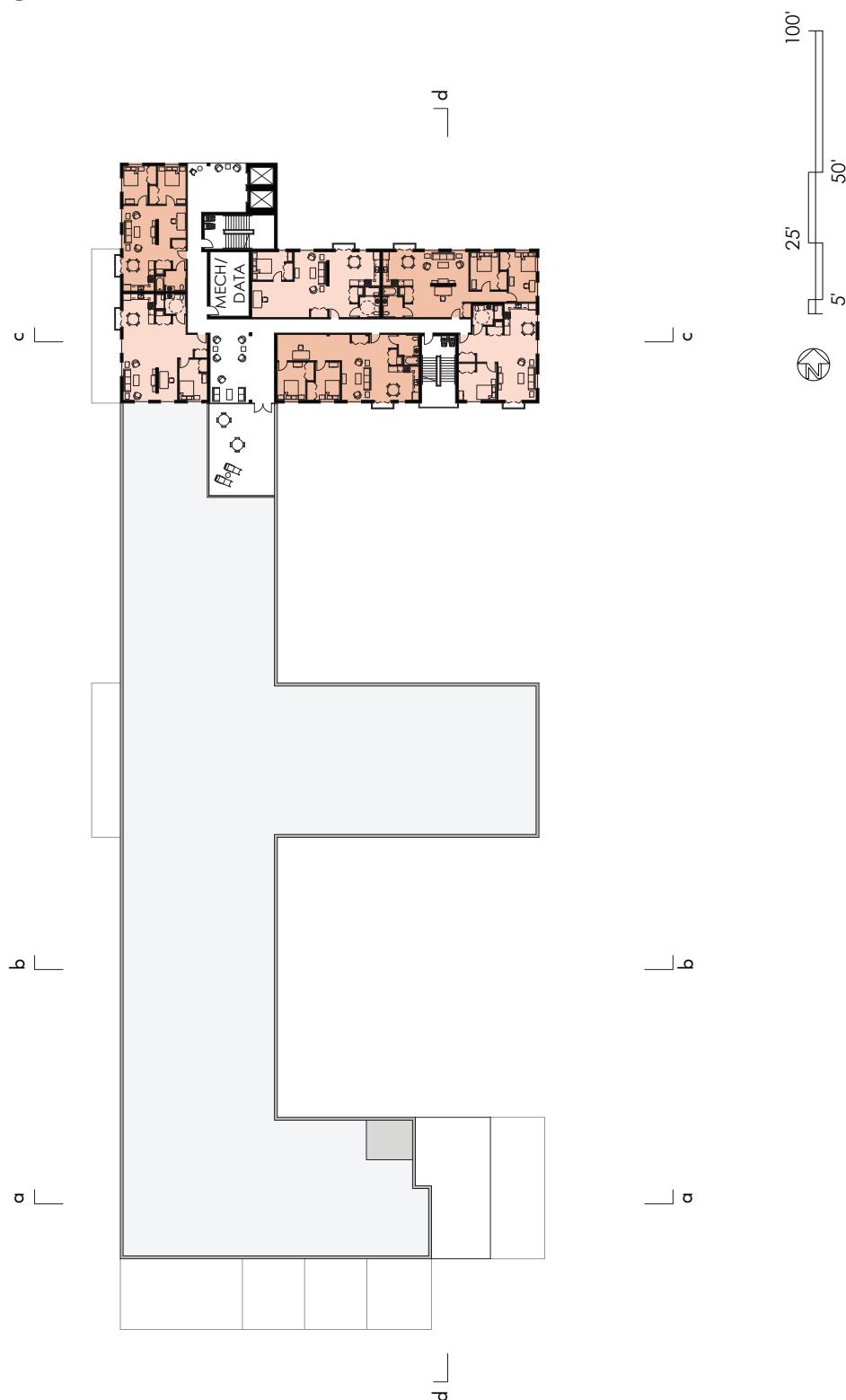


Figure 48, above: Outdoor terraces of levels 2-7 at south end of building

PROJECT THREE DESIGN DEVELOPMENT

L8



TYPICAL FACULTY APARTMENT FLOOR:

- ONE-BEDROOM UNIT
- TWO-BEDROOM UNIT

Figure 50, above: L8, faculty apartment level, representative of L8-L10

PROJECT THREE_DESIGN DEVELOPMENT

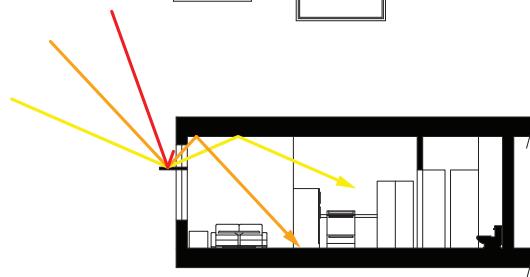
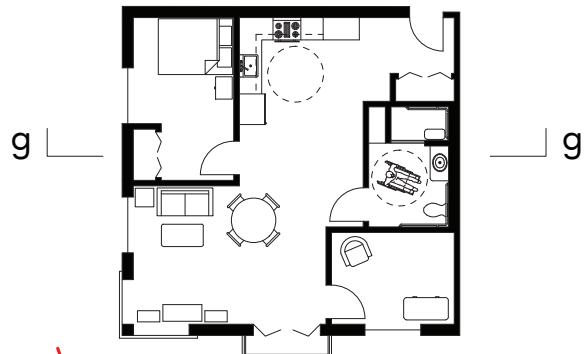
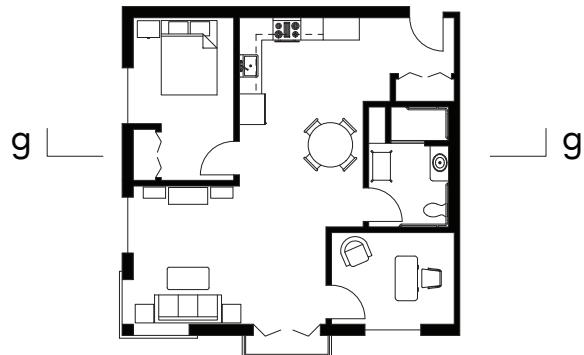
DESIGN CONCEPT: FLEXIBILITY

- o Target users are graduate students and faculty; however, apartments can accommodate all types of students if housing demand changes
- o Two-bedroom units can be rented to two separate individuals, one individual (converting second bedroom to office), a couple, etc.
- o All apartment units with exception of two-bedroom faculty units are accessible
- o Multiple furniture arrangements possible

STUDENT APARTMENTS, 3rd-7th FLOORS:

ONE-BEDROOM UNITS:

Five Floors – 1 unit per floor
5 units
790 sq. ft. each



section g-g

Figure 51, above: Two possible layouts of a student one-bedroom unit

Figure 52, opposite left: Two possible layouts of a student two-bedroom unit

Figure 53, opposite right: Two possible layouts of a studio unit

PROJECT THREE DESIGN DEVELOPMENT

STUDENT APARTMENTS, 3rd-7th FLOORS:

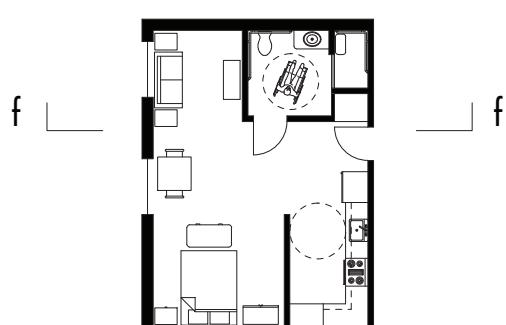
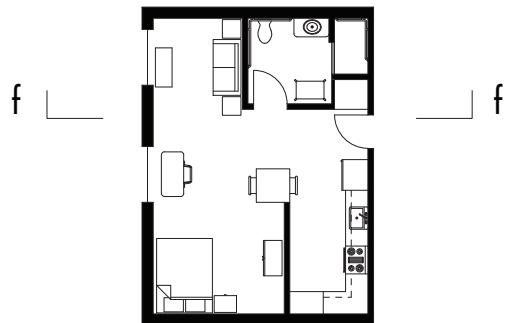
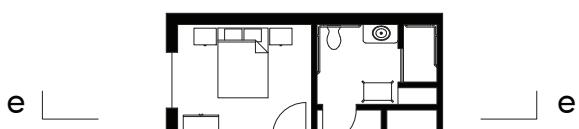
TWO-BEDROOM UNITS:

Five Floors – 18 units per floor
90 units
80 units 732 sq. ft. each
10 units 941 sq. ft. each

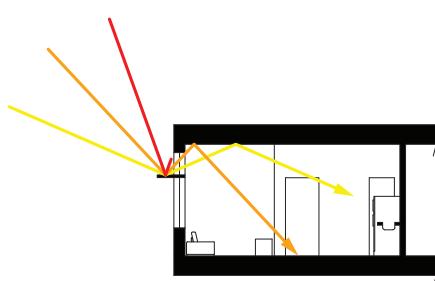
STUDENT APARTMENTS, 3rd-7th FLOORS:

STUDIO UNITS:

Five Floors – 4 units per floor
20 units
510 sq. ft. each

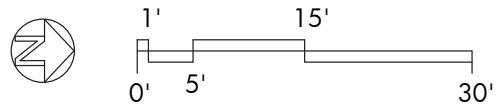


section e-e



section f-f

■ summer solstice - 70.2° ■ equinox - 47° ■ winter solstice - 23.6°



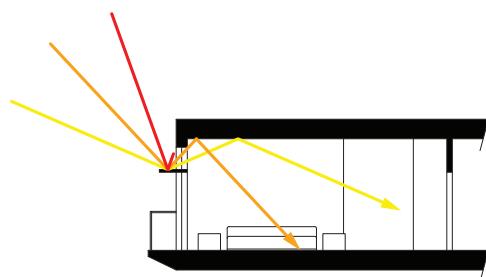
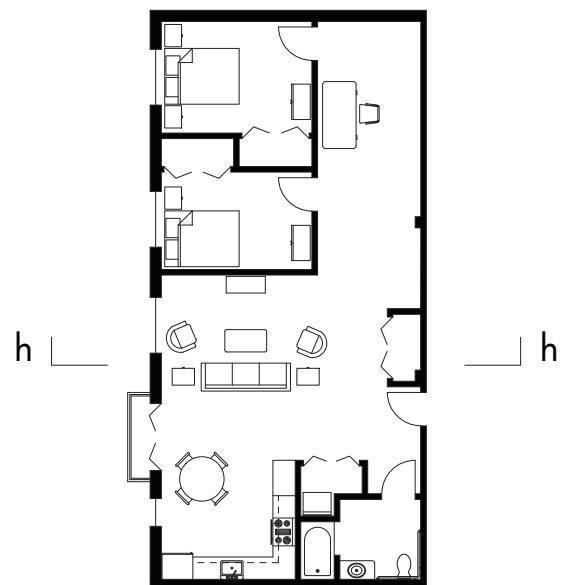
PROJECT THREE_DESIGN DEVELOPMENT

FACULTY APARTMENTS 8th-10th FLOORS:

Three Floors – 3 one-bedroom units per floor
3 two-bedroom units per floor

18 units

Average One-Bedroom unit: 995 sq. ft.
Average Two-Bedroom unit: 1157 sq. ft.



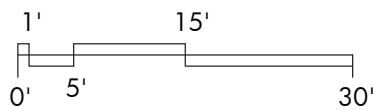
section h-h

Figure 54, right: Visitable faculty two-bedroom unit

Figure 55, opposite (top): Section a-a

Figure 56, opposite (middle): Section b-b

Figure 57, opposite (bottom): Section c-c



summer solstice - 70.2° equinox - 47° winter solstice - 23.6°

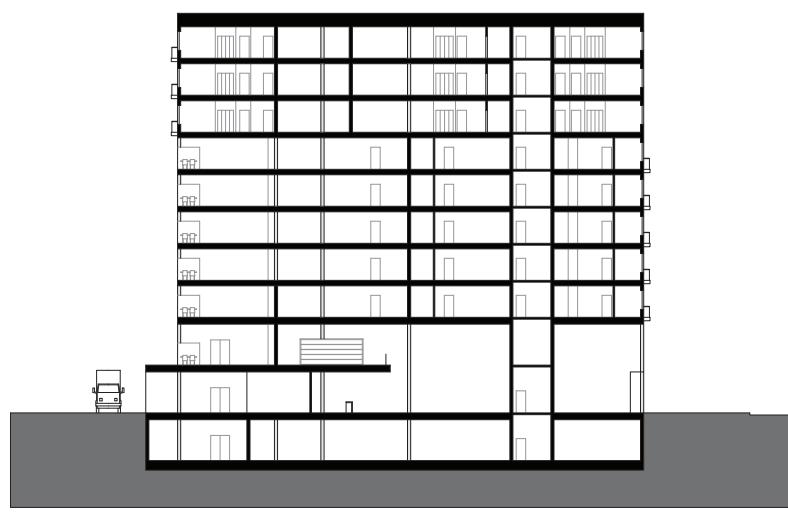
PROJECT THREE DESIGN DEVELOPMENT



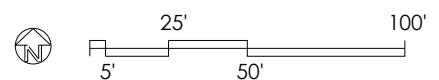
section a-a



section b-b



section c-c



PROJECT THREE_DESIGN DEVELOPMENT



Figure 58, above left: East elevation (lee road)

Figure 59, above right: Section d-d

PROJECT THREE _DESIGN DEVELOPMENT



Figure 60: Overall aerial perspective looking northwest



Figure 61: Perspective of southernmost courtyard

PROJECT THREE_DESIGN DEVELOPMENT

REVIEWER COMMENTS

PRELIMINARY DESIGN REVIEW:

CRITICS: Sue Weidemann, professor and environmental psychologist; Ken MacKay, professor and architect; Ed Steinfeld, studio professor, architect, and director of the Center for Inclusive Design and Environmental Access (IDeA Center)

Professor MacKay said that the project was very competently done and that the next stage was to focus on the elevations, which he found to be monotonous once the windows of the apartments begin to repeat. He suggested moving the windows into the corners of rooms to break the monotony and to bring more natural light into the rooms by having the adjacent wall reflect it. Professor Steinfeld disagreed, saying that rooms with corners provide more options for furnishability, and light going across one's field of vision would cause glare. Both suggested looking into ways to create better light distribution and penetration.

The reviewers also suggested looking at the apartment units in more detail, and demonstrating the flexibility of the units by showing different furniture layouts.

To create a more welcoming building, the reviewers suggested tucking the first floor in slightly to create an overhang. They also said that the public end of the building was more rigid than it needed to be and each floor could be different, especially on the residential levels.

The staircases located at the ends of the wings were seen to be awkwardly projecting onto the sidewalk, and the reviewers suggested moving them into the building, using the resulting shifting of apartments as a way to create more efficient plumbing walls.

The site plan was well-received, but the critics suggested developing the alley behind the building more to make it more pedestrian-friendly and optimized for servicing the building.

SEMI-FINAL DESIGN REVIEW:

CRITICS: Beth Tauke, Inclusive Design professor; Ed Steinfeld; Brian Haggerty, Senior Associate Director, Campus Living

Beth Tauke suggested making all of the units accessible instead of visitable by replacing the bathtubs with no step showers with trench drains and to make the grab bars usable as towel racks. Brian Haggerty suggested leaving the bathtubs in some of the faculty units for residents who may have children.

Professor Tauke said that the intimate green spaces (outdoor terraces on the south end of the building) make the building feel more human-scale, which was really nice. She suggested creating outdoor terraces for the faculty floors of the building like those provided for the students. Brian Haggerty also suggested a multi-use space for the faculty to promote cross-disciplinary dialog and to have a place where professors and students can interact. The reviewers also said that the balconies facing onto the courtyards provide an opportunity for great social interaction. It was also suggested to see what would happen if the interior walkway along the back of the building was brought to the front, wrapping around the building between the entrances to the stores and the courtyards.

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FINAL DESIGN REVIEW:

CRITICS: Sue Weidemann; Ken MacKay; Ed Steinfeld; Beth Tauke; Brian Haggerty;
Harry Warren, professor and architect; Jonathan White, Architectural Research
and Design Associate at IDeA Center

Ken MacKay began the review by saying it was one of the most competent presentations he had ever seen. Several reviewers said that the logic was very clear throughout the development of the project and the way it was presented. Professor MacKay said that the presentation was very convincing and that I should continue to develop the elevations and renderings. Professor Tauke asked if there was a reveal that could be done between the second and third floors (public and residential) to differentiate the masses and create a floating effect. Both Professors MacKay and Tauke suggested exploring the materiality of the building more as a way to suggest different programs, and possibly pushing or pulling walls in to create different effects.

It was suggested that the outdoor terrace for the faculty could be expanded across the whole roof instead of being just a small area. Jonathan White said that the stepped terraces are great but they do not read well in the plans.

Overall, the final design was well-received and it was said that a lot of problems initially in the design were solved.

PROJECT THREE_DESIGN DEVELOPMENT

SELF-CRITIQUE

Overall, I think I was able to come up with solutions by the final design review for many of the issues critics brought up in earlier reviews. I felt that the end product was well-developed and fully articulated my vision for the living-learning quarter, and could be used as a realistic design proposal for new student housing at the University at Buffalo. The design solution incorporated design knowledge as well as environmental psychology research and personal experience with on-campus housing.

If I were to move forward with this project, I would continue to explore materiality and form as a way to articulate the functions within the building and to create a more visually interesting façade that would create a landmark building on North Campus. I would also continue to develop the exterior renderings of the building to show more activity occurring in the courtyards. I would have also liked to design the apartments in more detail, perhaps showing interior renderings.

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