SASAKI

UNIVERSITY OF CALIFORNIA, RIVERSIDE

GLEN MOR 2 STUDENT HOUSING

DETAILED PROJECT PROGRAM

April 2009

UCR Project Number: 956334

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ACKNOWLEDGEMENTS

Appreciation is extended to all who participated in the development of the Glen Mor 2 Student Housing Detailed Project Program (DPP).

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EXECUTIVE SUMMARY

In the fall of 2007, the Glen Mor Student Apartments opened to students after "selling out" all 504 beds in one day's time. Testament to the continued demand for on-campus apartment-style living and in recognition of the success of the Glen Mor project, UC Riverside and Housing Services initiated programming and planning for Glen Mor 2, an 800 bed student housing community located across the arroyo from Glen Mor 1.

PROJECT VISION

Glen Mor 2 is envisioned to be a companion community to Glen Mor 1, similar in apartment unit type, level of amenities, and services. In fact, the projects will be marketed as an integrated community to prospective student residents. Glen Mor 2 will consolidate the Resident Services Office and maintenance facilities for the community while addressing parking needs within the Glen Mor/Aberdeen-Inverness/Lothian/Pentland Hills residential neighborhood as well as enhancements to the shared arroyo landscape.

Goals expressed during the DPP process reiterate campus wide planning goals:

- Increase the critical mass of the on-campus resident community while fostering opportunities for social interaction and learning,
- Emphasize strong pedestrian connections to the core campus, to Glen Mor 1, and around and within the community,
- Create a regional model for environmental stewardship, with LEED® Silver as a minimum target, and
- Create outdoor environments that attract and encourage community use.

Aerial photograph

METHODOLOGY

The programming for Glen Mor 2 was realized through a series of on-campus workshops. A rapid consensus was reached on the project direction by virtue of an interactive, iterative, and collaborative process. Glen Mor 1 served as a point of departure, and refinements to unit modules, support spaces, and additional community amenities were informed by post-occupancy interviews with residents and Housing Services staff.

The workshops were directed by the Design Team in collaboration with a Project Management Team represented by the offices of Capital and Physical Planning, Facilities - Design and Construction, and Housing Services.

SITE

The project study area is located near the East Entry to campus, bound by Big Springs Road to the south, Valencia Hill Drive to the east, the Lothian Residence Hall & Dining Center to the west, and a natural arroyo to the north. The site is directly across the arroyo from Glen Mor 1, and at present, is partially utilized for surface parking lots. The area of the site not currently occupied by parking is characterized by sloping grades of unimproved landscape. A currently unoccupied residential structure, constructed in 1925, according to the Cultural Resources Report (December, 2008), sits atop the highest point of the site.

Big Springs Road

PROJECT SCOPE

The Glen Mor 2 project will provide 800 single-occupant student beds in apartment-style units, along with support and community spaces, in 250,640 assignable square feet (ASF) and 334,187 gross square feet (GSF).

The program is organized in five categories, Residential Spaces, Community Space, the Resident Services Office, a small Conference Facility, and Support Spaces.

The 232,900 ASF of ***Residential Spaces*** include:

- 182 4-Bedroom Apartments
- 36 2-Bedroom Apartments
- 4 2-Bedroom Resident Director/Faculty In-Residence Apartments
- 10 1-Bedroom Resident Advisor Apartments

The 7,820 ASF of ***Community Space*** includes:

- Large and Small Meeting Rooms
- A Computer Lab and Gaming Lounge
- A Fitness and Multi-Purpose Room
- Academic Resource Center and Faculty-in-Residence Office
- Laundry & Vending Centers

The 4,710 ASF ***Resident Services Office (RSO)*** includes:

- Reception and Administrative Support Spaces
- Resident Services Staff Offices
- Residence Life Staff Offices
- Conference Staff Offices
- Mailboxes and distribution for Glen Mor 1 and Glen Mor 2

The 2,170 ***Conference Facility*** includes:

- Meeting Room
- Studio Apartments
- Support Spaces

The 3,040 ASF ***Support Spaces*** include:

- Housekeeping and Custodial Services
- Maintenance Shop
- Maintenance Staff Support and Office Space

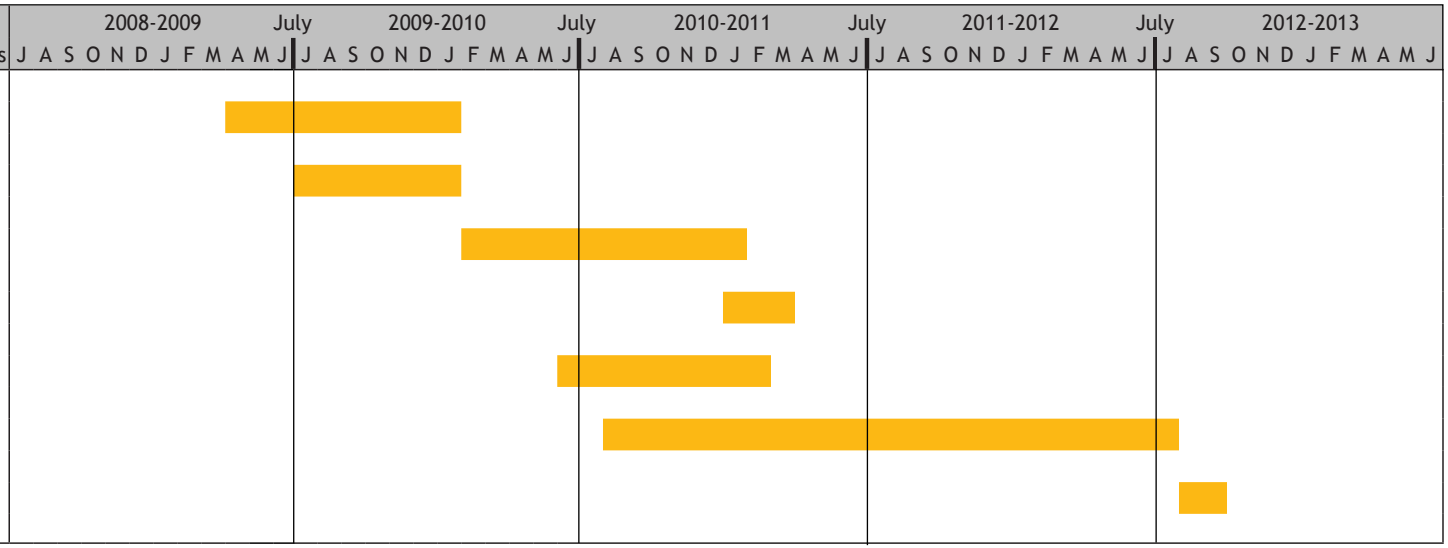
In addition to the enclosed square footage, Glen Mor 2 has a considerable site-based scope of work, including arroyo enhancements, at least one pedestrian bridge connecting the community to Glen Mor 1, a 596 space parking structure, a swimming pool, and landscape associated with the housing community.

Site Illustrative Plan

PROJECT SCHEDULE

Glen Mor 2 is anticipated to start the Design Phase in the spring of 2009, the Working Drawing Phase in the winter of 2010, with Construction underway in the summer of 2010. Occupancy is slated for fall 2012. This schedule suggests a delivery method that accommodates fast-tracking or selective scope bid packaging to assure construction starts before documentation is fully complete.

Activity	# of Months
Preliminary Plans	10
CEQA	6
Working Drawings	12
Agency Review	3
Bid/Award Contract	9
Construction	24
Equipment/Occupancy	2



Total Cumulative Calendar Months	42

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DETAILED PROJECT PROGRAM PROCESS

The Detailed Project Program (DPP) planning process for Glen Mor 2 represents the first step towards completing the northeast residential precinct of the campus, characterized presently by the Lothian Residence Hall, Pentland Hills Residence Halls, and Glen Mor 1 Student Apartments. The intent of the programming process is to understand thoroughly and completely the implications of the planned project in terms of its functional requirements and its relationship to the greater UCR campus, to current and future academic (and non-academic neighbors), and to campus resources. While the process of programming necessarily includes elements of design, the result is not intended as a design solution, but rather as a rational and reliable basis for the design process that will follow.

THE PROCESS

Developing a Common Basis of Understanding

- Review 2008 Strategic Plan for Student Housing Update Principles, Housing Service's Mission Statement, etc.
- Define the project stakeholders
  - Housing Services
  - Campus Planning
  - Facilities, Design and Construction
  - Transportation and Parking Services
  - What is the relationship between user groups?
  - What other campus groups are involved?
  - How will decisions be made?
- Understand the current physical accommodation of Glen Mor 1 Student Apartments
  - What currently works and what doesn't?
  - Lessons Learned

Envisioning Opportunities

- Possibilities offered by proposed location of the new project in relation to the evolving campus environment (relationship to the UCR 2005 Long Range Development Plan (LRDP) and/or 2008 Campus Aggregate Master Planning Study (CAMPS))
- Relationship of new project to the existing student housing options
- Possible opportunities for program offerings
- Possibilities offered by technology

Defining the Goals for Your New Facility

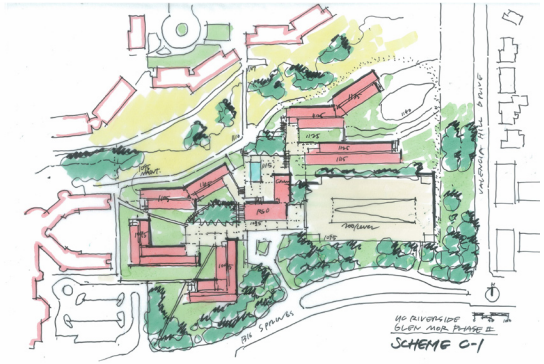
- Quantitative (Scope)
  - How big, how many, how often, how much?
  - Functional requirements
  - Schedule/timing
- Qualitative (Vision)
  - Image
  - Character
  - Environmental responsiveness

Reconciling Scope, Vision, and Budget

- Balancing program needs and facility character with available budget before design begins

Workshop sessions

Site visit



Site sketch

THE APPROACH

To initiate the work, a common understanding of project goals was developed. These goals served as the yardstick by which project progress and resolution were measured. Interviews with stakeholder groups, particularly those who reside, manage, and maintain Glen Mor 1 provided invaluable feedback in framing the programmatic response for Glen Mor 2. Many alternatives in regards to program composition, unit type design, and site accommodation were created for review and comment. Ultimately, a preferred alternative was developed reflecting a balanced program, vision, and budget.

A four-step, interactive series of workshops were held on the UC Riverside campus. Workshops were separated by intervals to permit consultant reaction, response, and synthesis. These workshops were held from late September through mid-November 2008.

Glen Mor 1

Workshop 1 Data Gathering

- Define project goals
- Define population to be served
- Understand the project context
- Understand the relationship to the academic program
- Define physical opportunities and constraints

Workshop 2 Program Definition and Concepts

- Campus planning considerations
- Site planning influences - utilities, access, open space, campus relationships, phasing
- Space descriptions and functional relationships
- Building organization alternatives
- Building system alternatives
- Sustainable strategies
- Preliminary cost model

Workshop 3 Program Synthesis and Concept Alternatives

- Reconciliation of space needs and room requirements
- Conceptual plan types, functional relationships, vertical organization, density, massing
- Site planning alternatives – utilities, access, open space, campus relationships, phasing
- Identification of cost premiums between alternatives
- Evaluation of alternatives against project goals
- Selection of preferred alternative

Workshop 4 Preferred Alternative Development

- Incorporate final comments
- Define program, scope, site, proposed budget and schedule
- Identify consensus- based framework for Schematic Design: open space concept, building organization, pedestrian and vehicular circulation, relationship to campus, relationship to LRDP

1.4

PROJECT GOALS

The following project goals were developed during the UC Riverside workshops with the Project Management Team.

The new Glen Mor 2 Student Housing will:

- Create a cohesive 800 bed student housing community for occupancy by July 2012.
- Foster an identity for the project with Glen Mor 1.
- Establish a clear network of pedestrian connections - to campus, to Glen Mor 1, and around and within the housing community.
- Embrace sustainable design strategies, with LEED® Silver Certification as a minimum target.
- Create a vision for the arroyo, with implementation tied to the completion of Glen Mor 2.
- Provide a greater proportion of community-based program amenities (in comparison to Glen Mor 1), including a new Resident Services Office and Pool complex.
- Provide proximate and secure vehicular parking (176 spaces + number displaced from lot 14); explore alternatives to surface lots.
- Integrate building services for efficiency and transparency.
- Create outdoor environments that attract and encourage community use, while engaging the site's unique character.

2.1

CAMPUS PLANNING PRINCIPLES

The University of California, Riverside is projected to increase its enrollment to 22,000 students by the year 2015 and 25,000 students by 2020. Growth projections have been revised since completion of the 2005 LRDP. The LRDP prescribes that at least 50% of the students will be housed on the 1,121 acre campus. Several recent planning studies have been published to guide that growth:

2005 Long Range Development Plan (LRDP)

2007 Campus Design Guidelines

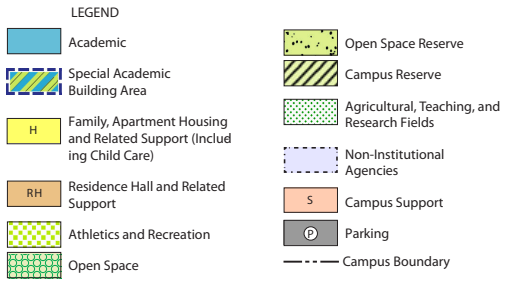
2008 Campus Aggregate Master Planning Study (CAMPS)

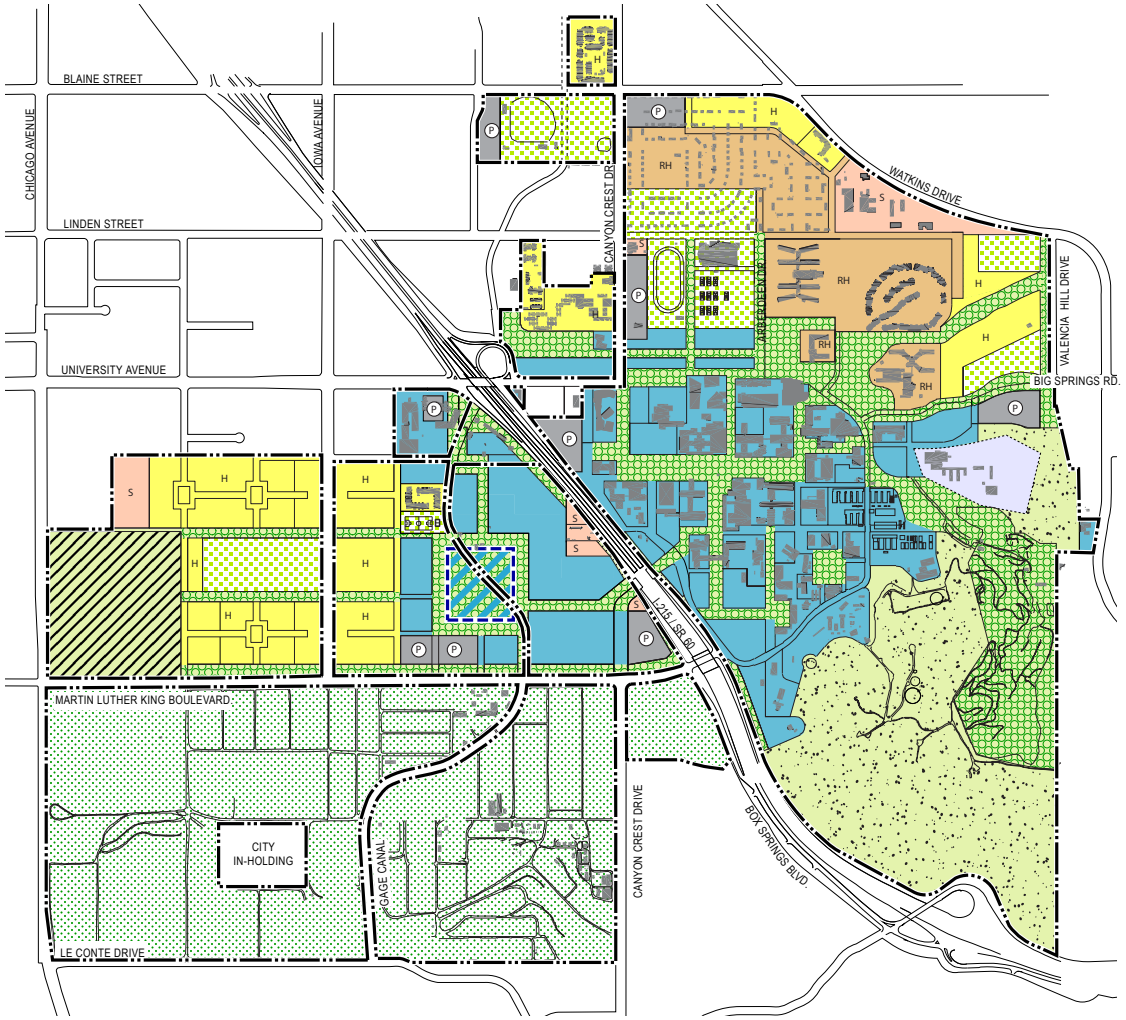
2008 Strategic Plan for Student Housing Update

2005 LONG RANGE DEVELOPMENT PLAN (LRDP)

The 2005 LRDP is a physical development and land use plan to meet the academic and institutional objectives for UCR in order to provide facilities for a projected student enrollment of 25,000. Key goals among those objectives include:

- Increase the critical mass of the on-campus community and improve opportunities for social interaction, socialization, and learning.
- Improve University town/gown connections and interaction.
- Emphasize strong connection and accessibility within campus and within the surrounding community.
- Create a regional model of planning, design and environmental stewardship, protecting the natural environment and incorporating sustainable planning and design practices.
- Enhance the UCR image with a unique design expression.





LRDP LAND USE PLAN

2007 CAMPUS DESIGN GUIDELINES

A guiding principle for UCR's development is to create a campus that is responsive to the intrinsic character of the region. The Design Guidelines offer the following goals:

- Provide visual connections to the surrounding landscape.
- Respect the legacy of the clear, modernist design that established the original campus buildings and utilize the buildings to support the campus open space system.
- Strengthen the relationship between buildings and landscape in new construction.

The Design Guidelines, especially as they relate to massing, materials, architectural elements, etc. will become more relevant as the design phases are initiated.

2008 CAMPUS AGGREGATE MASTER PLANNING STUDY (CAMPS)

CAMPS is an all-encompassing examination of the series of detailed area planning studies that supported the 2005 LRDP. The document weaves the various planning documents together, creating a coherence amongst the numerous University districts, focusing upon:

- Circulation Reconciliation
- Campus Gateways
- West Campus Development
- West Campus Capacity
- Phasing and Implementation of the West Campus Development
- School of Medicine

Relative to Glen Mor 2, the LRDP, CAMPS, and 2008 Strategic Plan for Student Housing Update anticipate structured parking replacing Lot 14 and reconcile future building development and address orientation while articulating vehicular, pedestrian and mass transit circulation relative to Big Springs Road.

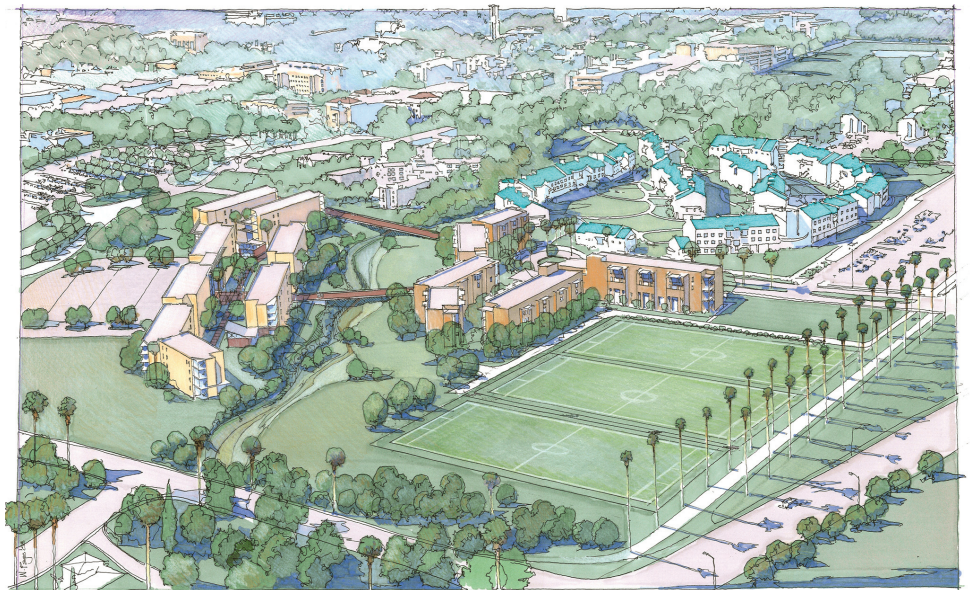
EAST CAMPUS HOUSING COMMUNITIES
2008 STRATEGIC PLAN FOR STUDENT HOUSING UPDATE

2008 STRATEGIC PLAN FOR STUDENT HOUSING UPDATE

In response to UCR's increased enrollment goals, and specifically, the desire of the University to house 50 percent of the students (including 75 percent of the freshmen and 50 percent of the transfer students) in campus housing, the Strategic Plan for Student Housing was updated in 2008. Highlights of the plan include:

- 3,000 new residence hall-style beds and parking (4:1 ratio) on the East Campus, providing programming primarily for first-year and transfer students
- 4,288 new apartment-style beds and associated parking (2:1 ratio) on the East and West Campus providing independent lifestyle living with the convenience of living on campus.
- 708 new family housing units and associated parking in apartment and townhouse style residences on the West Campus.
- 336 small group housing beds and associated parking on the East Campus.
- 300 apartment-style beds and associated parking on the West Campus for Medical Students
- Related programs for Child Care, Dining, and Student Services.

The Plan anticipates 800 apartment-style beds and a 600 car parking structure on the Glen Mor 2 site.



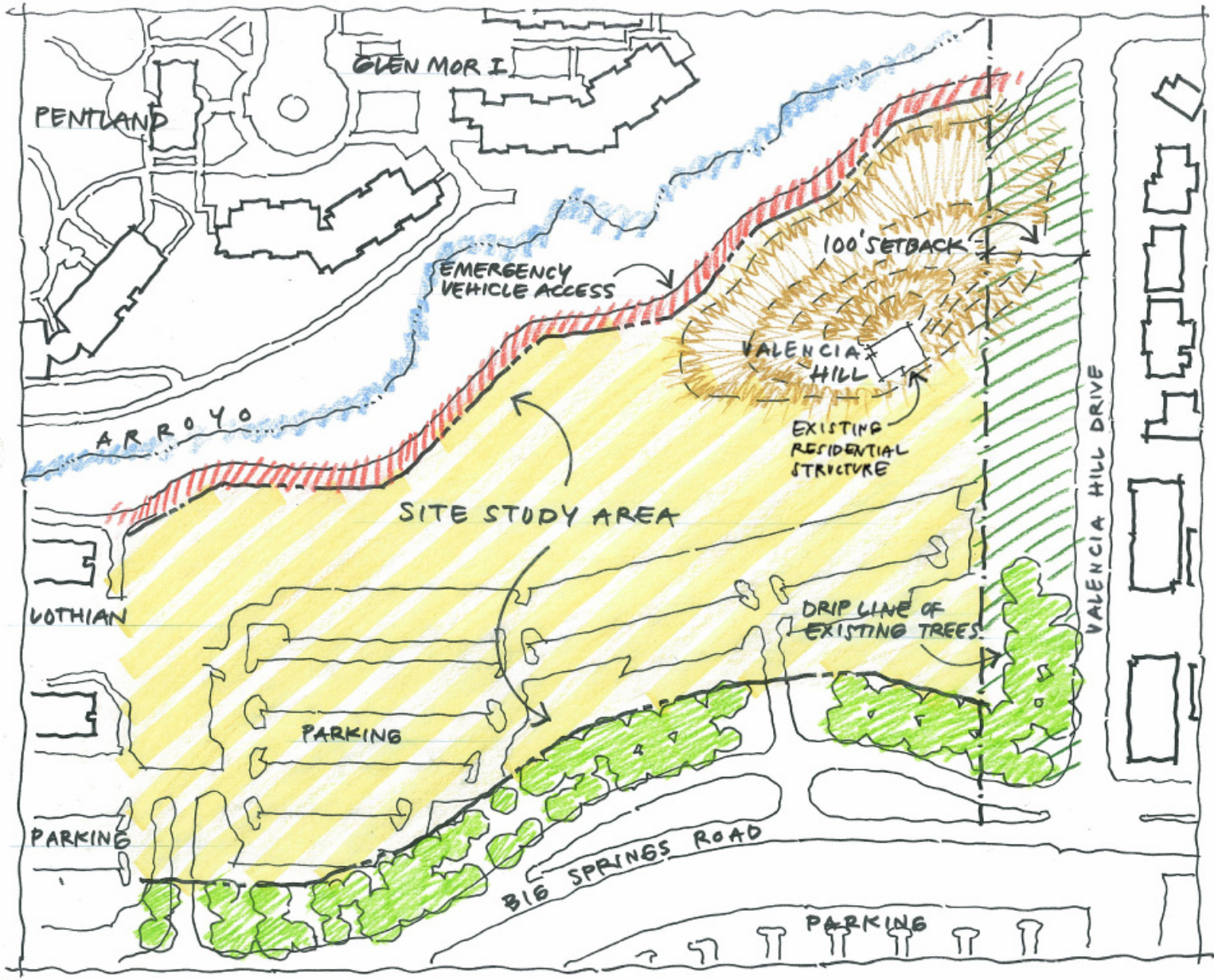
Glen Mor community

GLEN MOR 2 SITE AERIAL

2.2

SITE ANALYSIS

The Glen Mor 2 project site is located adjacent to the East Entry to the East Campus, bounded by Big Springs Road to the south and Valencia Hill Drive to the east. In CAMPS, planning for the site is influenced by the Strategic Plan for Housing Update and the East-Southeast Campus Area Study. Currently, the site is occupied by Parking Lot 14, which is on-grade parking dedicated to student-resident permit holders, a large undeveloped area, and a currently unoccupied residential structure dating from 1925, according to the Cultural Resources Report.



SITE STUDY AREA

SITE CONSTRAINTS

Each perimeter zone of the site is unique, and will require a different design strategy to address the various frontages.

To the East:
Valencia Hill Drive borders the entire eastern frontage of the site, and serves as a campus edge to the Belvedere Heights residential neighborhood. In accordance with campus planning documents, a 100 foot setback is required from the Valencia Hill Drive curb to any future building development. The setback area has a partially improved landscape, a double-row of ash trees and irrigated turf that characterize the East Campus entry.

The campus intends to complete the landscape character of the campus entry along the site's entire Valencia Hill Drive frontage within the scope of any site development. No vehicular access to the site shall be considered from Valencia Hill Drive. The natural topography of the site should be utilized, where possible, to temper the impact of new development from the residential neighborhood.

To the South:
Big Springs Road borders the entire southern frontage of the site, and serves as a formal entry to the East Campus. The mature landscape noted above characterizes this entire edge of the site, and should be maintained as part of any site development strategy.

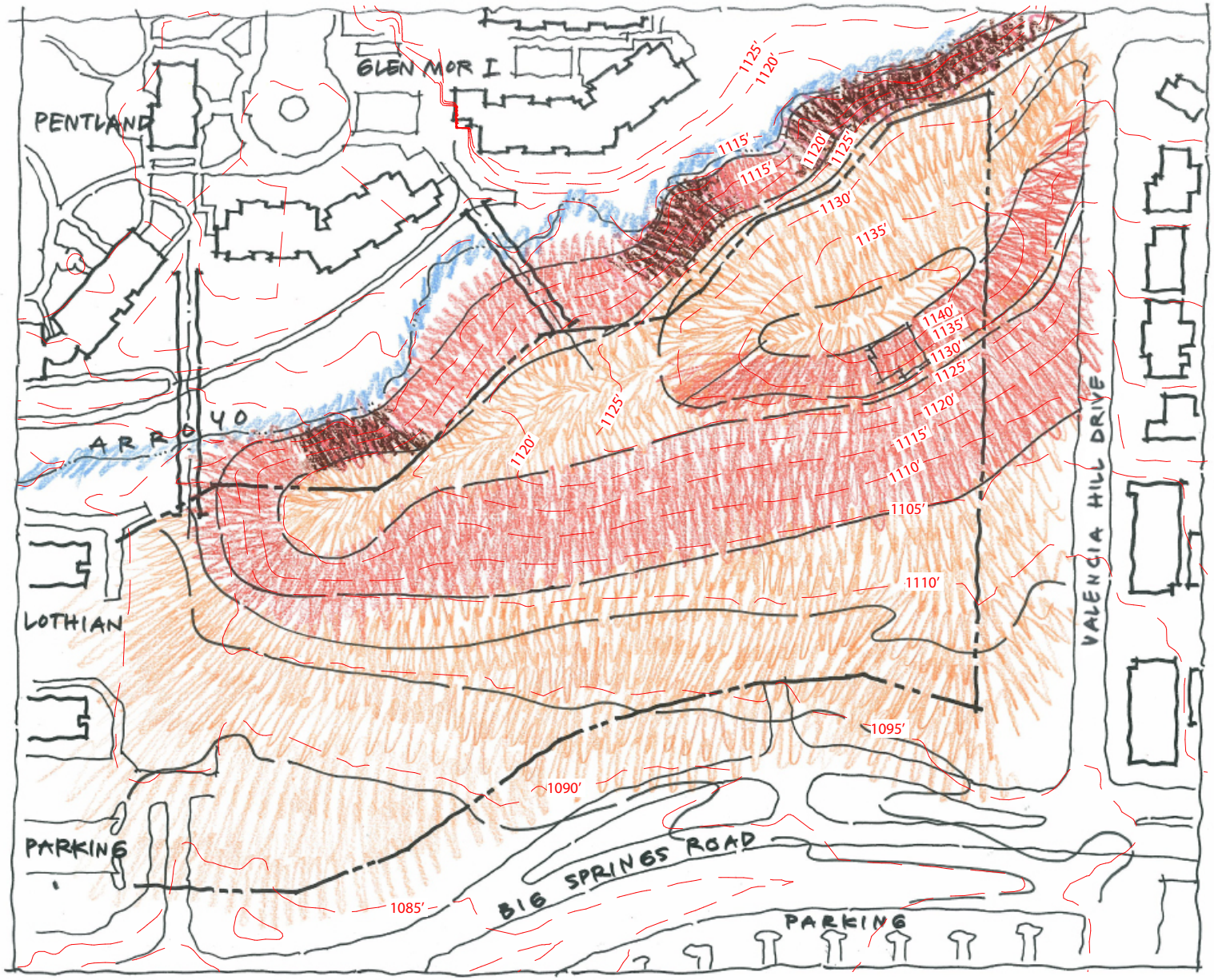
Big Springs Road will serve as the primary vehicular access for the site, and a prominent sense of arrival should be fostered from this exposure. Some modification to the dividing island may be necessary to promote improved site access for eastbound traffic.

To the West:
The Lothian Residence Hall & Dining Center is adjacent to the west edge of the site. Also notable is the visitor parking area of Lot 14, which is intended to remain and serve both Lothian and Glen Mor 2. The Lothian Residence Hall is a four-story building that fronts the arroyo, across from Pentland Hills. While adjacent to the site of Glen Mor 2, there's minimal programmatic relationship envisioned between the communities beyond shared parking, use of the pool, and dining opportunities.

At present, the fire lane that serves Lothian from the north terminates in the field before Lot 14, a condition that must be addressed in the development of the Glen Mor 2 site.

To the North:
The northern perimeter of the site is bounded by the arroyo. Past development in the precinct has traditionally sought to avoid the arroyo, so as not to fall under federal and State jurisdiction and review. As the last major project to be planned along the arroyo, the University intends for Glen Mor 2 to proactively address the arroyo - presenting a vision of pedestrian safety, environmental sustainability, and shared landscape amenity between the residential communities.

The campus fire marshal has mandated that emergency vehicular access be created along the entire northern perimeter of the site, between the arroyo and any proposed development. The project's connection to Glen Mor 1 is proposed via pedestrian footbridges spanning the arroyo at appropriate intervals. Ideally, these bridges would support electric carts and other small maintenance vehicles.



SITE TOPOGRAPHY AND SLOPES

TOPOGRAPHY

The dominant natural feature of the site is its topography. The pinnacle of the hill is roughly 50 feet above Parking Lot 14. Much of the undeveloped area of the site has grades in excess of 10% slope, with the steepest portions in excess of 25% slope. The currently unoccupied residential structure is perched at the top of the slope, which suggests the hill is a stable landform, and not a result of spoils or waste from neighboring development (as was the case in Glen Mor 1). Further geotechnical investigation will be necessary to analyze the sub-grade composition and soil bearing capacity prior to the start of design.

Site accessibility will serve as a key design constraint, as the average slope across the site exceeds 6% slope. Buildings may be required to accommodate stepped grades within their sections and elevators, ramps, and stairs will all be necessary to serve path of travel needs. Connection to Glen Mor 1, across the arroyo, should be considered with topographic elevations to ensure universal accessibility between the communities.

Due to the height of the hill relative to its immediate surroundings, the views from the upper elevations of the slope are impressive. The East Campus academic core, Carillon Bell Tower, and the surrounding Box Spring Mountains all dominate the view shed, and should inform building composition.

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CHARACTER

1. View of Pentland Hills Residence Hall across the arroyo
2. View of Glen Mor 1 across the arroyo
3. View of recreation fields and mountains to the north across the arroyo
4. Valencia Hill Drive, looking north, near the corner of Big Springs Road
5. Campus entry monument at corner of Big Springs Road and Valencia Hill Drive
6. Mature landscape character along Big Springs Road

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11

7. View from northeast corner of site looking southwest toward hill
8. Looking west, slope bank from parking Lot 14 to currently unoccupied residential structure
9. Looking east, along slope bank toward Box Spring Mountains
10. Looking west, from top of slope toward East Campus academic core
11. Parking Lot 14 and mature landscape along Big Springs Road
12. Entry to Lothian Residence Hall and Dining Center

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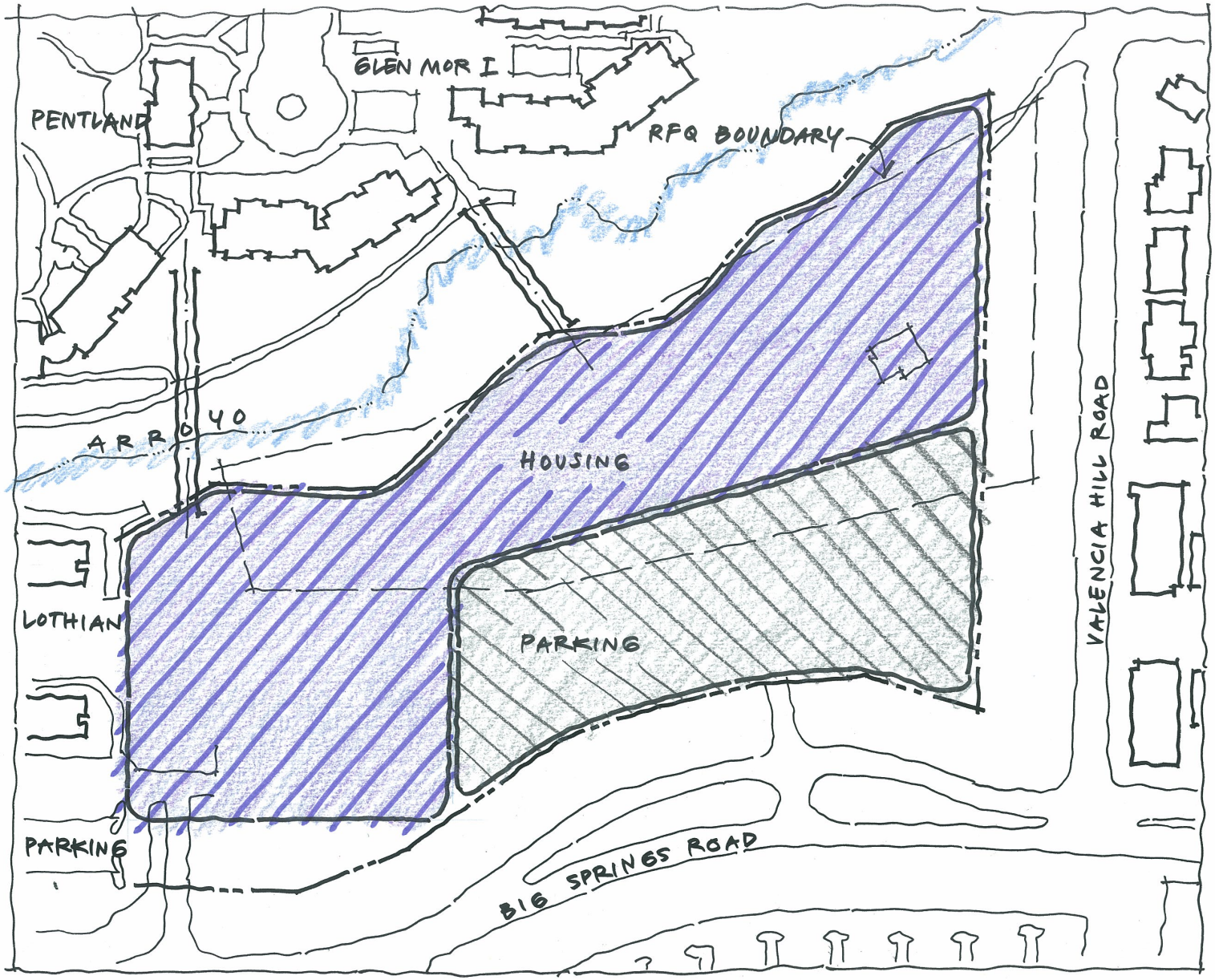


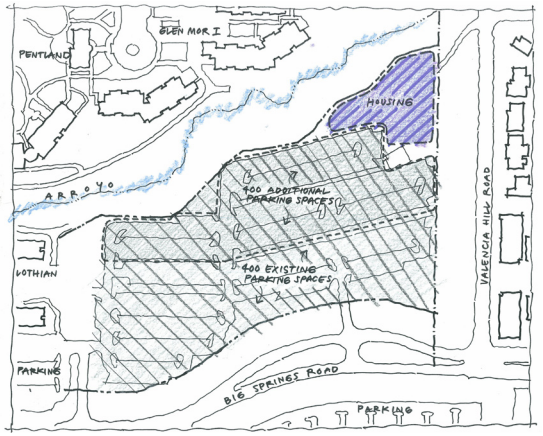
LAND USE DIAGRAM

LAND USE

Land use analysis during the DPP process revealed that, in order to achieve a similar density to Glen Mor 1, the majority of the site needs to be allocated to residential use. Glen Mor 1, absent the recreation fields, has a density of approximately 135 beds/acre. The Glen Mor 2 site area totals about 6.6 acres, so achieving a similar density to Glen Mor 1 would result in 5.9 acres of the site dedicated to residential use.

Parking demand was calculated on a precinct-wide basis, using ratios established by the LRDP for residence halls (4 beds : 1 parking space) and apartments (2 beds : 1 parking space). Ultimately, the additional 800 beds proposed for Glen Mor 2 will generate an additional on-site demand for 176 spaces in addition to any parking displaced from Lot 14. Presuming that all of Lot 14 falls within the study area for Glen Mor 2, the total parking demand then equates to 596 spaces (420+176).

Accommodating 596 parking spaces on-grade would require about 6 acres, demonstrating that a parking structure of some type would be essential for maintaining housing density at appropriate levels. Generally, parking is envisioned in the southeast quadrant of the site, adjacent to Big Springs Road and the vehicular entry to campus. Housing is envisioned wrapping the north and west quadrants of the site, adjacent to the neighboring student residential communities. This organization supports and reinforces the campus-wide pedestrian circulation networks already in place, with the opportunity to significantly improve the quality of those paths along the arroyo edge.



Land use alternative

ENVIRONMENTAL FACTORS

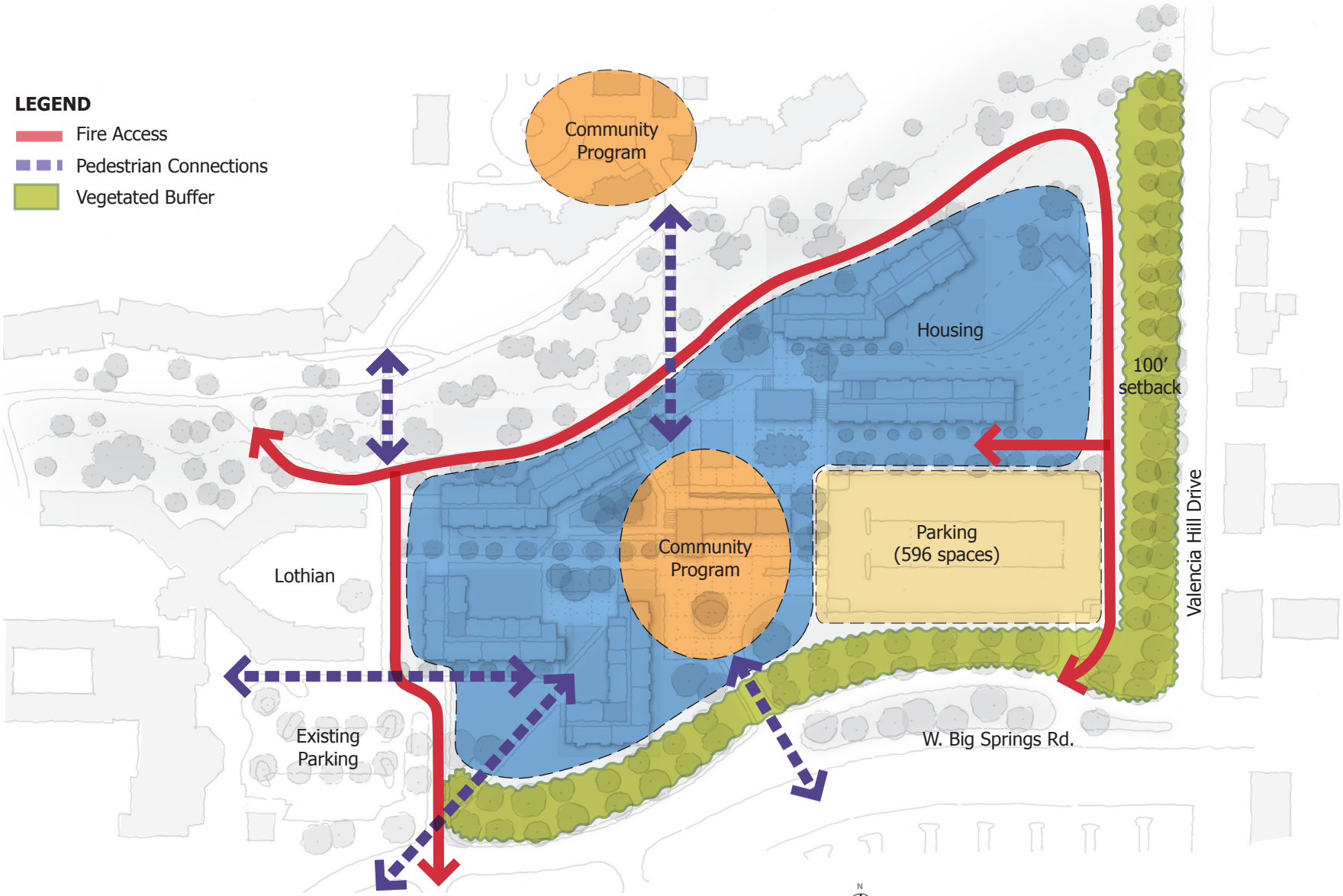
Much of what contributes to UC Riverside's "sense of place" can be derived from its physical setting and climate. Set against the rugged Box Spring Mountains, the campus offers a diverse series of open spaces, from the formal oasis of the Carillon Mall to the indigenous landscape of the arroyo. With less than 10 inches of rain annually, along with a yearly temperature average of nearly 79 degrees, shade and solar orientation are important considerations for any sustainable design approach. Prevailing winds are from the northwest; hot dry Santa Ana winds, occurring primarily during winter months, occasionally blow in from the desert areas to the northeast.

As expressed in the Project Goals, a key objective for this project is to obtain a LEED® Certification of Silver or higher. The physical expression of sustainable design strategies in the building character, site design, and unit organization – guiding principles in the DPP – will be further explored during the Design Phases of the project.

2.3

PREFERRED CONCEPT

During the DPP process, a number of different site strategies, unit types, and building configurations were explored. The selected scheme most effectively met the programmatic requirements and project goals defined by the Project Management Team.



ORGANIZATIONAL FRAMEWORK

ORGANIZATIONAL FRAMEWORK

The project's organizational framework is reflective of site constraints, land use identified during the site analysis, and the principles envisioned as project goals. In particular, the emphasis is on creating important connections with Glen Mor 1 and providing amenities and outdoor environments that encourage use by the whole housing community.

The connection to Glen Mor 1 is realized through a pedestrian bridge across the arroyo between the respective centers of community. This fosters identity between the two projects, which is reinforced with shared programmatic elements {the convenience store in Glen Mor 1, the Resident Services Office (RSO) in Glen Mor 2}. The Glen Mor 2 community center is located in the middle of the housing community, providing relatively equal accessibility to all student residents. The prominent RSO address on Big Springs Road is important for campus identity, fostering deliveries, and providing for ease of vehicular access.

The site constraints are manifested in a contiguous landscape character within the 100 feet setback along Valencia Hill Drive, a fire access loop that fosters pedestrian connections to campus, and apartment buildings generally located on the flattest portions of the site. The apartment buildings closest to Lothian Residence Hall acknowledge the campus context by respecting existing setbacks and building forms.

The parking structure is located at the southeast corner of the site, nestled into the mature grove of existing trees. Access to the garage is provided at both ends, off of Big Springs Road, as well as the Glen Mor 2 arrival plaza. The three-level structure's northwest corner is completely embedded in the southern slope bank of Valencia Hill, providing on-grade access to the upper community plaza from the parking structure's top deck.

SITE ILLUSTRATIVE PLAN

0 25' 50' 100'

SITE DESIGN

Similar to Glen Mor 1, the Glen Mor 2 community is organized around a diverse series of outdoor spaces shaped by building forms and activated by program amenities. The arrival plaza, at site elevation 1095, is envisioned as a formal space, fronted by the publicly-oriented Resident Services Office (RSO) building. While designed to accommodate vehicular traffic – to drop-off and pick-up residents, foster deliveries, and as access to the parking structure – the space should maintain a pedestrian scale. A pedestrian path on a direct north/south axis links this space to Glen Mor 1's arrival plaza.

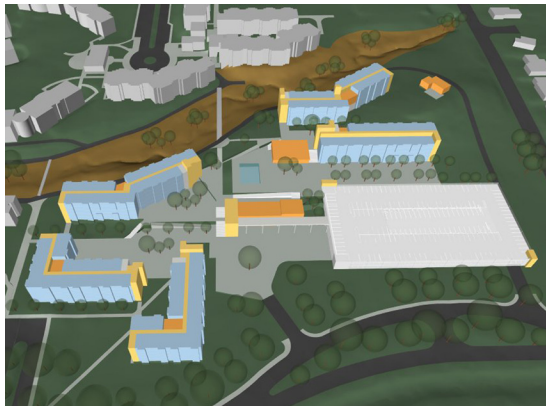
The RSO building is multi-story, responding to changes in site elevation. While the south side fronts the arrival plaza, the north side, at elevation 1110, serves as the central mail collection point for both Glen Mor communities. A laundry facility further defines this more informal exposure.

As the site's topography steps up from the arrival level, the core community elements follow suit. The pool deck, fitness and multi-purpose rooms, as well as a large meeting room, occupy elevation 1115. This socially-oriented courtyard serves as a "crossroads" for the community, and aligns with the upper-most level of the parking structure.

Further up the hill, at elevation 1125, the community core hosts a computer lab, gaming lounge, and the academic resource center. While these more reflective pursuits are purposely located above the social center, the intent is for all the community spaces to be flexibly designed to allow for multiple uses.

Residential apartment buildings also populate the different levels of the site, and their main entries are planned to be adjacent to the core community spaces. Apartment units are organized along double-loaded interior corridors, similar to Glen Mor 1. Each building will have one elevator serving five floors of student apartments. At the upper levels of the site, apartment buildings are proposed to be stepped, in section, to accommodate the topography more readily.

Perched atop the hill, in lieu of the currently unoccupied residential structure, is a small Conference Facility. This building is accessed separately from a discrete pathway adjacent to the parking structure. The small Conference Facility will serve the University community for retreats and meetings, and provide revenue generation for Housing Services. This use allows for a level of administrative control over the Valencia Hill Drive edge of campus.



From south

From north

Bird's eye view of arrival plaza and upper courtyard

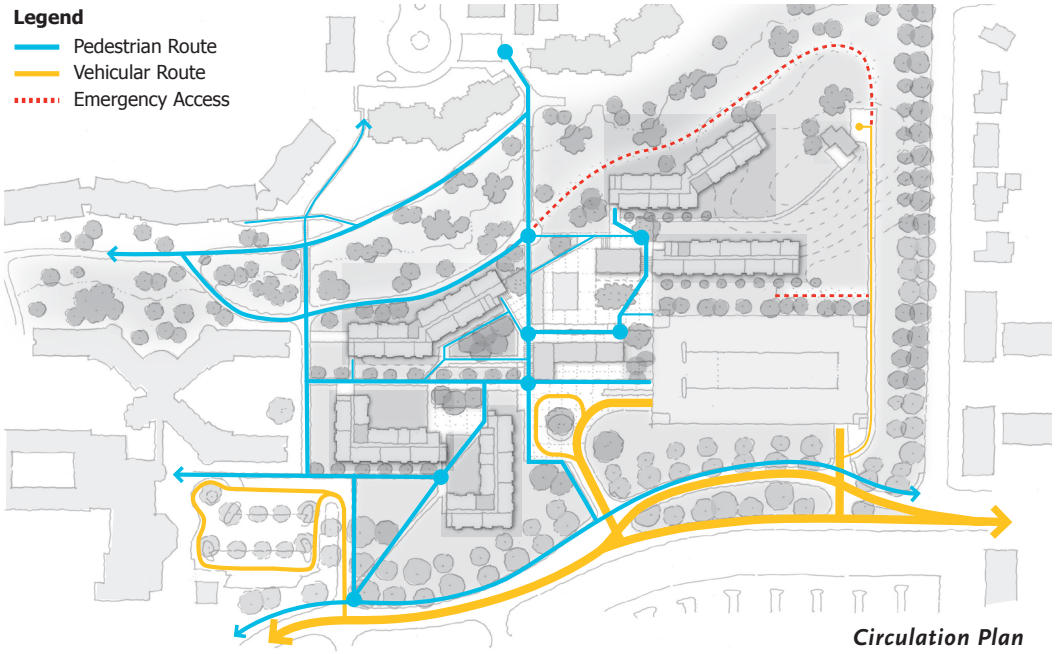
LANDSCAPE DESIGN

The Glen Mor 2 Housing Community may be regarded as a unique composite of three landscape systems. Two of these—the "arroyo" and the "streetscape"—are extant, disparate landscapes, with Glen Mor 2 introducing an intermediary system, "housing."

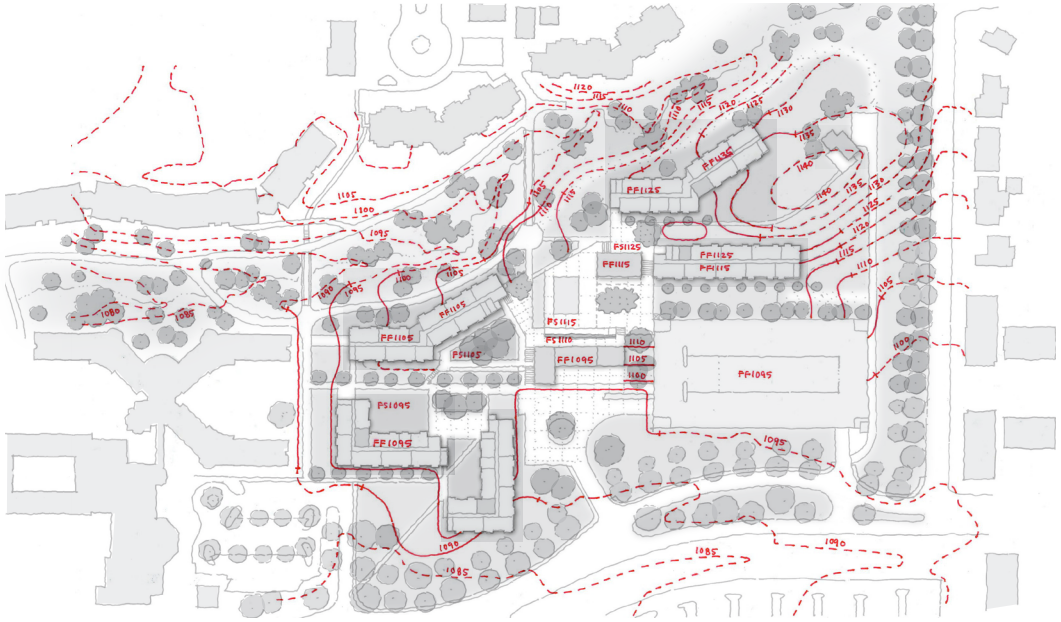
The "arroyo" is a natural system that has, over time, suffered from neglect and misuse. With the introduction of the Glen Mor 2 community, it will be restored, with efforts directed at removing non-native plant species and replacing those with an appropriate native plant palette. An additional objective includes diverting pedestrian access away from the arroyo into an integrated, campus-wide circulation network. These strategies contribute to the University's long-standing goal to return the arroyo to its natural state as a seasonal waterway and wildlife habitat.

By comparison, the "streetscape" is a more intact landscape. The easterly border of Glen Mor 2 is also the campus property line, and that edge is defined as a 100-feet landscape buffer that serves to mitigate University activities and development from the adjacent residential community. At the southern edge of Glen Mor 2 is Big Springs Road, which boasts a double row of mature street trees. That edge lends a distinct identity to the arrival and entry sequence of Glen Mor 2.

The new landscape, "housing," comprises a range of pedestrian and vehicular circulation and gathering spaces characteristic to on-campus housing communities. The concentration of the number of students, the high frequency of predictable movement patterns, and the distribution of services and amenities associated with Glen Mor 2 requires a development strategy that pursues a well-defined circulation system and gathering areas—including plazas and a pool deck, as well as smaller, introspective spaces—that are programmatically flexible, accessible, and easy to maintain. In acknowledgement of the region's temperate climate, the plant palette will feature a wide range of drought-resistant and naturalized species.

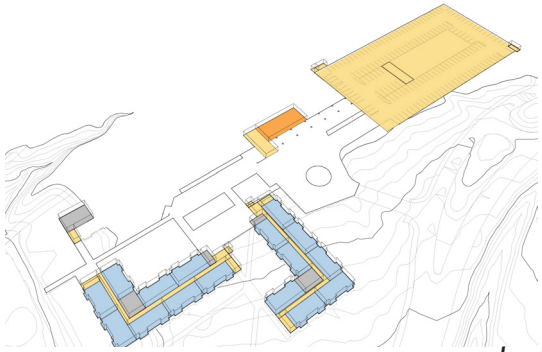


Circulation Plan

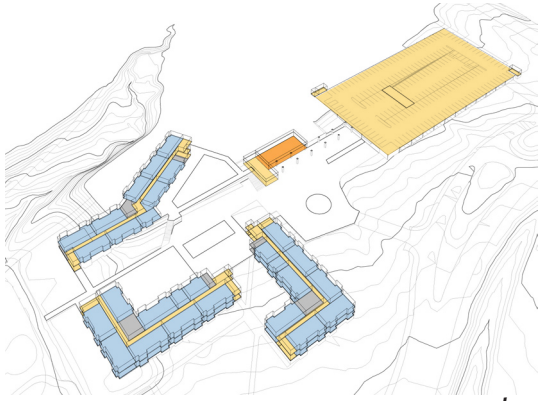


Grading Plan

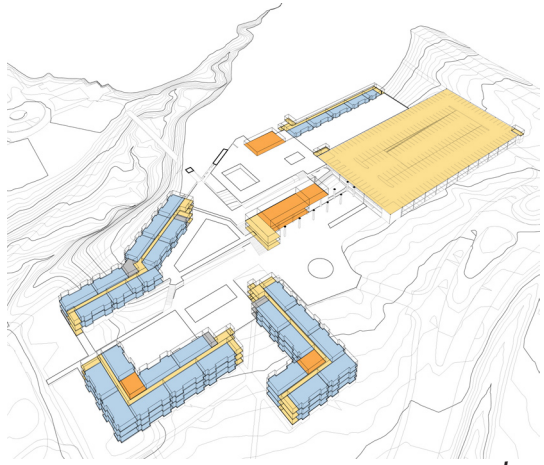
BUILDING ORGANIZATIONAL DIAGRAMS



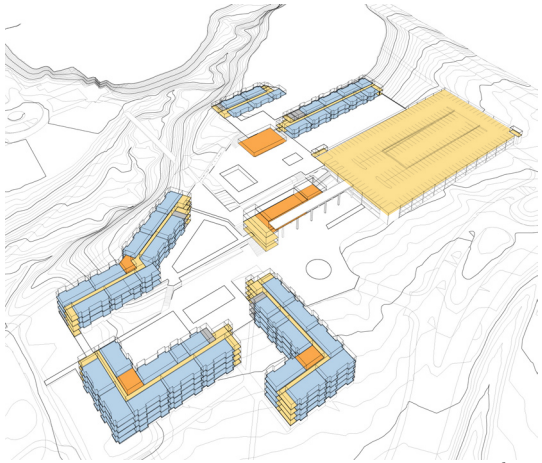
1095 level



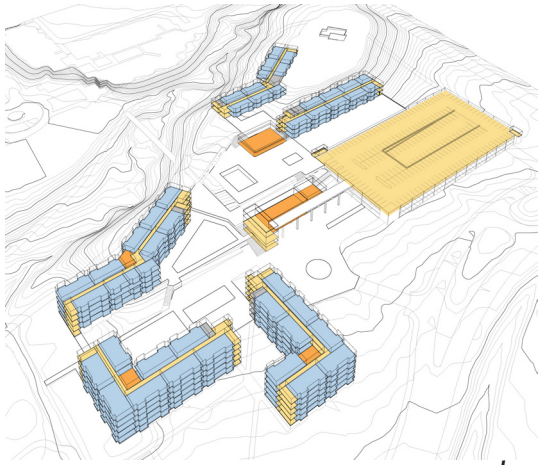
1105 level



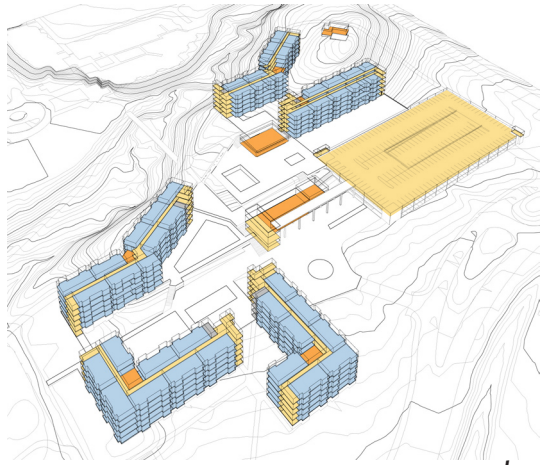
1115 level



1125 level



1135 level



1175 level

3.1

PROGRAM SUMMARY

The following summary represents the project total assignable square footage required for the Glen Mor 2 Student Housing.

The program is organized into six categories:

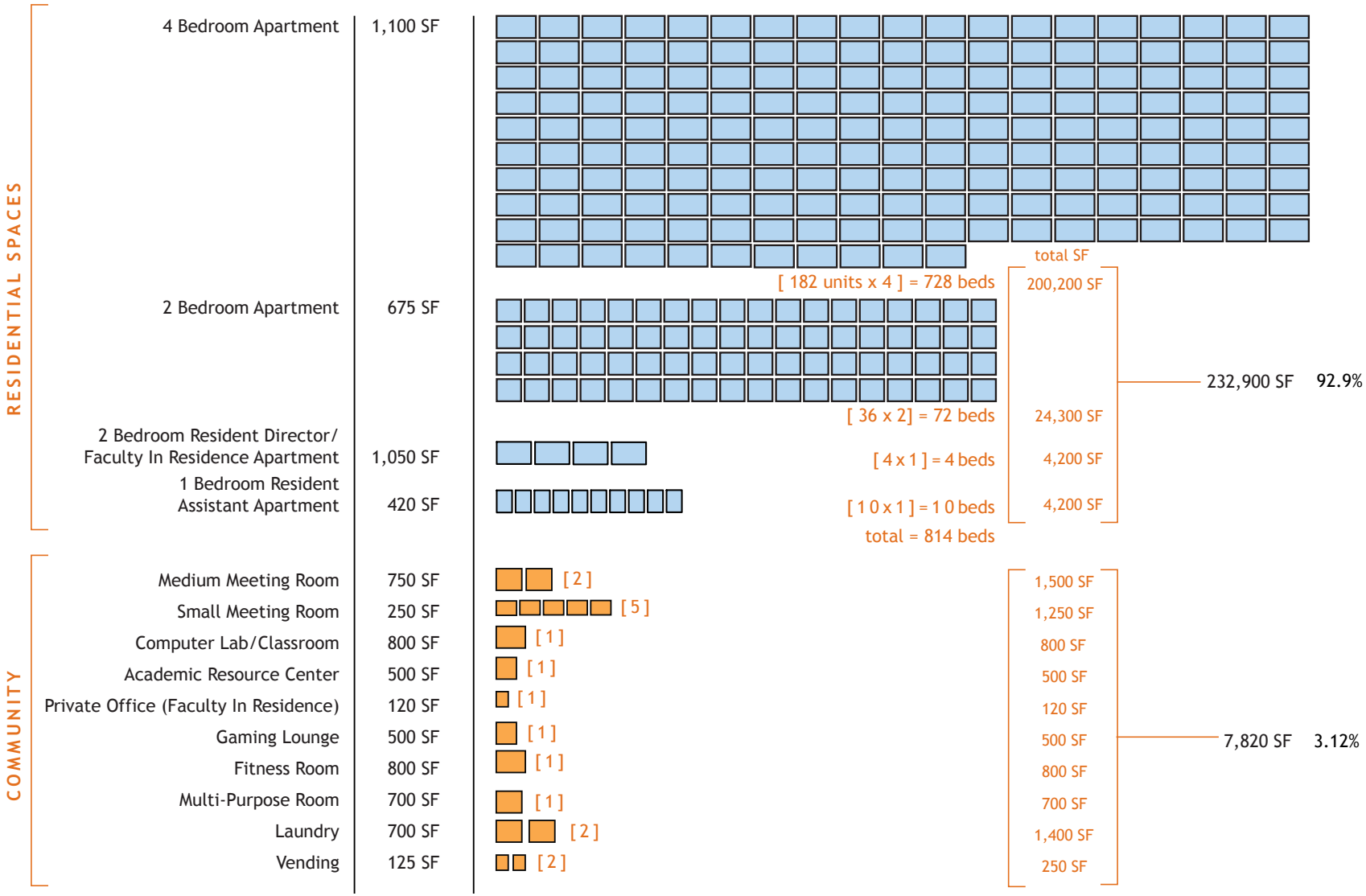
- Residential Spaces
- Community Space
- Resident Services Office (R.S.O.)
- Conference Facility
- Support Spaces
- Parking Structure

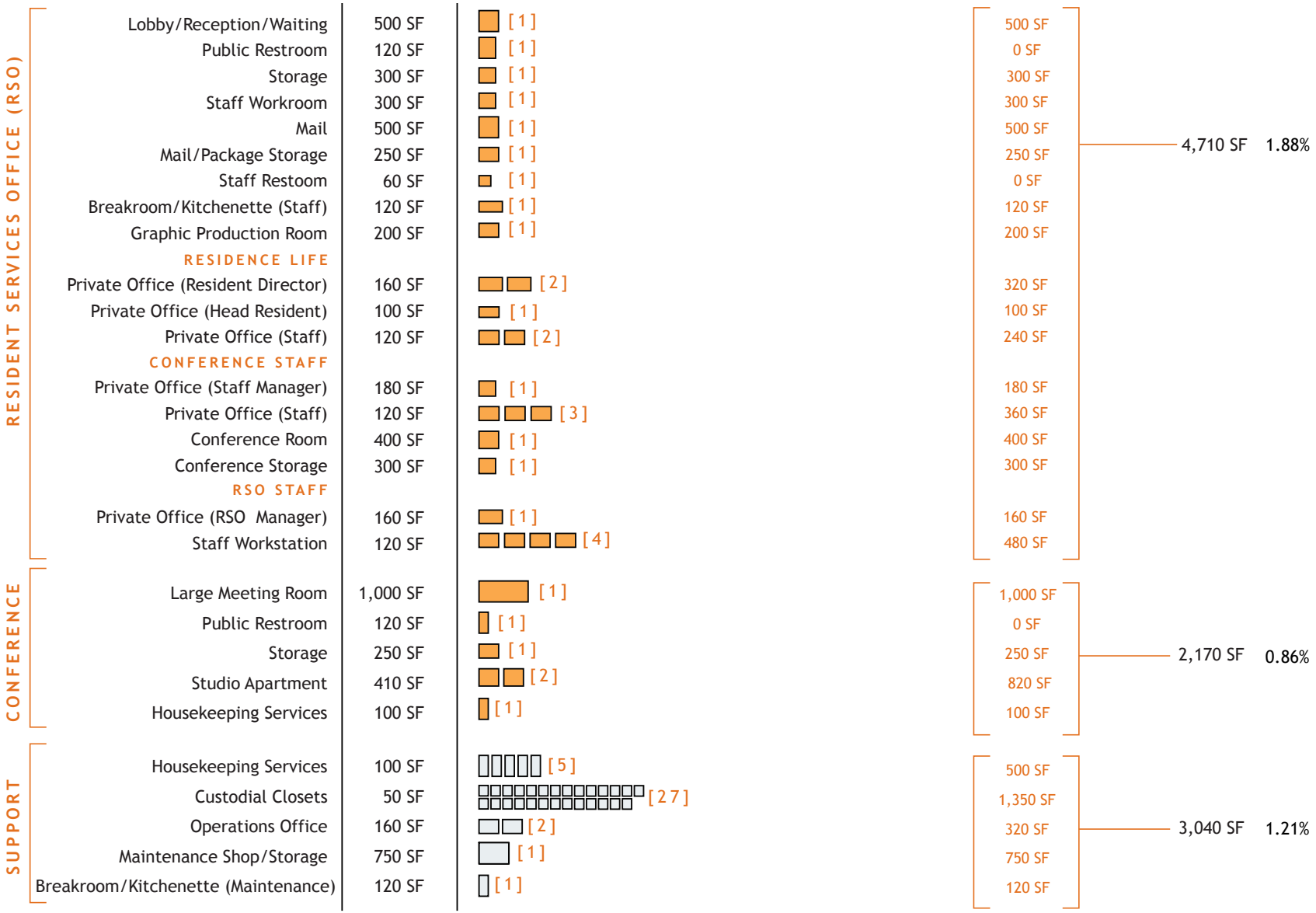
PROGRAM SUMMARY

Code	Space/ Description	Quantity	ASF	Total ASF	Beds	Comments
	RESIDENTIAL SPACES					
APT-4	4 Bedroom Apartment	182	1,100	200,200	728	Bedrooms sized for single occupancy
APT-2	2 Bedroom Apartment	36	675	24,300	72	Bedrooms sized for single occupancy
APT-RD	2 Bedroom Resident Director/Faculty In Residence Apartment	4	1,050	4,200	4	Master bedroom suite, with washer/dryer
APT-RA	1 Bedroom Resident Assistant Apartment	10	420	4,200	10	
			Subtotal	***232,900***	***814***	
	COMMUNITY SPACE					
CR-2	Medium Meeting Room	2	750	1,500		Catering Kitchenette, 30 people
CR-4	Small Meeting Room	5	250	1,250		Provide 1 per building, 10 people
CL-1	Computer Lab/Classroom	1	800	800		
RC-1	Academic Resource Center	1	500	500		
PO-3	Private Office - Type 3	1	120	120		Faculty In Residence
GL-1	Gaming Lounge	1	500	500		
F-1	Fitness Room	1	800	800		Equipment
F-2	Multi-Purpose Room	1	700	700		Studio
L-1	Laundry	2	700	1,400		Additional laundry located in Resident Services Office
V-1	Vending	2	125	250		Adjacent to laundry
			Subtotal	***7,820***		
	RESIDENT SERVICES OFFICE					
WT-1	Lobby/Reception/Waiting	1	500	500		
RR-1	Public Restroom	1	120	0		Note: Square footage not included in ASF
ST-1	Storage	1	300	300		
WR-1	Staff Workroom	1	300	300		
MR-1	Mail	1	500	500		Adjacent to Resident Services Office work stations
MR-2	Mail/Package Storage	1	250	250		Adjacent to Resident Services Office work stations
RR-2	Staff Restroom	1	60	0		Note: Square footage not included in ASF
SL-1	Breakroom/Kitchenette	1	120	120		Staff Lounge
MP-1	Graphic Production Room	1	200	200		

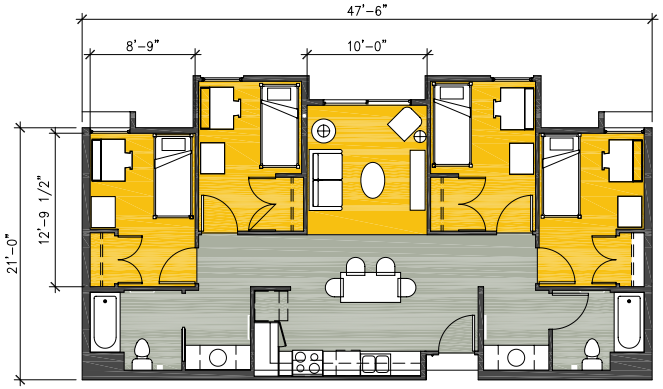
Code	Space/ Description	Quantity	ASF	Total ASF	Comments
	Residence Life				
PO-2	Private Office - Type 2	2	160	320	Resident Directors; size accommodates small meetings
PO-4	Private Office - Type 4	1	100	100	Head Resident
PO-3	Private Office - Type 3	2	120	240	Support Resident Directors
	Conference Staff				
PO-1	Private Office - Type 1	1	180	180	Staff Manager
PO-3	Private Office - Type 3	3	120	360	Support Resident Services Office Staff Managers
CR-3	Conference Room	1	400	400	
ST-1	Conference Storage	1	300	300	
	Resident Services Office Staff				
PO-2	Private Office - Type 2	1	160	160	Resident Services Office Manager
WS-1	Staff Workstations	4	120	480	2 professional staff, 2 student staff
			Subtotal	***4,710***	
	CONFERENCE FACILITY				
CR-1	Large Meeting Room	1	1,000	1,000	With sink and catering counter, 2 parking spaces (1 delivery, 1 handicap accessible)
RR-1	Public Restroom	1	120	0	Note: Square footage not included in ASF
ST-2	Storage	1	250	250	For large meeting room tables/chairs
APT-S	Studio Apartment	2	410	820	2 parking spaces
HS-1	Housekeeping Services	1	100	100	
			Subtotal	***2,170***	
	SUPPORT SPACES				
HS-1	Housekeeping Services	5	100	500	1 per building; includes mod sink
ST-3	Custodial Closets (storage)	27	50	1,350	1 per floor
PO-2	Private Office - Type 2	2	160	320	Operations Office
MS-1	Maintenance Shop/Storage	1	750	750	
SL-1	Breakroom/Kitchenette	1	120	120	Maintenance Breakroom
			Subtotal	***3,040***	
	PARKING				
	Parking Structure	596			420 displaced + 176 additional = 596 total required
	Total ASF			***250,640***	
	Net to Gross Factor (75%)			***334,187***	

PROGRAM DIAGRAM

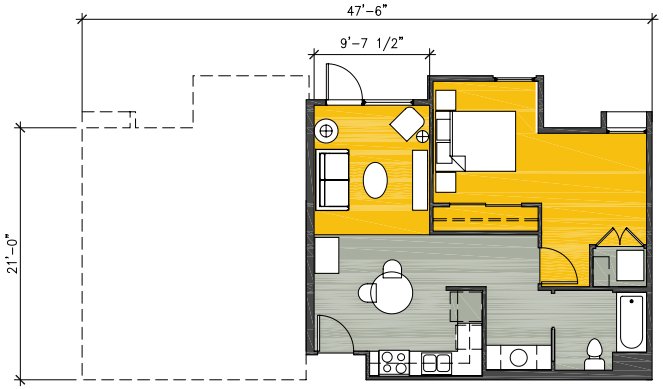



RESIDENT SERVICES OFFICE (RSO)
Lobby/Reception/Waiting 500 SF [1] 500 SF
Public Restroom 120 SF [1] 0 SF
Storage 300 SF [1] 300 SF
Staff Workroom 300 SF [1] 300 SF
Mail 500 SF [1] 500 SF
Mail/Package Storage 250 SF [1] 250 SF
Staff Restoom 60 SF [1] 0 SF
Breakroom/Kitchenette (Staff) 120 SF [1] 120 SF
Graphic Production Room 200 SF [1] 200 SF
RESIDENCE LIFE
Private Office (Resident Director) 160 SF [2] 320 SF
Private Office (Head Resident) 100 SF [1] 100 SF
Private Office (Staff) 120 SF [2] 240 SF
CONFERENCE STAFF
Private Office (Staff Manager) 180 SF [1] 180 SF
Private Office (Staff) 120 SF [3] 360 SF
Conference Room 400 SF [1] 400 SF
Conference Storage 300 SF [1] 300 SF
RSO STAFF
Private Office (RSO Manager) 160 SF [1] 160 SF
Staff Workstation 120 SF [4] 480 SF
4,710 SF 1.88%
CONFERENCE
Large Meeting Room 1,000 SF [1] 1,000 SF
Public Restroom 120 SF [1] 0 SF
Storage 250 SF [1] 250 SF
Studio Apartment 410 SF [2] 820 SF
Housekeeping Services 100 SF [1] 100 SF
2,170 SF 0.86%
SUPPORT
Housekeeping Services 100 SF [5] 500 SF
Custodial Closets 50 SF [27] 1,350 SF
Operations Office 160 SF [2] 320 SF
Maintenance Shop/Storage 750 SF [1] 750 SF
Breakroom/Kitchenette (Maintenance) 120 SF [1] 120 SF
3,040 SF 1.21%

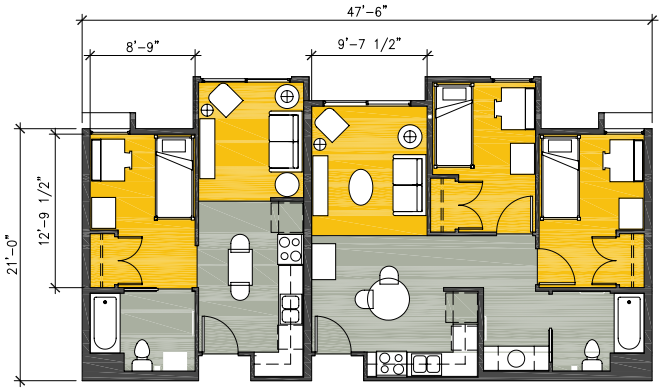
GLEN MOR 1 APARTMENT UNIT PLANS



4 BEDROOM APARTMENT
1,064 ASF



RESIDENT DIRECTOR APARTMENT
617 ASF

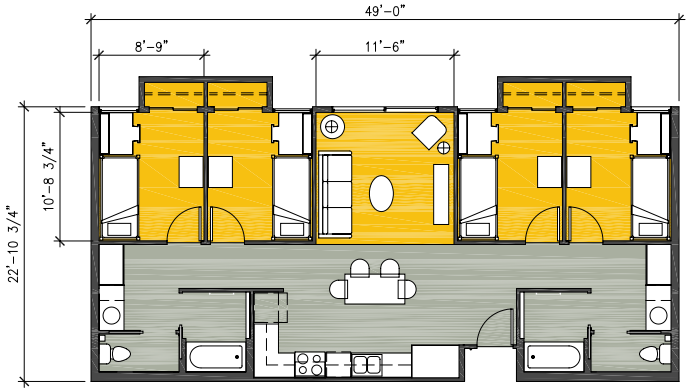


1 AND 2 BEDROOM APARTMENT
404 ASF AND 630 ASF

The Glen Mor 1 apartment unit has proven to be a successful addition to the University's student housing alternatives. That noted, several areas of improvement to the unit were identified during the DPP process:

- Additional width/space in the living rooms
- Improved access to the pantry/kitchen storage area
- Kitchen cabinet planning (avoid narrow drawers)
- Closet access in the bedrooms
- More counter space in the vanity area
- Resident Director/Faculty-in-Residence Unit to accommodate 2 bedrooms, one of which organized in a master suite. Provide in-unit washer/dryer.
- Provide door in Resident Advisor Unit between living room and bedroom

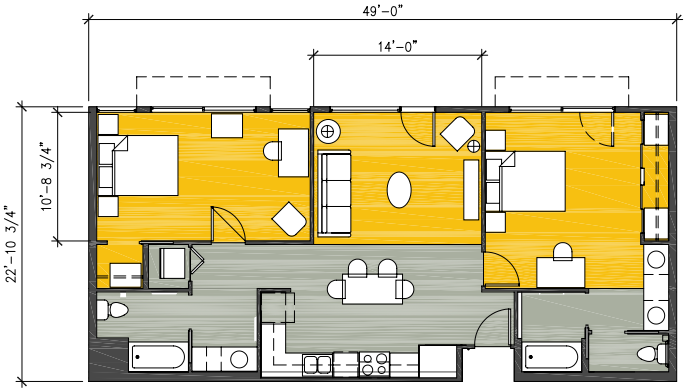
GLEN MOR 2 APARTMENT UNIT TYPE A PLANS



4 BEDROOM APARTMENT

1,100 ASF

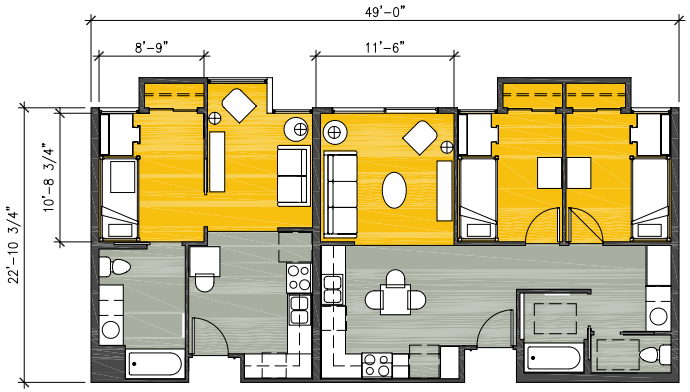
CODE APT-4



2 BEDROOM RESIDENT DIRECTOR/FACULTY IN RESIDENCE APARTMENT

1,050 ASF

CODE APT-RD



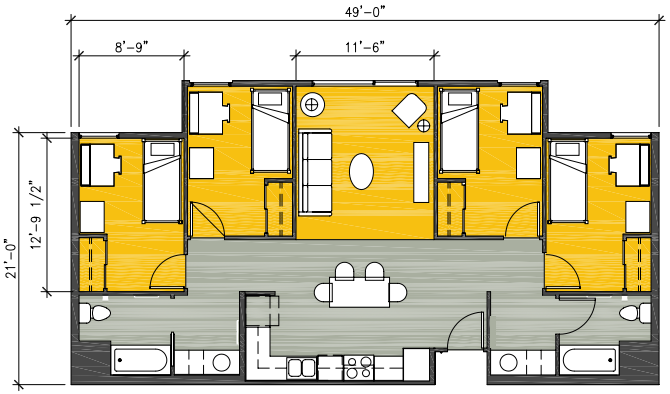
1 BEDROOM RESIDENT ASSISTANT APARTMENT AND 2 BEDROOM APARTMENT

420 ASF AND 675 ASF

CODE APT-RA + CODE APT-2

Beyond the feedback received from Housing Services staff and the student residents of Glen Mor 1, effort was made to ensure that the different unit types were "stackable," allowing for flexibility in locating them within the apartment buildings. Additionally, two basic unit types were developed to better address the different solar orientations of the buildings. Unit Type A repositions the bedroom closets toward the exterior wall, which creates a layer of building façade that will assist with passive solar control on south and west exposures. Unit Type A also allows for further compartmentalization of the bathrooms, if desired. Unit Type B is a more direct derivative of the Glen Mor 1 apartment, and may be more suitable for north and east exposures.

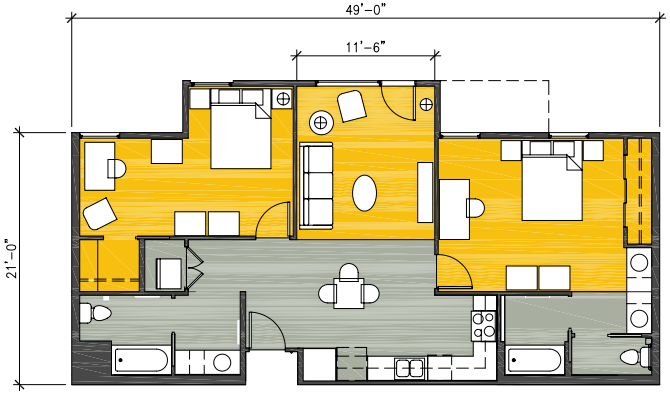
GLEN MOR 2 APARTMENT UNIT TYPE B PLANS



4 BEDROOM APARTMENT

1,075 ASF

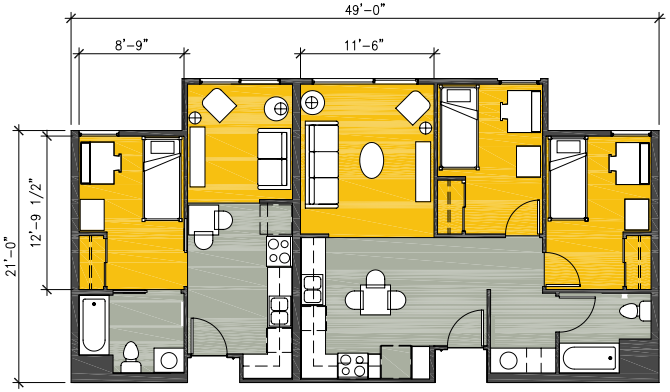
CODE APT-4



2 BEDROOM RESIDENT DIRECTOR/FACULTY IN RESIDENCE APARTMENT

1,049 ASF

CODE APT-RD



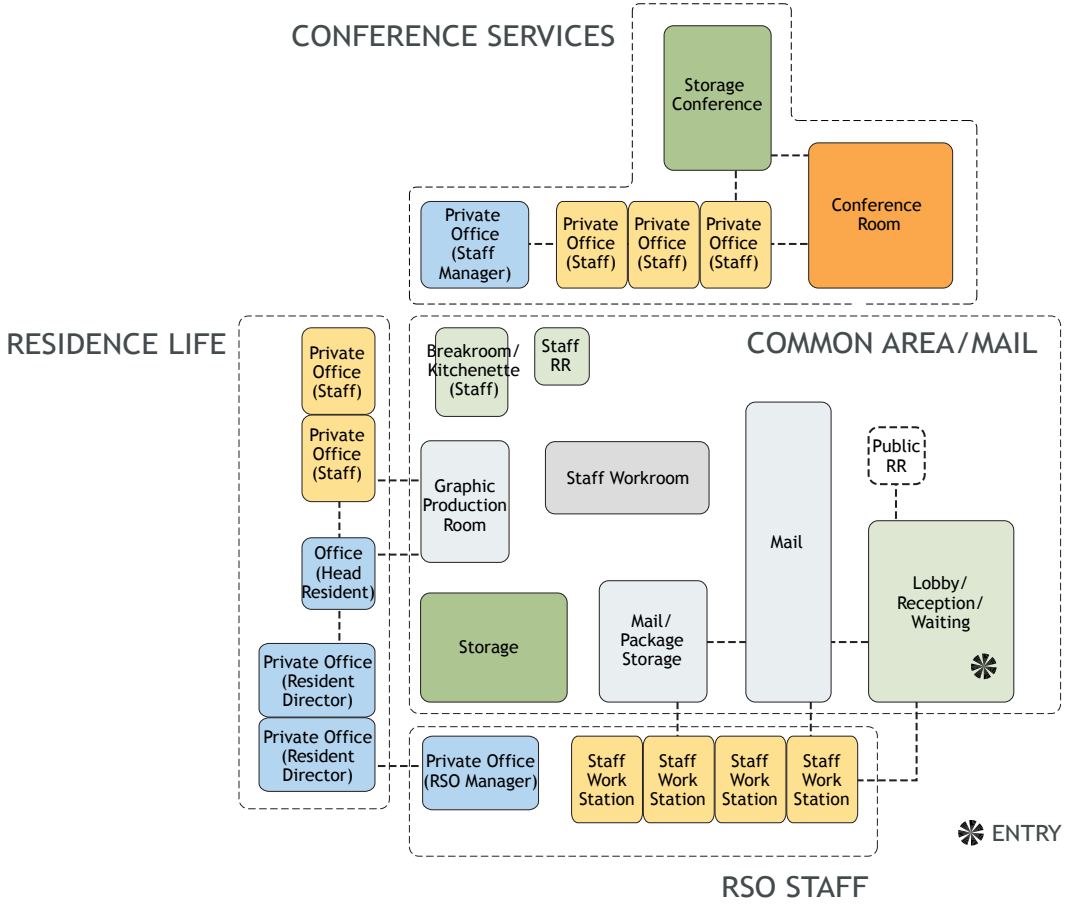
1 BEDROOM RESIDENT ASSISTANT APARTMENT AND 2 BEDROOM APARTMENT

420 ASF AND 675 ASF

CODE APT-RA + CODE APT-2

RSO ADJACENCY DIAGRAM

The Resident Services Office (RSO) houses three departments - Residence Life, Conference Services, and RSO Staff – in a central, shared office environment. The Common Areas serve as both student service interface and office support. Residence Life and RSO Staff require direct access and adjacency to the Common Areas, however Conference Services can be remotely located (on a second level, for example) if necessary.



3.2

ROOM DATA SHEETS

The following section contains schematic diagrams and descriptions of each typical room type. The general requirements that apply to all rooms of a particular type (i.e. meeting rooms, offices, etc.) are noted in the System Narratives. The following room data sheets only list requirements that are specific to that room.

CODE APT-2

GENERAL

SPACE NAME	**2 Bedroom Apartment**
ASSIGNABLE AREA (ASF)	675
FUNCTION	2 Bedroom Apartment
MIN. CEILING HEIGHT	9’-0”; 8’-0” at kitchen and bathroom areas
CRITICAL ADJACENCIES	None

MATERIALS

FLOOR	Carpet/VCT in bathroom and kitchen areas
CEILING	Painted GWB
WALLS/BASE	Painted GWB/resilient
WINDOWS	Aluminum
DOORS/FRAMES	Solid-core wood door/aluminum frame

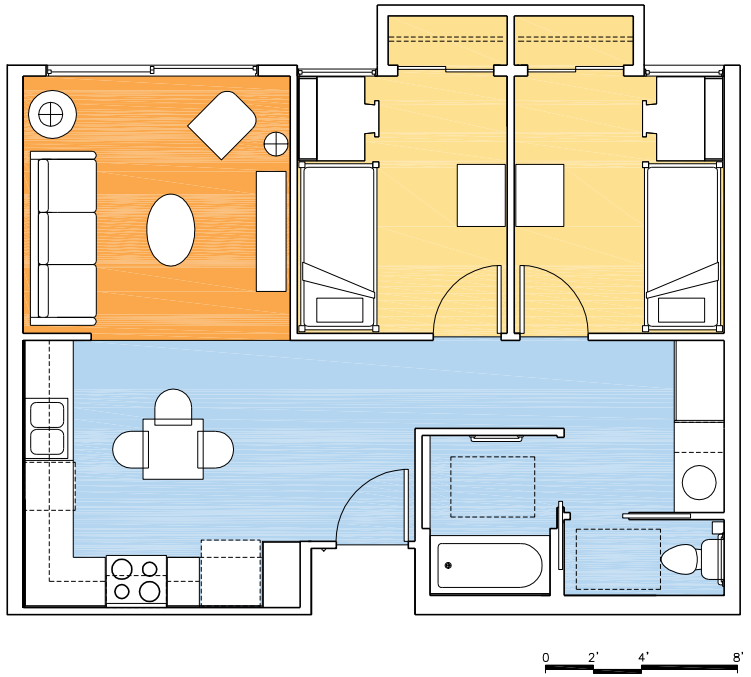
SYSTEMS

ACOUSTICS	Walls & floor/ceiling assemblies: STC 50
A/V EQUIPMENT	None
SECURITY	Key lock at bedrooms and apartment unit entry
MECHANICAL	Single thermostat control in living room
ELECTRICAL	Power for appliances; 240/208 VAC for range
PLUMBING	Dual flush toilet; flow control aerators at lavatory
TELECOM	One data outlet per bedroom and living room, one phone outlet in the living room

EQUIPMENT

FIXED EQUIPMENT	• Blinds @ windows • Appliances provided by contractor include: range, refrigerator, dishwasher, microwave
MOVABLE EQUIPMENT AND FURNITURE	Bedroom furniture provided by UCR includes: • 1 36” x 80” bed • 1 45” x 24” desk with task chair, bookcase, and pedestal • 1 60” x 24” underbed unit
BUILT-IN FEATURES	Bathroom casework/fixtures
SPECIAL REQUIREMENTS	Provide door bells at unit entry

DIAGRAM



CODE APT-4

GENERAL

SPACE NAME	**4 Bedroom Apartment**
ASSIGNABLE AREA (ASF)	1,100
FUNCTION	4 Bedroom Apartment
MIN. CEILING HEIGHT	9’-0”; 8’-0” at kitchen and bathroom areas
CRITICAL ADJACENCIES	None

MATERIALS

FLOOR	Carpet/VCT in bathroom and kitchen areas
CEILING	Painted GWB
WALLS/BASE	Painted GWB/resilient
WINDOWS	Aluminum
DOORS/FRAMES	Solid-core wood door/aluminum frame

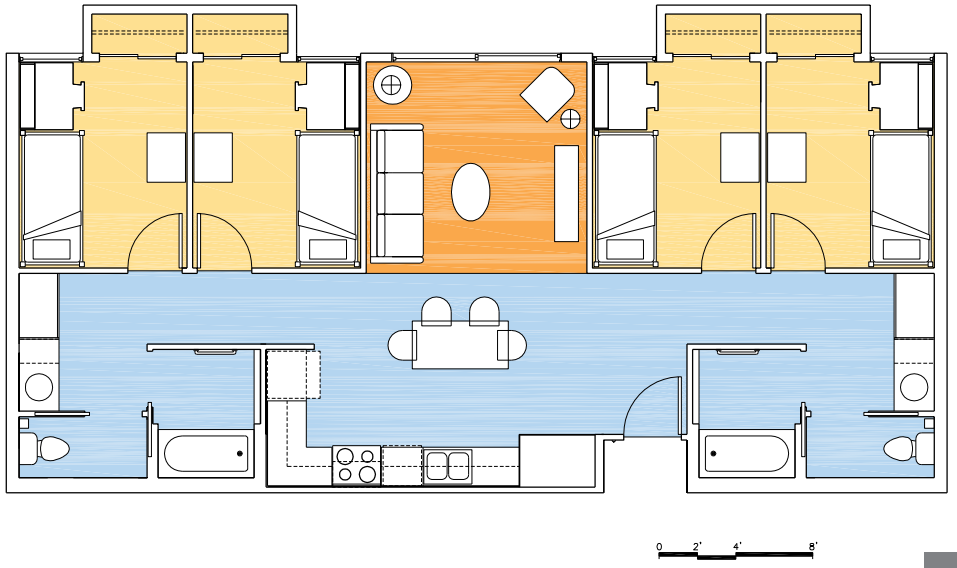
SYSTEMS

ACOUSTICS	Walls & floor/ceiling assemblies: STC 50
A/V EQUIPMENT	None
SECURITY	Key lock at bedrooms and apartment unit entry
MECHANICAL	Single thermostat control in living room
ELECTRICAL	Power for appliances; 240/208 VAC for range
PLUMBING	Dual flush toilet; flow control aerators at lavatory
TELECOM	One data outlet per bedroom and living room, one phone outlet in the living room

EQUIPMENT

FIXED EQUIPMENT	• Blinds @ windows • Appliances provided by contractor include: range, refrigerator, dishwasher, microwave
MOVABLE EQUIPMENT AND FURNITURE	Bedroom furniture provided by UCR includes: • 1 36” x 80” bed • 1 45” x 24” desk with task chair, bookcase, and pedestal • 1 60” x 24” underbed unit
BUILT-IN FEATURES	Bathroom casework/fixtures
SPECIAL REQUIREMENTS	Provide door bells at unit entry

DIAGRAM



CODE APT-RA

GENERAL

SPACE NAME	**1 Bedroom Resident Assistant Apartment**
ASSIGNABLE AREA (ASF)	420
FUNCTION	1 Bedroom Apartment for Resident Assistants
MIN. CEILING HEIGHT	9’-0”; 8’-0” at kitchen and bathroom areas
CRITICAL ADJACENCIES	None

MATERIALS

FLOOR	Carpet/VCT in bathroom and kitchen areas
CEILING	Painted GWB
WALLS/BASE	Painted GWB/resilient
WINDOWS	Aluminum
DOORS/FRAMES	Solid-core wood door/aluminum frame

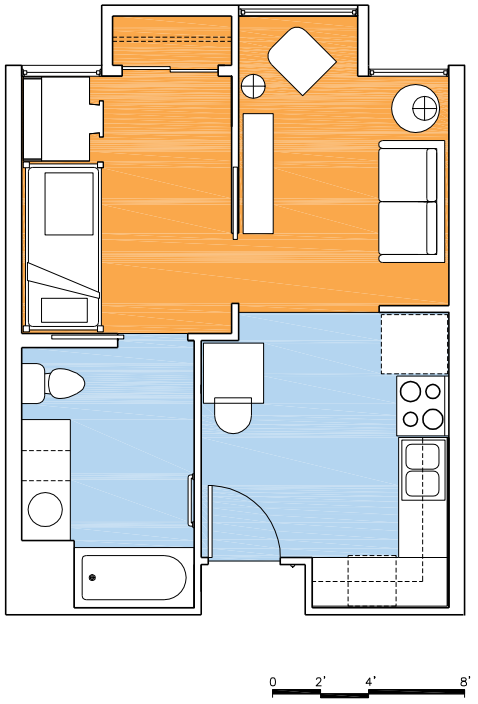
SYSTEMS

ACOUSTICS	Walls & floor/ceiling assemblies: STC 50
A/V EQUIPMENT	None
SECURITY	Key lock at bedrooms and apartment unit entry
MECHANICAL	Single thermostat control in living room
ELECTRICAL	Power for appliances; 240/208 VAC for range
PLUMBING	Dual flush toilet; flow control aerators at lavatory
TELECOM	One data outlet per bedroom and living room, one phone outlet in the living room

EQUIPMENT

FIXED EQUIPMENT	• Blinds @ windows • Appliances provided by contractor include: range, refrigerator, dishwasher, microwave
MOVABLE EQUIPMENT AND FURNITURE	Bedroom furniture provided by UCR includes: • 1 36” x 80” bed • 1 45” x 24” desk with task chair, bookcase, and pedestal • 1 60” x 24” underbed unit
BUILT-IN FEATURES	Bathroom casework/fixtures
SPECIAL REQUIREMENTS	Provide door bells at unit entry

DIAGRAM



CODE APT-RD

GENERAL

SPACE NAME	**2 Bedroom Resident Director/Faculty in Residence Apartment**
ASSIGNABLE AREA (ASF)	1,050
FUNCTION	2 Bedroom Apartment for Resident Directors and Faculty in Residence
MIN. CEILING HEIGHT	9'-0"; 8'-0" at kitchen and bathroom areas
CRITICAL ADJACENCIES	None

MATERIALS

FLOOR	Carpet/VCT in bathroom and kitchen areas
CEILING	Painted GWB
WALLS/BASE	Painted GWB/resilient
WINDOWS	Aluminum
DOORS/FRAMES	Solid-core wood door/aluminum frame

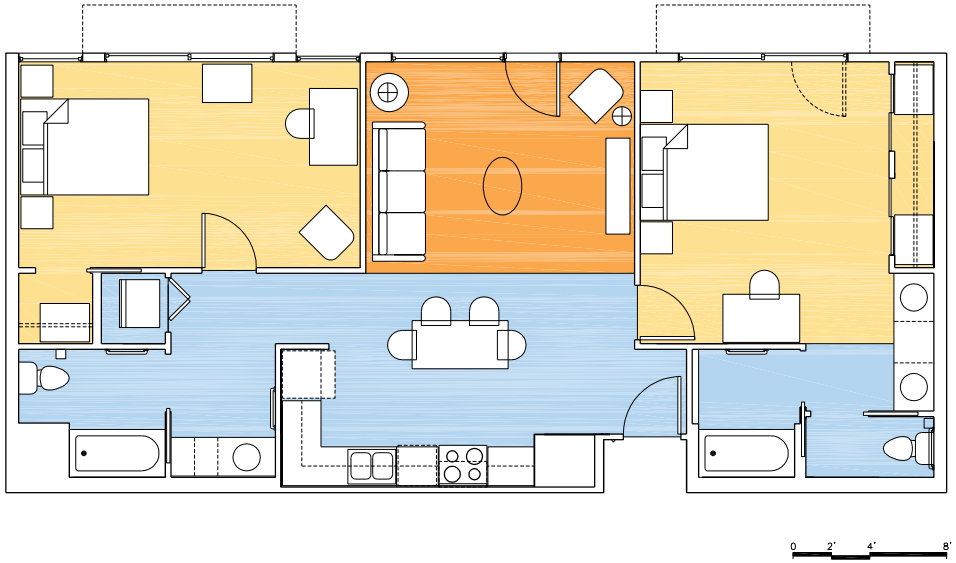
SYSTEMS

ACOUSTICS	Walls & floor/ceiling assemblies: STC 50
A/V EQUIPMENT	None
SECURITY	Key lock at bedrooms and apartment unit entry
MECHANICAL	Single thermostat control in living room
ELECTRICAL	Power for appliances; 240/208 VAC for range
PLUMBING	Dual flush toilet; flow control aerators at lavatory
TELECOM	One data outlet per bedroom and living room, one phone outlet in the living room

EQUIPMENT

FIXED EQUIPMENT	• Blinds @ windows • Appliances provided by contractor include: range, refrigerator, dishwasher, microwave
MOVABLE EQUIPMENT AND FURNITURE	Bedroom furniture provided by UCR includes: • 1 queen-sized bed • 1 45" x 24" desk with task chair, bookcase, and pedestal • 1 60" x 24" underbed unit
BUILT-IN FEATURES	Bathroom casework/fixtures
SPECIAL REQUIREMENTS	Provide door bells at unit entry

DIAGRAM



CODE APT-S

GENERAL

SPACE NAME	**Studio Apartment**
ASSIGNABLE AREA (ASF)	410
FUNCTION	Studio Apartment
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Conference Facility

MATERIALS

FLOOR	Carpet/VCT in bathroom
CEILING	Painted GWB
WALLS/BASE	Painted GWB/resilient
WINDOWS	Aluminum
DOORS/FRAMES	Wood door/aluminum frame

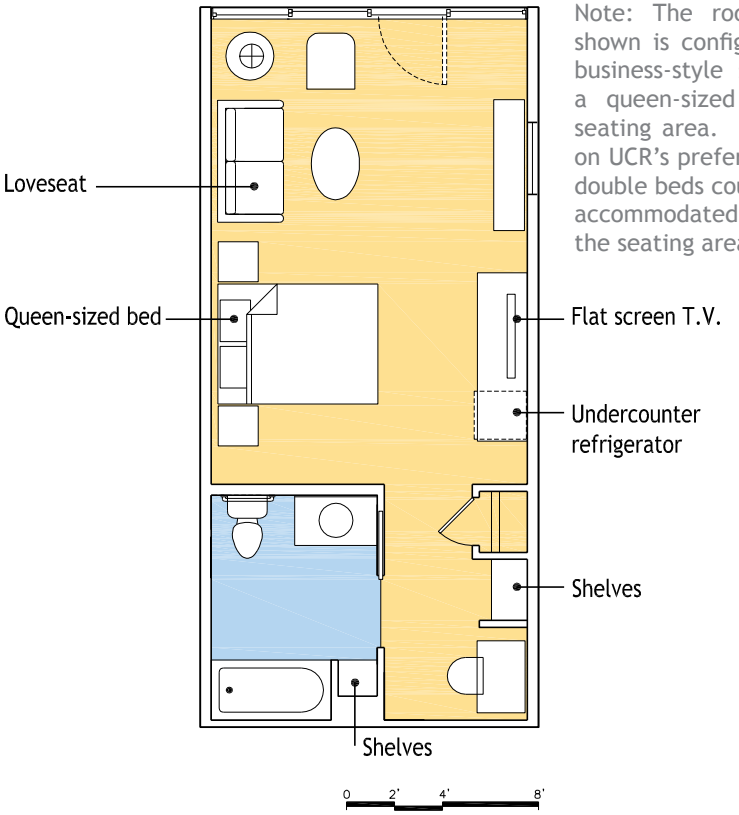
SYSTEMS

ACOUSTICS	Walls & floor/ceiling assemblies: STC 50
A/V EQUIPMENT	None
SECURITY	Key lock at entry door
MECHANICAL	Single thermostat control
ELECTRICAL	Power for appliances
PLUMBING	Dual flush toilet; flow control aerators at lavatory
TELECOM	One data outlet, one phone outlet

EQUIPMENT

FIXED EQUIPMENT	Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• Furniture by UCR/appliances by contractor • Flat screen TV • Undercounter refrigerator
BUILT-IN FEATURES	Bathroom casework/fixtures
SPECIAL REQUIREMENTS	None

DIAGRAM



Note: The room layout shown is configured as a business-style suite with a queen-sized bed and seating area. Depending on UCR’s preference, two double beds could also be accommodated in lieu of the seating area.

CODE CL-1

GENERAL

SPACE NAME	**Computer Lab/Classroom**
ASSIGNABLE AREA (ASF)	800
FUNCTION	Community Computer lab
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located within community

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

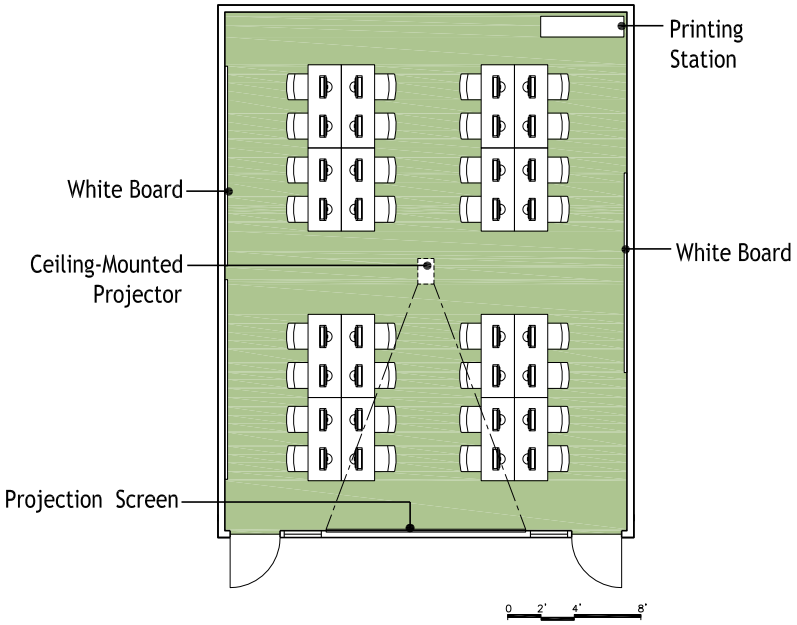
SYSTEMS

ACOUSTICS	Walls: STC 45, NC 25-30
A/V EQUIPMENT	• Electrical roll-down projection screen • Ceiling mounted digital projector • Ceiling mounted speakers
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	Locate power ports in floor & walls for flexibility; zoned lighting
PLUMBING	No special requirements
TELECOM	Locate data ports in floor & walls for flexibility; provide wireless access

EQUIPMENT

FIXED EQUIPMENT	• 3 White boards, 12’ x 4’ • Blinds at windows
MOVABLE EQUIPMENT AND FURNITURE	• 32 Task chairs • 16 Movable tables • 32 Computers • 1 Printer with cabinet
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	• Provide blackout capability at windows

DIAGRAM



CODE CR-1

GENERAL

SPACE NAME	**Large Meeting Room**
ASSIGNABLE AREA (ASF)	1,000
FUNCTION	Large Meeting Room
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Conference Facility

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

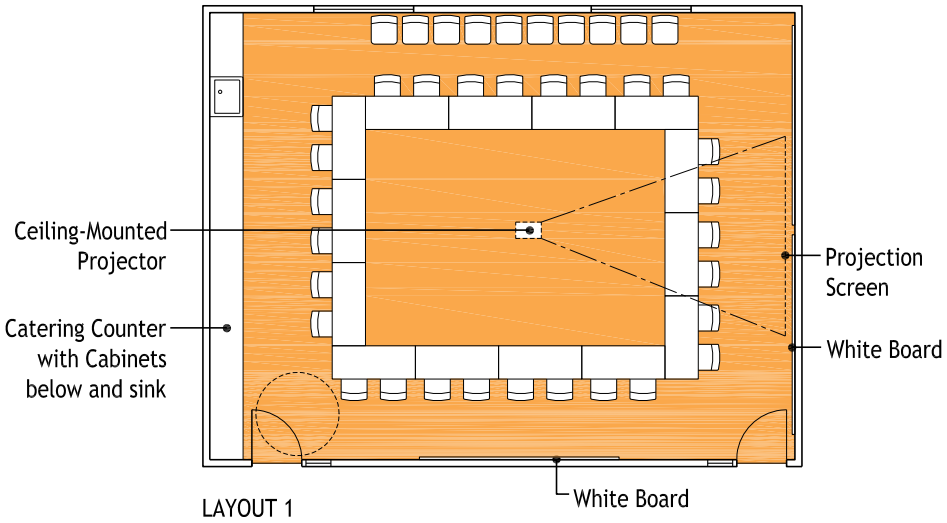
SYSTEMS

ACOUSTICS	Walls: STC 45, NC 25-30
A/V EQUIPMENT	• Electrical roll-down projection screen • Ceiling mounted digital projector • Ceiling mounted speakers
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	Locate power ports in floor & walls for flexibility; zoned lighting
PLUMBING	No special requirements
TELECOM	Locate data ports in floor & walls for flexibility; provide wireless access

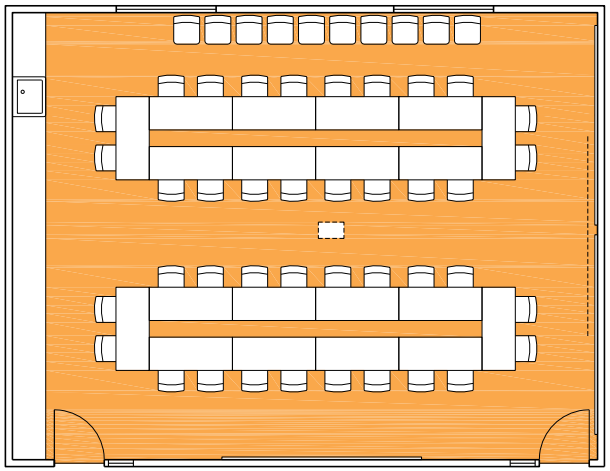
EQUIPMENT

FIXED EQUIPMENT	• 3 White boards, 12’ x 4’ • Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• 50 Task chairs • 20 Movable tables
BUILT-IN FEATURES	Casework
SPECIAL REQUIREMENTS	Provide blackout capability at windows

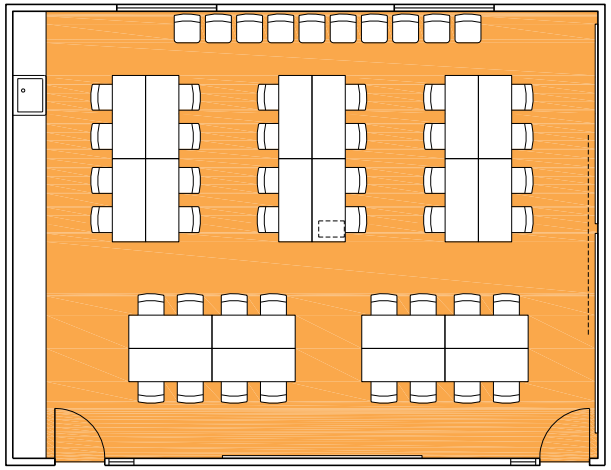
DIAGRAM



LAYOUT 1



LAYOUT 2



LAYOUT 3

0 2' 4' 8'

CODE CR-2

GENERAL

SPACE NAME	**Medium Meeting Room**
ASSIGNABLE AREA (ASF)	750
FUNCTION	Community Space/Medium Meeting Room
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located within community

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

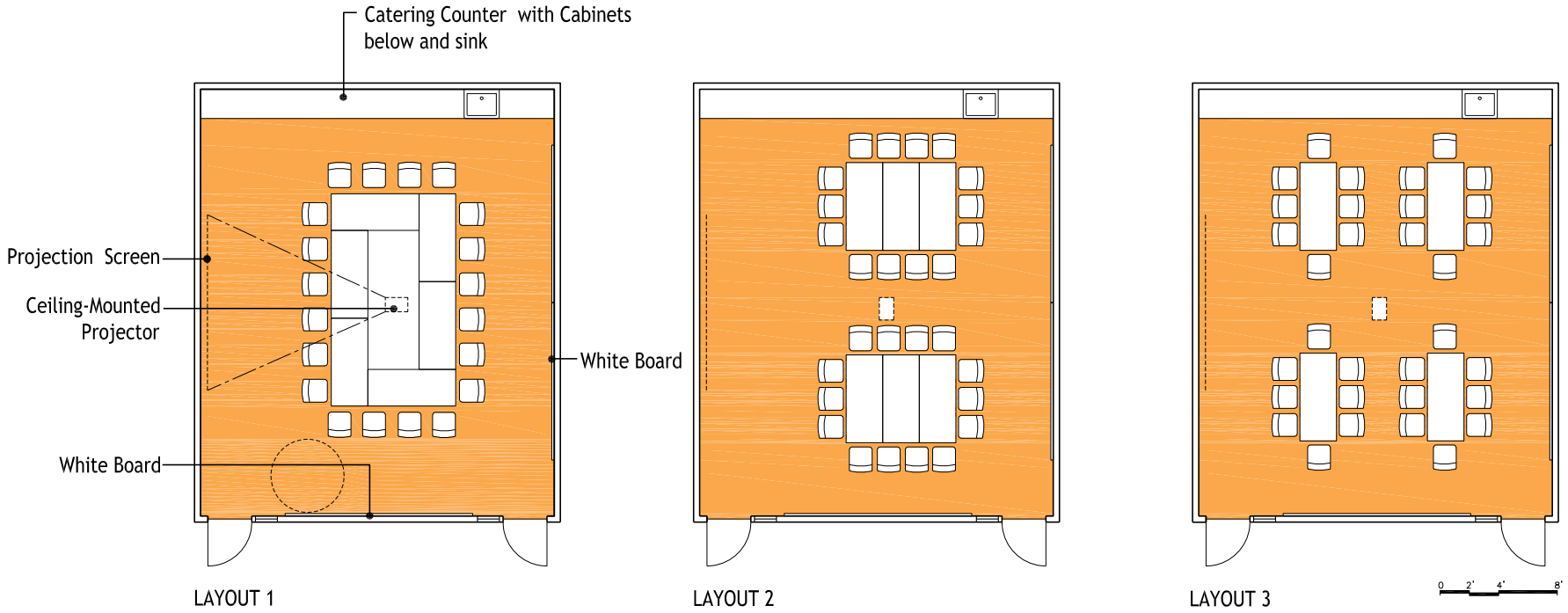
SYSTEMS

ACOUSTICS	Walls: STC 45, NC 25-30
A/V EQUIPMENT	• Electrical roll-down projection screen • Ceiling mounted digital projector • Ceiling mounted speakers
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	Locate power ports in floor & walls for flexibility; zoned lighting
PLUMBING	No special requirements
TELECOM	Locate data ports in floor & walls for flexibility; provide wireless access

EQUIPMENT

FIXED EQUIPMENT	• 2 White Boards, 10’ x 4’ • 1 White Board, 12’ x 4’ • Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• 32 task chairs • 6 movable tables
BUILT-IN FEATURES	• Catering counter with cabinet below • Sink in counter
SPECIAL REQUIREMENTS	• Provide blackout capability at windows

DIAGRAM


Catering Counter with Cabinets below and sink
Projection Screen
Ceiling-Mounted Projector
White Board
White Board
LAYOUT 1
LAYOUT 2
LAYOUT 3
0
2'
4'
8'

CODE CR-3

GENERAL

SPACE NAME	**Conference Room**
ASSIGNABLE AREA (ASF)	400
FUNCTION	Small Conference Room in RSO
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Conference Staff

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

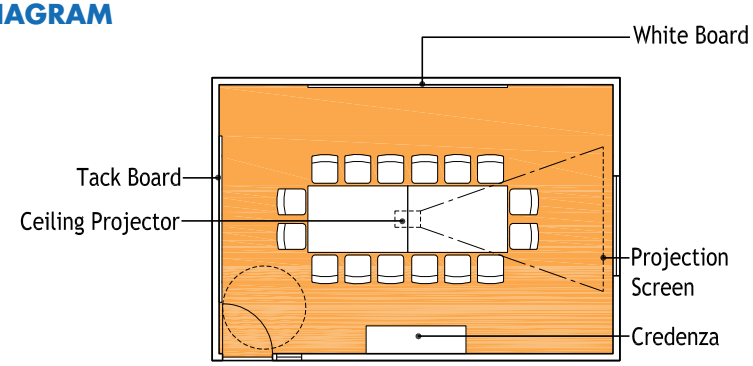
SYSTEMS

ACOUSTICS	Walls: STC 45, NC 25-30
A/V EQUIPMENT	• Electrical roll-down projection screen • Ceiling mounted digital projector • Ceiling mounted speakers
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	Locate power ports in floor & walls for flexibility; zoned lighting
PLUMBING	No special requirements
TELECOM	Locate data ports in floor & walls for flexibility; provide wireless access

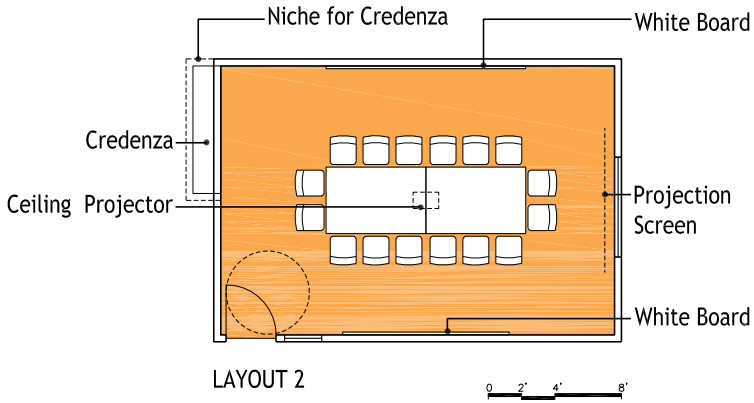
EQUIPMENT

FIXED EQUIPMENT	• 2 White boards, 12’ x 4’ • Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• 2 Tables • 16 Task chairs
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	Provide blackout capability @ windows

DIAGRAM



LAYOUT 1



LAYOUT 2

CODE CR-4

GENERAL

SPACE NAME	**Small Meeting Room**
ASSIGNABLE AREA (ASF)	250
FUNCTION	Small Meeting Room
MIN. CEILING HEIGHT	9’-6”
CRITICAL ADJACENCIES	Locate 1 per residential building

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Wood door/aluminum frame with side light

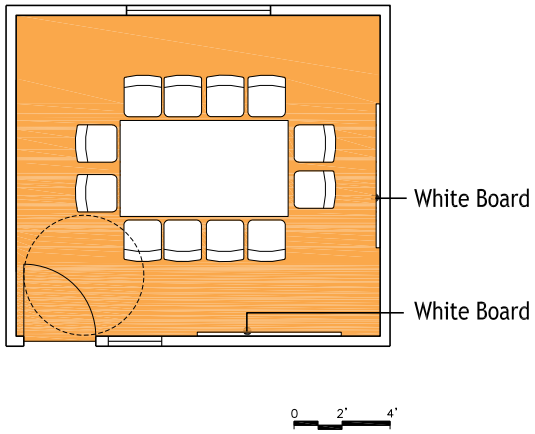
SYSTEMS

ACOUSTICS	Walls: STC 45, NC 25-30
A/V EQUIPMENT	• Electrical roll-down projection screen
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	Locate power ports in floor & walls for flexibility; zoned lighting
PLUMBING	No special requirements
TELECOM	Locate data ports in floor & walls for flexibility; provide wireless access

EQUIPMENT

FIXED EQUIPMENT	• 2 White Board, 6’ x 4’ • Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• 12 Task chairs • 1 Conference Table
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	• Provide blackout capability at windows

DIAGRAM



CODE F-1

GENERAL

SPACE NAME	**Fitness Room**
ASSIGNABLE AREA (ASF)	800
FUNCTION	Fitness Room with equipment
MIN. CEILING HEIGHT	9’-6” min.
CRITICAL ADJACENCIES	Centrally located within community

MATERIALS

FLOOR	Resilient
CEILING	Painted GWB
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

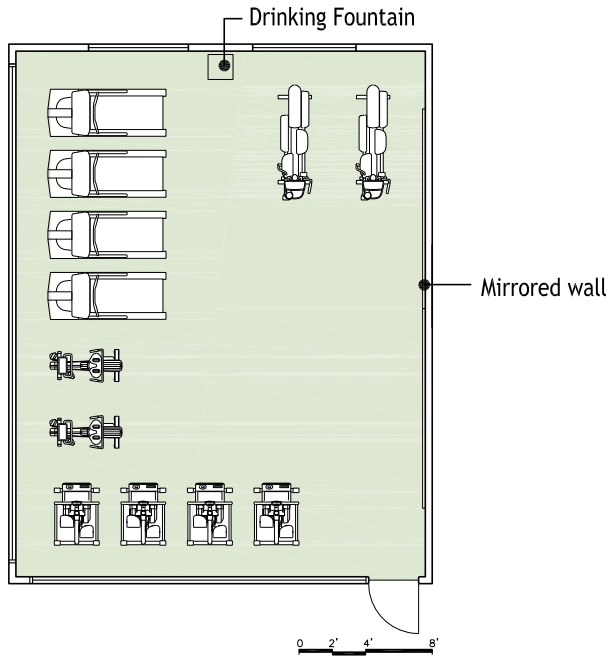
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	• Ceiling mounted speaker • Music • TV
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	Flush floor outlets for equipment; dedicated circuits for equipment
PLUMBING	Plumbing for drinking fountain
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	• 2 Fixed mirror, 12’ x 4’
MOVABLE EQUIPMENT AND FURNITURE	• Fitness equipment per UCR
BUILT-IN FEATURES	Drinking fountain
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE F-2

GENERAL

SPACE NAME	**Multi-Purpose Room**
ASSIGNABLE AREA (ASF)	700
FUNCTION	Multi-purpose studio for floor exercise; yoga
MIN. CEILING HEIGHT	9’-6”
CRITICAL ADJACENCIES	Centrally located within community

MATERIALS

FLOOR	Wood
CEILING	ACT
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

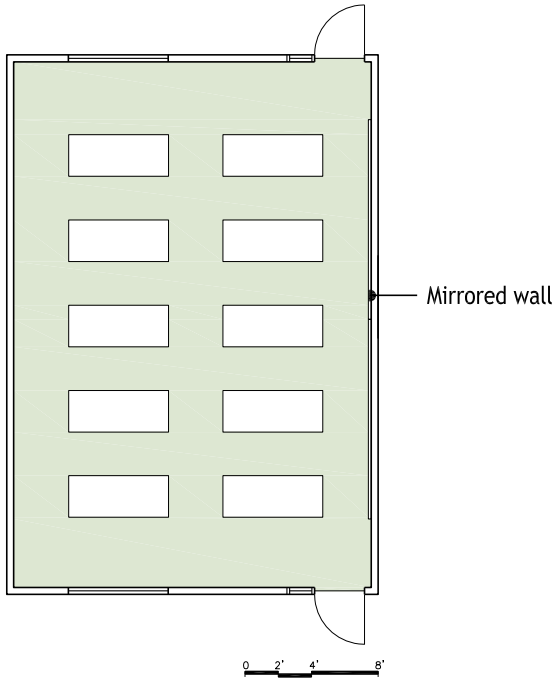
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	• Ceiling mounted speaker • Music
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	No special requirements
PLUMBING	No special requirements
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	• 2 mirrors, 12’ x 4’
MOVABLE EQUIPMENT AND FURNITURE	None
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	Provide blackout capability @ windows

DIAGRAM



CODE GL-1

GENERAL

SPACE NAME	**Gaming Lounge**
ASSIGNABLE AREA (ASF)	500
FUNCTION	Community gaming room
MIN. CEILING HEIGHT	9'-0"
CRITICAL ADJACENCIES	Centrally located within community

MATERIALS

FLOOR	Carpet
CEILING	Acoustical Panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

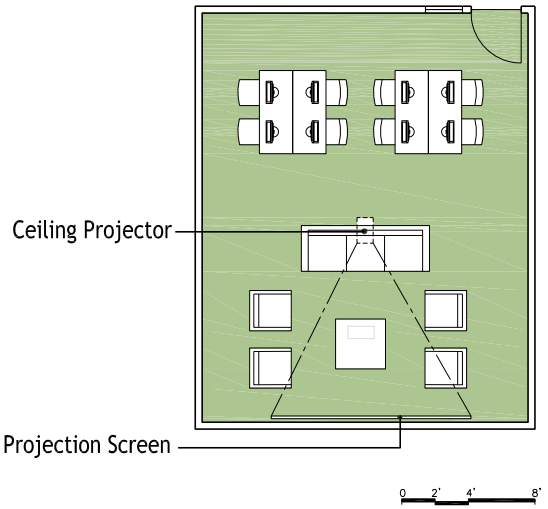
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	• Electrical roll-down projection screen • Ceiling mounted digital projector • Ceiling mounted speakers
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	Locate power ports in floor & walls for flexibility; zoned lighting
PLUMBING	No special requirements
TELECOM	Locate data ports in floor & walls for flexibility; provide wireless access

EQUIPMENT

FIXED EQUIPMENT	Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• 4 Computer tables • 8 Task chairs • Coffee/computer table • Couch • 4 Lounge seats
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE HS-1

GENERAL

SPACE NAME	**Housekeeping Services**
ASSIGNABLE AREA (ASF)	100
FUNCTION	Housekeeping room with mop sink
MIN. CEILING HEIGHT	9'-0"
CRITICAL ADJACENCIES	One @ ground level or each residential building & Conference Facility

MATERIALS

FLOOR	Resilient
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	None
DOORS/FRAMES	Wood door/aluminum frame

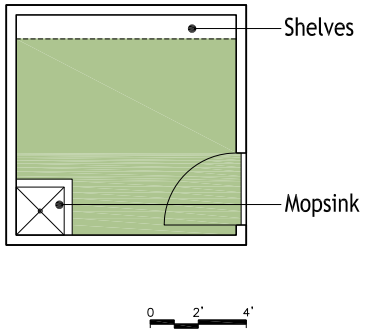
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	No special requirements
PLUMBING	Plumbing for mop sink
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	Mop sink
MOVABLE EQUIPMENT AND FURNITURE	Shelves
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE L-1

GENERAL

SPACE NAME	**Laundry**
ASSIGNABLE AREA (ASF)	700
FUNCTION	Community laundry
MIN. CEILING HEIGHT	9’-0’ min. (double height preferable)
CRITICAL ADJACENCIES	Centrally located within community

MATERIALS

FLOOR	Resilient
CEILING	Painted GWB
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

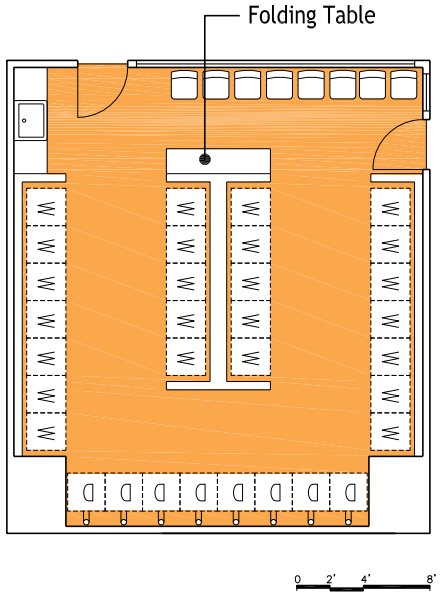
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	None
SECURITY	Card key access
MECHANICAL	Provide ventilation for washers & dryers as required
ELECTRICAL	Provide power for washers & dryers as required
PLUMBING	Provide plumbing for washers & dryers as required
TELECOM	Provide data outlets for washers and dryers and vending machines for credit card payment

EQUIPMENT

FIXED EQUIPMENT	Change Machine
MOVABLE EQUIPMENT AND FURNITURE	• 24 Washers, 16 dryers • 8 Chairs
BUILT-IN FEATURES	• Counter with sink • Folding table
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE MP-1

GENERAL

SPACE NAME	**Graphic Production Room**
ASSIGNABLE AREA (ASF)	200
FUNCTION	Student graphic production room
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Residence Life

MATERIALS

FLOOR	Resilient
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Optional

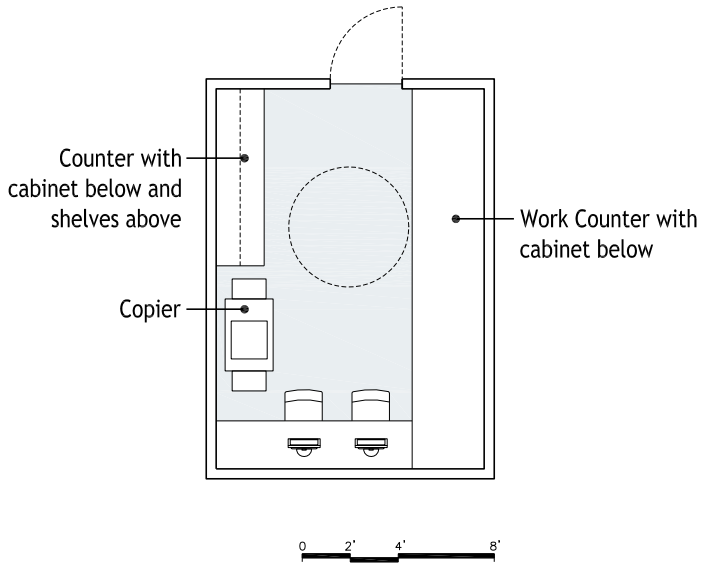
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	Power outlet for photo copier; provide power outlets at work counter height
PLUMBING	No special requirements
TELECOM	Data outlet for photo copier

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	• Photo copier • 2 Task Chairs • 2 Computers
BUILT-IN FEATURES	Counters with lockable cabinets below & shelves above
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE MR-1

GENERAL

SPACE NAME	**Mail**
ASSIGNABLE AREA (ASF)	500
FUNCTION	Community mail box location
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located within community

MATERIALS

FLOOR	Resilient
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	None
DOORS/FRAMES	Wood door/aluminum frame

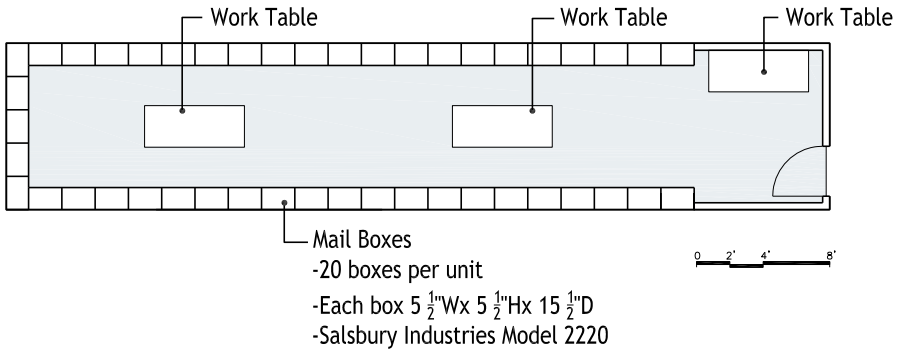
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	No special requirements
PLUMBING	No special requirements
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	1300 Mailboxes
MOVABLE EQUIPMENT AND FURNITURE	3 Work tables
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE MR-2

GENERAL

SPACE NAME	**Mail/Package Storage**
ASSIGNABLE AREA (ASF)	250
FUNCTION	Mail storage
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Mail

MATERIALS

FLOOR	Resilient
CEILING	Acoustical panels in suspended grid
WALLS/ BASE	Painted GWB/resilient
WINDOWS	None
DOORS/FRAMES	Wood door/aluminum frame

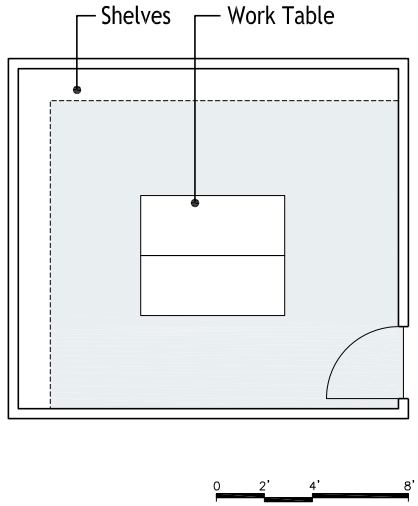
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	No special requirements
PLUMBING	No special requirements
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	2 Work tables
BUILT-IN FEATURES	18” deep shelves
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE MS-1

GENERAL

SPACE NAME	**Maintenance Shop/Storage**
ASSIGNABLE AREA (ASF)	750
FUNCTION	Facility maintenance
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	None

MATERIALS

FLOOR	Sealed concrete
CEILING	Exposed ceiling
WALLS/BASE	Painted GWB/resilient
WINDOWS	None
DOORS/ FRAMES	Hollow metal door/hollow metal frame; 10’ W x 8’ H overhead door

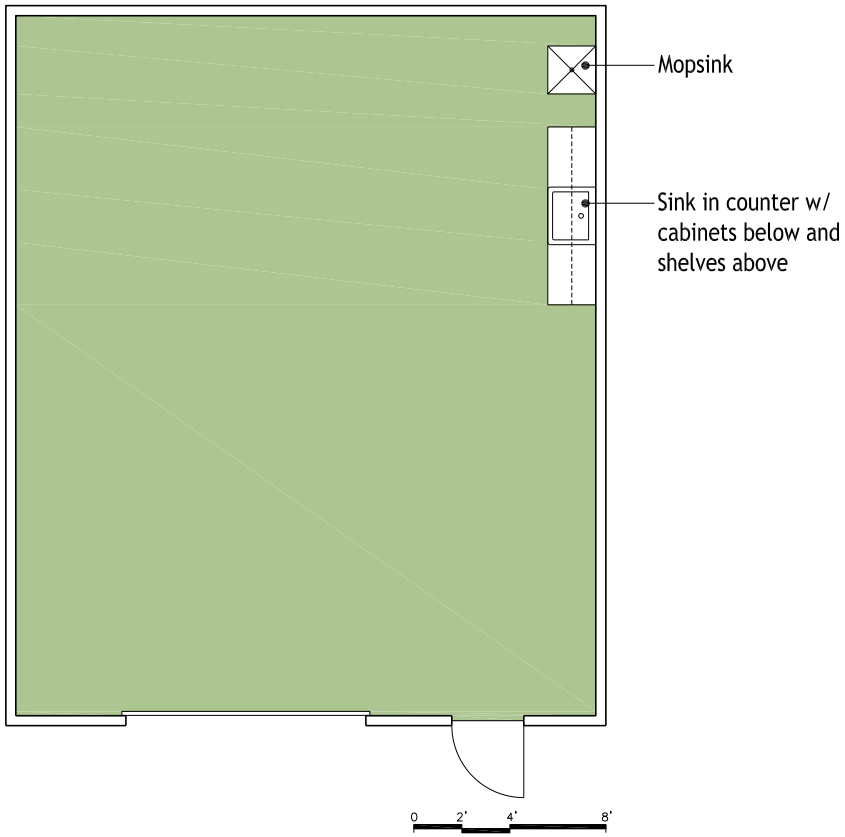
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	Provide ventilation
ELECTRICAL	Power for shop equipment
PLUMBING	Plumbing for sinks
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	Mop sink
MOVABLE EQUIPMENT AND FURNITURE	None
BUILT-IN FEATURES	Sink in counter & shelves above
SPECIAL REQUIREMENTS	

DIAGRAM



CODE PO-1

GENERAL

SPACE NAME	**Private Office - Type 1**
ASSIGNABLE AREA (ASF)	180
FUNCTION	Office for Staff Manager
MIN. CEILING HEIGHT	9'-0"
CRITICAL ADJACENCIES	Conference Staff

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

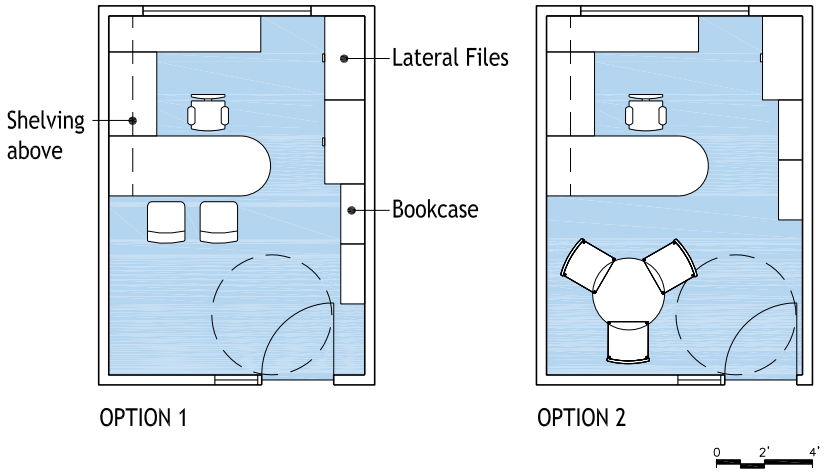
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	Power outlets on wall
PLUMBING	No special requirements
TELECOM	Data outlets on wall

EQUIPMENT

FIXED EQUIPMENT	Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• U shaped desk w/ overhead storage • 3 or 4 Task chairs • Lateral file • Bookcase • Task lamp • Round table (Option 2)
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE PO-2

GENERAL

SPACE NAME	**Private Office - Type 2**
ASSIGNABLE AREA (ASF)	160
FUNCTION	Office for Resident Director, RSO Manager, Operations
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Residence Life/RSO Staff/Maintenance Shop

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

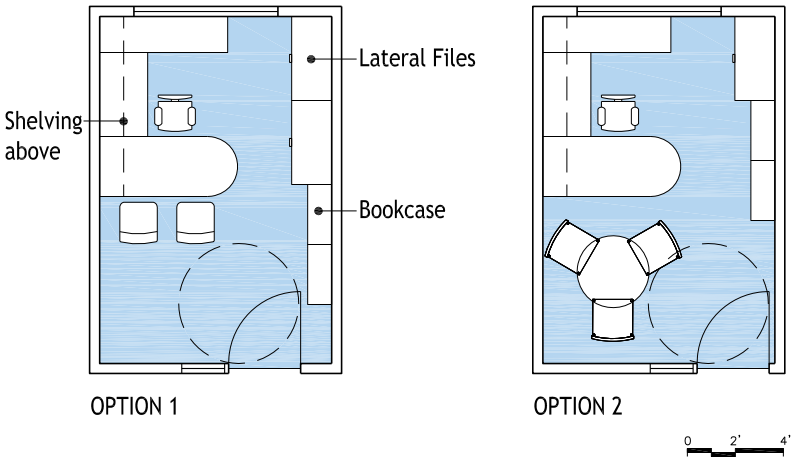
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	Power outlets on wall
PLUMBING	No special requirements
TELECOM	Data outlets on wall

EQUIPMENT

FIXED EQUIPMENT	Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• U shaped desk with overhead storage • 3 of 4 Task chairs • Lateral file • Bookcase • Task lamp • Round table (Option 2)
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE PO-3

GENERAL

SPACE NAME	**Private Office - Type 3**
ASSIGNABLE AREA (ASF)	120
FUNCTION	Office for Faculty In Residence, Resident Director, Support RSO Staff Manager
MIN. CEILING HEIGHT	9'-0"
CRITICAL ADJACENCIES	Community Space/Residence Life/Conference Staff

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/ BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/ FRAMES	Aluminum door/aluminum frame with sidelight

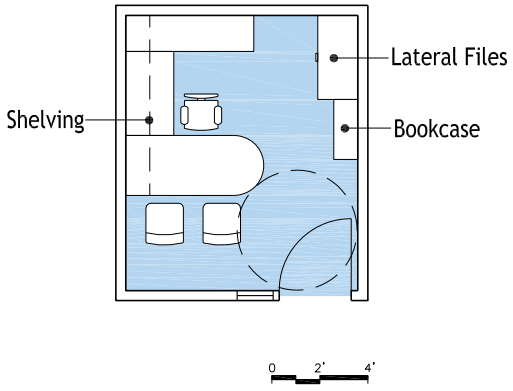
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	Power outlets on wall
PLUMBING	No special requirements
TELECOM	Data outlets on wall

EQUIPMENT

FIXED EQUIPMENT	Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• U shaped desk with overhead storage • 3 Task chairs • Lateral file • Bookcase • Task lamp
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE PO-4

GENERAL

SPACE NAME	**Private Office - Type 4**
ASSIGNABLE AREA (ASF)	100
FUNCTION	Office for Residence Life Head Resident
MIN. CEILING HEIGHT	9'-0"
CRITICAL ADJACENCIES	Residence Life

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Aluminum door/aluminum frame with sidelight

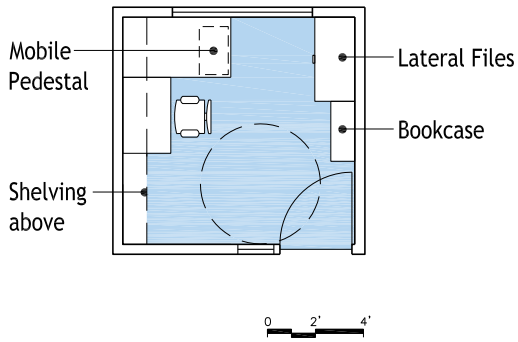
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	Power outlets on wall
PLUMBING	No special requirements
TELECOM	Data outlets on wall

EQUIPMENT

FIXED EQUIPMENT	Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• Task chair • L shaped desk with overhead storage • Bookcase • Lateral file • Task Lamp
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE RC-1

GENERAL

SPACE NAME	**Academic Resource Center**
ASSIGNABLE AREA (ASF)	500
FUNCTION	Place to access books, journals, digital materials
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located within housing community

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/FRAMES	Wood door/aluminum frame

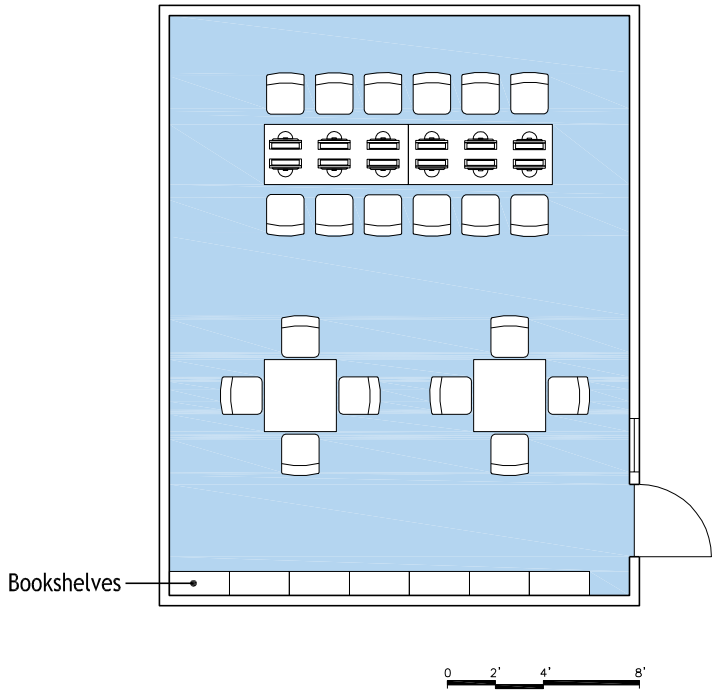
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	None
SECURITY	Card key access
MECHANICAL	No special requirements
ELECTRICAL	Flush floor power receptacles
PLUMBING	No special requirements
TELECOM	Flush floor data receptacles; provide wireless access

EQUIPMENT

FIXED EQUIPMENT	Blinds @ windows
MOVABLE EQUIPMENT AND FURNITURE	• 2 Computer tables • 20 Task chairs • 2 Tables, 3’ x 3’ • Bookshelves
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE RR-1

GENERAL

SPACE NAME	**Public Restroom**
ASSIGNABLE AREA (ASF)	120
FUNCTION	Public Restroom
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	RSO waiting area

MATERIALS

FLOOR	Ceramic tile
CEILING	Moisture resistant GWB
WALLS/ BASE	GWB/Ceramic tile wainscot
WINDOWS	None
DOORS/ FRAMES	Wood door/aluminum frame

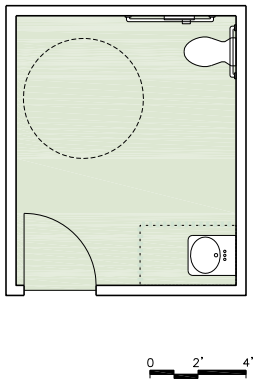
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	None
SECURITY	Privacy lock
MECHANICAL	Vent as required
ELECTRICAL	No special requirements
PLUMBING	Dual flush toilet, flow control aerator on lavatory
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	Toilet accessories, including grab bars and mirror
MOVABLE EQUIPMENT AND FURNITURE	None
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE RR-2

GENERAL

SPACE NAME	**Staff Restroom**
ASSIGNABLE AREA (ASF)	60
FUNCTION	Staff Restroom
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located in RSO

MATERIALS

FLOOR	Ceramic tile
CEILING	Moisture resistant GWB
WALLS/ BASE	GWB/Ceramic tile wainscot
WINDOWS	None
DOORS/ FRAMES	Wood door/aluminum frame

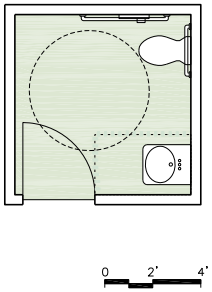
SYSTEMS

ACOUSTICS	Provide for sound privacy
A/V EQUIPMENT	None
SECURITY	Privacy lock
MECHANICAL	Vent as required
ELECTRICAL	No special requirements
PLUMBING	Dual flush toilet, flow control aerator on lavatory
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	Toilet accessories, including grab bars and mirror
MOVABLE EQUIPMENT AND FURNITURE	None
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE SL-1

GENERAL

SPACE NAME	**Breakroom/Kitchenette**
ASSIGNABLE AREA (ASF)	120
FUNCTION	RSO staff lounge and maintenance breakroom
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located in RSO/adjacent to Maintenance Shop/Storage

MATERIALS

FLOOR	Resilient
CEILING	Painted GWB
WALLS/ BASE	Painted GWB/resilient
WINDOWS	None
DOORS/ FRAMES	None

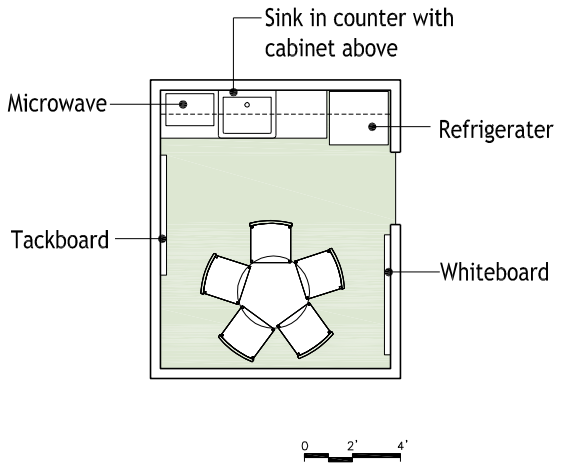
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	None
MECHANICAL	No special requirements
ELECTRICAL	Power for microwave & refrigerator
PLUMBING	Plumbing for sink
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	• 1 White board, 5’x 4’ • 1 Tack board, 5’x 4’
MOVABLE EQUIPMENT AND FURNITURE	• 1 Tables • 5 Task chairs • Refrigerator • Microwave
BUILT-IN FEATURES	Sink in counter with cabinet above
SPECIAL REQUIREMENTS	

DIAGRAM



CODE ST-1

GENERAL

SPACE NAME	**Storage**
ASSIGNABLE AREA (ASF)	300
FUNCTION	Store table & chairs
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located in RSO common area

MATERIALS

FLOOR	Resilient
CEILING	Acoustical panels in suspended grid
WALLS/ BASE	Painted GWB/resilient
WINDOWS	None
DOORS/ FRAMES	Hollow metal door/hollow metal frame

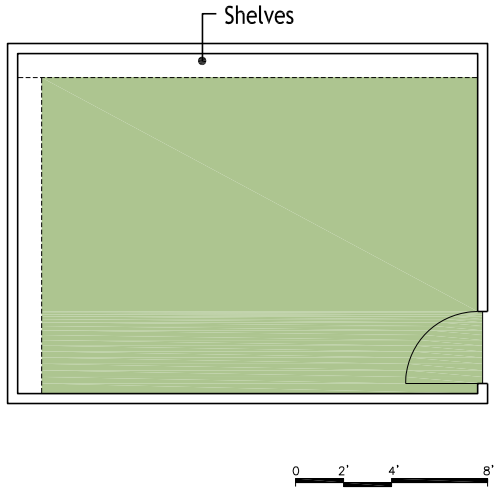
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	No special requirements
PLUMBING	No special requirements
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	Shelves
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE ST-2

GENERAL

SPACE NAME	**Storage**
ASSIGNABLE AREA (ASF)	250
FUNCTION	Storage for Conference Facility Meeting Room
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Located in Conference Facility

MATERIALS

FLOOR	Resilient
CEILING	Acoustical panels in suspended grid
WALLS/ BASE	Painted GWB/resilient
WINDOWS	None
DOORS/ FRAMES	Hollow metal door/hollow metal frame

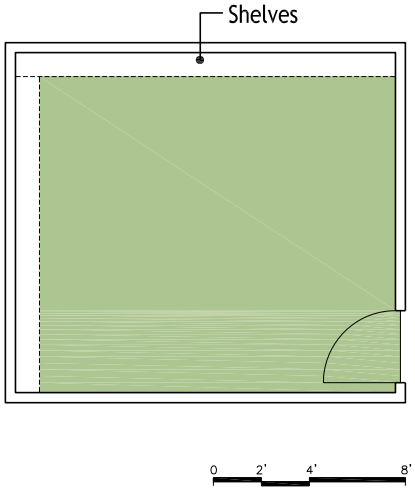
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	No special requirements
PLUMBING	No special requirements
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	Shelves
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE ST-3

GENERAL

SPACE NAME	**Custodial Closets**
ASSIGNABLE AREA (ASF)	50
FUNCTION	Storage
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	One at each level of each residential building

MATERIALS

FLOOR	Resilient
CEILING	Acoustical panels in suspended grid
WALLS/ BASE	Painted GWB/resilient
WINDOWS	None
DOORS/ FRAMES	Hollow metal door/hollow metal frame

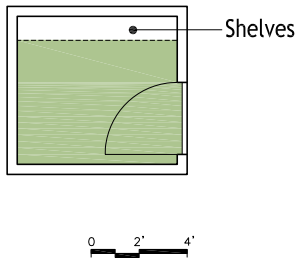
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	Key lock
MECHANICAL	No special requirements
ELECTRICAL	No special requirements
PLUMBING	No special requirements
TELECOM	No special requirements

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	Shelves
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE V-1

GENERAL

SPACE NAME	**Vending**
ASSIGNABLE AREA (ASF)	125
FUNCTION	Community vending machines
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located adjacent to Laundry

MATERIALS

FLOOR	Resilient
CEILING	Painted GWB
WALLS/ BASE	Painted GWB/resilient
WINDOWS	Desirable
DOORS/ FRAMES	Optional aluminum door/aluminum frame with sidelight; alcove optional

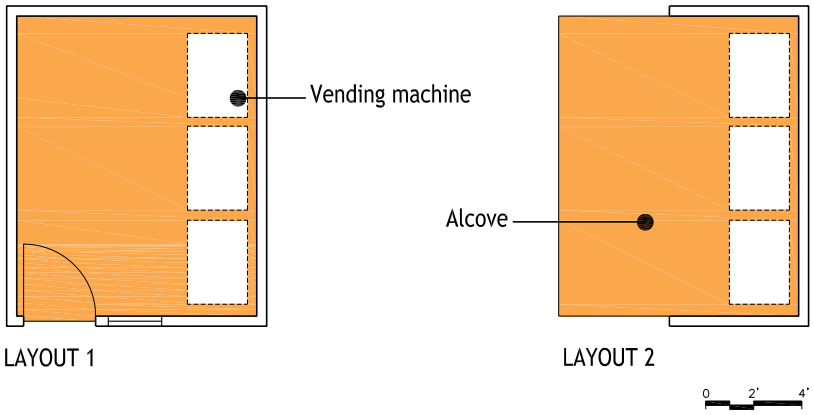
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	None
MECHANICAL	No special requirements
ELECTRICAL	Provide dual outlets
PLUMBING	No special requirements
TELECOM	Provide data outlets for vending machines for credit card payment

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	Vending machines per UCR contract
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE WR-1

GENERAL

SPACE NAME	**Staff Workroom**
ASSIGNABLE AREA (ASF)	300
FUNCTION	RSO workroom
MIN. CEILING HEIGHT	9’-0”
CRITICAL ADJACENCIES	Centrally located in RSO

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/ BASE	Painted GWB/resilient
WINDOWS	None
DOORS/ FRAMES	None

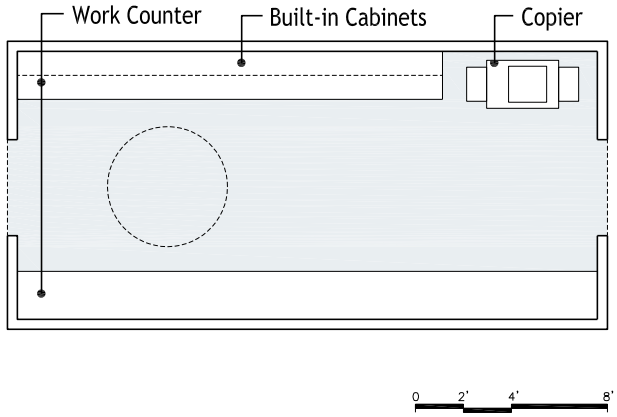
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	None
MECHANICAL	No special requirements
ELECTRICAL	Power outlets for photo copier; provide power outlets at work counter height
PLUMBING	No special requirements
TELECOM	Data outlets for photo copier

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	Photo copier
BUILT-IN FEATURES	Counters with lockable cabinets above and below
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE WS-1

GENERAL

SPACE NAME	**Staff Workstations**
ASSIGNABLE AREA (ASF)	85
FUNCTION	Typical modular workstation
MIN. CEILING HEIGHT	9'-0"
CRITICAL ADJACENCIES	RSO Manager Office, Mail, Lobby, Mail Storage

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/ BASE	Painted GWB/resilient
WINDOWS	None
DOORS/ FRAMES	None

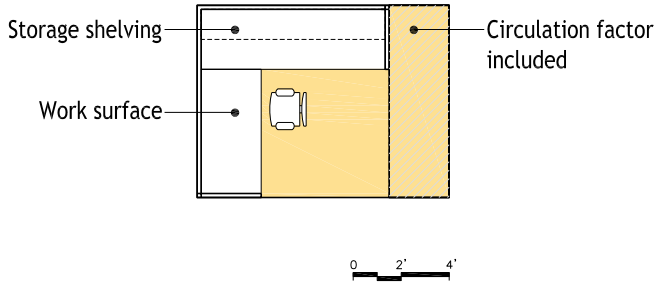
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	None
SECURITY	None
MECHANICAL	No special requirements
ELECTRICAL	Provide power outlets at work surface height
PLUMBING	No special requirements
TELECOM	Provide data outlets at work surface height

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	• Task chair • Work surface and storage per diagram • Work station: with potential for work surfaces, power and data, storage above and below, task light and keyboard drawer. See diagram. Panels may be glass or fabric covered, varying heights.
BUILT-IN FEATURES	None
SPECIAL REQUIREMENTS	None

DIAGRAM



CODE WT-1

GENERAL

SPACE NAME	**Lobby/Reception/Waiting**
ASSIGNABLE AREA (ASF)	500
FUNCTION	Waiting area; entry lobby
MIN. CEILING HEIGHT	9'-0"
CRITICAL ADJACENCIES	RSO Staff Workstations & Mail

MATERIALS

FLOOR	Carpet
CEILING	Acoustical panels in suspended grid
WALLS/ BASE	Paint GWB/resilient
WINDOWS	Desirable
DOORS/ FRAMES	Aluminum door/aluminum frame with glazed sidelight

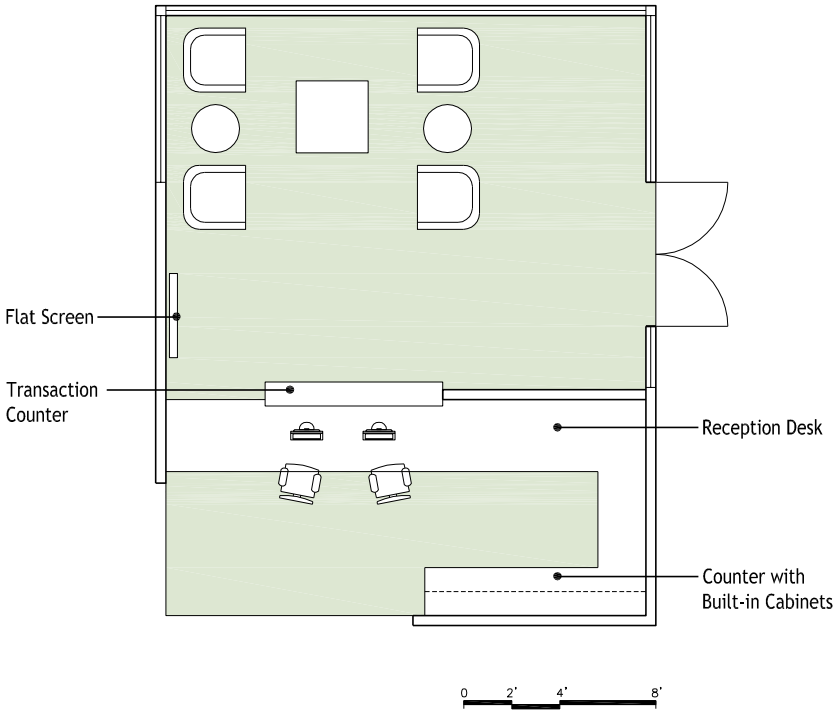
SYSTEMS

ACOUSTICS	No special requirements
A/V EQUIPMENT	Flat panel monitor
SECURITY	Card key access at entry doors
MECHANICAL	No special requirements
ELECTRICAL	Power for flat screen monitor
PLUMBING	No special requirements
TELECOM	Data for flat screen monitor; provide wireless access

EQUIPMENT

FIXED EQUIPMENT	None
MOVABLE EQUIPMENT AND FURNITURE	• 2 Task chairs • 3 Coffee tables • 4 Lounge seats • Built in reception desk with power/data ports
BUILT-IN FEATURES	Counter with upper cabinets
SPECIAL REQUIREMENTS	None

DIAGRAM



4.1

SYSTEM NARRATIVES

The following section contains narratives for:

- Landscape
- Civil
- Structural
- Mechanical
- Plumbing and Fire Protection Systems
- Electrical

LANDSCAPE

Overview

The approach to the Glen Mor 2 landscape design is characterized by an emphasis on creating a healthy, sustainable community. Underlying principles include pedestrian interconnectivity, optimization of key resources, respect for the natural environment including the arroyo, and the placement of high value on quality of residential life.

Streetscape

The landscape identity of the eastern and southern boundaries of the Glen Mor 2 site is characterized by an existing streetscape system typical of the University's primary roadways and adjacent community streets, and acts as a transitional element between the campus and the city streets and residences across Valencia Hill Drive. At the ground plane, irrigated turf areas evoke a civic tableau and character associated with southern California roadway and neighborhood street development. Regularly spaced street trees and tree groupings provide a density and definition to roadway corridors, announcing, then marking, one's progress across the campus threshold. Indeed, this clarity is well-suited to Big Springs Road as the access it provides to the University is the only one at the campus's east boundary.

Arroyo

The existing arroyo figures prominently in the identity of Glen Mor 2 as it encompasses the restoration of a natural plant community and wildlife habitat unique to the University's grounds but characteristic of this region of California. Its restoration also strengthens the campus' connection to the nearby Box Springs Mountains as it renews the ability of the arroyo to function as a seasonal riparian corridor—an integral component of the Santa Ana River basin's hydrologic legacy. All non-native plant species will be removed from the approximately 1/3-mile long stretch of the arroyo, and will be replaced with plants common to local riparian communities, including Salix, Populus and understory species in the arroyo bottom and the Riversidian sage scrub and mixed riparian communities, including Artemisia, Eriogonum, Ceanothus, Mimulus, and Salvia species for the slopes and upland areas. It is important to note that the natural habitat in this area has the potential to support more than the flora and fauna of the area, as it also provides an educational opportunity of study and research for campus academic programs.

Housing

The housing milieu engenders a landscape response that accommodates the dynamism of the student population and University programming, both implied and overt. Courtyards and pathways within the housing community reflect this with their openness and clarity, and reflect the density of the student population with Campus Design Guidelines for outdoor spaces character. Depending on adjacencies and use, the landscape is a hybrid of simple statements (walkways) and carefully composed spaces (courtyards). Paving materials will feature locally-sourced components and will include paving systems capable of supporting a reduction of stormwater runoff and increasing rainwater infiltration. Consideration for visual and solar screening is factored into the tree plantings, with species selection based upon whether the planted area is "extroverted"—in which the plant palette for the northern bounds of housing would, for example, be generated entirely of riparian trees where it meets the arroyo—or introspective of the housing community—in which case the palette may increase its range to include drought-tolerant and adaptive species. Plant selection would be done with an eye to limit the potential for invasive species to impact the arroyo.

CIVIL

Existing Conditions

The existing site topography is moderately sloped with an average 5% slope across the main portion of the site. The northern area has steeper slopes and is undeveloped with the exception of a small existing vacant single family residence at the highest elevation on site, along with a few existing older retaining walls at the north side. This area has some dry brush vegetation with a few trees within the area around the building.

The south and southwest portion of the site has a fairly large existing parking lot with a gentle slope. The surrounding south side is bordered along Big Springs Road with well manicured trees and grass.

Existing utilities onsite include small diameter service lines to the existing building from the east side, and parking lot lighting and electrical conduit. A power pole on the east side also has some overhead wires serving the existing building. The existing building has a small driveway with a high temporary portable cell tower adjacent to it.

Exterior Fire and Domestic Water Distribution System

Both fire and domestic water will be supplied from the existing water source adjacent to the Lothian Residence Hall. The system can also tie into the existing Glen Mor 1 housing water line to provide a second source for times when maintenance of a portion of the system is required. The use of gate valves throughout the system will also make it easier for maintenance of the system, while helping minimize disruption of service.

The proposed fire water main will loop around the new buildings utilizing an 8-inch pipe size. A backflow device will protect the campus main from the new fire loop system. Fire hydrants and building sprinkler connections will branch from the main line to provide fire service for the new buildings. Each building will have a fire sprinkler service connection with a post indicator valve and fire department connection, while maintaining a maximum 50 foot distance from a fire hydrant per National Fire Protection Association (NFPA) code. All fire service mains and appurtenances shall comply with the latest edition of NFPA. In addition, the Campus Fire Marshal requirements and input shall be followed for the design.

A separate 4-inch domestic water service main will be utilized for the buildings. Based on feedback from the campus physical plant personnel, a single water meter is preferred for the domestic water service to the complex, rather than a meter for each individual building. A separate backflow device will be utilized for the domestic water system near each connection to the campus main.

Exterior Sanitary Sewer System

The new sewer system will consist of a main 8-inch line connection from the existing 15-inch sewer main along West Big Springs Road to the housing. A sewer lateral will be routed to each of the buildings and connect into the new 8-inch main serving this project. Sanitary sewer sizing for the lateral shall be based on plumbing demand sizes for the building.

The system consists of polyvinyl chloride (PVC) pipe, cleanouts, and connections. Cleanouts shall be installed at a maximum of 100 foot spacing.

All rules of the State Department of Health Services, relative to crossing and parallel lines shall be complied with. In addition, all UC Riverside Campus Design Specifications shall be followed along with the California Plumbing Code.

Storm Drainage System

Area drain inlets shall be provided with riser extensions and size adaptors as required for the depths needed to maintain positive drainage from the site. A drainage report during design shall indicate storm drain and inlet sizing.

The new storm drainage piping will consist of PVC piping of various required sizes. Several inlets shall be installed throughout the site with manhole cleanout structures placed in critical locations.

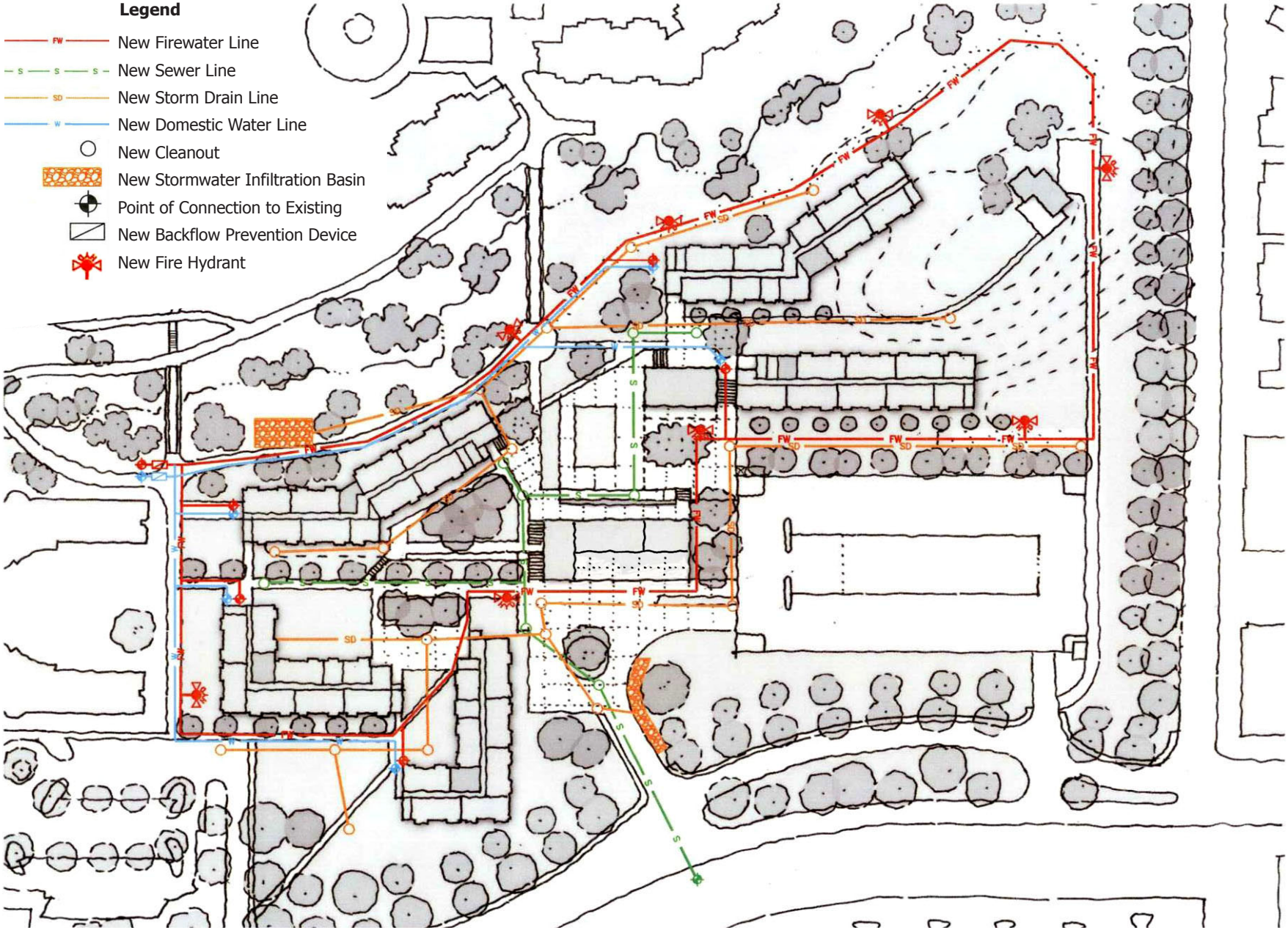
A Stormwater Pollution Prevention Plan will be required (over 1 acre disturbed) for this project, and shall be submitted to UCR Office of Design & Construction and a Notice of Intent will be submitted to the State Water Resources Control Board.

Sustainable Design

Storm water quantity (LEED® Credit 6.1) may be addressed with the use of pervious paving, detention or retention basins, or other means as determined by required standard urban stormwater mitigation plans or water quality technical reports during design.

Implementation of storm water treatment controls will help meet the State requirements for Best Management Practices for storm water quality and the University requirements pursuant to the Campus Storm Water Management Plan. This will also allow the project to capture LEED® credit 6.2. Several options are currently available as treatment control such as hydrodynamic separator units, drainage inserts, biofilters, detention basins, and filtration units.

LEED® credit for water efficient landscaping may be implemented through the use of a greywater system. The system would require design efforts through landscape, plumbing, and civil design disciplines, and would be required to follow California Greywater Standards. Essentially, this system would recycle washwater from inside the building (with the exception of toilet and kitchen sinks). With the use of pre-treatment options such as septic tanks, sand-filters, or other package filtration units, the greywater would then be allowed to be pumped or gravity fed to landscaped areas.



N

UTILITY DIAGRAM

0 25' 50' 100'

STRUCTURAL

Project Description

The Glen Mor 2 Student Housing Project will include new student apartments, commons areas and bridges connecting this new project to Glen Mor 1. The total project gross square footage will be 334,187 sf. A three-story parking structure for 596 cars will also be constructed adjacent to the housing units. The site slopes down from the east creating a total building pad differential of up to 30 feet across the site. The uppermost buildings will have stepped levels to accommodate the site topography. The parking structure will also be built partially into the hill.

General Design Criteria

Codes

The governing building code is Part 2, Title 24, California Code of Regulations (C.C.R.). The structural design shall be per Chapters 16-23 of the California Building Code (CBC), 2007 Edition. Other referenced design codes are anticipated to include the AISC Steel Construction Manual, Thirteenth Edition, ACI Building Code, Commentary, ACI 318-05, AWS Structural Welding Code, AWS D 1.1-05, the North American Specification for the Design of Cold-Formed Steel Structural Members (with 2004 Supplement), and the National Design Specifications for Wood Construction (NDS-1997).

Design Loads

Live Loads:

Residential	40 psf, reducible
Offices	50 psf, reducible
General Storage	125 psf, non-reducible
Exit Paths	100 psf, non-reducible
Assembly areas	50 psf, fixed seating
	100 psf, movable seating and other
	125 psf, stages and enclosed platforms
Flat roofs	20 psf reducible

Dead Loads:

General: Estimated weight of construction material.
Mechanical Equipment: Weight of mechanical equipment.

Seismic Design:

Occupancy Category	II
Importance Factor	I = 1.00
Mapped spectral response	SS = 1.50g S1 = 0.60g
Site Class	D
Spectral Response Coefficients	SDS = 1.00g SD1 = 0.60g
Seismic Design Category	D
Structural System Factor	Will depend on the system selected and will be based on CBC 2007.

Wind Design:

Basic Wind Speed	85 miles per hour
Exposure	Exposure C
Importance Factor	IW= 1.0

Materials

Concrete

f'c = 3000 psi slab on grade
f'c = 3000 psi foundations
f'c = 3000 psi (lightweight) slab on metal deck

Reinforcing Steel

ASTM A615, Grade 60
ASTM A706, Grade 60 (weldable reinforcing)
ASTM A-185 for welded wire fabric

Structural Steel

ASTM 992, Grade 50 for all structural shapes except as noted otherwise
A325 High strength bolts, except as noted otherwise
ASTM A36 for all channels and angles
ASTM A572, Grade 50 or ASTM A36 for plates
ASTM A500, Grade B for square or rectangular tubes
ASTM A500, Grade C for all round tubes
ASTM A53, Grade B for all pipes
ASTM F1554, Grade 36 or 105, for anchor bolts
E70XX for welding electrodes
ASTM A446 for metal deck

Concrete Masonry Units

f'm = 1500 psi Typical
f'c = 2000 psi Grout
f'c = 1800 psi Mortar

Rough Carpentry

Sawn Lumber: Douglas Fir – Larch, No. 1 & 2, Hem Fir #1 (alternate)
Sheathing: Plywood: APA rated Struct. 1 & 2
Manufactured Lumber: TrusJoist plywood web joists, Timberstrand, Parallam, etc.
Hardware: Simpson Strong-Tie
Holdown System: EARTHBOUND Seismic Holdown System Using the "Impasse Device™"

Structural Building Description

General

The residential component of the project is Type III construction which requires non-combustible exterior walls. This can be achieved in several different framing schemes (see *Building Structural Framing System*). The apartment buildings will be up to 5 stories framed with either wood or metal studs. Floors will be lightweight concrete over plywood or metal deck. Foundations are assumed to be conventional spread and continuous footings. The parking structure will be reinforced concrete.

Geotechnical

Geotechnical report is not complete at this time.
Foundations are assumed to be conventional spread and continuous footings. Ground floor slabs are assumed to be conventional slab on grade

Seismic Design

Seismic design criteria will be based on the latest edition of the California Building Code (CBC 2007). We have assumed that special seismic performance goals beyond these Code requirements are not required for this project. The Seismic Lateral Resisting System (SLRS) will utilize light framed shear walls, distributed braced frames or a combination of the two systems. The final SLRS will depend on the type of framing system utilized.

Building Structural Framing System

Residential Buildings:
Several framing options exist for this part of the project. The structural options, roughly in order of cost (lowest to highest), are as follows:

Option 1: All wood framed.
Type III construction may be all wood framing with fire-treated wood at the exterior walls (and exterior plywood sheathing). Floors will be plywood with 1.5" lightweight concrete topping. Joists are 2x10 or 2x12 at 16" o.c. Bearing walls at ground floor will likely be 4x4 studs for 4" walls and 3x6 studs for 6" walls. Bearing walls at 2nd & 3rd floors will be 3x4 studs for 4" walls and 2x6 studs for 6" walls. Bearing walls at 4th and 5th floors will be 2x4 studs for 4" walls and 2x6 studs for 6" walls. The SLRS will be plywood shear walls with a continuous rod holdown system.

Option 2: Metal stud & joist framed.
Framing will be similar to Option 1, but with metal studs and joists instead of wood. Stud sizes can be as desired (4" or 6") with heavier gages at ground floor. Joists will be 8" to 12" depending on maximum spans. Floors are plywood with 1.5" lightweight concrete topping. Seismic shear walls can be sheet metal on metal studs or plywood on metal studs.

Option 3: Metal stud with wood framed floor hybrid.
This option is a combination of Option 1 and Option 2. The framing will utilize metal studs for walls and wood joists for floors. A possible alternative is metal stud walls only at exterior and wood studs at interiors. This option will likely provide a material cost savings but will take some additional coordination due to multiple trades framing the building.

Option 4: Metal stud walls with concrete on metal deck floors.
Walls are metal stud for all interior and exterior walls. Floor is concrete on metal deck (3" deck + 2.5" lightweight = 5.5" total thickness). Concrete on metal deck spans from wall to wall. This provides a heavier system which substantially reduces noise transmission between floors. Due to the heavier structure, the seismic laterally system must also be stronger than light framed shear walls. Distributed structural steel braced frames or concrete/masonry shear walls will be required for this purpose.

Parking Structure:
The parking structure will be reinforced concrete. The construction may be entirely cast-in-place concrete or precast concrete beams & columns with cast-in-place foundations, slabs and shear walls. The most efficient framing system for a stand-alone parking structure is typically a long-span beam system with short span one-way slabs. The beams span across the parking stalls and drive aisle and will be approximately 36" deep. A 5" – 6" thick slab can span between these beams when spaced at 18' – 20' on center. The shear walls and foundations will be cast-in-place concrete construction.

MECHANICAL

System Design Philosophy

HVAC system components and distribution layouts will have the following characteristics:

- Comfortable indoor environment
- Energy efficient
- Service life/durability
- Ease of maintenance
- Reliability

Codes and Standards

California Building Code, 2007
California Mechanical Code, 2007
NFPA Codes, current editions, as applicable
ASHRAE Standard 62.1-2007
ASHRAE Handbooks, current editions
SMACNA Duct Construction Standards

External Conditions

The building is located in California climate zone 9 in the city of Riverside and has the following external design conditions. For the purposes of engineering calculations to estimate heat loads and temperatures within the building, the California Energy Code climate zone will be used. This zone contains the city reference Riverside, CA.

HVAC Design Criteria

Location: Riverside, CA
Latitude: 34.0 ° N 117.4 ° W
Elevation: 1,007 feet

Outside Design Conditions :

Summer : 104° FDB / 74° FWB
Winter: Outdoor 32° FDB
Outdoor daily range: 37° F
Based on California Residential Manual @ 0.1% for summer, 0.2% for winter

Internal Conditions:

The internal environment will be designed to maintain the following conditions. These will be superceded by specific University of California Riverside requirements or acoustician advice.

Area	Summer	Winter	HVAC Noise Rating*
Classrooms	75°F±2°F humidity not controlled	70°F min humidity not controlled	NR - 35
Offices	74°F±4°F humidity not controlled	70°F min humidity not controlled	NR - 35
Laundry Room	Swamp cooler humidity not controlled	70°F min humidity not controlled	NR - 35
Apartments	75°F±4°F humidity not controlled	70°F min humidity not controlled	NR - 35
Elevator Machine Rooms, Electrical Rooms, and Server Rooms	75°F max humidity not controlled	65°F min humidity not controlled	NR - 55

Humidity control is not required in general occupied spaces, but may be necessary in Telecom/Data Equipment Rooms if required by Telecom equipment manufacturers.

*Note - Noise criteria to be confirmed by Acoustic Consultant.

Outdoor Air Ventilation:

Minimum outdoor air ventilation rate for all offices and community rooms will be 15 cfm/occupant as recommended by ASHRAE guidelines for maximum number of people in each space taken from *Room Data Sheets*, whichever is higher. Where the LEED EQ Credit dictates, a higher air flow will be used.

The ventilation criteria for the apartments will be based on ASHRAE standard 62.1-2007 requirements. Where ASHRAE standard 62.1-2007 criteria can be met with operable windows, the outside air to the apartments to be supplied through operable windows.

Residential units bathrooms to be ventilated using individual exhaust fans ducted to the outside.

Residential units to be provided with individual kitchen hoods with exhaust ducts extended from the hoods to outside.

The corridors to be heated and air conditioned.

Internal Heat Gains:

Heat gain from occupants will be calculated according to ASHRAE guidelines for maximum number of people in each space taken from *Room Data Sheets* or information provided by University Representative.

Heat gain from lighting will be calculated based on the actual layouts and fixture types obtained from the electrical drawings. For energy efficiency, the lighting design will employ lower ambient lighting levels with task lighting.

Heat gain from equipment will be based on information taken from *Room Data Sheets*.

Energy Efficiency

The UC system mandates that all new buildings are required to beat Title 24 by a 20% margin. The building will need to incorporate sustainable design measures to meet the requirements for the LEED Silver Rating. The building envelope shall be designed to exceed Title 24 performance envelope requirements:

- Roof R30
- Wall R19
- Windows are double clear with low E glazing

Glazing systems shall be selected to provide optimum shading coefficients/solar heat gain coefficients and U-factors on each exposure of the building. External shading is recommended where possible for non-north exposures.

- Glazed areas shall be optimized to maximize effective use of natural day-lighting and allow views to the exterior.
- Operable windows will provide natural ventilation for the apartments.

HVAC systems will incorporate energy conserving features known to be economically feasible. The design will first focus on passive systems, such as the thermal mass, which provide the highest energy benefit at the least cost. Once the cooling and heating loads have been minimized, then the most efficient economically

feasible active systems will be explored. Technologies to be explored are described in detail in the five options stated below.

Utilization of renewable energy resources, such as solar panels for water heating, or photo-voltaic power for supplemental power generation will be evaluated during the Schematic Design phase and incorporated into the project if shown to be economically feasible.

HVAC Systems

Five HVAC configurations have been evaluated for the Glen Mor 2 Student Housing project. The following is a brief description of each system and summary of advantages and disadvantages of each option as it applies to this project:

Option 1: 4 PIPE FAN COIL SYSTEM - CENTRAL PLANT WITH ONE 4 PIPE FAN COIL PER SUITE

System Description

a. Cooling System: Water Cooled Chiller

A water cooled chiller typically consists of screw or centrifugal chiller which generates chilled water for cooling and condenser water for waste heat. Chilled water is pumped from the chiller through the chilled water loop to cooling coils inside the fan coil units and condenser water is pumped to a cooling tower. The chilled water loop consists of one set of insulated pipes that delivers chilled water to each of the cooling coils inside the fan coil units.

b. Heating System: Gas Fired Hydronic Heating Boilers

Multiple boilers which generate hot water. Hot water is pumped from the boiler through the heating hot water loop to heating coils inside the fan coil units. The heating hot water loop consists of one set of insulated pipes that delivers hot water to each of the heating coils inside the fan coil units.

c. Primary and Zone Air Distribution System

One 4 pipe fan coil unit with separate chilled water and heating hot water coils per suite. The space temperature inside each suite to be controlled by one thermostat located in the living room. Whenever possible, the fan coils to be installed inside the drop soffit areas in the suites.

Service Life

As per ASHRAE, the anticipated service life of major components of this system are as follows:

Chillers	23 years
Cooling towers	25 years
Boilers	20 years
Fan coils	20 years

Subjective Criteria

This system has the following characteristics:

ADVANTAGES	DISADVANTAGES
Minimal noise mitigation measures are required to achieve acceptable interior noise levels.	
Simultaneous heating and cooling of different suites is made possible.	
Lowest operating cost.	Highest initial cost. The initial cost of separately metering each apartment (if required) is relatively high.
Lowest maintenance requirement.	
Fan coil service access requirement is relatively small in comparison to water source heat pumps or split system air cooled heat pumps.	Require mechanical rooms to house the boiler(s) and the chiller(s). Highest space requirement for running pipes. The water loop for the 4 pipe system utilizes 2 sets of insulated pipes, whereas the water loop for the water source heat pump requires one set of un-insulated pipes.
Highest equipment service life.	

Major Components

- One or two water cooled chiller(s)
- One or two cooling tower(s)
- Two or four boilers
- Approximately 210 - four pipe fan coils

Remarks

This is a good option if the University is anticipating to pay for all the utility costs without metering or monitoring the tenants' (students) utility consumptions. The University is already familiar with this type of system - the Pentland Hills Student Housing Project incorporated this system.

This option becomes especially attractive if there is one central plant that serves this project.

Option 2: WATER SOURCE HEAT PUMP SYSTEM

System Description

a. A typical water source heat pump system consists of unitized compressor, coil and fan. The compressor will either absorb heat or reject it into the condenser water piping loop. A fluid cooler (cooling tower) is used to reject the heat that is transferred into the condenser water piping loop. The condenser water loop consists of one set of un-insulated pipes that delivers condenser water to and from each of the water source heat pumps.

b. Primary and zone air distribution system: one vertical water source heat pump per suite located inside a mechanical closet, the space temperature is controlled by one thermostat that could be located in the living room of each suite.

Service Life

As per ASHRAE, the anticipated service life of major components of this system are as follows:

Water source heat pumps	19 years
Fluid cooler	20 years
Boiler	20 years

Subjective Criteria

This system has the following characteristics:

ADVANTAGES	DISADVANTAGES
No need for chiller rooms.	Larger service access requirements inside the suites.
Smaller boiler rooms [the need for boiler rooms could be eliminated by installing the boiler(s) outside, adjacent to the cooling tower(s)].	
Moderate initial cost.	Higher electrical construction cost than 4 pipe fan coil system. Higher operating cost than 4 pipe fan coil system.
Higher reliability, since each suite has a separate water source heat pump.	Higher maintenance than 4 pipe system.
Moderate equipment service life (19 years). Each suite can easily be metered separately (if required).	

Major Components

- Approximately 210 vertical and/or horizontal water source heat pumps
- Two or three boilers
- Two or three fluid coolers

Remarks

This is a good option, especially if the suites are all electric (except for domestic hot and cold water, the only other required utility is electricity) and there is no place to install remote outdoor condensing units. There are many equipment variations available with this type of system.

A water source heat pump requires outdoor space for installing fluid coolers(s) and boiler(s). The fluid cooler(s) and the boiler(s) could be installed on the roof or on the ground (the roof is preferable).

Maintenance: There are approximately 210 compressors to maintain; however, they are easy to service and can be maintained by most contractors.

The current mechanical budget may not accommodate this option; if the University selects this option, a detail cost estimate should be prepared.

Option 3: SPLIT SYSTEM HEAT PUMP

System description

Split system heat pumps (one system per suite) consist of an air-cooled outdoor section that needs to be located outside of the building either on the roof or on the ground and a DX fan coil that could be installed inside a closet or recessed inside the drop ceiling. Relatively small refrigerant pipes connect the fan coils to heat pump outdoor sections and the space temperature is controlled by one Title 24 approved thermostat that could be located in the living room. The University is already familiar with this type of system as the Glen Mor 1 project incorporated this system.

Service Life

As per ASHRAE, the anticipated service life of major components of this system are as follows:

Fan coil	15 years
Heat pump outdoor unit	15 years

Subjective Criteria

This system has the following characteristics:

ADVANTAGES	DISADVANTAGES
Low initial cost.	Higher operating cost than 4 pipe fan coil systems.
Each suite can easily be metered separately (if required) in order for the residents of each suite to be responsible for their own power usage.	
Heating and cooling is available at all times.	Medium energy consumption.
Low outdoor noise with good condensers.	
Mechanical chiller room(s) and boiler room(s) are not required.	
No cooling tower and hydronic systems to be maintained.	
Simple to maintain; most contractors, including residential contractors can maintain this type of system.	Higher number of compressors to maintain.
Moderate equipment life (15 years).	Lowest equipment service life (15 years).
High reliability, each suite's mechanical system is totally independent of the other suites' mechanical system.	

Major Components

- Approximately 210 heat pump outdoor units
- Approximately 210 indoor heat pump DX fan coil units

Remarks

This is a good option, especially if the suites are all electric and there is space on the roof for installing the heat pumps outdoor units. The current mechanical budget may accommodate this option.

Option 4: VARIABLE REFRIGERANT FLOW ZONING SYSTEM (VRFZ)

System description

A VRFZ system (one system for every 8 to 10 suites) consists of one air-cooled heat recovery outdoor section that needs to be located outside of the building either on the roof or on the ground, ducted DX fan coils that could be installed inside a closet or recessed inside a drop ceiling of each apartment, one BC controllers for each heat recovery outdoor section, and a direct digital control system. With this type of system, relatively small refrigerant pipes connect the fan coils to the BC controllers; approximately eight to ten fan coils connect to one BC controller. Refrigerant pipes connects the BC controller to the outdoor heat recovery condensing units. The space temperature inside each apartment is controlled by a separate thermostat in the living room.

Service Life

As per ASHRAE, the anticipated service life of major components of this system are as follows:

Fan coils	15 years
Heat recovery condensing units	15 years

Subjective Criteria

This system has the following characteristics:

ADVANTAGES	DISADVANTAGES
Moderate initial cost.	Higher maintenance cost than 4 pipe fan coils but lower than water source heat pumps and air cooled heat pumps. Higher operating cost than 4 pipe fan coil and water source heat pumps systems but lower than air cooled heat pumps.
Each suite can be metered separately relatively easily (if required, the system has internal metering capabilities) in order for the residents of each suite to be responsible for their own power usage. A little more difficult than water source heat pump.	Larger service access requirements inside the suites.
Heating and cooling is available at all times.	Medium energy consumption.
Low outdoor noise.	
Mechanical chiller room and boiler room are not required.	
No cooling tower and water system to be maintained.	
Easier to maintain than split system heat pumps, since less (compressors) outdoor (heat recovery) units to maintain.	
Moderate equipment life (15 years).	Lower equipment life (15 years).
High reliability; Mitsubishi makes a very reliable equipment.	

Major Components

- 25 to 30 heat pump outdoor units.
- 210 indoor heat pump DX fan coil units

Remarks

If the mechanical budget can accommodate the additional initial cost of this option, this option is recommended over the PTHP option, air cooled split system heat pump option, and water source heat pump option, since there are fewer compressors to service.

Option 5: PACKAGE TERMINAL HEAT PUMPS (PTHP)

System description

A typical package terminal air conditioner (heat pumps) consists of unitized compressor, coils and fans. The compressor will either absorb heat or reject it to the outdoor coil. Typical systems are generally ductless and can serve one or two rooms. Each system has an integral thermostat (remote thermostats are also available) that control the temperature of the room where the PTHP is installed. Three to five of these units are required to serve each 4 bedroom apartment.

Service Life

As per ASHRAE, the anticipated service life of major components of this system are as follows:

PTHP	10 years

Subjective Criteria

This system has the following characteristics:

ADVANTAGES	DISADVANTAGES
Lowest initial cost.	Highest maintenance cost. Highest operating cost.
Each suite can easily be metered (if required) in order for the residents of each suite to be responsible for their own power usage.	Highest energy consumption.
Heating and cooling is available at all times.	
Building space is conserved because ductwork and mechanical rooms are not needed.	Impacts architectural design.
No cooling tower and water system to maintain. Simple, but a lot of units to maintain.	Lowest equipment life (10 years).
No outdoor condensing units to be accommodated.	High indoor and outdoor equipment noise.

Major Components

- 700 to 1000 PTHPs

Remarks

This option is generally not recommended unless the mechanical budget is so low that even split system air cooled heat pumps cannot be accommodated. Considering that a minimum of 3 PTHPs per 4 bedroom apartment will be required, the initial installation cost of this system will not be considerably lower than a split system air cooled heat pumps and split system air cooled heat pumps are considerably a better system.

These units have impacts on architectural design, both in the interior (space planning) and exterior (elevations).

These units are generally noisy and the noise from these units will also impact the outside noise level of the outdoor private and semi private spaces.

Comparison of Systems Initial and Operating Cost

The following table compares the initial cost, operating cost and maintenance cost of the mechanical systems.

SYSTEM	INITIAL COST	OPERATING COST	MAINTENANCE COST
Central Plant with one Fan Coil per apartment	Highest; not within current budget	Lowest	Lowest
Water Source Heat Pump (one per apartment)	Moderate	Moderate	Moderate
Air Cooled Heat Pump (one per apartment)	Low	Moderate	Moderate
VRFZ (Variable Refrigerant Flow Zoning System)	Moderate	Moderate	Low
PTHP (minimum three per apartment)	Lowest	Highest	Highest

Summary And Recommendation

- Based on the current mechanical budget, only the following options are possible: split system air cooled heat pump and PTHP. The PTHP system is strongly discouraged and the split system air cooled heat pump is recommended. The split heat pump selection should be based on the highest SEER rating that the budget will allow. The VRFZ system requires higher initial cost and should be considered if additional funding is available.
- In housings projects where the tenants are not responsible for any of their utilities, they will tend to leave the heating and air conditioning systems running continuously. When the tenants are responsible for their usage, they will generally turn off the system whenever they are not in the suites and whenever the outdoor temperatures are not extreme.
- It is not recommended that the University monitor or provide provisions for monitoring the students' electricity usage. However, every suite should be provided with a reasonable budget for electricity usage (based on average consumption) and the suites that exceed their budget be asked to pay for their difference in usage above average in order to prevent the abusers of the system.

Testing, Adjusting, Balancing And Commissioning

All testing and balancing of HVAC systems will be by an independent test and balance company hired directly by the University, as agreed during the design phases of the project.

Air systems will have manual dampers where required for balancing.

Hydronic systems will have manual balancing valves where required for balancing, together with Pete's plugs or similar devices for measurement of temperatures and pressures at coils, pumps, control valves and other strategic locations.

All systems shall be commissioned to the campus protocol. Additional commissioning to qualify for the applicable LEED® credits should be costed as a separate line item.

PLUMBING

Codes and Standards

California Building Code, 2007
California Plumbing Code, 2007
California Fire Code, 2007
NFPA Codes, current editions, as applicable

General

Each of the residential buildings will be provided with a separate domestic hot water system for that building. The domestic hot water system for each building will consist of two 120 gallon hot water storage tanks, two remote hot water heaters (Lockinvar or approved equal), circulating pump, and required accessories. Each hot water heater will be sized to be able to serve 75% of each building's domestic hot water load.

A separate gas meter will be provided for each building. The meter and piping will be sized to accommodate the domestic water heaters in each of the apartment buildings and to accommodate the space heating load, domestic water heaters, and gas dryers.

Plumbing Fixtures

Fixtures will be provided as identified by the *Room Data Sheets* and will be selected to comply with Campus Standards.

Plumbing fixtures will be commercial quality with water conserving technologies to meet LEED® aspirations of the project.

Water closets shall be dual flush 0.8/1.6 gallon per flush and urinals shall be 1/8 gallon per flush or waterless urinals upon prior approval by UCR facilities staff. Fixtures will be wall hung. Metering faucets with 0.5 gpm flow control aerators, fully complying with ADA and other relevant regulations will be used at lavatories. It is estimated that all non-irrigation LEED® Water Efficiency credits could be achieved using these low flow fixtures.

Domestic and Industrial Water System

Separate domestic and fire water supplies shall be supplied to the buildings from the campus utility mains, with approved water meter installed.

Domestic Cold Water and Hot Water

A backflow preventer shall be provided on the cold water supply to protect existing mains. A pressure reducing station assembly shall be provided if pressure exceeds 80 psi. Domestic water shall be supplied to all plumbing fixtures and equipment. Water hammer arrestors, trap primers, and access panels shall be provided to meet code requirements.

Piping material shall be Type “L” copper for above grade piping and Type “K” copper for below grade piping.

Shut-off valves will be provided in accessible locations to allow for domestic isolation of each toilet room or groups of plumbing fixtures.

Hot Water

Gas-fired water heater shall provide domestic hot water to all plumbing fixtures that require hot water. Each of the apartment buildings to be provided with two water heaters and two storage tanks. Each water heater to be sized to handle 75% of the building total hot water load.

Natural Gas System

The natural gas system will be connected to the low pressure natural gas meters supplied by the Gas Company, and seismic shut-off valve will be installed outside of the building if required by authorities having jurisdiction and University Representatives.

Gas piping inside the building will be schedule 40, black steel pipe.

Sanitary Waste and Vent System

A complete new sanitary waste and vent system will be provided in accordance with the California Plumbing Code throughout the building. The system will be connected to the site sewer lines (refer to civil drawings).

Piping material will be no hub cast iron.

Storm Drainage System

Roof drainage will be provided by sheet metal gutters, cast iron roof drains, and downspouts based on architectural conditions. Piping material will be no hub cast iron system. Roof drains will connect to site infrastructure storm drainage that will be reflected on civil drawings.

A separate overflow drain system will be provided by either cast iron overflow drain piping system and/or scupper system as required by the building architecture.

Load Analysis

The anticipated project preliminary loads are as follows:

Domestic Cold Water demand: 500 gpm

Gas Loads:

Domestic Hot Water	= 5,500 MBH
Space Heating	= 500 MBH
Laundry (40 dryers)	= 1,400 MBH
Total	= 7,400 MBH

Greywater for Irrigation

Water from bath tubs, showers, washing machines, and lavatories is called greywater. Greywater from these fixtures, if collected separately, can be reused as a source water for landscape irrigation.

A greywater system consists of storage tank(s), filter(s), pumps, and controls. The water from bath tubs, showers, laundry, and lavatories are collected through a separate piping system from the waste water collected from toilets and kitchen sinks. Then the greywater is filtered and stored in storage tank(s) and pumped to the landscape irrigation water distribution system. Greywater for irrigation to qualify for LEED credit should be budgeted as a separate line item.

Solar Pool Heating System

The swimming pool will have a gas fired pool heater to heat the pool water. In order to minimize the amount of gas energy used, solar pool water heating system is recommended to be incorporated into the project.

Solar pool heating systems uses the sun energy to heat the pool. The system consists of pipes, pump(s), and solar pool heating panels and controls. In a solar heating system, pool water is circulated through the solar pool heating panels, usually located on the roof of a nearby building. Solar panels collect the sun energy and transfer it to the pool water. The solar pool heating system to be budgeted as a separate line item.

FIRE PROTECTION SYSTEM

Codes and Standards

NFPA-13 National Fire Ptotection Association Installation of Sprikler Systems
NFPA-14 National Fire Protection Association Installation of Stand Pipes and Hose Systems
State Fire Marshall, California State Fire Marshall
ANSI American National Standard Institute
ASTM American Society for Testing and Materials
CBC California Building Code (2007)
AWWA American Waterworks Association
CCR California Code of Requirements
OSHA Occupational Safety and Health Administration

General

All the buildings shall be fully protected by automatic fire sprinkler system.

System Description

Each building shall have a separate water supply and shall be protected by a fully automatic sprinkler system in accordance with NFPA-13, NFPA-14, Uniform Building Code Standard for Installation of Sprinkler Systems, Fire Sprinkler Design Criteria Specification, and the requirements of the Campus Fire Marshal. Any attic spaces shall also be equipped with an automatic fire sprinkler system. A combination stand pipe with floor control valves shall be located on one of the stair shafts of each building. The second stair shaft shall be provided with wet stand pipe in accordance with the requirements of NFPA-14, CBC, and the Campus Fire Marshall.

The systems will include tamper and flow switches to connect to fire alarm systems. The system should be installed so that it may be connected to a campus-wide fire alarm system.

An alarm check valve with electric bells shall be installed inside each of the buildings. A double detector check backflow preventer, and fire department pumper connection shall be provided outside each of the buildings which will be design by Civil Engineer. A post indicator valve shall also be provided outside the buildings, a listed indicating OS & Y control valve will be located on the risers for each building. The system will be equipped with valve and water-flow switch monitoring, audible sprinkler flow alarms on the exterior and interior of the building, and the sprinkler piping will be schedule 40, black steel pipe.

ELECTRICAL

Codes and Standards

California Electrical Code (2008 Edition)
National Fire Protection Agency (NFPA 72)
California Energy Code: Title 24, Part 6 (2009 Edition)
Illuminating Engineering Society of North America (IESNA)
Riverside Public Utilities Rules and Regulations
Underwriters Laboratory (UL)
University of California, Riverside (UCR) Design Specifications

Electrical Service

The electric service will be designed on the basis of an estimated demand load density criteria, mechanical loads, project document requirements, projected building service loads, and Electrical Code criteria.

A medium voltage service extended from the campus power distribution loop will be provided. The service feeders will be underground concrete encased duct banks which will be reinforced when crossing an excavated area, roads, and parking areas. They will originate from the nearest power manhole and terminate at an exterior pad mounted oil-type transformer. One transformer will be required for each of the apartment buildings.

Secondary service voltage for buildings will be 120/208 volt, 3-phase, 4-wire, extracted from the pad-mounted transformers. Each building will be equipped with a 120/208 volt, 3-phase, 4-wire service section which will supply power to distribution panels located on every other floor of each building. Distribution panels will supply power to load centers located within each apartment.

Campus utility metering will be provided at each main service in accordance with the Campus standards. We also suggest including provisions for electronic metering at each apartment.

There will not be an emergency generator installed at the site. See *Interior Lighting* section for description of the emergency egress lighting system.

A low-maintenance, photovoltaic (PV) system may be installed at the site and will interact with the utility power. Required for the system are an inverter system, metering equipment, and utility switch. The system will supply power common areas in each building.

Interior Lighting

Lighting, in general, will be designed in accordance with UCR Specifications, IESNA recommendations, and California Administrative Code, Title 24, Part 6, California Energy Code, and will provide standard illumination levels. All emergency lighting requirements will be satisfied by use of self-contained emergency batteries in light fixtures.

Lighting fixtures of sizes, types, and ratings as required, complete with lamps, lamp holders, reflectors, high power factor electronic ballasts, wiring and mounting hardware compatible with the type and quality for each application to obtain the maintained levels of illumination required will be provided.

The interior lighting will utilize T-8 fluorescent lamps with CRI greater than 80 and electronic ballasts with THD less than 10% wherever possible. In cases where compact fluorescent lamps are selected for aesthetic criteria, fixtures will exceed 64 lumens per watt and 82 CRI. If incandescent sources must be used, consider infrared coated (IRC) halogen lamps which are more energy efficient and have a longer lamp life. In general, apartment units will be illuminated utilizing task lights, wall mounted or cove mounted fixtures over mirrors, downlights over toilets, ceiling or under cabinet mounted luminaires at the kitchen area, downlights over counters and accent lighting in the living areas as appropriate by design.

Exit corridors and stairwells will utilize daylighting where possible. Corridors will contain un-switched emergency egress lighting to provide a minimum 1 foot-candle illumination.

Table 1 - Recommended Interior Illuminance Values

VISUAL TASKS	LUMINANCE
Mechanical, Electrical & Communication Rooms	30 foot-candles
Circulation	15 foot-candles
Toilets	20 foot-candles
Storage Rooms	7.5 foot-candles
Offices, Conference Rooms, Reading Room	30 foot-candles
Laundry	30 foot-candles
General Lighting: relaxation, entertainment, and passageways	7.5 foot-candles
Apartment Bedroom:	
Reading/Writing	30 foot-candles
Dressing	30 foot-candles
General	10 foot-candles
Apartment Living Area:	
Reading/Writing	30 foot-candles
General	3-5 foot-candles
Apartment Kitchen	30-50 foot-candles

Exterior Lighting

Exterior lighting will be installed to match UCR Standards and existing conditions. In general, pedestrian walkways and bikeways will be lit with 10' pole mounted high pressure sodium fixtures per UCR Design Specifications, unless otherwise illuminated by adjacent roadway luminaires. Local roadways will be illuminated to compliment the landscaping and buildings with pole mounted fixtures based on UCR Standards and existing conditions.

Exterior lighting will be provided with energy efficient sources. Ungrounded conductors on taps serving all exterior lighting will be fused. Luminosity will be in accordance with UCR Standards.

Table 2 – Recommended Exterior Illuminance Values

CLASSIFICATION	LUMINANCE	LUMINANCE UNIFORMITY
Local Roads	0.5 foot-candle average	2 to 1 ave/min
Walkways & Bikeways	1.5 foot-candle average	3 to 1 ave/min
Parking Lots	2 foot-candle average	4 to 1 ave/min
Parking Lot Entrance	5 foot-candle average	3 to 1 ave/min
Building Entrances	5 foot-candle average	3 to 1 ave/min

Lighting Control

The main lighting control system will consist of a master lighting control panel (LCP), remote lighting control panels, low voltage switches, dimmer switches, line-voltage switches, interior and exterior photocells, ceiling mounted dual technology occupancy sensors, passive infrared wall switch sensors with daylight controls and various digital interfaces. Exterior parking, landscaping, and patio egress pathways will be controlled by photocells and astronomical type time clocks.

Control panels will sweep off designated interior lighting areas at pre-determined programmable intervals during unoccupied times. The time clock program will allow programming for normal hours, weekends, summer and holiday schedules and other special events. All clocks for the system will be astronomic type.

The central lighting control system for the lighting system will control the following areas (additional means of controls listed where applicable):

- Corridors – Dual technology occupancy sensors
- Restrooms – Dual technology occupancy sensors
- Offices – Wall mounted occupancy sensors with manual override capability and photosensors for daylighting control (where applicable)
- Conference Rooms – Low voltage switching with preprogrammed multiscene selection
- Study Rooms – Wall mounted occupancy sensors with manual override capability and photosensors for daylighting control (where applicable)
- Laundry – Dual technology occupancy sensors
- Electrical, Mechanical, and Machine Rooms – On/off switching
- Equipment, Janitorial, and Storage Rooms – Wall mounted occupancy sensors

Fire Alarm

The fire alarm system will be designed in accordance with NFPA 72, California Building Code (CBC), and California Fire Code (CFC) and will meet the requirements of the American Disabilities Act. A Simplex Grinnell system will be installed per the UCR Design Standards.

The fire detection, alarm, and communication systems will be a microprocessor based, addressable system, Class B, consisting of a main fire alarm control panel (MFACP), remote annunciator(s), manual pull stations, ceiling mounted products of combustion detectors, duct mounted products of combustion detectors, horns, synchronized flashing strobes, and audible devices.

Smoke detectors in each apartment will cause the audio-visual devices in that particular apartment to initiate, but will not put the entire building in alarm. The smoke detectors in the apartment will be system type and will put the building fire alarm panel and the campus master fire alarm panel in trouble mode. A signal will be sent to the monitoring station requiring personnel to investigate the cause of the activated smoke detector.

Each building will have a fire alarm control panel, which will be networked together and report to a main fire alarm control panel in the designated fire command center for the campus.

Telecommunication

The telephone, data/networking, and television backbone cabling system will consist of both fiber optic cables and unshielded twisted pair copper cables with the capability to transport multiple applications throughout the facility. There will be one demarcation point for the entire project at a designated building distribution frame (BDF) in one of the buildings. From the demarcation BDF, the system will be extended to the main distribution frames (MDFs) in other buildings.

A PBX phone system with a primary rate interface (PRI) and direct inward dialing (DID) will be provided. The following telephone lines will be provided for each building: dedicated line for office fax, one intrusion alarm line per alarm panel, two fire alarm lines connected to Universal Digital Alarm Communicator Transmitter (UDACT), one dedicated line for elevator, one dedicated line for environmental control system, one T1 for data system and phones as required in offices with direct access to the outside. Each apartment will have one phone outlet located in the living room.

A complete local area network (LAN) will be provided in each building. The system will consist of a standing MDF with patch panels, switches, cable management, and UPS. An intermediate distribution frame (IDF) will be provided on every other floor for network access for two floors. Each bedroom and living room will be provided with one data drop. Workrooms, offices, conference rooms, study rooms and all others will be provided with data drops as required. Wireless access points will be installed throughout the corridors and at exterior community spaces to provide access to the network.

Cable TV will be provided by Charter Communications. Television cabling will be terminated in a cabinet at each building and connect to a headend rack with required equipment. A coax cable will be extended from the CATV cabinet to the headend rack. TV outlets will be installed in each bedroom, living room, conference room and other rooms as required or requested by the University.

Security, Intrusion Alarm & Closed Circuit Television (CCTV)

Door contacts, card key access and alarm in a central panel will be provided for the security system. All wiring will be in a separate security conduit system. The security alarm will be connected to the UCR campus security department by telephone. Security card key systems must be provided and installed by an approved UCR contractor in accordance with University standards for campus security.

Terminal cabinets and remote security panels with a power supply will be provided as required throughout each building.

A surveillance system will be installed consisting of visual image monitoring and visual image data storage. Real-time visual monitoring equipment will be located in a secure monitoring site with restricted access to approved individuals only. CCTV cameras will be installed in elevators, hallways, and common areas.

Code blue emergency phones will be installed where required by TAPS.

LEED® Credits

An energy efficient, well lit, and comfortable environment can be achieved through careful design of the electrical system. LEED® points that are available for the design of the electrical system are described below:

- SS Credit 8 – Light Pollution – 1 point possible

  To minimize light trespass from the building, all non-emergency interior light fixtures in public areas will be automatically controlled during off-hours. Permanently installed lighting in bedrooms and other private areas will be installed so the direct beam illumination from the fixture will intersect solid building surfaces and not exit to any exterior surfaces. Exterior lighting will be designed so as no to exceed 80% of the lighting power densities for exterior areas and 50% for building façades.

- EA Credit 1 – Energy Performance – 10 points possible

  At a minimum, common area lighting will be designed to 14% better than the allowed power for each building. In combination with other systems' energy performance and the photovoltaic system, up to 10 points can be achieved. The Energy Modeling will be by mechanical consultants. Input on electrical loads will be provided to mechanical consultants for coordination.

- EA Credit 2 – On-Site Renewable Energy – 3 points possible

  A photovoltaic (PV) system may be installed to supply a minimum of 2.5% renewal energy for the site. Glen Mor 1 kWhr demand readings will be obtained from the University to estimate the required PV system size for the Glen Mor 2 site. The PV system will be used to supply power to common areas within the buildings.

- EQ Credit 6.1 – Control of Light Systems – 1 point possible

  90% of occupants will need to have control of individual lighting. Bedrooms, kitchens, and living rooms will have manual on/auto off controls with override capability. Private offices, reception desks, and individual workstations will have occupancy sensors with manual override capabilities. Additional controls will be provided in conference rooms and larger study rooms to allow for various scene controls.

4.2

CODE ANALYSIS

Applicable State Building Codes

2007 California Building Code
California Code of Regulations
Title 24, Part 2

Description

Glen Mor 2 is an 800 bed apartment type residential community made up of 5 five-story buildings with shared common areas that include a Community Space, Resident Services Office, a small Conference Facility, a parking structure, and support spaces.

Occupancy

Primary occupancy will be R-2 for the apartments with accessory B occupancies for the common community/ support areas and S-2 for the parking structure.

Construction Type

CBC Table 503, Allowable Height and Building Areas.

	Construction Type	
	III B	IIA
Occupancy Group	Allowable Height/Area	
R-2	4 Stories/24,000 SF	
B	5 Stories/28,500 SF	
S-2		5 Stories/39,000 SF

Per CBC Section 504.2 and Section 506.3, buildings equipped with an approved automatic sprinkler system can be increased in height by one story and in area limitation by 200 percent. Because the site is surrounded by open space, additional allowable area increase may be considered per CBC Section 506.2 Frontage Increase.

Per CBC Table 601, footnote "e," an approved automatic sprinkler system in accordance with Section 903.3.1.1 shall be allowed to be substituted for 1-hour fire-resistance-rated construction, provided such system is not otherwise required by other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. The 1-hour substitution for the fire resistance of exterior walls shall not be permitted.

These code allowances will allow the project to exceed the 4 story height limit of the R-2 occupancy and the 39,000 SF area limitation of the S-2 occupancy. Further research and analysis during the Design Phase will be necessary to evaluate the benefits of different construction type classifications for the most cost effective solution. The assigned construction types as presented here-in reflect the project as cost estimated.

4.3

SUSTAINABLE DESIGN

The University of California system is committed to minimizing the University's impact on the environment and reducing the University's dependence on non-renewable energy. A Presidential Policy was established by The Regents in 2003 to promote "…the principles of energy efficiency and sustainability in the planning, financing, design, construction, renewal, maintenance, operation, space management, facilities utilization, and the decommissioning of facilities and infrastructure to the fullest extent possible, consistent with budgetary constraints and programmatic requirements." Since then, the Policy has continually been reviewed and new sections, including sustainable transportation practices and building renovations, have been incorporated.

This project will comply with the most recent 2007 UC Policy Guidelines for Sustainable Practices. See the UC website at http://www.ucop.edu/facil/sustain/greenbldg.html.

SUSTAINABLE DESIGN & LEED® CERTIFICATION

As required by the Policy and UCR sustainability benchmarks, all new buildings should be designed to minimum standard equivalent to the latest US Green Building Council Leadership in Energy and Environmental Design (LEED®) "Silver" rating. These "green buildings" should also outperform California Energy Code (Title 24) energy-efficient standards by at least 20%. The Policy encourages the use of resource-efficient, energy-efficient, water-efficient products and "recycled and rapidly renewable content for building materials, subsystems, components, equipment, and supplies."

In addition, real economic benefits are accrued by pursuing green design. Sustainable strategies have proven to:

- Reduce operating costs,
- Create local benefits by reducing the burden on utilities, roads, landfills, etc.,
- Increase productivity and reduce building occupancy absenteeism, and
- Reduce liability by improving workplace environments.

This DPP offers several strategies for realizing a LEED® Silver (or higher) Certified project. From a preliminary planning perspective, sustainability is manifested by:

- Building orientations and massing that maximize the potential for day-lighting, minimize solar gain, and provides usable exterior spaces,
- Pedestrian-focused planning that emphasizes connectivity within Glen Mor 1 and Glen Mor 2 and other communities and to campus, and
- Inclusive planning that envisions the Arroyo as a valued native habitat.

Several strategies were also identified for "demonstration" purposes – high visibility sustainability measures the University could opt to pursue:

- Solar hot water heating (particularly relevant for the swimming pool),
- Photovoltaic panels, perhaps in shade structures associated with the parking structure,
- Waste water recapture systems (for irrigation), and
- Car-sharing accommodation in the parking structure.

LEED® CHECKLIST

Item	Item	Prerequisite	UCR Baseline	Additional	Exemplary	Notes
SUSTAINABLE SITES						
SS Prereq 1	Construction Activity Pollution Prevention	Y				Erosion and sedimentation control typically required with SWPPP
SS 1	Site Selection		1			Not prime farmland, flood zone, or within body of water. Confirm arroyo cannot support fish or is endangered species habitat.
SS 2	Development Density & Community Connectivity		1			Ten basic services within 1/2 mile; site is near high density residential and community shopping center
SS 3	Brownfield Redevelopment					N/A
SS 4.1	Alternative Transportation - Public Transportation Access		1			RTA 10 and 14 lines stop at Big Springs & Watkins ((within 1/4 mile); Campus shuttle also contributes to this point
SS 4.2	Alternative Transportation - Bicycle Storage & Changing Rooms			1		Install covered bike storage for residents; bike racks, showers, and changing rooms in building for non-residential program
SS 4.3	Alternative Transportation - Low Emitting & Fuel Efficient Vehicles		1			Verify if TAPS provides parking preference for low-emitting vehicles
SS 4.4	Alternative Transportation - Parking Capacity		1		1	No new parking for FTE or design not to exceed campus requirements; verify campus-wide parking plan for innovation point
SS 5.1	Reduced Site Disturbance - Protect or Restore Habitat			1		
SS 5.2	Reduced Site Disturbance - Development Footprint		1			Potential to achieve this point on-site; campus can also designate an open space area equal to the development footprint of new construction for innovation point
SS 6.1	Stormwater Management - Quantity Control		1			25% reduction of volume of storm water
SS 6.2	Stormwater Management - Quality Control		1			Capture and treat storm water - use of CDS hydrodynamic separator and bioswale
SS 7.1	Heat Island Effect - Non-Roof		1			50% of site hardscape; Solar Reflectance Index of at least 29
SS 7.2	Heat Islands Effect - Roof		1			75% of roof - Solar Reflectance Index of 78
SS 8.1	Light Pollution Reduction		1			LZ3; Urban Area as defined by US Census
	SUSTAINABLE SITES SUBTOTAL:	**0**	**11**	**2**	**1**	

Item	Item	Prerequisite	UCR Baseline	Additional	Exemplary	Notes
WATER EFFICIENCY						
WE 1.1	Water Efficient Landscaping - Reduce by 50%			1		Utilize low water requiring, native-like plants, drip irrigation technology
WE 1.2	Water Efficient Landscaping - No Potable Use or No Irrigation			1		Greywater contributes to water use reduction & sewage conveyance
WE 2	Innovative Wastewater Technologies			1	1	Greywater storage system for flush fixtures; 100% potable water use reduction for flush fixtures = Innvoation Point
WE 3.1	Water Use Reduction - 20% Reduction		1			Use of dual-flush or ultra-low-flow toilets, 1.5 gpm showerheads, faucet and lavatory aerators; sensors in public restrooms
WE 3.2	Water Use Reduction- 30% Reduction			1	1	40% Reduction = Innovation Point
	WATER EFFICIENCY SUBTOTAL:	**0**	**1**	**4**	**2**	

Item	Item	Prerequisite	UCR Baseline	Additional	Exemplary	Notes
ENERGY & ATMOSPHERE						
EA Prereq 1	Fundamental Building Systems Commissioning	Y				
EA Prereq 2	Minimum Energy Performance	Y				Energy Model for EA 1, Savings by Design (or RPU equivalent) will achieve prerequisite
EA Prereq 3	Fundamental Refrigerant Management	Y				No CFC-based refrigerants will be used in new base building HVAC and refrigeration systems
EA 1.1	Optimize Energy Performance - 14% New/7% Existing	2				All LEED NC projects are required to achieve at least two (2) points
EA 1.2	Optimize Energy Performance - 21% New/14% Existing			2		Savings by design measures should result in at least 4 points
EA 1.3	Optimize Energy Performance - 28% New/21% Existing					
EA 1.4	Optimize Energy Performance - 35% New/28% Existing					Would require 4-pipe system with central plant
EA 1.5	Optimize Energy Performance - 42% New/35% Existing					45.5% Energy cost reduction = Innovation Point
EA 2.1	On-Site Renewable Energy - 2.5%			1		Maximizing RPU incentives for solar may suffice for one (1) point; also contributes to EA1
EA 2.2	On-Site Renewable Energy - 7.5%			1		Solar hot water heating
EA 2.3	On-Site Renewable Energy - 12.5%			1		PV/Sunshades at parking structure
EA 3	Enhanced Commissioning			1		Independent Commissioning Agent (CxA) required
EA 4	Enhanced Refrigerant Management		1			
EA 5	Measurement and Verification - Building Systems			1		Requires investment in metering equipment and campus commitment and plan for verification
EA 6	Green Power			1		Two year contract for 35% energy; available through City of Riverside Green Power Premium program
	ENERGY & ATMOSPHERE SUBTOTAL:	**2**	**1**	**8**	**0**	

Item	Item	Prerequisite	UCR Baseline	Additional	Exemplary	Notes
MATERIALS & RESOURCES						
MR Prereq 1	Storage & Collection of Recyclables	Y				Campus Standards; provide recycling area in each building (preferably floor)
MR 1.1	Building Reuse - Maintain 75% of Existing Walls, Floors and Roof					N/A
MR 1.2	Building Reuse -Maintain 95% of Existing Walls, Floors and Roof					N/A
MR 1.3	Building Reuse - Maintain 50% of Interior Non-Structural Elements					N/A
MR 2.1	Construction Waste Management - Divert 50% From Disposal		1			
MR 2.2	Construction Waste Management - Divert 75% From Disposal			1	1	95% Waste diversion = Innovation Point
MR 3.1	Materials Reuse - 5%					
MR 3.2	Materials Reuse - 10%					
MR 4.1	Recycled Content - 10% (post-consumer + 1/2 pre-consumer)		1			Depends on structural/construction system
MR 4.2	Recycled Content - 20% (post-consumer + 1/2 pre-consumer)			1	1	Metal studs manufactured locally will likely contribute; 40% cement replacement = Innovation Point
MR 5.1	Regional Materials- 10% Extracted, Processed, Manufactured Regionally		1			500 mile radius; steel, metal studs, concrete
MR 5.2	Regional Materials- 20% Extracted, Processed, Manufactured Regionally			1		
MR 6	Rapidly Renewable Materials			1		2.5% of material costs; Cotton insulation, bamboo casework, linoleum, etc.
MR 7	Certified Wood			1	1	50% of wood-based materials to be FSC Certified; 95% = Innovation Point
	MATERIALS & RESOURCES SUBTOTAL:	**0**	**3**	**5**	**3**	

Item	Item	Prerequisite	UCR Baseline	Additional	Exemplary	Notes
INDOOR ENVIRONMENTAL						
EQ Prereq 1	Minimum IAQ Performance	Y				
EQ Prereq 2	Environmental Tobacco Smoke (ETS) Control	Y				Prohibit smoking in all buildings and within 25' of doors, windows, intakes, etc. Current campus policy is set at 20'; need to modify campus policy
EQ 1	Outdoor Air Delivery Monitoring					
EQ 2	Increase Ventilation					Depends on mode of ventilation
EQ 3.1	Construction IAQ Management Plan - During Construction		1			Protect materials for moisture damage; use MERV 8 filters during construction & replace before occupancy
EQ 3.2	Construction IAQ Management Plan - Before Occupancy			1		Requires two-week flush-out (schedule impact) or air quality testing
EQ 4.1	Low-Emitting Materials - Adhesives & Sealants		1			
EQ 4.2	Low-Emitting Materials - Paints and Coatings		1			
EQ 4.3	Low-Emitting Materials - Carpet Systems		1			Carpet must be Green Label Plus certified
EQ 4.4	Low-Emitting Materials - Composite Wood & Agrifiber Products			1		
EQ 5	Indoor Chemical & Pollutant Source Control			1		Walk-off mats and MERV 13 filtration media for regularly occupied spaces
EQ 6.1	Controllability of Systems - Lighting		1			Task lighting plus individual offices at non-residential program
EQ 6.2	Controllability of Systems - Thermal Comfort		1			Based upon mechanical zones
EQ 7.1	Thermal Comfort - Design		1			ASHRAE 55-2004 - Predicted Mean Vote comfort model
EQ 7.2	Thermal Comfort - Verification			1		UCR would need to commit to conducting post-occupancy survey to achieve credit 6-18 months after occupancy
EQ 8.1	Daylight and Views - Daylight 75% of Spaces		1			2% Glazing Factor or 25 footcandles in min 75% of occupied spaces
EQ 8.2	Daylight and Views - Views for 90% of Spaces		1			Direct line of sight for building occupants in 90% or regularly occupied spaces
	INDOOR ENVIRONMENTAL QUALITY SUBTOTAL:	**0**	**9**	**4**	**0**	

Item	Item	Prerequisite	UCR Baseline	Additional	Exemplary	Notes
INNOVATION IN DESIGN						
ID 1.X	Innovation in Design				1	Educational Program
ID 1.X	Innovation in Design				1	Energy star appliances & office equipment
ID 1.X	Innovation in Design				1	Non-hydraulic elevators substantially reduce energy use
ID 1.X	Innovation in Design				1	Full-scale mock-up eliminates material waste during construction
ID 1.X	Innovation in Design				1	Post Occupancy Evaluation
ID 1.X	Innovation in Design				1	Zipcar parking
ID 1.X	Innovation in Design				1	Advanced wood framing systems
ID 1.X	Innovation in Design				1	Green Housekeeping
ID 2	LEED Accredited Professional		1			
	INNOVATION IN DESIGN SUBTOTAL:	**0**	**1**	**0**	**4**	
	Subtotal Required:	**2**				
	Subtotal Baseline:		**26**			
	TOTAL Required + Baseline:		**28**			
	Subtotal Possible Additional:			**23**		Need five (5) additional or ID points for Silver; 11 for Gold
	Subtotal Exemplary & ID:				**4**	Maximum of 4 ID Points possible; Over 10 available points
	TOTAL Possible:				**55**	

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points

4.4

PHASING

The intent of the University and Housing Services is to deliver the complete Glen Mor 2 project as described in this DPP, and noted in the Project Goals. However, should enrollment projections fall short of established targets during the course of the Design Phase, alternatives were studied for phased project delivery. Residential apartment buildings (affecting total unit count) and parking (number of spaces) were identified as the variable scope items. It was determined that the Resident Services Office and other Community Spaces, along with connections across and improvements to the Arroyo, would be delivered in the initial phase to better complete the Glen Mor community. Further reasoning promoted the idea of building out the residential structures "on the hill" first, to capitalize on a construction market that should provide economically favorable results for these more complex structures. The future phase(s) would then be constructed on the flatter sites at the southwest corner of the community. Alternatives illustrate options with and without the parking structure, the demand for which is determined by campus-wide parking counts (based upon LRDP defined ratios for housing type).

ALTERNATIVE 1 (SURFACE PARKING)

502 BEDS, 351 PARKING SPACES

ALTERNATIVE 2 (PARKING STRUCTURE)

502 BEDS, 596 PARKING SPACES

4.5

SCHEDULE

The project schedule is based upon an beneficial occupancy date of September 2012. Approval for Preliminary Planning is expected in March of 2009. Working backwards from July 2012 (allowing time for move-in), and presuming a 24 month construction period, suggest a bid date in the summer of 2010. Project a design phase (SD though CD) forward from March of 2009 results in completed documents in the winter of 2011. The overlap anticipated between start of construction and completion of documentation demands a procurement and delivery method that allows for fast-tracked construction. Bringing in a construction manager early in the design process to assist the University in delivery analysis is a recommended strategy.

Activity	# of Months	2008-2009 J A S O N D J F M A M J	July	2009-2010 J A S O N D J F M A M J	July	2010-2011 J A S O N D J F M A M J	July	2011-2012 J A S O N D J F M A M J	July	2012-2013 J A S O N D J F M A M J
Preliminary Plans	10									
CEQA	6									
Working Drawings	12									
Agency Review	3									
Bid/Award Contract	9									
Construction	24									
Equipment/Occupancy	2									

Total Cumulative Calendar Months	42

5.1

COST MODEL SUMMARY

The following section contains the construction cost summary and basis of estimate.
The detail component cost is found in the Appendix.

COST MODEL SUMMARY

for

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

February 18, 2009

DAVIS LANGDON
301 Arizona Avenue
Suite 301
Santa Monica
California 90401
Tel: 310.393.9411
Fax: 310.393.7493
www.davislangdon.com

COST MODEL SUMMARY

for

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

Sasaki Associates, Inc
77 Geary Street
Fourth Floor
San Francisco, California 94108

Tel: (415) 776-7272
Fax: (415) 202-8970

DAVIS LANGDON
February 18, 2009

CONTENTS

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

Cost Model Summary
February 18, 2009
0168-7833.110

BASIS OF

Prepared From	Dated	Received
Drawings issued for	11/07/08	11/07/08
Unit Plans A and B		
Community and RSO space diagrams		
Residential Building diagrams		
Glen Mor 2 program area tabulation		
Site Costing Diagrams		
Site Grading Diagrams		
Parking Structure Floor Plan		
Discussions with the Project Architect and Engineers		

BASIS OF

Conditions of Construction

The pricing is based on the following general conditions of construction

A start date of July 2010

A construction period of 24 months

The procurement will be based on CM-At Risk delivery method

The trade contract will be competitively bid with qualified subcontractors

There will not be small business set aside requirements

The contractor will be required to pay prevailing wages

The general contractor will have full access to the site during normal working hours

INCLUSIONS

The project consists of the construction of (5) - five story housing units, 596 stalls parking structure, and development of associated sitework.

Program areas include (10)1 bedroom units, (36) 2 bedroom units, (4) 2 bedroom RD units and (182) 4 bedroom units, community spaces, small conference facility, resident services office and support spaces.

This cost plan assumes the following building systems:

Housing

Foundation includes conventional spread footing, stepped footing and elevator pit. Allowance for rock excavation is included.

Vertical structure includes metal studs framing with plywood sheathing, reinforced concrete wall on buildings with stepped foundation..

Floor structure include concrete slab-on grade, prefabricated wood joists and plywood sheathing with lightweight concrete fill at suspended floors. Roof structure includes prefabricated wood joists with plywood sheathing. It also includes gypsum board underlayment.

Exterior cladding includes metal stud framing and cement plaster with allowance for architectural detailing, gypsum board lining to interior face of exterior walls, glazed aluminum framed windows and entrances.

Roofing and waterproofing include waterproofing to retaining walls, slabs and elevator pits, insulation, built-up roofing, flashing and sheetmetal.

Interior partitions include drywall partitions, sound insulation and solid core wood doors.

Floor finishes include colored concrete at lobbies, carpet to bedrooms, vinyl tiles to kitchen and toilets, carpet to corridors, vinyl tiles to support spaces, quarry tiles to commons kitchen, sheet vinyl to laundry, carpet to administrative and sealed concrete to utility rooms. Wall finishes include painting and acoustic panel. Ceiling finishes include acoustic lay-in tiles, painting to exposed gypsum board , gypsum board ceiling and painting to exposed structure.

Function equipment includes allowances for code and directional signage and fire extinguisher cabinets. Also included are shelving and millwork, built-in cabinets and countertops, and residential appliances.

INCLUSIONS

Plumbing includes sanitary fixtures, waste, vent and domestic hot and cold water, laundry, kitchen equipment connections, water heating equipment, roof drainage and natural gas.

HVAC includes an air cooled (split) heat pump system, including corridor ventilation.

Electrical includes normal, machine, equipment and user convenience power (MC cabling where appropriate), lighting (MC cabling where appropriate), door bell, telephone/data, TV, fire alarm and housing unit entry and building entry (card-key) security.

Fire protection includes automatic wet sprinkler systems - complete.

Sitework Associated with Housing

Sitework is presented in 3 zones, Zone A - Housing, Zone B - Arroyo and Zone C - Valencia Hill Drive New Landscape Buffer

Zone A includes 10.2 acres development. Allowances are provided for site demolition, building demolition (including hazmat abatement), grading (cut/fill), paving and surfacing, landscaping, allowance for swimming pool and prefabricated pedestrian bridge and vehicular bridge.

Zone C includes new landscape buffer along Valencia Hill Drive.

Site utilities include site drainage, domestic and fire water, sewer, gas, electrical mains power, telecommunications/signals (conduit only).

Parking (596 stalls) and Associated Sitework

Parking costs include conventional spread footing, reinforced concrete retaining wall on the north side, reinforced concrete columns and shearwalls supporting post tensioned flat slabs, combination landscape screen, brick veneer and railing for the facade, exposed soffits and painted walls, sliding gate, code required signage and parking control equipment.

Site costs associated with parking include site clearing and grading to areas within 5' of the parking perimeter, perimeter landscape, protection of the existing landscaping, new access drive from Big Springs Road and median island.

INCLUSIONS

BIDDING PROCESS - MARKET CONDITIONS

This document is based on the measurement and pricing of quantities wherever information is provided and/or reasonable assumptions for other work not covered in the drawings or specifications, as stated within this document. Unit rates have been obtained from historical records and/or discussion with contractors. The unit rates reflect current bid costs in the area. All unit rates relevant to subcontractor work include the subcontractors overhead and profit unless otherwise stated. The mark-ups cover the costs of field overhead, home office overhead and profit and range from 15% to 25% of the cost for a particular item of work.

Pricing reflects probable construction costs obtainable in the project locality on the date of this statement of probable costs. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors and general contractors, with a minimum of 4-5 bidders for all items of subcontracted work and 7-8 general contractor bids. Experience indicates that a fewer number of bidders may result in higher bids, conversely an increased number of bidders may result in more competitive bids.

Since Davis Langdon has no control over the cost of labor, material, equipment, or over the contractor's method of determining prices, or over the competitive bidding or market conditions at the time of bid, the statement of probable construction cost is based on industry practice, professional experience and qualifications, and represents Davis Langdon's best judgement as professional construction consultant familiar with the construction industry. However, Davis Langdon cannot and does not guarantee that the proposals, bids, or the construction cost will not vary from opinions of probable cost prepared by them.

EXCLUSIONS

Compression of schedule, premium or shift work, and restrictions on the contractor's working hours

Design, testing, inspection or construction management fees

Architectural and design fees

Scope change and post contract contingencies

Assessments, taxes, finance, legal and development charges

Environmental impact mitigation

Builder's risk, project wrap-up and other owner provided insurance program

Land and easement acquisition

Cost escalation beyond midpoint of construction

Owner supplied and installed furniture, fixtures and equipment

Loose furniture and equipment except as specifically identified

Utility connection charges and fees

Emergency power (excepting exit lighting battery back-up)

Public address

Site telecommunications/signals cabling

Major utility relocations

Storm water containment

Window treatment

Audio/visual/TV equipment and cabling

Fire water booster systems

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

Cost Model Summary
February 18, 2009
0168-7833.110

EXCLUSIONS

Kitchen hood exhaust system (assumed recirculation type)

Telephone/data - "back bone" cabling (between distribution frames)

Telephone/data "active" equipment - including hubs, routers, LAN, servers, switches and the like

Horizontal distribution conduit re: fire alarms, security, telephone/data and cable T.V. (J-hooks)

Out-door secondary feeders (assumed sub-stations immediately adjacent to buildings)

Renewable power

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

Cost Model Summary
February 18, 2009
0168-7833.110

OVERALL SUMMARY

	Gross Floor Area	$ / SF	$x1,000
Housing Units	334,187 SF	228.46	76,347
Sitework			
Zone A - Housing (Including Bridges)			10,802
Zone B - Arroyo			1,078
Zone C - Valencia Hill Drive New Landscape Buffer			183
SUB- TOTAL Housing & Sitework Construction	***July 2010***		***88,410***
Parking Structure (596 Stalls)	190,720 SF	57.33	10,934
Sitework Associated with Parking Structure			365
SUB-TOTAL Parking & Sitework Construction	***July 2010***		***11,299***
TOTAL Building & Sitework Construction	***July 2010***		***99,709***
Premium for CM-At Risk Contract	4%		3,988
Alternates			
Alternate 1: Photovoltaics			544
Alternate 2: Grey water collection system			129
Alternate 3: LEED Third Party Testing & Commissioning			194
Alternate 4: Solar heating to the pool			45
Structural Framing Alternates			
Option 1. All wood framed structures			(5,780)
Option 2. Metal stud and joist framed structures			2,130
Option 3. Metal stud with wood framed floor hybrid (Base option - included in the cost plan)			
Option 4. Metal stud walls with concrete on metal deck floors			7,196

Please refer to the Inclusions and Exclusions sections of this report

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

Plant Account Number:
Date: **11/24/08**
Budget Year:
CCCI of Budget Year:

OGSF: **334,187**

UC COMPONENT COST SUMMARY WORKSHEET
"P" Submittal

			Construction Cost with markups broken out		Construction Cost with markups incl. escalation rolled up	
			$/OGSF	Cost ($x1,000)	$/OGSF	Cost ($x1,000)
1. Foundations			8.50	2,842	10.01	3,346
2. Vertical Structure			21.31	7,120	25.08	8,382
3. Floor & Roof Structures			34.58	11,556	40.71	13,604
4. Exterior Cladding			19.47	6,506	22.92	7,659
5. Roofing & Waterproofing			2.52	843	2.97	993
Shell (1-5)			*86.38*	*28,867*	*101.69*	*33,982*
6. Interior Partitions, Doors & Glazing			23.72	7,927	27.92	9,332
7. Floor, Wall & Ceiling Finishes			8.11	2,710	9.55	3,190
Interiors (6-7)			*31.83*	*10,637*	*37.47*	*12,522*
8. Function Equipment & Specialties			12.93	4,322	15.23	5,088
9. Stairs & Vertical Transportation			6.76	2,261	7.96	2,661
Equipment &Vertical Transportation			*19.70*	*6,583*	*23.19*	*7,749*
10. Plumbing Systems			18.55	6,199	21.84	7,298
1 1. Heating, Ventilating & Air Conditioning			22.63	7,562	26.64	8,902
12. Electric Lighting, Power & Communications			35.94	12,012	42.31	14,140
13. Fire Protection Systems			6.83	2,284	8.04	2,688
Mechanical & Electrical			*83.96*	*28,057*	*98.83*	*33,028*
Total Building Construction (1-13)	(Sub 1)		**221.86**	**74,144**	**261.17**	**87,281**
14. Site Preparation & Demolition	(Sub 0)		3.91	1,306	4.60	1,538
15. Site Paving, Structures & Landscaping	(Sub 4)		20.87	6,976	24.57	8,212
16. Utilities on Site	(Sub 2)		6.81	2,274	8.01	2,677
Total Site Construction (14-16)			**31.59**	**10,557**	**37.19**	**12,427**
TOTAL BUILDING & SITE (1-16)*			**253.45**	**84,701**	**298.36**	**99,707**
General Conditions		7.00%	17.74	5,929		
Contractor's Overhead & Profit or Fee		3.00%	8.14	2,720		
Base budget as of date of estimate			**279.33**	**93,349**		
Escalation to Midpoint						
Escalation from date of estimate to Midpoint		7%	19.03	6,360		
ESTIMATED CONSTRUCTION BUDGET			**298.36**	**99,709**		

*Above component costs include a design contingency of: 10.00%
Note - above component costs include escalation to the midpoint of construction.

COMPARISON SUMMARY

	Housing Units 334,187 SF		Parking Structure 190,720 SF		Zone A - Sitework 402,930 SF		Sitework 235,920 SF		Parking Sitework 220,300 SF		Total 334,187 SF	
	$/SF	$x1,000	$/SF	$x1,000	$/SF	$x1,000	$/SF	$x1,000	$/SF	$x1,000	$/SF	$x1,000
1. Foundations	5.77	1,927	3.44	657	0.00	0	0.00	0	0.00	0	7.73	2,584
2. Vertical Structure	17.27	5,772	3.67	700	0.00	0	0.00	0	0.00	0	19.37	6,473
3. Floor & Roof Structures	21.47	7,176	17.46	3,330	0.00	0	0.00	0	0.00	0	31.44	10,506
4. Exterior Cladding	14.58	4,872	5.47	1,043	0.00	0	0.00	0	0.00	0	17.70	5,915
5. Roofing & Waterproofing	2.13	712	0.29	55	0.00	0	0.00	0	0.00	0	2.29	767
Shell (1-5)	61.22	20,459	30.33	5,784	0.00	0	0.00	0	0.00	0	78.53	26,243
6. Interior Partitions, Doors & Glazing	20.66	6,904	1.59	302	0.00	0	0.00	0	0.00	0	21.56	7,207
7. Floor, Wall & Ceiling Finishes	7.09	2,368	0.50	95	0.00	0	0.00	0	0.00	0	7.37	2,464
Interiors (6-7)	27.75	9,272	2.09	398	0.00	0	0.00	0	0.00	0	28.94	9,670
8. Function Equipment & Specialties	11.52	3,849	0.42	80	0.00	0	0.00	0	0.00	0	11.76	3,929
9. Stairs & Vertical Transportation	5.61	1,875	0.94	180	0.00	0	0.00	0	0.00	0	6.15	2,055
Equipment & Vertical Transportation (8-9)	17.13	5,724	1.36	260	0.00	0	0.00	0	0.00	0	17.91	5,984
10. Plumbing Systems	16.29	5,445	1.00	191	0.00	0	0.00	0	0.00	0	16.86	5,636
11. Heating, Ventilating & Air Conditioning	20.00	6,684	1.00	191	0.00	0	0.00	0	0.00	0	20.57	6,874
12. Electric Lighting, Power & Communications	29.54	9,871	5.50	1,049	0.00	0	0.00	0	0.00	0	32.68	10,920
13. Fire Protection Systems	4.50	1,504	3.00	572	0.00	0	0.00	0	0.00	0	6.21	2,076
Mechanical & Electrical (10-13)	70.33	23,504	10.50	2,003	0.00	0	0.00	0	0.00	0	76.32	25,506
Total Building Construction (1-13)	**176.43**	**58,959**	**44.27**	**8,444**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**201.69**	**67,404**
14. Site Preparation & Demolition	0.00	0	0.00	0	2.95	1,188	0.00	0	0.00	0	3.55	1,188
15. Site Paving, Structures & Landscaping	0.00	0	0.00	0	12.62	5,086	4.13	974	1.28	282	18.98	6,342
16. Utilities on Site	0.00	0	0.00	0	5.13	2,068	0.00	0	0.00	0	6.19	2,068
Total Site Construction (14-16)	**0.00**	**0**	**0.00**	**0**	**20.70**	**8,342**	**4.13**	**974**	**1.28**	**282**	**28.72**	**9,597**
TOTAL BUILDING & SITE (1-16)	**176.43**	**58,959**	**44.27**	**8,444**	**20.70**	**8,342**	**4.13**	**974**	**1.28**	**282**	**230.41**	**77,000**
General Conditions	12.35	4,127	3.10	591	1.45	584	0.29	68	0.09	20	16.13	5,390
Contractor's Overhead & Profit or Fee	5.66	1,893	1.42	271	0.67	268	0.13	31	0.04	9	7.40	2,472
PLANNED CONSTRUCTION COST	**194.44**	**64,979**	**48.79**	**9,306**	**22.82**	**9,194**	**4.55**	**1,073**	**1.41**	**310**	**253.94**	**84,863**
Contingency for Design Development	19.44	6,498	4.88	931	2.28	919	0.45	107	0.14	31	25.39	8,486
Allowance for Rising Costs	14.57	4,870	3.65	697	1.71	689	0.34	80	0.11	23	19.03	6,360
RECOMMENDED BUDGET	**228.46**	**76,347**	**57.33**	**10,934**	**26.81**	**10,802**	**5.34**	**1,261**	**1.66**	**365**	**298.36**	**99,709**

6.1

MEETING NOTES

minutes

SASAKI

date	22 October 2008		
project name	UCR Glen Mor II Student Housing	project #	84063.00
meeting date	September 26, 2008	time	8:00am - 5:00pm
location	Bannockburn J-102		
recorded by	Angel Cantu – Sasaki Associates		
distribution	Andy Plumley, Susan Marshburn, Yun Baird, Kieron Brunelle, Tim Stevens, Jim Jacobs		
Purpose	Kick-off Meeting/Workshop #1		

ATTENDEES

See attached attendance sheet

Morning Sessions 8:00 – 12:00

- Introduction by Yun Lee Baird, Senior Educational Facilities Planner
- Schedule, Milestones:
  - Project Completion date, July 2011
  - DPP Completion date, December 2008
  - UC Regents Approval, March 2009

- Delivery Methods,
  - CM at Risk is Don Caskey's Preference, to be determined per schedule opportunities and further discussion with Office of Design and Construction.
  - Phasing: Phase I would deliver 400 beds, Phase two would deliver additional 400 beds.

- Basic Program:
  - 800 bed facility with the flexibility of having double occupancy bedrooms.
  - Bridge to connect GMI to GMII.
  - 400 parking spaces(in addition to those in lot 14)
  - Pool
  - RSO

- Market Glen Mor II and Glen Mor I as one community

What works and what doesn't at Glen Mor I.
Glen Mor II <u>PROJECT GOALS.</u>

- Greater proportions of Community amenities, build on GMI community
- Students from Pentland/GMI dine at Lothian
- <u>Define parking for Residents and Guests clearly</u>
  - Provide safe and proximate parking.
  - Provide 1:2 parking to student ratio
  - Students drive to work/groceries
  - Parking deck is a possibility
  - Parking is an amenity selling point
- <u>LEED Silver Certification (minimum)</u>
  - Study Solar opportunities
  - Reclaimed Water
  - Provide Recycle Center
  - Provide Transparent/Educational Systems
  - East-West Orientation of Buildings

- <u>Swimming Pool</u>
  - 5 feet deep, "party pool"
  - Create Neighborhood
  - "Dive-in" movies
  - Showcase sustainable heating system

- <u>Solve Trash issues</u>
  - Opportunities for recycling
  - Need to make it more efficient than GMI. Both for students and maintenance.
  - Provide Recycling receptacles in Units (blue cans)
  - Provide trash chute
  - Every exterior receptacle should have a recycling receptacle

- Need Fitness Room
- Improve Signage and Way finding
- <u>Dwelling Units</u>
  - Provide Staff apartments that are 'unique' and family friendly
  - 4 bedroom units to be flexible, possible double occupancy, upto 8 residents
  - Kitchen drawers are not sufficient
  - Closet size adjusted for double occupancy bedrooms
  - Living room should be 50 sf larger
  - Open kitchen is good
  - Breakdown of 2 bedroom units is OK
  - Need more study rooms
  - GMII needs 2 sinks in each bath if we have double occupancy
  - GMII needs compartmentalized shower and water closet

- <u>Bridge(s)</u>
  - Accommodate Gem carts
  - 13'+ clear height for fire trucks

- <u>Site Program</u>
  - Provide more Green space, open for passive activities
  - Provide more public restrooms
  - Site furnishings
  - Provide fixed and movable furniture
  - Provide heavy but non institutional outdoor furniture
  - Provide fixed seating near entrance and Laundry facility
  - Trash locations
  - Provide dedicated Smoke areas

- BBQ's near Pool
- Patio with misters
- Exterior water features
- More exterior outlets, data

- Community Spaces
  - Provide interior Meeting space to compete with hotels
  - Limit south facing glazing in study rooms or provide shading
  - Laundry, keep in central location, works well
  - Bicycle storage needs to be more accessible, look at Lothian parking
  - Bicycle route on path to campus
  - Covered/secured bicycle storage
  - No C-Store in GMII
  - We should provide vending machines in a convenient location for the students
  - Need more storage

- Student Resource Office (RSO)
  - Staff offices
  - Mail, not like Pentland
  - Breakroom with Kitchenette
  - Staff rest rooms
  - Study rooms
  - Conference room

- Mail
  - Students get many large packages. Provide storage space for packages adjacent to mail room

- Computer Labs
  - Provide more floor outlets
  - Provide separate 'study' and 'gaming' labs

- Program wireless(data) antenna locations in next phase, current GMI does not work.
- **Look at Multi-Modal Transportation study**. Encourage alternative transportation.
- Arroyo
  - Give Arroyo Meaning
  - Enhance Arroyo

- KUCR may be part of program
  - Will require private parking, separate entry
- May need to accommodate cell phone tower in project.
- Larger Maintenance Areas

12:00 – 1:00 **Lunch Break**

Afternoon Sessions

1:00 – 3:00 **Existing Glen Mor Tour and Site Visit**
Kieron Brunelle, Tim Ralston, Yun Baird, Susan Marshburn, Andy Plumley, Tim Brown, Nita Bullock

3:00 – 4:00 **Sasaki Work Session**

4:00 – 5:00 **Wrap-up Meeting with Project Management Team**

minutes

SASAKI

date	28 October 2008		
project name	UCR Glen Mor II Student Housing	project #	84063.00
meeting date	September 30, 2008	time	8:00am - 7:00pm
location	Bannockburn J-102		
recorded by	Angel Cantu – Sasaki Associates		
distribution	Andy Plumley, Susan Marshburn, Yun Baird, Kieron Brunelle, Tim Stevens, Mark Yin, Octavio Gutierrez		
purpose	Programming Workshop #2/Program Definition & Preliminary Concepts – Day 1		

ATTENDEES

See attached attendance sheet

Day 1

10:00 – 11:00 PMT GROUP ONLY

- Presented the PROJECT GOALS established in Workshop #1 for review by the PMT. These were edited to the form shown below:

1. Create a cohesive 800 bed student housing community, designed for the possibility of phased delivery, so that a minimum of 400 beds are delivered by July 2011.
2. Develop unit types that accommodate flexible occupancy for periods of double-occupancy.
3. Foster an identity for the project with Glen Mor Phase One.
4. Embrace sustainable design strategies, with LEED Silver Certification as a minimum target.
5. Provide a greater proportion of community-based program amenities (in comparison to Glen Mor Phase One), including a new Resident Services Office and Pool complex.
6. Establish a clear network of pedestrian connections - to campus, to Phase One, and around and within the housing community.
7. Create outdoor environments that attract and encourage housing community use.
8. Create a vision for the Arroyo, with implementation tied to the completion of Glen Mor Phase II.
9. Provide proximate and secure vehicular parking (2:1 student bed to parking space ratio); exploring alternatives to surface lots.
10. Integrate building services for efficiency and transparency.

- Presented Draft PROGRAM established in Workshop #1 for review.
  - Draft Program was identified as a 'soft' document intended to be edited throughout the Workshop phases.
  - Initial Draft Program numbers exceed Project Program square footage by 146,000 ASF
  - Adding this amount would increase the RFQ budget by $26,000,000

- Per Campus review comments listed below the Draft Program was edited.
  - Add 2, total of 4, RD units. Enlarge to accommodate family
  - Could have a mix of 4 bed units double occupancy to make numbers work
  - Two Laundry rooms
  - Look at Fitness Room in Pentland to confirm ASF
  - Reduce Gaming Lounge to 500 ASF
  - Look at bicycle storage at Lothian
  - M/P(Multi-Purpose) Room: Yoga, Aerobics, etc. in addition to Fitness Room
  - Recreation Fitness Room can be smaller due to proximity to campus Recreation Center.
  - Large Meeting Rooms: add Kitchenette/Catering station/Water
  - Size Mail for 1,300 students; 500 for Glen Mor I + 800 for Glen Mor II
  - Poster Room(or Graphic Room) for student graphic reproduction: Computers and large format printers
  - Remove Rest Rooms from program GSF
  - Recycle Center can be added to ASF since per LEED it is required
  - **CPAC Code all program elements, UCR to provide** **UCR**

- Total project budget depends on financing:
  - $86 million: 5.75%
  - $88 million: 5.5%
  - $91 million: 5.25%
  - $93 million: 5%
  - Total project budget includes Housing, Parking, Site improvements, Bridges, and Soft Costs i.e., Arroyo Study, Historical Review of House on Hill.

11:00 – 12:00 Campus Environmental Planning
Tricia Thrasher, Nita Bullock

- Redevelop Arroyo as "front yard"
  - Need to perform another jurisdictional review
  - Bridges: Consultation with Corps of Engineers
  - Need to make Arroyo safe; provide pathway lighting
  - Clean out non-native vegetation, plant native vegetation: LEED point
  - Bank Stabilization
  - Enhance ecosystem
  - Provide safe meandering pathway along Arroyo
  - If a timeline and funds were committed then Arroyo Improvements could be Phased
  - Start with a vision, Concept Plan and Management Plan(Remediation/Mitigation

Plan)
  - Determine what is best for project and go forward with that submittal
  - Agency does not want to spend time on review unless it is 'real' project, they prefer you submit plans that will not change much from original submittal.
  - Downstream Arroyo is out of jurisdiction
  - Review Agencies have their own timeline: the sooner we submit a plan the better
  - Provide Drainage Plan

- Agencies
  - Dept. of Fish and Game
  - Corps of Engineers
  - Riverside County Flood Control and Water Conservation Agency

- Other environmental issues
  - House on hill, need to initiate a historical analysis, then make decision on whether to preserve or not.
  - 100' set back from Valencia Drive
  - Preserve double row of trees along Big Springs

12:00 – 1:00 Lunch Break

1:00 – 4:00 Stakeholder Group Meetings Campus Representatives:

1:00 – 2:00 EH & S, Police, Fire
Brian Kermath, Scott Corrin, John Freese

Police, John Freese
- Primary concern is safety of Arroyo: Lighting and Accessibility
- The path along the Arroyo does not feel safe, better lighting would help
- Students take most direct route to campus
- Treat Arroyo as an Asset
- Consider theft deterrent at ground level windows
- Security cameras layout design, provide DVR, connection via internet, and police access/monitoring.
- Provide Campus wide emergency notification system: Alarm, Cameras, Blue Phones, PA system
- Provide electronic plans of buildings for Emergency access
- No dead bolts inside units, this prevents emergency access
- Few complaints from Glen Mor I
- If Parking Structure is provided need to follow safety requirements for different types
  - Housing over Podium Parking
  - Freestanding Parking Garage

Sustainability, Brian Kermath
- Provide highest level of LEED certification we can achieve, Gold should be the target
- Consider Solar as energy option: Photovoltaic
- Consider Solar water heating
- Water Recovery, consider grey water strategies, study UCOP standards

- Showcase innovative design: "Demonstration" for future projects
- Study power purchase options
- Future Metrolink station across from Watkins: LEED point

Fire, Scott Corrin
- Need to extend campus loop onto site
- NFPA 13R for Residence
- NFPA 13 for Parking
- Provide separate stand alone dry standpipe system
- If extending campus main water line might need to compartmentalize
- Do not allow fire access from Valencia Drive, we prefer to not disturb the neighbors
- Consider flow through truck access to avoid turn-around
- Extend hammerhead Northwest of Lothian to gain access to site
- Fire and Domestic Water share same lines
- Consider approaching city of Riverside, if economically viable, to purchase water
- Provide same detection system as GLEN MOR I, 4100 Simplex, but with some augmentation
- If parking garage, then provide adequate ventilation system
- Prefer underground pipes for crossing Arroyo, as opposed to along bridge structure

2:00 – 3:00 Accessibility and Parking

Accessibility, Suzanne Trotta
- Provide accessible connection across Arroyo
- Separate bicycle from Pedestrian traffic
- Provide Gem cart access
- Enhance "visit-ability" between residential communities
- Provide roll-in showers: review drainage concepts
- Use ramps vs. elevators where possible

Parking, Mike Delo
- Provide accessible parking in close proximity to housing
- Turn-around at Pentland is very successful; we should consider something similar at Glen Mor II.
- Provide short-term parking near RSO
- Consider .25 spaces per bed as a ratio
- Expand lot 14 south towards Big Spring
- This is the third year of decline in residential parking permits
- Housing and Parking programs need to be better linked/related
- Consider Flex-Car program
- Consider other commuting choices
- Parking lot lighting levels should be 1 foot candle
- Need to study parking demand
- Transportation and Parking pays for parking structures and lots
- Meeting on 13th of Oct. will establish parking count for housing
- Valencia Hill Dr. will eventually become a cul-de-sac at North
- Avoid fire lane connections to Valencia Hill

3:00 – 4:00 Physical Plant Facilities

Chuck Spini, Jerry Higgins, Jill Hishmeh

- Power could come from Lothian
- Sasaki to study capacity of 12 KV line vault in East courtyard of Lothian
- There is a 15" Sanitary Sewer along big springs. Sasaki to verify capacity
- Gas from Valencia Hill
- Water, Provide Per Fire Marshall requirements
- Communications(copper and fiber lines) from Pentland "J" Building, cross arroyo via future bridge
- Telephone is for emergency response, Glen Mor I currently has one per bedroom, investigate installing only one per unit in Glen Mor II. Most students have cell phones.
- Need to be purposeful about wireless design, in Glen Mor I it was an after thought(note: Not In Contract in Glen Mor I)
- Mobile phones are prevalent but we still need one phone outlet for each room
- Cell Tower is a temporary cell site.
- Provide Internet for each bedroom.
- Provide cable TV for each bedroom and living room: cable is provided by vendor.
- Consider 1 IDF per floor: Glen Mor I has less than this.
- Drainage of parking lot 13: sheets off to the south, not pre-filtered.
- EH&S has Stormwater Management Plan(SMP), Sasaki to request at a later time
- There is no campus Greywater Plan, each plan needs to be project based
- One water meter(domestic) for project
- One water meter(irrigation) for project
- Submeter Lighting for Parking
- Consider Emergency Power for RSO Building: battery packs

4:00 – 4:30 Sasaki Work Session

4:30 – 5:00 Conclusions:

Campus and Environmental Planning

- Implement Jurisdictional study and Improvement plan
- **Initiate historical analysis of existing house**
- Review copy of legal settlement for insight into development near Valencia Hill Drive.

Police

- Arroyo is #1 issue
- Noise mitigation (neighbors)
- Theft deterrent
- Camera accessibility via internet

Fire

- Emergency vehicle access
- Water Loop
- Dry Standpipe System
- Stay away from Valencia Hill for Access
- Need to study if it is economically viable to connect to city water

EH&S

- We should strive for LEED Gold as a minimum
- Demonstration Project for future developments
- Explore Solar Opportunities
- A future Metrolink Station is planned on Watkins

Accessibility

- "Visit-ability" between housing communities
- Separate bikes from pedestrians
- Proximity of accessible parking
- Ramps instead of elevators

Parking

- 2:1 Student to Parking ratio: parking count will be determined at Oct 13th Mtg.
- Drop off, guest parking, flexcar
- Decrease in residential parking permits

Physical Plant

- Communication/Telecom, Served from Pentland "J"
  - Telecomm in Living room only
  - Data/Cable TV at Bedrooms and Living Room
  - Coordinate wireless antenna design
- Utilities
  - Well served, good capacity, generally
  - Minimize metering
  - Emergency power for RSO

6:00 – 7:00 Student Session– Glen Mor I Students

UCR

- Make parking safer/closer, more lighting
- Bedroom doors are heard when shut
- We have jobs, go grocery shopping, use cars often
- Don't like sharing parking with Pentland
- Arroyo trail is "scary" needs better lighting
- Acoustic issues: floor/ceiling and wall/wall, mainly floors
- Are sliding doors at bath ok? Yes
- Single hung windows are hard to open
- Kitchen Drawers too small
- Plumbing:
  - Kitchen prefer pull-out head
  - Shower head not enough pressure
- Building entry doors do not close
- We feel safe in the building but not in the parking lot
- Bedroom are too small: provide enough "wiggle" space between bed and desk
- RA rooms are great
- Kitchens and living rooms are great

- Bedroom closet doors eat up too much space, block outlet, prefer sliders
- Electrical outlets are upside down
- Not enough cabinet space in vanity
- Different size kitchen cabinets: never use skinny ones
- Better pantry space, current space is awkward
- Kitchen storage not sufficient in 2 bedroom unit.
- No transition between bathroom/bedroom and living area(privacy issue)
- Limited use of dishwasher, for some it doesn't work for others they don't know how to use it
- Need Cable TV in every room: Living Room and Bed Rooms
- We want a designated recycling bin in our unit
- Trash chute would be more convenient
- No folding area in Laundry
- Provide TV in Laundry
- Card readers for Laundry
- Additional Public restrooms
- Each building should have at least on study area, we shouldn't have to leave the building
- 8 people max., flexible
- Recreation Fields made Glen Mor I "cool"
- We want a pool!
- Glen Mor I seems like a "transitional" dorm, it's not quite an apartment/not quite a dorm
- Provide Fitness Room in development
- Provide Mailboxes in development
- Lighting in bathroom is too slow, need quickfire fluorescents
- Student lounge should be more inviting, provide tv/dvd etc.
- Window washing was nice, needs to happen more often
- Cell service is horrible
- Toilets have too small a "hole", keeps clogging up
- Make bed rooms less restricted, more space to move around
- More "comfy" furniture
- HVAC works really well
- All appliances work well
- Couch is good for smaller people
- Desk is great
- Dual pane windows are good
- Furnish the balconies, we would use them!
- Really appreciate entry landscape area, feel "proud"
- Love the way GLEN MOR I looks!
- 1 bedroom: would prefer folding table
- Closet space is good
- Assign parking in lots adjacent to Res. Comm.
- Car = Freedom
- Public Trans. Is horrible, trolley doesn't serve Glen Mor I
- Don't need vending in each building, would be good in Laundry.
- Add Laundry supplies to vending
- Make all stairs available to enter building from
- Elevators are slow
- Fire alarm is too loud

- We want to put stuff on walls to Personalize Rooms

End of Minutes

date	28 October 2008		
project name	UCR Glen Mor II Student Housing	project #	84063.00
meeting date	October 1, 2008	time	8:30am - 5:00pm
location	Bannockburn J-102		
recorded by	Angel Cantu – Sasaki Associates		
distribution	Andy Plumley, Susan Marshburn, Yun Baird, Kieron Brunelle, Tim Stevens, Mark Yin, Octavio Gutierrez		
purpose	Programming Workshop #2/Program Definition & Preliminary Concepts – Day 2		

ATTENDEES
See attached sign-in sheet

Day 2

8:30 – 9:00 PMT Group Only

9:00 10:30 User Group #1

Housing Services
Administration, Resident Directors & Advisors, Residence Life Staff

Tim Stevens presented Draft PROGRAM established in Workshop #1 for review.

Draft Program was identified as a 'soft' document intended to be edited throughout the Workshop phases. The following comments were recorded.

- Additional C-Store is not anticipated
  - Current food service, Scotty's and Lothian, have capacity to feed everyone efficiently, including the Glen Mor II.
  - Housing should consider testing dining capacity of Scotty's to verify that it can handle the housing community in the area since no C-Store is planned for this project.
  - **Andy will consider alternative dining options**

UCR

- Residential spaces
  - Provide Security/Safety
  - One custodian closet per floor
  - No deadbolts
  - Lighted connections between communities, for safety
  - Designated smoking areas
  - Deficiency of Meeting/reading space, need more in Glen Mor II
  - Flexible rooms with operable walls are desirable.
  - Smart spaces: Fully outfitted rooms with projectors, screens, wireless
  - Swimming Pool Space needs to energized with community/amenity program
  - Other activities: Ping Pong
  - Single occupancy sells
  - Double occupancy has problems selling
  - Suggest making 2 bedroom units double occupancy instead of 4 bedroom units: 4 students in an apartment are manageable, 8 is pushing it.
  - Exit only stairs not an issue, helps control access
  - All elevators card access? Currently, only exterior entries including elevators require this

- RSO Program comments
  - 2 resident director offices w/ meeting capability – 160 ASF
  - Mail Room with boxes accessible from back/front desk staff
  - Provide separation between "public" and "private" spaces
  - Need back door/private entrance separate from main entry
  - Faculty in Residence office 120 ASF
  - Bigger lobby
  - Provide space for Counselor in residence
  - Conference adjacent to RSO but separate
  - RSO should be central/proximate to all
  - Consider two restrooms: one public one staff
  - Consider separating professional workstations from student workstations
  - Operations staff office (janitors) near RSO
  - Storage/Maintenance shop adjacent to RSO

10:45 – 12:15 User Group #2:

Maintenance, Facility Services, Custodial Services

Tim Stevens presented Draft PROGRAM established in Workshop #1 for review.

Draft Program was identified as a 'soft' document intended to be edited throughout the Workshop phases. The following comments were recorded.

Tim, Grounds Services

- Landscape
  - Indigenous planting at south of Glen Mor I along arroyo is a fire hazard when dormant
  - Consider water conservation recycling for irrigation
  - Incorporate drought tolerant plants
  - Irrigation run-off contributes to arroyo erosion issues, causing deterioration of the

perimeter. Need to minimize run-offs.
  - More attention needs to be paid to tree/plant selection and location
  - Irrigation design needs to be coordinated with plant selection, particularly height conflicts
  - Provide better depth/coverage of mulch
  - Irrigation zones: pay attention to orientation, North, South, East, West
  - Soil amendments for better water retention

- Facilities, Building Systems
  - Prefer 4 pipe system but split system has been OK
  - Students like control of thermostats in every unit
  - Service for changing fan coil filters is maintenance issue: it takes several screws to remove the fan coil cover. Provide easier access on next project.
  - Boiler vents still an issue
  - Next time keep high impact gypsum board specified at corridors(Value Engineered item in Phase I)
  - Fire annunciators not necessary in every RA Room, need more centralized system. "Troubles" set off panel and wake RA's.
  - Change the fire annunciator in the RA rooms to mirror what is used in Pentland Hills

- Plumbing: Students think shower pressure too low, Maintenance thinks it is OK
  - Roll-in shower has drainage issues

- Windows: Hard to operate, Milgard has been replacing units
- Doors: Laundry, Stair, Computer Lab doors do not close, air pressure needs to be balanced
  - Front entry doors have delay need to adjust closer time
  - Provide sweep for entry doors to keep out bugs

- Material Quality: VCT and Carpet are OK. Like stained concrete, need better installation
- Trash chutes: Students want them, worth investing? Study how Pentland's works

12:15 – 1:00 Lunch Break

1:00 – 4:30 Building Systems, Sustainable Design, and Budget

Sasaki Consultants: Estimator, Civil, Structural, Mechanical, Electrical, and Plumbing

Structural
- If project is split into two phases then front load utilities
- Most efficient to create building pads then either slab on grade or pier, depends on soil
- **Need to have geotech report for site, UCR to provide what they have on file** **UCR**
- Site seems more pristine than Glen Mor I but report should give us direction
- CHJ should have historical data of geology of site, we can probably make a good estimate from that report
- Utilities are closest to South West portion of site, the closer the building are to utilities = lower costs
- Phasing is tied to demand, if opened today all units would be filled
- Stand alone parking structure is less expensive compared to podium parking.
- $18,000-$20,000 per car for parking structure
- $32,000-$38,000 per car for podium parking structure
- Design/build parking structure providers may provide slightly more economical solutions.
- Superstructure:
  - 6 plus stories, type I const, concrete construction, beyond budget
  - 5 stories, type 3A or B, fire rated
  - 4 stories, type V 1HR fire rated
  - Generally, it is cheaper to add a floor that it is to add a building
  - 5 story metal framed is competitive with 5 story wood frame
- Structured parking near Valencia Hill Dr. will be scrutinized by neighbors

Mechanical
- If 4-pipe system then use central plant (more flexibility) lower cost
  - Split system heat pump = Base Cost
  - Multi heat pump = 2X base cost
  - 4 pipe system = 4X base cost
- Multi heat pump advantage is that it is 20% more efficient and Maintenance is much less since there are fewer units
- Consider passive solar shading at windows
- If podium parking, then need to consider garage ventilation
- Sasaki to include lot 14, from Val Hill to East of Lothian, From Big Springs Road(N. of double row of trees) to Arroyo as part of site studies
- Solar heating hot water is desired
- Must justify payback based on operations and budget savings
- Sasaki will investigate what energy rebates are available during design

Electrical
- Overhead lighting in living room is preferred, item was value engineered out in Glen Mor I
- Per Jack Khalifeh, photovoltaics are a 30 year payback without grants.
- Get info from Don Caskey & Campus: discussions regarding solar institutional work that has already been done

Water Reclamation
- Difficult in some jurisdictions to get grey water approved
- Capture sink and shower water, packaged filter, Sasaki to study
- Santa Ana water control board: What will be allowed? Sasaki to study
- 20% higher plumbing cost but you will save on sewage. Sasaki to study
- Look at payback for grey water. Sasaki to study

Cost Model
- Global Market Still High
- Escalated Glen Mor Phase I(time and size) totals $67.5M(w/out parking)
- On-grade parking for 400 cars totals $2M

- Carry parking below the line for cost estimating purposes as well as bridge and arroyo improvements
- Identify LEED costs, carry above the line
  - Documentation
  - Commissioning

4:30 – 5:00 Wrap-up Session:

Based on the project budget double occupancy bedrooms are not possible. Project Goals/Draft Program will be revised accordingly.

End of minutes

date	21 November 2008		
project name	UCR Glen Mor II Student Housing	project #	84063.00
meeting date	October 20, 2008	time	8:00am - 4:00pm
location	Bannockburn J-102		
recorded by	Angel Cantu – Sasaki Associates		
distribution	Andy Plumley, Susan Marshburn, Yun Baird, Kieron Brunelle, John Coons,Tim Stevens, Jim Jacobs		
purpose	Programming Workshop #3 – Day 1,/Review and Evaluate Program/Unit Plans/Site Planning Alternatives/Conceptual Massing Studies/Sustainable Design Strategies/Comparative Cost Planning/ and Schedule and Delivery Options		

ATTENDEES

See attached attendance sheet

ACTION ITEM

Day 1

8:30 – 12:00 **PMT Meeting** - Review Schedule and Parking

- Schedule and Delivery Methods Comments
  - Glen Mor I construction timeline was compared to Glen Mor II schedule
  - Construction Phasing; 400 beds by 2011 and remainder(400 beds) to follow
  - Fall 2011 delivery date is highly desired
  - Prefer Construction Manager at risk, most likely will not have a Multi-Prime contract
  - We would like to Bridge the 3 month gap for Regent's approval in schedule if possible

- Parking Comments
  - In addition to the existing parking count in Lot 14 we need 176 additional spaces
  - Structure could be built in Lot 21, off site, to allow for housing on lot 14
  - The best place for parking is near housing
  - Parking solution will most likely be a hybrid with some structure parking and some surface parking
  - Regardless of parking solution we need to maintain a connection with Glen Mor I

1:00 – 4:00 **Stakeholder Group Meeting:** Review entire project

- Program Comments
  - Let's move forward with the program as presented even though it looks like it is $5M over budget
  - **We will move forward with common space/amenity program space as presented except that we should add a Staff Break Room with a Kitchenette in the Maintenance Shop** **Sasaki**

- Unit Plan Comments
  - Sasaki presented two unit schemes that responded to site solar orientation. Scheme A is intended for south facing elevations and has compartmentalized bathrooms. Scheme B is intended for north facing elevations and does not have compartmentalized bathrooms.
  - Andy and Susan were intrigued with the design of the site responsive units. They were OK with the bathroom variation in the unit design.
  - **Second bedroom in RD should allow for larger than twin bed, ideally queen.** **Sasaki**
  - **Provide Laundry room access directly from hallway and not through Bedroom.** **Sasaki**

- **Project Site Analysis**
- Alternative A Comments
  - Good sense of vehicular arrival at the entry off of Big Springs Rd.
  - Relocate the turn-around further south near Lothian to strengthen the axis to Glen Mor I.
  - Parking structure is in good location
  - Pool should serve all communities, not only Glen Mor II
  - Don't like building placement on top of hill due to it's close proximity to the neighbors on Valencia Hill Drive. Might cause some negative feedback from the neighborhood.

- Alternative B Comments
  - UPS and Service vehicles need to have direct access to RSO
  - Commons area on East side of site is not desired, it's too far from rest of the community
  - Like the use of RSO location as connector between Glen Mor I and Glen Mor II
  - Podium Parking allows for ease of services like trash management and deliveries
  - Podium Parking has higher operational/security costs
  - Like the use of existing hill top as a buffer to neighbors
  - Lacks sense of entry from parking on south side

- Alternative C Comments
  - Pool exposure is nice
  - Simple Parking Structure is nice

- We like the location of the RSO towards middle of community, very centralized
- Possibly shorten the length of the garage
- It has a "comfortable" feel on site
- Surface parking will need to be reworked South of Lothian
- **Explore the possibility of incorporating the RSO with the parking structure** **Sasaki**

- Alternative D Comments
  - Don't like location of RSO, it's too removed from the rest of the project
  - Goals are not met

- **Sustainability: Kieron suggested costs be assigned to LEED points** **Sasaki**

End of Minutes

date	21 November 2008		
project name	UCR Glen Mor II Student Housing	project #	84063.00
meeting date	October 21, 2008	time	11:00am - 2:30pm
location	Bannockburn J-102		
recorded by	Angel Cantu – Sasaki Associates		
distribution	Andy Plumley, Susan Marshburn, Yun Baird, Kieron Brunelle, John Coons,Tim Stevens, Jim Jacobs		
purpose	Programming Workshop #3, Day 2 - Define Preferred Alternative, Delivery Methods, Parking and Budget		

ATTENDEES	ACTION ITEM
See attached attendance sheet	
Day 2	
11:00 – 12:00 PMT Meeting – General Comments on Site Alternatives	
• **We like different qualities of each Alternative: a Hybrid Scheme might be the solution**	**Sasaki**
• **We like the formal entry of Scheme A, but it should be moved towards the center of the community**	**Sasaki**
• **We like parking structure of Schemes A and C**	**Sasaki**
• **We like the RSO in Scheme B, but location should bridge Arroyo and Big Springs**	**Sasaki**
• **Move Housing towards the Southwest portion of site, closer to Lothian**	**Sasaki**
12:00 – 1:00 Parking, Mike Delo	
• Consider Landscaping existing hill and site along Valencia Hill Drive as soon as possible to lessen the project impact on the neighbors	
• 3-bay parking structure is preferred, it is easier to navigate up and down ramps	
• There should be direct access between the parking garage and Glen Mor I	
• Structure will serve Glen Mor I, Glen Mor II, and Lothian	
• Disabled parking should be distributed throughout all levels of parking structure	
• Open air type Parking Structure is preferred	
• Parking structure should have a strong connection to Glen Mor I and could form "Community Spine" through the Glen Mor development	
• Incorporate Visitor parking into overall design	
• **Need Parking Cost estimate from Sasaki so that UCR can decide what is feasible**	**SASAKI/UCR**
1:00 – 2:30 Schedule	
• Schedule has a 3 month gap in it for Regents approval; in order to deliver the project on 2011 is there a way for Sasaki to continue work during the approval process? Sasaki can not proceed with out the approval from Regents	
• Glen Mor I had a 5 ½ month overlap between design documents and construction, in that project we incorporated a multi prime contract with a multi bid - fast track schedule	
• Glen Mor II 2011 delivery date suggests we will have a 6 ½ month overlap to deliver 400 beds	
• With Sasaki's' assistance UCR needs to submit a reliable budget, program, and schedule to the Regents for review(DPP)	
• UCR is off from December 24 - January 1	
• **DRB and C3 are Campus Advisory boards which are scheduled for early December and mid January respectively, Sasaki could have these approvals started early if allowed.**	**SASAKI**
• CEQA at minimum takes 5 months to review, can start in April	
• We should have Regents approval by Mid March	
• A Construction Manager at Risk can not be hired until we complete Schematic Design and have CEQA approval	
• Given these conditions a project delivery of July 2011 is not possible, **Sasaki to study schedule for delivery of project by July of 2012**	**SASAKI**
• **Wrap-up**	
• **Arroyo Study, review list of deliverables for "Arroyo Vision". Tricia to submit for Jurisdictional Review**	**SASAKI**
• **Program Scope, Add Break Room to Maintenance**	**SASAKI**
• **Site Alternative, Study variation of scheme C**	
• For the RD units, increase the ASF of the second bedroom by deleting the third bedroom and creating a Laundry Room.	**SASAKI**
• Parking Structure, prefer 3 bay to 2 bay structure	
• Budget: Keep escalation below the line in the cost model	
• Next conference call meeting will be next week. Day and time to be determined.	
• Next Workshop is on November 17th, 2008	
End of Minutes	

minutes

date	25 November 2008		
project name	UCR Glen Mor II Student Housing	project #	84063.00
meeting date	November 17, 2008	time	8:30am - 5:00pm
location	Bannockburn J-102		
recorded by	Angel Cantu – Sasaki Associates		
distribution	Andy Plumley, Susan Marshburn, Yun Baird, Kieron Brunelle, Tim Brown, John Coons, Tim Stevens, Jim Jacobs		
purpose	Programming Workshop #4: Review Development of Preferred Site and Building Design Alternative		

ITEM	ACTION ITEM
Attendees: See attached attendance sheet	
8:30 – 9:00 **PMT Meeting** - Review Deliverables Schedule	
• **DRB Presentation**, December 2nd from 11AM - 2PM.	**SASAKI**
• **Pre - C3 Review**, December 9th, 8AM via conference call	**SASAKI**
• **C3 Review**, December 18th from 2PM - 3PM	**SASAKI**
• **Draft DPP**, Due December 12th	**SASAKI**
9:00 – 12:00 **Review of Project Goals, Program, Unit Types, Building Diagrams, and the Preferred Site Alternative**	
• **Project Goals Comments**	
o Need to differentiate between customer parking and guest parking and verify that we are accounting for each in the required parking number. See Item 12:00- 1:00 Parking resolution	
• **Program Comments**	
o Mail Room: Provide a separate 250 S.F. storage room for packages	**SASAKI**
o Executive Retreat: Show 600 S.F. for each studio apartment, add a storage room for conference room tables/chairs (250 S.F.), show the Custodial Room with 100 S.F., add a public restroom for conference room.	**SASAKI**
o Community Area/RSO: Show public restroom but do not include area in ASF program number	**SASAKI**
o Revise description/quantity of Custodial Services and Housekeeping Closets; Show 1 Housekeeping Services (with mop sink) per building and 1 Custodial Closets (with storage) per floor.	**SASAKI**
o Show Operations Office, Maintenance Shop/Storage, and Maintenance Break Room/Kitchenette adjacent to one another.	**SASAKI**
• **Building Diagram Comments**	
o Revise RSO Diagram per user comments	**SASAKI submitted on 11/25/08 for review**
• **Preferred Site Alternative Comments**	
o Extend Arroyo rehabilitation work to include area East towards Valencia Hill Drive and area west towards crossing by northwest corner of Lothian.	**SASAKI**
o At Executive Retreat show ADA access, both vehicular and pedestrian, delivery access/parking for catering, and two guest parking spaces for studios.(total of 4 parking spaces)	**SASAKI**
o Show walking path to Executive Retreat from housing development.	**SASAKI**
o Entering the circle drive from the west on Big Springs Road provide a dedicated left turn lane.	**SASAKI**
o Parking Structure will be accessible (enter/exit) from both drives, provide gate with card access for security. Provide 10-15 guest parking spaces either inside or outside the parking structure. If guest parking is provided inside the parking structure provide card access security gate beyond this area.	**SASAKI**
o Incorporate CAMPS into Big Springs Road layout/design.	**SASAKI**
o Do not show pedestrian access along Valencia Hill Drive.	**SASAKI**
o Show how buildings are serviced for trash and general loading/unloading.	**SASAKI**
12:00-1:00 Parking	
• Mike Delo agreed to allow parking for Housing at Lot 27(80 spaces). Therefore the parking count as presented was approved (see attached Parking Review by UCR) Per program requirements 176 additional parking spaces are required in addition to the 420 existing parking spaces in lot 14 or 596 total parking spaces (176+420). The parking structure as presented by Sasaki shows a total of 596 parking spaces.	
1:00-2:00 Project Schedule Comments	
• Agreed that CM at Risk can and should come on early, preferably at the start of Schematic Design. RFQ for CM at Risk may come out immediately after budget is approved.	
• Regents approval will be requested January 2009	
• CEQA will take 6-9 months	
2:00 – 3:00 LEED Comments	
• Provide cost per LEED Point	**SASAKI**
• Consider using Dual Flush water closets	**SASAKI**
• Andy would like to see Zipcar or TAPS incorporated into project.	**SASAKI**
3:00 – 4:00 Cost Model and Budget Review Comments	
• Bridges: need to include piers if required by manufacturer	**SASAKI submitted on 11/24/08**
• Add commissioning below the line	**SASAKI submitted on 11/24/08**
• Budget for Exit/Entrance drive at southeast of parking structure off Big Springs Road will be allocated to Transportation and Parking Services.	**SASAKI submitted on 11/24/08**
• Add solar hot water for pool below the line	**SASAKI submitted on 11/24/08**
• Show rebate for PV	**SASAKI submitted on 11/24/08**
• Delete telecomm duct bank from BDF to BDF.	**SASAKI submitted on 11/24/08**
• Carry traction type elevators for Residence halls (5) and hydraulic	**SASAKI**

elevators for RSO(1) and garage(1)

- Include all apartment appliances in budget
- Do not include apartment furniture in budget
- Add demolition of existing house
- Verify number is included for bedrock site/demolition work
- Add cable television to each bedroom, including living room
- Add wireless inside and outside of building
- Add card key access hardware at main entry of every apartment
- Add trash enclosures
- Add charging stations for gem carts
- Add median work in Big Springs Road
- Add 1300 mail boxes

End of Minutes

SASAKI submitted on 11/24/08
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SASAKI submitted on 11/24/08
SASAKI submitted on 11/24/08

The information above will stand as recorded unless Sasaki receives written comments within five days of the distribution date from a recipient requesting an amendment.

6.2

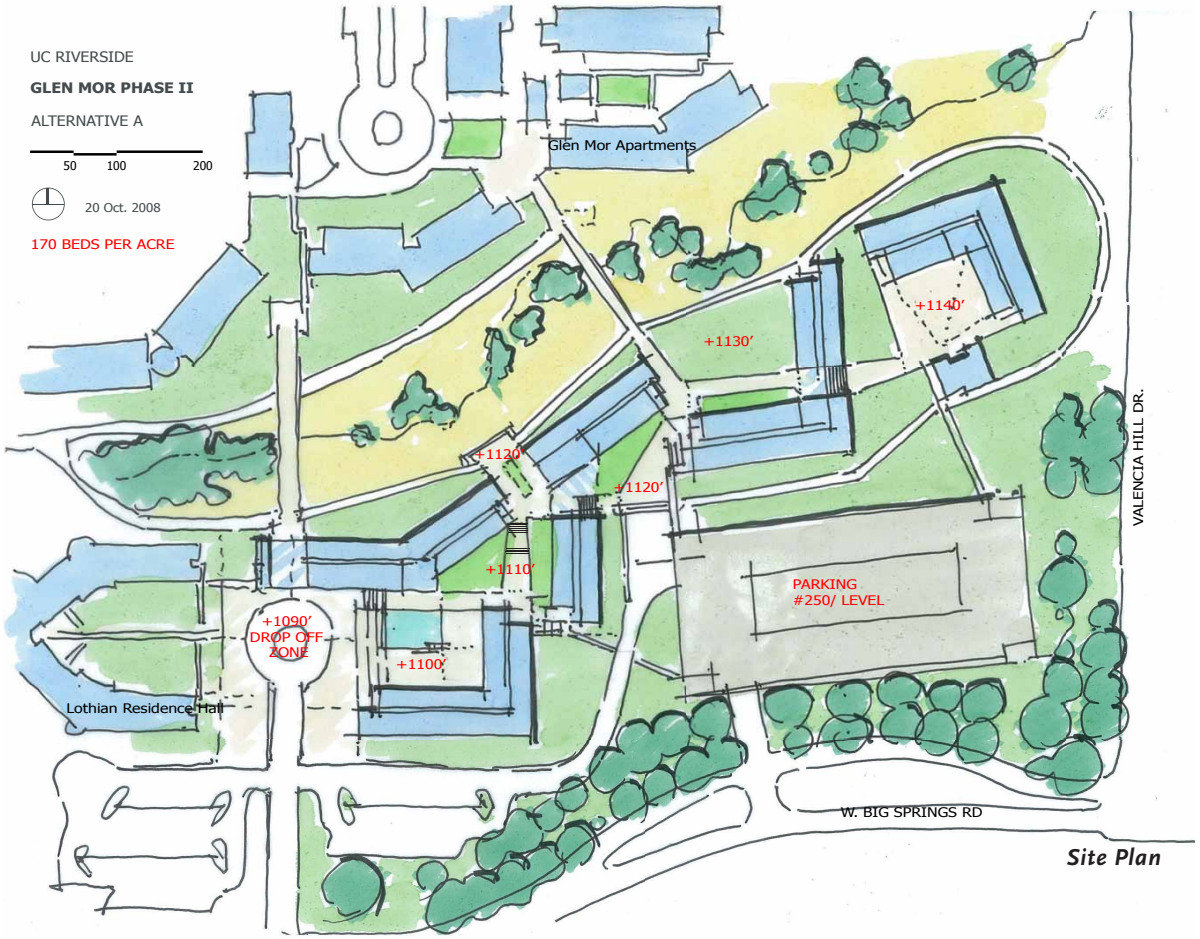
ALTERNATIVE STUDIES

ALTERNATIVE A

This scheme tested all the apartment units in four-story wood-framed buildings, similar to Glen Mor 1, organized around a series of linked courtyards that were terraced up the slope of the site. A vehicular drop-off, RSO, and pool deck anchored the west end of the community, adjacent to Lothian Residence Hall. Parking was accommodated in a three level structure at the southeast corner of the site.

PROS: Formal vehicular arrival, parking structure location, 3-bay parking structure design

CONS: Close proximity of the building on top of the hill to the neighborhood



Site Plan

View from south

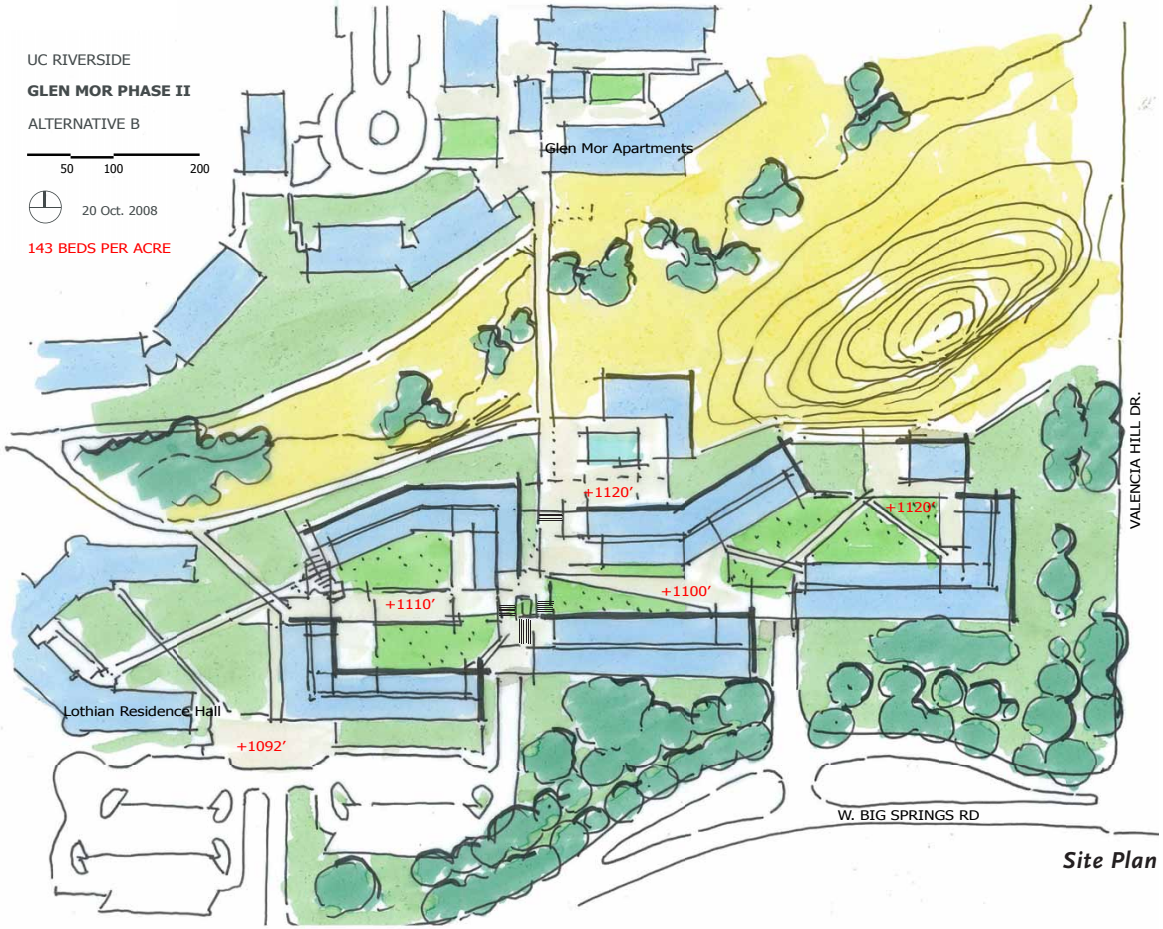
View from north

ALTERNATIVE B

This scheme studied the application of a developer-type podium structure on the site. Parking was accommodated under the podium structure, which was entered from Big Springs Road. Four-story wood-framed apartment buildings were situated on the podium deck. The RSO and community spaces were centrally located to both the Glen Mor 1 and 2 communities.

PROS: Central RSO; least impact to most challenging portion of site

CONS: Lacks sense of entry from parking on the south side; security issues with podium parking



Site Plan

View from south

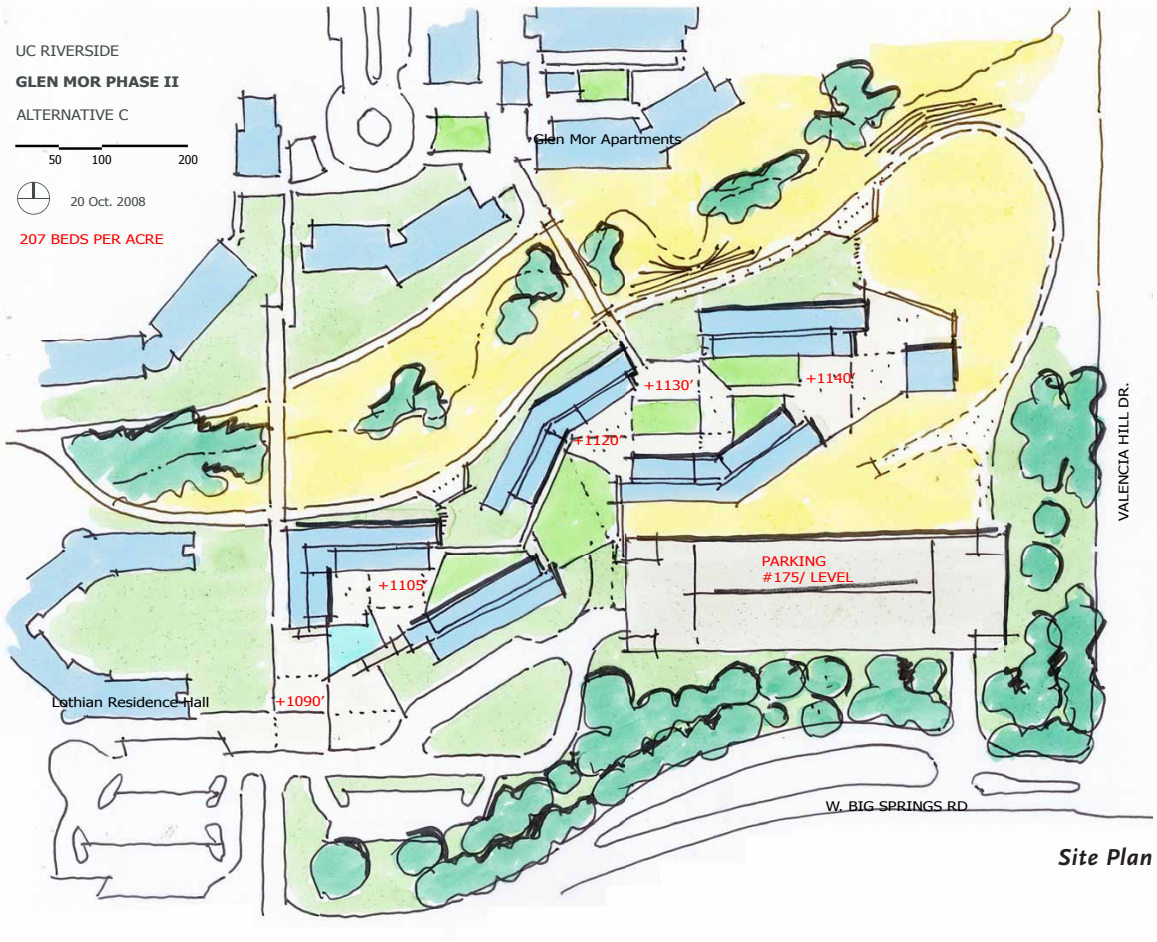
View from north

ALTERNATIVE C

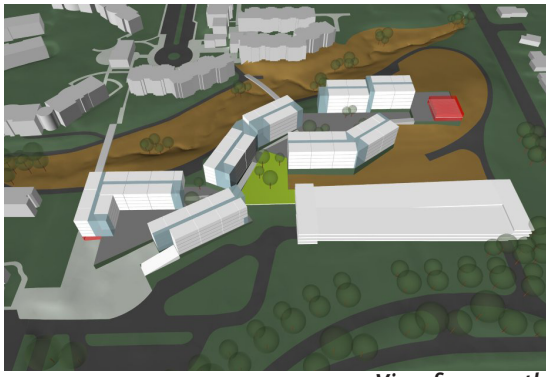
This scheme explored the impact of consolidating the residential program in five-story buildings, which resulted in correspondingly more open space. A 2-bay parking structure occupied the southeast corner of the site, and a vehicular arrival zone was located in the generally level area adjacent to Lot 14.

PROS: Five-story building configurations, overall site density

CONS: No known cons



Site Plan



View from south

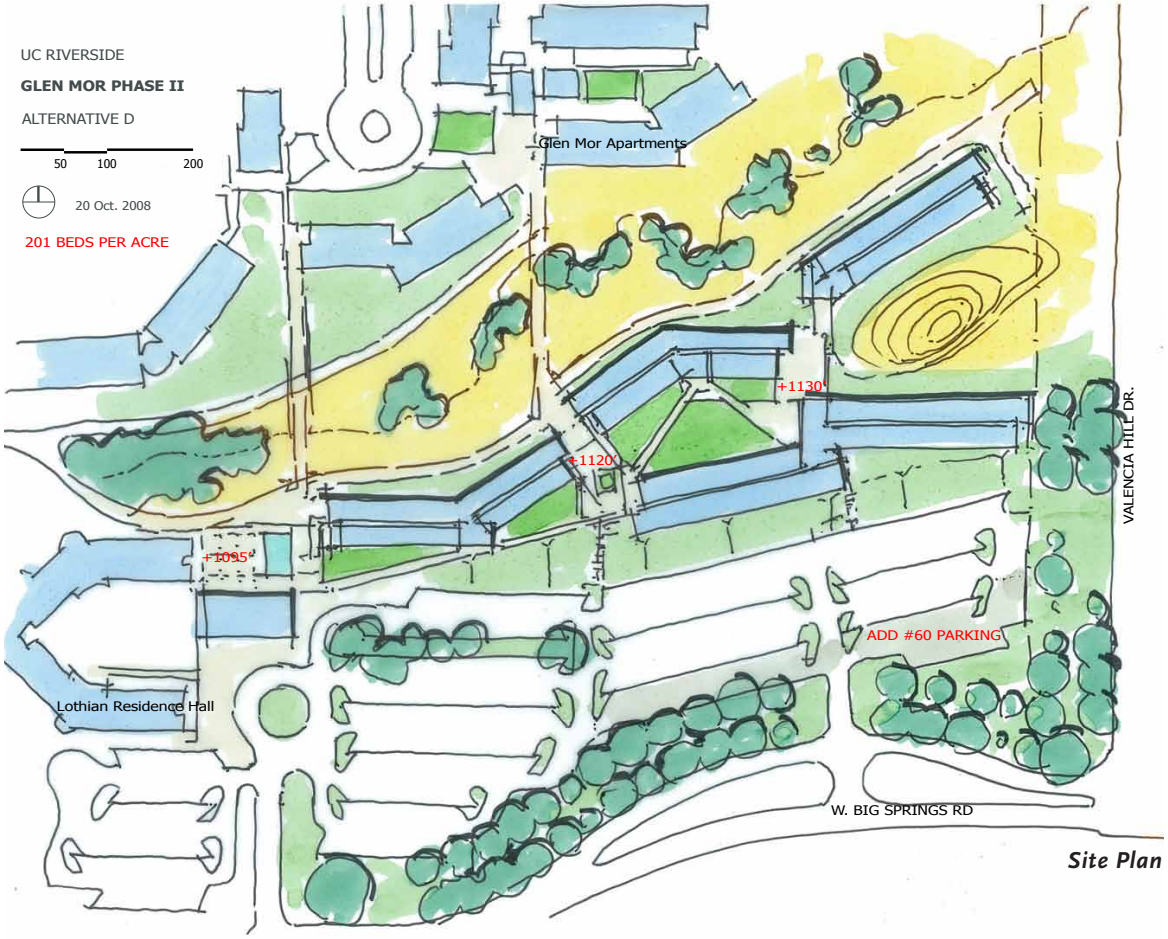
View from north

ALTERNATIVE D

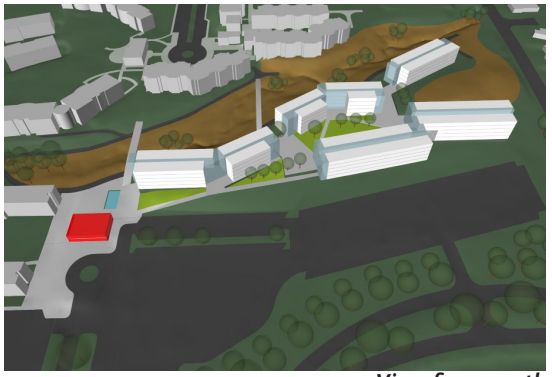
The sole intent of this scheme was to test the physical accommodation of the site area not currently occupied by Lot 14 – thus preserving the existing surface parking lot. This largely academic exercise was intended to challenge the level of commitment to planning for a parking structure on-site.

PROS: No known pros

CONS: RSO is removed from the rest of the project; project goals are not met



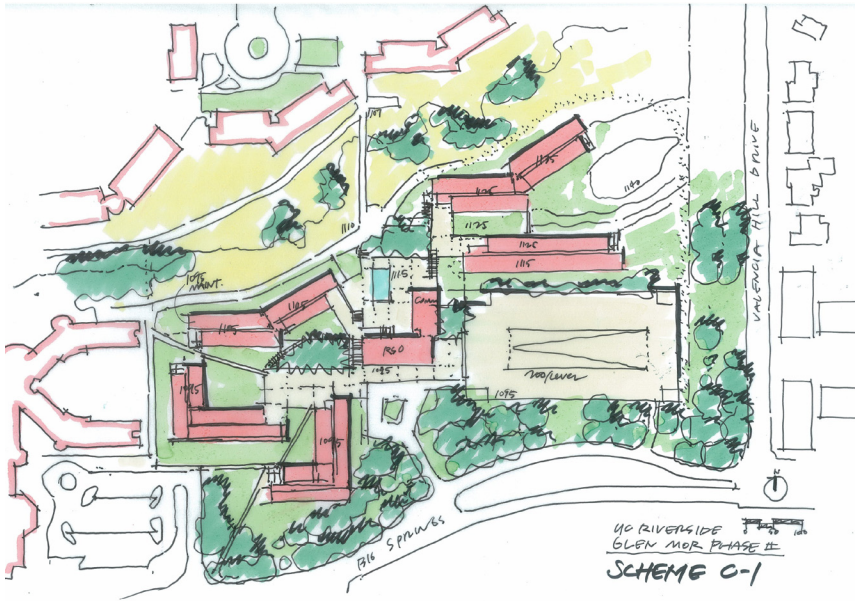
Site Plan

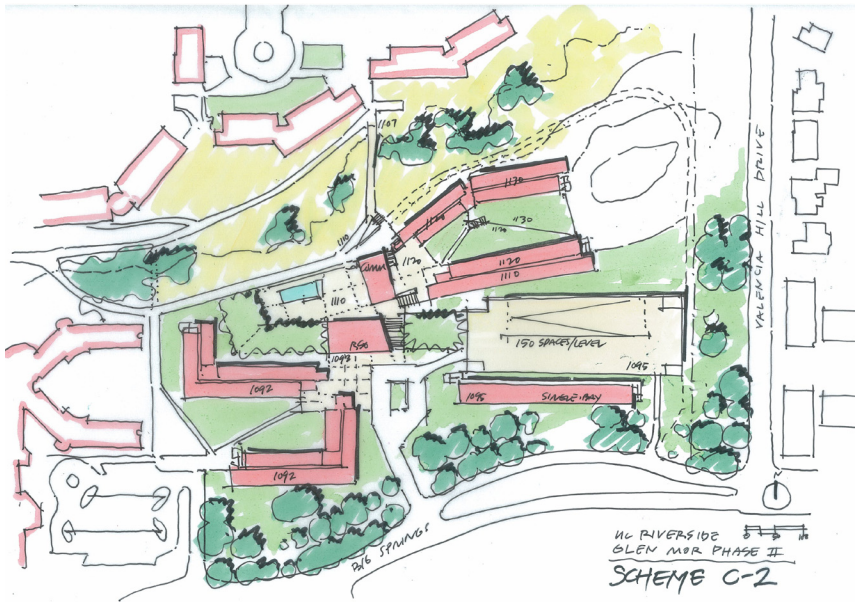


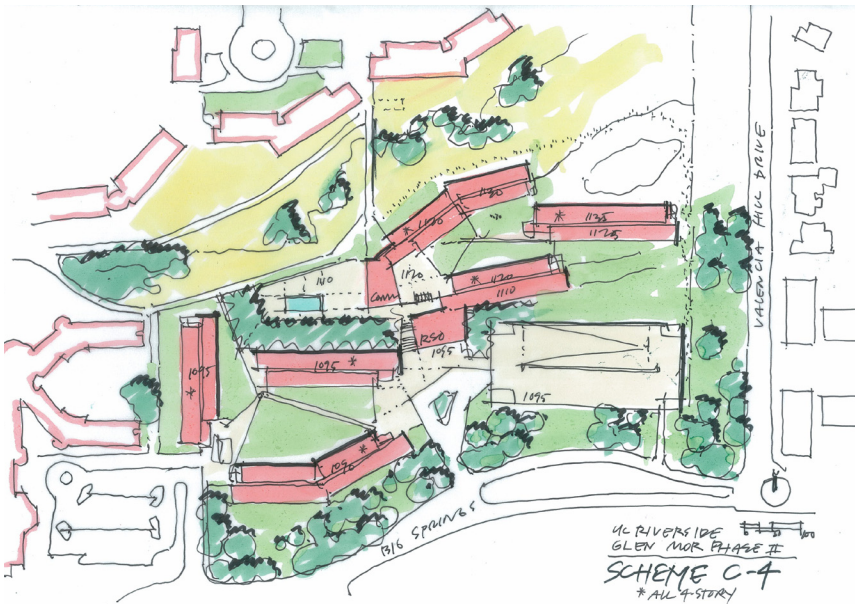
View from south

View from north

PREFERRED FRAMEWORK ALTERNATIVES







6.3

DETAILED COST MODEL

DETAILED COST MODEL

for

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

February 18, 2009

DAVIS LANGDON
301 Arizona Avenue
Suite 301
Santa Monica
California 90401
Tel: 310.393.9411
Fax: 310.393.7493
www.davislangdon.com

DETAILED COST MODEL

for

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

Sasaki Associates, Inc
77 Geary Street
Fourth Floor
San Francisco, California 94108

Tel: (415) 776-7272
Fax: (415) 202-8970

DAVIS LANGDON
February 18, 2009

CONTENTS

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

Detailed Cost Model
February 18, 2009
0168-7833.110

BASIS OF

Prepared From	Dated	Received
Drawings issued for	11/07/08	11/07/08
Unit Plans A and B		
Community and RSO space diagrams		
Residential Building diagrams		
Glen Mor 2 program area tabulation		
Site Costing Diagrams		
Site Grading Diagrams		
Parking Structure Floor Plan		
Discussions with the Project Architect and Engineers		

BASIS OF

Conditions of Construction

The pricing is based on the following general conditions of construction

A start date of July 2010

A construction period of 24 months

The procurement will be based on CM-At Risk delivery method

The trade contract will be competitively bid with qualified subcontractors

There will not be small business set aside requirements

The contractor will be required to pay prevailing wages

The general contractor will have full access to the site during normal working hours

INCLUSIONS

The project consists of the construction of (5) - five story housing units, 596 stalls parking structure, and development of associated sitework.

Program areas include (10)1 bedroom units, (36) 2 bedroom units, (4) 2 bedroom RD units and (182) 4 bedroom units, community spaces, small conference facility, resident services office and support spaces.

This cost plan assumes the following building systems:

Housing

Foundation includes conventional spread footing, stepped footing and elevator pit. Allowance for rock excavation is included.

Vertical structure includes metal studs framing with plywood sheathing, reinforced concrete wall on buildings with stepped foundation..

Floor structure include concrete slab-on grade, prefabricated wood joists and plywood sheathing with lightweight concrete fill at suspended floors. Roof structure includes prefabricated wood joists with plywood sheathing. It also includes gypsum board underlayment.

Exterior cladding includes metal stud framing and cement plaster with allowance for architectural detailing, gypsum board lining to interior face of exterior walls, glazed aluminum framed windows and entrances.

Roofing and waterproofing include waterproofing to retaining walls, slabs and elevator pits, insulation, built-up roofing, flashing and sheetmetal.

Interior partitions include drywall partitions, sound insulation and solid core wood doors.

Floor finishes include colored concrete at lobbies, carpet to bedrooms, vinyl tiles to kitchen and toilets, carpet to corridors, vinyl tiles to support spaces, quarry tiles to commons kitchen, sheet vinyl to laundry, carpet to administrative and sealed concrete to utility rooms. Wall finishes include painting and acoustic panel. Ceiling finishes include acoustic lay-in tiles, painting to exposed gypsum board , gypsum board ceiling and painting to exposed structure.

Function equipment includes allowances for code and directional signage and fire extinguisher cabinets. Also included are shelving and millwork, built-in cabinets and countertops, and residential appliances.

INCLUSIONS

Plumbing includes sanitary fixtures, waste, vent and domestic hot and cold water, laundry, kitchen equipment connections, water heating equipment, roof drainage and natural gas.

HVAC includes an air cooled (split) heat pump system, including corridor ventilation.

Electrical includes normal, machine, equipment and user convenience power (MC cabling where appropriate), lighting (MC cabling where appropriate), door bell, telephone/data, TV, fire alarm and housing unit entry and building entry (card-key) security.

Fire protection includes automatic wet sprinkler systems - complete.

Sitework Associated with Housing

Sitework is presented in 3 zones, Zone A - Housing, Zone B - Arroyo and Zone C - Valencia Hill Drive New Landscape Buffer

Zone A includes 10.2 acres development. Allowances are provided for site demolition, building demolition (including hazmat abatement), grading (cut/fill), paving and surfacing, landscaping, allowance for swimming pool and prefabricated pedestrian bridge and vehicular bridge.

Zone C includes new landscape buffer along Valencia Hill Drive.

Site utilities include site drainage, domestic and fire water, sewer, gas, electrical mains power, telecommunications/signals (conduit only).

Parking (596 stalls) and Associated Sitework

Parking costs include conventional spread footing, reinforced concrete retaining wall on the north side, reinforced concrete columns and shearwalls supporting post tensioned flat slabs, combination landscape screen, brick veneer and railing for the facade, exposed soffits and painted walls, sliding gate, code required signage and parking control equipment.

Site costs associated with parking include site clearing and grading to areas within 5' of the parking perimeter, perimeter landscape, protection of the existing landscaping, new access drive from Big Springs Road and median island.

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California
Detailed Cost Model
February 18, 2009
0168-7833.110

INCLUSIONS

BIDDING PROCESS - MARKET CONDITIONS

This document is based on the measurement and pricing of quantities wherever information is provided and/or reasonable assumptions for other work not covered in the drawings or specifications, as stated within this document. Unit rates have been obtained from historical records and/or discussion with contractors. The unit rates reflect current bid costs in the area. All unit rates relevant to subcontractor work include the subcontractors overhead and profit unless otherwise stated. The mark-ups cover the costs of field overhead, home office overhead and profit and range from 15% to 25% of the cost for a particular item of work.

Pricing reflects probable construction costs obtainable in the project locality on the date of this statement of probable costs. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors and general contractors, with a minimum of 4-5 bidders for all items of subcontracted work and 7-8 general contractor bids. Experience indicates that a fewer number of bidders may result in higher bids, conversely an increased number of bidders may result in more competitive bids.

Since Davis Langdon has no control over the cost of labor, material, equipment, or over the contractor's method of determining prices, or over the competitive bidding or market conditions at the time of bid, the statement of probable construction cost is based on industry practice, professional experience and qualifications, and represents Davis Langdon's best judgement as professional construction consultant familiar with the construction industry. However, Davis Langdon cannot and does not guarantee that the proposals, bids, or the construction cost will not vary from opinions of probable cost prepared by them.

EXCLUSIONS

Compression of schedule, premium or shift work, and restrictions on the contractor's working hours

Design, testing, inspection or construction management fees

Architectural and design fees

Scope change and post contract contingencies

Assessments, taxes, finance, legal and development charges

Environmental impact mitigation

Builder's risk, project wrap-up and other owner provided insurance program

Land and easement acquisition

Cost escalation beyond midpoint of construction

Owner supplied and installed furniture, fixtures and equipment

Loose furniture and equipment except as specifically identified

Utility connection charges and fees

Emergency power (excepting exit lighting battery back-up)

Public address

Site telecommunications/signals cabling

Major utility relocations

Storm water containment

Window treatment

Audio/visual/TV equipment and cabling

Fire water booster systems

Glen Mor 2 Student Housing
University of California, Riverside
Riverside, California

Detailed Cost Model
February 18, 2009
0168-7833.110

EXCLUSIONS

Kitchen hood exhaust system (assumed recirculation type)

Telephone/data - "back bone" cabling (between distribution frames)

Telephone/data "active" equipment - including hubs, routers, LAN, servers, switches and the like

Horizontal distribution conduit re: fire alarms, security, telephone/data and cable T.V. (J-hooks)

Out-door secondary feeders (assumed sub-stations immediately adjacent to buildings)

Renewable power

OVERALL SUMMARY

	Gross Floor Area	$ / SF	$x1,000
Housing Units	334,187 SF	228.46	76,347
Sitework			
Zone A - Housing (Including Bridges)			10,802
Zone B - Arroyo			1,078
Zone C - Valencia Hill Drive New Landscape Buffer			183
SUB- TOTAL Housing & Sitework Construction	***July 2010***		***88,410***
Parking Structure (596 Stalls)	190,720 SF	57.33	10,934
Sitework Associated with Parking Structure			365
SUB-TOTAL Parking & Sitework Construction	***July 2010***		***11,299***
TOTAL Building & Sitework Construction	***July 2010***		***99,709***
Premium for CM-At Risk Contract	4%		3,988
Alternates			
Alternate 1: Photovoltaics			544
Alternate 2: Grey water collection system			129
Alternate 3: LEED Third Party Testing & Commissioning			194
Alternate 4: Solar heating to the pool			45
Structural Framing Alternates			
Option 1. All wood framed structures			(5,780)
Option 2. Metal stud and joist framed structures			2,130
Option 3. Metal stud with wood framed floor hybrid (Base option - included in the cost plan)			
Option 4. Metal stud walls with concrete on metal deck floors			7,196

Please refer to the Inclusions and Exclusions sections of this report

HOUSING UNITS AREAS & CONTROL QUANTITIES

Areas

	SF	SF	SF
Enclosed Areas			
Housing Units	334,187		
SUBTOTAL, Enclosed Area		334,187	
Covered area			
SUBTOTAL, Covered Area @ ½ Value			
TOTAL GROSS FLOOR AREA			334,187

Control Quantities

				Ratio to Gross Area
Functional Units		814	Beds	2.448
Number of stories (x1,000)		27	EA	0.081
Gross Area		334,187	SF	1.000
Enclosed Area		334,187	SF	1.000
Footprint Area		56,514	SF	0.169
Volume		3,397,576	CF	10.167
Gross Wall Area		195,511	SF	0.585
Retaining Wall Area		2,830	SF	0.008
Finished Wall Area		192,681	SF	0.577
Windows or Glazing Area	13.98%	27,336	SF	0.082
Roof Area - Flat		66,817	SF	0.200
Roof Area - Total		66,817	SF	0.200
Interior Partition Length		49,036	LF	0.147
Finished Area		334,187	SF	1.000
Elevators (x10,000)		5	EA	0.150
Plumbing Fixtures (x1,000)		1,537	EA	4.599
HVAC		150,000	CFM	0.449
Electrical Load (x1,000)		5,000	kVA	14.962

HOUSING UNITS COMPONENT SUMMARY

		Gross Area: 334,187 SF	
		$/SF	$x1,000
1. Foundations		5.77	1,927
2. Vertical Structure		17.27	5,772
3. Floor & Roof Structures		21.47	7,176
4. Exterior Cladding		14.58	4,872
5. Roofing, Waterproofing & Skylights		2.13	712
Shell (1-5)		61.22	20,459
6. Interior Partitions, Doors & Glazing		20.66	6,904
7. Floor, Wall & Ceiling Finishes		7.09	2,368
Interiors (6-7)		27.75	9,272
8. Function Equipment & Specialties		11.52	3,849
9. Stairs & Vertical Transportation		5.61	1,875
Equipment & Vertical Transportation (8-9)		17.13	5,724
10. Plumbing Systems		16.29	5,445
11. Heating, Ventilating & Air Conditioning		20.00	6,684
12. Electric Lighting, Power & Communications		29.54	9,871
13. Fire Protection Systems		4.50	1,504
Mechanical & Electrical (10-13)		70.33	23,504
Total Building Construction (1-13)		**176.43**	**58,959**
14. Site Preparation & Demolition		0.00	0
15. Site Paving, Structures & Landscaping		0.00	0
16. Utilities on Site		0.00	0
Total Site Construction (14-16)		**0.00**	**0**
TOTAL BUILDING & SITE (1-16)		**176.43**	**58,959**
General Conditions	7.00%	12.35	4,127
Contractor's Overhead & Profit or Fee	3.00%	5.66	1,893
PLANNED CONSTRUCTION COST	***February 2009***	**194.44**	**64,979**
Contingency for Development of Design	10.00%	19.44	6,498
Escalation to Midpoint (July 2011)	6.81%	14.57	4,870
RECOMMENDED BUDGET	***July 2010***	**228.46**	**76,347**

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
1. Foundations				
Overexcavation				
Over-excavate existing soils under building footprint, 5' deep	10,466	CY	18.00	188,388
Premium for rock excavation	1	LS	150,000.00	150,000
Reinforced concrete including excavation				
Reinforced concrete spread footing system	56,514	SF	20.00	1,130,280
Reinforced concrete stem walls	7,874	SF	45.00	354,330
Premium for stepped foundations	283	LF	50.00	14,150
Pits				
Elevator pits	6	EA	15,000.00	90,000
				1,927,148
2. Vertical Structure				
Loadbearing walls				
Metal studs framing with plywood sheathing; exterior	195,511	SF	14.00	2,737,154
Metal studs framing with plywood sheathing; interior	206,684	SF	14.00	2,893,576
Retaining walls				
Reinforced concrete retaining walls	2,830	SF	50.00	141,500
				5,772,230
3. Floor and Roof Structure				
Floor at lowest level				
Reinforced concrete slab on grade including thickenings	56,514	SF	8.50	480,369
Suspended floors				
Prefabricated wood joists	248,723	SF	8.00	1,989,784
Plywood floor sheathing with lightweight concrete infill	248,723	SF	8.00	1,989,784

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Gypsum board underlayment, underneath floor joists	248,723	SF	4.00	994,892
Flat roofs				
Prefabricated wood joists	66,817	SF	8.00	534,536
Plywood floor sheathing with lightweight concrete infill	66,817	SF	8.00	534,536
Gypsumboard underlayment, underneath roof joists	66,817	SF	4.00	267,268
Equipment pads, equipment curbs and wall curbs				
Allowance for concrete pads, curbs and walkway	1	LS	50,000.00	50,000
Miscellaneous				
Miscellaneous framing, bracing, blocking and metals	334,907	SF	1.00	334,907
				7,176,076
4. Exterior Cladding				
Wall framing, furring and insulation				
Thermal insulation in external walls	187,637	SF	0.75	140,728
Applied exterior finishes				
Cement stucco, painted	187,637	SF	14.00	2,626,918
Interior finish to exterior walls				
Gypsum board, taped and sanded	187,637	SF	3.50	656,730
Painting to gypsum board surfaces	195,511	SF	0.65	127,082
Windows, glazing and louvers				
Glazed aluminum framed windows	27,336	SF	36.00	984,096
Exterior doors, frames and hardware				
Glazed aluminum framed entry doors	5	EA	5,000.00	25,000
Allow for exterior doors	1	LS	30,000.00	30,000
Fascias, bands, sunscreens and trim				
Architectural detailing	187,637	SF	1.50	281,456
				4,872,009

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
5. Roofing, Waterproofing & Skylights				
Waterproofing				
Elevator pits	6	EA	1,500.00	9,000
Walls below grade	10,704	SF	8.50	90,984
Insulation				
Batt insulation under roof structure	66,817	SF	1.00	66,817
Roof covering				
Built-up roofing membrane	66,817	SF	4.00	267,268
Roofing upstands and sheet metal				
Flashing and trim, roof specialties and accessories	66,817	SF	1.50	100,226
Roof access and ventilation				
Roof access and hatch	1	LS	10,000.00	10,000
Caulking and sealants				
Miscellaneous caulking and sealants	334,907	SF	0.50	167,454
				711,748
6. Interior Partitions, Doors & Glazing				
Common Area				
Partition framing and cores				
Shaft walls	2,711	SF	4.00	10,844
Shaft liner	2,711	SF	5.00	13,555
Gypsum board lining , taped and sanded	209,395	SF	4.00	837,580
Paint to gypsum board	209,395	SF	0.75	157,046
Window walls and borrowed lights				
Allowance for glazed window with hollow metal frames	1	LS	30,000.00	30,000

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Interior doors, frames and hardware				
Hollow metal exterior doors, frames and hardware				
Single leaf	240	EA	1,500.00	360,000
Allow for interior doors to common area / staircases, etc.	1	LS	75,000.00	75,000
Elevator door	27	EA	4,200.00	113,400
Housing Units				
Partition framing and cores				
Metal studs at 16" o.c				
Non rated walls	285,428	SF	4.00	1,141,712
Partition surfacing				
Gypsum board lining , taped and sanded	570,856	SF	3.00	1,712,568
Painting to gypsum board	570,856	SF	0.75	428,142
Sound insulation				
Batt insulation in walls	285,428	SF	0.75	214,071
Interior doors, frames and hardware				
Solid core wood door with hollow wood frame and hardware				
Single leaf, sliding door	836	EA	800.00	668,800
Double leaf, sliding closet doors with mirrors (one side)	818	EA	700.00	572,600
Single leaf	808	EA	700.00	565,600
Flush double door, laundry room	4	EA	800.00	3,200
				6,904,118

7. Floor, Wall & Ceiling Finishes

Common Area				
Community space, Resident service office, Support spaces	18,180	SF	12.50	227,250

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Housing Units				
Floors				
Carpet	125,722	SF	4.00	502,888
Vinyl composition tiles	107,278	SF	3.50	375,473
Bases				
4" painted bases	90,658	LF	1.50	135,987
Ceiling				
Painting to exposed gypsum board ceiling	78,722	SF	1.00	78,722
Acoustic lay-in tiles	47,000	SF	4.00	188,000
Gypsum board ceiling	107,278	SF	8.00	858,224
Ceiling bulkheads, allow	1	LS	1,600.00	1,600
				2,368,144

8. Function Equipment & Specialties

General building specialties				
Allow for fire extinguisher cabinets, code required signage, and miscellaneous specialties	334,187	SF	0.50	167,094
Common Area				
Community space, resident service office, support space, allow for fixed casework, fixed equipment , tackboards and markerboards, toilet accessories, projection screens	14,725	SF	7.00	103,075
Housing Units				
Prefabricated compartments and accessories				
Toilet accessories				
Towel bar	418	EA	35.00	14,630
Toilet paper holder	418	EA	20.00	8,360
Grab bar	418	EA	150.00	62,700
Medicine cabinet	418	EA	100.00	41,800
Mirror	422	EA	100.00	42,200

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Shower accessories				
Soap holder in shower	418	EA	20.00	8,360
Vinyl shower curtain	418	EA	35.00	14,630
Prefabricated shower/ tub	418	EA	450.00	188,100
Cabinets and countertops				
Kitchen countertop	3,198	LF	110.00	351,780
Base cabinets	3,198	LF	150.00	479,700
Overhead wall cabinets	3,944	LF	125.00	493,000
Bathroom countertop	2,898	LF	95.00	275,310
Bathroom base cabinets	2,898	LF	150.00	434,700
Shelving and millwork				
Shelving and rods	4,034	LF	65.00	262,210
Light control and vision equipment				
Window blinds				OFOI
Chalkboards, insignia and graphics				
Unit identification signage	1	LS	80,000.00	80,000
Mailboxes	1,300	EA	150.00	195,000
Special use equipment				
Residential appliances				
Refrigerator	232	EA	1,000.00	232,000
Dishwasher	232	EA	650.00	150,800
Kitchen stove and hood	232	EA	850.00	197,200
Microwave	232	EA	150.00	34,800
Washer/ Dryer	4	EA	3,000.00	12,000
				3,849,449

9. Stairs & Vertical Transportation

Staircase flights, floor ro floor				
Fire exit stairs	42	EA	18,000.00	756,000

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Ladders and fire escapes				
Metal access ladders	1	LS	4,000.00	4,000
Elevators				
Traction passenger elevators				
Building A , 5 stops	1	EA	200,000.00	200,000
Building B, 5 stops	1	EA	200,000.00	200,000
Building C , 5 stops	1	EA	200,000.00	200,000
Building D , 6 stops	1	EA	220,000.00	220,000
Building E , 6 stops	1	EA	220,000.00	220,000
Hydraulic passenger elevator				
RSO building, 2 stops	1	EA	75,000.00	75,000
				1,875,000

10. Plumbing Systems

Sanitary fixtures and local connection pipework	1,537	FX	)	
Water closets	431	EA	1,250.00	538,750
Kitchen sink, garbage disposal	239	EA	1,150.00	274,850
Lavatories	431	EA	1,200.00	517,200
Tub/shower	431	EA	1,500.00	646,500
Service sinks	5	EA	2,150.00	10,750
Sanitary waste, vent and service pipework				
Hose bibbs, 1/2", including connection pipework, fittings	20	EA	5,000.00	100,000
Floor drains and sinks, < = 6", connection pipework, fittings	5	EA	5,000.00	25,000
Rough-in sanitary fixtures, including waste, vent and domestic service pipework systems	1,537	EA	2,000.00	3,074,000
Water heating equipment				
Gas, water heating, including storage and circulatory equipment	5	EA	20,000.00	100,000
Natural gas service - centralized water heating only				
Pipework, fittings, < = 2"	500	LF	65.00	32,500

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Valves and specialties	1	LS	25,500.00	25,500
Roof drainage				
Roof, overflow drains, including pipework, fittings, < = 6" (mechanical drainage only)	1	LS	100,000.00	100,000
				5,445,050
11. Heating, Ventilation & Air Conditioning				
(Split) heat pumps, including pipework, 24/7 cooling, air distribution, controls and unit exhaust/ventilation	334,187	SF	20.00	6,683,740
				6,683,740
12. Electrical Lighting, Power & Communication				
Main service and distribution				
Distribution switchboards and feeders	5,000	KVA	175.00	875,000
Machine and equipment power				
Connections and switches, including conduit and cable				
Miscellaneous connections, < 150 A - including mechanical and specialty equipment, elevators, fire alarm and dampers, telephone/data, security and power hardware	1	LS	550,000.00	550,000
User convenience power				
Unit power panels, 120 V, including feeder conduit and cable	232	EA	2,000.00	464,000
Receptacles, including conduit and cable (1/50 SF)	6,600	EA	175.00	1,155,000
Lighting				
Fixtures and switching, including conduit and cable	334,187	SF	6.50	2,172,216

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Lighting and power specialties				
Grounding	1	LS	25,000.00	25,000
Lighting control panels	10	EA	15,000.00	150,000
Front door bell	232	EA	375.00	87,000
Telephone and communications				
Telephone/data outlets, conduit (drops only) and cable (1/225 SF)	1,500	EA	675.00	1,012,500
Wireless points	156	EA	4,000.00	624,000
TV - outlets including coax	1,050	EA	550.00	577,500
Alarm and security				
Fire alarm stations/devices, including conduit and cable	334,187	SF	3.75	1,253,201
Security				
(card-key) to housing entry doors	232	EA	1,500.00	348,000
(card-key) to perimeter entry doors only	25	EA	1,500.00	37,500
CCTV cameras and monitoring @ corridors	108	EA	5,000.00	540,000
				9,870,917
13. Fire Protection Systems				
Automatic wet sprinkler system - complete	334,187	SF	4.50	1,503,842
				1,503,842

SITEWORK AREAS & CONTROL QUANTITIES

Areas

	SF	SF	SF
Zone A - Housing	402,930		
Zone B - Arroyo	203,170		
Zone C - Valencia Hill Drive New Landscape Buffer	32,750		
SUBTOTAL, Site Area		638,850	
TOTAL GROSS SITE AREA			638,850

ZONE A - HOUSING SITEWORK COMPONENT SUMMARY

Gross Area: 402,930 SF

		$/SF	$x1,000
14. Site Preparation & Demolition		2.95	1,188
15. Site Paving, Structures & Landscaping		12.62	5,086
16. Utilities on Site		5.13	2,068
TOTAL BUILDING & SITE (1-16)		**20.70**	**8,342**
General Conditions	7.00%	1.45	584
Contractor's Overhead & Profit or Fee	3.00%	0.67	268
PLANNED CONSTRUCTION COST	***February 2009***	**22.82**	**9,194**
Contingency for Development of Design	10.00%	2.28	919
Escalation to Midpoint (July 2011)	6.81%	1.71	689
RECOMMENDED BUDGET	***July 2010***	**26.81**	**10,802**

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
14. Site Preparation & Building Demolition				
Demolition				
Remove existing parking lot, road and paving; including gutters, drainage structures, lights and trees	402,930	SF	0.50	201,465
Allow for demolition of existing building (including hazardous material abatement)	1	LS	350,000.00	350,000
Remove existing retaining walls	1	LS	40,000.00	40,000
Remove existing power poles and utility structures	1	LS	20,000.00	20,000
Site clearing and grading				
Site cut / fill	402,930	SF	1.00	402,930
Fine grading - site area	346,416	SF	0.50	173,208
				1,187,603
15. Site Paving, Structures & Landscaping				
Paving and surfacing				
Emergency vehicle access, concrete paving	41,600	SF	10.00	416,000
Emergency vehicle access, decomposed granite paving	83,200	SF	7.50	624,000
Vehicular paving	48,408	SF	10.00	484,080
Pedestrian paving	34,642	SF	8.00	277,136
Premium for articulated pedestrian path	5,196	SF	15.00	77,945
Landscaping				
Soil amendment in planting areas	138,566	SF	0.50	69,283
Shrubs and groundcover	118,566	SF	2.50	296,415
Turf	20,000	SF	1.25	25,000
Allowance for trees	1	LS	50,000.00	50,000
Landscape irrigation	138,566	SF	1.25	173,208
Water feature				
Swimming pool (including structures, finish, piping and equipment - pool deck furniture excluded)	2,000	SF	250.00	500,000

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Site structures				
Allow for site retaining walls, stairs, handrails, guardrails and fence	1	LS	150,000.00	150,000
Trash enclosures	1	LS	15,000.00	15,000
Site furnishings				
Allow for site furnishings (bike rack, drinking fountain, built-in trash receptacles, tree grates	1	LS	50,000.00	50,000
Site signage	1	LS	15,000.00	15,000
Bridges				
Prefabricated metal pedestrian bridge	170	LF	3,500.00	595,000
Prefabricated metal vehicle rated bridge	100	LF	6,500.00	650,000
Site lighting	324,798	SF	0.75	243,599
Drainage				
General site drainage	324,798	SF	1.00	324,798
Stormwater containment and filtration	1	LS	50,000.00	50,000
				5,086,463
16. Utilities on Site				
Domestic and fire water				
Underground pipework, fittings < = 8", underground	3,000	LF	75.00	225,000
Valves and specialties	1	LS	62,500.00	62,500
Hydrants	7	EA	10,000.00	70,000
Connection to existing	2	EA	12,500.00	25,000
Gas				
Underground pipework, fittings < = 3", underground	1,500	LF	65.00	97,500
Valves and specialties	1	LS	37,500.00	37,500
Connection to existing	1	LS	15,000.00	15,000
Sewer				
Underground pipework, fittings, <=6"	2,000	LF	67.50	135,000

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Manholes	5	EA	12,500.00	62,500
Connection to existing	1	EA	15,000.00	15,000
Lift station				n/a
Electrical				
12 KV substations, including selector switches and (oil-filled) transformers	5,000	KVA	87.50	437,500
12 KV feeder conduit & cable, concrete encased only, (2) 4" - primary	1,500	LF	275.00	412,500
Secondary feeder conduit and cable, (3) 5", 600 MCM	500	LF	575.00	287,500
Telecommunications/signals - ductbank, (4) 4"				Excluded
Manholes/pullboxes	10	EA	13,500.00	135,000
Site security - code blue emergency points	1	LS	50,000.00	50,000
				2,067,500

	Quantity	*Unit*	*Rate*	*Total*
Zone B - Arroyo				
Demolition				
Remove all non-native plant species	203,170	SF	0.25	50,793
Protect and reinforce slopes and embankments impacted by development	203,170	SF	1.50	304,755
Grading				
Allow for fine grading	203,170	SF	0.25	50,793
Landscaping				
Allow for native plant (shrubs and groundcover)	203,170	SF	1.00	203,170
Temporary landscape irrigation	203,170	SF	1.00	203,170
Allowance for trees	1	LS	20,000.00	20,000
Markups	29.49	%	832,680.00	245,563
				1,078,243
Zone C - Valencia Hill Drive New Landscape Buffer				
Site clearing and grading				
Remove existing plant material and other debris	32,740	SF	0.50	16,370
Landscaping				
New planting materials	32,740	SF	2.00	65,480
Allowance for trees	1	LS	10,000.00	10,000
Landscape irrigation	32,740	SF	1.50	49,110
Markups	29.49	%	140,960.00	41,570
				182,530

PARKING STRUCTURE (596 STALLS) AREAS & CONTROL QUANTITIES

Areas

	SF	SF	SF
Enclosed Areas			
Parking Structure (596 Stalls)	190,720		
SUBTOTAL, Enclosed Area		190,720	
Covered area			
SUBTOTAL, Covered Area @ ½ Value			
TOTAL GROSS FLOOR AREA			190,720

Control Quantities

			Ratio to Gross Area
Functional Units	596	stalls	3.125
Number of stories (x1,000)	3	EA	0.016
Gross Area	190,720	SF	1.000
Enclosed Area	190,720	SF	1.000
Footprint Area	63,000	SF	0.330
Volume	2,008,090	CF	10.529

PARKING STRUCTURE (596 STALLS) COMPONENT SUMMARY

Gross Area: 190,720 SF

		$/SF	$x1,000
1. Foundations		3.44	657
2. Vertical Structure		3.67	700
3. Floor & Roof Structures		17.46	3,330
4. Exterior Cladding		5.47	1,043
5. Roofing, Waterproofing & Skylights		0.29	55
Shell (1-5)		30.33	5,784
6. Interior Partitions, Doors & Glazing		1.59	302
7. Floor, Wall & Ceiling Finishes		0.50	95
Interiors (6-7)		2.09	398
8. Function Equipment & Specialties		0.42	80
9. Stairs & Vertical Transportation		0.94	180
Equipment & Vertical Transportation (8-9)		1.36	260
10. Plumbing Systems		1.00	191
11. Heating, Ventilating & Air Conditioning		1.00	191
12. Electric Lighting, Power & Communications		5.50	1,049
13. Fire Protection Systems		3.00	572
Mechanical & Electrical (10-13)		10.50	2,003
Total Building Construction (1-13)		**44.27**	**8,444**
14. Site Preparation & Demolition		0.00	0
15. Site Paving, Structures & Landscaping		0.00	0
16. Utilities on Site		0.00	0
Total Site Construction (14-16)		**0.00**	**0**
TOTAL BUILDING & SITE (1-16)		**44.27**	**8,444**
General Conditions	7.00%	3.10	591
Contractor's Overhead & Profit or Fee	3.00%	1.42	271
PLANNED CONSTRUCTION COST	***February 2009***	**48.79**	**9,306**
Contingency for Development of Design	10.00%	4.88	931
Escalation to Midpoint (July 2011)	6.81%	3.65	697
RECOMMENDED BUDGET	***July 2010***	**57.33**	**10,934**

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
1. Foundations				
Foundation				
Reinforced concrete foundation	63,000	SF	10.00	630,000
Subsurface drainage system				
Perforated drain pipe	1,060	LF	25.00	26,500
				656,500
2. Vertical Structure				
Columns and pilasters				
Reinforced concrete columns				
Concrete	237	CY	200.00	47,400
Formworks	10,960	SF	10.00	109,600
Reinforcement	91,245	LB	1.00	91,245
Shearwalls				
Reinforced concrete shear walls, 12"				
Concrete	247	CY	220.00	54,340
Reinforcement	54,340	LB	1.00	54,340
Formwork	13,356	SF	10.00	133,560
Retaining walls				
Reinforced concrete retaining walls	5,250	SF	40.00	210,000
				700,485
3. Floor and Roof Structure				
Floor at lowest level				
Reinforced concrete slab-on grade, 5" thick	63,000	SF	8.50	535,500
Suspended floors				
Reinforced concrete flat slab, 11" thick				
Concrete	4,278	CY	210.00	898,380

Glen Mor 2 Student Housing University of California, Riverside
Parking Structure (596 Stalls)
Riverside, California

Detailed Cost Model
February 18, 2009
0168-7833.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Formwork	127,720	SF	10.00	1,277,200
Reinforcement	346,500	LB	1.00	346,500
Post tensioned tendons	97,020	LB	2.00	194,040
Roof				
Steel framing (7.5 psf)	3	T	3,600.00	10,800
Metal deck with lightweight concrete fill	700	SF	10.00	7,000
Wire mesh	700	SF	0.50	350
Reinforcement	2,100	LB	1.00	2,100
Miscellaneous				
Miscellaneous metals and rough carpentry	190,720	SF	0.25	47,680
Equipment pads and curbs	1	LS	10,000.00	10,000
				3,329,550
4. Exterior Cladding				
Interior finish to exterior walls				
Painting to interior face	15,900	SF	1.00	15,900
Exterior doors, frames and hardware				
Sliding gates	1	LS	12,000.00	12,000
Miscellaneous exterior doors	1	LS	10,000.00	10,000
Balustrades, parapets and roof screens				
Allow for screen and brick veneer	28,300	SF	18.00	509,400
Allow for railing	2,830	LF	175.00	495,250
				1,042,550
5. Roofing, Waterproofing & Skylights				
Waterproofing slabs				
Waterproofing deck	700	SF	7.50	5,250
Elevator pit	1	LS	5,000.00	5,000

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Waterproofing walls below grade	5,250	SF	8.50	44,625
				54,875
6. Interior Partitions, Doors & Glazing				
Partition framing and surfacing	18,900	SF	16.00	302,400
				302,400
7. Floor, Wall & Ceiling Finishes				
Floors				
Sealed concrete	190,720	SF	0.50	95,360
				95,360
8. Function Equipment & Specialties				
General specialties				
Parking signage	596	EA	50.00	29,800
Parking control equipment	1	LS	50,000.00	50,000
				79,800
9. Stairs & Vertical Transportation				
Staircase flights, floor to floor				
Fire exit stairs, steel framed including handrail and finish	4	EA	20,000.00	80,000
Elevator				
Parking elevator	1	EA	100,000.00	100,000
				180,000

Glen Mor 2 Student Housing University of California, Riverside
Parking Structure (596 Stalls)
Riverside, California

Detailed Cost Model
February 18, 2009
0168-7833.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
10. Plumbing Systems				
Plumbing system, surface drainage system	190,720	SF	1.00	190,720
				190,720
11. Heating, Ventilation & Air Conditioning				
HVAC	190,720	SF	1.00	190,720
				190,720
12. Electrical Lighting, Power & Communication				
Electrical - including fire alarm and security	190,720	SF	5.50	1,048,960
				1,048,960
13. Fire Protection Systems				
Fire sprinkler	190,720	SF	3.00	572,160
				572,160

PARKING SITEWORK AREAS & CONTROL QUANTITIES

Areas

	SF	SF	SF
Parking Site (5' from building footprint)	66,100		
Big Springs Road Landscape & Median Island	154,200		
SUBTOTAL, Site Area		220,300	
TOTAL GROSS SITE AREA			220,300

	Quantity	*Unit*	*Rate*	*Total*
Parking Sitework & Big Springs Road and Median Island				
Site clearing and grading				
Fine grading - parking site area	66,100	SF	0.25	16,525
Remove existing parking lot access drive	3,000	SF	1.00	3,000
Remove existing media island	12,000	SF	1.50	18,000
Remove portion of landscape buffer turf planting	4,500	SF	0.50	2,250
Paving and surfacing				
New access drive A	2,500	SF	12.00	30,000
New access drive B	2,000	SF	12.00	24,000
Remove portions/ add portions to existing median island	1	LS	100,000.00	100,000
Landscaping				
Allow for landscaping to parking perimeter	3,100	SF	5.00	15,500
Allowance for turf	1	LS	10,000.00	10,000
Landscape irrigation	23,300	SF	1.50	34,950
Miscellaneous				
Charging station	1	LS	2,500.00	2,500
Site security - code blue emergency points	1	LS	25,000.00	25,000
Markups	29.49	%	281,725.00	83,082
				364,807

	Quantity	Unit	Rate	Total
Option 1. All wood framed structures				
Loadbearing walls				
Wood studs, 3 x 6; exterior; GF	32,178	SF	5.50	176,979
Wood studs, 2 x 6; exterior; 2F & 3F	72,097	SF	3.75	270,364
Wood studs, 2 x 6; exterior; 4F & 5F	91,236	SF	3.75	342,135
Wood studs, 4 x 4; interior; GF	41,345	SF	4.80	198,455
Wood studs, 3 x 4; interior; 2F & 3F	81,967	SF	3.75	307,375
Wood studs, 2 x 4; interior; 4F & 5F	83,373	SF	2.50	208,433
Miscellaneous blocking	402,195	SF	1.00	402,195
Suspended floors				
Wood joist, 2 x 10 at 16" o.c.	243,816	SF	7.00	1,706,712
Plywood floor sheathing with lightweight concrete infill	243,816	SF	8.00	1,950,528
Gypsum board underlayment, underneath floor joists	243,816	SF	4.00	975,264
Flat roofs				
Prefabricated wood joists	66,817	SF	7.00	467,719
Plywood floor sheathing with lightweight concrete infill	66,817	SF	8.00	534,536
Gypsumboard underlayment, underneath roof joists	66,817	SF	4.00	267,268
Partition framing and cores				
Wood studs, 2 x 4				
Non rated walls	285,428	SF	2.50	713,570
Markups	29.49	%	8,521,531.79	2,513,054
				11,034,585

	Quantity	Unit	Rate	Total
Option 2. Metal stud and joist framed structures				
Loadbearing walls				
Metal studs framing with plywood sheathing; exterior	195,511	SF	15.00	2,932,665
Metal studs framing with plywood sheathing; interior	206,684	SF	15.00	3,100,260
Suspended floors				
Prefabricated steel truss joists	243,816	SF	12.00	2,925,792
Plywood floor sheathing with lightweight concrete infill	243,816	SF	8.00	1,950,528
Gypsum board underlayment, underneath floor joists	243,816	SF	4.00	975,264
Flat roofs				
Prefabricated steel truss joists	66,817	SF	12.00	801,804
Plywood floor sheathing with lightweight concrete infill	66,817	SF	8.00	534,536
Gypsumboard underlayment, underneath roof joists	66,817	SF	4.00	267,268
Partition framing and cores				
Metal studs at 16" o.c				
Non rated walls	285,428	SF	4.00	1,141,712
Markups	29.49	%	14,629,829.00	4,314,429
				18,944,258

	Quantity	Unit	Rate	Total
Option 3. Metal stud with wood framed floor hybrid (Base option - included in the cost plan)				
Loadbearing walls				
Metal studs framing with plywood sheathing; exterior	195,511	SF	14.00	2,737,154
Metal studs framing with plywood sheathing; interior	206,684	SF	14.00	2,893,576
Suspended floors				
Prefabricated wood joists	243,816	SF	8.00	1,950,528
Plywood floor sheathing with lightweight concrete infill	243,816	SF	8.00	1,950,528
Gypsum board underlayment, underneath floor joists	243,816	SF	4.00	975,264
Flat roofs				
Prefabricated wood joists	66,817	SF	8.00	534,536
Plywood floor sheathing with lightweight concrete infill	66,817	SF	8.00	534,536
Gypsumboard underlayment, underneath roof joists	66,817	SF	4.00	267,268
Partition framing and cores				
Metal studs at 16" o.c				
Non rated walls	285,428	SF	4.00	1,141,712
Markups	29.49	%	12,985,102.00	3,829,389
				16,814,491

	Quantity	Unit	Rate	Total
Option 4. Metal stud walls with concrete on metal deck floors				
Loadbearing walls				
Metal studs framing with plywood sheathing; exterior	195,511	SF	12.00	2,346,132
Metal studs framing with plywood sheathing; interior	206,684	SF	12.00	2,480,208
Shear bracing				
Steel braced frames	2,206	T	3,600.00	7,940,283
Suspended floors				
Metal deck with concrete fill	243,816	SF	14.00	3,413,424
Flat roofs				
Metal deck with concrete fill	66,817	SF	14.00	935,438
Partition framing and cores				
Metal studs at 16" o.c				
Non rated walls	285,428	SF	5.00	1,427,140
Markups	29.49	%	18,542,625.12	5,468,337
				24,010,962

6.4

LIST OF ABBREVIATIONS

LIST OF ABBREVIATIONS

A	
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
ASHREA	American Society of Heating, Refrigeration, and Air-conditioning Engineers
ASF	Assignable Square Footage
ASTM	American Society of Testing of Materials
AWS	American Welding Society
AWWA	American Waterworks Association
B	
BDF	Building Distribution Frame
BTU	British Thermal Unit
C	
CATV	Cable Television
CBC	California Building Code
CCR	California Code of Regulations
CCTV	Closed Circuit Television
CFC	California Fire Code
CFM	Cubic Feet per Minute
Comm.	Communications (data)
CPC	California Plumbing Code
CM	Construction Manager
CRI	Color Rendering Index
D	
DID	Direct Inward Dialing
DPP	Detailed Project Program
DX	Direct expansion
E	
EA	Energy and Atmosphere (LEED category)
EQ	Indoor Environmental Quality
F	
F	Fahrenheit
°FDB	Degree Fahrenheit Dry Bulb Temperature
°FWB	Degree Fahrenheit Wet Bulb Temperature
f'c	Specified concrete strength
f'm	Specified masonry strength
G	
g	Acceleration Gravity
GSF	gross square footage
GWB	gypsum wallboard
H	
HVAC	Heating, Ventilation, and Air-conditioning
I	
ID	Innovation in Design (LEED category)
IDF	Intermediate Distribution Frame
IESNA	Illuminating Engineering Society of North America
IRC	Infrared Coated
L	
LAN	Local Area Network
LCP	Lighting Control Panel
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
LRDP	Long Range Development Plan
M	
MBH	Thousand BTU Per Hour
MDF	Main Distribution Frame
MEP	Mechanical, Electrical, Plumbing
MFACP	Main Fire Alarm Control Panel
N	
NC	Noise Criteria
NDS	National Design Specification
NFPA	National Fire Protection Agency
NOI	Notice of Intent
O	
OSHA	Occupational Safety and Health Association

P

PRI	Primary Rate Interface
psf	pounds per square foot
psi	pounds per square inch
PTHP	Package Terminal Heat Pumps
PV	Photovoltaic
PVC	Polyvinyl Chloride

R

RA	Resident Assistant
RD	Resident Director

S

sf	square feet
SLRS	Seismic Lateral Resisting System
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SS	Sustainable Sites (LEED category)
STC	Sound Transmission Class
SUSMP	Standard Urban Stormwater Mitigation Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board

T

T1	Telecommunications Data circuit
THD	Total Harmonic Distortion

U

UDACT	Universal Digital Alarm Communicator Transmitter
UL	Underwriters Laboratory

V

VCT	Vinyl Composition Tile
VRFZ	Variable Refrigeration Flow Zoning System

W

WE	Water Efficiency
WQTR	Water Quality Technical Report

SASAKI