ARROYO STUDENT HOUSING PROJECT

DETAILED PROJECT PROGRAM

December 2003




UNIVERSITY OF CALIFORNIA, RIVERSIDE

RATCLIFF . MVE . SWA . ARUP . WEBB DESIGN . DLA

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Introduction 1

1.1 PROJECT SUMMARY

In response to California's increasing demand for student enrollment in higher education, the University of California, Riverside (UCR) is developing a comprehensive study to guide the growth of future facilities on Campus called the Draft 2003 Long Range Development Plan (LRDP). The document currently in draft form identifies the physical development needed to achieve the academic goals of the campus through the year 2015. With a present student enrollment of 14,439, the University is projecting a growth to 25,000 by 2015. In addition to providing new facilities to meet projected academic, administrative, and support needs, the University wishes to increase the availability of on campus housing from 24% to a housing goal of 50% of the student population (including 75% of the freshmen). This is 15% more students housed in campus housing from the 1990 goal of 35%.

To address the housing component of the LRDP, the University developed the Strategic Plan for Housing (SPH) that guide's UCR's residential growth over the next 13 years through the advancement of residential concepts in accordance with the basic land use development as established in the LRDP. This is accomplished through the continuation of the UCR signature strengths and the will to achieve an ideal future residential community. This Detailed Project Program (DPP) addresses one of the many projects established in SPH to achieve the University's goal to house 50% of the student population.

The SPH enhances the goals established in the Draft 2003 LRDP, those include the following:

- Increase the critical mass of on-campus community and improve opportunities for social interaction, socialization, and learning.
- 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.

In addition to the goals established in the Draft 2003 LRDP, the SPH seeks to maintain UCR's current housing mission of providing residents responsive and supportive staff and exceptional programs which foster student success. It recommends strengthening and extending the existing neighborhood concept as a model for future residential growth. The existing neighborhood concept led to the development of the Ideal Residential Model and Principles of Planning.

The Ideal Residential Models are defined by the community response to the needs of the individual student, residential community, and connections to the broader campus. These are used to generate program models for each student sub-market (freshmen and transfers, upperclassmen, graduate, and families) that quantify the area and type

of spaces required per student that are in balance with the University's objectives and needs of the students.

The Principles of Planning define and guide the framework for each neighborhood in providing a strong resident community which provides a unique sense of community and identity, identifiable edges and centers, and an intentional network of connections and destinations that improve opportunities for informal interaction, socialization, and learning.

There are four identifiable neighborhoods identified in the SPH, one of which is the Arroyo – Apartment-Style Student Housing located on the East Campus. This neighborhood will accommodate the sub-market of upperclassmen and graduates.

This DPP addresses the requirements for new student housing, recreation fields, a grill/convenience store, and associated site development and infrastructure improvements. This DPP presents analysis consistent with the objectives of the Draft 2003 LRDP and the recommendations of the SPH and is organized by the four areas of study, each of which is further defined in the content of this document.

- Housing – Student Apartments
- Site Development and Infrastructure Improvements
- Recreation
- Food - Grill/Convenience Store

1.2 PROJECT GOALS

Goals indicate what the University of California, Riverside strives to achieve by undertaking this project.

1.2.1 Student Apartment Housing Complex

- Provide an appropriate mix of living options
- Provide housing with competitive rents and amenity choices.
- Meet the targets proposed in the Draft 2003 LRDP and SPH.
- Enhance and contribute to the campus fabric, physically, socially, and academically.
- Minimize turn around costs for apartments by promoting students to stay multiple years.
- Provide buildings with significant longevity.

1.2.2 Site and Infrastructure

- Create an aesthetically pleasing and integrated development which provides a desirable learning environment
- Enhance the campus community's overall image and "sense of place."
- Provide a residential and pedestrian friendly environment.
- Protect the natural environment and incorporate sustainable planning and design practices.
- Provide utility system improvements to support development on the Arroyo site.

1.2.3 Recreation Fields

- Provide recreational fields for intramural sports to serve the adjacent student housing residents as well as the generic student population.

1.2.4 Grill/Convenience Store

- Support campus housing residents in Pentland Hills / Arroyo site area and those using the recreation fields
- Provide services that meet the diverse dining needs of residents as well as after-hours services

1.3 PLANNING PROCESS

The Ratcliff Six-phase process for programming and planning is built upon an informed framework in which consensus building and decision-making occurs within a structured cost modeling process. Given that the information gathered through this process is analytical in nature, it is important that the framework provide a structure in which decisions can be tested, evaluated, approved or rejected and finally signed off.

For this DPP, each of these phases included budget and schedule control, approval and sign-off, as well as interactive participation with the faculty, staff, and students to assure a plan with superior functional attributes.

The 6 phases are:

1. Confirm Strategy and Management Plan
2. Establish Aims and Objectives
3. Assessment
4. Develop Guidelines and Standards
5. Program Synthesis
6. Gaming

Executive Summary 2

2.1 HOUSING – STUDENT APARTMENTS

Diagram 2.1 – 1: Conceptual view of the interior courtyard

The programming process identified the individual components required to meet the demands of student housing, as well as specific preferences in the manner by which those components are arranged. A single occupant bedroom is the preferred module, which should form the basis of planning prototypical apartment layouts.

The proposed scheme provides for 508 beds in a mixture of single occupant bedrooms in four-bed/two bath, two-bed/one bath, one-bed/one bath, and studio/one bath units. This includes a resident director in a two bedroom unit and three resident advisors in one bedroom units. Ancillary space such as administrative offices, study rooms, a computer lab, and laundry facilities are located throughout the buildings. Maintenance shop, bicycle storage and recreation field storage are located in the parking structure while the mail area is attached to the Grill/Convenience Store.

The student apartment housing complex offers an appropriate mix of living options and provides proper community, academic, and support spaces to meet the student needs through the Residential Life Program. The Program is administered by live-in staff that schedule programs, events, and activities throughout the year and provide direct assistance to residents in both housing and of a personal nature. In addition to the circulation space and organization of all residences and their relationships to each other, dedicated open space and outdoor gathering spaces facilitate informal gatherings, chance encounters, and encourage resident interaction. The project provides a balance in addressing the individual living needs of the students with social opportunities and the convenience of academic/social assistance.

Student housing is organized into five buildings. Buildings A, B, C, and D along Linden Street extension are proposed to be three stories high and built over one story of parking. Building E paralleling Valencia Hill Drive is built on grade with a gradual slope towards the Arroyo. This building will be smaller in scale (two stories) in order to maintain a more residential feel to complement the adjacent neighboring off-campus single family houses to the east.

Diagram 2.1 – 2: Conceptual view towards the north-east corner of the recreation fields at buildings D and E.

The location and orientation of the buildings are designed with respect to the local climate with the reduction of western exposed windows and maximizing the natural breeze of the northwestern winds and blocking the hot and fast moving Santa Ana winds from the northeast. In addition, the apartment buildings serve as a transition and buffer between the site activities, lights, and noise; and the adjacent private residential neighborhood along Valencia Hill Drive and north of Watkins Drive.

Apartment units are oriented either towards the recreations fields which provide views of field activity, the Arroyo, Pentland Hills, Carillon Tower, and the campus beyond; or towards Valencia Hill Drive with the dramatic view of Box Springs Mountains. Those oriented towards the interior courtyard will have the view of the activity space and landscaping below, creating a more residential feel.

Diagram 2.1 – 3: Conceptual view from Linden Street extension

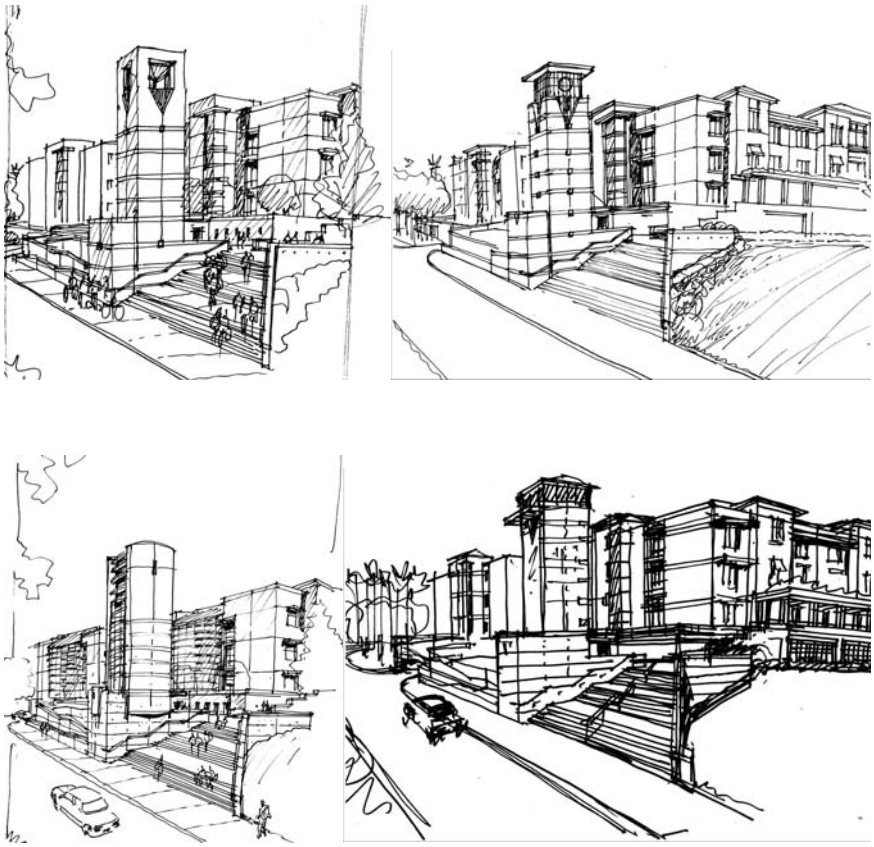


Diagram 2.1 – 4: Pentland Way entry conceptual character sketches

Additional information can be found in the Housing section of this document.

2.2 SITE DEVELOPMENT

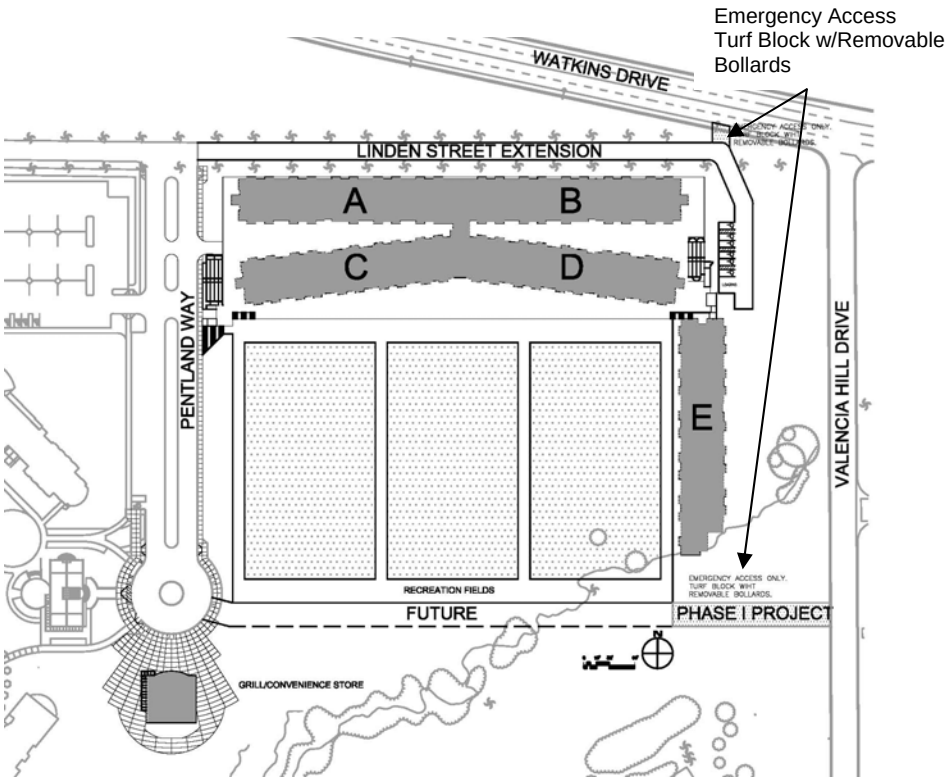


Diagram 2.2 – 1: Site Concept Plan

The proposed site development for the Arroyo Student Housing Project includes the following:

- Extension of Linden Street to the northeast corner of the proposed housing complex.
- Provisions for providing a secondary emergency access off of Valencia Hill Drive to the southeast corner of building E.
- Anticipate future access to the recreation fields from the southeast corner of building E along the southern edge of the recreation fields to Pentland Way.
- Partial infill of the eastern end of the Arroyo to provide a contiguous pedestrian connection to the residences and recreation fields.
- Enhancement and revitalization of the western end of the Arroyo.
- 100' landscaped buffer between housing and Valencia Hill Drive that serves as a buffer of site activities from adjacent off-campus neighboring houses.
- Provisions of pedestrian paths that complement the existing ones to Lothian and Pentland Hills, as well as to the rest of the campus.
- Design of the physical layout of the neighborhood that responds to the existing natural conditions, i.e. sun, wind, rain.

2.3 CONCEPTUAL MASSING

Diagram 2.3 – 1: Site Massing Concept Plan

Conceptual massing of the project consists of the following:

- Student apartments into four separate buildings (A, B, C, and D) above a parking structure along Linden Street extension (Watkins Drive) and a fifth building (E) paralleling Valencia Hills Drive.
- Recreation fields framed to the north by buildings A, B, C, and D; and to the east by building E.
- Grill/Convenience Store located at the southern end of Pentland Way with main entrance facing north.

For more details, refer to the corresponding sections in this document.

2.4 INFRASTRUCTURE IMPROVEMENTS

Infrastructure improvements for the Arroyo Housing Project include the following:

- Domestic Water
- Sanitary Sewer
- Electric
- Natural Gas
- Storm Water

Refer to the Site Development and Infrastructure Improvements section of this document for further details.

2.5 RECREATION FIELDS

Three recreation fields are located south of the apartments along Linden Street extension and defined on the west by Pentland Way. The fields will be lit utilizing a combination of 70' and 80' poles to achieve approximately 30 foot-candles on the field surface. No bleachers or benches are required. A storage room for field equipment is provided in the parking structure below the apartments.

2.6 GRILL/CONVENIENCE STORE

The proposed grill and associated convenience store are located at the termination of Pentland Way turnaround with the main entrance facing north. The facility sits on a paved plaza that provides an outside seating area for patrons. Service vehicles are accommodated on the service drive way extended from the cul-de-sac from Pentland Way on the south side of the facility. Configuration of the space integrates both the grill and convenience store into a single floor plan. That said, it is important to separate retail sales from the seating area.

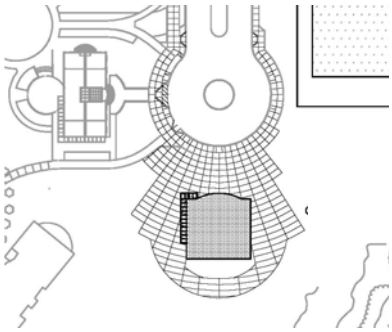


Diagram 2.1 – 4: Grill Concept

The proposed facility will serve as a "hang out" for students while providing a variety of food and retail supplies. The menu provides much of the regular fare including burgers and fries but also options not provided elsewhere on campus. Vegetarian options as well as "grab and go" meals are available. Seating is accommodated both inside and out. The convenience aspect of the facility provides some basic food options, prepared food, canned goods, office and cleaning supplies.

2.7 PROGRAM SUMMARY

2.7.1 Housing – Student Apartments Program

Arroyo Student Apartment Complex

Room Code	Function Area Description: Apartment Complex	Studio A	Studio B	1 Bedroom	2 Bedroom	2 Bedroom	4 Bedroom
981/982/984	Living			86	116	116	116
980/981/982/984	Dining	37	41	43	45	45	68
980/981/982/984	Kitchen	43	43	67	87	87	126
980	Bedroom (coupled w/ Living)	117	112				
981/982/984	Bedroom (with closet)			120	112	112	112
982/984	Bedroom (with closet)				120	120	112
984	Bedroom (with closet)						120
984	Bedroom (with closet)						120
980/981/982/984	Bathroom	68	60	73	103	103	103
984	Bathroom						103
980	Closet		19				
	Unit Circulation/Grossing	100	117	83	172	172	234
		265	275	389	583	583	980
	Unit ASF	365	392	472	755	755	1,214
	Quantity of Units	3	1	5	23	1	113
	Total ASF per Unit Type	1,095	392	2,358	17,369	755	137,190
	Grand Total ASF (unit)						**159,159**
	Grand Total GSF (building)						**204,509**

Apartment Amenity Spaces

Room Code	Function Area Description: Apartment Complex Amenity Areas	QTY	ASF	Total ASF
320	Administrative Office	1	635	635
410	Study Lounge	2	720	1,440
410	Computer Lab	1	905	905
985	Laundry	2	415	830
985	Laundry	1	425	425
	Bike Storage	1	2,665	2,665
	Recreation Storage	1	355	355
	Total ASF			7,255
	Total GSF			**9,322**

Apartment Support Spaces

Room Code	Function Area Description: Support Spaces	QTY	ASF	Total ASF
985	Maintenance Shop	1	526	526
402	Housekeeping	3	50	150
402	Housekeeping	3	54	162
402	Housekeeping	1	190	190
	Total ASF			1,028
	Total GSF			**1,321**

Parking

Room Code	Function Area Description: Support Spaces	QTY	Spaces	Total ASF
	Parking	1	309	100,425
	Gem Cart	1	4	1,300
			313	101,725
	Total GSF			**101,725**

2.7.2 Site and Infrastructure Program

According to the East Campus Infrastructure DPP, the following infrastructure supporting the Arroyo Student Housing Project will be provided up to the site boundaries:

- Electrical
- Domestic Water
- Gas
- Telecom

Natural gas proposed connections are consistent with those indicated in the LDRP. Sanitary sewer connections based on the assumption of offsite improvements by others provided to the boundaries of the Arroyo site.

Code	Improvement Item	Length	Approximate Amount
	Domestic Water/Fire Piping	2000ft.	8'' Diameter
	Sanitary Piping		
	Housing (Linden - Gravity)	1500ft.	12'' Diameter
	Housing (Valencia - Force Main)	900ft.	6'' Diameter
	Grill (Force Main)	900ft.	4'' Diameter
	Electric Feeder	1500ft.	12 kV
	Natural Gas Piping		
	Housing	1500ft.	5'' Diameter
	Grill	100ft.	1'' Diameter
	Storm Water (RCP)	600ft.	48'' Diameter
		1000ft.	18'' Diameter
	Paved Roadway	800ft.	22' Wide

2.7.3 Recreation Fields Program

- 3 recreation fields at 55 x 100 yards each with appropriate buffers, totaling 199,800 sf
- 1 recreation storage of 355 sf; included in the housing program.
- 4 light poles at 80’ and 6 light poles at 70’ providing 50 footcandles on the field

2.7.4 Grill/Convenience Store Program

Room Code	Function Area Description: Grill Area	Occupant / unit	QTY	ASF	Total ASF
	Grill				
	Receiving		1	110	110
	Dry Storage		1	202	202
	Locker Area / Change Room		1	67	67
	Office		1	81	81
	Salad Bar		1	131	131
	Produce		1	17	17
	Bakery		1	81	81
	Beverage		1	32	32
	Condiment		1	45	45
	Preparation Area		1	110	110
	Scullery		1	100	100
	Walk-in Refrigerator		1	76	76
	Grill		1	142	142
		subtotal			**1,194**
	Convenience Store				
	Display Refrigerator		1	206	206
	Display Freezer		1	85	85
	Display		1	178	178
	Coffee		1	120	120
	Deli		1	117	117
	Cashier Stations		1	287	287
		subtotal			**993**
	Support				
	Dining Area		1	735	735
	Mail Room		1	214	214
		subtotal			**949**
		Total ASF			**3,136**
		Total GSF			**4,129**

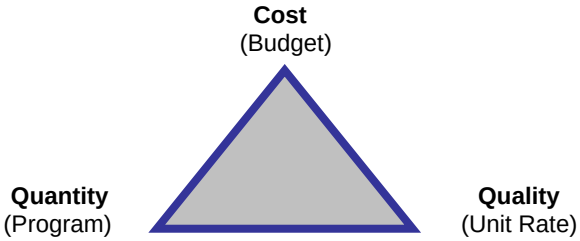
Notes				
GSF includes	Public Toilets	2	46	92
	Electrical Room	1	150	150
				242

2.7.5 Summary Total Program – Housing / Parking / Grill

	Total ASF		Total GSF	
Arroyo Student Apartment Complex	159,159		204,509	
Apartment Amenity Spaces	7,255		9,322	
Apartment Support Spaces	1,028	167,442	1,321	215,152
Parking	101,725		101,725	
Arroyo Market Grill	3,136		4,129	
Grand Total	272,303		**321,006**	

2.8 COST MODEL SUMMARY

The goal of cost modeling is to establish parameters against which all considerations are measured: construction components, design elements and the amount of square footage attainable. This real-time process identifies any potential shortfall, prior to design (Cost Planning vs. Cost Estimating), and allows the campus make adjustments towards achieving the appropriate solutions. By maintaining a balance between these elements, the Consulting team creates buildings of lasting value. It does not happen independently of the planning and design process. It is built into all decisions and procedures.



Meetings were held to discuss the level of quality appropriate for student housing at UCR. This was necessary to balance against the budget and program.

The overall building and site construction is approximately $45 million, including an escalation at 3% per annum. The following chart provides the cost allocations for each of the components.

Budget Summary

Improvement Item	Gross Floor Area	$/SF	$ X 1,000
Apartment / Parking	215,152	154.67	$33,277
Grill / Retail / Convenience	4,129	319.03	$1,317
Sitework and Infrastructure	322,990	21.58	$6,970
Recreation Fields	198,000	5.90	$1,168
Total Building and Sitework Construction - September 2003			$42,731
Escalation at 3% per Annum - 6.61%			$2,826
Total Building and Sitework Construction - November 2005			**$45,557**

The Consulting team sought to stay within the budget set by the Strategic Plan for housing. For more details of the Cost modeling, please refer to the Cost Modeling section.

Site and Project Analysis 3

3.1 LOCATION AND SITE CHARACTERISTICS

The Arroyo site is located on the University's East Campus. The existing residential areas in the East Campus are distinct neighborhoods, each having its own social and physical identity. Visual and physical connection to the broader campus is generated through a network of open spaces, paths, and walkways that knit neighborhoods together, promoting the pedestrian campus experience through walking, bicycle riding, and use of the transit system, all of which should be maintained with the proposed Arroyo neighborhood.

The Arroyo site can best be described as a gently sloping alluvial terrace that is westward sloping from the intersection of Watkins Drive and Valencia Hill Drive and diagonally down to the southwestern extentof a storm water drainage area called the arroyo tributary for the purposes of this DPP. The site is defined to the north by the line of Mexican fan palms and Valencia Hill Drive to the east with Pentland Way delineating the western boundary of the site (Diagram 3.1-2). The upper tributary reach of the Arroyo running in an east-northeast and west-southwest direction defines the southern extent of the site. The site is approximately 13.6 acres (592,000 sq. ft) (Diagram 3.1-1).

Diagram 3.1 – 1: Extent of Arroyo Student Housing Site

Used primarily for construction spoils over the past few years, there is little significant vegetation on the site. Disturbed annual grassland and remnant willow scrub in the western extent of the Arroyo tributary constitutes what little remains.

The Consulting team has utilized existing topographic information obtained by the Office of Design and Construction. This information is not current with observed existing conditions. It is highly recommended

that the design team obtain a comprehensive topographic site survey which indicates existing site topography, bench elevations, significant vegetation, and site utilities (if existent). The Consulting team does not warrant conceptual data contained herein to be accurate and true to the existing conditions.

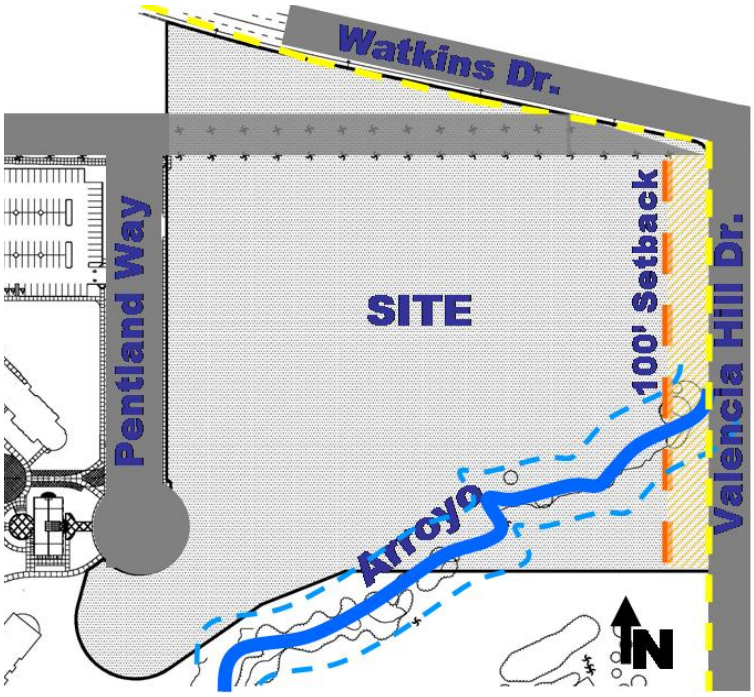


Diagram 3.1 -2 The Arroyo Student Housing Neighborhood – Site Constraints

As indicated in the SPH, the Arroyo neighborhood achieves its identity and organization through its use of the recreation fields as open space elements framed to the north and east by student housing; and the naturalistic features of the site which include the Arroyo to the south and Box Spring Mountains to the East. The Arroyo provides an interesting change in topography and vegetation while the Box Springs Mountains serves as a dramatic backdrop with its undeveloped hillside. The apartment buildings are oriented and designed to generate and terminate important view corridors, one of which is towards the Carillon Tower, the most remarkable architectural feature defining the center of the campus.

Diagram 3.1-3 The Arroyo neighborhood as proposed in the Strategic Plan for Housing.

As referenced in the SPH (Diagram 3.1-3), the Arroyo is proposed to be partially filled on the east end to provide a continuous pedestrian connection to the residences and recreation to the north. The revitalized and enhanced western portion of the Arroyo provides aesthetic and functional / environmental opportunities for the site, as well as creating a naturalized focal point for the neighborhood and campus. Neighborhood pedestrian paths complement the existing paths and connections to Lothian and Pentland Hills and to the rest of campus.

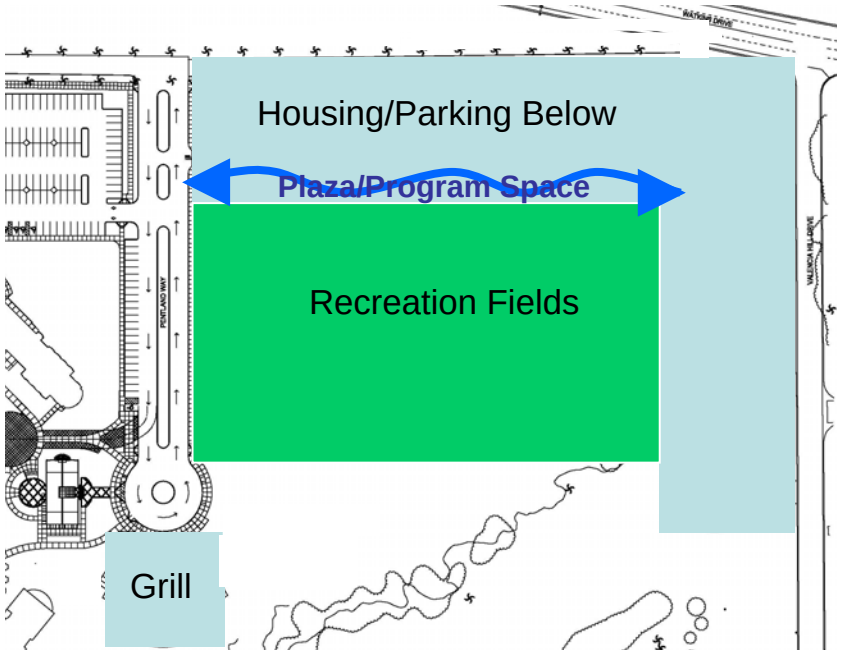


Diagram 3.1 - 4 – Massing Development Study

3.2 THE ARROYO NEIGHBORHOOD – MASSING STUDIES

The consultant team in conjunction with the university applied the criteria set forth from a variety of documents, primarily the Draft 2003 LRDP and SPH, to develop initial massing opportunities for the given site (Diagram 3.1-4). The criteria set forth was very specific and required the team to balance the program, cost, and quality against the many factors set forth including parking requirements, codes and regulations, circulation, building height, engineering systems, student satisfaction, noise mitigation, light mitigation, function, maintenance, as well as a number of other factors.

The progress studies shown here (Diagrams 3.2.-1-4) are representations of these many scenarios. Discussions centered upon whether the option would meet project goals. Any option not meeting the criteria was eliminated (as these were).

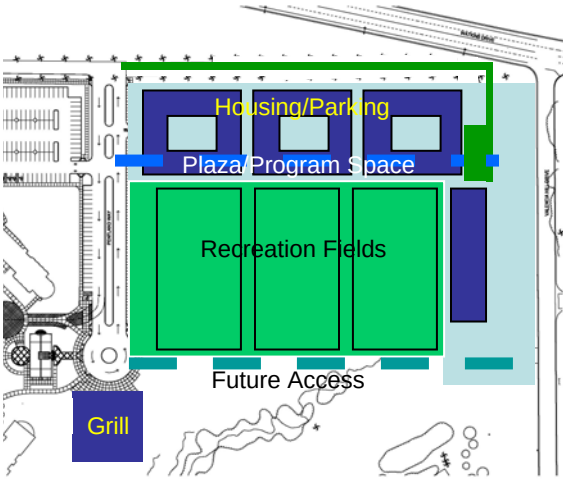


Diagram 3.2 -1 – Scheme A

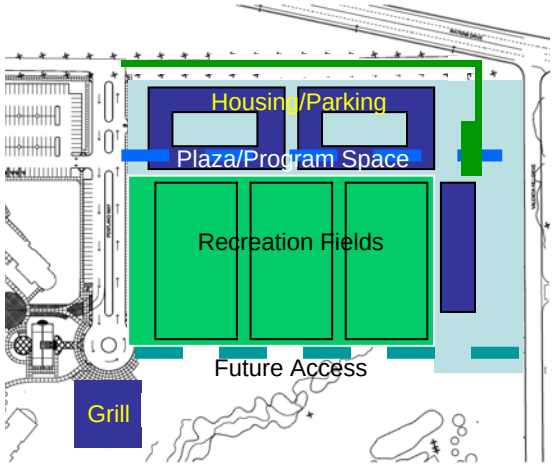


Diagram 3.2 -2 – Scheme B

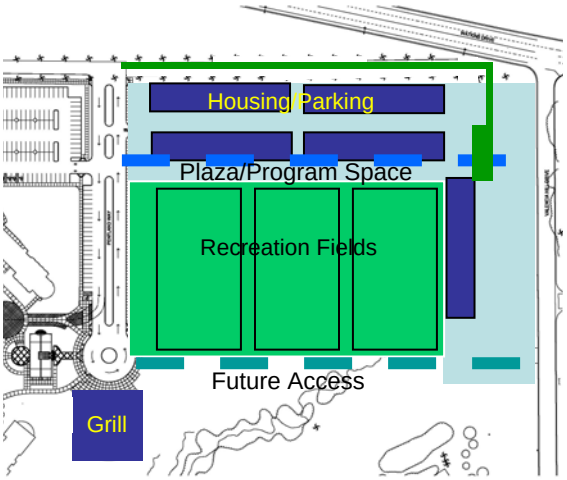


Diagram 3.2 -3 – Scheme C

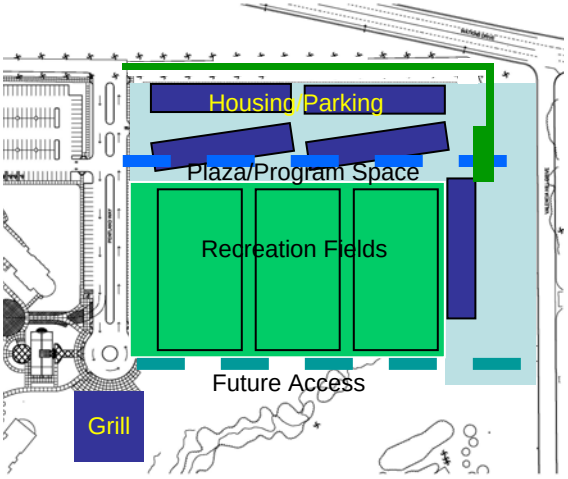


Diagram 3.2 – 4 – Scheme D

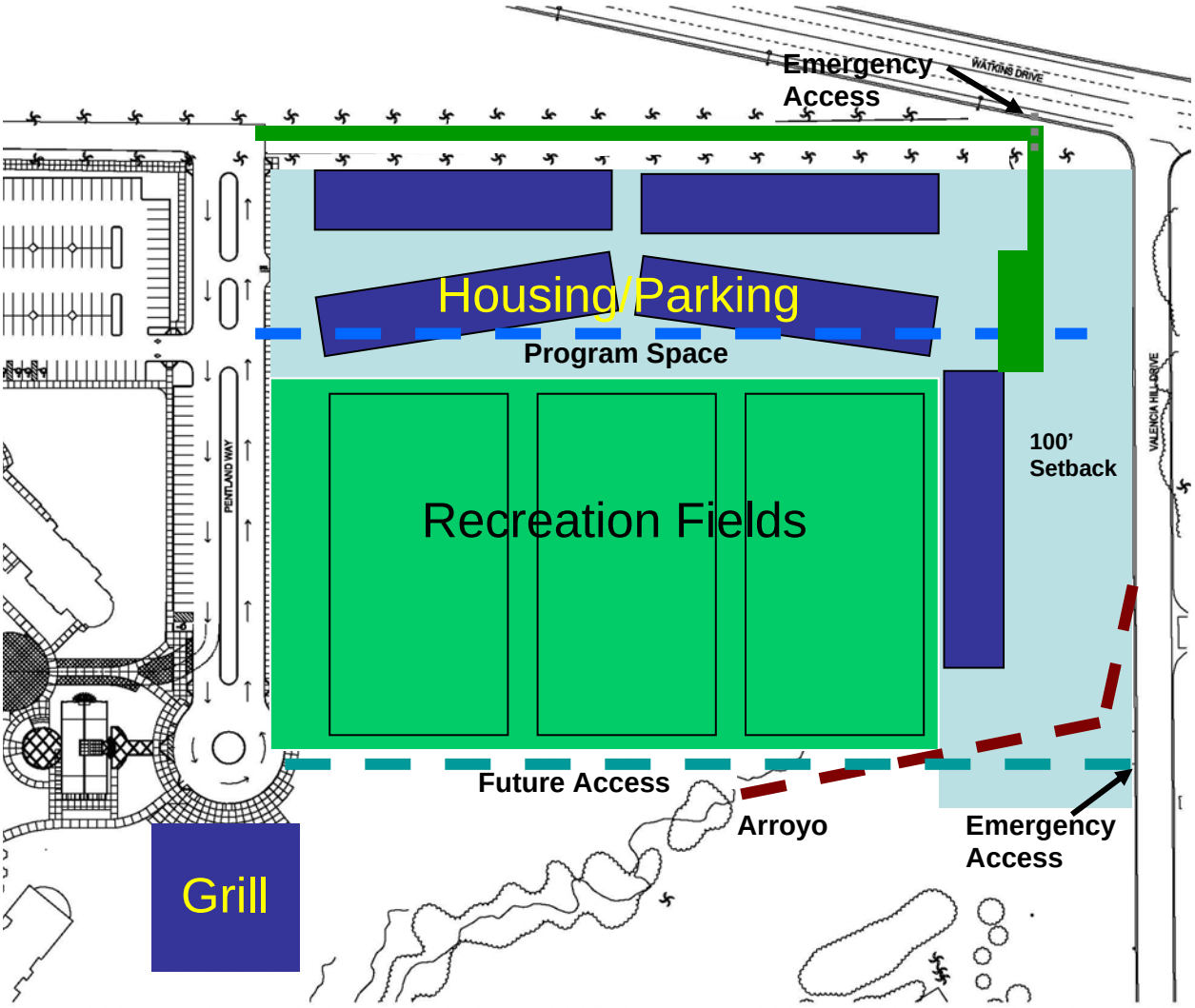


Diagram 3.2 – 5 – Preferred Option

A preferred scheme was realized (Diagram 3.2-5) which balanced all requirements within the budget. The design team should anticipate a similar massing arrangement however this should not limit their ability to provide a significant design statement for the campus.

3.3 PARAMETERS AND ASSUMPTIONS

This DPP presents analysis consistent with the objectives of the Draft 2003 LRDP and the recommendations of the SPH. The following are the list of documents made available to the Consulting team:

- Long Range Development Plan, July 1990
- Long Range Development Plan, Draft 2003
- Strategic Plan for Housing, March 2003
- Campus Design Guidelines, January 1996
- East Campus Infrastructure DPP, June 2002
- East Campus Infrastructure Improvements, September 2002
- University Arroyo Flood Control and Enhancement Plan, October 9, 2001

3.4 GENERAL BUILDING CODES AND REGULATIONS

The project will be designed and constructed in accordance with the current applicable laws, codes, and requirements of regulatory agencies having jurisdiction over this project, including the following

- 2001 Building Standards Administrative Code (Part One, Title 24 C.C.R)
- 2001 California Building Code (CBC Part Two, Title 24 C.C.R.)
- 2001 California Electrical Code (CEC Part Three, Title 24 C.C.R.)
- 2001 California Mechanical Code (CMC Part Four, Title 24 C.C.R.)
- 2001 California Plumbing Code (CPC Part Five, Title 24 C.C.R.)
- 2001 California Energy Code (Part Six, Title 24 C.C.R.)
- 2001 California Elevator Safety Construction Code (Part Seven, Title 24 C.C.R.)
- 2001 California fire Code (CFC Part Nine, Title 24 C.C.R.)
- 2001 California Referenced Standards (Part Twelve, Title 24 C.C.R.)
- 1990 Title 19 C.C.R., Public Safety, State Fire Marshall Regulations.

Partial List of Applicable Standards* include the following:

- NFPA 13, 1999 Edition; Automatic Sprinkler Systems
- NFPA 14, 2000 Edition; Standpipe, Private Hydrants and Hose Systems
- NFPA 17, 1998 Edition; Dry Chemical Extinguishing Systems
- NFPA 17A, 1998 Edition; Wet Chemical Systems
- NFPA 20, 1999 Edition; Stationary Pumps
- NFPA 24, 1995 Edition; Private Fire Service Mains
- NFPA 72, 1999 Edition; National Fire Alarm Code (California Amended) See UL Standard 1971 for "Visual Devices"
- NFPA 253, 2000 Edition; Critical Radiant Flux of Floor Covering Systems
- NFPA 2001, 2000 Edition; Clean Agent Fire Extinguishing Systems
- Applicable Federal Regulations
- Americans with Disabilities Act (ADA)

*Refer to CBC 3305.1.3 for additional standards not provided on this list.**
**Refer to CBC 3504.1 for NFPA Standards Code Sections

Housing – Student Apartments 4

Design and Systems Criteria

4.1 GOALS

Goals provide a direction for programming. Goals are listed as statements, but they also imply the question: What do you want to accomplish? Goals provide a starting point in determining what types of facts are appropriate to the project.

Goals indicate what the University of California, Riverside hopes to achieve by undertaking this project.

- Provide apartments with competitive rents and amenity choices
- Provide a minimum of 500 beds in the apartment complex
- Provide a variety of units
- Minimize turn around costs for apartments by promoting students to stay until graduation
- Provide buildings with significant longevity
- Provide parking on a ratio of 1 space for every 2 students
- Provide secure bicycle storage

4.2 FACTS

Facts pertain to the organization, operation and function of the proposed space. They form the basis for internal planning and quantifying the program in terms of type, size and number of spaces.

These facts were obtained through interviews and tours with the users of the department. The information was then collected and assessed. Measuring and evaluating the current space led to understanding the spirit of the space.

4.2.1 Existing Housing Context

The University offers a wide range of housing options to satisfy the differing and unique requirements of residents, from residence halls, apartment complexes, and family student housing.

Residential halls such as Aberdeen-Inverness, Lothian and Pentland Hills accommodate the needs of most freshmen, providing furnished units with common restrooms, and providing amenities such as study rooms, computer labs, recreation/television lounges, and full meal service.

Apartment complexes designed for upperclassmen, transfer and graduate students include Stonehaven, Bannockburn Village, The Plaza and International Village. Bannockburn Village and The Plaza offer a total of eleven different apartment styles ranging from one-bedroom furnished suites, with or without kitchen access, to standard two bedroom/two bathroom apartments. Both complexes provide swimming pools and television/recreation rooms. Bannockburn additionally offers study rooms, computer labs, a fitness center, laundry rooms, and secure bike storage.

The apartment complexes most similar to the Arroyo project are Stonehaven and International Village. Both are contemporary styled projects with stucco finishes and metal roofs. Stonehaven provides a total of 200 apartments arranged in two story buildings with one hundred 1-bedroom/1-bath units of 530 S.F. each and one hundred 2-bedroom/2-bath units of 780 S.F. All units are fully furnished and feature single or double occupancy bedrooms. Amenities include a television/recreation lounge and a laundry room. Residential units are provided with gas, electric, cable television service and computer network service. Administrative offices are included on site and a gated keypad entry with surveillance cameras provides security. One assistant resident director and three resident advisors are located on site. Outdoor amenities include a swimming pool, basketball half-court, volleyball court and barbecue area, with two centralized locations for bicycle storage, and on-site parking.

International Village comprises 92 apartments arranged in three story buildings featuring twenty-one studios of 280 S.F. each, sixty-one 2-bedroom apartments of 815 S.F. each, six 3-bedroom apartments of 1,250 S.F. each and four 5-bedroom apartments of 2,000 S.F. each. The units are fully furnished and include such amenities as a television/recreation room, a computer lab, a fitness center, two laundry rooms and a vending area. One assistant resident director and three resident advisors are located on site. Outdoor features include a basketball court and a soccer field. Both Stonehaven and International Village allow the option for bedrooms to be single or double occupancy.

Canyon Crest provides family student housing on 55 acres located at the northern edge of campus. Primarily two and three-bedroom duplex homes are located in a neighborhood setting of tree lined streets bordering extensive park, playground and picnic areas. The units are unfurnished but are equipped with appliances. Each single story unit has its own unfenced back yard. Amenities include a community center, a study lounge, a computer lab and laundry facilities. An adjacent Child Development Center provides childcare services for UCR students, staff and faculty.

4.3 ARCHITECTURAL DESIGN CRITERIA

Concepts are abstract ideas that respond to organizational and operational problems. They are not included as literal physical solutions, but rather as graphic statements to assist in understanding the complex functions and relationships required.

4.3.1 Unit Types – Room Diagrams

The following diagrams are the various units provided in the Arroyo student apartment housing complex. The four bedroom unit served as the basic module in which all other unit types were based upon. This is indicated with a dashed line in the diagrams.

The necessity of each student to have easy access to a lavatory at any time established the criteria of providing one sink per student in each of the units. Kitchen configurations were based on a standard of 30” in one upper, one drawer, and one lower for personal storage per student which generated a more generous kitchen layout. Bedrooms are designed to be more efficient spaces suitable to accommodate the sleeping, study and storage needs of each individual resident. All rooms are furnished by the University.

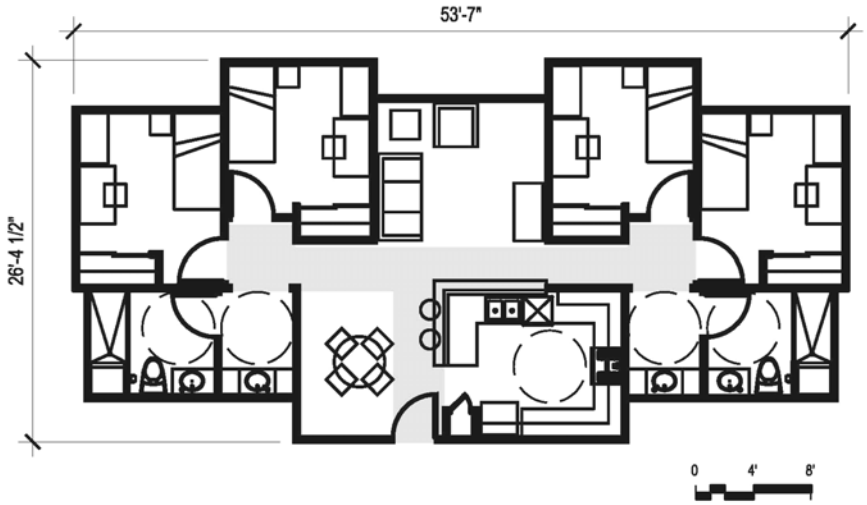


Diagram 4.3.1A – 1: 4 bedroom, 1214 sq. ft.

4.3.1A Four-bedroom Unit Description

Units are divided into separate two bedroom clusters, each sharing a bathroom. The two clusters flank a central shared area for living/dining/kitchen.

Bedroom

Individual bedrooms should be 10' x 12’ in size and should be large enough to accommodate a single bed with nightstand, a dresser, a desk with chair, and a closet.
Entry to the room, as well as access to the closet, should be provided on the same wall to allow students greater flexibility in rearranging the furnishings to suit their individual needs on the remaining three walls.

Common Bathroom

Bathrooms should be located equidistant between each bedroom and should provide a compartmented design with an area for a sink and vanity cabinet separated from an enclosed room with another sink and vanity cabinet, water closet, and tub/shower. The vanity cabinet in the alcove should feature a centrally located sink flanked by two identical sets of drawers with a shared wall mounted medicine cabinet above. Only one of the bathrooms of approximately 103 ASF should be handicap accessible and satisfy ADA requirements.

Living/Dining

It was determined that the most effective use of the shared common area was to join the living and dining spaces into one contiguous rectangular space of approximately 185 ASF to create a greater sense of openness

and to allow flexibility in the use of the space. Outdoor egress to the apartment could be located either to one end of this space or toward the center depending on the disbursement of public circulation to the unit.

Kitchen

A centrally located kitchen should adjoin the living/dining area. The U-shaped room arrangement of approximately 125 sf was identified as the most successful layout and should feature 30" upper and lower cabinetry storage for each occupant with a breakfast bar to be used for student dining. Kitchens should include a refrigerator, stove/oven, microwave, dishwasher and garbage disposal.

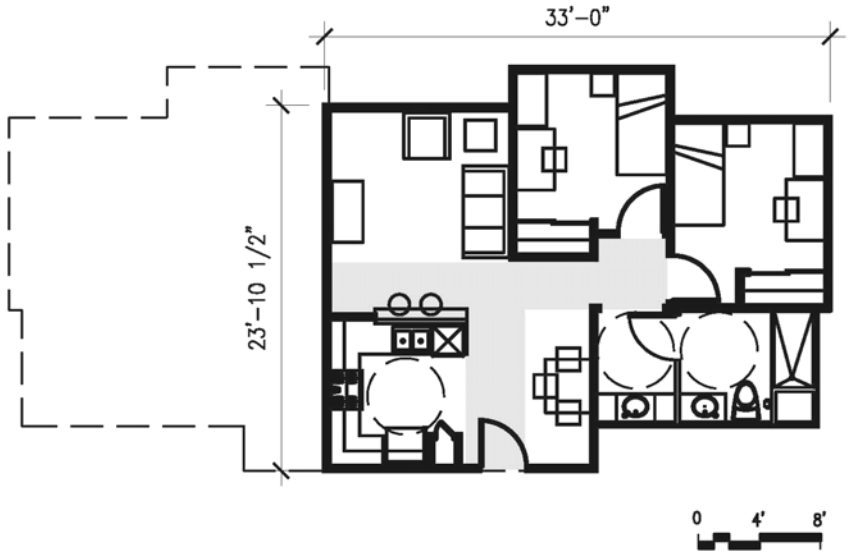


Diagram 4.3.1B – 1: 2 bedroom, 755 sq. ft.

4.3.1B Two-bedroom Unit Description

Two bedroom units are intended to provide diversity for students preferring alternate accommodations. The bedrooms will be clustered together and will share one bathroom. This cluster should be located to one side of a common area for living/dining with an adjoining kitchen opening into the space.

Bedroom

The bedroom in the two-bedroom unit will be identical in size, shape and configuration as the four-bedroom unit.

Common Bathroom

The unit will accommodate one handicap accessible bathroom that satisfies ADA requirements. The size, shape and configuration will match the corresponding bathroom in the four-bedroom unit.

Living/Dining

A shared common space of approximately 160 sf for living/dining facilities should be located to one side of the bedroom cluster and should include an entry door at the end of the space.

Kitchen

The U-shaped kitchen is similar in shape/configuration and types of appliances furnished for the kitchen in the four-bedroom unit. Standard of 30" upper and lower cabinetry storage for each occupant is also provided.

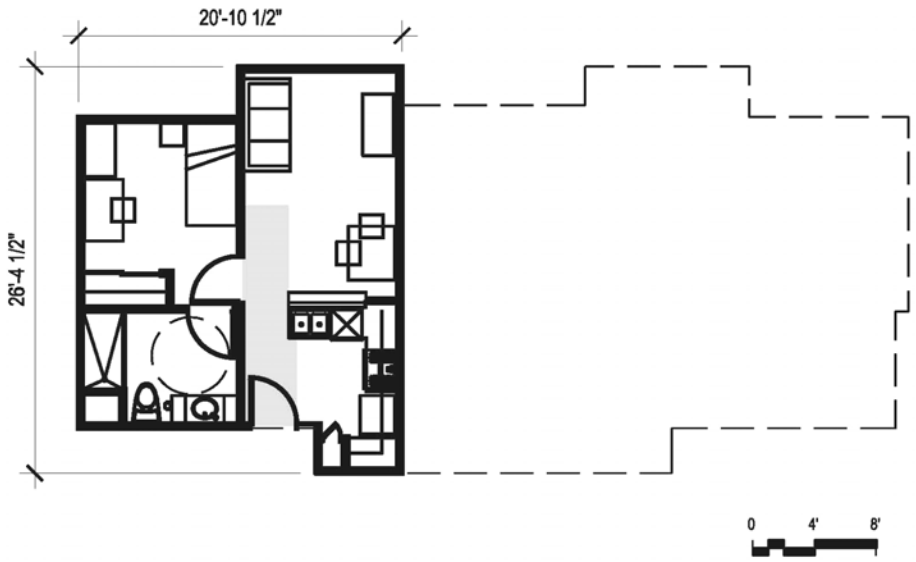


Diagram 4.3.1C – 1: 1 bedroom, 472 sq. ft.

4.3.1C One-bedroom Unit Description

One-bedroom apartment units will follow the same standards established for the two-bedroom and four-bedroom units. It is intended that these apartments be limited in quantity to satisfy the requirements of the Resident Advisors.

Bedroom

The bedroom in the one-bedroom unit will be identical in size, shape and configuration as the two-bedroom and four-bedroom units.

Bathroom

One bathroom will satisfy the requirements of the one-bedroom apartment units. Bathroom not will feature a compartment design similar to those in the two and four-bedroom units.

Living/Dining

A larger common space will be provided to combine the activities of both living and dining. There will be no distinct architectural break to identify the activities within this zone. This will lend a greater sense of spaciousness to the area and will promote flexibility in arranging the furnishings to suit the resident's individual requirements. A single door to one end of this area will provide entry to the apartment.

Kitchen

The U-shaped kitchen should be similar to shape/configuration and types of appliances furnished for the kitchen in the two-bedroom and four-bedroom unit.

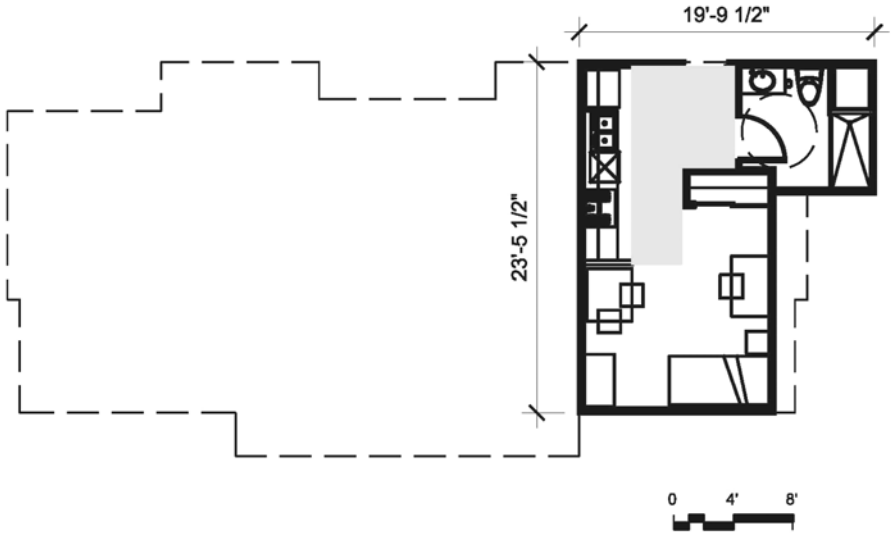


Diagram 4.3.1D - 1: studio A, 365 sq. ft.

4.3.1D Studio Unit Description

Studio apartment units will combine the living/dining, kitchen, and bedroom into one space. There will be no distinct architectural break to identify the activities within these zones. This will lend a greater sense of spaciousness to the area and will promote flexibility in arranging the furnishings to suit the resident's individual requirements. Kitchens should include a refrigerator, stove/oven, microwave and garbage disposal. A single door to one end of this area will provide entry to the apartment.

Bathroom

One bathroom will satisfy the requirements of the studio apartment units. Bathrooms will not feature a compartment design.

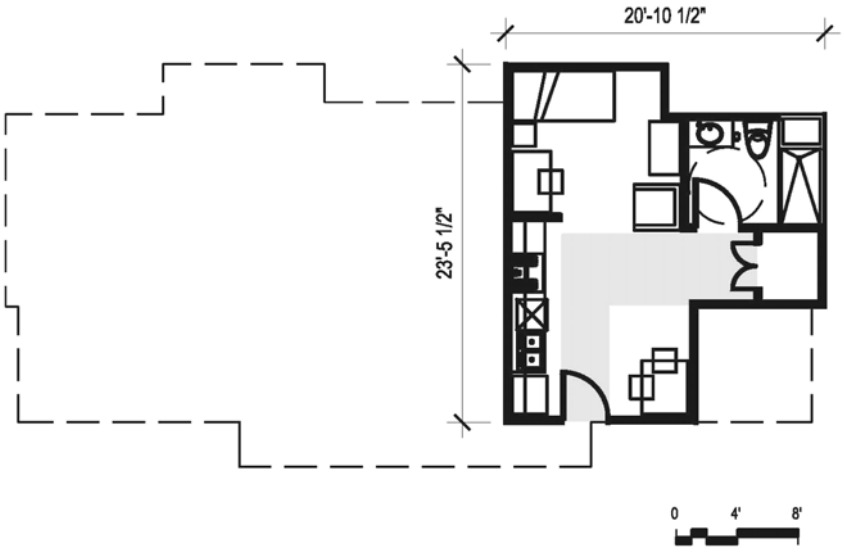


Diagram 4.3.1E – 1: studio B, 392 sq. ft.

4.3.1E Studio Unit Description

Studio apartment units will combine the living/dining, kitchen, and bedroom into one space. There will be no distinct architectural break to identify the activities within these zones. This will lend a greater sense of spaciousness to the area and will promote flexibility in arranging the furnishings to suit the resident's individual requirements. Kitchens should include a refrigerator, stove/oven, microwave and garbage disposal. A single door to one end of this area will provide entry to the apartment.

Bathroom

One bathroom will satisfy the requirements of the studio apartment units. Bathrooms will not feature a compartment design.

4.3.2 Support Spaces - Room Diagrams

The following diagrams are the amenities and building support functions provided in the Arroyo student apartment housing complex. The four bedroom unit served as the basic module in which the amenities were based off from. This is indicated with a dashed line in the diagrams.

Diagram 4.3.2A – 1: administrative offices, 660 sq. ft.

4.3.2A. Administrative Offices

Administrative suite is comprised of 2 private offices, 1 workstation near the entrance, 1 storage room, and a copy/fax/break room.

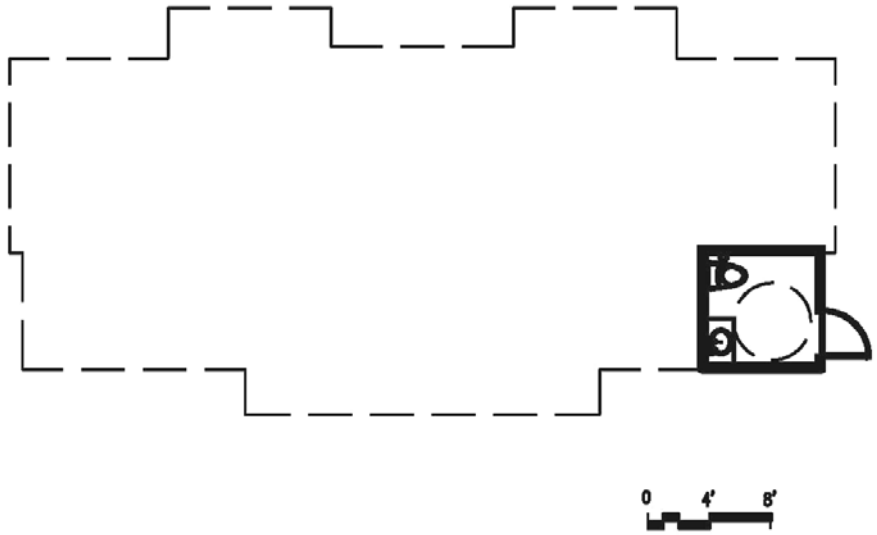


Diagram 4.3.2B – 1: public toilet, 62 sq. ft.

4.3.2B Public Restrooms

Restrooms will be handicap accessible and satisfy ADA requirements.

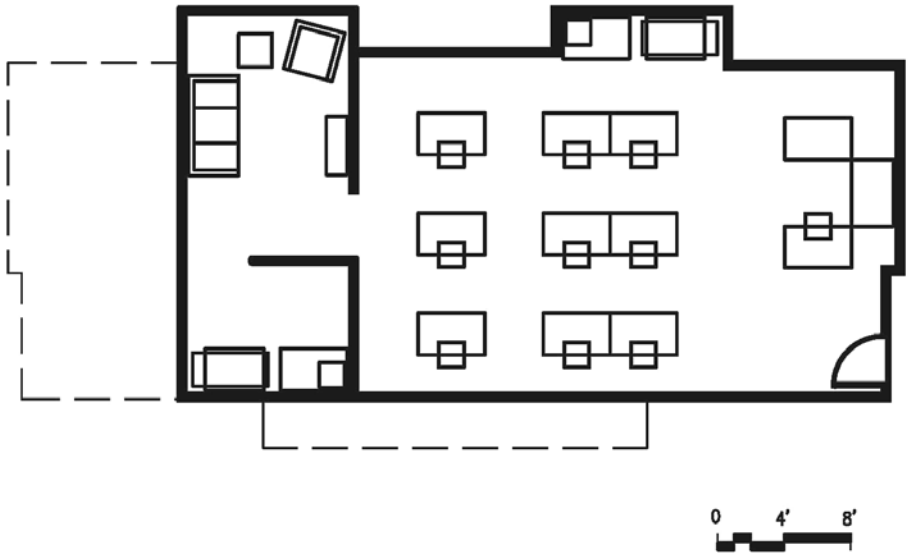


Diagram 4.3.2C – 1: computer lab, 945 sq. ft.

4.3.2C Computer Labs

Computer lab provides 10 stations of which one is used by the overseer. There are 2 printer/copy areas plus a more “relaxed” environment with a sofa and lounge chairs.

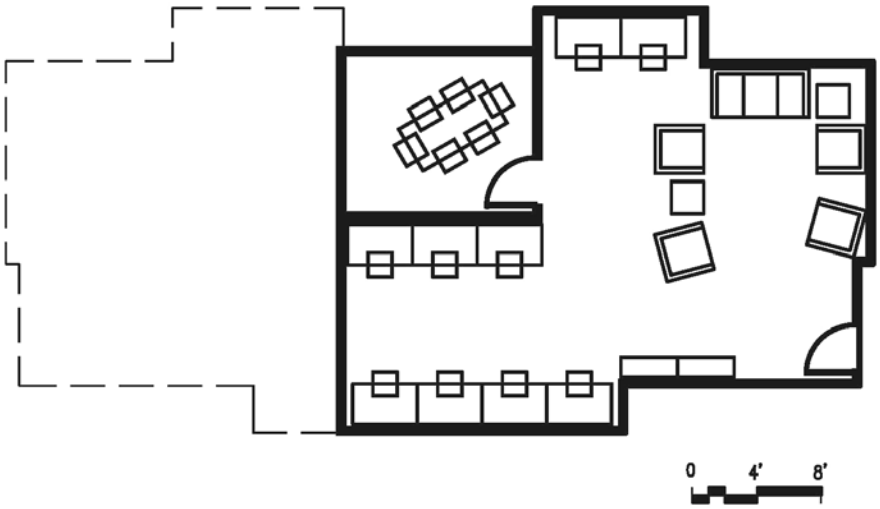


Diagram 4.3.2D – 1: study lounge, 755 sq. ft.

4.3.2D Study Room

Each study room is divided into 3 settings: conference room, individual stations of 9, and a lounge area.

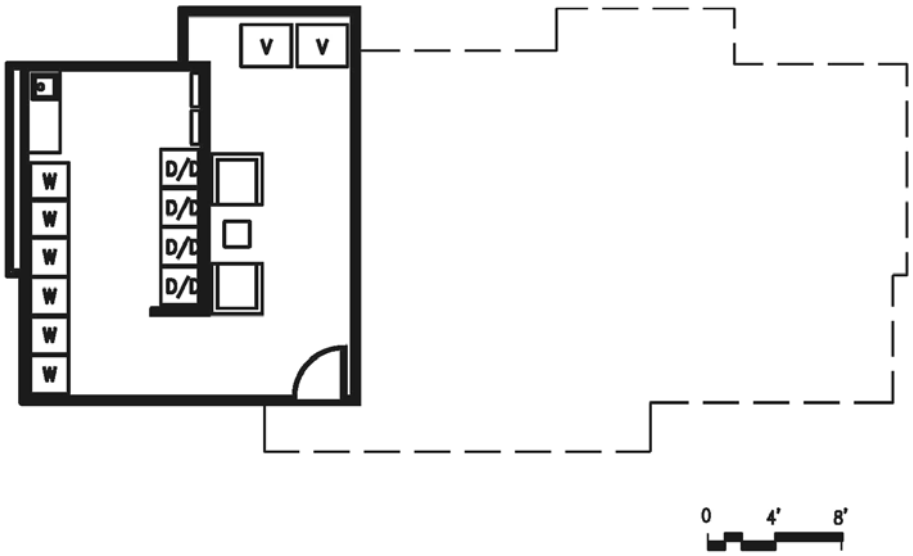


Diagram 4.3.2E – 1: laundry A, 415 sq. ft.

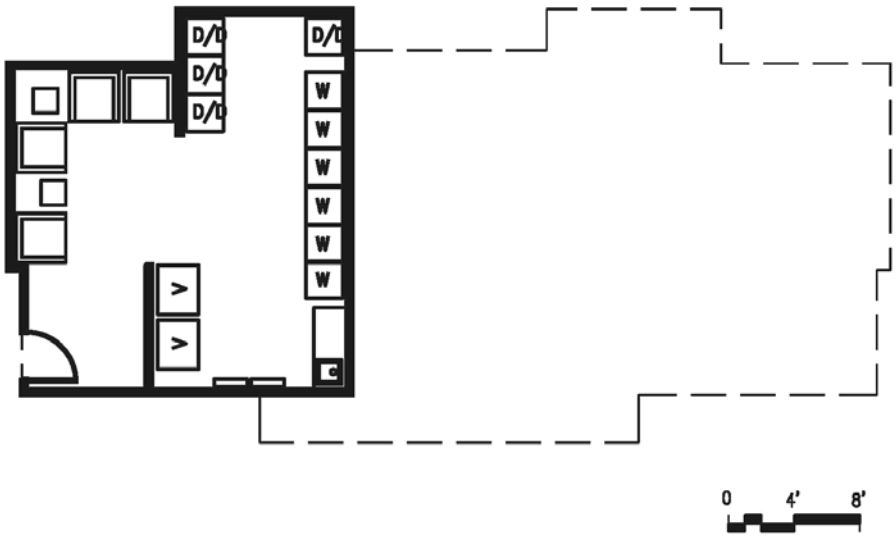


Diagram 4.3.2E – 2: laundry B, 425 sq. ft.

4.3.2E Laundry/Vending Room

Each laundry room provides 6 washers, 8 dryers, detergent dispenser, and a change machine. Incorporated into the space is an area for 2 vending machines and some lounge chairs.

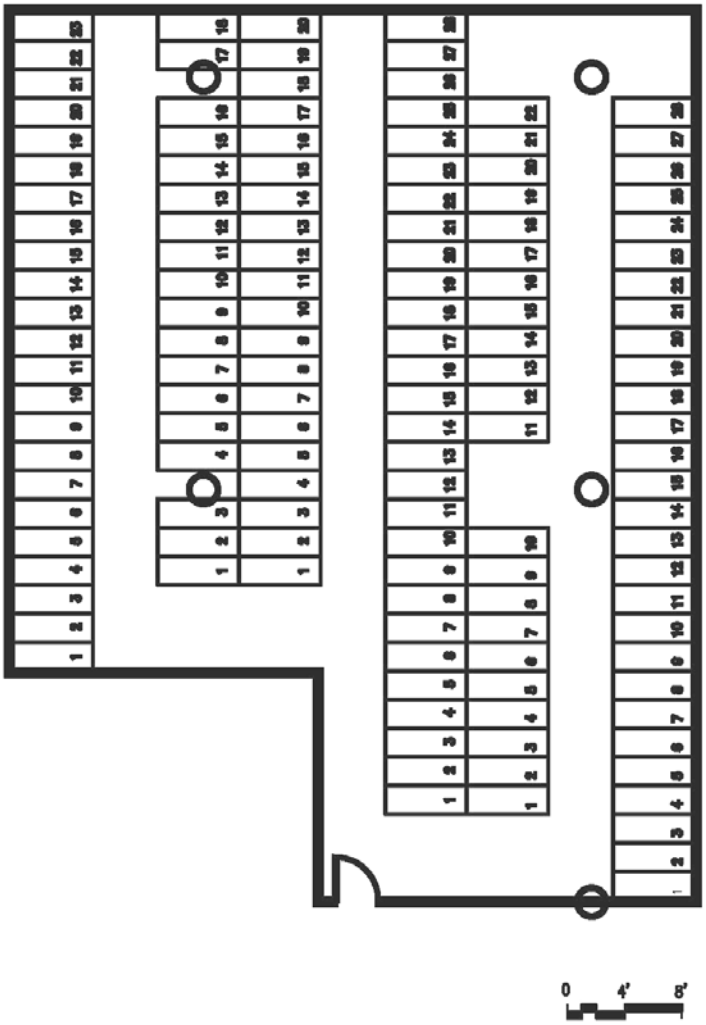


Diagram 4.3.2F – 1: bicycle storage (111 bikes), 2665 sq. ft.

4.3.2F Bike Storage

Bike storage accommodates up to 111 bikes.

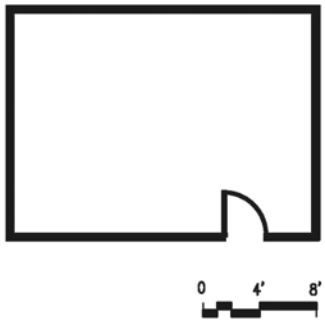


Diagram 4.3.2G – 1: recreation storage, 355 sq. ft.

4.3.2G Recreation Storage

Recreation storage provides storage for equipment and materials used for the recreation fields.

Diagram 4.3.2H – 1: maintenance shop, 526 sq. ft.

4.3.2H Support Spaces

- Maintenance Shop
- Trash Chute/Recycling
- Trash Room
- Housekeeping Closets

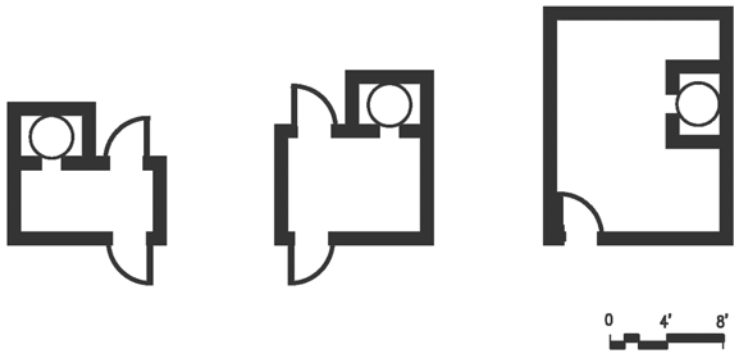


Diagram 4.3.2I – 1: trash chute A-60 sq. ft, B-92 sq. ft, C-204 sq.ft.

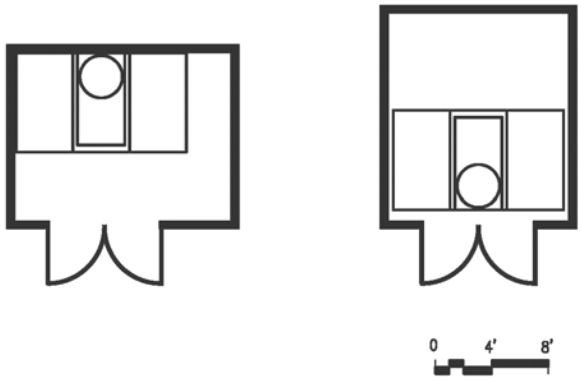


Diagram 4.3.2I – 2: trash room A-204 sq. ft, B-210 sq. ft.

4.3.2I Trash Rooms

Trash Rooms provide space for chute access and garbage bin collection and storage.

4.3.3 Conceptual Building Plans

Buildings A, B, C, and D are proposed to be 3 stories high located above parking. Building E is proposed to be 2 stories high.

Street Level/Parking Level

Primary pedestrian access to the parking garage and podium is at the southwest corner off Pentland Way. Secondary access is located at the southeast corner off of the Linden Street extension.

The parking garage entrance (vehicular) is located on the west end of the garage at Pentland Way.

The parking garage provides parking spaces for cars, motorcycles, and GEM carts. Additional components located in the garage include a maintenance shop, bike storage, recreation storage, trash rooms, and electrical rooms.

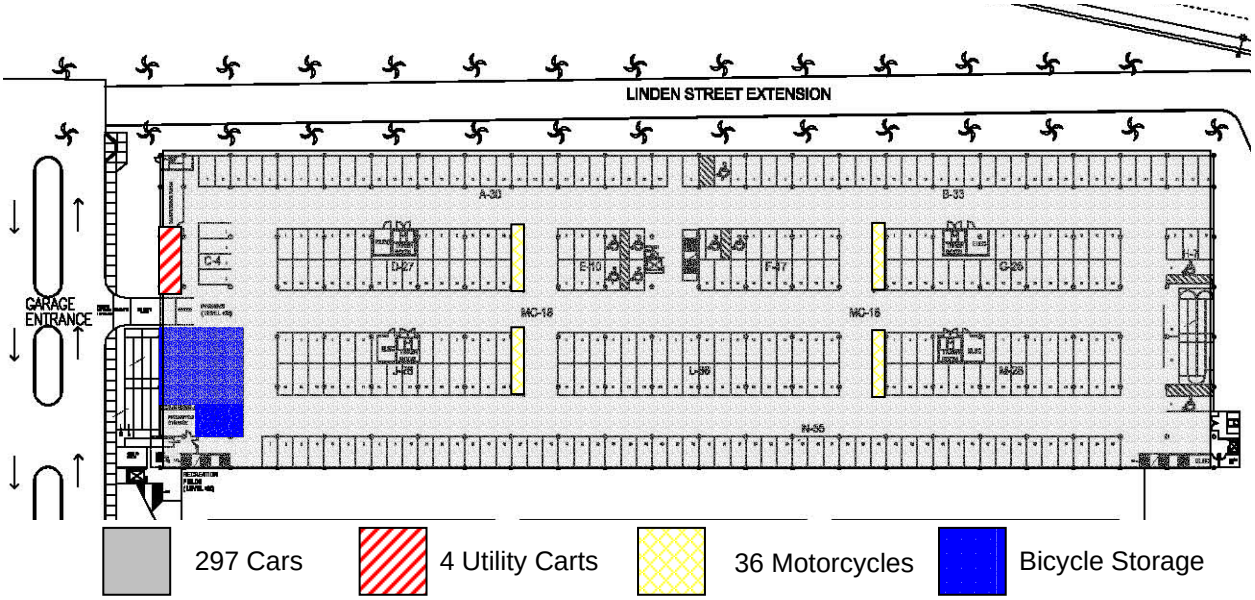


Diagram 4.3.3-1: Garage Level - Parking

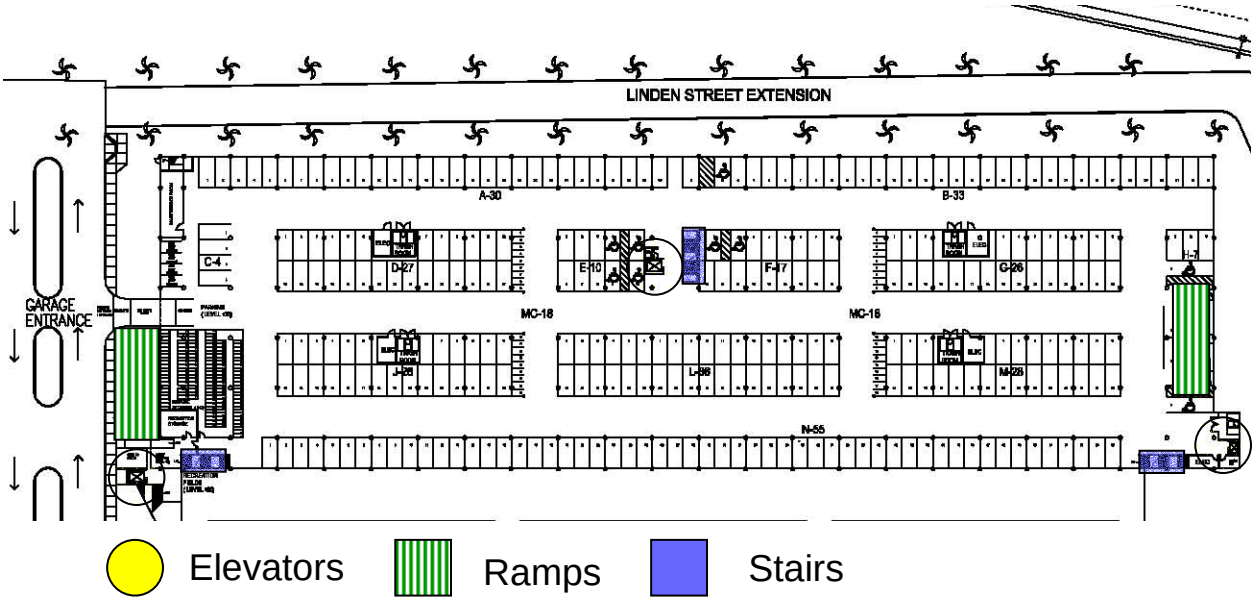


Diagram 4.3.3 - 2: Garage Level - Circulation

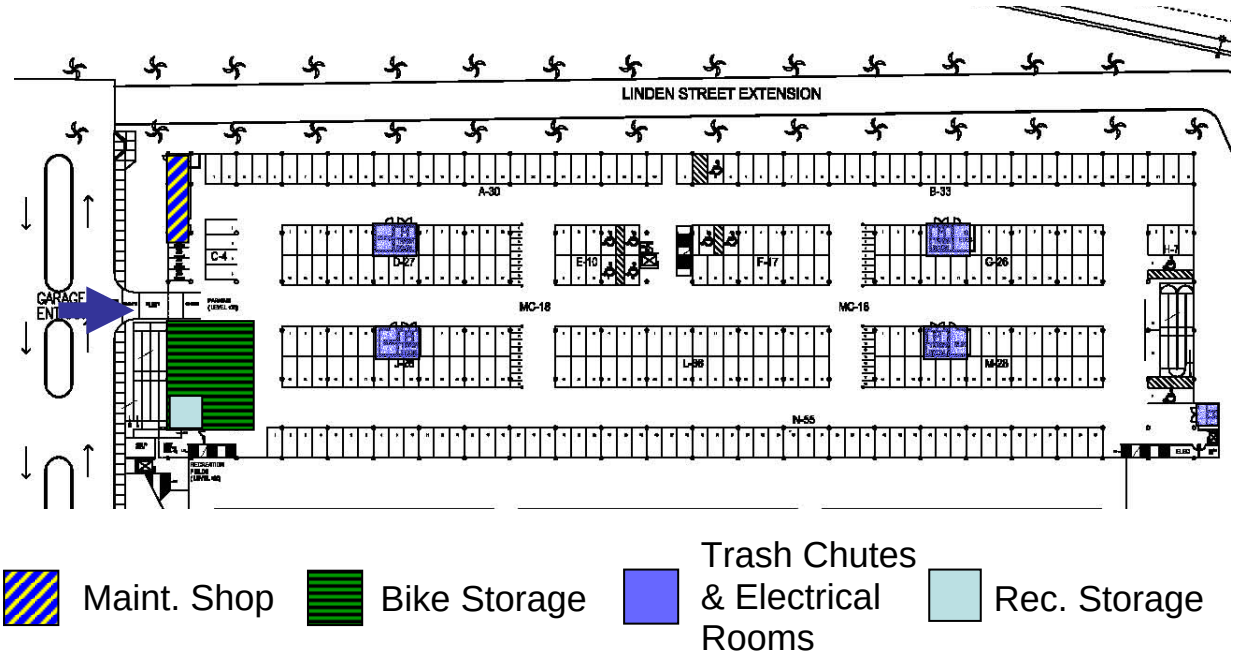


Diagram 4.3.3 - 3: Garage Level - Ancillary Space

4.3.4 Typical Building Floors

Each building floor is based upon the 4-bedroom module. The smaller units (2-bedroom, 1-bedroom, studios) fit within the 4-bedroom module. Ancillary or support space occupies space within the same module. Below are representative floor layouts showing how the modules fit together with circulation, support, and typical units.

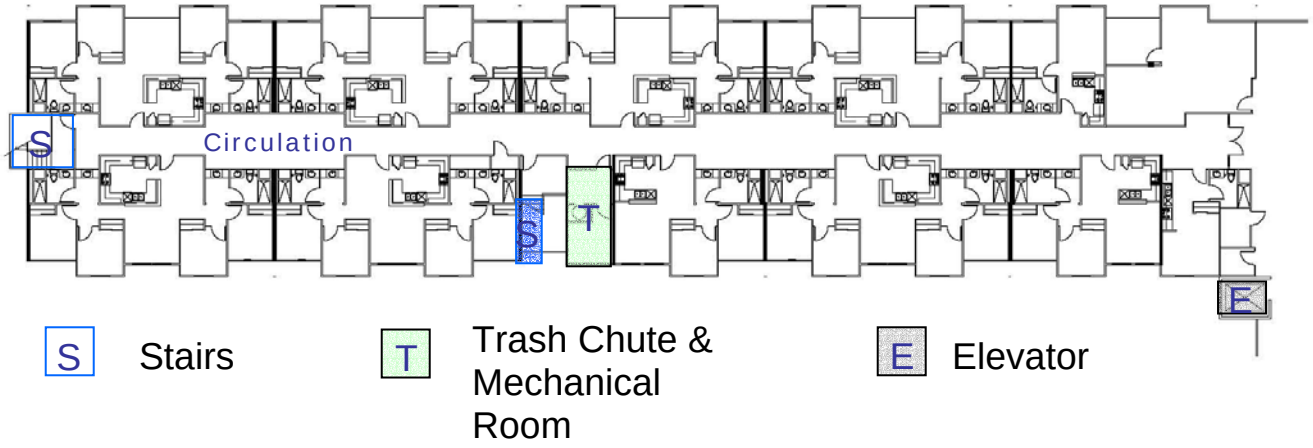


Diagram 4.3.4 - 1: Unit Levels – Circulation and Ancillary Space

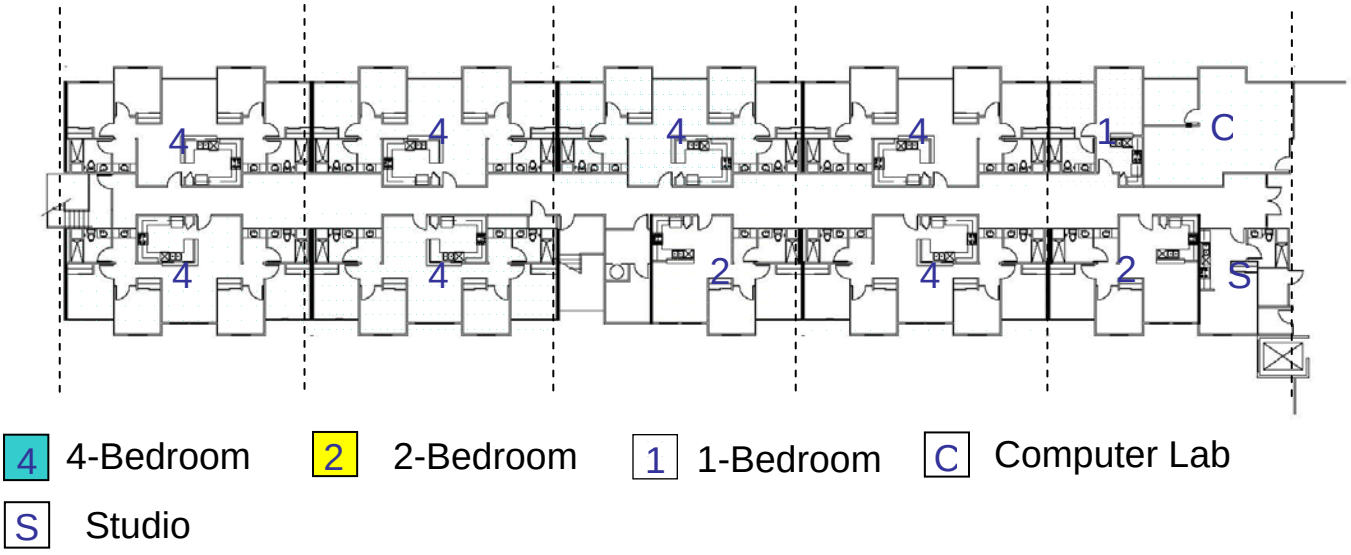


Diagram 4.3.4 - 2: Unit Levels – Sample Floor Layout based on 4 bedroom unit

4.3.5 First Floor

The first floor provides a total of 53 units in a mixture of 4-bed (37), 2-bed (12), 1 bed (2) and studios (2).

Amenities include a centrally located computer lab, laundry rooms that are decentralized for easier access, centralized administrative office and public restrooms, as well as trash/recycle rooms in each of the buildings.

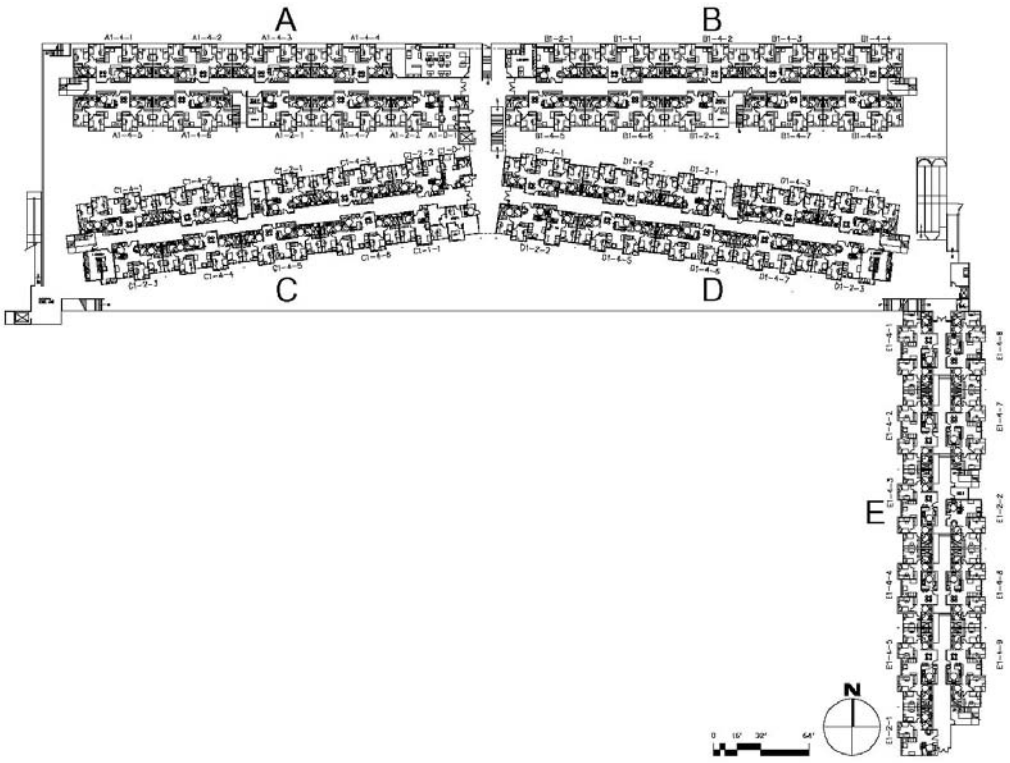


Diagram 4.3.5 - 1: First Floor Conceptual Floor Plan

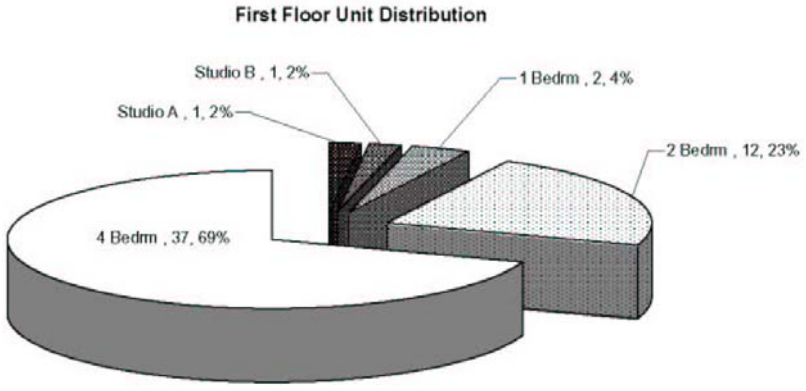


Diagram 4.3.5 - 2: First Floor Unit Distribution

4.3.6 Second Floor

The second floor provides a total of 54 units in a mixture of 4-bed (44), 2-bed (7), 1 bed (2) and studios (1).

Amenities include a centrally located study room and trash/recycle rooms in each of the buildings.

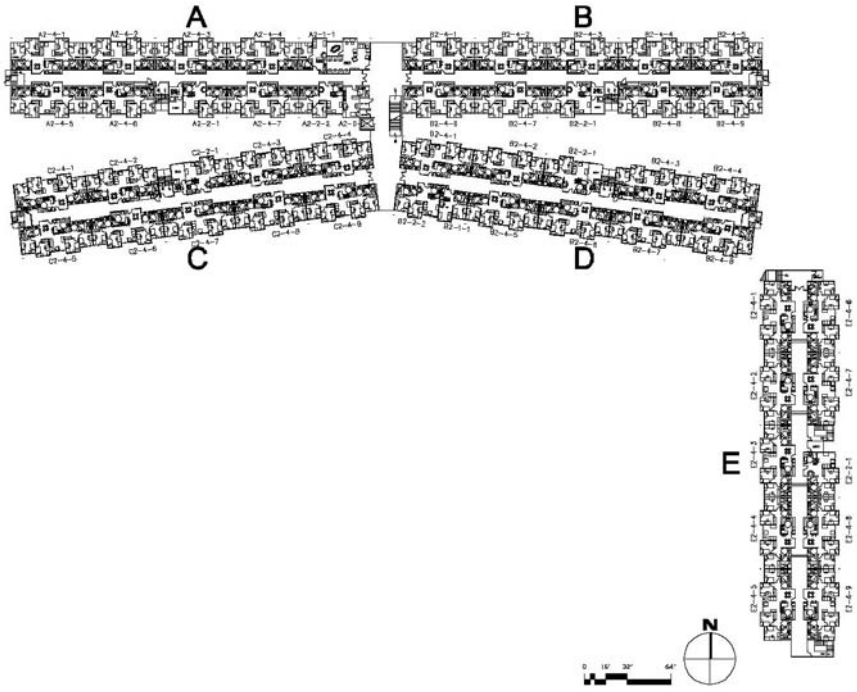


Diagram 4.3.6 - 1: Second Floor Conceptual Floor Plan

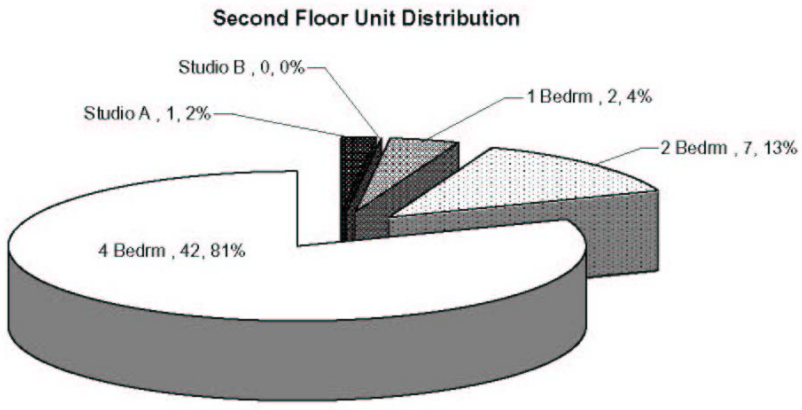


Diagram 4.3.6 - 2: Second Floor Unit Distribution

4.3.7 Third Floor

The third floor provides a total of 51 units in a mixture of 4-bed (39), 2-bed (5), 1 bed (1) and studios (1).

Amenities include a centrally located study room and trash/recycle rooms in each of the buildings.

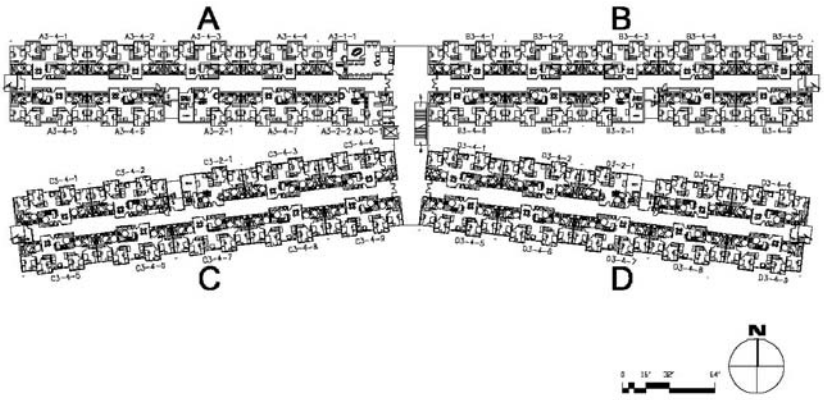


Diagram 4.3.7 - 1: Third Floor Conceptual Floor Plan

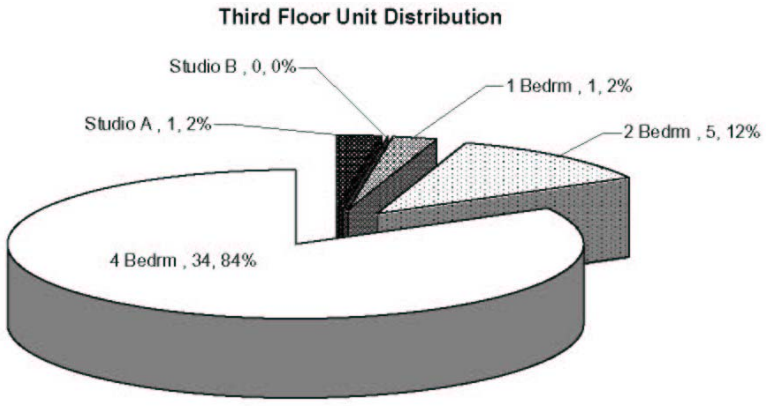


Diagram 4.3.7 - 2: Third Floor Unit Distribution

4.3.8 Unit Distribution

113	four-bedroom units	@ 1,214 ASF ea.
24*	two-bedroom unit	@ 755 ASF ea.
5	one-bedroom units	@ 472 ASF ea.
3	studios A	@ 365 ASF ea.
1	studio B	@ 392 ASF ea.
146		Total Units (508 Beds)

* One two bedroom unit is reserved for the resident director and therefore counts as only one bed

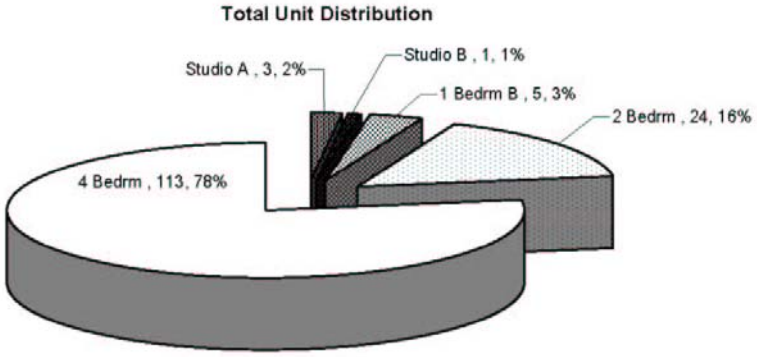


Diagram 4.3.8 - 1: Total Unit Distribution

4.3.9 Architectural Design

Building Mass / Scale manipulation is identified by the programming process as one of the important elements in providing visual interest and human scale, which is especially important on the east side of the project facing Valencia Hill Drive. Recessed wall planes and building offsets may help to create shadow lines and visual diversity. Articulating components and adding features such as canopies, awnings, and covered entries can help to break down the apparent mass of the complex to a more intimate, approachable scale**.**

Building Roofscapes will be pitched. Hip roofs are a good way to articulate the building mass and provide visual interest.

Exterior Building Materials should be chosen for their ability to lend texture and visual interest while providing durable, low maintenance surfaces that can be achieved within a limited budget. Such materials include:

- Painted Stucco Walls
- Concrete Masonry Walls
- Concrete composite roof shingles
- Limited decorative ceramic wall tile at focal points

4.3.10 Architectural Interior Design

Interior Finishes should be comprised of attractive, durable materials that require low maintenance while providing long-term wear. Color schemes should be selected to provide a neutral background that is timeless in its visual appeal while reflecting current market standards for private leased housing. The following guidelines should be followed with regard to the specification of interior finishes:

Space Name	Floor Covering	Base	Wall/ Ceiling	Window Coverings	Furniture
Living	carpet	painted wood base	painted	vertical solid vinyl blinds	refer to furniture chart
Dining	carpet	painted wood base			
Kitchen	sheet vinyl	vinyl roll			
Bedroom	carpet	painted wood base			
Bathroom	sheet vinyl	vinyl roll			

Notes:
1. Carpet will be broadloom carpet over pad of 1/10" gauge. Cut pile, loop, or cut and loop. Low pile height for easy maintenance and moisture barrier backing material to avoid transmission from either side of the carpet.
2. Sheet vinyl with limited seaming and heat welded seams.
3. Wood base with eased edge.
4. Paint in neutral colors with semi-gloss finish.
5. Blinds should pivot and draw completely to one side. Painted in neutral color.

Furnishings are an integral feature to the design of the apartment units and should be selected for their ability to provide cost-effective options that promote comfort, health and safety, in an attractive manner. Furniture finishes should be selected with an eye toward long term durability and wear, as well as ease in maintenance. Finishes should be neutral, yet appealing in character to satisfy a wide range of residents. The programming process identified the following furniture items that should be accommodated within the design of the apartment units:

Space Name	Quantity	Type of Furnishing
Living	1	Fully upholstered sofa to accommodate three residents
	1	Fully upholstered lounge char
	1	End table

	1	Entertainment unit
	1	Table lamp
	1	Floor lamp
Dining	1	42” diameter table
	4	Dining chairs
Kitchen	3	Bar stools
Bedroom	1	Single bed
	1	Night stand
	1	Dresser
	1	Desk with drop leaf top
	1	Desk chair
Bathroom	-	N/A

Millwork is provided in the kitchen and bathroom and should follow the following guidelines:

- Upper and lower cabinets constructed with plastic laminate
- Cabinet doors to be flush overlaid with concealed hinges.
- Drawers to receive accuride-style roller guides with full extension.
- Cabinet doors and drawers to receive 4” wire pulls.
- Countertops to be solid surface acrylic resin material, if feasible. Acceptable alternate finish is plastic laminate.
- Countertops to feature a radius or bull-nose leading edge with coved, molded 4” backsplash.
- Sink to be self-rimming drop-in units.
- Kitchen to have breakfast counter mounted at bar height.
- Bathroom to feature a base unit with a center sink and two identical sets of flanking drawers.

The following are guidelines for interior lighting:

- Entries to the units should feature a surface mounted or recessed fluorescent light fixture.
- Living Areas will not receive wall mounted or ceiling mounted fixtures. Lighting shall occur from lamps, either table mounted or freestanding.
- Dining areas should receive an overhead wall mounted fixture; either a pendant style fixture or a track fixture with adjustable heads. Track lighting promotes flexibility and allows residents opportunities to adapt the dining room to their individual needs.
- Kitchens should receive a 2' x 4' surface mounted fluorescent light fixture centered in the room.
- Bathrooms should receive an overhead fluorescent light fixture, either surface mounted or recessed, with an integral fan unit. One fluorescent vanity light should be located above the mirror at the sink.
- Bedrooms should receive an overhead surface mounted fluorescent light fixture centered in the room.

To respond to the University's commitment to sustainable design and student health, careful consideration should be given to the specification of interior finish materials. Whenever feasible, interior finish products should be manufactured fully or in part, from recycled materials and should have the ability to be recycled after their useful life. Carpet and carpet backing should feature recycled content and

should have the ability to be remanufactured in a closed loop cycle upon replacement. Paints and adhesives should have low or no VOCs to avoid harmful off gassing. Cabinetry construction should be formaldehyde free. Any wood staining should be performed off site. Lighting and window coverings should be selected for their value in conserving energy.

4.3.11 Building Exterior and Interior Graphics / Signage

All signage must comply with University signage guidelines and satisfy ADA requirements. Exterior signage will be required to identify the property, as well as components within the project and should allow emergency personnel to easily identify building locations from the street. Monument signs or pole-mounted signs will be required at strategic locations to identify the property for a first-time user or visitor. Within the complex, way-finding signage must guide visitors to individual buildings. This signage may include annotated directory maps with a "you are here" component, as well as a naming and/or numbering system for each individual building that must be prominently located. Examples of interior signage include interior corridor room numbering, public elevators and public restrooms.

4.3.12 ADA Requirements

The design of the project will conform to the Regulation for the Accommodation of the Disabled, Title 24, California Administrative Code including provisions of the Americans with Disabilities Act (ADA) Accessibility Guidelines for Building and Facilities.

The design of accommodations for people with disabilities is an important aspect of this project and should be addressed early in the planning process.

Special consideration should be given to the design and placement of accessible exterior walkways and ramps, as well as curb cuts at sidewalks.

For interior spaces, consideration must be given to the appropriate size and design of accessible public areas such as lobbies, corridors and elevators. Within the dwelling units, the kitchen and one bathroom will be designed to be handicap accessible. All kitchen cabinetry will not initially be installed at an accessible height, but can be modified, when required.

4.3.13 Parking Criteria

New development on the site must include the construction of parking spaces with a minimal ratio of 1 space for every 2 students.

Parking will consist of a single level of underground parking located below the buildings along the north edge of the site and will

accommodate three aisles of perpendicular parking running in the east-west direction. The basement would accommodate 297 parking spaces (9 handicapped), 36 motorcycle spaces (recognized as 12 spaces), and 4 GEM carts. This meets the University's target while providing additional space that could be used for visitor parking, service vehicle parking or other uses.

The entrance to the parking structure will be located on the west side of the basement off Pentland Way. While a detailed traffic impact report has not been completed, it can be assumed that one point of access will be adequate. Residential parking turnover is generally on the order of 30-50% in the peak hour. This generally occurs when people have to leave for work in the AM and return in the PM. In the case of this student apartment building complex, it is expected that the peak demand for travel will be less concentrated, and a relatively smaller share of people will be driving for their commute. Therefore the low end of the turnover range (30%) would be considered a conservative estimate, resulting in a peak trip hour generation rate of 100 vehicles per hour. This volume is modest and is well within the capacity of the parking aisle. The only other potential constraint would be the access intersection on Pentland Way. Considering Pentland Way is a cul-de-sac street with no parking lots, it is highly unlikely that traffic volumes would be large enough to create a capacity constraint for a driveway with a peak volume of 100 vehicles per hour.

4.4 SYSTEMS DESIGN CRITERIA

A moderate level of sustainable development was desired by the client. This gave rise to systems with relatively short payback periods and lowered first costs. Is also directed effort away from emerging technology systems, systems with longer pay backs and/or greater initial costs.

4.4.1. Structural

The UCR Arroyo housing complex is cluster of buildings located on the Arroyo site to the east of the campus. The four northern buildings (A, B, C, and D) are envisaged as three story structures grouped around a central circulation tower and linked by exposed bridge. They sit on a podium above a basement parking structure. The eastern building (E) is a two story structure without a basement. This project will be designed using the California Building Code (CBC), latest edition adopted by UC Riverside.

The geotechnical investigation must be made available to the design team in sufficient time to enable the development, at the outset, of viable foundation solutions.

Imposed Loads are the basic loads to be considered when designing this facility. Suitable load factors, load reductions, and load combinations are to be applied as required by code.

- Gravity Load is the actual weight of the in place material.
- Uniform Live Loads vary depending on the usage of the space. The following table summarizes the basic loads required for this facility,

however, special cases may occur which require particular consideration. Specific live loads from planting must also be accommodated.

Occupancy	Uniform Live Load		Concentrated Live Load
	Reducible	Un-reducible	
Residential apartments	40 psf	-	-
Residential balconies	60 psf	-	-
Circulation area	100 psf	-	-
Common public rooms	100 psf	-	-
Roof areas w/o mech. equip	20 psf	-	-
Roof areas with mech. equip	-	80 psf or weight of equip = 20 psf, whichever greater	-
Piazza walkway	100 psf	-	-

- Wind load effects on the structure as a whole and on individual elements shall be considered with recognition of its variation over the height of the building and orientation to the wind. Wind loading criteria are as follows:

Wind speed	70 mps, exposure C
Wind importance factor (I)	1.0

- Seismic Loads for a building located in Seismic Risk Zone 4, as defined by the CBC has a base shear calculation based on the following equations:

Design base shear	V=Cv I W / R T V need not exceed, V1=2.5 Ca I W / R V shall not be less than, V2=0.11 Ca I W
I	Importance factor, 1.0
W	Building's seismic weight
R	Over-strength and ductility coefficient (table 16-N)
T	Elastic fundamental period of vibration
Cv	Seismic zone ad soil profile coefficient (table 16-R)
Ca	Seismic zone and soil profile coefficient (table 16-Q)

- Foundation Loads arise from combinations of the above load cases. Depending on the structural frame and lateral force resisting system, there could be net uplift in certain locations. The geotechnical investigation must be made available to the design team in sufficient time to enable the development, at the outset, of viable foundation solutions.

Imposed Movements include settlement, heave, thermal changes, shrinkage, creep, drift, and elastic shortening. The structural system must be capable of resisting or minimizing the impact of these

movements. Guidance should be provided by the Geotechnical engineer on the range of predicted soil movement, both heave and settlement, in the long and short-term conditions. Consideration should be given to the effect of movement on cladding panels and partitions. Provision of both seismic and movement joints will need to be coordinated with the other engineering disciplines and the architecture.

Gravity Framing of a type 5 building with group R occupancy and floor to floor height pf 9' within the housing units and 12' within the 28.8' x 27' bay spacing garage will have potential construction materials of concrete, steel, masonry and wood.

Wood is currently the preferred system. Where the apartment buildings sit above a parking garage the sub structure would be concrete with a concrete top slab. This slab would form part of the adjacent walkway and the base for the wooden structure above. Options for the construction of this slab include post tensioned slab, two-way spanning concrete slab, one way spanning slab and beams, and ribbed slabs. These alternatives should be reviewed for overall thickness, ease of coordination with services, interface with plywood shear wall anchorage and future flexibility.

A comparable steel system would utilize wide flange beam and column and girder sections with lightweight concrete fill on metal deck for the suspended slabs. Shear studs on the beams and girders would ensure composite action with the structural slab thus maximizing the performance of the steel elements and creating a rigid diaphragm for the transference of lateral loads. The final orientation of the beams and girders would be selected to suit the services distribution and ceiling height limitations.

The equivalent concrete system would be post tensioned slab, two-way spanning concrete slab, one way spanning slab and beams, or ribbed slabs.

When comparing the merits of the different materials and framing systems consideration should be given to the building mass and configuration, floor to floor and overall building heights, associated foundation requirements, ease of integration of services, relative costs and ease and speed of construction.

Lateral Framing should be designed to resist both wind and seismic forces. The final selection of lateral system will depend on the overall building material. For a wooden structure plywood shear walls would be adopted. For a steel building braced frames, and for a concrete frame concrete shear walls. The relative merits of the different schemes should be compared on the basis of cost, constructability and compatibility with other disciplines requirements. The suspended floor slabs and the roof will act as diaphragms with drag elements delivering the loads into the lateral elements.

For all the building materials the lateral system should be located to minimize impact on major service routes and space planning. Positioning frames or walls away from the perimeter will enable more flexibility for the placement of windows.

If an irregular floor plan is chosen, consideration must be given to the dynamic performance of the structure. A scheme with non-symmetrical wings, or narrow 'necking' of the slab profile may require a seismic joint between the wings resulting in two or more independent buildings.
The bridges and central circulation tower will need to be designed with separate lateral framing systems and seismic joints to accommodate differential seismic movement between the structures.

Foundation should be designed to suit the soil conditions and the gravity and lateral framing schemes. At the lateral frames, resultant uplift forces may develop depending on the layout of the frames and the magnitude of the lateral demand. Uplift resisting elements should be provided or a system that results in negligible resultant uplift adopted.

A site-specific geotechnical investigation has not been performed as of this date. It should include an assessment of both shallow and deep foundation systems and basic design parameters for each. Any potential geological hazards should be identified and basic soil conditions including groundwater information provided.

The Geotechnical report for an adjacent site titled "Geotechnical Investigation – Undergraduate Housing Expansion 2 – University of California, Riverside, California was prepared for the UCR Job No. 00523-3 by CHJ Inc and is available. This indicates the soil to be comprised of both old and young alluvial materials and fill. The foundation recommendations include moving the fill and younger alluvial soils, replacing these with compacted fill capable of supporting conventional pad footings and slab on grade.

If shallow foundations are used, consideration will need to be given to avoid surcharging any retaining walls at the adjacent road and housing. Deep foundation options using straight shafted and belled drilled piers should be evaluated. However consideration will need to be given to the spacing of the drilled piers to ensure that they maintain proper separation whilst still aligning with the main structural grid.

Other Design Considerations of the structural system include serviceability requirements for the comfort of the users and satisfaction for the operation of the facility. This will include, for example, deflections limits, maximum beam depths, and location of vertical elements.

The fire rating of the structure should be considered as it will impact the selection of structural elements and the clear zone required for fire protection. If needed, protection from ground borne or airborne water and moisture vapor should be provided.

To help achieve comfort levels, sunshades, overhangs, and canopies will be an integral part of the design and should be incorporated into the overall building profile and support system.

External stairwells should be located to tie into the main structural frame to minimize the need for additional framing and lateral elements.
The location of mechanical plant on the apartment roof will impact the seismic weight of the structure and should be evaluated. A separate plant room on grade may be preferable and more cost effective.

Particular attention shall be given to building drifts and cladding compatibility as well as anchorage of non-structural elements so as to reduce seismic vulnerability.

4.4.2 Mechanical

The mechanical systems will be designed in accordance with the campus standards and will minimize energy use without compromising occupant safety or comfort.

The HVAC systems will be designed in accordance with the following codes, latest edition as adopted by UC Riverside:

- California Building Code, latest edition
- California Mechanical Code, latest edition
- ASHRAE 62
- National Fire Protection Association (NFPA), latest edition
- UCR Campus Design Standards, latest edition

Design Criteria of the site located at UCR with latitude of 34ºN and elevation of 1,110 feet would be the following:

Outside Design Conditions; refer to 2.2E Natural Systems in the Site Development and Infrastructure Improvements section.

Inside Design Conditions include the following:
- Temperatures from 68ºF - 78ºF and no humidity control.
- Minimum Supply and Exhaust Air ratios should be as follows:

Apartments	3 air changes per hour
Toilets and showers	10 air changes per hour
Mechanical rooms	0.15 cfm/sq. ft.
Electrical room	0.15 cfm/sq. ft.

Note:
1. There may be some special storage rooms that require a higher minimum or constant volume air change rate than listed above. These rooms should be agreed to during the early design stages.

- Maximum supply and exhaust air will be regulated so as to suit the cooling load or the exhaust volume, depending upon which requires greater airflow.
- Minimum ventilation rates will meet the requirements of ASHRAE Standard 62. Outside Air ratios should be maintained at the 20 cfm/ person in all areas serviced by re-circulation air systems.
- Air Filtration maintained at 65% minimum ASHRAIE-52.
- Noise Criteria should not exceed NC 35.

Internal Gains include equipment, lighting, and people loads.

- Equipment loads by consulting with the users. The designer shall include an appropriate factor for the diversity of equipment usage: The cooling loads shall therefore be less than the connected loads. For the purposes of Initial equipment sizing a design value of 1.5 w/ft2 for apartments is used.
- Lighting loads is calculated with a design value of 1.2 w/ft2 for the purpose of initial equipment sizing.
- Occupancy ratio shall be 100 square feet over the net usable area. This corresponds to approximately 1 w/ft2 sensible and 1 w/ft2 latent.

Points of Connection to Site Utilities should be investigated by the design team for all possibilities. The underground campus infrastructure will be extended as required to meet the building requirements. Campus chilled water and campus steam systems will not be extended.

Heating & Cooling Systems of unitary air to air heat pumps will be considered for the basis of design. The air to air heat pumps will respond well to the predominance of perimeter spaces with varying orientations and individual thermal zones. The design team should consider the length of refrigerant runs and compressor location in their design. Configurations may include but are not limited to: through the wall packaged units, split systems that are roof mounted, ducted systems in recessed cavities. The heat pumps shall be installed and sub-metered on an individual basis for billing purposes.

For the purposes of this DPP the capacity of each residence bedroom air to air heat pump is estimated to be 3,800 BTUH cooling/1,200 BTUH heating. Assuming 400 sf/ton, buildings A, B, C, and D collectively are anticipated to demand approximately 540 tons of cooling.

The final cooling capacity will be heavily dependant on energy efficiency improvements installed within or as a part of the building thereby resulting in reduced cooling demand.

Alternate systems for improved energy performance shall be provided, in keeping with the University's desire to pursue sustainable design opportunities. The design team shall evaluate the cost and benefits associated with the following alternate systems. The comparative evaluation shall make use of life cycle cost analysis techniques and shall be made available to the University prior to the design team's completion of schematic design. Discount rate, analysis period, and escalation rate shall be as provided by the University. If such information is not provided by the University, the DOE discount rate and DOE escalation rates current as of the start of analysis shall be used1. The analysis period shall be 30 years. As with the Air to Air Heat Pump System, all alternate systems shall be installed and sub-metered on an individual unit basis for billing purposes.

[1] The DOE real discount rate (which excludes general price inflation) for 2002 is 3.2% (nominal rate is 5.6%). Current discount and escalation rates can be found by referencing the "Annual Supplement to Handbook 135", US DOE, http://www.eren.doe.gov/femp.

- Alternate I: air to water heat pumps with a cooling tower and boiler source is an alternate source of heating and cooling that will be considered. In addition to the improved efficiency, the elimination of extended refrigeration runs should be considered (when comparing to air to air basis).

  Condenser water will be provided to serve the air to water heat pumps via a condenser water loop serving the site buildings. Centralized cooling towers and boilers shall be used to maintain loop temperature between 65°F and 85°F. The design team shall select cooling towers with a minimum approach of 6°F and a low air pressure drop.

  For the purposes of this DPP, the diameter of a buried un-insulated HDPE central condenser water loop is estimated at 10". This accommodates 600 tons of 1440 gpm at a 10°F delta T.

- Alternate II: air to water heat pumps with a ground source heat pump should be considered as another optional system. The ground water table is approximately 50' to 100' below grade. The design team shall confirm the stabilized groundwater temperature of approximately 68°F[2].

  Condenser water will be provided to serve the air to water heat pumps via a condenser water loop serving the site buildings. Vertical bore holes shall be drilled for coupling of high density poly-ethylene pipe with the ground water source. The pipe sections shall be fused with an estimated lifetime exceeding 40 years. Loop temperature will be maintained between 60°F and 76°F. The design team shall design the system to minimize pressure drop through the pipes. An approach of 5°F on the ground coupled heat exchanger is achievable.

Noise and Vibration Control considerations should be taken into account when designing mechanical systems. The design will consider any limitations of the structure, and the presence of program areas with restrictive sound criteria. Particular attention will be given to the location and isolation of heavy equipment, including cooling towers, boilers, pumps and compressors.

Duct noise, including noise generated by fans, excessive air speed, excessive pressure drop, dampers, turning vanes, terminal boxes, resonances and pressure fluctuations shall be considered. Pipe noise and vibration transfer due to pump vibration and excessive pipe velocity shall also be considered.

Controls systems shall be designed in accordance with the UC Riverside Campus Design Guidelines and in conformance with Methodology B of the 2001 IPMVP Standard.

Local control inputs will be used for the HVAC system in order to provide residents with point of use control. All resident private rooms

[2] W.D.Collins, "Temperature of Water Available for Industrial Use in the United States," U.S. Geological Survey Paper 520-F, Washington, D.C., 1925.

will be sub-metered for the purpose of billing and shall be indirectly monitored by way of electrical consumption.

Where centralized equipment is specified (as in the air to water – cooling tower/boiler source system), a modular indirect digital control (DDC) system shall be installed. All zone controls (heat pumps, fcu's, thermostats, reheat coils, etc.) will be electric. A common data highway will link all the modular controllers. A central personal computer and printer will be provided. Full color system simulation, monitoring, trending and set point and sequence modification will be available at this central station. The system will be capable of transferring data to the campus energy management control system for monitoring purposes.

Energy Efficiency alternative measures shall be investigated by the design team. Each shall be evaluated on a life cycle cost basis in constant dollars, with study life, discount rate, and escalation rates as provided by the University. The building energy usage shall exceed Title 24 requirements by at least 10% and incorporate all other mandatory measures found in the current edition of the UC Riverside Campus Design Guidelines. It is assumed that the building systems will incorporate standard practices for energy efficiency, including the following:

- Variable volume fan systems, to reduce fan energy under low load conditions.
- If hydronic distribution loops are included in the design, variable speed pumping shall be used to reduce pumping energy.
- Building fabric and systems shall exceed Title 24 where applicable.

4.4.3 Electrical

The electrical systems will include the following:

Lighting	Interior and exterior
Power	Normal, 227/480V, 120/208V, 3 phase, 4-wire
Signal Systems	Fire alarm, telecommunication (voice/data), and security

The electrical installation will comply with the following codes and standards, latest edition as adopted by UC Riverside:

- California Electrical Code
- California Code of Regulations (CCR)
- National Fire Protection Association
- UCR Campus Design Stan dards, latest edition
- Illuminating Engineering Society of North America (IES)

Design Load estimate is obtained by assigning unit loads per square foot (VA/ft^2) for each system to early program gross areas and will be updated as additional information is received. The following is a summary of the preliminary load estimation for the UCR Arroyo Housing complex.

Items	Normal VA/ft2	Ft2	Normal kVa

Lighting **All Areas**	1.5	215,000	323
Receptacle Power **All Areas**	3.5	215,000	752
HVAC/Ventilation **Heat Pumps** **Fans** **Plumbing** **Elevators**	6.0 2.5 0.5 1.0	215,000 215,000 215,000 215,000	1290 538 104 215
Subtotal			**3225**
Allow 10% margin			**322**
Total			**3550**

The total estimated load for the UCR Arroyo Housing complex is 3550kVA. A pad-mounted transformer or secondary unit substation at each building will serve this load. The transformer size for each building will be determined based on occupancy and size. An external area adjacent to each building shall be provided to accommodate the building transformer.

All transformers will have 480/277V, 3-phase, 4-wire secondary.

Power will be obtained from the campus 12 KV distribution systems. The transformers will be arranged for loop feed. The exact points of service connection will need to be determined in conjunction with Campus Facilities.

Each housing building will have a main electrical room containing the main 480/277V, 3-phase, 4-wire switchboard and distribution boards. Dry-type step-down transformers will be provided to obtain 208/120V power. The main electrical room shall be positioned as close as possible to the campus service connection point (transformer location).

The building power distribution will be at 277/480V and 120/208V via cable feeders in conduits and will be distributed as stated in the chart below.

Motor loads of one horsepower and larger	480 V, 3-phase, 3-wire
Fluorescent lighting and HID fixtures	227V and 120V, 1-phase
Special equipment	208V, single phase, 3-phase
Motor loads smaller than ¾ horsepower and receptacle outlets	120V, single phase

In each building the branch electrical rooms (or closets) on each floor shall be vertically stacking. The number of electrical rooms (or closets) will depend on the building layout and size of the floor. The requirement for electrical room ventilation will be evaluated during the design phase. Each electrical room will have a 277/480V distribution board and feeders will be provided for service motor loads and lighting. A 120/208V distribution board will also be provided and will feed individual apartment single-phase panel boards. Each apartment

panel boards will be metered. The apartment panel boards serve all electrical loads within the apartment.
Distribution of power within the building areas is to be via a conduit and wire system.

Power outlets equally spaced on face of podium on recreational field side will provide power for outdoor program activities.

Power hook-ups for electric 'gem carts' will be provide at the designated parking spaces within and adjacent to the maintenance room.

The emergency power requirement for exit and egress lighting will be provided by the use of integral battery inverter systems in the designated luminaries. Similarly the fire alarm and security systems shall have an associated battery system to provide power during normal power outages. No standby diesel generation or other alternate generation system will be provided for emergency power means.

A central grounding system will be provided for all the switchboards. A low impedance connection to earth will be obtained using ground rods, a concrete encased electrode and bonding to the building steel and main water piping. All grounded busses from switchboards, transformers, and panel boards will be connected at a central ground bus in the electrical room.

Lighting levels will be designed in accordance with Illuminating Engineering Society (IES) recommendations and UCR standards. The lighting power density will be less than that mandated by California Code of Regulations (CCR), Title 24 - Energy Conservation Regulations. The following lighting levels will be provided:

Work Plane Lighting Levels	
Room	**Footcandles**
Apartments (General)	5-10
Kitchen (General)	20-30
Lobby	5-10
Living/Study Area (General)	15-25
Living/Study Area (Task)	40-50
Corridors	5-10
Storage/Janitor's Rooms	10-20
Toilets	15-25
Electrical/Mechanical Rooms	20-30

The following lighting specifications will be followed:

- Light fixtures in general will be fluorescent type such as down lighting fixtures (utilizing compact fluorescent) and linear recessed fixtures using T8 or T5 lamps and electronic ballasts.
- Wall switch devices in general will be used for manually control of light fixtures in apartment areas.
- Exit signs will be LED type. A battery inverter system will be used to serve egress luminaries.
- Exterior lighting will be high intensity discharge and will be controlled photocells and time switch.

Fire Alarm System should match the UCR campus design guidelines and conforming to NFPA 72, UBC, and ADA requirements. The system will be provided for each building and will consist of the following:

- A main fire alarm control panel located in the electrical room of each building.
- The building will have full area smoke detector coverage in order to avoid the requirements for duct detectors. Heat detectors will be located in all elevator machine rooms, as required. Fire/smoke dampers will be closed and air-handling units will be shut down using the full area coverage detectors in accordance with applicable codes and as required by the UCRFD.
- Each unit shall be provided with addressable smoke detectors in the bedroom units and outside each room.
- Fire alarm horns and strobes shall be provided at the living room of each unit and all common spaces including lobbies, coffee rooms, and laundry room.
- Handicapped designated units shall be provided with 100 candela strobes at the bedrooms and toilet area. These strobes shall be driven and supervised by the building fire alarm system.
- Audio-visual alarm stations will be provided along all egress routes, toilet areas, lobbies and other areas of assembly.
- Pull stations will be provided along egress routes.
- The fire alarm system shall be linked with the elevators to a predetermined floor and to the mechanical air supply system for shut down in the event of a fire alarm signal. The system will also be linked to the sprinkler flow switches and valve monitors and connected to the campus main fire alarm system through telephone interface. All devices shall be addressable.

4.4.4 Plumbing

The plumbing and fire protection systems will be designed in accordance with campus standards and the current codes, latest edition as adopted by UC Riverside.

- California Building Code, latest edition
- California Plumbing Code, latest edition
- California Fire Code, latest edition
- National Fire Protection Association (NFPA), latest edition
- UCR Campus Design Standards, latest edition.
- American with Disabilities Act (A.D.A.)
- UL –Underwriter's Laboratories
- AGA – American gas Association
- ASME – American Society of Mechanical Engineers
- ASSE – American Society of Sanitary Engineers
- ASTM – American Society for Testing and Materials
- AWWA – American Waterworks Association
- NSF – National Sanitation Foundation
- PDI – Plumbing and Drainage Institute
- California Administrative Codes, Titles 8, 17, 22 & 24

Design Criteria & System Description

- Domestic water system shall be connected to the Campus water main extension from Linden Street. Each building will be provided with individual control valves, backflow protection and pressure reducing devices and meter. Based on the East Infrastructure DPP, the Campus has adequate water pressure and flow to supply each buildings water demand.

  Domestic cold water pipe sizing shall be based on a maximum velocity of 6 feet per second; hot water system shall be based on maximum velocity of 4 feet per second; and allowable pressure loss of 2 psi per 100 feet.

  Industrial cold water shall be taken from the domestic cold water system, provided with reduced pressure backflow protection device. Pipe sizing shall be based on the same criteria as the domestic cold water system.

  Hot water shall be provided to each unit via tank-less water heaters. The water heaters are gas supplied but have no pilot, so standby losses are negligible. Depending on the location and distance of the water heaters to the plumbing fixtures, a re-circulating system might be provided.

  Sectionalizing control valves shall be provided at the main water system to provide accessibility for service. Cold water supply to each unit shall also be provided with shut-off valves and sub-water meter.

- Storm drainage system shall be sized based on Tables 11-1 and 11-2 of the latest edition of the California Plumbing Code. Rainfall intensity of 4”/hour will be used. This was based on the East Infrastructure DPP.

  The main roof drainage will be routed within the building and will discharge to 5’-0” outside the building. Final connection to the site’s main storm drainage system shall be under the Civil Engineer’s scope of work. Overflow drains will be routed and discharge at face of building at (+/-) 6” above the finish grade or at face of curbs.

  Buildings A, B, C, and D are located over a basement parking structure. This basement parking structure shall be provided with area drains and emergency drains and will discharge into a sump pit and pump out of the building and connected to the main storm drainage system. Provision for sub-soil drainage system will depend on the results of the geotechnical report.

  Sanitary waste and vent system shall be sized based on Tables 7-3 and 7-5 of the latest edition of the California Plumbing Code. It shall be routed to 5’-0” outside of the building and connected to the Campus 12” main sewer extension from Linden Street. Final connection to the sewer mains shall be provided under the Civil Engineer’s scope of work.

- Natural gas service is provided by the Southern California Gas at a pressure of 25 psi. The distribution system within the Campus is at 5 psi. Each building will be provided with an individual gas meter assembly comprising of gas meter, gas pressure regulator, gas shut-

off valve and gas seismic valve. The gas pressure will be reduced to 8" W.C. The natural gas system shall be sized based on Table 12-3 of the latest edition of the California Plumbing Code.

- Fire Protection System shall be based on the latest edition of the National Fire Protection Association (NFPA) Pamphlet No. 13, the California Building Code and California Fire Code. The entire building shall be protected by an automatic sprinkler system. The system shall be hydraulically protected, based on the current water pressure and performance flow test acquired from the Campus water system. The minimum rate of water application (density) shall be 0.10 GPM per square foot for Light Hazard, over the most remote 1,500 square feet. The podium (above the garage) shall be provided with dry standpipes spaced per NFPA 14, to provide full coverage of the south-side of buildings A, B, C, and D.

4.4.5 Telecommunications

Conduits will be provided from site telecommunication manholes to each building for incoming cables, as well as between buildings for inter-connecting cables, as required.

Telecommunication closets will be provided per UCR telecommunication service requirements. Backboards, ground bars, and receptacles will be provided. Riser conduits and/or sleeves will be provided for vertical distribution cabling. Cable trays will be provided for horizontal distribution cabling. An outlet box with conduit will be provided for each communication outlet.

4.4.6 Life / Safety Criteria

Security

Public areas of the project will be open and accessible during standard operating hours, to be determined by the University. After hours, access will be limited to residents only who may access the public areas through a card key system.

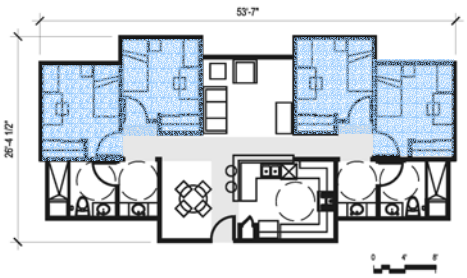
Access to individual dwelling units will be restricted to residents only. Residents will have card key access at the exterior entry door to the unit.

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.

A fire or security alarm will also trigger a notice within the staff apartments in this development.

4.4.7 SPACE DATA SHEETS

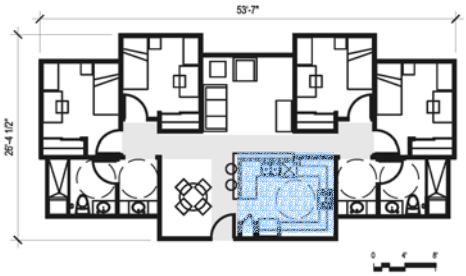
Space data sheets are provided as a guide to each room type anticipated (ASF). Freestanding equipment or moveable furniture shown will be provided by the owner.



ROOM DESCRIPTION	
Name	**Bedroom**
Function	
Utilization	
Adjacencies	Bathroom
Quantity of Room	509
ASF	112SF/120SF
Total ASF	
ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	X
Epoxy Finish	
Other	
Base	
4" vinyl	
4" wood base	X
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd. Painted	X
Other	
Doors	
Dimensions	3'-0" x 7'-0"
Finish	Painted
Other	
Windows	
Dimensions	TBD
Coverings	
Horizontal Shades	
Vertical Shades	X
Curtains	
Frame	
Glazing type	Low E / IGU
Operable	X
Non-operable	
Other	
MECHANICAL	
Air to Air Heat Pump	X
Temperature Control	X
Exhaust Fan	
Exhaust Hood	
Smoke Detector	X
Ceiling Fan	
ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V (2)	X
208V, single phase	
208V, three phase	
Communications	
Voice (1)	X
Data (1)	X
Cable (1)	X
Keycard Access	
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	
Natural Gas	
Steam	
Sink	
Floor Sink	
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	
CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	
FURNITURE / EQUIPMENT	
Movable	
Desk	X
Desk-Chair	X
File Cabinet	
Computer	
Printer	
Cash Register	
Card Reader	
Bed	X
Night Stand	X
Dresser	X
Sofa	
Lounge Chair	
Coffee Table	
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	

Diagram 4.4.7 - 1: Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Kitchen**
Function	
Utilization	
Adjacencies	Dining
Quantity of Room	259
ASF	126SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	X
Carpet	
Epoxy Finish	
Other	
Base	
4" vinyl	X
4" wood base	
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Temperature Control	
Exhaust Fan	
Exhaust Hood	X
Ceiling Fan	
Other	

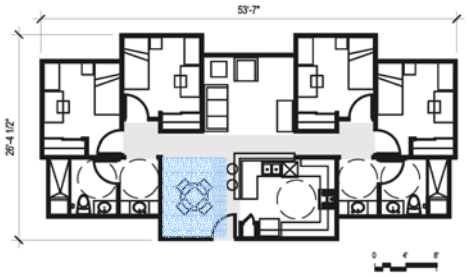
ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V (2)	X
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Hot Water	X
Cold Water	X
Natural Gas	X
Steam	
Sink	X
Floor Sink	
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	X
Other	

CASEWORK	
Base	X
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	X
Open	
Finish	
Counter	X
Dimension	
Finish	Plastic Laminate
Backsplash	X
Upper	X
Dimension	
Style	
Door Cabinet	X
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	
Desk-Chair	
File Cabinet	
Computer	
Printer	
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	
Lounge Chair	
Coffee Table	
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	X
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	
Range	
Range/Oven	X
Oven	
Microwave	X
Other	
Dishwasher	X

Diagram 4.4.7 - 2: Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Dining**
Function	
Utilization	
Adjacencies	Kitchen/Living Room
Quantity of Room	146
ASF	68SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	X
Epoxy Finish	
Other	
Base	
4" vinyl	
4" wood base	X
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Temperature Control	
Exhaust Fan	
Exhaust Hood	
Ceiling Fan	X
Other	

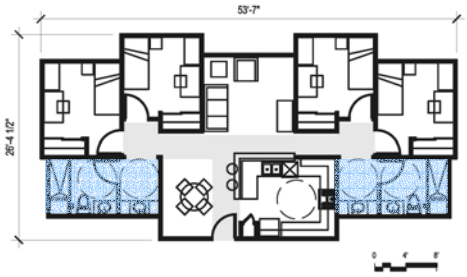
ELECTRICAL	
Lighting	
Fluorescent	
Compact Fluor.	
Incandescent	X
Halogen	
Heat Lamp	
Other	
Power	
120V (1)	X
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	
Natural Gas	
Steam	
Sink	
Floor Sink	
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	
Desk-Chair	
File Cabinet	
Computer	
Printer	
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	
Lounge Chair	
Coffee Table	
TV Stand	
Dining Table	X
Dining Chair	X
Bar Stool	X
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	

Diagram 4.4.7 - 3: Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Bathroom**
Function	
Utilization	
Adjacencies	Bedroom
Quantity of Room	261*
ASF	103SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	X
Carpet	
Epoxy Finish	
Other	
Base	
4" vinyl	X
4" wood base	
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	3'-0" x 7'-0"
Finish	Painted
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Temperature Control	
Exhaust Fan	X
Exhaust Hood	
Ceiling Fan	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Heat Lamp	
Other	
Power	
120V (1per sink)	X (GFI)
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

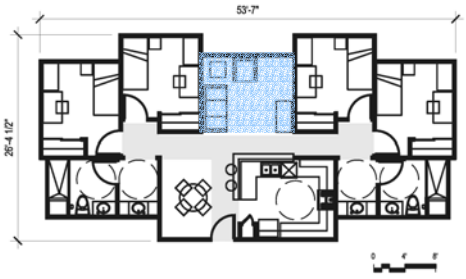
*Includes 2 55Sf public bathrooms

PLUMBING	
Hot Water	X
Cold Water	X
Natural Gas	X
Steam	
Sink	X
Floor Sink	
Shower	X
Toilet	X
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	X
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	Plastic Laminate
Backsplash	X
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT
Movable
Desk
Desk-Chair
File Cabinet
Computer
Printer
Cash Register
Card Reader
Bed
Night Stand
Dresser
Sofa
Lounge Chair
Coffee Table
TV Stand
Dining Table
Dining Chair
Bar Stool
Refrigerator
Refrigerator/Freezer
Freezer
Toaster
Slicer
Bread Rack
Trash Can
Scale
Fixed
Mirror
Toilet Paper Holder
Shower Curtain Rod

Diagram 4.4.7 - 4: Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	Living Room
Function	
Utilization	
Adjacencies	Dining Room
Quantity of Room	142
ASF	116SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	X
Epoxy Finish	
Other	
Base	
4" vinyl	
4" wood base	X
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	TBD
Coverings	
Horizontal Shades	
Vertical Shades	X
Curtains	
Frame	
Glazing type	Low E
Operable	X
Non-operable	
Other	

MECHANICAL	
Air to Air Heat Pump	X
Temperature Control	X
Exhaust Fan	
Exhaust Hood	
Ceiling Fan	
Smoke Detector	X

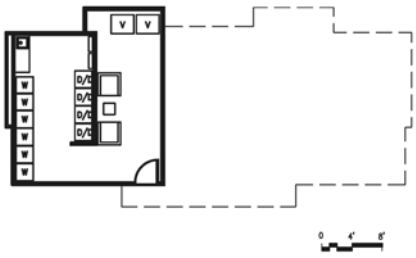
ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	X
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V (2)	X
208V, single phase	
208V, three phase	
Communications	
Voice (1)	X
Data (1)	X
Cable (1)	X
Keycard Access	
Other	
Accessories	
Signage	
Other	

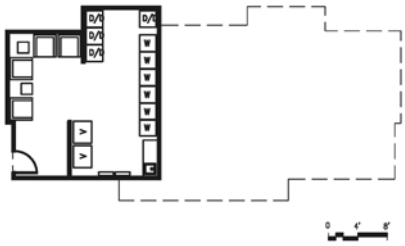
PLUMBING	
Hot Water	
Cold Water	
Natural Gas	
Steam	
Sink	
Floor Sink	
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	
Desk-Chair	
File Cabinet	
Computer	
Printer	
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	X
Lounge Chair	X
Coffee Table	X
TV Stand	X
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	

Diagram 4.4.7 - 5: Room Diagram and Space Data Sheet





ROOM DESCRIPTION	
Name	Laundry Room
Function	
Utilization	
Adjacencies	
Quantity of Room	3
ASF	415SF/425SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	X
Carpet	
Epoxy Finish	
Other	
Base	
4" vinyl	X
4" wood base	
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	3'-0" x 7'-0"
Finish	Painted
Other	
Windows	X
Dimensions	TBD
Coverings	
Horizontal Shades	
Vertical Shades	X
Curtains	
Frame	
Glazing type	Low E/IGU
Operable	
Non-operable	X
Other	

MECHANICAL	
Air to Air Heat Pump	X
Temperature Control	
Exhaust Fan	
Exhaust Hood	
Ceiling Fan	
Smoke Detector	X

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V	X
208V, single phase	
208V, three phase	X
Communications	
Voice	X
Data	X
Cable	X
Keycard Access	X
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	X
Cold Water	X
Natural Gas	X
Steam	
Sink	X
Floor Sink	
Shower	
Toilet	
Floor Drain	X
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	X
Dimension	
Finish	Plastic Laminate
Backsplash	X
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	
Desk-Chair	
File Cabinet	
Computer	
Printer	
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	
Lounge Chair	X
Coffee Table	X
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	
Washers	
Dryers	

Diagram 4.4.7 - 6: Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Offices - Housing**
Function	
Utilization	
Adjacencies	
Quantity of Room	1 Suite (multiple workstations)
ASF	660SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	X
Epoxy Finish	
Other	
Base	
4" vinyl	
4" wood base	X
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	3'-0" x 7'-0"
Finish	Painted
Other	
Windows	X
Dimensions	TBD
Coverings	
Horizontal Shades	
Vertical Shades	X
Curtains	
Frame	
Glazing type	Low E/IGU
Operable	X
Non-operable	
Other	

MECHANICAL	
Air to Air Heat Pump	X
Temperature Control	
Exhaust Fan	
Exhaust Hood	
Ceiling Fan	X
Smoke Detector	X

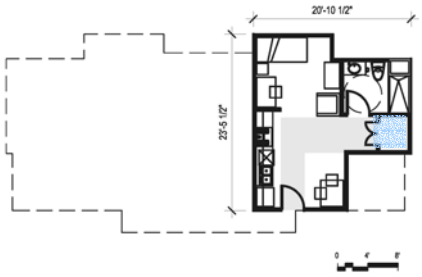
ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V (2)	X
208V, single phase	
208V, three phase	
Communications	
Voice (1)	X
Data (1)	X
Cable	
Keycard Access	
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	
Natural Gas	
Steam	
Sink	
Floor Sink	
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	X
Desk-Chair	X
File Cabinet	X
Computer	
Printer	
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	
Lounge Chair	
Coffee Table	
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	

Diagram 4.4.7 - 7: Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Storage (Studio B)**
Function	
Utilization	
Adjacencies	
Quantity of Room	1
ASF	19SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	
Walls	
Painted	
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	
Doors	
Dimensions	3'-0" x 7'-0"
Finish	Painted
Other	
Windows	TBD
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Temperature Control	
Exhaust Fan	
Exhaust Hood	
Ceiling Fan	
Smoke Detector	X

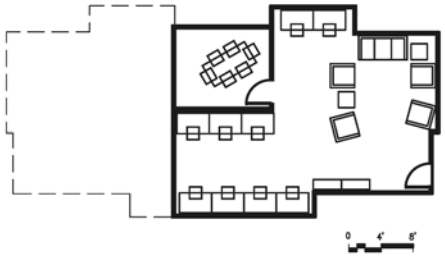
ELECTRICAL	
Lighting	
Fluorescent	
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V	
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Other	
Accessories	
Signage	
Other	

PLUMBING
Hot Water
Cold Water
Natural Gas
Steam
Sink
Floor Sink
Shower
Toilet
Floor Drain
Fire Sprinkler
Garbage Disposal
Other

CASEWORK
Base
Dimension
Style
Drawer
Door Cabinet
Single Drwr w/ Dr Cab
Open
Finish
Counter
Dimension
Finish
Backsplash
Upper
Dimension
Style
Door Cabinet
Open
Shelving
Dimension
Closet
Dimension

FURNITURE / EQUIPMENT
Movable
Desk
Desk-Chair
File Cabinet
Computer
Printer
Cash Register
Card Reader
Bed
Night Stand
Dresser
Sofa
Lounge Chair
Coffee Table
TV Stand
Dining Table
Dining Chair
Bar Stool
Refrigerator
Refrigerator/Freezer
Freezer
Toaster
Slicer
Bread Rack
Trash Can
Scale
Fixed

Diagram 4.4.7 - 8: Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Study Lounge**
Function	
Utilization	
Adjacencies	
Quantity of Room	2
ASF	755SF
Total ASF	
ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	X
Epoxy Finish	
Other	
Base	
4" vinyl	
4" wood base	X
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	3'-0" x 7'-0"
Finish	Painted
Other	
Windows	X
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	X
Curtains	
Frame	
Glazing type	Low E/IGU
Operable	
Non-operable	X
Other	
MECHANICAL	
Air to Air Heat Pump	X
Temperature Control	X
Exhaust Fan	
Exhaust Hood	
Ceiling Fan	
Smoke Detector	X
ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	X
Incandescent	X
Halogen	
Heat Lamp	
Other	
Power	
120V (6)	X
208V, single phase	
208V, three phase	
Communications	
Voice (1)	X
Data (10)	X
Cable (1)	X
Keycard Access	
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	
Natural Gas	
Steam	
Sink	
Floor Sink	
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	
CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	
FURNITURE / EQUIPMENT	
Movable	
Desk	X
Desk-Chair	X
File Cabinet	
Computer	X
Printer	X
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	X
Lounge Chair	X
Coffee Table	X
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	

Diagram 4.4.7 - 9: Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	Computer Lab
Function	
Utilization	
Adjacencies	
Quantity of Room	1
ASF	945SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	X
Epoxy Finish	
Other	
Base	
4" vinyl	
4" wood base	X
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	3'-0" x 7'-0"
Finish	Painted
Other	
Windows	X
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	X
Curtains	
Frame	
Glazing type	Low E
Operable	
Non-operable	X
Other	

MECHANICAL	
Air to Air Heat Pump	X
Temperature Control	X
Exhaust Fan	
Exhaust Hood	
Fire Suppression System	
Smoke Detector	X

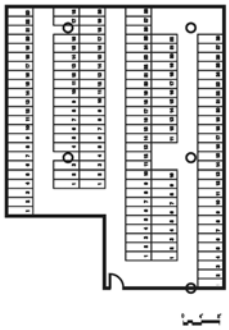
ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	X
Incandescent	X
Halogen	
Heat Lamp	
Other	
Power	
120V (per layout)	X
208V, single phase	
208V, three phase	
Communications	
Voice (1)	X
Data (per layout)	X
Cable	X
Keycard Access	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	
Natural Gas	
Steam	
Sink	
Floor Sink	
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	X
Desk-Chair	X
File Cabinet	
Computer	X
Printer	X
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	X
Lounge Chair	X
Coffee Table	X
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	X
Scale	
Fixed	

Diagram 4.4.7 - 10: Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Bike Storage**
Function	
Utilization	
Adjacencies	Entry to Garage
Quantity of Room	1
ASF	2665SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	X
Other	
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	
Walls	
Painted	
Wall Paper	
Tile	
Other	
Ceiling	
Height	9'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	X
Doors	
Dimensions	3'-6" x 7'-0"
Finish	Painted
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Temperature Control	
Exhaust Fan	
Exhaust Hood	
Ceiling Fan	
Smoke Detector	X

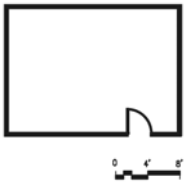
ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V (1)	
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	X
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	
Natural Gas	
Steam	
Sink	
Floor Sink	
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	
Desk-Chair	
File Cabinet	
Computer	
Printer	
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	
Lounge Chair	
Coffee Table	
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	
Bike racks for 111 bikes	X

Diagram 4.4.7 - 11: Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Recreation Storage**
Function	
Utilization	
Adjacencies	Recreation Fields
Quantity of Room	1
ASF	355SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	X
Other	
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	
Walls	
Painted	
Wall Paper	
Tile	
Other	
Ceiling	
Height	9'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	X
Doors	
Dimensions	3'-6" x 7'-0"
Finish	Painted
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Temperature Control	
Exhaust Fan	X
Exhaust Hood	
Ceiling Fan	
Smoke Detector	X

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V (1)	X
208V, single phase	
208V, three phase	
Communications	
Voice (1)	X
Data	
Cable	
Keycard Access	X
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	X
Natural Gas	
Steam	
Sink	
Floor Sink	
Shower	
Toilet	
Floor Drain	X
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	
Desk-Chair	
File Cabinet	
Computer	
Printer	
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	
Lounge Chair	
Coffee Table	
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	

Diagram 4.4.7 - 12: Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Maintenance Shop**
Function	
Utilization	
Adjacencies	Garage
Quantity of Room	1
ASF	526SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	X
Other	
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	
Walls	
Painted	
Wall Paper	
Tile	
Other	
Ceiling	
Height	9'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	X
Doors	
Dimensions	3'6"X7'0"
Finish	
Other	
Windows	X
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Air to Air Heat Pump	X
Temperature Control	
Exhaust Fan	X
Exhaust Hood	
Ceiling Fan	
Smoke Detector	X

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V	X
208V, single phase	
208V, three phase	
Communications	
Voice (1)	X
Data (1)	X
Cable	
Keycard Access	X
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	X
Natural Gas	
Steam	
Sink	X
Floor Sink	X
Shower	
Toilet	
Floor Drain	X
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK
Base
Dimension
Style
Drawer
Door Cabinet
Single Drwr w/ Dr Cab
Open
Finish
Counter
Dimension
Finish
Backsplash
Upper
Dimension
Style
Door Cabinet
Open
Shelving
Dimension
Closet
Dimension

FURNITURE / EQUIPMENT
Movable
Desk
Desk-Chair
File Cabinet
Computer
Printer
Cash Register
Card Reader
Bed
Night Stand
Dresser
Sofa
Lounge Chair
Coffee Table
TV Stand
Dining Table
Dining Chair
Bar Stool
Refrigerator
Refrigerator/Freezer
Freezer
Toaster
Slicer
Bread Rack
Trash Can
Scale
Fixed

Diagram 4.4.7 - 13: Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Housekeeping**
Function	
Utilization	
Adjacencies	
Quantity of Room	7
ASF	50SF
Total ASF	

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	X
Other	
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'-0"
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	3'0"X7'0"
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Temperature Control	
Exhaust Fan	
Exhaust Hood	X
Ceiling Fan	
Smoke Detector	X

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Heat Lamp	
Other	
Power	
120V	
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Other	
Accessories	
Signage	
Other	

PLUMBING	
Hot Water	
Cold Water	X
Natural Gas	
Steam	
Sink	
Floor Sink	X
Shower	
Toilet	
Floor Drain	
Fire Sprinkler	X
Garbage Disposal	
Other	

CASEWORK	
Base	
Dimension	
Style	
Drawer	
Door Cabinet	
Single Drwr w/ Dr Cab	
Open	
Finish	
Counter	
Dimension	
Finish	
Backsplash	
Upper	
Dimension	
Style	
Door Cabinet	
Open	
Shelving	
Dimension	
Closet	
Dimension	

FURNITURE / EQUIPMENT	
Movable	
Desk	
Desk-Chair	
File Cabinet	
Computer	
Printer	
Cash Register	
Card Reader	
Bed	
Night Stand	
Dresser	
Sofa	
Lounge Chair	
Coffee Table	
TV Stand	
Dining Table	
Dining Chair	
Bar Stool	
Refrigerator	
Refrigerator/Freezer	
Freezer	
Toaster	
Slicer	
Bread Rack	
Trash Can	
Scale	
Fixed	

Diagram 4.4.7 - 14: Room Diagram and Space Data Sheet

Site Development and Infrastructure Improvements 5

Systems Criteria

5.1 GOALS

Goals provide a direction for programming. Goals are listed as statements, but they also imply the question: What do you want to accomplish? Goals provide a starting point in determining what types of facts are appropriate to the project.

Goals indicate what the University of California, Riverside hopes to achieve by undertaking this project.

- Provide an aesthetically pleasing and integrated development which provides a desirable learning environment
- Enhance the campus community's overall image and "sense of place."
- Provide a residential and pedestrian friendly environment.
- Protect the natural environment and incorporate sustainable planning and design practices.
- Provide utility system improvements to support the development on the Arroyo site.

5.2 SYSTEMS DESIGN CRITERIA

5.2.1 Access / Circulation

Primary vehicular access to the site is provided from Linden Street and Pentland Way. (See diagram 5.2.1 – 1 on the next page). Linden Street will be extended to the east along the alignment of the existing palm trees, serving as a service and emergency access roadway. The extension will end in a hammerhead on the east side of the parking podium. A secondary access for emergency vehicles only will be provided off Valencia Hill Drive near the southeast corner of the site. A future access road will be anticipated along the southern edge of the recreation fields from the access off of Valencia Hill Drive. Pentland Way provides access to the parking garage.

The main pedestrian access to the parking, podium, and apartments is from the southwest corner of the podium, orienting towards the main traffic flow form the campus beyond. Secondary pedestrian access to the garage and/or podium and apartments is provided in the northeast corner of the podium.

The creation of visual and physical connections to the broader campus is through a network of paths and walks that knit neighborhoods together. The site is organized around the pedestrian campus experience and promotes walking, bicycle riding and use of the transit system. The circulation space and organization facilitates informal gatherings, chance encounters, contact between neighbors, and shall encourage resident interaction.

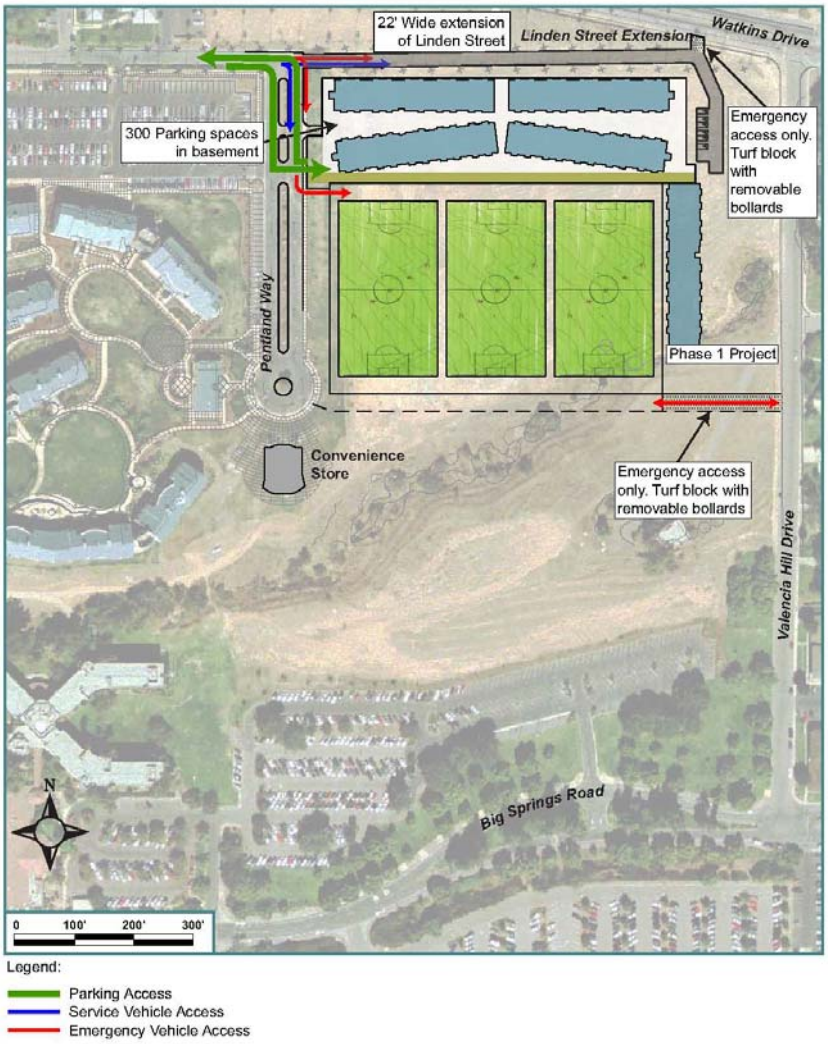


Diagram 5.2.1 – 1: Roadway Layout and Vehicular Circulation

5.2.3 Parking

No existing parking is available to serve the Arroyo Student Housing site. Parking spaces are included in the basement of the new student housing with a minimal ratio of 1 space for every 2 students.

5.2.4 Topography, Hydrology, and Vegetation

Based on the information provided by the Office of Design and Construction, the Consulting team proposed new grading to the Arroyo Student Housing site in recognition of the following criteria as referenced in the Campus Design Guidelines (Diagrams 5.2.4 – 1-5):

- Recognition of the role of elevation changes in providing functional separation and visual screening between project elements and between the project and its neighbor.
- Balancing cut and fill on-site.
- Preservation of the natural environment the fullest extent possible.

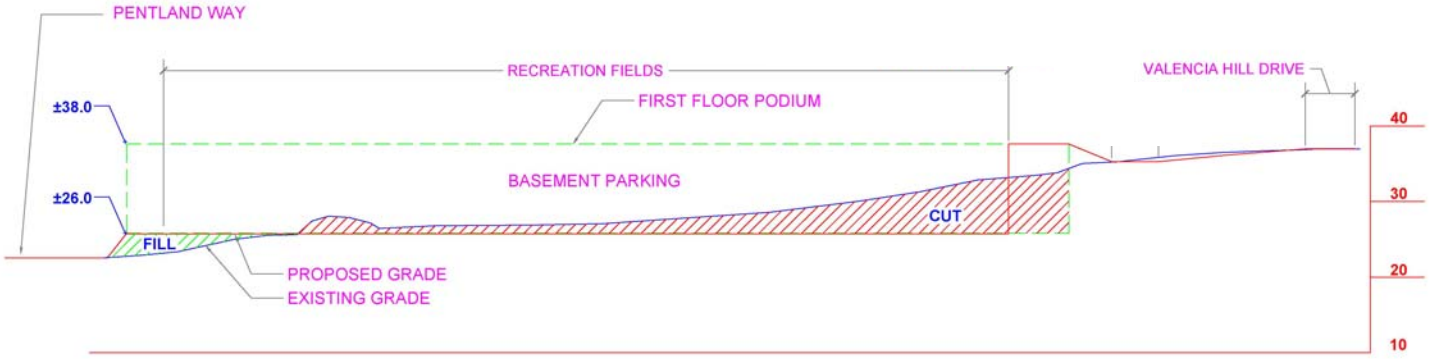


Diagram 5.2.4 – 1: North section through site (vertical scale exaggerated)

Diagram 5.2.4 – 2: South section through site (vertical scale exaggerated)

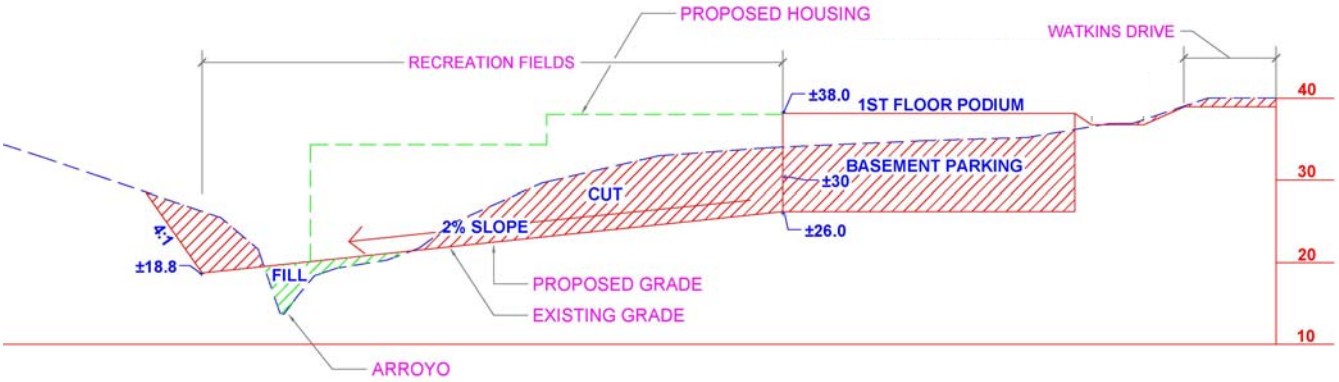


Diagram 5.2.4 – 3: East section through site (vertical scale exaggerated)

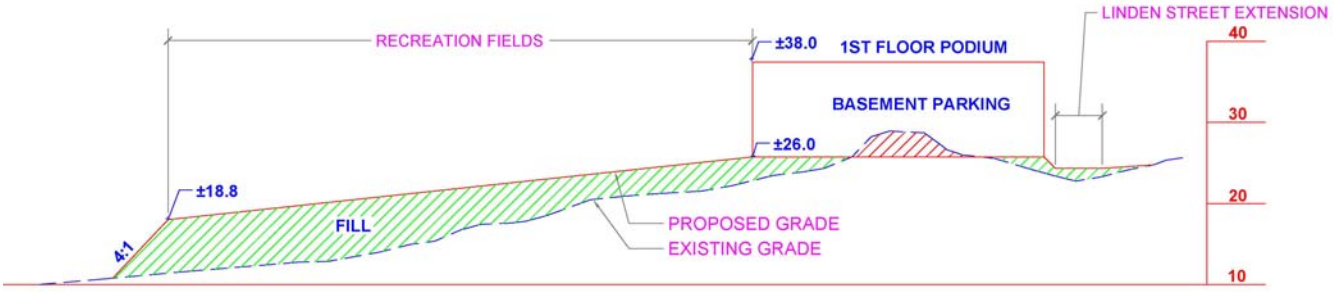


Diagram 5.2.4 – 4: West section through site (vertical scale exaggerated)

Parking level is proposed to be at an estimated elevation of 1126', which closely aligns with the existing elevation of the northern end of Pentland Way, minimizing the length of access ramp to the garage. The northern end of the recreation fields is set at the same elevation of the garage but slopes 2% southward to an estimated elevation of 1118.8'.

Top of the podium is established at an estimated elevation 1138' which ensures the pedestrian desire lines to the grill and campus beyond are not across the playing fields, separating function and reducing potential field maintenance. Podium level also provides viewing area for the activities on the field.

Buildings A, B, C, and D are located on top of the podium, while Building E sits on its own foundation starting at the northern end at an estimated elevation of 1138', and steps down in unison with the recreation field to approximately 1118.8'. The main access to the parking, podium, and apartments are off the south-west corner of the podium, orienting towards the main traffic flow form the campus beyond, at an estimated elevation of 1113'.

The Grill/Convenience Store is set at an estimated elevation of 1108', located due south of the Pentland Way turnabout.

Refer to Diagram 5.2.4 - 6 on next page for illustrated proposed elevations.

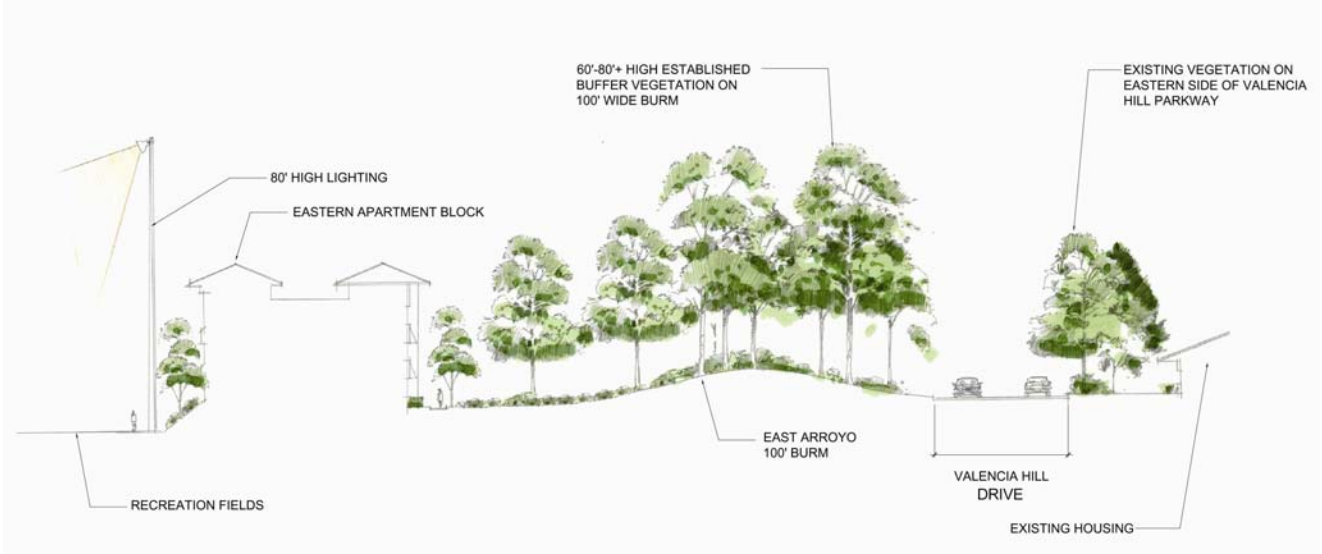


Diagram 5.2.4 – 5: Section through Valencia Hill Drive

A landscaped buffer along Valencia Hill Drive will be developed to separate the site activities and the adjacent residential neighborhood.

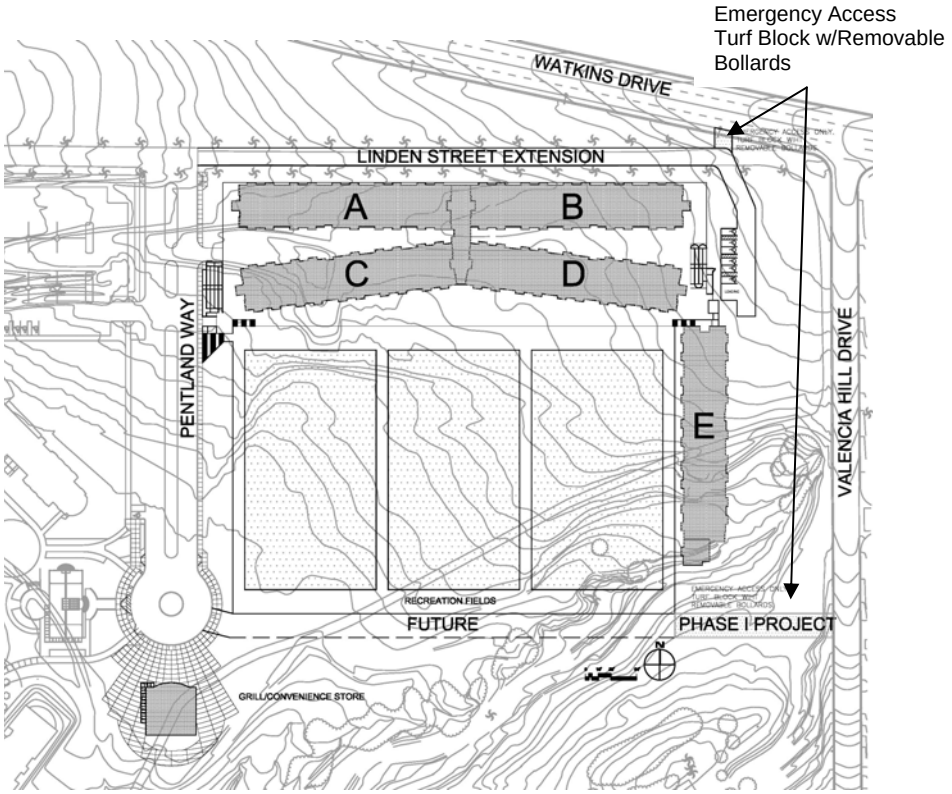


Diagram 5.2.4 – 6 – Topography and Elevations

5.2.5 Natural Systems

With the Campus located in a region that is semi-arid in character, physical layout of the neighborhood as well as the design of individual buildings respond to this climate. Temperatures are marked by extreme changes with lows occasionally below freezing and highs of 110 degrees.

At a latitude of 34ºN and elevation of 840 feet, the summer design temperature of the site is 110ºF DB/71ºF WB and winter of 29ºF DB, with heating degree days of 1,818.

Natural Design Conditions

- Summer design temperature: 110ºF DB/71ºF WB
- Winter design temperature: 29ºF DB
- Heating degree days: 1,818

Sun

The site is characterized by an abundance of solar radiation. Average direct insolation levels remain relatively constant throughout the year at

5.8 kWh/m^2. This relatively intense level of sunlight is suggestive of technologies that mitigate the possible negative impacts that can result with regard to human comfort (both indoors and outdoors). Strategies include, but may not be limited to:

- Shade structures over walkways and windows
- Reflective and high emissive roofing surfaces
- Vegetated shading
- Reduced use of windows (especially on western exposures)
- Higher performance windows (insulated low-e)

The sun's intensity is also suggestive of opportunities to capitalize and take benefit from the energy resource. Photovoltaics that generate electricity from the sun and which can be integrated into canopy shade structures represent a high level of synergy between human comfort and responsible use of energy.

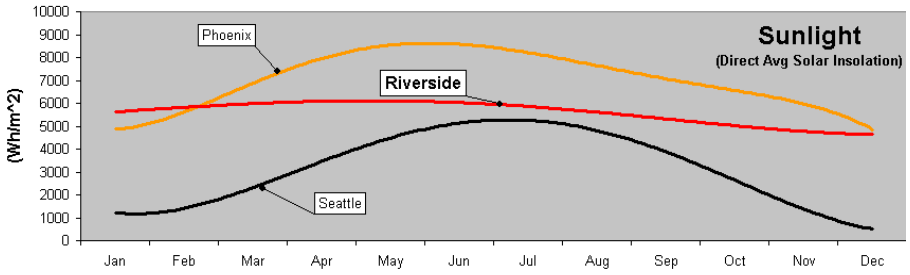


Diagram 5.2.5 – 1 – Sunlight Chart

Wind

The prevailing site wind pattern is predominantly from the northwest as warmed air rising from the urban and rural areas of the State rises drawing cooler coastal breezes inland. The exception are the Santa Ana winds which bring hot and fast moving winds to the site from a northeasterly direction. In order to mitigate the impact of the Santa Ana wind pattern and open up the site to northwesterly breezes, the building massing and land use should focus on opening up to the west and blocking from the north and east.

Rain

As is typically true throughout the Southern California climate zones, the Arroyo site receives approximately 10" of rain throughout the year. Most importantly however, is that the summer months of May through September are exceptionally dry with no significant precipitation reaching the site. This reality makes the thoughtful selection of landscaped vegetation crucial to both aesthetic and resource conservation sensibilities. It also is suggestive of the importance of responsible water use throughout the project buildings and landscaping.

Responsible water use strategies include:

- Use of drought tolerant native or adapted vegetation
- High water efficiency irrigation technologies (if needed)
- Low water consumption building fixtures

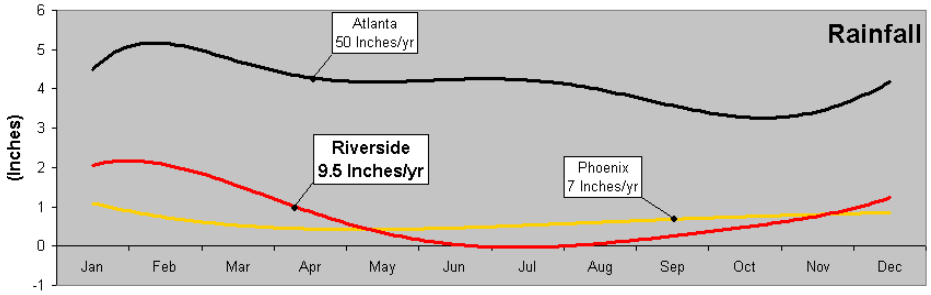


Diagram 5.2.5 – 2 – Rain Chart

5.2.6 Biological Conditions

The significance of native biological resources is limited due to past stockpiling of soil from previous construction projects. Biological surveys of the Arroyo will be required. Federal, State and government agencies have authority over the Arroyo.

5.2.7 Geotechnical Conditions

A site-specific geotechnical investigation has not been performed as of this date.

5.2.8 Fire & Safety

Provide emergency access to apartments such that large vehicles can access the apartments and playing fields.

5.2.9 Domestic Water System

Existing Conditions

Currently on the campus fire protection and irrigation water (separated by back flow preventers) are both supplied from the potable water system.
Refer to the East Campus Infrastructure DPP for a full description of the existing campus-wide system. This document notes that “the campus has (2) domestic water storage tanks, with capacities of 1,000,000 gallons and 50,000 gallons, both located at an elevation of 1287.58 feet. The lowest building elevation on campus is 1030 feet, and the top floor of the building closest to the tank is at 1163 feet. This translates to a maximum building water pressure of 112 psi, and minimum pressure of 54 psi.”

It is assumed that work projects W-23 and W-14 (Campus Pumping station upgrade) as described in the East Campus Infrastructure DPP, will be completed up to the site boundary (at the eastern curbline of Pentland Way) and available for use before the construction of the Arroyo Student housing project.

Proposed Conditions

The on-site domestic water system (refer to Diagram 5.2.9 – 1) shall tie into the W-23 main line extension (8" approximately), which is assumed to terminate at the site boundary at Linden Street / Pentland Way. The site system will run to the end of the Linden Street extension before proceeding south between the eastern buildings and Valencia Hill Drive. It will then run west along the south edge of the recreation fields where it then reconnects into the Pentland Hills main loop (reference work project W-23 in East Campus Infrastructure DPP).

The sizing of the mains supply should be verified and sized to accommodate maximum day demands plus fire flow (unless otherwise stipulated by UCR), in accordance with the California Fire Code, 2001. The design fire flow rate, location and frequency of hydrants, etc, should be approved by the Campus Fire Marshal.

Due to the elevation of the Arroyo Student Housing site (1110 – 1140 ft approximately), the pressure in the street adjacent to the site will be at the lower end of the available pressures on the Campus. During design, the available pressure in the Linden Street main adjacent to the site should be measured in order to determine whether additional booster pumps for each building are required.

Refer to P.107 of the University of California, Riverside Campus Design Guidelines, 1996 for typical domestic water system design requirements. Refer to the Plumbing and Fire Protection section of this document for additional information.

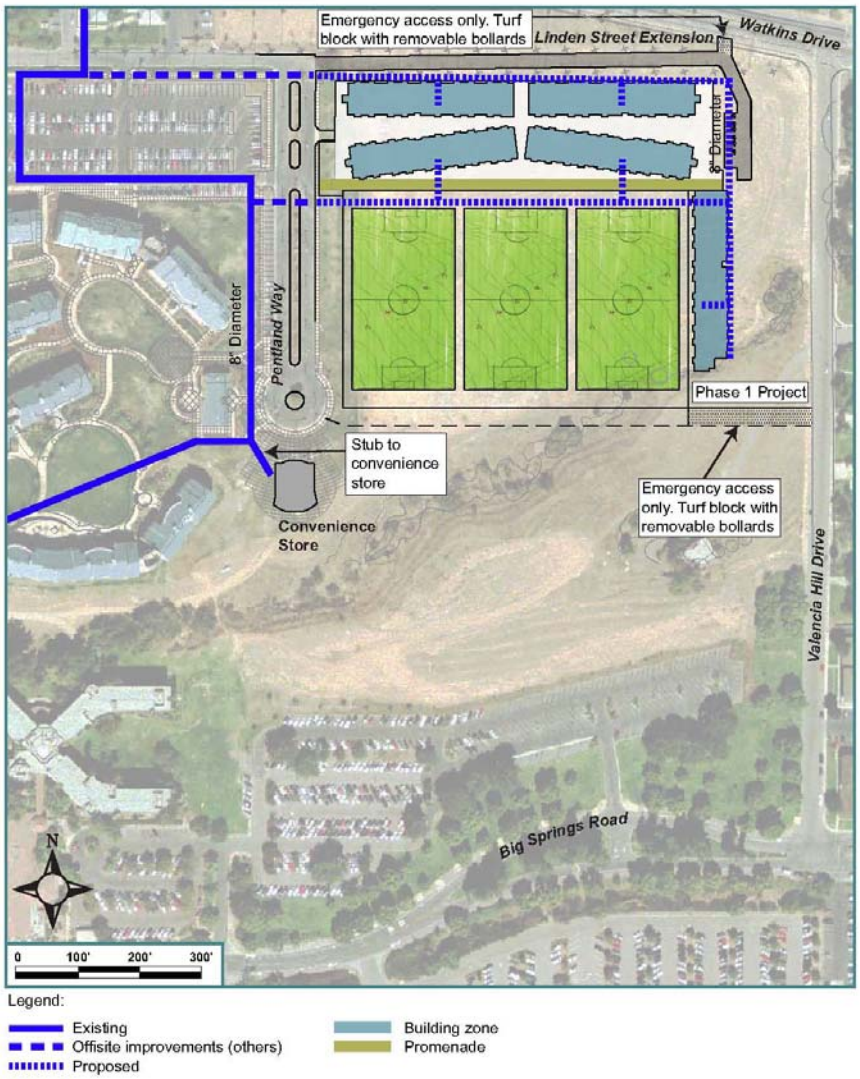


Diagram 5.2.9 – 1: Domestic Water Layout

5.2.10 Sanitary Sewer System

Existing Conditions

Refer to the East Campus Infrastructure DPP for a full description of the existing campus-wide system. This document notes that:

- The existing 8" "F" line is on the south side of Linden Street, and is in good condition.
- The existing 8" "G" line on the north of Linden Street is in very poor condition, but has adequate slope.
- Project SS-22 recommends that the "G" line be replaced with a 12" line, and then continued east to serve the new buildings.

It is assumed that work project S-22, as described in the East Campus Infrastructure DPP, will be completed up to the site boundary (at the

eastern curb line of Pentland Way) and available for use before the construction of the Arroyo housing project.

Proposed Conditions

The Sanitary Sewer shall tie into the 12" diameter main line upgrade along Linden Street at Pentland Way and run to the end of the Linden Street extension, serving the north residences (refer to Diagram 5.2.10 - 1). It is assumed that the S-22 project that involves extending a 12" sewer along Linden Street towards the Arroyo housing site will have adequate capacity. This assumption requires confirmation. The existing grade of the site along the proposed Linden Street extension will be approximately 1.5%, which if maintained will allow the proposed sewer to connect to the existing system, and be constructed at a minimum slope of 1.5% to the north-east corner of the site.
The east residences are located on a north to south slope, and may not be able to connect to the Linden Street sewer by gravity (Option 1a). At least two possible alternatives may exist:

- Provide a lift station at the southern end of the housing. A force main (6" diameter approximately) would then pump the effluent to the head of the Linden Street extension (Option 1b-scheme for costing).
- Provide a gravity connection to the Big Springs Road sewer, via either:
  - Along the southern bank of the Arroyo, before turning south to Big Springs Road adjacent to the Convenience Store (Option 2a), or
  - Valencia Hill Drive (Option 2b).

The capacity of the Big Springs Road sewer is unknown and should be confirmed if this option is progressed. This option would require significant off-site work.

The preferable connection for the Convenience Store would be to the existing Pentland Hills development sewer, providing there is spare capacity available (Option A). The nearest manhole to the store in the Pentland Hills development has an invert elevation of 1097.1 feet, at a ground level of approximately 1108 feet; therefore a connection is physically possible. It is not known whether the Pentland Hills sewer has spare capacity, which should be confirmed.

If a connection to the Pentland Hills sewer proves unacceptable, a connection could be made to the Linden Street sewer along the western edge of the recreation fields. If invert elevations preclude a gravity connection, a lift station would be required (Option B-scheme for costing).
All sewer designs will be subject to approval by the University.

Refer to P.108 of the University of California, Riverside Campus Design Guidelines, 1996 for typical Sanitary Sewer System design requirements.

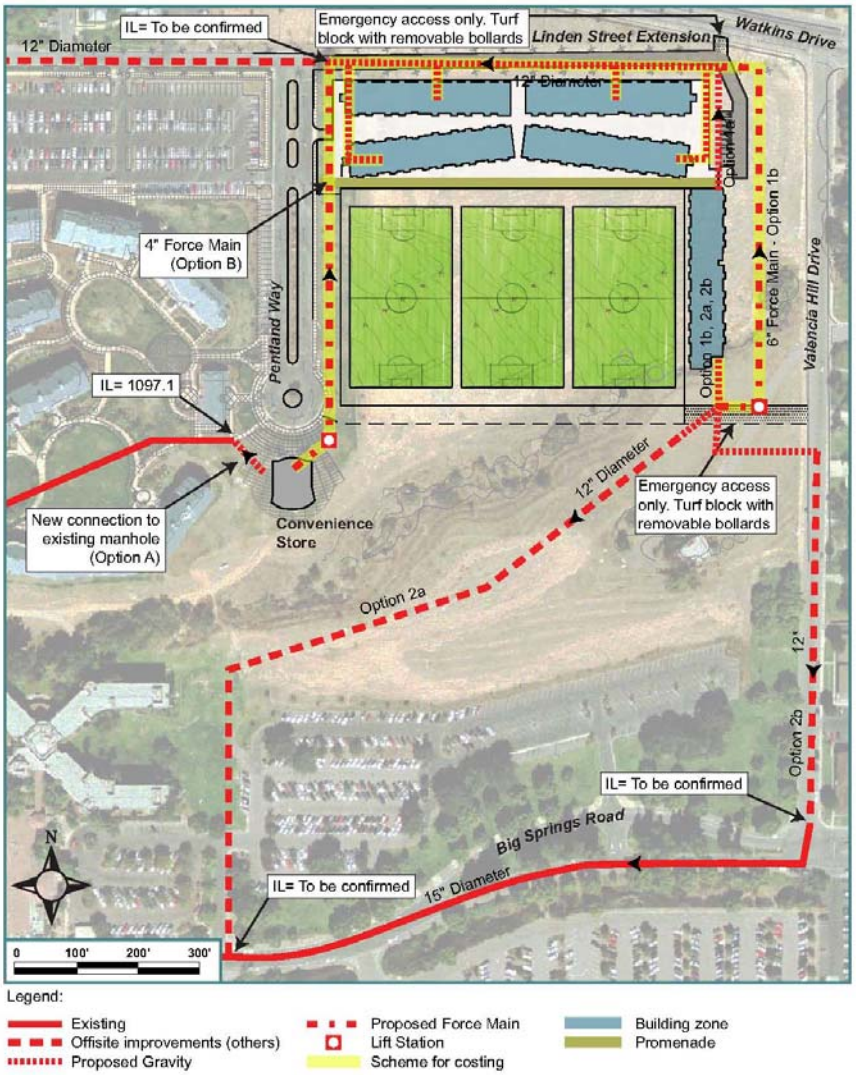


Diagram 5.2.10 – 1: Sanitary Sewer Layout

5.2.11 Electrical Supply and Distribution System

Existing Conditions

Currently, 12kV does not exist within the project site. It is proposed, under a separate project contract (reference work project EL-22 in the East Campus Infrastructure DPP), that the 12kV line be extended along Linden Street to the northwest edge of the project site.

Proposed Conditions

A 12kV interconnection shall occur at the northwest edge of the site along Linden Street (reference work project EL-22 in the East Campus Infrastructure DPP). The feeder will serve north and east residential buildings (refer to Diagram 5.2.11 – 1). A separate 12kV tie in off of the

Pentland Hills residential project shall provide electrical services to the Grill/Convenience Store.

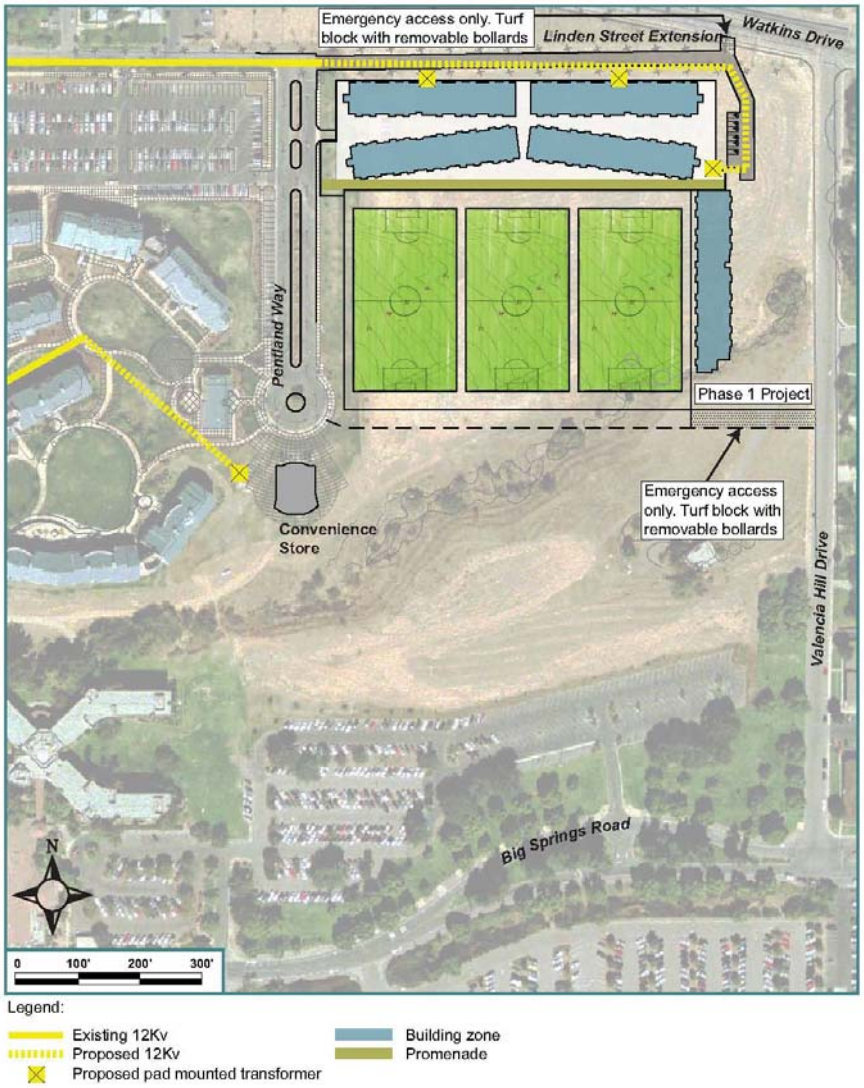


Diagram 5.2.11 -1: Electrical Layout

5.2.12 Natural Gas Supply and Distribution System

Existing Conditions

The Campus has natural gas service provided by the Southern California Gas Company (SCGC) at a pressure of 25 psi. A primary Southern California Gas feeder runs north/south across the East Campus approximately 1000 ft west of the site boundary. A 3" campus line supplied by the SCG feeder runs to the North of the Pentland Hills development. The distribution system within the Campus is at 5 psi. A metered line ties in at the intersection of Aberdeen and Canyon Crest.

No work projects have been identified in the East Campus Infrastructure DPP for natural gas expansion.

Proposed Conditions

A natural gas interconnection of capacity suitable to supply the northern and eastern residential units may occur at one of two optional points. Both points of interconnection occur beyond the site boundary and will need to be extended to the site boundary for tie in. The first optional point occurs to the northwest along Watkins Drive. This proposal is reflected in the LRDP and in the accompanying diagram (Option A). It would result in a new metered point of connection to SCG supply along Watkins Drive. Option B (Diagram 5.2.12-1) highlights a secondary extension which may occur from the campus meter located at the interconnection of Aberdeen and Linden Street. In either option, the approximate pipe size will be 5". This is based on domestic hot water loading resultant from the natural gas fired instantaneous hot water heaters discussed under Systems Criteria – Pumping. No natural gas space heating occurs in buildings A,B,C,D, and E. Space heating is instead performed by a heat pump system. Refer to Systems Criteria – Mechanical for further detail.

A separate natural gas interconnection will occur in order to supply capacity to the C-Store/Grill. This line will tie into the Pentland Hills residential project and will be approximately 1". The capacity of Pentland Hills network shall be confirmed.

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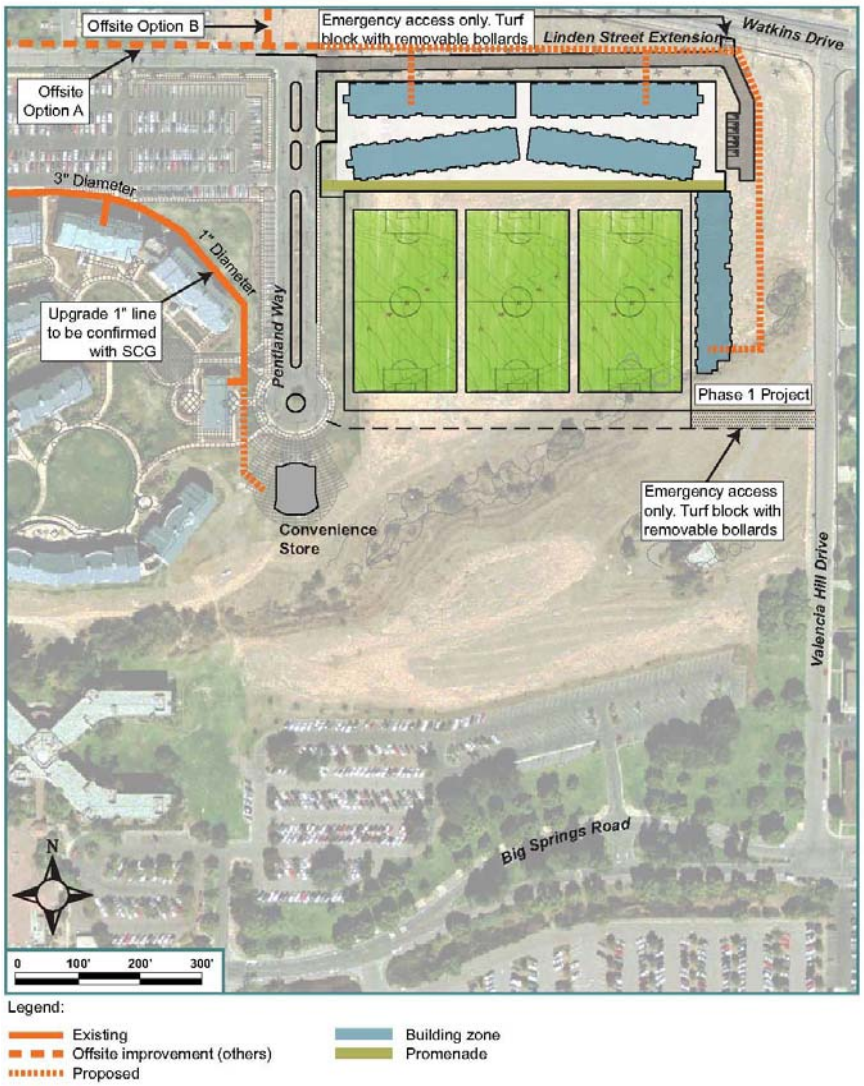


Diagram 5.2.12 – 1: Natural Gas Layout

5.2.13 Storm Drain System

Existing Conditions

Refer to the East Campus Infrastructure DPP for a full description of the existing campus-wide system. The existing road drainage in Linden Street drains to the west in the 18" 'J' line, the spare capacity of which is unknown and should be confirmed.

"The University Arroyo Flood Control and Enhancement Plan: Summary Report of Hydrologic and Hydrodynamic Conditions and Evaluations of Alternatives" report describes the University of Riverside Arroyo hydrological characteristics located through the campus. As labeled in this report, Tributary (2) runs in a southwesterly direction across the Arroyo Housing Site.

Tributary 2 Arroyo receives storm water runoff from immediately adjacent land and also from a watershed north of Watkins Drive through an existing 48" drain positioned west of Valencia Hill Drive.

The Arroyo housing site is not within the 100 year Flood boundary as designated by the Federal Emergency Management Agency (FEMA) Flood Insurance maps.

The PWA report recommended options for improving the storm water systems and increasing the flood protection on the Campus. The options suggested alternatives for increasing the storm water detention storage capacity. The report provides information regarding the hydrologic soil types around the campus, based on the Riverside County and Water Conservation District's (RCFC&WCD) Hydrology Manual. The soils are predominantly Type C and Type D, which have slow to very slow rates of water transmission. The soils are therefore not well suited to infiltration-based drainage techniques.

Proposed Conditions

The proposed development may require part of the Arroyo to be filled over, which would require the existing 48" pipe to be extended to the south. All new drainage devices associated with the Arroyo Housing project should be sized to accommodate the design storm in compliance with the relevant applicable codes, standards and design criteria. The suggested design storm in the East Campus Infrastructure (page 9-3) is the 100-year storm with duration of 5 minutes, resulting in a rainfall intensity of 3.92 inches/hr. The design team should verify this design storm with the University.

The storm water system serving the proposed development will ultimately drain into the existing Arroyo (refer to Diagram 5.2.13 -1). The University of California, Riverside, Storm Water Management Plan, March 10, 2003 describes the procedures being undertaken by the University to enable compliance with the Phase 2 National Pollutant Discharge Elimination System (NPDES) requirements of the Santa Ana Regional Water Quality Control Board (SARWQCB). The Storm Water Management Plan requires that run-off from the site be treated by implementing Best Management Practices (BMP's) on storm water discharges to the Arroyo. At the time of writing, specific requirements were not known and should be verified with the University and SARWQCB.

The proposed development will change the existing drainage characteristics slightly and will generate some additional runoff due to the increased impermeable area. The PWA report described options for increasing the overall Campus detention storage capacity and the East Campus Infrastructure DPP indicates that if these suggested improvements are implemented, the system should be sufficient to handle additional Campus flows. Based on this, it is unlikely that local detention will be required on the Arroyo site, although this should be verified with the University and SARWQCB at the time of design.
BMP's should be implemented to ensure that storm water run-off is treated to the Maximum Extent Practicable (MEP), prior to discharge to the Arroyo. Source Control BMP's should be agreed with the University and SARWQCB and taken account of when assessing the water quality

of the run-off. Similar agreement should be gained regarding Structural BMP's, which could include, but are not limited to, the following:

- Swales – if the on-site sub-soils are confirmed to be relatively impermeable, these should be installed with an underlying perforated pipe to convey un-infiltrated water to the Arroyo.
- Infiltration trenches – if the on-site sub-soils are confirmed to be relatively impermeable, these should be installed with an underlying perforated pipe to convey un-infiltrated water to the Arroyo.
- Detention ponds
- Oil / Water separators – could be used to treat concentrated run-off from roads and parking areas.

The Storm Water Layout shows a typical solution utilizing some of the above BMPs that may be appropriate for the site. The on-site roads could be drained using one of the following options:

- Option A – the 18" Linden Street storm drain may be extended east. The spare capacity of this drain is unknown and should be verified if this option is to be progressed.
- Option B – the Linden Street extension drains to adjacent swales, using depressed curb sections at regular intervals, which will convey water towards the Arroyo.
- Option C – the Linden Street extension is drained using conventional curb and gutter drainage. Oil / water separators would be required to treat run-off from the road, prior to discharging to the swale system, and then to the Arroyo.

As the design progresses, the design team should amend the plan as appropriate, and agree the BMP strategy with the SARQWCB and University. A typical design event for sizing BMP's would be the 6-month 24-hour storm, unless otherwise stipulated by the SARQWCB. All BMP's shall be sized to accommodate the conveyance required for the 100-year event.

Refer to P.108 of the University of California, Riverside Campus Design Guidelines, 1996 for typical Storm Drain System design requirements.

The University of California, Riverside, Draft 2003 Long Range Development Plan, states that "each new project or developed area will be required to control the storm water flow rate from the proposed development area in compliance with the RCFC & WCD's design criteria. Accomplishing this control is anticipated to be through use of localized detention swales and systems piping as new areas are converted from agricultural to housing or academic use." This possible requirement for on-site detention should be verified during design.

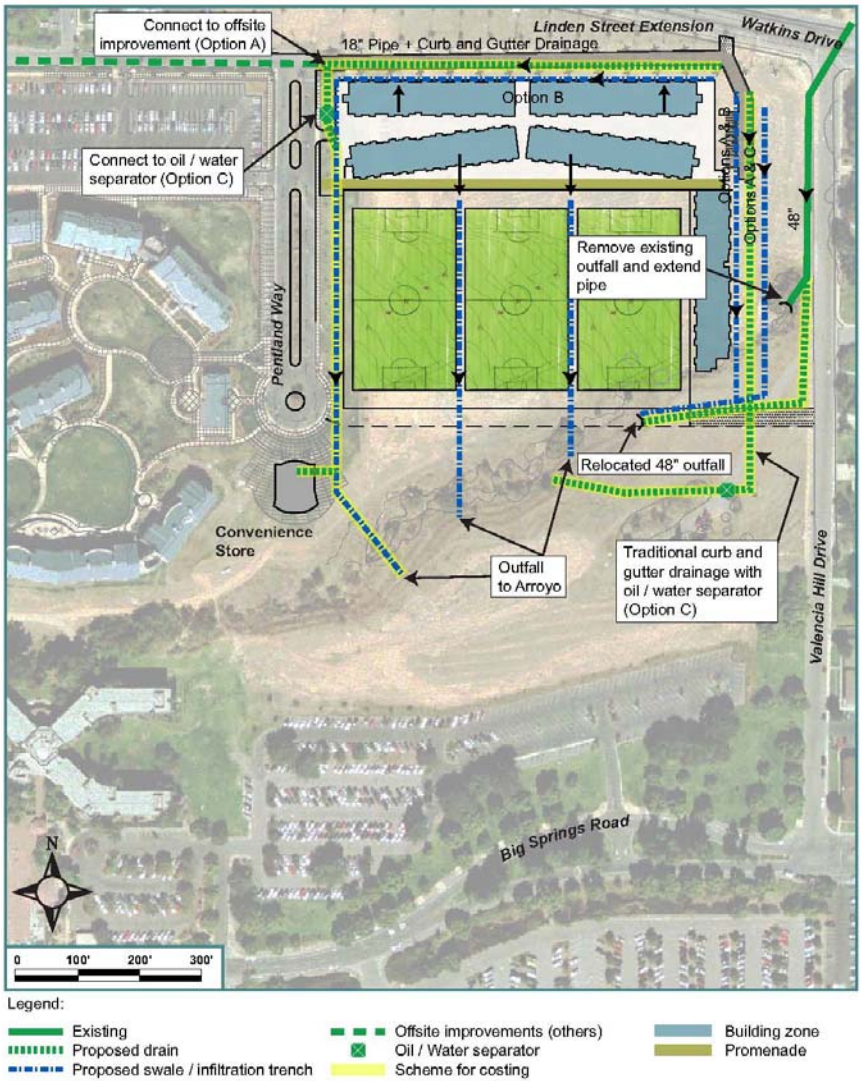


Diagram 5.2.13 – 1: Storm Water Layout

5.2.14 Sustainability

- LEED™ / Sustainable design (SPH)
- Use the LEED™ rating system (or as recommended in the LRDP) or similar guideline as a guide to establish the minimum acceptable criteria for development
- Site development that supports efficient land use and a pedestrian focused community with easy access to transit locations, bike paths, and campus connections
- Arroyo will become a source of identity, pride and environmental benefit.
- Preservation and enhancement of the natural Arroyo and its vegetation, recreating a natural habitat/ecosystem.
- Establishment of a soft-scape composed of native species and/or drought tolerant plants
- Site lighting that mitigates light pollution
- Natural outdoor environments that encourage habitats for birds, butterflies, and other visible evidence that the environment is desired by animals as well as people
- The natural landscape as an educational tool through the identification and short narrative of the native plant species on site.

Recreation Fields 6

Design and Systems Criteria

6.1 GOALS

Goals provide a direction for programming. Goals are listed as statements, but they also imply the question: What do you want to accomplish? Goals provide a starting point in determining what types of facts are appropriate to the project.

Goals indicate what the University of California, Riverside hopes to achieve by undertaking this project.

- Provide recreational fields for intramural sports to serve the residents as well as the neighborhoods of campus housing.
- Provide facilities that reduce light pollution, and noise spillover to the adjacent single family neighborhood
- Maintain University of California, Riverside's high standard for health, safety, and security.

6.2 FACTS

Facts pertain to the organization, operation and function of the proposed space. They form the basis for internal planning and quantifying the program in terms of type, size and number of spaces.

These facts were obtained through interviews, tours and documentation provided by the university. The information was then collected and assessed. Measuring and evaluating the facts led to understanding the spirit of the space.

6.2.1 The Arroyo Neighborhood – Recreation Fields

The UCR Recreation Program has experienced tremendous growth over the past two years, exceeding that of the general student population growth. In order to meet the demands, additional field and facility space will be needed. One of the recreation program expansion sites is included as part of the Arroyo Housing Project.

As indicated in the SPH, there are three recreation program expansion sites within the four new residential neighborhoods, one of which is associated with the development of the Arroyo site. According to the Recreation Program Model of the SPH, fields require the accommodation of multiple field sports league play for four nights per week (Monday thru Thursday) from 6:00 pm to 12:00 am. Minimal sizes of the fields are 55 yards by 110 yards with a buffer of approximately 5 yards between fields and 10 yards on either end of the other axis. These fields are designed to be able to rotate play as necessary to minimize wear and tear on the turf. They are meant to support multiple sport play in both “east-west” and “north-south” orientations as space permits, either concurrently or otherwise, and in multiple configurations. No bleachers or benches are required. A storage room for field equipment will be provided for in the parking structure.

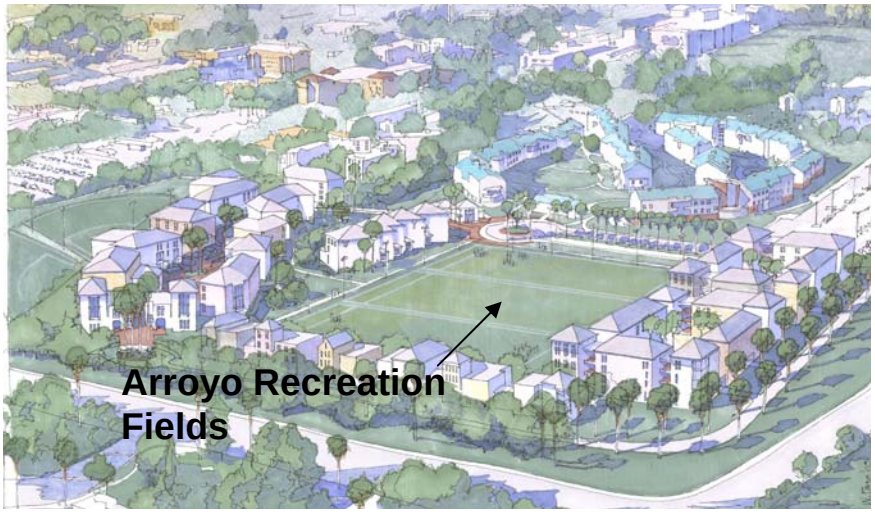


Diagram 6.2.1-1 The Arroyo neighborhood as proposed in the Strategic Plan for Housing.

As indicated in the SPH, the recreation fields are located south of the apartments along Linden Street extension and defined on the west by Pentland Way.

6.3 ARCHITECTURAL DESIGN CRITERIA

6.2.1 Access / Circulation

Emergency vehicle access to field is anticipated to be from two locations: off of Watkins Dr from the southwest corner across the southern end of the fields and from the northwest corner off of Pentland Way.

Diagram 6.2.1-2 Site Concept

6.3.2 Topography, Hydrology, and Turf Development

The elevation of the fields is anticipated to be at the same level as the parking garage, which is 12 feet below the podium on which housing sits. This locates the fields above the cul-de-sac of Pentland Way as well as Pentland Way itself. The elevation difference between the podium level and the recreation fields ensure that pedestrian desire lines to the grill are not across the playing surfaces, separating function and reducing potential playing field maintenance.

The fields will be constructed to allow for a 2% slope and to provide for exceptional drainage capabilities.

6.3.3 Architectural Criteria

Architectural Design

The recreation fields require a storage unit for housing equipment and supplies. The unit will be incorporated in the parking structure and be immediately accessible to the recreation fields. The space should be approximately 335SF, with double doors. A hose bib is required immediately outside the entry for cleaning equipment prior to storage.

Architectural Interior Design

The interior of the storage unit should be simple and utilitarian with painted gypsum board walls or exposed concrete masonry units, and an exposed, sealed concrete floor, preferably with a floor drain. Lighting should be overhead-suspended industrial fluorescent fixture(s). No finished ceiling is required. One convenience outlet should be provided.

6.4 SYSTEMS DESIGN CRITERIA

6.4.1 Turf Development Concepts

- Turf grass based on performance/recovery.
- The soil over the field needs to be compatible with the grass.
- Agronomic soils specificity and testing consideration given to suitable sports turf types.

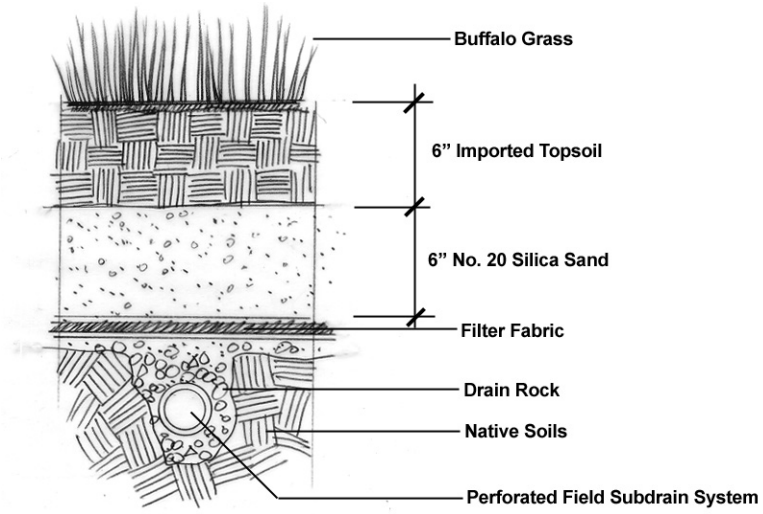


Diagram 6.4.1-2 Field Section Concept

6.4.2 Lighting

- Ball field lighting: Class III
  - Examples: sports clubs, amateur leagues, high schools and training facilities.

  - Classification of 100 foot-candles.
  - University of California, Riverside's student recreation fields need lighting of 30 foot-candles

- Pedestrian Lighting
  - 5 foot-candles for path lighting, per IAS handbook.
  - 100 watt metal halide fixtures with cut off optics that direct light downward onto path to reduce light spill.
  - White light only.
  - Use of light shielding to prevent light trespass from pathways and bike trails into apartment windows and or natural areas.
  - UCR's Campus Design Guidelines recommend 10' McGraw – Edison lights for pedestrian paths.

- Emergency Access Lighting
  - Average of 1 foot-candle, per IAS handbook.

Lighting Concepts

- General Lighting
  - Meet the expectations of the neighboring community.
  - Protect the night sky.
  - Install reflectors.
  - Redirect off-site spill light significantly.
  - Reduce energy usage.
- Landscape Lighting
  - Highlight key landscape features such as specimen trees, walkways and plazas.
- Sports Lighting
  - Meet the needs of the recreation fields users.
  - Maximize light on playing surface.
  - Lighting System.
    - 4 x 80' and 6 x 70' high poles.
    - 1500 watt metal halide lamps.
    - 8x luminaries per pole.
    - Shared luminaries (16) on central poles; refer to diagram 3.3C -1 and 3.3C -2 on the following pages.

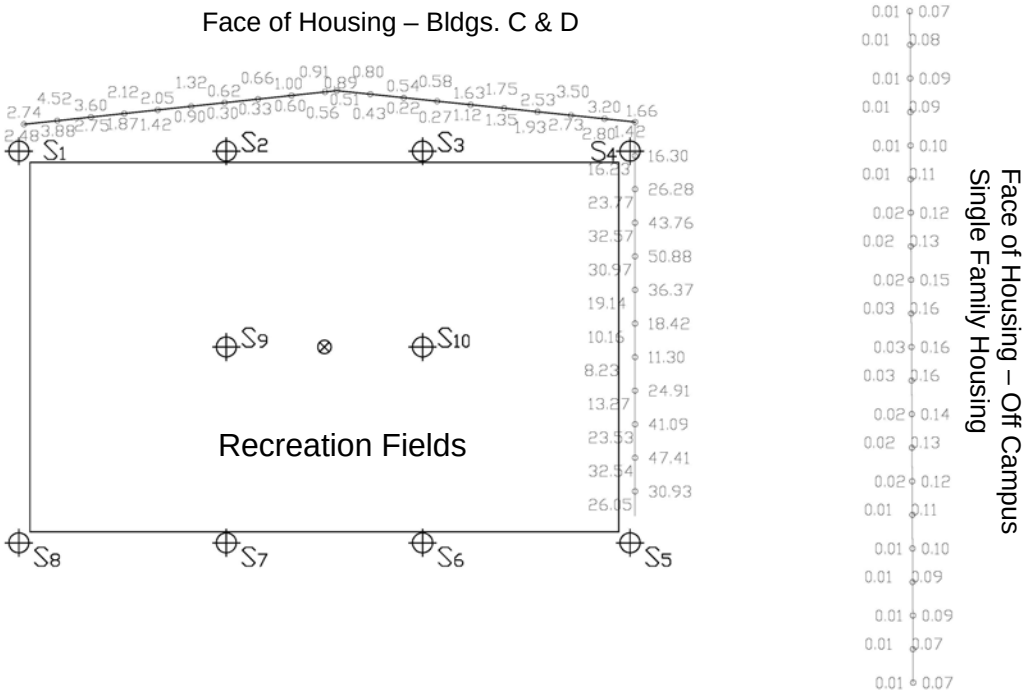


Diagram 6.4.2 -1: Lighting diagram depicting the recreation fields and associated spillage

Fixture Type:	TLC MZ
Lamp Type:	1500W MZ
Lumens:	155,000
Initial Spill Light Maximum Foot-candles:	
Target Points:	52
Average:	7.43
Maximum:	50.88
Minimum:	0.07
Ave/Min:	111.610
Max/Min:	763.881
Number of Luminaries:	76
KW Consumption:	121.60
Average Tilt Factor:	0.972
Recoverable Light Loss Factor:	x1000
Total Light Loss Factor (LFF):	0.972
Initial Spill Light Horizontal Foot-candles:	
Target Points:	52
Average:	5.09
Maximum:	32.77

Minimum:	0.01
Ave/Min:	750.123
Max/Min:	4800.875
Number of Luminaries:	76
KW Consumption:	121.60
Average Tilt Factor:	0.972
Recoverable Light Loss Factor:	x1000
Total Light Loss Factor (LFF):	0.972

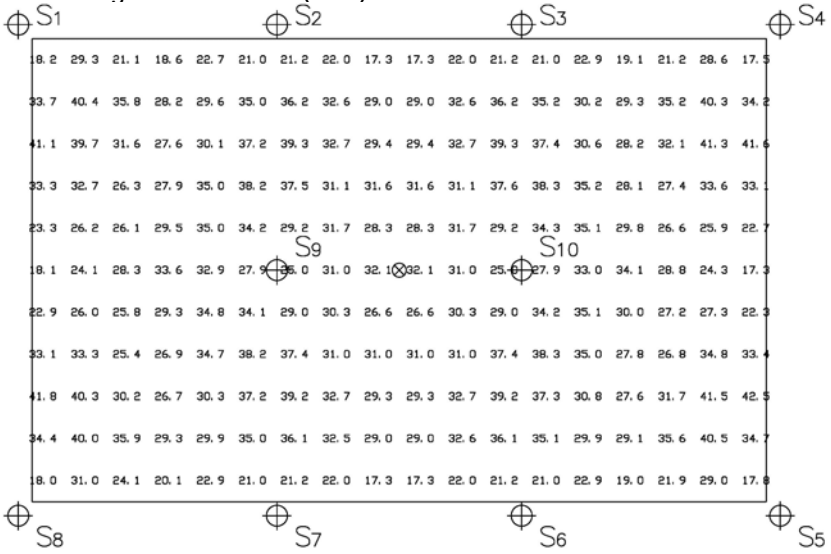


Diagram 6.4.2 -2: Lighting diagram depicting the recreation fields with layover of a matrix showing the foot-candle readings

Maintained Illumination Rectangle:

Horizontal Foot-candles on Plane Z:	3
Target Points:	198
Average:	30.06
Maximum:	42.55
Minimum:	17.29
Ave/Min:	1.739
Max/Min:	2.461
UG (Adj. pts):	1.952
CV:	0.203
Number of Luminaries:	76
KW Consumption:	121.60
Average Tilt Factor:	0.972
Recoverable Light Loss Factor:	0.800
Total Light Loss Factor (LFF):	0.777

Equipment Listing:

Pole Count	Pole Location	Mounting Height	Pole Size	Elev.	Fixt/Unit	kw/unit
1	S1	80’	80’	0’	7	11.2
2	S2-S3	70’	70’	0’	7	11.2
2	S4-S5	80’	80’	0’	7	11.2
2	S6-S7	70’	70’	0’	7	11.2
1	S8	80’	80’	0’	7	11.2
2	S9-S10	70’	70’	0’	10	16

6.4.3 Pedestrian Mitigation

- Playing fields will not be fenced in
- Design direct paths of travel
- Grade separated areas as will serve as a barrier between students using the playing fields, and as a path of travel
- Elevation change between housing and recreation fields will prevent students from using the playing fields, and as a path of travel

6.4.4 Noise Mitigation

- Landscaped buffer of 100’ wide between Housing and Valencia Hill Drive
- Housing proximity to north and east of the recreation fields.

Food – Grill / Convenience Store 7

Design and Systems Criteria

7.1 GOALS

Goals provide a direction for programming. Goals are listed as statements, but they also imply the question: What do you want to accomplish? Goals provide a starting point in determining what types of facts are appropriate to the project.

Goals indicate what the University of California, Riverside hopes to achieve by undertaking this project.

- Support all campus housing residents in Pentland Hills / Arroyo site area and those using the recreation fields
- Provide dining services that meet the diverse dining needs of residents as well as after-hours dining services
- Provide meal service for the Arroyo residents while arroyo is used as a residence hall
- Provide convenience retail services that meet the needs of the residents
- Provide access to restrooms for residents, recreation field users, and grill patrons

7.2 FACTS

Facts pertain to the organization, operation and function of the proposed space. They form the basis for internal planning and quantifying the program in terms of type, size and number of spaces.

These facts were obtained through interviews, tours and documentation provided by the university. The information was then collected and assessed. Measuring, evaluating and presenting the current space led to a greater understanding of the requirements for the project.

7.2.1 The Arroyo Neighborhood – Grill/Convenience Store

In additions to the provisions of new residential housing in the Arroyo neighborhood, as defined in the SPH, a new small scale grill and associated convenience store is provided to meet the diverse dining needs of the new student population of the Arroyo and the existing of Pentland Hills, as well as the campus community, teams and others using the associated recreation fields. It will function as part of the Dining Services Program in the interim period when the housing component of this project serves as residence halls (500 residents). Upon the completion of the whole Arroyo neighborhood, the facility will support a total of 1250 residents. As indicated in the SPH, during the interim period of when the student apartments as part of this project serve as residence halls, the facility will provide meals as part of the Dining Services Program.

7.2.2 Operational Hours

Operations from 7:00 AM to 12:00 AM. The hours will be updated after a market analysis is performed prior to opening.

7.2.3 Staffing

The Grill/Convenience Store will be capable of operating with as few as two employees. During peak periods of operation there may be as many as nine employees required.

7.2.4 Menu

The menu should include items such as burgers, finger foods, comfort foods, a unique item not served at other venues, vegetarian options and a salad bar. The menu should provide complete/”combo” meals”. Breakfast offerings should be of the “grab n’ go” variety. All the menu items should be ”made to order”. The prepared menu items at the “grill” will be served on single service utensils

7.2.5 Preparation Method

A variety of preparation methods will be utilized. Many convenience store items will not require preparation, as they will be received in a "packaged for sale" container. Some "grab-n-go" items will be prepared at other dining locations and transported to the market for sale. Certain menu items and ingredients will be transported to the market from other dining facilities and finished on site. Some menu items will be prepared on site.

The grill and exhibition stations will prepare menu items on a "just-in-time" or "cooked to order" basis. Depending upon the menu items it may be fried, broiled, grilled, or sautéed. The food product will be held in the platform in accordance with "serve safe" and EHS guidelines prior to final preparation (cooking) for service.

7.2.6 Distribution Method

The method of service will be "quick serve" or self-serve depending on the individual menu item. The majority of the convenience store items will be self-serve. The majority of the cooking platform items will be "quick serve".

7.2.7 Fire & Safety

The exhaust hoods within the facility will be protected by an Ansul R-102 wet chemical fire suppression system. This system will be connected to the campus fire alarm system.

7.2.8 Security

The facility will include a surveillance camera system with cameras to observe the receiving entrance and cash register stations. These cameras will be monitored in the manager's office.

7.2.9 Maintenance

The dumpster/compactor that will be required for the facility will be screened from view and located near the receiving/delivery door. The facility will also include a janitor area with mop sink and chemical storage.

7.2.10 Deliveries

A variety of delivery vehicles will be used to make deliveries to the facility. The largest will be a tractor-trailer, which will make a delivery at least twice per week. The smallest vehicle will be a step van. All of the delivery vehicles will have a lift gate or integral ramp, so a loading dock is not required.

7.3 ARCHITECTURAL DESIGN CRITERIA

Concepts are abstract ideas that respond to organizational and operational problems. They are not included as literal physical solutions, but rather as graphic statements to assist in understanding the complex functions and relationships required.

7.3.1 Architectural Criteria

Architectural Design

The facility is intended to act as a focal point on the site to attract residents and to lend architectural character to the project. To achieve this, the architectural statement should be distinctive while maintaining the integrity of the surrounding neighborhood. Building materials should be chosen for their ability to provide texture and visual interest while providing durable, low maintenance surfaces that can be achieved within a limited budget. Material choices could include painted stucco or concrete masonry units for wall construction with concrete composite shingles or asphalt shingles employed for roofing. Either flat or pitched roofs may be selected for the Grill/Convenience Store and this choice may provide an opportunity to create architectural distinction. Roof top equipment, in any, should be screened from view. The application of limited areas of ceramic tile at focal points will help draw attention to key areas of importance, such as entry zones, while metal and glass storefront systems should be considered to visually connect indoor dining areas with outdoor dining.

Architectural Interior Design

The Detailed Project Program process has determined that the “grill” and convenience store components should be merged into a single facility. In this scenario the requirements for changing rooms, employee restrooms, janitor’s closets, offices and storage rooms will be consolidated. Such a consolidation will maximize the efficiency of space and provide greater opportunities for providing a more varied menu. The larger space will allow increased interaction among the students using the facility. The single facility will also provide the operator with substantial flexibility in terms of staffing and operating hours.

The basic design criteria for the space are to provide a functional, flexible and aesthetically pleasant environment. Ceilings should be a minimum of 11’ high in the serving areas and 9’-6” in the working areas. Water wash ventilators will be used at the grill and exhibition cooking platforms. The ventilator in the preparation area will be a non-water wash type. The equipment will be specified for future menu flexibility. Where appropriate, equipment with casters and quick-disconnects should be specified. The remainder of the equipment is to be designed

and specified to allow for minimal disruption to operations or modification to the facility in the event of replacement or repair. Finishes selected for the food service areas will provide optimal durability and ease of maintenance.

Diagram 7.3.1 - 1 – Conceptual layout

7.4 SYSTEMS DESIGN CRITERIA

7.4.1 Structural

The Grill/Convenience Store will be located on the Arroyo site to the east of the campus. It is envisaged as a single story structure with exterior seating and public spaces. This project will be designed using the California Building Code (CBC), latest edition as adopted by UC Riverside.

The geotechnical investigation must be made available to the design team in sufficient time to enable the development, at the outset, of viable foundation solutions.

Imposed Loads

The following are the basic loads to be considered when designing this facility. Suitable load factors, load reductions, and load combinations are to be applied as required by code.

- Gravity Loads is the actual weight of the in place material.
- Uniform live loads will vary depending on the usage of the space. The following table summarizes the basic loads required for this facility, however, special cases may occur which require particular consideration. Specific live loads from plant must also be accommodated.

Occupancy	Uniform Live Load		Concentrated Live Load
	Reducible	Un-reducible	
Common public rooms	100 psf	-	-
Roof areas w/o mech. equip	20 psf	-	-
Roof areas with mech. equip	-	80 psf or weight of equip = 20 psf, whichever greater	-

- Wind load effects on the structure as a whole and on individual elements shall be considered with recognition of its variation over the height of the building and orientation to the wind. Wind loading criteria are as follows:

Wind speed	70 mps, exposure C
Wind importance factor (I)	1.0

- Seismic loads for a building is located in a Seismic Risk Zone 4, as defined by the California Building Code has a base shear calculation based on the following equations:

Design base shear V=Cv I W / R T
V need not exceed, V1=2.5 Ca I W / R
V shall not be less than, V2=0.11 Ca I W

I	Importance factor, 1.0
W	Building's seismic weight
R	Over-strength and ductility coefficient (table 16-N)
T	Elastic fundamental period of vibration
Cv	Seismic zone ad soil profile coefficient (table 16-R)
Ca	Seismic zone and soil profile coefficient (table 16-Q)

- Foundation loads arise from combinations of the above load cases. Depending on the structural frame and lateral force resisting system, there could be net uplift in certain locations.

Imposed Movements including settlement, heave, thermal changes, shrinkage, creep, drift, and elastic shortening. The structural system must be capable of resisting or minimizing the impact of these movements. Guidance should be provided by the Geotechnical engineer on the range of predicted soil movement, both heave and settlement, in the long and short-term conditions.

Consideration should be given to the effect of movement on cladding panels and partitions. Provision of both seismic and movement joints will need to be coordinated with the other engineering disciplines and the architect.

Gravity Framing for a Type 5 building will have potential construction materials such as concrete, steel, masonry and wood. However due to architectural considerations wood has been selected as the base material.

Lateral Framing is to be designed to resist both wind and seismic forces. For a wooden structure plywood shear walls act as the lateral resisting elements. The suspended floor slabs and the roof will act as diaphragms with drag elements delivering the loads into the lateral elements.

Foundation design should be designed to suit the soil conditions and the gravity and lateral framing schemes.

A site-specific geotechnical investigation has not been performed as of this date. It should include an assessment of both shallow and deep foundation systems and basic design parameters for each. Any potential geological hazards should be identified and basic soil conditions including groundwater information provided. It is anticipated that there will not be a basement beneath the convenience store and grill.

The Geotechnical report for an adjacent site titled “Geotechnical Investigation – Undergraduate Housing Expansion 2 – University of California, Riverside, California. Prepared for University of California, Riverside Job No 00523-3 by CHJ Inc. is available. This indicates that the soil is comprised of both old and young alluvial materials and fills. The foundation recommendations include removing the fill and younger alluvial soils, replacing these with a compacted fill capable of supporting conventional pad footings and slab on grade. As the building loads for this structure will be relatively light a shallow foundation will probably be sufficient. However this will need to be confirmed by the Geotechnical recommendations. The final foundation scheme will be designed to suit the soil conditions and the gravity and lateral framing schemes. At the lateral elements resultant uplift forces may develop depending on the layout and the magnitude of the lateral demand. Uplift resisting elements should be provided or a system that results in negligible resultant uplift adopted.

Other Design Considerations should be considered during the design of the structural system. Serviceability requirements for the comfort of the users and to ensure satisfactory operation of the facility should be established. This will include, for example, deflections limits, maximum beam depths, and location of vertical elements.

The fire rating of the structure should be considered as it will impact the selection of structural elements and the clear zone required for fire protection. If needed protection from ground borne or airborne water and moisture vapor should be provided.

Particular attention shall be given to building drifts and cladding compatibility as well as anchorage of non-structural elements so as to reduce seismic vulnerability.

7.4.2 Mechanical

The Grill/Convenience Store mechanical systems will be designed in accordance with the campus design guidelines and in order to minimize energy use without compromising occupant safety and whilst maintaining occupant comfort and building usability. The gross area of Convenience Store and Grill is approximately 4,100gsf.

The HVAC systems will be designed in accordance with the following codes, latest edition as adopted by UC Riverside:

- California Building Code, latest edition
- California Mechanical Code, latest edition
- ASHRAE 62
- National Fire Protection Association (NFPA), latest edition
- UCR Campus Design Standards, latest edition.

Design Criteria of the site located at UCR with latitude of 34ºN and elevation of 1,110 feet would be the following:

Outside Design Conditions; refer to 2.2E Natural Systems in the Site Development and Infrastructure Improvements section.

Inside Design Conditions include the following:
- Temperatures from 68ºF - 74ºF and no humidity control.
- Minimum Supply and Exhaust Air ratios should be as follows:

Convenience Store	3 air changes per hour
Toilets and showers	10 air changes per hour
Mechanical rooms	0.15 cfm/sq. ft.
Electrical room	0.15 cfm/sq. ft.

Note:
1. There may be some special storage rooms that require a higher minimum or constant volume air change rate than listed above. These rooms should be agreed to during the early design stages.

- Maximum supply and exhaust air will be regulated so as to suit the cooling load or the exhaust volume, depending upon which requires greater airflow.
- Minimum ventilation rates will meet the requirements of ASHRAE Standard 62. Outside Air ratios should be maintained at the 20 cfm per person.
- Air Filtration should be maintained at 65% minimum as per ASHRAE Standard 52.
- Noise Levels shall not exceed NC 35.

Internal Gains include equipment, lighting, and people loads
- Equipment loads by consulting with the users. The designer shall include an appropriate factor for the diversity of equipment usage: The cooling loads shall therefore be less than the connected loads. For the purposes of initial equipment sizing a design value of approximately 12 w/ft2 sensible and 6 W/ft2 latent in the grill area and 1 W/ft2 sensible in the convenience store area should be used. As internal gains resultants from the grill equipment are highly dependent on the equipment specified, the design team shall consult with the grill consultant for appropriate basis of design parameters.
- Lighting loads is calculated with a design value of 2 w/ft2 for the purpose of initial equipment sizing.
- Occupancy ratio shall be 20 square feet per person over the net usable area. Assuming 80% efficiency, this corresponds to approximately 40,000 BTUH sensible and 32,000 BTUH latent occupant loading.

Points of Connection to Site Utilities should be investigated by the design team for all possibilities. The underground campus infrastructure will be extended as required to meet the building

requirements. Campus chilled water and campus steam systems will not be extended.

Heating and cooling systems of a direct expansion gas-fired packaged air handling unit will be considered for the basis of design. The equipment shall incorporate direct evaporative media and an economizer function. The evaporative media and coils shall be selected so as to reduce pressure drop with air speed limited to 400 fpm.

For the purposes of this DPP the capacity of the air handling unit cooling and heating coils is estimated to be 20 tons and 100,000 BTUH respectively.

The final cooling capacity will be heavily dependant on energy efficiency improvements installed within or as a part of the building thereby resulting in reduced cooling demand. The design team is encouraged to explore heat recovery for the purpose of process water pre-heating.

In keeping with the University's desire to pursue sustainable design opportunities, the design team shall evaluate the cost and benefits associated with the following alternate systems. The comparative evaluation shall make use of life cycle cost analysis techniques and shall be made available to the University prior to the design team's completion of schematic design. Discount rate, analysis period, and escalation rate shall be as provided by the University. If such information is not provided by the University, the DOE discount rate and DOE escalation rates current as of the start of analysis shall be used1. The analysis period shall be 30 years. As with the Air to Air Heat Pump System, all alternate systems shall be installed and sub-metered on an individual unit basis for billing purposes.

- Alternate: A ground source heat pump should be considered as an optional system. The ground water table is approximately 50' to 100' below grade. The design team shall confirm the stabilized groundwater temperature of approximately 68F2.

  Condenser water will be provided to serve the Air to Water Heat Pumps via a condenser water loop serving the site buildings. Vertical bore holes shall be drilled for coupling of high density poly-ethylene pipe with the ground water source. The pipe sections shall be fused with an estimated lifetime exceeding 40 years. Loop temperature will be maintained between 60°F and 76°F. The design team shall design the system to minimize pressure drop through the pipes. An approach of 5°F on the ground coupled heat exchange is achievable.

[1] The DOE real discount rate (which excludes general price inflation) for 2002 is 3.2% (nominal rate is 5.6%). Current discount and escalation rates can be found by referencing the "Annual Supplement to Handbook 135", US DOE, http://www.eren.doe.gov/femp.
[2] W. D. Collins, "Temperature of Water Available for Industrial Use in the United States," U.S. Geological Survey Paper 520-F, Washington, D.C., 1925.

Noise and Vibration Control considerations should be taken in account when designing mechanical systems. The design will consider any limitations of the structure, and the presence of program areas with restrictive sound criteria. Particular attention will be given to the location and isolation of heavy equipment, including cooling towers, boilers, pumps and compressors.

Duct noise, including noise generated by fans, excessive air speed, excessive pressure drop, dampers, turning vanes, terminal boxes, resonances and pressure fluctuations shall be considered. Pipe noise and vibration transfer due to pump vibration and excessive pipe velocity shall also be considered.

Energy Efficiency shall be investigated for a reasonable number of energy efficiency measures. Each shall be evaluated on a life cycle cost basis in constant dollars, with study life and escalation rates determined by the University. The building energy usage shall exceed Title 24 requirements by at least 10% and incorporate all other mandatory measures found in the current edition of the UC Riverside Campus Design Guidelines. It is assumed that the building systems will incorporate standard practices for energy efficiency, including the following:

- Variable volume fan systems, to reduce fan energy under low load conditions.
- Variable speed pumping for hydronic distribution loops to reduce pumping energy.
- Building fabric and systems will exceed Title 24 where applicable.

7.4.3 Electrical

The electrical system will include:

Lighting	Interior and exterior
Power	Normal, 227/480V, 120/208V, 3 phase, 4-wire
Signal Systems	Fire alarm, telecommunication (voice/data), and security

The electrical installation will comply with the following codes and standards codes, latest edition as adopted by UC Riverside

- California Electrical Code
- California Code of Regulations (CCR)
- National Fire Protection Association
- UCR Campus Design Standards, latest edition.
- Illuminating Engineering Society of North America (IES)

Design Loads

Design Load estimate is obtained by assigning unit loads per square foot (VA/ft²) for each system to early program gross areas and will be updated as additional information is received. The following is a summary of the preliminary load estimation for the Grill/Convenience Store.

Items	Normal VA/ft2	Ft2	Normal kVa
Lighting **All Areas**	1.5	4,100	7
Receptacle Power **General Areas** **Kitchen Areas**	 2.5 20.0	 4,100 4,100	 11 82
HVAC/Ventilation **Heat Pumps** **Fans** **Plumbing**	6.0 2.5 0.5	4,100 4,100 4,100	25 11 2
Subtotal			**135**
Allow 10% margin			**14**
Total			**149**

The total estimated load for the Grill/Convenience Store is 149kVA. A pad-mounted transformer or secondary unit substation will be used to serve this load. Based on this load it recommended that a 250kVA transformer be utilized. An external area adjacent to the Grill/Convenience Store shall be provided to accommodate this transformer.

The transformer will have a 480/277V, 3-phase, 4-wire secondary. However it may be possible that the transformer have a 208/120V, 3-phase, 4-wire secondary by ensuring all the loads in the Grill/Convenience Store are operable off this voltage level. This would avoid having a dual voltage system in the Grill/Convenience Store.

Power will be obtained from the campus 12 KV distribution systems. The exact point of service connection will need to be determined in conjunction with Campus Facilities.

The Grill/Convenience Store will have a main electrical room containing a main switchboard and distribution boards. The main electrical room shall be positioned as close as possible to the campus service connection point.

The building power distribution will be at 277/480V and 120/208V via cable feeders in conduits and will be distributed as follows:

Motor loads of one horsepower and larger	480 V, 3-phase, 3-wire
Fluorescent lighting and HID fixtures	227V and 120V, 1-phase
Special equipment	208V, single phase, 3-phase
Kitchen equipments, receptacle outlets, and motors smaller than ¾ horsepower	120V, single phase

No facility will be provided for power system other than 277/480V and 120/208V AC, 3-phase, 4-wire, 60 Hz.

The emergency power requirement for exit and egress lighting will be provided by the use of integral battery inverter systems in the designated luminaries. Similarly the fire alarm and security systems shall have an associated battery system to provide power during normal power outages.

No standby diesel generation or other alternate generation system will be provided for emergency power means.

A central grounding system will be provided for all the switchboards. A low impedance connection to earth will be obtained using ground rods, a concrete encased electrode and bonding to the building steel and main water piping. All grounded busses from switchboards, transformers, and panel boards will be connected at a central ground bus in the electrical room.

Lighting levels will be designed in accordance with Illuminating Engineering Society (IES) recommendations and UCR standards. The lighting power density will be less than that mandated by California Code of Regulations (CCR), Title 24 - Energy Conservation Regulations. The following lighting levels will be provided:

Work Plane Lighting Levels	
Room	**Footcandles**
Grill Area	20-30
Store Area (merchandising)	30-50
Corridors	10-20
Storage/Janitor's Room	15-25
Toilets	15-25
Electrical/Mechanical Rooms	20-30

The following lighting specifications will be followed:

- Light fixtures in general will be fluorescent type - Down lighting fixtures (utilizing compact fluorescent) and linear recessed fixtures using T8 or T5 lamps and electronic ballasts.
- Wall switch devices in general will be used for manually control of light fixtures.
- Exit signs will be LED type.
- Exterior lighting will be high intensity discharge and will be controlled by a Lighting Control Panel.

Fire Alarm System will match the UCR campus design guidelines will be provided for the building and will consist of the following:

- A main fire alarm control panel located in the electrical room.
- The building will have full area smoke detector coverage in order to avoid the requirements for duct detectors. Fire/smoke dampers will be closed and air-handling units will be shut down using the full area coverage detectors in accordance with applicable codes and as required by the UCRFD.
- Audio-visual alarm stations will be provided along all egress routes, toilet areas, and areas of assembly.
- Pull stations will be provided along egress routes.

7.4.4 Plumbing

The Grill/Convenience Store will be located on the Arroyo site to the east of the campus. It is envisaged as a single story structure with exterior seating and public spaces.

The Plumbing and Fire Protection Systems will be designed in accordance with the following codes, latest edition as adopted by UC Riverside

- California Building Code, latest edition
- California Plumbing Code, latest edition
- California Fire Code, latest edition
- National Fire Protection Association (NFPA), latest edition
- UCR Campus Design Standards, latest edition.
- American with Disabilities Act (A.D.A.)
- UL –Underwriter's Laboratories
- AGA – American gas Association
- ASME – American Society of Mechanical Engineers
- ASSE – American Society of Sanitary Engineers
- ASTM – American Society for Testing and Materials
- AWWA – American Waterworks Assocaition
- NSF – National Sanitation Foundation
- PDI – Plumbing and Drainage Institute
- California Administrative Codes, Titles 8, 17, 22 & 24

Design Criteria & System Description

- The domestic water system shall be connected to the 8" Campus water main at Pentland Way. The building will be provided with control valves, backflow protection and pressure reducing devices and meter. Assuming the infrastructure expansion projects described in the East Infrastructure Report by Bechard Long & Associates are undertaken, the Campus should have adequate water pressure and flow to supply the building's water demand.

  Domestic cold water pipe sizing shall be based on a maximum velocity of 6 feet per second; hot water system shall be based on maximum velocity of 4 feet per second; and allowable pressure loss of 2 psi per 100 feet. Industrial cold water shall be taken from the domestic cold water system, provided with reduced pressure backflow protection device. Pipe sizing shall be based on the same criteria as the domestic cold water system.

  Hot water shall be provided to the Grill/Convenience Store by a storage type high recovery water heater. The water heaters are gas supplied. Water heater will be sized based on the hot water demand of the Grill Area. It shall be heated to 140°F temperature and supply the equipment and fixtures at this temperature. Hot water supply to dishwashing machine requiring more than the 140°F temperature shall be supplied via booster heaters. A point-of-use tempering valves will be provided for fixtures requiring less than 140°F.

  Sectionalizing control valves shall be provided at the main water system to provide accessibility for service.

- Storm drainage system shall be sized based on Tables 11-1 and 11-2 of the latest edition of the California Plumbing Code. Rainfall intensity of 4"/hour will be used. This was based on a DPP report made by Bechard Long & Associates for the East Campus Infrastructure.

  The main roof drainage will be routed within the building and will discharge to 5'-0" outside the building. Final connection to the site's main storm drainage system shall be under the Civil Engineer's scope of work. Overflow drains will be routed and discharge at face of building at (+/-) 6" above the finish grade or at face of curbs.

- The sanitary waste and vent system shall be sized based on Tables 7-3 and 7-5 of the latest edition of the California Plumbing Code. It shall be routed to 5'-0" outside of the building and connected to the Campus 12" main sewer extension from Linden Street. There will be a provision for grease interceptor and shall be sized based on the Local Health Department's requirement. Final connection to the sewer mains shall be provided under the Civil's scope of work.

- The Campus has natural gas service provided by the Southern California Gas at a pressure of 25 psi. The distribution system within the Campus is at 5 psi. The building will be provided with gas meter assembly comprising of gas meter, gas pressure regulator, gas shut-off valve and gas seismic valve. The gas pressure will be reduced to 8" W.C. The natural gas system shall be sized based on Table 12-3 of the latest edition of the California Plumbing Code.

- The fire protection system shall be based on the latest edition of the National Fire Protection Association (NFPA) Pamphlet No. 13, the California Building Code and California Fire Code.

  The entire building shall be protected by an automatic sprinkler system. The system shall be hydraulically protected, based on the current water pressure and performance flow test acquired from the Campus water system. The minimum rate of water application (density) shall be 0.10 GPM per square foot for Light Hazard, over the most remote 1,500 square feet; and a minimum of 0.12 GPM per square foot for Ordinary Hazard Group 1, over the most remote 3,000 square feet.

7.4.5 Telecommunications

Conduits will be provided from site telecommunication manholes to each building for incoming cables, as well as between buildings for inter-connecting cables, as required.

Telecommunication closets will be provided per UCR telecommunication service requirements. Backboards, ground bars, and receptacles will be provided. Riser conduits and/or sleeves will be provided for vertical distribution cabling. Cable trays will be provided for horizontal distribution cabling.

An outlet box with conduit will be provided for each communication outlet.

7.4.6 Security Criteria

Card Access provided at receiving doors, storage doors, and office doors. Security camera's and alarm systems to be provided in all areas.

7.4.7 SPACE DATA SHEETS

Space data sheets are provided as a guide to each room type anticipated (ASF). Freestanding equipment or moveable furniture shown will be provided by the owner. For further system requirements refer to the beginning of section 7.4.

ROOM DESCRIPTION	
Name	**Cashier Area**
Function	
Utilization	
Quantity	1
ASF	287SF
Adjacencies	Grill & C-store display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	
Walls	
Painted	Enamel
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' with soffits
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shade	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	60 amps
208V, single phase	
208V, three phase	
Communications	
Voice	X (2)
Data	X (2)
Cable	
Keycard Access	
Barcode Reader	X (2)
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	
Floor Drain	
Hot water	
Cold water	
Natural gas	
Steam	
Fire Sprinklers	X

FIXED EQUIPMENT	
Cashier counters (2)	X

MOVEABLE EQUIPMENT	
Cash register (2)	X

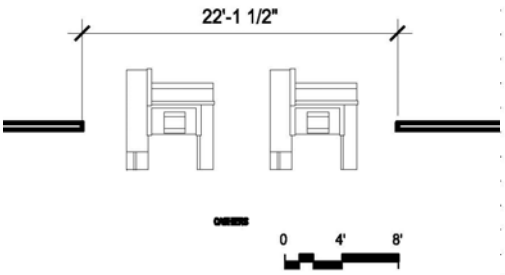


Diagram 7.4.7 - 1:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Coffee**
Function	Specialty coffee service
Utilization	
Quantity	1
ASF	120SF
Adjacencies	C-store display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	Enamel
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' with soffits
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Other	

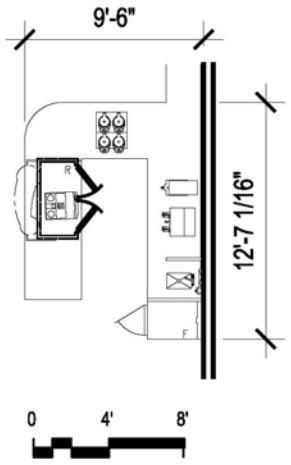
ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	80 amps
208V, single phase	80 amps
208V, three phase	
Communications	
Voice	X (1)
Data	X (1)
Cable	
Keycard Access	
Barcode Reader	X (1)
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	1
Floor Sink	2
Floor Drain	
Hot water	2 @ 1/2"
Cold water	5 @ 1/2"
Natural gas	
Steam	
Fire Sprinklers	X

FIXED EQUIPMENT	
Display case	X
Service counter	X
Espresso machine	X
Undercounter refrigerators (2,	X
Untility sink	X
Ice Bin	X
Work counter	X
Coffee maker	X
Coffee warmer	X
Frappacino machine	X
Hand sink	X

MOVEABLE EQUIPMENT	
Blenders (2)	X
Trash can	X
Cash register (optional)	X

Diagram 7.4.7 - 2:
Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Deli**
Function	Made to order sandwiches
Utilization	
Quantity	1
ASF	117SF
Adjacencies	C-store display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	
Walls	
Painted	
Wall Paper	
Tile	decorative
Other	
Ceiling	
Height	10' with soffits
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	
Exhaust Hood	
Fire suppression system	X
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	60 amps
208V, single phase	20 amps
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	1
Floor Sink	2
Floor Drain	1
Hot water	2 @ 1/2"
Cold water	2 @ 1/2"
Natural gas	
Steam	
Fire Sprinkler	X

FIXED EQUIPMENT	
Refrigerated display case	X
Work table	X
Utility sink	X
Hand sink	X
Service counter	X
Food warmer	X
Reach-in refrigerator	X
Sandwich make-up table	X

MOVEABLE EQUIPMENT	
Slicer	X
Scale	X
Bread rack	X
Cash register (optional)	X

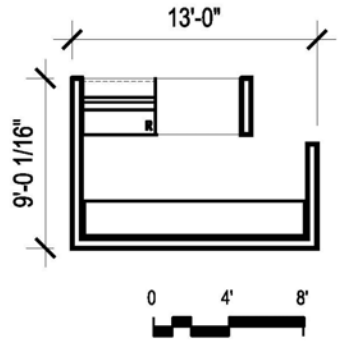


Diagram 7.4.7 - 3:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Display Area**
Function	
Utilization	
Quantity	1
ASF	178SF
Adjacencies	Food platforms & refrig. display

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' minimum
Open	
Acoustical Tile	
Gyp Bd, Painted	enamel, light in color
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	
Exhaust Hood	
Smoke Detector	X
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	60 amps
208V, single phase	30 amps
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	
Floor Drain	
Hot water	
Cold water	
Natural gas	
Steam	
Fire Sprinkler	X

FIXED EQUIPMENT	
Beverage counter	X
Condiment counter	X
Produce display refrigerator	X

MOVEABLE EQUIPMENT	
Salad bar	X
Sundries display shelving	X
Packaged food display shelving	X
Bakery display shelving	X
Office supplies display shelving	X
Coffee dispensing equipment	X
Soft drink dispensing equipment	X
Hot chocolate dispenser	X
Housekeeping display shelving	X

Diagram 7.4.7 - 4:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Dry Storage**
Function	Food and paper storage
Utilization	
Quantity	1
ASF	202SF
Adjacencies	Receiving, preparation area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	enamel, light in color
Wall Paper	
Tile	
Other	
Ceiling	
Height	10'
Open	
Acoustical Tile	
Gyp Bd, Painted	enamel, light in color
Other	
Doors	
Dimensions	36" min.
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	
Exhaust Hood	
Fire suppression system	
Smoke Detector	X
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Other	
Power	
120V,	10 amps
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	
Floor Drain	
Hot water	
Cold water	
Natural gas	
Steam	
Fire Sprinklers	X

FIXED EQUIPMENT	
Shelving, NSF approved	X

MOVEABLE EQUIPMENT

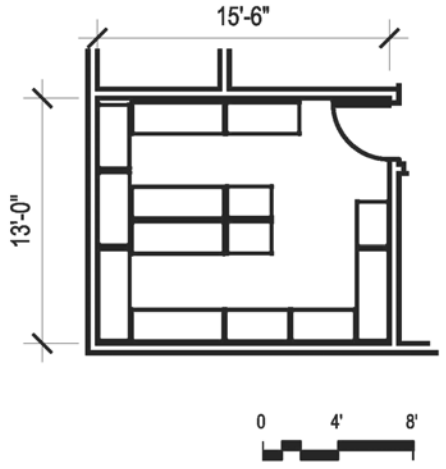
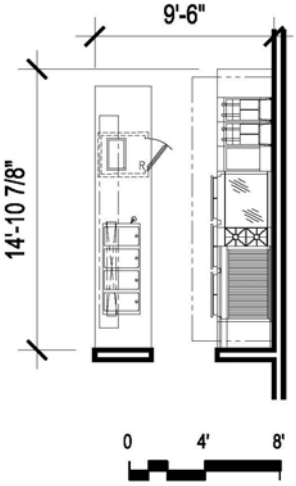


Diagram 7.4.7 - 5:
Room Diagram and Space Data Sheet



ROOM DESCRIPTION	
Name	**Grill**
Function	Quick serve hot foods
Utilization	
Quantity	1
ASF	142SF
Adjacencies	C-store display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	
Wall Paper	
Tile	decorative
Other	
Ceiling	
Height	10' with soffits
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	15' x 4'
Fire suppression system	X
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	80 amps
208V, single phase	40 amps
208V, three phase	
Communications	
Voice	
Data	X (2)
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	1
Floor Sink	4
Floor Drain	1
Hot water	2 @ 1/2"
Cold water	3 @ 1/2"
Natural gas	600 mbtu
Steam	
Fire Sprinklers	X

FIXED EQUIPMENT	
Sneeze guard	X
Service counter	X
Food warmer	X
Undercounter refrigerators (3)	X
Untility sink	X
Hand sink	X
Spreaders (2)	X
Fryers with filter system	X
Dump station	X
Open burners	X
Griddle	X
Broiler	X
Refrigerated base with drawer	X
Heat lamps	X
"Environmental system" exhaust hood	X

MOVEABLE EQUIPMENT	
Work Counter	
Reach-in freezer	X Quick Disconnect
Heated sandwich display	X Quick Disconnect
Refrigerated condiment displa	X Quick Disconnect
Toaster, conveyor	X
Trash can	X
Cash register (optional)	X

Diagram 7.4.7 - 6:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Office**
Function	Kitchen manager's office
Utilization	
Quantity	1
ASF	81SF
Adjacencies	Preparation area, receiving

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	10'
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	36" min.
Finish	
Other	
Windows	X
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	
Exhaust Hood	
Smoke Detector	X
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Other	
Power	
120V,	15 amps
208V, single phase	
208V, three phase	
Communications	
Voice	X (1)
Data	X (1)
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	
Floor Drain	
Hot water	
Cold water	
Natural gas	
Steam	
Sprinklers	X

FIXED EQUIPMENT	
Safe	X

MOVEABLE EQUIPMENT	
Computer	X
Desk	X
Chair	X
File Cabinet	X

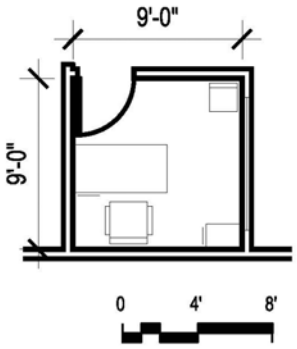


Diagram 7.4.7 - 7:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Produce**
Function	Bulk vegetables and fruit
Utilization	
Quantity	1
ASF	17SF
Adjacencies	Display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	Enamel
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' with sofits
Open	
Acoustical Tile	
Gyp Bd, Painted	Enamel
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	40 amps
208V, single phase	20 amps
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	2"
Floor Drain	
Hot Water	
Cold Water	1/2"
Natural gas	
Steam	
Fire Spinklers	X

FIXED EQUIPMENT	
Refrigerated self serve display counter	X
Non-refrigerated self serve display counter	X

MOVEABLE EQUIPMENT

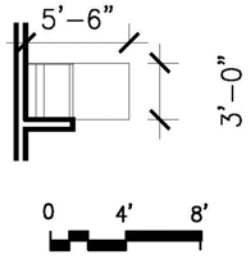


Diagram 7.4.7 - 8:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Condiment Station**
Function	
Utilization	
Quantity	1
ASF	45SF
Adjacencies	Display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	Enamel
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' with sofits
Open	
Acoustical Tile	
Gyp Bd, Painted	Enamel
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Fire suppression system	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING
Sink, direct waste
Floor Sink
Floor Drain
Hot Water
Cold Water
Natural gas
Steam
Fire Sprinklers X

FIXED EQUIPMENT

MOVEABLE EQUIPMENT	
Condiment display counter	X

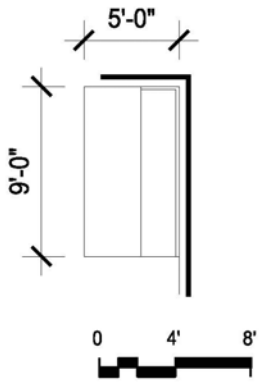


Diagram 7.4.7 - 9:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Beverage Station**
Function	
Utilization	
Quantity	1
ASF	32SF
Adjacencies	Display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	Enamel
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' with sofits
Open	
Acoustical Tile	
Gyp Bd, Painted	Enamel
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	40 amps
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	2"
Floor Drain	
Hot Water	
Cold Water	
Natural gas	
Steam	
Fire Sprinklers	X

FIXED EQUIPMENT

MOVEABLE EQUIPMENT	
Coffee Machine	X
Hot Chocolate Machine	X
Soft Drink Dispenser	X
Ice Machine	X

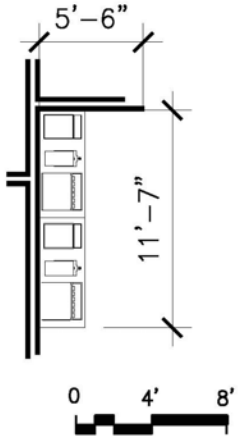


Diagram 7.4.7 - 10:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Bakery**
Function	Baked goods display
Utilization	
Quantity	1
ASF	81SF
Adjacencies	Display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	Enamel
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' with sofits
Open	
Acoustical Tile	
Gyp Bd, Painted	Enamel
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	40 amps
208V, single phase	20 amps
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	2"
Floor Drain	
Hot Water	
Cold Water	
Natural gas	
Steam	
Fire Sprinklers	X

FIXED EQUIPMENT

MOVEABLE EQUIPMENT	
Toaster, conveyor type	X

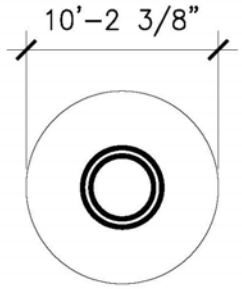


Diagram 7.4.7 - 11:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Dining**
Function	
Utilization	
Quantity	1
ASF	735SF
Adjacencies	Public area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' minimum
Open	
Acoustical Tile	
Gyp Bd, Painted	Enamel
Other	
Doors	
Dimensions	36" Min
Finish	
Other	
Windows	
Dimensions	Varies
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	Low E/IGU
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	
Exhaust Hood	
Smoke Detector	X
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	X
Halogen	
Other	
Power	
120V,	X
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	X
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Fire Sprinklers	X

FIXED EQUIPMENT

MOVEABLE EQUIPMENT	
Tables	X
Chairs	X
Televisions	X

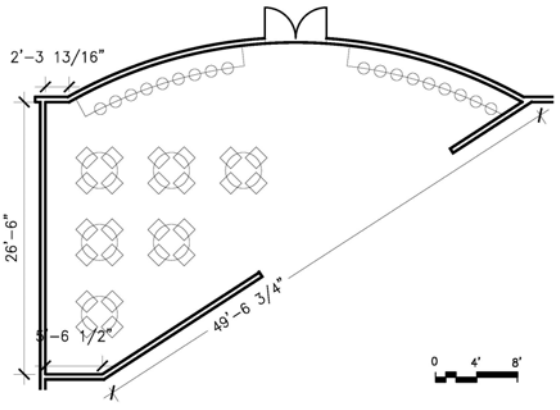


Diagram 7.4.7 - 12:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Receiving Area**
Function	Delivery entrance
Utilization	
Quantity	1
ASF	110SF
Adjacencies	Office, change room

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	
Wall Paper	
Tile	
Other	FRP
Ceiling	
Height	10'
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	42", minimum
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Other	
Power	
120V,	10 amps
208V, single phase	
208V, three phase	25 amps
Communications	
Voice	X (1)
Data	
Cable	
Keycard Access	X (1)
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	1
Floor Drain	1
Hot water	1/2"(1)
Cold water	1/2"(2)
Natural gas	
Fire Sprinklers	X
Other	Drain trough
Hose Bib for power washer	

FIXED EQUIPMENT	
Fly fan	X
receiving table	X
Ice machine with bin	X
Janitor's sink	X
Faucet	X

MOVEABLE EQUIPMENT	
Receiving scale	X

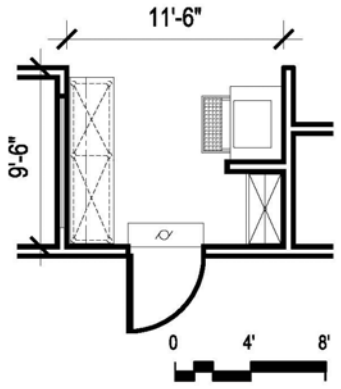


Diagram 7.4.7 - 13:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Change Room**
Function	Employee change room
Utilization	
Quantity	1
ASF	67SF
Adjacencies	Receiving

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	10'
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	36" min.
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Other	
Power	
120V,	
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	
Floor Drain	
Hot water	
Cold water	
Natural gas	
Steam	
Fire Sprinklers	X

FIXED EQUIPMENT

MOVEABLE EQUIPMENT	
Employee lockers (adjacent)	X

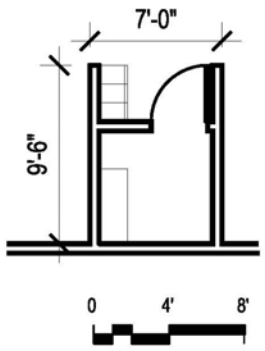


Diagram 7.4.7 - 14:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Walk-In Freezer**
Function	Self serve display & storage
Utilization	
Quantity	1
ASF	85
Adjacencies	C-store display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	
Wall Paper	
Tile	
Other	Stucco aluminum
Ceiling	
Height	8'
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	white aluminum
Doors	
Dimensions	36"
Finish	
Other	4 self service glass doors
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Fire suppression system	
Other	

ELECTRICAL	
Lighting	
Fluorescent	
Compact Fluor.	
Incandescent	X
Halogen	
Other	Vapor proof
Power	
120V,	10 amps
208V, single phase	25 amps
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	X
Floor Drain	
Hot water	
Cold water	
Natural gas	
Steam	
Fire Sprinkler	X

FIXED EQUIPMENT	
Evaporator Coil	X
Shelving units	X
Display doors with heated frar	X
Rear load display shelving	X

MOVEABLE EQUIPMENT

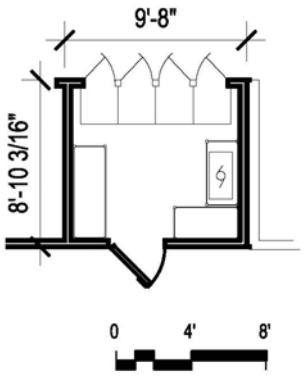


Diagram 7.4.7 - 15:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Display Refrigerator**
Function	Self serve display & storage
Utilization	
Quantity	1
ASF	206SF
Adjacencies	C-store display area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	
Wall Paper	
Tile	
Other	Stucco aluminum
Ceiling	
Height	8'
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	white aluminum
Doors	
Dimensions	36"
Finish	
Other	10 self service glass doors
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	
Compact Fluor.	
Incandescent	X
Halogen	
Other	Vapor proof
Power	
120V,	20 amps
208V, single phase	15 amps
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	X
Floor Drain	
Hot water	
Cold water	
Natural gas	
Steam	
Other	

FIXED EQUIPMENT	
Evaporator Coil	X
Shelving units	X
Display doors with heated frar.	X
Rear load display shelving	X

MOVEABLE EQUIPMENT

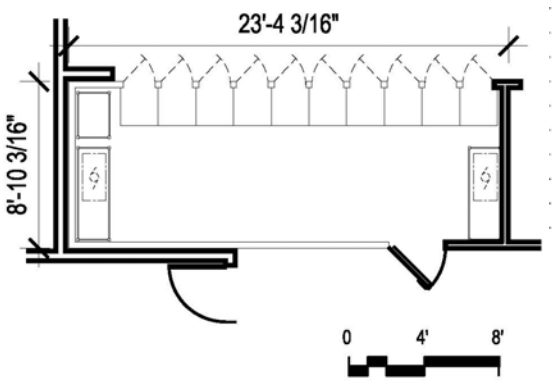


Diagram 7.4.7 - 16:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Walk-in Refrigerator**
Function	Bulk food storage
Utilization	
Quantity	1
ASF	76SF
Adjacencies	Preparation

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	
Wall Paper	
Tile	
Other	Stucco aluminum
Ceiling	
Height	8'
Open	
Acoustical Tile	
Gyp Bd, Painted	
Other	white aluminum
Doors	
Dimensions	36"
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	
Compact Fluor.	
Incandescent	X
Halogen	
Other	Vapor proof
Power	
120V,	20 amps
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	X
Floor Drain	
Hot water	
Cold water	
Natural gas	
Steam	
Fire Sprinklers	

FIXED EQUIPMENT	
Evaporator Coil	X
Shelving units	X

MOVEABLE EQUIPMENT

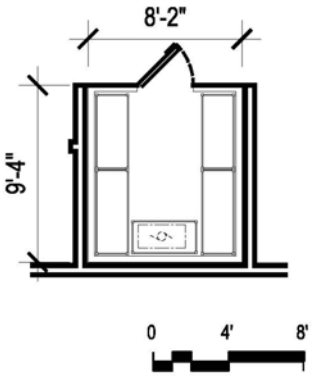


Diagram 7.4.7 - 17:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Scullery**
Function	Utensil washing
Utilization	
Quantity	1
ASF	100SF
Adjacencies	Preparation, serving platforms

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	
Wall Paper	
Tile	
Other	FRP
Ceiling	
Height	10'
Open	
Acoustical Tile	
Gyp Bd, Painted	Enamel
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Other	
Power	
120V,	
208V, single phase	30 amps
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	1
Floor Sink	1
Floor Drain	1
Hot water	1/2"(2)
Cold water	1/2"(3)
Natural gas	
Steam	
Fire Sprinklers	X

FIXED EQUIPMENT	
Three compartment utensil sir.	X
Disposer	X
Wall shelves	X
Utensil rack	X
Shelving unit	X

MOVEABLE EQUIPMENT

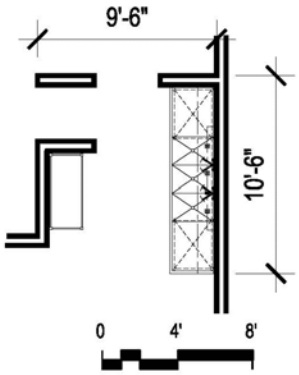


Diagram 7.4.7 - 18:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Preparation Area**
Function	
Utilization	
Quantity	1
ASF	110SF
Adjacencies	Scullery, walk-in refrigerator

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	
Wall Paper	
Tile	
Other	FRP
Ceiling	
Height	10'
Open	
Acoustical Tile	
Gyp Bd, Painted	Enamel
Other	
Doors	
Dimensions	
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	
Exhaust Hood	60" x 48"
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Other	
Power	
120V,	40 amps
208V, single phase	60 amps
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	4
Floor Drain	2
Hot water	1/2"
Cold water	1/2"
Natural gas	1"
Steam	
Fire Spinklers	X

FIXED EQUIPMENT	
Work tables	X
Wall shelves	X
Range or Oven	X
Preparation sinks	X

MOVEABLE EQUIPMENT	
Pan racks	X
Slicer	X
Food Processor	X

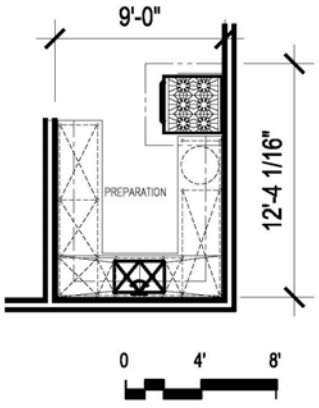


Diagram 7.4.7 - 19:
Room Diagram and Space Data Sheet

ROOM DESCRIPTION	
Name	**Mail Room**
Function	
Utilization	
Quantity	1
ASF	214
Adjacencies	Public area

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	X
Carpet	
Epoxy Finish	
Other	
Base	
4" vinyl	X
4" wood base	
integral w/floor	
Other	
Walls	
Painted	X
Wall Paper	
Tile	
Other	
Ceiling	
Height	10' minimum
Open	
Acoustical Tile	
Gyp Bd, Painted	X
Other	
Doors	
Dimensions	36" Min
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

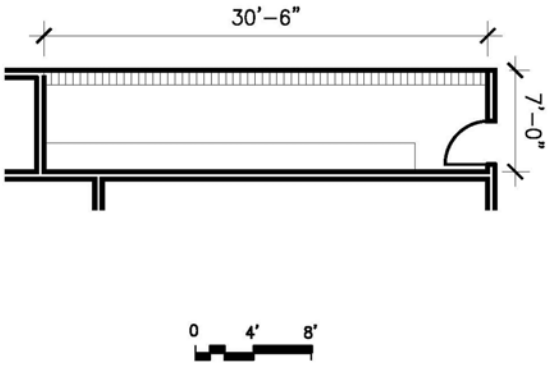
MECHANICAL	
Overhead VAV Air Supply	*X*
Exhaust Fan	
Exhaust Hood	
Fire suppression system	
Smoke Detector	X
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Other	
Power	
120V,	X
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Fire Sprinklers	X

FIXED EQUIPMENT	
Mail Boxes	X
Sorting Table	X

MOVEABLE EQUIPMENT



ROOM DESCRIPTION	
Name	**Restrooms**
Function	
Utilization	
Quantity	2
ASF	46SF
Adjacencies	Public areas

ARCHITECTURAL/FINISH	
Floor	
VCT	
Sheet Vinyl	
Carpet	
Epoxy Finish	
Other	Tile
Base	
4" vinyl	
4" wood base	
integral w/floor	
Other	Tile
Walls	
Painted	enamel, light in color
Wall Paper	
Tile	
Other	
Ceiling	
Height	8'
Open	
Acoustical Tile	
Gyp Bd, Painted	Enamel
Other	
Doors	
Dimensions	36" min.
Finish	
Other	
Windows	
Dimensions	
Coverings	
Horizontal Shades	
Vertical Shades	
Curtains	
Frame	
Glazing type	
Operable	
Non-operable	
Other	

MECHANICAL	
Overhead VAV Air Supply	X
Exhaust Fan	X
Exhaust Hood	
Other	

ELECTRICAL	
Lighting	
Fluorescent	X
Compact Fluor.	
Incandescent	
Halogen	
Other	
Power	
120V,	
208V, single phase	
208V, three phase	
Communications	
Voice	
Data	
Cable	
Keycard Access	
Barcode Reader	
Other	
Accessories	
Ceiling Fan	
Signage	
Other	

PLUMBING	
Sink, direct waste	
Floor Sink	
Floor Drain	1
Hot water	1/2"(1)
Cold water	1/2"(2)
Natural gas	
Fire Sprinklers	X
Other	Toilet
	Hand sink

FIXED EQUIPMENT	
Towel Dispenser	X
Soap Dispenser	X
Mirror	X

MOVEABLE EQUIPMENT

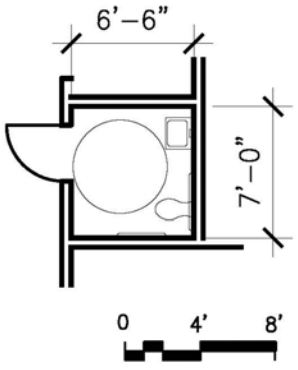


Diagram 7.4.7 - 20:
Room Diagram and Space Data Sheet

Budget 8

8.1 Budget

The following cost model is predicated on the assumption that all elements (Student Apartments with Parking, Site and Infrastructure work, Recreation Fields and Grill) are included in the scope of the project.

DAVIS LANGDON ADAMSON

DETAIL PROJECT PROGRAM COST MODEL

for

East Campus Arroyo Housing
University of California, Riverside
Riverside, California

January 12, 2004

Project 0168-7005.110

DETAIL PROJECT PROGRAM COST MODEL

for

East Campus Arroyo Housing
University of California, Riverside
Riverside, California

RATCLIFF Architecture
5856 Doyle Street
Emeryville, California 94608

Tel: (510) 652-1972
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January 12, 2004

DAVIS LANGDON ADAMSON
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301 Arizona Avenue
Suite 301
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East Campus Arroyo Housing
University of California, Riverside
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

CONTENTS

East Campus Arroyo Housing
University of California, Riverside
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

BASIS OF COST MODEL

Cost Model Prepared From

Draft DPP information

Discussions with the Project Architect and Engineers

Conditions of Construction

The pricing is based on the following general conditions of construction

A start date of April 2005

A construction period of 15 months

The general contract will be competitively bid with qualified general and main subcontractors

There will not be small business set aside requirements

The contractor will be required to pay prevailing wages

There are no phasing requirements

The general contractor will have full access to the site at regular construction hours

East Campus Arroyo Housing
University of California, Riverside
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

INCLUSIONS

The project consists of the development of the East Campus Arroyo student housing complex, which includes the following:

1. An apartment complex that includes 113 EA 4 bedroom units, 24 EA 2 bedroom unit, 5EA 1 bedroom units, 4 EA studio units stacked in a combination on two story and three story buildings, a below grade parking structure of approximately 101,725 GSF. The total gross square feet for the apartments is 215,149SF of Type V construction. The typical construction includes reinforced concrete foundations and slab on grade or a topping slab on the parking structure podium, wood framed floor and roof structures with gypcrete topping on floors, exterior finish of stucco with integral color finish, aluminum framed insulated sliding windows with low-e, entry doors, and stucco soffits. Roofing includes concrete tile over R-30 batt insulation, and allowances for miscellaneous sheetmetal work and caulking and sealants. Interior construction includes wood framed partitions with painted gypsum board lining, wood doors and frames, carpet and sheet vinyl flooring, resilient rubber bases and painted gypsum board ceilings. Function equipment includes bathroom accessories, built-in cabinets and countertops, window blinds, fire extinguisher cabinets, mail boxes and kitchen appliances. 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 to air heat pump system. Electrical includes normal, machine, equipment and user convenience power, lighting, telephone/data, fire alarm and security. Fire protection includes automatic wet sprinkler systems - complete.

2. A Grill/Retail/Convenience building that includes a single story building with a gross square feet of approximately 3,953SF.

3. Sitework and Infrastructure include site clearance, cut to reduce levels, rough grading and an allowance to fill the Arroyo, asphalt paving to roads and parking, reinforced concrete walks, and an allowance for landscaping, irrigation and site furniture. Site utilities include site drainage, domestic and fire water, sewer, gas, electrical mains power, telecommunications/signals (conduit only), trade demolition, removal, protection of existing utilities.

4. Recreation Fields include preparation and turf, irrigation, lighting and an allowance for site utilities to approximately 198,000SF.

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 bidders for all items of subcontracted work and 6-7 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 Adamson 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 Adamson's best judgement as professional construction consultant familiar with the construction industry. However, Davis Langdon Adamson 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

Owner supplied and installed furniture, fixtures and equipment

Loose furniture and equipment except as specifically identified

Audio visual equipment

Hazardous material handling, disposal and abatement

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 a construction midpoint of November 2005

Utility connection charges and fees

Emergency power (excepting exit lighting battery back-up)

Public address

CCTV surveillance cameras and monitoring

Site telecommunications/signals cabling

HV equipment and cabling - P.G. & E.

Major utility relocations

Storm water containment

Refrigerators

East Campus Arroyo Housing
University of California, Riverside
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

OVERALL SUMMARY

	Gross Floor Area	$ / SF	$x1,000
Apartment Complex	215,152 SF	154.67	33,277
Grill/Retail/Convenience	4,129 SF	319.03	1,317
Sitework and Infrastructure	322,990 SF	18.19	5,874
Recreation fields	198,000 SF	11.42	2,261
TOTAL Building & Sitework Construction	***September 2003***		***42,729***
Escalation at 3.00% per annum	6.61%		2,826
TOTAL Building & Sitework Construction	***November 2005***		***45,555***
Telecommunications work by campus			350
GRAND TOTAL			***45,905***

NOTE:
This cost model is perdicated on the assumption that the entire scope of works included in this summary will be included in the scope of works and no section will excluded.

East Campus Arroyo Housing
University of California, Riverside
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

APARTMENT COMPLEX SUMMARY

				$x1,000
Apartments *		215,152 SF	135.65	29,185
3EA Studio A at 365ASF	1,095			
1EA Studio B at 392ASF	392			
5EA 1 Bedroom at 472ASF	2,360			
24EA 1 Bedroom at 755ASF	18,120			
113EA 4 Bedroom at 1,214ASF	137,182			
	159,149			
Communal Functions	7,255			
Support Functions	1,028			
	167,432			
Efficiency 78%	47,720			
	215,152			
Parking Garage - partially below grade		101,725 SF	40.22	4,091
$/space @ 313 spaces	$13,072			
TOTAL - APARTMENT COMPLEX				**33,277**

Notes:
* To arrive at an average cost for the apartments, detailed costs were developed for (3) four-bed roomed units stacked in a three story configuration (see page 8). This cost was then applied to the total gross floor area for apartment within the overall program.

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Apartments - $/SF Calculation *January 12, 2004*
Riverside, California *0168-7005.110*

APARTMENTS - $/SF CALCULATION AREAS & CONTROL QUANTITIES

Areas

	SF	SF	SF
Enclosed Areas			
Apartments - $/SF Calculation	5,026		
SUBTOTAL, Enclosed Area		5,026	
Covered area			
SUBTOTAL, Covered Area @ ½ Value			
TOTAL GROSS FLOOR AREA			5,026

Control Quantities

				Ratio to Gross Area
Number of stories (x1,000)		3	EA	0.597
Gross Area		5,026	SF	1.000
Enclosed Area		5,026	SF	1.000
Footprint Area		1,675	SF	0.333
Volume		50,260	CF	10.000
Gross Wall Area		5,277	SF	1.050
Windows or Glazing Area	12.00%	633	SF	0.126
Roof Area - Total		1,675	SF	0.333
Interior Partition Length		469	LF	0.093
Plumbing Fixtures (x1,000)		27	EA	5.372
HVAC		3,150	CFM	0.627
Electrical Load		50	KW	9.948

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Apartments - $/SF Calculation *January 12, 2004*
Riverside, California *0168-7005.110*

APARTMENTS - $/SF CALCULATION COMPONENT SUMMARY

		Gross Area: 5,026 SF	
		$/SF	$x1,000
1. Foundations		2.67	13
2. Vertical Structure		3.81	19
3. Floor & Roof Structures		12.22	61
4. Exterior Cladding		21.64	109
5. Roofing, Waterproofing & Skylights		2.75	14
Shell (1-5)		43.08	217
6. Interior Partitions, Doors & Glazing		8.83	44
7. Floor, Wall & Ceiling Finishes		5.91	30
Interiors (6-7)		14.75	74
8. Function Equipment & Specialties		6.22	31
9. Stairs & Vertical Transportation		2.00	10
Equipment & Vertical Transportation (8-9)		8.22	41
10. Plumbing Systems		11.55	58
11. Heating, Ventilating & Air Conditioning		13.50	68
12. Electric Lighting, Power & Communications		16.68	84
13. Fire Protection Systems		2.00	10
Mechanical & Electrical (10-13)		43.73	220
Total Building Construction (1-13)		**109.79**	**552**
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)		**109.79**	**552**
General Conditions	8.00%	8.75	44
Contractor's Overhead & Profit or Fee	4.00%	4.78	24
PLANNED CONSTRUCTION COST		**123.32**	**620**
Contingency for Development of Design	10.00%	12.34	62
Escalation is carried on the Overall Summary		0.00	0
RECOMMENDED BUDGET	***September 2003***	**135.65**	**682**

East Campus Arroyo Housing DPP, UCR
Apartments - $/SF Calculation
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
1. Foundations				
Reinforced concrete including excavation				
Wall footings and column bases	1,675	SF	8.00	13,400
				13,400
2. Vertical Structure				
Columns and pilasters				
Wood posts	5,026	SF	2.50	12,565
Shear bracing				
Plywood sheathing	5,277	SF	1.25	6,596
				19,161
3. Floor and Roof Structure				
Floor at lowest level				
Reinforced concrete slab on grade, 4" thick	1,675	SF	4.00	6,700
Suspended floors				
Suspended structural floor slab	1,675	SF	7.15	11,976
Wood joists, blocking plywood decking, insulation, gypcrete topping	3,351	SF	8.50	28,484
Pitched roofs				
Wood trusses / rafters, blocking, plywood	1,675	SF	8.50	14,238
				61,397
4. Exterior Cladding				
Wall framing, furring and insulation				
Wood stud framing and batt insulation	5,277	SF	3.25	17,150
Extra for double stud between units	1,380	SF	2.50	3,450
Applied exterior finish				
Stucco with integral color finish	4,644	SF	8.00	37,152

East Campus Arroyo Housing DPP, UCR
Apartments - $/SF Calculation
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Interior finish to exterior walls				
Gypsum board with paint finish	4,644	SF	1.50	6,966
Windows, glazing and louvers				
Aluminum windows, dual glazed sliders, low-e	633	SF	30.00	18,990
Exterior doors, frames and hardware				
Entry door and frame	3	EA	600.00	1,800
Fascias, bands, screens and trim, etc				
Allowance for sunscreens	1	LS	9,000.00	9,000
Soffits				
Stucco with integral color finish	277	SF	10.00	2,770
Balustrades				
Walkway railing	115	LF	100.00	11,500
				108,778

5. Roofing, Waterproofing & Skylights

Insulation				
R-30 batt insulation	1,675	SF	0.60	1,005
Roofing				
Concrete tile	1,675	SF	5.00	8,375
Roof or deck surfaces				
Walkway waterproof surfacing	348	SF	5.00	1,740
Roofing upstands and sheetmetal				
Metal flashings, gutters and downspouts, miscellaneous sheetmetal work	1,675	SF	0.85	1,424
Caulking and sealants				
Miscellaneous caulking and sealants	5,026	SF	0.25	1,257
				13,800

East Campus Arroyo Housing DPP, UCR
Apartments - $/SF Calculation
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
6. Interior Partitions, Doors & Glazing				
Partition framing and cores				
Wood stud framing and batt insulation	4,221	SF	3.25	13,718
Partition surfacing				
Gypsum board with paint finish	10,052	SF	1.50	15,078
Interior doors frames and hardware				
Interior doors	18	EA	600.00	10,800
Closet door, 2 sliders	12	EA	400.00	4,800
				44,396
7. Floor, Wall & Ceiling Finishes				
Floors				
Sheet vinyl	878	SF	3.50	3,073
Carpets	2,782	SF	3.00	8,346
Sealed concrete	1,366	SF	0.50	683
Bases				
Resilient rubber	1,455	LF	1.75	2,546
Ceilings				
Gypsum board with paint finish	5,026	SF	3.00	15,078
				29,726
8. Function Equipment & Specialties				
Prefabricated apartments and accessories				
Toilet accessories, including medicine cabinets and mirrors	6	SET	250.00	1,500
Shelving and millwork				
Closet shelving and pole	78	LS	30.00	2,340

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Apartments - $/SF Calculation *January 12, 2004*
Riverside, California *0168-7005.110*

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Cabinets and countertops				
Plastic laminate countertop				
2'-0" wide - kitchen	57	LF	55.00	3,135
1'0" wide - breakfast counter	21	SF	45.00	945
Pre-manufactured plastic lavatory countertop				
2'-6" long	3	EA	165.00	495
3'-0" long	3	EA	200.00	600
4'-5" long	6	EA	300.00	1,800
Base cabinets including door pulls and hardware				
Kitchen	57	LF	70.00	3,990
Bathroom	44	LF	70.00	3,080
Overhead wall cabinet including door pulls and hardware	81	LF	65.00	5,265
Broom cabinet	3	EA	200.00	600
Light control and vision equipment				
Window blinds	633	SF	2.00	1,266
Amenities and convenience items				
Allowance for fire extinguisher cabinets, mail boxes, etc.	5,026	SF	0.50	2,513
Kitchen appliances				
Gas oven / range cook top	3	EA	500.00	1,500
Dishwasher	3	EA	350.00	1,050
Garbage disposer	3	EA	150.00	450
Refrigerator				excluded
Microwave	3	EA	250.00	750
				31,279

9. Stairs & Vertical Transportation

Staircase flights and elevators				
Pro-rata allowance	5,026	SF	2.00	10,052
				10,052

East Campus Arroyo Housing DPP, UCR
Apartments - $/SF Calculation
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
10. Plumbing Systems				
Sanitary fixtures and connection piping	27	Fx)		
Water closets	6	EA	650.00	3,900
Lavatory basins	12	EA	625.00	7,500
Sinks with disposal, double unit	3	EA	675.00	2,025
Bathtub/shower	6	EA	1,075.00	6,450
Sanitary waste, vent and service piping				
Kitchen /laundry equipment	1	LS	1,150.00	1,150
Rough-in for fixtures, including sanitary waste, vent and domestic hot and cold water pipework	27	EA	950.00	25,650
T-K2 vent pipe, 1"	3	EA	500.00	1,500
Water treatment, storage, and circulation				
T-K2 (wholesale price $ 1,597.00 - 33% discount/installed)	3	EA	1,625.00	4,875
Surface water drainage				
Roof and overflow drains	1,675	SF	1.50	2,513
Gas distribution				
Gas piping to kitchens	1	LS	2,500.00	2,500
				58,063
11. Heating, Ventilation & Air Conditioning				
Air to air split unit airconditioning system, including air distribution, controls and unit ventilation	5,026	SF	13.50	67,851
				67,851

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Apartments - $/SF Calculation *January 12, 2004*
Riverside, California *0168-7005.110*

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
12. Electrical Lighting, Power & Communication				
Main service and distribution				
Including main switchboard, distribution equipment and cabling	5,026	SF	2.50	12,565
Emergency and uninterrupted power				Excluded
Machine and equipment power				
Unit connections	6	EA	350.00	2,100
Miscellaneous connections, < 150 A	1	LS	1,500.00	1,500
User convenience power				
Including unit panelboards, feeders and user convenience outlets	5,026	SF	2.50	12,565
Lighting				
Light fixtures and switches including conduit and wire	5,026	SF	3.50	17,591
Lighting and power specialties				
Grounding	1	LS	550.00	550
Lighting control system	1	LS	550.00	550
Telephone and communications systems				
Telephone/data outlets, including conduit and	5,026	SF	2.50	12,565
Cable TV, outlets	15	EA	350.00	5,250
Alarm and security systems				
Fire alarm systems	5,026	SF	2.50	12,565
Security	5,026	SF	1.20	6,031
				83,832
13. Fire Protection Systems				
Automatic wet sprinkler system - complete	5,026	SF	2.00	10,052
				10,052

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Grill/Retail/Convenience *January 12, 2004*
Riverside, California *0168-7005.110*

GRILL/RETAIL/CONVENIENCE AREAS & CONTROL QUANTITIES

Areas

	SF	SF	SF
Enclosed Areas			
Grill/Retail/Convenience	4,129		
SUBTOTAL, Enclosed Area		4,129	
Covered area			
SUBTOTAL, Covered Area @ ½ Value			
TOTAL GROSS FLOOR AREA			4,129

Control Quantities

				Ratio to Gross Area
Number of stories (x1,000)		1	EA	0.242
Gross Area		4,129	SF	1.000
Enclosed Area		4,129	SF	1.000
Covered Area		0	SF	0.000
Footprint Area		4,129	SF	1.000
Gross Wall Area		3,023	SF	0.732
Windows or Glazing Area	25.01%	756	SF	0.183
Roof Area - Total		4,129	SF	1.000

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Grill/Retail/Convenience *January 12, 2004*
Riverside, California *0168-7005.110*

GRILL/RETAIL/CONVENIENCE COMPONENT SUMMARY

Gross Area: 4,129 SF

		$/SF	$x1,000
1. Foundations		7.66	32
2. Vertical Structure		4.27	18
3. Floor & Roof Structures		14.84	61
4. Exterior Cladding		20.46	84
5. Roofing, Waterproofing & Skylights		16.37	68
Shell (1-5)		63.60	263
6. Interior Partitions, Doors & Glazing		8.62	36
7. Floor, Wall & Ceiling Finishes		8.86	37
Interiors (6-7)		17.47	72
8. Function Equipment & Specialties		133.61	552
9. Stairs & Vertical Transportation		0.00	0
Equipment & Vertical Transportation (8-9)		133.61	552
10. Plumbing Systems		6.22	26
11. Heating, Ventilating & Air Conditioning		17.71	73
12. Electric Lighting, Power & Communications		17.23	71
13. Fire Protection Systems		2.39	10
Mechanical & Electrical (10-13)		43.56	180
Total Building Construction (1-13)		**258.24**	**1,066**
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)		**258.24**	**1,066**
General Conditions	8.00%	20.59	85
Contractor's Overhead & Profit or Fee	4.00%	11.14	46
PLANNED CONSTRUCTION COST		**289.97**	**1,197**
Contingency for Development of Design	10.00%	29.06	120
Escalation is carried on the Overall Summary		0.00	0
RECOMMENDED BUDGET	***September 2003***	**319.03**	**1,317**

East Campus Arroyo Housing DPP, UCR
Grill/Retail/Convenience
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
1. Foundations				
Reinforced concrete including excavation				
Wall footings and column bases	3,953	SF	8.00	31,624
				31,624
2. Vertical Structure				
Columns and pilasters				
Wood posts	3,953	SF	3.50	13,836
Shear bracing				
Plywood sheathing	3,023	SF	1.25	3,779
				17,614
3. Floor and Roof Structure				
Floor at lowest level				
Reinforced concrete slab on grade, 6" thick	3,953	SF	5.50	21,742
Pitched roofs				
Wood trusses / rafters, blocking, plywood	3,953	SF	10.00	39,530
				61,272
4. Exterior Cladding				
Wall framing, furring and insulation				
Wood stud framing and batt insulation	3,023	SF	3.25	9,825
Applied exterior finish				
Stucco with integral color finish	2,267	SF	8.00	18,136
Interior finish to exterior walls				
Gypsum board with paint finish	2,267	SF	1.50	3,401

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Grill/Retail/Convenience *January 12, 2004*
Riverside, California *0168-7005.110*

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Windows, glazing and louvers				
Aluminum storefronts	756	SF	45.00	34,020
Exterior doors, frames and hardware				
Aluminum entry doors	1	EA	6,000.00	6,000
Hollow metal doors, single	4	EA	1,300.00	5,200
Soffits				
Stucco with integral color finish	791	SF	10.00	7,910
				84,491

5. Roofing, Waterproofing & Skylights

Insulation				
R-30 batt insulation	3,953	SF	0.60	2,372
Roofing				
Standing seam metal roofing	3,953	SF	15.00	59,295
Roofing upstands and sheetmetal				
Metal flashings, gutters and downspouts, miscellaneous sheetmetal work	3,953	SF	1.00	3,953
Caulking and sealants				
Miscellaneous caulking and sealants	3,953	SF	0.50	1,977
				67,596

6. Interior Partitions, Doors & Glazing

Partition and doors				
Wood stud framing with painted gypsum board lining, hollow metal doors in hollow metal	3,953	SF	9.00	35,577
				35,577

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Grill/Retail/Convenience *January 12, 2004*
Riverside, California *0168-7005.110*

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
7. Floor, Wall & Ceiling Finishes				
Floors				
Sheet vinyl	3,953	SF	3.50	13,836
Bases				
Resilient rubber	3,953	LF	0.25	988
Walls				
Ceramic tiles in wet areas	3,953	SF	2.50	9,883
Ceilings				
Gypsum board with paint finish	3,953	SF	3.00	11,859
				36,565
8. Function Equipment & Specialties				
General building equipment				
Toilet partitions and accessories, code signage, fire extinguishers and cabinets, markerboards and tackboards, window blinds	3,953	SF	3.50	13,836
Shelving and millwork				
Storage shelving, adjustable shelving, miscellaneous wood trim	1	LS	30,000.00	30,000
Cabinets and countertops				
Built-in plastic laminate cabinets and countertops	3,953	SF	3.50	13,836
Special use equipment				
Food services equipment	1	LS	474,000.00	474,000
Miscellaneous equipment	1	LS	20,000.00	20,000
				551,671
9. Stairs & Vertical Transportation				
				0

East Campus Arroyo Housing DPP, UCR
Grill/Retail/Convenience
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
10. Plumbing Systems				
Including sanitary fixtures, waste, vent and domestic water pipework, water heating equipment, gas and roof drainage	3,953	SF	6.50	25,695
				25,695
11. Heating, Ventilation & Air Conditioning				
Including packaged (gas-electric) roof-mounted air handling units, air distribution systems, controls and unit ventilation	3,953	SF	18.50	73,131
				73,131
12. Electrical Lighting, Power & Communication				
Including mains power, machine, equipment and user convenience power, lighting, telephone/data, fire alarm and security	3,953	SF	18.00	71,154
				71,154
13. Fire Protection Systems				
Automatic wet sprinkler system - complete	3,953	SF	2.50	9,883
				9,883

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Sitework and Infrastructure *January 12, 2004*
Riverside, California *0168-7005.110*

TOTAL SITEWORK AND INFRASTRUCTURE COMPONENT SUMMARY

Gross Area: 322,990 SF

		$/SF	$x1,000
14. Site Preparation & Demolition		3.05	985
15. Site Paving, Structures & Landscaping		5.68	1,835
16. Utilities on Site		5.99	1,935
Total Site Construction (14-16)		**14.72**	**4,755**
TOTAL BUILDING & SITE (1-16)		**14.72**	**4,755**
General Conditions	8.00%	1.18	380
Contractor's Overhead & Profit or Fee	4.00%	0.63	205
PLANNED CONSTRUCTION COST		**16.53**	**5,340**
Contingency for Development of Design	10.00%	1.65	534
Escalation is carried on the Overall Summary		0.00	0
RECOMMENDED BUDGET	***September 2003***	**18.19**	**5,874**

East Campus Arroyo Housing DPP, UCR **Sitework and Infrastructure** **Riverside, California**		***Detail Project Program Cost Model*** ***January 12, 2004*** ***0168-7005.110***
APARTMENTS SITEWORK COMPONENT SUMMARY		$x1,000
14. Site Preparation & Demolition		942
15. Site Paving, Structures & Landscaping		1,737
16. Utilities on Site		1,861
Total Site Construction (14-16)		**4,540**
TOTAL BUILDING & SITE (1-16)		***4,540***
General Conditions	8.00%	363
Contractor's Overhead & Profit or Fee	4.00%	196
PLANNED CONSTRUCTION COST		**5,099**
Contingency for Development of Design	10.00%	510
Escalation is carried on the Overall Summary		0
RECOMMENDED BUDGET	***September 2003***	**5,609**

GRILL SITEWORK COMPONENT SUMMARY		$x1,000
14. Site Preparation & Demolition		43
15. Site Paving, Structures & Landscaping		98
16. Utilities on Site		74
Total Site Construction (14-16)		**215**
TOTAL BUILDING & SITE (1-16)		***215***
General Conditions	8.00%	17
Contractor's Overhead & Profit or Fee	4.00%	9
PLANNED CONSTRUCTION COST		**241**
Contingency for Development of Design	10.00%	24
Escalation is carried on the Overall Summary		0
RECOMMENDED BUDGET	***September 2003***	**265**

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Sitework and Infrastructure *January 12, 2004*
Riverside, California *0168-7005.110*

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
14. Site Preparation & Building Demolition				
Site clearing and grading				
Clear site and rough grading to reduced levels	322,990	SF	1.00	322,990
Cut to reduce levels	70,000	CY	5.00	350,000
Remove surplus material	39,000	CY	8.00	312,000
				984,990
15. Site Paving, Structures & Landscaping				
Vehicular paving				
Asphalt paving	50,841	SF	3.00	152,523
Pedestrian paving				
Reinforced concrete walks	30,000	SF	5.00	150,000
Landscape planting and maintenance				
Landscaping, irrigation and site furniture	67,668	SF	5.00	338,340
Hardscape on parking deck	52,433	SF	15.00	786,495
Pedestrian railings	1,277	LF	85.00	108,545
Retaining wall, 8' high to east of rec fields	291	LF	445.00	129,495
Site lighting	169,653	SF	1.00	169,653
				1,835,051
16. Utilities on Site				
Domestic and fire water				
Underground pipework, fittings				
< = 8", underground	3,000	LF	47.50	142,500
Valves and specialties	1	LS	25,000.00	25,000
Hydrants	4	EA	4,750.00	19,000
Connection to existing	1	LS	5,000.00	5,000
Gas				
Underground pipework, fittings				
< = 3", underground	2,800	LF	28.50	79,800
Valves and specialties	1	LS	25,000.00	25,000
Connection to existing	1	LS	3,500.00	3,500

East Campus Arroyo Housing DPP, UCR
Sitework and Infrastructure
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
Sewer				
Underground pipework, fittings, <=10"	3,000	LF	37.50	112,500
Manholes	8	EA	5,500.00	44,000
Connection to existing	1	EA	15,000.00	15,000
Reclaimed water				Excluded
Electrical				
12 KV feeder conduit only, concrete encased only, (2) 4"	3,000	LF	45.00	135,000
Telecommunications/signals - ductbank, (4) 4"	3,000	LF	55.00	165,000
Manholes/pullboxes	6	EA	7,500.00	45,000
Infrastructure upgrades				
Electrical - [EL-22]	1	LS	164,425.00	164,425
Sewer - [SS 22, PHASE 1]	1	LS	553,608.00	553,608
Water - [W-23]	1	LS	400,400.00	400,400
				1,934,733

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Recreation fields *January 12, 2004*
Riverside, California *0168-7005.110*

RECREATION FIELDS COMPONENT SUMMARY

		Gross Area: 198,000 SF	
		$/SF	$x1,000
14. Site Preparation & Demolition		1.28	254
15. Site Paving, Structures & Landscaping		7.71	1,526
16. Utilities on Site		0.25	50
Total Site Construction (14-16)		**9.24**	**1,830**
TOTAL BUILDING & SITE (1-16)		**9.24**	**1,830**
General Conditions	8.00%	0.74	146
Contractor's Overhead & Profit or Fee	4.00%	0.40	79
PLANNED CONSTRUCTION COST		**10.38**	**2,055**
Contingency for Development of Design	10.00%	1.04	206
Escalation is carried on the Overall Summary		0.00	0
RECOMMENDED BUDGET	***September 2003***	**11.42**	**2,261**

East Campus Arroyo Housing DPP, UCR
Recreation fields
Riverside, California

Detail Project Program Cost Model
January 12, 2004
0168-7005.110

Item Description	*Quantity*	*Unit*	*Rate*	*Total*
14. Site Preparation & Building Demolition				
Site clearing and grading				
Clear site and rough grading to reduce levels -				
(cut and fill to Arroyo included with	198,000	SF	0.50	99,000
Fill to Arroyo with excavated material	31,000	CY	5.00	155,000
				254,000
15. Site Paving, Structures & Landscaping				
Landscape planting and maintenance				
Sand layer, 6"	198,000	SF	0.65	128,700
Topsoil 4", fertilizer and fine grading	198,000	SF	0.65	128,700
Bullseye turf	198,000	SF	0.55	108,900
Landscaping, irrigation and site furniture	48,275	SF	5.00	241,375
Rehabilitation to the fill area of the Arroyo -				
Allowance	111,000	SF	2.50	277,500
Site drainage, including culvert extension	169,653	SF	1.25	212,066
Structures				
Retaining wall, average 6' high	200	LF	285.00	57,000
Irrigation				
Irrigation to recreation fields	198,000	SF	0.50	99,000
Lighting				
Sport lighting to recreation fields, 30' candles				
minimum	198,000	SF	1.38	273,240
				1,526,481
16. Utilities on Site				
Site utilities				
Site utilities	1	LS	50,000.00	50,000
				50,000

East Campus Arroyo Housing DPP, UCR *Detail Project Program Cost Model*
Parking Garage *January 12, 2004*
Riverside, California *0168-7005.110*

PARKING GARAGE COMPONENT SUMMARY

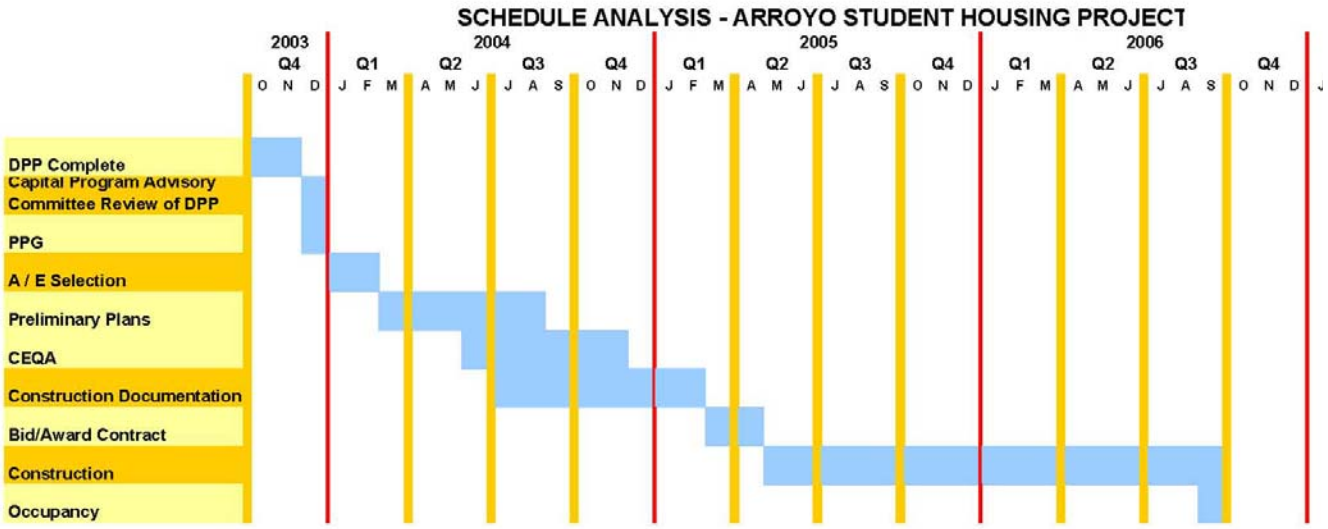
Gross Area: 101,725 SF

		$/SF	$x1,000
1. Foundations		5.00	509
2. Vertical Structure		2.80	285
3. Floor & Roof Structures		11.00	1,119
4. Exterior Cladding		2.00	203
5. Roofing, Waterproofing & Skylights		2.90	295
Shell (1-5)		23.70	2,411
6. Interior Partitions, Doors & Glazing		0.50	51
7. Floor, Wall & Ceiling Finishes		1.00	102
Interiors (6-7)		1.50	153
8. Function Equipment & Specialties		0.75	76
9. Stairs & Vertical Transportation		0.35	36
Equipment & Vertical Transportation (8-9)		1.10	112
10. Plumbing Systems		1.50	153
11. Heating, Ventilating & Air Conditioning		0.75	76
12. Electric Lighting, Power & Communications		2.50	254
13. Fire Protection Systems		1.50	153
Mechanical & Electrical (10-13)		6.25	636
Total Building Construction (1-13)		**32.55**	**3,311**
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)		**32.55**	***3,311***
General Conditions	8.00%	2.61	265
Contractor's Overhead & Profit or Fee	4.00%	1.41	143
PLANNED CONSTRUCTION COST		**36.56**	**3,719**
Contingency for Development of Design	10.00%	3.66	372
Escalation is carried on the Overall Summary	0.00%		0
RECOMMENDED BUDGET	***September 2003***	**40.22**	**4,091**

Schedule 9

9.1 Schedule

The Consulting Team has completed a full analysis of the schedule for the Arroyo Housing Project with the goal of having occupancy by fall 2006. The analysis addresses the development of the project starting from the completion of the DPP through construction.



Appendix 10

10.1 Housing Program Detail

Room Code	Space Name	CONCEPTUAL PLAN ESTIMATED AREA #	ASF	0.5 Factor	Subtotal Net	Subtotal Gross	Total Gross	Net/ Gross Ratio
	HOUSING FIRST FLOOR							
	BUILDING A FIRST FLOOR							
	Units							
980	Studio A	1	365	-	365			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	2	755	-	1,510			
984	4 Bedroom	7	1,214	-	8,498			
	Subtotal Net				**10,373**			
	Amenities							
410	Computer Lab	1	905	-	905			
	Subtotal Net				**905**			
	Support							
	Housekeeping (next to Elevator)	1	50	-	50			
	Housekeeping (next to Computer Lab)	1	190	-	190			
	Housekeeping (next to Elevator)	1	54	-	54			
	Subtotal Net				**294**			
	Building Gross							
	Trash/Recycle	1	92	-	-	92		
	Mechanical Room	1	108	-	-	108		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,474	-	-	2,474		
	End Stairs	1	225	0.5	-	113		
	Middle Stairs	1	235	0.5	-	118		
	Subtotal Gross					**2,920**		
	Bldg A First Floor Total						**14,492**	
	Net/Gross Ratio							**80%**
	BUILDING A FIRST FLOOR TOTAL				**11,572**	**2,920**	**14,492**	
	BUILDING B FIRST FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	2	755	-	1,510			
984	4 Bedroom	8	1,214	-	9,712			
	Subtotal Net				**11,222**			
	Amenities							
985	Laundry	1	425	-	425			
	Subtotal Net				**425**			
	Building Gross							
	Trash/Recycle	1	92	-	-	92		
	Mechanical Room	1	108	-	-	108		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,378	-	-	2,378		
	End Stairs	1	225	0.5	-	113		
	Middle Stairs	1	235	0.5	-	118		
	Subtotal Gross					**2,824**		
	Building B First Floor Total						**14,471**	
	Net/Gross Ratio							**80%**
	BUILDING B FIRST FLOOR TOTAL				**11,647**	**2,824**	**14,471**	

Room Code	Space Name	#	ASF	0.5 Factor	Subtotal Net	Subtotal Gross	Total Gross	Net/ Gross Ratio
	CONCEPTUAL PLAN ESTIMATED AREA							
	BUILDING C FIRST FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	1	392	-	392			
981	1 Bedroom	1	472	-	472			
982	2 Bedroom	3	755	-	2,265			
984	4 Bedroom	6	1,214	-	7,284			
	Subtotal Net				**10,413**			
	Amenities							
320	Administrative	1	635	-	635			
985	Laundry	1	415	-	415			
	Subtotal Net				**1,050**			
	Building Gross							
	Public Toilets	2	55	-	-	110		
	Trash/Recycle	1	69	-	-	69		
	Mechanical Room	1	130	-	-	130		
	Electrical Room	1	16	-	-	16		
	Corridor, Walls, Structure	1	2,453	-	-	2,453		
	End Stairs	1	225	0.5	-	113		
	Middle Stairs	1	235	0.5	-	118		
	Subtotal Gross					**3,008**		
	Building C First Floor Total						**14,471**	
	Net/Gross Ratio							**79%**
	BUILDING C FIRST FLOOR TOTAL				**11,463**	**3,008**	**14,471**	
	BUILDING D FIRST FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	1	472	-	472			
982	2 Bedroom	3	755	-	2,265			
984	4 Bedroom	7	1,214	-	8,498			
	Subtotal Net				**11,235**			
	Amenities							
985	Laundry	1	415	-	415			
	Subtotal Net				**415**			
	Building Gross							
	Trash/Recycle	1	69	-	-	69		
	Mechanical Room	1	130	-	-	130		
	Electrical Room	1	16	-	-	16		
	Corridor, Walls, Structure	1	2,376	-	-	2,376		
	End Stairs	1	225	0.5	-	113		
	Middle Stairs	1	235	0.5	-	118		
	Subtotal Gross					**2,821**		
	Building D First Floor Total						**14,471**	
	Net/Gross Ratio							**81%**
	BUILDING D FIRST FLOOR TOTAL				**11,650**	**2,821**	**14,471**	
	BUILDING A,B,C,D CENTRAL CONNECTION PLATFORM							
	Other							
	-	-	-	-	0			
	Building Gross							
	Elevator	1	103	-	-	103		
	Stairs	1	153	0.5	-	77		
	Subtotal Gross					**180**		
	Building A,B,C,D Central Connection Platform Total						**180**	
	Net/Gross Ratio							**0%**
	BUILDING A,B,C,D CENTRAL CONNECTION PLATFORM				**0**	**180**	**180**	
	FIRST FLOOR TOTAL				**46,332**	**11,753**	**58,085**	**80%**

Room Code	Space Name	#	ASF	0.5 Factor	Subtotal Net	Subtotal Gross	Total Gross	Net/ Gross Ratio
	CONCEPTUAL PLAN ESTIMATED AREA							
	HOUSING SECOND FLOOR							
	BUILDING A SECOND FLOOR							
	Units							
980	Studio A	1	365	-	365			
980	Studio B	-	392	-	-			
981	1 Bedroom	1	472	-	472			
982	2 Bedroom	2	755	-	1,510			
984	4 Bedroom	7	1,214	-	8,498			
	Subtotal Net				**10,845**			
	Amenities							
410	Study Lounge	1	720	-	720			
	Subtotal Net				**720**			
	Support							
	Housekeeping (next to Elevator)	1	50	-	50			
	Housekeeping (next to Elevator)	1	54	-	54			
	Subtotal Net				**104**			
	Building Gross							
	Trash/Recycle	1	92	-	-	92		
	Mechanical Room	1	108	-	-	108		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,377	-	-	2,377		
	End Stairs	1	166	0.5	-	83		
	Middle Stairs	1	207	0.5	-	104		
	Subtotal Gross					**2,780**		
	Building A Second Floor Total						**14,449**	
	Net/Gross Ratio							**81%**
	BUILDING A SECOND FLOOR TOTAL				**11,669**	**2,780**	**14,449**	
	BUILDING B SECOND FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	1	755	-	755			
984	4 Bedroom	9	1,214	-	10,926			
	Subtotal Net				**11,681**			
	Building Gross							
	Trash/Recycle	1	92	-	-	92		
	Mechanical Room	1	108	-	-	108		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,344	-	-	2,344		
	End Stairs	1	166	0.5	-	83		
	Middle Stairs	1	207	0.5	-	104		
	Subtotal Gross					**2,747**		
	Building B Second Floor Total						**14,428**	
	Net/Gross Ratio							**81%**
	BUILDING B SECOND FLOOR TOTAL				**11,681**	**2,747**	**14,428**	

Room Code	Space Name	#	ASF	0.5 Factor	Subtotal Net	Subtotal Gross	Total Gross	Net/ Gross Ratio
			CONCEPTUAL PLAN ESTIMATED AREA					
	BUILDING C SECOND FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	1	755	-	755			
984	4 Bedroom	9	1,214	-	10,926			
	Subtotal Net				**11,681**			
	Building Gross							
	Trash/Recycle	1	69	-	-	69		
	Mechanical Room	1	130	-	-	130		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,345	-	-	2,345		
	End Stairs	1	166	0.5	-	83		
	Middle Stairs	1	207	0.5	-	104		
	Subtotal Gross					**2,747**		
	Building C Second Floor Total						**14,428**	
	Net/Gross Ratio							**81%**
	BUILDING C SECOND FLOOR TOTAL				**11,681**	**2,747**	**14,428**	
	BUILDING D SECOND FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	1	472	-	472			
982	2 Bedroom	2	755	-	1,510			
984	4 Bedroom	8	1,214	-	9,712			
	Subtotal Net				**11,694**			
	Building Gross							
	Trash/Recycle	1	69	-	-	69		
	Mechanical Room	1	130	-	-	130		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,332	-	-	2,332		
	End Stairs	1	166	0.5	83	83		
	Middle Stairs	1	207	0.5	104	104		
	Subtotal Gross					**2,734**		
	Building D Second Floor Total						**14,428**	
	Net/Gross Ratio							**81%**
	BUILDING D SECOND FLOOR TOTAL				**11,694**	**2,734**	**14,428**	
	BUILDING A,B,C,D CENTRAL CONNECTION PLATFORM							
	Other							
	-	-	-	-	0			
	Building Gross							
	Elevator	1	103	-	-	103		
	Stairs	1	153	0.5	-	77		
	Platform	1	2,912	0.5	-	1,456		
	Subtotal Gross					**1,636**		
	Building A,B,C,D Central Connection Platform Total						**1,636**	
	Net/Gross Ratio							**0%**
	BUILDING A,B,C,D CENTRAL CONNECTION PLATFORM				**0**	**1,636**	**1,636**	
	SECOND FLOOR BLDG GROSS TOTAL				**46,725**	**12,642**	**59,367**	**79%**

Room Code	Space Name	CONCEPTUAL PLAN ESTIMATED AREA #	ASF	0.5 Factor	Subtotal Net	Subtotal Gross	Total Gross	Net/ Gross Ratio
	HOUSING THIRD FLOOR							
	BUILDING A THIRD FLOOR							
	Units							
980	Studio A	1	365	-	365			
980	Studio B	-	392	-	-			
981	1 Bedroom	1	472	-	472			
982	2 Bedroom	2	755	-	1,510			
984	4 Bedroom	7	1,214	-	8,498			
	Subtotal Net				**10,845**			
	Amenities							
410	Study Lounge	1	720	-	720			
	Subtotal Net				**720**			
	Support							
	Housekeeping (next to Elevator)	1	50	-	50			
	Housekeeping (next to Elevator)	1	54	-	54			
	Subtotal Net				**104**			
	Building Gross							
	Trash/Recycle	1	92	-	-	92		
	Mechanical Room	1	108	-	-	108		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,377	-	-	2,377		
	End Stairs	1	166	0.5	-	83		
	Middle Stairs	1	207	0.5	-	104		
	Subtotal Gross					**2,780**		
	Building A Third Floor Total						**14,449**	
	Net/Gross Ratio							**81%**
	BUILDING A THIRD FLOOR TOTAL				**11,669**	**2,780**	**14,449**	
	BUILDING B THIRD FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	1	755	-	755			
984	4 Bedroom	9	1,214	-	10,926			
	Subtotal Net				**11,681**			
	Building Gross							
	Trash/Recycle	1	92	-	-	92		
	Mechanical Room	1	108	-	-	108		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,354	-	-	2,354		
	End Stairs	1	166	0.5	83	83		
	Middle Stairs	1	207	0.5	104	104		
	Subtotal Gross					**2,757**		
	Building B Third Floor Total						**14,438**	
	Net/Gross Ratio							**81%**
	BUILDING B THIRD FLOOR TOTAL				**11,681**	**2,757**	**14,438**	

CONCEPTUAL PLAN ESTIMATED AREA

Room Code	Space Name	#	ASF	0.5 Factor	Subtotal Net	Subtotal Gross	Total Gross	Net/ Gross Ratio
	BUILDING C THIRD FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	1	755	-	755			
984	4 Bedroom	9	1,214	-	10,926			
	Subtotal Net				**11,681**			
	Building Gross							
	Trash/Recycle	1	69	-	-	69		
	Mechanical Room	1	130	-	-	130		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,355	-	-	2,355		
	End Stairs	1	166	0.5	-	83		
	Middle Stairs	1	207	0.5	-	104		
	Subtotal Gross					**2,757**		
	Building C Third Floor Total						**14,438**	
	Net/Gross Ratio							**81%**
	BUILDING C TOTAL				**11,681**	**2,757**	**14,438**	
	BUILDING D THIRD FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	1	755	-	755			
984	4 Bedroom	9	1,214	-	10,926			
	Subtotal Net				**11,681**			
	Building Gross							
	Trash/Recycle	1	69	-	-	69		
	Mechanical Room	1	130	-	-	130		
	Electrical Room	1	16	-	-	16		
	Corridors, Walls, Structure	1	2,355	-	-	2,355		
	End Stairs	1	166	0.5	-	83		
	Middle Stairs	1	207	0.5	-	104		
	Subtotal Gross					**2,757**		
	Net/Gross Ratio						**14,438**	
	Building D Third Floor Total							**81%**
	BUILDING D THIRD FLOOR TOTAL				**11,681**	**2,757**	**14,438**	
	BUILDING A,B,C,D CENTRAL CONNECTION PLATFORM							
	Other							
	-	-	-	-	0			
	Building Gross							
	Elevator	1	103	-	-	103		
	Stairs	1	157	0.5	-	79		
	Platform	1	2,912	0.5	-	1,456		
	Subtotal Gross					**1,638**		
	Building A,B,C,D Central Connection Platform Total						**1,638**	
	Net/Gross Ratio							**0%**
	BUILDING A,B,C,D CENTRAL CONNECTION PLATFORM				**0**	**1,638**	**1,638**	
	THIRD FLOOR BLDG GROSS TOTAL				**46,712**	**12,687**	**59,399**	**79%**
	LINDEN HOUSING BLDG GROSS TOTAL				**143,315**	**41,287**	**184,602**	**78%**

Room Code	Space Name	CONCEPTUAL PLAN ESTIMATED AREA #	ASF	0.5 Factor	Subtotal Net	Subtotal Gross	Total Gross	Net/ Gross Ratio
	VALENCIA HOUSING (BUILDING E)							
	HOUSING FIRST FLOOR							
	BUILDING E FIRST FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	2	755	-	1,510			
984	4 Bedroom	9	1,214	-	10,926			
	Subtotal Net				**12,436**			
	Building Gross							
	Mechanical Room	1	96	-	-	96		
	Electrical Room	1	58	-	-	58		
	Corridors, Walls, Structure	1	2,741	-	-	2,741		
	End Stairs (North)	1	220	0.5	-	110		
	End Stairs (South)	1	231	0.5	-	116		
	Middle Stairs	1	231	0.5	-	116		
	Subtotal Gross					**3,236**		
	Building E First Floor Total						**15,672**	
	Net/Gross Ratio							**79%**
	BUILDING E FIRST FLOOR TOTAL				**12,436**	**3,236**	**15,672**	
	HOUSING SECOND FLOOR							
	BUILDING E SECOND FLOOR							
	Units							
980	Studio A	-	365	-	-			
980	Studio B	-	392	-	-			
981	1 Bedroom	-	472	-	-			
982	2 Bedroom	1	755	-	755			
984	4 Bedroom	9	1,214	-	10,926			
	Subtotal Net				**11,681**			
	Building Gross							
	Mechanical Room	1	96	-	-	96		
	Electrical Room	1	58	-	-	58		
	Corridors, Walls, Structure	1	2,587	-	-	2,587		
	End Stairs (North)	1	444	0.5	-	222		
	End Stairs (South)	1	231	0.5	-	116		
	Middle Stairs	1	231	0.5	-	116		
	Subtotal Gross					**3,194**		
	Building E Second Floor Total						**14,875**	
	Net/Gross Ratio							**79%**
	BUILDING E SECOND FLOOR TOTAL				**11,681**	**3,194**	**14,875**	
	VALENCIA HOUSING BLDG GROSS TOTAL				**24,117**	**6,430**	**30,547**	**79%**
	ARROYO HOUSING BLDG GROSS TOTAL				**167,432**	**47,717**	**215,149**	**78%**

Room Code	Space Name	#	ASF	0.5 Factor	Subtotal Net	Subtotal Gross	Total Gross	Net/ Gross Ratio
					CONCEPTUAL PLAN ESTIMATED AREA			
	% of program distribution							
	PARKING							
	Parking (Cars: 297 cars, 36 motorcycles = 309)	309	325	-	100,425			
	GEM carts	4	325	-	1,300			
	Total Net				**101,725**			
	Net/Gross Ratio				**97%**			
	Total Gross				**104,822**			

10.2 Meeting Notes

The following represents the issues discussed during the planning and programming process.

RATCLIFF
5856 Doyle Street
Emeryville CA 94608
Tel 510 652 1972
Fax 510 655 6654
info@ratcliffarch.com

Memorandum of Meeting

Date of Meeting: July 1, 2003

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Place and Time: College Building North Room 205
4:00 pm – 5:00 pm

Attendees:
Andy Plumley *Director of Housing, UCR*
Susan Marshburn *Associate Director of Housing, UCR*
Mac McGinnis *Principal Analyst, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Nita Bullock *Campus Physical Planner, UCR*
Bob Brumbaugh *Director of Resident Assignments and Accounts, UCR*
Tony Lees *Senior Superintendent of Housing Operations, UCR*
Henry Rosenfeld *Chief of Police, UCR*
Ross Grayson *Director of Environmental Health & Safety, UCR*
Lionel Bradford, *Supervisor/Electronics Tech, UCR*
Cole Roberts, *Engineer Consultant, Arup*
Geoff Turnbull, *Land Planner, SWA Group*
Gary Penman, *Housing Consultant, MVE*
Robert Puleo, *Housing Consultant, MVE*
Mike Dyekman, *Food Service Consultant, Webb Design*
Philip Sun, *Principal-in-Charge, Ratcliff*
Mark Kiszonak, *Process and Planning Manager, Ratcliff*
Steve Swearengen, *Process and Planning Manager, Ratcliff*
Robert Rinker, *Planner, Ratcliff*

Submitted By: Lilis Wu

Distribution: Attendees
File

Purpose: Campus Service Groups

Goals

- Provide facilities that maintain UCR's high standard for health, safety, and security
- Provide facilities that help student excel academically

Facts

- Apartments
  - Telecomm, data, and cable supports for units

- Campus provides phone service to residence halls only
- Pacbell provides phone service to apartments
  - Campus will provide phone service to apartments in future
- Emergency lighting supported by battery packs
  - No other emergency power needed
- External stairs
  - Provide sufficient lighting for life safety reasons
  - Not to be used as storage

- Parking
  - Clustered parking provide easier surveillance for campus security and police

- Bike storage
  - Visible storage provides easier surveillance for campus security and police

- Security
  - Provide through cameras, and code blue phones
  - Fire alarm system that has addressable FA system with remote annunciation panel located in the parking below the apartments
  - Regular security patrol have access and direct sightlines to areas
  - Provide emergency access to recreation fields
  - Provide emergency access to apartments via Valencia

Concepts

- Parking
  - Secure access to parking garage
  - Clustered parking
  - Street parking with “pockets” for perpendicular parking

- Bike storage
  - Centralized storage
  - Enclosed vs. open

- General security
  - Finger recognition; scan finger the second time to notify security
  - Facial recognition
  - Emergency vehicles access minimal clearance and turning radius

- “Good neighbor” policy
  - Edge of campus to adjacent neighborhood along Valencia needs to be addressed

Needs

- Apartments
  - 1 data port per bed
  - 1 voice per room; 1 line can be shared between 2 students with the use of password

- CATV in each bedroom and one in living room

- 1 or 2 points of access along Valencia for emergency vehicles

Follow –up Actions & Responsible Person

- Elevator (Design Consulting Team)
  - Minimal requirements for elevator to be confirmed
  - Requirements for accessible units on upper floors needs to be confirmed

- Fire sprinklers to be confirmed (Design Consulting Team/University)

- Parking (Design Consulting Team/University)
  - Barrier arm or gates
  - Card access

- Bike storage (Design Consulting Team/University)
  - Enclosed vs. open

- Security (University)
  - Information regarding standard model for code blue phones to be provided
  - Staffing requirements

This summarizes the content of the subject meeting. If there are substantial errors or omissions, please contact Ratcliff within three working days of receipt of this memorandum.

RATCLIFF
5856 Doyle Street
Emeryville CA 94608
Tel 510 652 1972
Fax 510 655 6654
info@ratcliffarch.com

Memorandum of Meeting

Date of Meeting: July 1, 2003

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Place and Time: College Building North Room 205
1:00 pm – 4:00 pm

Attendees:
Andy Plumley *Director of Housing, UCR*
Susan Marshburn *Associate Director of Housing, UCR*
Mac McGinnis *Principal Analyst, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Nita Bullock *Campus Physical Planner, UCR*
Bob Brumbaugh *Director of Resident Assignments and Accounts, UCR*
Tony Lees *Senior Superintendent of Housing, UCR*
Cole Roberts, *Engineer Consultant, Arup*
Geoff Turnbull, *Land Planner, SWA Group*
Gary Penman, *Housing Consultant, MVE*
Mike Dyekman, *Food Service Consultant, Webb Design*
Sam Kelbrick, *Cost Estimator, DLA*
Philip Sun, *Principal-in-Charge, Ratcliff*
Mark Kiszonak, *Process and Planning Manager, Ratcliff*
Steve Swearengen, *Process and Planning Manager, Ratcliff*
Lilis Wu, *Planner, Ratcliff*
Robert Rinker, *Planner, Ratcliff*

Submitted By: Robert Rinker/Lilis Wu

Distribution: Attendees
File

Purpose: Kick-Off Meeting

Goals

- Operational goal to minimize turn around costs for apartments by promoting students to stay until graduation
- *Project program/design goals*
  - Provide building with significant longevity
  - Provide apartments with competitive rents and amenity choices
  - Provide 500 beds in apartment complex
  - Provide a variety of units
  - Provide grill/convenience/retail

- Provide recreational fields for intramural sports

- *Project schedule goals*
  - First part of August: administrative draft of DPP to be completed
  - August 19, 2003: work sessions to be completed
  - Last week of August/first part of September: draft of DPP to be completed
  - September 30, 2003: final DPP to be completed

- *Construction budget goals*
  - $41.5 million construction budget; based on 2003 dollars and does not include inflation costs

Facts

- *Project schedule*
  - 13 week project schedule

- *Construction budget*
  - $41.5 million construction cost includes 5% design contingency
  - Construction budget breakdown
    - Housing: $32,300,000 (5% of which is allocated for sustainable strategies)
    - Grill/Convenience/Retail: $2,373,400
    - Recreation: $1,089,000
    - Infrastructure: $3,789,400
  - Inclusions
    - Limited Arroyo restoration to area that is effected by scope of work
  - Exclusions
    - Utility upgrades in order to service the Arroyo site proposed phasing 2006-2010
    - Arroyo restoration beyond area that is effect by scope of work
    - Inflation costs
  - Cost/square footage targets
    - Housing
      - $170/sf for housing with parking
      - $136-138/sf without parking (mid-range quality)
    - Grill/Convenient/Retail
      - $200/sf without equipments
      - $273/sf with equipment
      - No site improvements included
    - Recreation
      - $5/sf

- *Project Site Overview*
  - Vegetation
    - Palm trees are almost at the end of life span but they are of historic significance

- Edges
  - Relationship with neighborhood along Valencia Hill to be addressed
    - Buffer along Valencia between site and neighborhood
      - 100' setback from Valencia as stated in LRDP
- Climate
  - 110 degree equals summer design temperature
  - 29 degrees equals winter design temperature
  - Capture western winds during the summer
  - Block northeast winds (Santa Ana winds) during the summer and winter.
  - Address western exposure to low angle afternoon sun on the Eastern units
  - Relatively low rainfall
    - 9"/yr (in comparison to 7 for Phoenix, 40 for Seattle, and 50 for Atlanta)
    - Desert climate.
- Access and flow
  - Proposed Frontage Road will keep campus traffic off of Valencia Hill Road
    - Not to be a full accessible road for residents
    - More for use of emergency/maintenance vehicles and load/drop-off area
  - Speed bumps are being placed on Valencia Road by city

- *Utilities*
  - Residential utilities are detached from the rest of campus
    - No inter-tie planned for steam/CHW
  - Energy targets eliminated from the LRDP in anticipation of UC directive on sustainability
  - Central hot water is easier to control
    - Stonehaven and Bannockburn Village have central water
    - Bannockburn Plaza has individual water
  - Gas
    - Heating to be gas
    - Range to be gas

- *Recreation fields*
  - Standard turf development
  - Above grade rotary irrigation as opposed to below grade drip irrigation
    - Fine graded
    - Soil amended to normal high school field standards (without sand bed preparation because not within budget)

- *Housing*
  - Users are 2nd to 4th year students, transfers, and graduates
  - Academic/social spaces to be shared with those in Pentland Hills while

this project is operating as a residence hall
- Pro-rated rent of 12 months provided in 10 month contract for students that stay during the summer provides incentive for students to stay in unit
- Students have no incentive to conserve on energy if included in rent
  - Some apartments provide students an allowance and students will pay the surplus
  - Provide sub-metering of apartments in accordance with LEED™ M&V Credit.
    - Administrative costs go up
    - Operational cost potentially decrease

- *Confirmed information from LRDP*
  - Increase critical mass of on-campus community
  - Improve University town/gown connections and interaction
  - Emphasize strong connection and accessibility within campus and within the surrounding community
  - Protect the natural environment
  - Incorporate sustainable planning and design practices
  - Enhance the UCR image
  - LEED™ Rating System used as a framework

- *Confirmed information from Strategic Plan for Housing*
  - Preserve UCR's housing mission of providing residents responsive and supportive staff and superlative programs which foster student success
  - Update SPH in response to the private sector housing occupancy rates and the status of private sector housing, retail, and recreation proposals and projects
  - Provide the ideal residential community
    - Unique to student needs
    - Offers an appropriate mix of living options
    - Addresses the mission of the University resident population
    - Meets the targets as proposed in the LRDP
    - Enhances and contributes to the campus fabric
      - Physically
      - Socially
      - Academically
  - Design housing in context with UCR's signature strengths; strong focus on first year and transfer students and associated residence life programming, apartment communities for upperclassmen, and provision for family housing
  - Achieve an environmentally responsible living environment by contributing to sustainable opportunities
  - Achieve standard of sustainable quality as defined in Strategic Plan of Housing

Concepts

- *Recreational Fields*
  - No rotations on fields; field are not meant to support one sport in one direction (length-wise) and another sport in the other direction (width-wise)

- *Apartments*
  - Provide protection from sun
    - Overhangs
    - Vegetation
    - External stairwells
  - Take advantage of prevailing winds for natural ventilation
  - Evaporative effect and thermal mass
  - Massing distribution
    - East side of site that is facing Valencia should be of smaller mass and height with parking on street; no more than 2-3 stories
    - North side of site facing Linden can be of larger mass but no more than 3-4 stories including parking on ground
    - Keep in mind how massing will effect the neighborhood views through campus
    - Broken/disconnected massing will allow better daylight distribution, improved natural ventilation, and tendency for self shading
  - Parking
    - Parking on ground level of apartment complex
    - Street parking
      - Parallel
      - Clustered perpendicular parking

- *Neighborhood*
  - Create unique sense of identity
  - Create a strong sense of community
  - Create a defined center
  - Create discernible edges

- *Connections and destinations*
  - Separate local and slow vehicular traffic

- *Sustainable design*
  - Use land efficiently
  - Use water efficiently (low flow building fixtures and drought tolerant planting)
  - Use energy efficiently
  - Provide effective storm water management
  - Provide students education on conservation of energy/water use
  - Create pedestrian friendly community by providing access to transit locations, pedestrian paths, and bike paths
  - Preserve significant view corridors

- Preserve and restore natural land features and vegetation
- Provide flexibility in budget for material and building system selection with consideration of life cycle cost, sustainability, and social impact
- Use drought tolerant vegetation
- Provide extensive shading of buildings and pathways through use of vegetation and constructed overhangs.
- Create space for collection, storage, and removal of recyclable materials
- Create building masses to shade exterior spaces
- Enhance interior day lighting

- *LEED*
  - Provide finishes that use rapidly renewable materials
  - Provide finishes that use recycled material
  - Provide lighting that mitigates light pollution

Needs

- Parking ratio of 1:2 (1 parking space per 2 beds)

Follow –up Actions & Responsible Person

- Phasing needs to be confirmed (Design Consulting Team/University)
  - Phase I: Summer 2004, Recreation Fields
  - Phase II: Fall 2006, Infrastructure, Site, and Site Improvements, Apartments (temporary residence hall), and Grill/Retail/Convenience
  - Phase IV: 2007, Operational conversion to apartments

- Scope of Arroyo restoration needs to be confirmed (Design Consulting Team/University)

- 100’ setback along Valencia Hill needs to be confirmed (University)
  - To Frontage Road or to face of building

- Street parking along Frontage Road needs to be confirmed (University)

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Memorandum of Meeting

Date of Meeting: July 2, 2003

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Place and Time: College Building North Room 205
11:15 am – 1:00 pm

Attendees:
Andy Plumley *Director of Housing, UCR*
Susan Marshburn *Associate Director of Housing, UCR*
Mac McGinnis *Principal Analyst, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Nita Bullock *Campus Physical Planner, UCR*
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Todd Fowler, *Student, UCR*

Cole Roberts, *Engineer Consultant, Arup*
Geoff Turnbull, *Land Planner, SWA Group*
Gary Penman, *Housing Consultant, MVE*
Mike Dyekman, *Food Service Consultant, Webb Design*
Philip Sun, *Principal-in-Charge, Ratcliff*
Mark Kiszonak, *Process and Planning Manager, Ratcliff*
Steve Swearengen, *Process and Planning Manager, Ratcliff*
Robert Rinker, *Planner, Ratcliff*
Lilis Wu, *Planner, Ratcliff*

Submitted By: Robert Rinker

Distribution: Attendees
File

Purpose: Grill and Convenience Store Data Collection

Goals

- Meet the diverse dining needs of residents
- Provide after hours services

DRAFT

Memorandum of Meeting

Date of Meeting: July 2, 2003
Project: University of California, Riverside
Ratcliff Project No. 23018.00
Subject: Grill / Convenience Store Data Collection

- Support all campus housing residents in Pentland Hills / Arroyo site area

Facts

- Gas service for grill
- Program will include a grill
- Program will include a convenience store
- Grill will be open till midnight

Concepts

- Grill
  - Suggested menu items
    - Mixed food (like the Commons)
    - Variety of frozen entrees
    - Vegetarian options
    - Salad Bar
    - Breakfast available all day
    - Burgers
    - Ice cream
    - Boba (Tapioca Balls)
    - Sandwiches
    - Steak
    - Fruit Smoothies
    - Fountain drinks
- Convenience Store
  - Suggested sale items
    - General cleaning supplies
    - Microwavable meals
    - Frozen entrees
    - Office Supplies

Needs

Follow –up Actions & Responsible Person

- Confirm Seating for 80-100 (with outdoor seating)

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Memorandum of Meeting

Date of Meeting: July 2, 2003

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Place and Time: Tour of Stonehaven, International Village, and Grand Marc
9:00 am - 11:00 am

Attendees: Bob Brumbaugh, *Director of Resident Assignments and Accounts, UCR*
Gary Penman, *Housing Consultant, MVE*
Lilis Wu, *Planner, Ratcliff*

Submitted By: Lilis Wu

Distribution: Attendees
File

Purpose: Tour of Existing Apartment Complexes

Goals

- Apartments to provide an environment that gives the students opportunity to "have it all" in one location.

Facts

- Standard furniture from Thurston Furniture
- Card key from Best Locking Systems

<u>Stonehaven Student Apartments 3201 Canyon Crest</u>

- Third party built
- Designed for second year students
- 2 stories
- 200 apartments total: 100 singles and 100 doubles of all which can be double occupancy
- Occupancy range is from 300 – 600 students (single occupancy to double occupancy of all rooms)
- Current occupancy is approximately 400 students
- Amenities
  - Swimming pool with surrounding outdoor open area including tables and chairs
  - ½ basketball court
  - Volleyball court
- Bike storage in two central locations
  - One covered and fenced in
  - One covered but not fenced in.
  - BBQ area (converted to open air bike storage)
- 3 RAs and 1 RD on site

- Does not have study rooms and computer lab
- No trash chutes
- Not enough parking; parking ratio to be confirmed
- Stucco finish material with metal roofing
- Architectural style: contemporary
- Surveillance cameras – in parking lots only
- No elevator
- Gated keypad entry
- Rent: $330-$438 per bed
- Community building
  - Student mailboxes; 1 box per resident
  - TV lounge
  - Laundry with 12 dryers and 14 washers; folding area: soap, bleach and softener dispenser
  - Administrative offices that include a front office, 2 provide offices, and a copy/fax room
  - Coin change machine
  - Bulletin board
  - Ceiling fan
  - Lacks additional community function rooms such as student study rooms and computer lab
- Mechanical building is shared with maintenance facility and storage; was not provided in the initial design
- Maintenance people do not use golf cart within complex but do use them between complexes
- Unit
  - Sprinklered
  - Data/phone per bed; cable in bedroom and living
  - Vertical shades
  - Operable windows
  - Bedroom
    - Twin bed
    - Desk/chair
    - Night table
    - Side chair
    - Double sliding door closet (approximately 5’)
    - Carpet
    - Ceiling light
  - Bathroom
    - Shower/bath
    - Sink with base cabinet (approximately 3’)
    - Vanity lighting
    - Medicine cabinet
    - Toilet paper holder
    - Mirror
    - Sheet vinyl
    - Cultured-marble countertops
    - Wood finish cabinets

- Living
  - Sofa
  - Lounge chair
  - Coffee table
  - TV stand
  - Carpet
  - Ceiling light
- Kitchen
  - Refrigerator (17 cubic feet)
  - Double sink
  - Microwave
  - Electric range and oven
  - Dishwasher
  - Sheet vinyl
  - Fluorescent 2x4 lighting
  - Plastic laminate counter tops
  - Wood finish cabinets

<u>International Village</u>

- Third party built
- Originally designed for international students but currently not limited to them
- 3 stories
- 2 large buildings
- Double loaded corridors for internal circulation; ventilation a problem
- 92 units total
  - 21 studios
  - 61 2-bedrooms
  - 6 3-bedrooms
  - 4 5-bedrooms
- Occupancy range is from 181-362 students
- Current occupancy is 225 students
- Amenities
  - Fitness center
  - Vending area
  - Computer lab
  - Study rooms
  - Laundry
  - Soccer field
  - Basketball court
  - Short term linen and blanket service to international students
  - No pool
- 3 RAs and 1 ARD on site
- Trash chutes
- Stucco finish with metal roofing
- Architectural style: Contemporary
- Elevator
- No gated keypad entry

- Rent: $450-$750 per bed
- Main building
  - TV lounge
  - Recycling area
  - Public restrooms
  - Mailboxes
  - Administrative offices: 2 workstations
  - Administrative lounge/copy/fax/storage room
- Vending area
  - 5 machines of soda, snacks, pizza, coffee
  - Originally designed as a convenience store
- Computer lab
  - Near vending area
  - 1 station for supervision staff
  - 14 computer stations
  - 3 empty stations
  - Billiard table
  - Restroom
  - Hours of operation 2 pm – 2 am
- Fitness room
  - 2 treadmills
  - 1 glider
  - 2 upper body strengthening units
  - 2 bicycles
  - Fitness center in Pentland Hills; debating whether to provide fitness centers in all apartments
- 2 study rooms
  - 3 tables with each having 3 chairs
  - 4 lounge chairs
  - No data connection provided
- 2 laundry rooms
  - 8 dryers and 8 washers
  - Service sink
  - Folding table
  - Coin change machine
- Unit
  - Sprinklered
  - Data/phone per bed; cable in bedroom and living
  - Vertical shades
  - Operable windows
  - Bedroom
    - Twin bed
    - Desk/chair
    - Dresser
    - Walk in closet (20 sq. ft)
    - Carpet
    - Ceiling light
  - Bathroom

- Shower/bath with shower door
- Sink with base cabinet (approximately 3')
- Vanity lighting
- Toilet paper holder
- Mirror
- VCT
- Cultured-marble countertops
- Wood finish cabinets
- Heat lamp
- Exhaust fan

- Living
  - Sofa
  - 2 lounge chair
  - Coffee table
  - TV stand
  - Carpet
  - Ceiling light
- Kitchen
  - Refrigerator (17 cubic feet)
  - Double sink
  - Microwave
  - Electric range and oven
  - VCT
  - Fluorescent 2x4 lighting
  - Plastic laminate counter tops
  - Wood finish cabinets

<u>Grand Marc</u>

- Off-campus private housing
- Designed for students
- 4 stories
- 212 rooms total; 760 beds of which 8 are in singles, 32 are in doubles, and 172 in quads (distributed in 6 buildings)
- Amenities
  - Swimming pool
  - BBQ area
  - (2) ½ basketball courts
  - Jogging trail
  - Cantina Lounge: fire place, 3 TV's, foosball, 2 pool tables, and 6 game tables with 2 chairs each
  - Business center: 2 conference rooms that can accommodate 6-8 people; 3 computer stations; lounge chairs with data connection for students to connect their laptops
  - Fitness center: 2 treadmills, 2 bicycles, 2 gliders, 1 stairmaster, free weights, and bench pressing unit
  - Multipurpose room: podium, 32 seating, white board, ceiling hung projector with wide screen, DVD connection, and surround system
  - Vending area: 4 machines of soda, snacks, and coffee with newspaper

- Kitchen: can be used after 7 pm
- All parties and gatherings can be held after operational hours
- $200 deposit for use of spaces but is refundable
- Bike storage (outside and inside)
- Additional storage is available for rent
- Mailboxes centrally located near the gate (1 mailbox per unit); serviced by US Postal

- On site counselor
- No trash chutes; each building has a central location for students to bring down their trash
- Stucco finish with tile roofing
- Architectural style: Mission/Mediterranean
- Surveillance cameras located throughout the complex
- Elevator
- Gated community
- Rent: $695-$1035 per bed
- Units are furnished and utilities are covered within rent
  - All furnishings to be similar besides the full size bed
  - Gas appliances in kitchen
  - Full size washer and dryer in each apartment

<u>Bannockburn Village</u>
- Current occupancy is 358 students

<u>Bannockburn Plaza</u>
- Current occupancy is 137 students

Concepts

Needs

Follow –up Actions & Responsible Person

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Gary Penman, *Housing Consultant, MVE*
Robert Puleo, *Housing Consultant, MVE*
Mike Dyekman, *Food Service Consultant Webb Design*
Philip Sun, *Principal-in-Charge, Ratcliff*
Mark Kiszonak, *Process and Planning Manager, Ratcliff*
Steve Swearengen, *Process and Planning Manager, Ratcliff*
Robert Rinker, *Planner, Ratcliff*

Submitted By: Lilis Wu

Distribution: Attendees
File

Purpose: Housing Data Collection

Goals
- To provide building with significant longevity

Facts
- Apartments
  - 500 beds

- Single occupancy rooms
- No pets in apartments
- No smoking in apartments

- Parking of 1 space per 2 beds

- Comfort levels
  - Adaptive standards for naturally ventilated areas and buffer zones.
  - STD 55 used in fully conditioned spaces
  - Provide protection from sun

- Building services
  - Life cycle costs/benefits to be considered for all major service items
  - Low flow fixtures to reduce water usage
  - Reduce energy use
  - No renewable energy planned
  - Sub-meter apartments

- Systems
  - Central water (hot); preferred for maintenance reasons
  - Tank-less hot water for space heating
  - Electric A/C distribution
  - Tank-less hot water for domestic water heating (DW and HW)

- Architectural
  - Provide operable windows throughout
  - Utilize natural ventilation

- Drinking/bath
  - Low water use fixtures

- Lighting
  - Low energy use fluorescent lighting

- Equipment/appliances
  - Energy star appliances standard
  - Gas range
  - Ceiling fans

- 3 RAs and 1 ARD
  - RA hours
    - M-F 6pm – 9pm are office hours
    - M-F 5pm – 8am are on call hours
    - Weekends is 24 hours

Concepts

- Building services
  - Distributed and centralized services; varies by service

- Energy use reduction
- No renewable energy planned

- Protection from sun/shading
  - Deciduous vegetation
  - Constructed overhangs
  - High performance glazing

- 1 low water use sink per resident; shared toilet and low water use shower between 2 residents

- Cool roof

- External stairway with integral balcony (that cannot function as storage)

Needs

Follow –up Actions & Responsible Person

- Sub-meter each residence needs to be confirmed (University)

- Unit distribution to be confirmed (University)
  - Use ratio in program model of the Strategic Plan for Housing
    - Approximately 82% of 3 bedrooms
      - 136 units of 3 bedrooms (408 beds)
    - Approximately 18% of 4 bedrooms
      - 22 units of 4 bedrooms (88 beds)
    - 4 units of 1 bedroom for RAs and ARD (4 beds)
    - Total of 500 beds

- Room component to be confirmed (University)
  - Bedroom
    - Twin bed
    - Study table
    - Study chair
    - Closet
  - Bathroom
    - Low water use sink with base (3'); 1 drawer per student
    - Toilet
    - Low water use shower
    - Mirror
    - Medicine cabinet
  - Kitchen (energy star components)
    - Refrigerator
    - Oven
    - Stove
    - Microwave
    - Dishwasher
    - Double sink with garbage disposal

- 36” upper/lower cabinet per student
- Living Room
  - Lounge chair
  - Sofa (2-3 seater)
  - Coffee table
  - TV stand
- Broom Closet
- No pantry

- Types of amenities/services to be confirmed (University)
  - Amenities
    - Computer lab/print shop (number of stations to be determined)
    - Study lounge
    - Picnic area with outdoor BBQ
    - Vending machines
    - Centralized laundry room (number of washer and dryers to be determined)
    - ½ basketball court
    - Recycling area and containment
    - Bicycle storage; enclosed or open?

  - Services
    - Fax/copy centers
    - Equipment check out
    - Access to mail delivery
    - 24 hour emergency assistance

- Systems (Design Consulting Team/University)
  - Air handling units with zonal dampers are preferred
  - Heat pumps
  - Fan coil units; potential maintenance liability

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Ratcliff Project No. 23018.00

Place and Time: College Building North Room 205
9:30 am – 11:00 am

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Steve Swearengen, *Process and Planning Manager, Ratcliff*
Robert Rinker, *Planner, Ratcliff*

Submitted By: Robert Rinker

Distribution: Attendees
File

Purpose: Infrastructure Data Collection

Goals

- To provide utility system improvements required to support the recreation fields, grill/convenience store, and apartments on the Arroyo site

Facts

- Gas
  - Existing line is close to Arroyo site.
  - East Campus Infrastructure DPP did not undertake any work with regard to the gas infrastructure
  - LRDP is therefore assumed to be the informing document for this work
- Water
  - East Campus Infrastructure DPP notes extension of campus line along Linden in an 8" diameter loop around the site during 2006-2010 phase (W-23)

DRAFT

- Sanitary sewer upgrades
  - East Campus Infrastructure DPP notes upgrade of campus line along Linden from 8" to 12" during 2006-2010 phase (SS-22).
  - East Campus Infrastructure DPP notes upgrade of city line along Canyon Crest from 8" to 15" during 2006-2010 phase (No SS-#).
  - South Campus Drive line will be upgraded from 15” – 18” in the near future
- Arroyo site will be tied in to campus power (12 kV)
- Arroyo site will be tied in to campus water
- Storm water
  - Storm water Plan (5yr) has been completed and will be forthcoming
  - Past design practice is to pipe storm water directly to the arroyo without filtration
  - Recent requirements call for improved water quality prior to release into the arroyo
  - Governing organizations
    - Corps of Engineers
    - Department of Fish and Game
    - EPA
  - Level of treatment needs to be identified along with any opportunities to adjust fertilizer use so that water treatment is not needed
- Traffic
  - It was noted in the meeting that a traffic impact assessment has been completed and is available.

Concepts

- Apartments will be sub-metered
- Grill, C-store will be sub-metered
- Level of sustainability will impact infrastructure capacity required to serve the site
- Explore storm water detention/retention possibilities

Needs

- Adequate utility service to site
- Adequate transportation access to site

Memorandum of Meeting

Date of Meeting: July 2, 2003
Project: University of California, Riverside
Ratcliff Project No. 23018.00
Subject: Infrastructure Data Collection

Follow –up Actions & Responsible Person

- Conference Call will be set up between University Representatives, and Ratcliff to discuss the Arroyo
- Ratcliff will distribute Pentland Hills II Documents to consultants

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Attendees:
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Mac McGinnis *Principal Analyst, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Lindy Fenex, *Director of Student Recreation Center, UCR*
Steven Thiele, *Assistant Program Coordinator of Intramural Sports, UCR*
Mike Eason, *Senior Recreation Supervisor of Intramural/Outdoor Excursions, UCR*
Cole Roberts, *Engineer Consultant, Arup*
Geoff Turnbull, *Land Planner, SWA Group*
Philip Sun, *Principal-in-Charge, Ratcliff*
Mark Kiszonak, *Process and Planning Manager, Ratcliff*
Steve Swearengen, *Process and Planning Manager, Ratcliff*
Robert Rinker, *Planner, Ratcliff*

Submitted By: Robert Rinker

Distribution: Attendees
File

Purpose: Recreation Data Collection

Goals

- Provide recreation fields for Intramural Sports Program
- Create a unique residential environment using the recreation fields
- Provide open space for the residential student

Facts

- If we are going to impact the Arroyo, a site plan must be reviewed by the following agencies

DRAFT

- California Department of Fish and Game
- Army Corps of Engineers
- Environmental Protection Agency

- In order to comply with CEDQ (California Environmental Quality Act) on this project, biological surveys may have to wait until next spring
- Recreation field usage is from 6pm to midnight Monday thru Thursday, and possibly Sundays (this may be an issue with the neighbors since standard city requirements on week nights limit operations to 10:00 PM)

- Recreation fields are 55' x 100'

- Recreation fields require a 10' buffer at the end, and 5' buffer at each side

- Recreation fields must be accessible to emergency vehicles

- Current recreation fields have drainage problems

- FEMA will not allow buildings to be constructed within the flood plain without design mitigation to remove the finished floor elevation of habitable structures out of the flood plain

- Recreation fields are approximately 4.5 acres for this phase (199,800 SF)

- No benches @ Recreation fields

- No bleachers @ Recreation fields

Concepts

- Mitigate light pollution away from neighbors off campus to the North and East

- Mitigate noise pollution away from neighbors off campus to the North and East

- Mitigate pedestrian traffic across the recreation fields
  - Designing barriers (berms, plantings) around fields
  - Incentivizing them to walk around as noted below (i.e. through deciduous shading along the perimeter)
  - Provide direct pedestrian paths of travel
  - Make paths of travel attractive, possibly shaded with deciduous trees, or a latticed walkway

- Balance cut/fill
- Encourage campus residential interaction
- Discourage use by surrounding community
- Neighborhoods should encourage walking, bike riding, and use of transit system
- Design should maintain natural drainage pattern
- Maintain view corridors where appropriate and possible
- Use white light only
- Retain existing trees whenever possible
- Grading adjacent to natural open space should minimize impact on existing natural area's
- Avoid over planting
- Avoid excessive maintenance
- Avoid excessive water requirements
- Protect and enhance natural landscape
- Use recyclable materials and finishes
- Neighborhoods shall have exterior bike storage visible and accessible to students
- Each neighborhood shall have open space
- Landscape should be conserved to the greatest extent possible
- Visual screening between project elements, the project, and it's neighbors
- Topography changes should be used to reduce building massing

- Grading shall impact adjacent area as little as possible
- Fields should not be fenced in

Needs

- Program
  - 3 playing fields
    - Field construction
      - 6-8” base
      - 4” topsoil
      - Grass / Turf
      - Irrigation / drainage
  - Buffer area
  - Basic storage building for Recreation equipment (100 SF)
  - Pedestrian routes

Follow –up Actions & Responsible Person

- Elevation of playing field must be determined
- Cost per SF must be determined

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Memorandum of Meeting

Date of Meeting: July 15, 2003

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Place and Time: Bannockburn Village J102
11:00 am – 4:00 pm

Attendees:
Andy Plumley *Director of Housing, UCR*
Susan Marshburn *Associate Director of Housing, UCR*
Mac McGinnis *Principal Analyst, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Nita Bullock *Campus Physical Planner, UCR*
Bob Brumbaugh *Director of Resident Assignments and Accounts, UCR*
Tony Lees *Senior Superintendent of Housing, UCR*
Albert Esqueda *Operations Manager, UCR*
Kipp Doughity *Dinning, UCR*
Lindy Fenex *Director of Student Recreation Center, UCR*
Students
Jeanette Bradeen *Student, UCR*
Neeran Koupadia *Student, UCR*
Abby Juhasz *ARD Student, UCR*
Yesica Frias *Student, UCR*
Teddy Tsau *Student, UCR*
Jason Kosmal *Student, UCR*
Erik McCroskey *Student, UCR*
Fred Lam *Student, UCR*
Jordan Koehler *Student, UCR*
Vanessa Elola *Student, UCR*
Todd Fowler *Student,, UCR*
Consultants
Philip Sun *Principal-in-Charge, Ratcliff*
Mark Kiszonak *Process and Planning Manager, Ratcliff*
Steve Swearengen *Process and Planning Manager, Ratcliff*
Robert Rinker *Planner, Ratcliff*
Cole Roberts *Engineer Consultant, Arup*
Geoff Turnbull *Land Planner, SWA Group*
Gary Penman *Housing Consultant, MVE*
Mike Dyekman *Food Service Consultant, Webb Design*

Submitted By: Robert Rinker

Distribution: Attendees
File

Purpose: Work Session I, to finalize goals, facts and concepts, and gather additional information

DRAFT

Memorandum of Meeting

Date of Meeting: July 15, 2003
Project: University of California, Riverside
Ratcliff Project No. 23018.00
Subject: Work Session I

Goals

- Grill
  - Finalize Menu
- C- Store
  - Finalize merchandise
- Utilities
  - Finalize proposed connections
- Recreation Fields
  - Finalize playing field size
  - Confirm lighting parameters
- Housing
  - Finalize room diagrams
  - Finalize apartment suite models
  - Finalize finishes and furnishings
  - Finalize system selection

Facts

- Grill
  - Hours of operation 10:00 AM – 12:00 AM
  - It was generally accepted that the grill and C-store components should be combined to create one facility
  - Set up a portion of the menu that rotates (i.e. Wednesday is Spaghetti)
  - Should accept "Plus Dollars" (student mean plan)
  - Should sell food items "by the pound"
  - Offer the ability to create "combo" meals
  - Entertainment (as background) offered at grill
    - Television
    - Juke Box
  - Use disposable utensils
  - Tables should seat 2 people, 4 people, 6 people, 8 people, up to 10 people
  - Menu options
    - Custom made sandwiches
    - Burgers
    - A "unique" item (something not offered at other venues)
    - Finger Foods (nacho's, French fries)
    - Comfort Foods (mashed potatoes, soup)
    - Pizza should not be an option (too many places already specialize in pizza)
    - Self Serve Salad Bar
    - Vegetarian options
  - A web site was discussed and students determined that they would not use a web site to look up daily specials
  - Self serve soda fountain
  - Tractor Trailer access is required (2 per week min)
  - Receiving area is required
  - No loading dock required
  - No "emergency food supplies" required at this site
- C – Store
  - Mail drop boxes are out
  - 3 Check out stands
  - Merchandise options
    - Office supplies
    - 10 Self Serve displays
    - A balanced number of frozen foods
    - Easy Prep food (Mac and Cheese)
    - Larger packages (12 pack of soda)
    - Grab and Go ingredients (milk, eggs, butter, ect) for students who want to cook in their apartments
- Utilities
  - Potable water
    - Loop will occur similar to that described in W-23 of the E. campus

infrastructure DPP
- Electrical
  - Housing will tie in to 12" kV feed identified in EL-22 of the E. Campus Infrastructure DPP
  - Convenience store will connected to Pentland Hills
- Traffic
  - A majority of parking will be below the Housing
  - Overflow should be in pockets on street level
  - Traffic flow will follow LRDP / Master plan
  - Fire access will be off of Linden extension turnabout
- Natural Gas
  - Housing will tie in either nearby at Watkins, or at Linden meter
  - Convenience store will connect to Pentland Hills
  - Gas tie in to Southern California at Watkins, for housing
  - Tie into gas line at Pentland, for the grill
- Storm water
  - Treatment / Filtration before release into arroyo is likely needed
  - 48" RCP will be extended
  - Housing will not be built over 48" RCP
- Sanitary Sewer
  - Housing will tie in to 12" SS-22 of the E. Campus Infrastructure DPP
  - Convenience store will connect to Pentland Hills

- Recreation Fields
  - Playing fields will encroach into the arroyo
  - Lindy Fenex states that UCR would like 50 foot candles though he will look into lowering the requirement to 30 foot candles
  - Three classes of lighting
    - Class I: International, National, Professional, College, Semi professional, and Sports club – greater than 150 foot candles at playing field
    - Class II: College, Semi professional, Sports clubs, Amateur leagues, and high schools – 150 foot candles at playing field
    - Class III: Sports clubs, Amateur leagues, high schools, and training facilities - 100 foot candles at playing field
- Housing
  - Students want to share a bathroom with only one other person, and have a sink outside the bathroom
  - Domestic hot water heating will be tank less on demand
  - Plumbing water use:
    - Showers water use will meet the minimum requirements of EPACT 1992 – 2.5 gpm (no LEED™ benefit)
    - Toilets water use will meet the minimum requirements of EPACT 1992 – 1.6 gpf (no LEED™ benefit) Faucets in bathrooms will be low flow at 1.0 gpm (+1.5 gpm LEED™ benefit)
    - Faucets in kitchen will be 2.0 gpm (+0.5 gpm LEED™ benefit)
  - Lighting will be fluorescent

- Space heating and cooling (in order of decreasing preference)
  - Room Heat Pump (air to water)
  - Room Heat Pump (air to air)
  - Room FCU's
  - DX Units
- Suites models include:
  - 4 bedrooms, two full bathrooms, with two extra sinks
  - 2 bedrooms, one full bathroom, with one extra sink
  - 1 bedroom, one full bathroom
- All bedrooms are singles
- Furniture
  - Bed
  - Nightstand
  - Book Shelf over desk
  - Dresser
- Bike storage should accommodate 20% to 50% of the housing occupants
- Finishes
  - Carpet will be padded
  - 8' ceilings
  - Vertical blinds
  - Coriam counter tops, or Plastic Laminate with molded cove
  - Self rimming sinks for easy replacement
  - Sub metering of individuals rooms will be costed out
- Access Cards that control energy usage out – too complicated
- No sink in Bedroom
- High performance Low – E insulated windows will be standard

Concepts

- Grill
  - Create a “hang out” place
    - Create a meeting place
    - Create a place to do homework
  - Movable tables inside
- Housing
  - Plumbing water use:
    - Urinals in the grill may be waterless – 1.0 gpf less than EPACT 1992 (+1 gfp LEED™ benefit)
  - Shades should be used over windows to protect from heat gain in summer and allow heat gain in winter
  - Buildings should be self shading as well as shaded by vegetation
  - West facing windows should be minimized
  - Public Space should face Recreation fields
- Utilities
  - Potable water
    - Current Pentland Hills loop may be connected

Needs

- Housing
  - 500 Beds
    - 124 4 bedroom units
    - 1 two bedroom unit
    - 3 single bedroom unit
- Utilities
  - Adequate to sustain build out
- Traffic
  - Parking for 250 vehicles
  - Fire access off of turnabout

Memorandum of Meeting

Date of Meeting: July 15, 2003
Project: University of California, Riverside
Ratcliff Project No. 23018.00
Subject: Work Session I

Follow –up Actions & Responsible Person

- Ratcliff will analyze different suite models
- Kieron Brunelle will forward Ratcliff a copy of the Food Service Marketing study
- Kieron Brunelle will forward Ratcliff a copy of the Arroyo Infill report
- Kieron Brunelle will forward Ratcliff a copy of UCR's recreational fields foot candle requirements
- Nita Bullock will confirm if option to put road within 100' buffer is viable
- SWA will provide a site plan showing the Recreation Fields
- SWA will provide two sections of the site

This summarizes the content of the subject meeting. If there are substantial errors or omissions, please contact Ratcliff within three working days of receipt of this memorandum.

RATCLIFF
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Memorandum of Meeting

Date of Meeting: August 5, 2003

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Place and Time: Bannockburn Village J102
11:00 am – 4:00 pm

Attendees:
Andy Plumley *Director of Housing, UCR*
Susan Marshburn *Associate Director of Housing, UCR*
Mac McGinnis *Principal Analyst, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Nita Bullock *Campus Physical Planner, UCR*
Bob Brumbaugh *Director of Resident Assignments and Accounts, UCR*
Tony Lees *Senior Superintendent of Housing, UCR*
Kipp Doughity *Dinning, UCR*
Lindy Fenex *Director of Student Recreation Center, UCR*
Students
Jeanette Bradeen *Student, UCR*
Neeran Koupadia *Student, UCR*
Abby Juhasz *ARD Student, UCR*
Yesica Frias *Student, UCR*
Teddy Tsau *Student, UCR*
Jason Kosmal *Student, UCR*
Erik McCroskey *Student, UCR*
Fred Lam *Student, UCR*
Jordan Koehler *Student, UCR*
Vanessa Elola *Student, UCR*
Todd Fowler *Student,, UCR*
Consultants
Philip Sun *Principal-in-Charge, Ratcliff*
Mark Kiszonak *Process and Planning Manager, Ratcliff*
Steve Swearengen *Process and Planning Manager, Ratcliff*
Robert Rinker *Planner, Ratcliff*
Cole Roberts *Engineer Consultant, Arup*
Geoff Turnbull *Land Planner, SWA Group*
Gary Penman *Housing Consultant, MVE*
Mike Dyekman *Food Service Consultant, Webb Design*

Submitted By: Robert Rinker

Distribution: Attendees
File

Purpose: Work Session II: to finalize goals, facts and concepts, and gather additional information

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DRAFT

Goals

- Grill/Convenient Store
  - Provide a high quality image of fresh healthy foods
  - Encourage socialization
  - Present a sense of community
- Utilities
  - Provide appropriate connections to support the Arroyo Housing Project that are most advantageous and cost effective.
- Recreation Fields
  - Establish field elevations and relationships that correspond to other components of the Arroyo Housing Project
  - Establish lighting parameters that meet the needs of the recreation field users, and residents
- Housing
  - Provide live-in staff to support housing and personal assistance to the students

Facts

- Grill
  - Display area will contain selections of:
    - Dry foods
    - Refrigerated foods
    - Frozen foods
    - Housekeeping products
    - Office supplies
    - Toiletries
    - Sundries
  - Back of house will contain the following spaces:
    - Office
    - Receiving area
    - Janitorial
    - Ice
    - Dry storage
    - Refrigeration
    - Food preparation
  - Food platforms will contain the following spaces:
    - Salad bar
    - Display freezer
    - Coffee / Bakery area
    - Grille
    - Exhibition area
    - Deli
  - Front of house will contain the following spaces:
    - Store display
    - Cashiering area
    - Restrooms (with exterior access only)
    - Seating

- Utilities
  - Electric
    - Electric outlets will be provided for outdoor use along the southern edge of the parking podium adjacent to the recreation fields
  - Roadwork
    - 100’ wide buffer is face of curb of Valencia Hill Drive to face of curb of Linden Street extension
    - Linden Street extension can not penetrate 100’ buffer

- Recreation Fields
  - Lighting standards will be 70’-80’ high
  - Spillage from light standards along Valencia hills will be minimal

- Housing
  - Changes to cost model include the addition of the microwave oven and the exclusion of the refrigerator since it is movable
  - Elevators will provide access to the buildings along the Linden Street

extension
  - One central 4 stop elevator will provide access to garage, podium and all apartments
  - One 2 stop elevator at the SE corner will provide access to garage and podium
  - One 3 stop elevator at the SW corner will provide access to street, garage/recreation, and podium
- Stairs will serve as primary vertical access to the building along Valencia Hill Drive
- Resident director and resident advisors' apartment locations
  - 1 RD located on the SW corner of the first floor of Bldg E
  - 3 RA's
    - One located in the SW corner of the first floor of Bldg D
    - One located in the SW corner of the second floor of Bldg D
    - One located in the NE corner of the third floor of Bldg C
- Amenity locations
  - Two administration offices will be located in the SE corner of the first floor of Bldg C
  - Two public restrooms will be located adjacent to the administration offices in the SE corner of the first floor of Bldg C
  - A mail room will be located adjacent to the administration offices in the SE corner of the first floor of Bldg C
  - A computer lab will be located in the NE corner of the first floor of Bldg A
  - Two studies will be provided
    - One located in the NE corner of the second floor of Bldg A
    - One located in the NE corner of the third floor of Bldg A
  - Three laundry area's will be provided
    - One located in the SE corner of the first floor of Bldg D
    - One located in the NW corner of the first floor of Bldg B
    - One located in the SW corner of the first floor of Bldg C

Concepts

- Grill
  - Convenient store and food service platforms to be integrated into a single platform
  - Function as a destination spot
- Housing
  - Resident director's apartment to be located in an area that allows privacy but also accessible to the students; second bedroom to function as office
  - Laundry and vending area to be incorporated into a single space
  - Decentralize laundry rooms
  - Computer lab/study rooms to be centrally located at each floor
  - Locate maintenance shop in the garage
  - Locate bike storage in the garage
  - Locate public functions such as the administrative offices and public toilets on the first floor.
  - Centrally locate main elevator servicing apartments along Linden Street extension
- Traffic
  - Optional turnabout at NE corner of site, where the Linden extension turns South
- Parking
  - Locate GEM cart parking spaces in the garage

Needs

- Housing
  - 1 2-bedroom unit for the RD; additional sink alcove to be replaced with washer/dryer
  - 3 1-bedroom units for the RA
  - 1 computer lab and 2 studies
  - 3 laundry rooms
  - 2 administrative offices with 1 room for storage
  - 2 public toilets
  - Maintenance shop of approximately 400 sf
  - 3 elevators: 1 four-stop, 1 two-stop, and 1 three-stop
- Parking
  - 4 Gem cart charger spaces in the garage

Follow –up Actions & Responsible Person

- Grill / C- Store
  - Confirm restroom size and location
- Utilities
  - Traffic
    - Need to address garbage collection
    - Need to address handicap parking
    - Need to address deliveries to grill / C- Store
    - Need to address recycling at grill / C- Store

This summarizes the content of the subject meeting. If there are substantial errors or omissions, please contact Ratcliff within three working days of receipt of this memorandum.

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Memorandum of Meeting

Date of Meeting: August 19, 2003

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Place and Time: Bannockburn Village J102
11:00 am – 4:00 pm

Attendees:
Andy Plumley *Director of Housing, UCR*
Mac McGinnis *Principal Analyst, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Tony Lees *Senior Superintendent of Housing, UCR*
Kipp Doughity *Dinning, UCR*
Consultants
Philip Sun *Principal-in-Charge, Ratcliff*
Mark Kiszonak *Process and Planning Manager, Ratcliff*
Steve Swearengen *Process and Planning Manager, Ratcliff*
Robert Rinker *Planner, Ratcliff*
Cole Roberts *Engineer Consultant, Arup*
Geoff Turnbull *Land Planner, SWA Group*
Gary Penman *Housing Consultant, MVE*
Mike Dyekman *Food Service Consultant, Webb Design*

Submitted By: Robert Rinker

Distribution: Attendees
File

Purpose: Work Session III : Presentation of proposed conceptual plan

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Goals

- Grill/convenient store
  - Provide a dining facility and convenient store for a population of 1,300 students

DRAFT

Memorandum of Meeting

Date of Meeting: August 19, 2003
Project: University of California, Riverside
Ratcliff Project No. 23018.00
Subject: Work Session III

Facts

- Grill
  - Provide appropriate square footage to service the proposed student population
  - Additional cash register desired at the coffee bar to maximize efficient use of man-power during slow times; staff to serve and charge coffee
  - Equipment should have quick connects specified
- Recreation
  - Lighting standards are 80’ tall to achieve 30 foot candles each
  - Soccer goal standard is 8’-6” high
  - Retaining wall required at SW corner of playing fields
- Housing
  - Separate garbage collection for the Arroyo Housing Project is not required
  - Garbage will be carted to the trash enclosure on the West of lot 21
  - Trash bins should hold 3 cubic yards
  - Main central elevator should be larger to provide moving of larger items for students and staff

Memorandum of Meeting

Project: University of California, Riverside
Ratcliff Project No. 23018.00
Subject: Work Session III

Concepts

- Recreation
  - Option of additional lights in between playing fields to preserve the fields use for soccer
- Housing
  - Provide shading from the late afternoon sun on western façade of building E
  - Adjust location of building E to provide vertical relief from the recreation field
  - Provide “main entrance” to housing complex
- Grill/convenient
  - Provide an additional cash register at coffee bar
  - Provide flexible and scalable space
  - Use minimal fixed equipment to allow maximum flexibility
  - Mail area for apartment attached
  - Provide adequate setback from Pentland Way
- Parking
  - Additional parking along the east side of Pentland Way

Needs

- Grill/convenient store
  - Approximately 4,000 SF
  - 3 cashiers (not 2)
- Utilities
  - Sanitary sewer: 2 lift stations
- Look at increasing landscape budget from $0.5 million to $2.5 million

Follow –up Actions & Responsible Person

- Revisit location of Grill / C- Store (Ratcliff)
- Verify clear height inside parking structure (ARUP)
- Verify capacity of existing Pentland Hills natural gas feed (ARUP)
- Verify existence of storm water line (ARUP)

This summarizes the content of the subject meeting. If there are substantial errors or omissions, please contact Ratcliff within three working days of receipt of this memorandum.

RATCLIFF
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Summary of Telephone Call

Date of Call: 7/14/03

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Attendees: Mac McGinnis *Principal Analyst, UCR*
Maggie Souder *Environmental Health and Safety, Hazardous Materials Specialist, UCR*
Scott Corrin *Environmental Health and Safety, Fire Marshal, UCR*
Nita Bullock *Campus Physical Planner, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Susan Marshburn *Associate Director of Housing, UCR*
Geoff Turnbull *Land Planner, SWA Group*
Liam Delaney *Engineer Consultant, Arup*
Philip Sun *Principal-in-Charge, Ratcliff*
Mark Kiszonak *Process and Planning Manager, Ratcliff*
Steve Swearengen *Process and Planning Manager, Ratcliff*
Robert Rinker *Planner, Ratcliff*

Submitted By: Robert Rinker

Distribution: Attendees

Purpose: Discuss questions regarding the Arroyo

Goals

- Delineate the boundaries of the Arroyo
- Define the remediation required in event that we impact the Arroyo
- Define the accepted rehabilitation / re-vegetation plants
- Define inventory of invasive plants not permitted in the jurisdictional area
- Define any aspects of Fauna breeding / seasonal issues regarding species within the arroyo and the impact on schedule
- Define fire requirements relating to the Arroyo, structural area's, and or irrigation areas
- Clarify status of UCR's storm water plan
- Clarify requirements for run-off entering the Arroyo

Facts

- A storm water plan was submitted to the federal and state agencies
- The federal agency approved the plan
- The state agency did not approve the plan, therefore an alignment with the regional water quality board might be forthcoming
- Scott Corrin reviewed proposed layout:

- Two points of emergency access exist across Arroyo
- Lot 15 to interior Lotian
- South of Pentland I to East Lotian

- Emergency access will come from the extension of Linden
- Ability to access Valencia Hills with emergency vehicles required to increase the response time to other incidents
- Housing does some vegetation management
- Need to loop Valencia hills water (possibly use 100' Buffer)
- Planting should be drought resistant plants

Concepts

-

Needs

-

Follow –up Actions & Responsible Person

- Reference:
  - I Zone report by the Department of Water Sacramento
  - 1999 Bay Area Storm water Agency

This summarizes the content of the subject meeting. If there are substantial errors or omissions, please contact Ratcliff within three working days of receipt of this memorandum.

RATCLIFF
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Summary of Telephone Call

Date of Call: 9/16/03

Project: University of California, Riverside
Ratcliff Project No. 23018.00

Attendees: Mac McGinnis *Principal Analyst, UCR*
Kieron Brunelle *Senior Educational Facilities Planner, UCR*
Susan Marshburn *Associate Director of Housing, UCR*
Philip Sun *Principal-in-Charge, Ratcliff*
Robert Rinker *Planner, Ratcliff*
Mike Dyekman *Food Service Consultant, Webb Design*

Submitted By: Robert Rinker

Distribution: Attendees

Purpose: Discuss questions regarding the Grill / C- Store Space Program

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Goals

- Create a destination spot for students
- Offer students a fresh food choice
- Offer students a late night dinner option

Facts

- Trash area will be a screened pad at the rear of the structure
- Beverage station is currently not included in equipment layout, but will be
- Delivery trucks will circle the grill and make their drop offs at the receiving door
- Prevailing winds are from the southwest to the northeast
- Housing should have access to mail room at all times

Concepts

- Provide separation with controlled access between the seating area and retail service area (possibly with a low wall)
- Create a clear path of travel (one way in / one way out)
- Use as much portable equipment as possible to give the grill flexibility going into the future
- Provide exterior access only to the mail room
- Beverage station should be against a wall since it is a fixed piece of equipment
- Open floor plan to provide employees with an unimpeded view of all patrons
- Mitigate smoke / odor created from the grill, it might be strong at the

southern corner of the recreation fields
- Servery needs more counter room to give management the flexibility to add cash registers when there is low volume

Needs

- More dry storage because of the grills isolated location
- More walk-in refrigeration (storage) because of the grills isolated location
- Trash compactor
- Provide an additional 40-60 seats outdoors

Follow –up Actions & Responsible Person

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