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GEOLOGY BUILDING RENOVATION

PROJECT NO.: 950446

UNIVERSITY of CALIFORNIA
RIVERSIDE

DETAILED PROJECT PROGRAM

AUGUST 2001

TABLE OF CONTENTS

jlp

TABLE OF CONTENTS

jlp

TABLE OF CONTENTS

jlp

1 EXECUTIVE SUMMARY

1.1 PROJECT DESCRIPTION

The original Geology Building was an instructional and research facility of 61,982 ASF. In 2001, the single story wing of the structure was demolished to allow new construction of the Science Laboratory Building. The Geology Building Renovation project will renovate the remaining 58,546 ASF to provide modern facilities needed to support state-of-the art research programs in the departments of Environmental Sciences, Earth Sciences, and the Institute for Geophysics and Planetary Physics.

The primary objectives of the Geology Building Renovation project are as follows:

- To replace existing outmoded and unsafe instructional and research space with new, state-of-the-art facilities.
- To create a generic, adaptable building that responds to changing technological and functional requirements for the departments of Earth Sciences, Environmental Sciences and the Institute of Geophysics and Planetary Physics (IGPP), and other future uses as determined by the College of Natural and Agricultural Sciences.
- To encourage and support safe, high quality academic instruction and research.
- To create a building which stimulates students, faculty and visitors and invites people into the worlds of Earth Sciences and Environmental Sciences by creating interaction zones internally and externally.
- To delineate an integrated phasing plan for the renovation of the Geology Building.

1.2 PLANNING PROCESS

The planning team met with a committee of building users from the Departments of Earth Sciences, Environmental Sciences and the Institute for Geophysics and Planetary Physics, representatives from the Offices of Capital and Physical Planning, Design and Construction and the College of Natural and Agricultural Sciences (CNAS) Dean's Office to explore program requirements, site impacts, conceptual building organizations and improvements to the building interior.

The Detailed Project Program (DPP) has been developed as the initial step in the design process. It represents a comprehensive summary of programmatic information and a detailed description of departmental and campus requirements for the Geology Building Renovation project to date. The program is an assessment of the spatial and functional requirements for the group of individuals who will work within a building. In addition to delineating and quantifying the spaces to be included in the building, the program is intended to reflect the goals and philosophies of those entities to be housed in the facility, the concepts for how those individuals will function in those spaces and to identify important issues that should be considered during the design of the building.

1 EXECUTIVE SUMMARY

1.3 SITE CONSIDERATIONS

The CNAS precinct covers 57 acres on the eastern edge of the University of California, Riverside (UCR) campus. The CNAS precinct defines the eastern portion of the Carillon Mall and serves as the transition from the geometric, orthogonal campus grid to the organic foothills, arroyo flood control zone, and botanical gardens to the east.

1.4 BUDGET AND SCHEDULE

A preliminary statement of probable cost for the project has been developed for the Geology Building Renovation project. The direct construction cost is estimated to be $21,303,100.00 excluding soft costs and escalation beyond September 2004.

The Detailed Project Program for the project was completed in August 2001. No schedule has been established for initiation and completion of design and construction documents for the project. However, $5,000,000.00 of state funding was recently earmarked for this project for 2004-05. Consequently an alternate phasing plan and cost estimate has been developed which is documented in Section 10 of this document.

2.1 BACKGROUND

UCR

The University of California, Riverside, is a 1,106 acre campus located three miles east of downtown Riverside in southern California's rapidly growing "Inland Empire" region, the one time center of the citrus growing industry. Most academic activities occur within the 576 acre campus area east of the I-215/SR-60 freeway, with the remaining 530 acres west of the freeway used for agricultural research and support programs.

The University of California, Riverside, has experienced significant growth over the past decade. Since the academic year of 1990-91, student enrollment at UCR has grown from a headcount of 8,402 to 11,225 in 1999-00. Current projections indicate a further major increase to 21,379 students by the year 2010-11.

The University of California, Riverside, consists of three colleges and two professional schools: the Anderson Graduate School of Management; the School of Education; the College of Natural and Agricultural Sciences; the College of Humanities, Arts, and Social Sciences; and the College of Engineering. The College of Natural and Agricultural Sciences precinct (CNAS) is comprised of 57 acres and is situated on the east side of the campus.

CNAS

Many of the CNAS buildings are antiquated, ranging in age from 30 to more than 60 years, and are not suitable for twenty-first century science. The CNAS has its origins in the Citrus Experiment Station, which was established in 1906 and moved to the Riverside campus site in 1918, where it achieved a reputation as a leading research institution in studies of citrus and subtropical horticulture. In 1948, the UCR campus was initially envisioned as a small liberal arts college adjacent to the Citrus Experiment Station. Classes began in 1955, and in 1959, UCR was declared a general campus of the University of California system. The campus developed rapidly to the north and west of the Citrus Experiment Station with the expansion and diversification of programs that followed in the 1960's. The College of Agriculture was established in 1960, and eventually through mergers with various disciplines became the present College of Natural and Agricultural Sciences in 1974. The CNAS is unique to the UC system in its integration of biological, agricultural and physical sciences within a single college.

The College of Natural and Agricultural Sciences is made up of thirteen departments and two organized research units. These units are as follows:

- Biochemistry
- Biology
- Botany and Plant Sciences
- Chemistry
- Citrus Research Center - Agricultural Experiment Station

- Earth Sciences
- Entomology
- Institute of Geophysics and Planetary Physics (IGPP)
- Mathematics
- Nematology
- Neuroscience
- Physics
- Plant Pathology
- Environmental Sciences
- Statistics

Increases in enrollment and faculty have resulted in a campus wide shortage of facilities. Enrollment growth in the college is expected to keep pace with the rapid pace projected for the campus as a whole.

2.2 THE PLANNING PROCESS

To address the rapid growth of the UCR campus, a Long Range Development Plan (LRDP) was completed in 1990 and adopted by the Regents of the University of California. The campus is currently updating the LDRP.

Long Range Development Plan

An LRDP is a comprehensive plan that guides the development of future facilities in the University of California system. The 1990 LRDP for the University of California, Riverside identifies the physical development needed to achieve the academic goals of the campus through the year 2005-06 with a projected student population of 18,050.

An Environmental Impact Report (EIR) was also prepared. The LRDP EIR examines the environmental effects of the LRDP and, together, these two documents present a detailed account of past planning, existing conditions and land uses, the proposed land uses, and mitigation recommendations.

Master Space Plan/Precinct Plan

The LRDP defines a precinct as "the area within which all research, teaching, and office space for each college or school will be provided". In June 1995, two companion planning documents for the College of Natural and Agricultural Sciences were completed and adopted by the campus: the Master Space Plan and the Precinct Plan. These documents were "intended to provide the college with a framework for development, circulation and open space that satisfies projected space needs, supports the College's research and educational mission and contributes to the campus quality of life and environment".

During the preparation of the CNAS Master Space Plan, an evaluation of all structures within the College of Natural and Agricultural Sciences was undertaken. The consulting team that prepared the CNAS Master Space Plan visually examined the structures and reviewed previous reports compiled by consultants for UCR.

Planning and Design Guidelines

In addition to the documents described above, the building and site designs must be responsive to the campus standards. These design and planning guidelines are set forth in the following documents:

- Campus Design Guidelines (1996)
- Campus Landscape Master Plan (1996)

2.3 EVALUATION OF EXISTING CONDITIONS

Since 1978, the University of California has relied on a seismic hazard identification and prioritization methodology developed in cooperation with the engineering firm H.J. Degenkolb Associates, as the basis for its seismic rehabilitation planning. The ratings assigned by Degenkolb are confirmed based upon additional studies. University buildings are given one of four ratings representing a range of potential life hazards: "Good", "Fair", "Poor", or "Very Poor". University policy requires that priority for rehabilitation be given to the "Poor" and "Very Poor" buildings.

The Primary Building Evaluation contained in the CNAS Master Space Plan gave the Geology Building ratings of "Poor" and "Fair" and recommended that the structures be demolished. However, resistance to the demolition of a state-funded building was so strong, that renovation and upgrade to the building had to be examined. In 1995, Nabih Youssef and Associates Structural Engineers developed a plan to seismically upgrade the building. The seismic retrofit work recommended in the report has been completed. Recent changes in seismic codes require that additional mitigation work be undertaken.

In addition to evaluation and mitigation of seismic hazards, the Geology Building has undergone additional analysis. In 1993, the firm Ehrlich Rominger developed the Geology Building Renovation plan, and in 1999 the SRG Partnership completed an evaluation of existing conditions of the Geology Building as a component of the Detailed Project Program for the Science Laboratory Building. In addition to poor seismic ratings, the evaluations cited the following general problems with the building:

- The building needs complete replacement of all systems.

- The building has insufficient fume hood exhaust capacity and airflow; numerous existing fume hoods do not function correctly or at all.

- Asbestos is present in the flooring, piping insulation, ceilings, and walls, and fume hood exhaust ducts.

- Lead paint is contained throughout the building.

- Interior finishes need replacement or substantial upgrading.
- Laboratory casework is old and deteriorated and contains asbestos in countertops.
- The building does not comply with disabled accessibility laws and codes.
- The building has low floor to floor heights (12'-5" to 12'-8") making it difficult to remodel for high intensity laboratory use.

Based upon this analysis, the reports recommended that the Geology Building be retained for low to medium intensity research and instruction. The following specific recommendations were made:

- Minor remodel of the exterior brick facade.
- Replacement of the roof (completed in 2000).
- Upgrade seismic conditions to meet current code requirements.
- Remodel to conform to all disabled accessibility laws and codes.
- Repair or replace vinyl tile flooring throughout.
- Repair or replace the 12"x12" acoustical tile ceiling throughout.
- Perform asbestos abatement as required.
- Upgrade all building systems to meet current codes. Design for the phased replacement of the HVAC supply and exhaust systems is currently underway as a deferred maintenance project.

2.4 CNAS PROJECT GOALS AND OBJECTIVES

In the process of developing a comprehensive space plan that will permit the College to meet enrollment and research objectives through at least the 10-year planning horizon ending 2010-11, the following key planning goals and principals have been adopted:

1. Major renovation projects will facilitate multi-disciplinary uses, enabling the College to optimize allocations of space based on contemporary trends in teaching and research.
2. Planning standards for determining the amount of space required for various disciplines will be based upon an analysis of best practices to research and teaching requirements.
3. To the extent possible, allocation of space will permit departments of the College to utilize space to achieve greater operational efficiency for teaching, research, administration , and

support functions.

4. Major renovations will be designed to adapt to changes in program, demands and research and teaching methodologies.

5. CNAS facilities must be designed to the highest standards of quality to attract and retain students and faculty, and obtain external sources of financial support, including private benefactors and community and business strategic alliances.

6. The planning process for projects will provide a baseline of data and a framework for future long-term development.

2.5 SPECIFIC PROJECT OBJECTIVES

During the development of the Detailed Project Program, specific design objectives were identified which represent opportunities and challenges for the final design of the renovation project. They are summarized as follows:

1. Organization should foster disciplinary interaction, even between laboratories which may be located on different floors.

2. Instructional laboratories should be separated from research laboratories in order to segregate traffic, building systems, and code related occupancies (where applicable). When space becomes available in Pierce Hall, instructional laboratories should be relocated to Pierce freeing up space in the Geology Building for research laboratories.

3. Research laboratory floors should be designed to be efficient, flexible, and minimize unnecessary travel between support space, yet create accessible shared/reassignable support space.

4. A strong relationship between the laboratories and the faculty offices should be maintained.

5. Public entrances to the building should be easily identified from the exterior.

6. Spaces with greater public functions should be located on or near the ground floor.

7. Circulation patterns should be straightforward and clearly identified.

8. Vertical circulation should be easily found and convenient to use.

9. Corridors and doorways should be sized to accommodate movement of large pieces of equipment and should create an environment different from that of the labs. This may be accomplished through the use of light, color, and materials. In addition, lab entries should be grouped and recessed into the labs, creating secondary spaces within the corridors accentuating the entry experience.

10. Security requirements for the labs must be maintained, but interaction and movement through the building should be encouraged.

11. Casual interaction should be encouraged by including spaces which are inviting, and that are strategically located at natural meeting places within the plan.

12. Natural and artificial lighting should be carefully coordinated with the specific function of each space.

13. The building and laboratories should be adaptable to the changes in technology and science, through a modular laboratory design.

3.1 SITE LOCATION

The site of the Geology Building is identified in the Precinct Plan for the College of Natural and Agricultural Sciences, and in the 1999 CNAS masterplanning efforts as the Earth and Environmental Sciences Development zone. With its companion document the CNAS Master Space Plan, the Precinct Plan outlines a masterplan for the phased, long-range development of academic programs and the facilities which will support them.

This section of the Detailed Project Program summarizes available information on existing conditions and future planning which will influence construction on the existing site. Its purpose is to identify the influences which may affect the program and design of the proposed Geology Building Renovation and to provide direction to the architectural design team in the final planning and design phases of the project.

3.2 CAMPUS PLANNING CONTEXT

The Precinct Plan for the College of Natural and Agricultural Sciences describes a pattern of buildings, circulation and open space to be developed as the college renovates and expands its space to accommodate projected growth to 2010/11 and beyond. The design concepts in the plan propose an extension from the existing campus system to the foothills on the east of buildings arranged to "define orthogonal malls" incorporating courtyards.

The CNAS Precinct Plan identifies the primary physical planning goals for the college. Goals for the precinct include:

General Planning Guidelines

- Development in a more dense, compact pattern to minimize walking distances, encourage interaction through siting of buildings and open space;
- Develop a more distinct and cohesive visual image which relates to the College's historic roots in the Citrus Experiment Station;
- Develop a hierarchy of pedestrian routes, open spaces and landmarks for orientation;
- Tie the precinct together;
- Provide safe, convenient access to all parts of the precinct;
- Preserve the natural hillside and drainages which define the outer edge of the precinct;
- Create a transition within the precinct from the natural landscape to the parklike landscape of the campus core.

It is important that these general planning guidelines for the CNAS Precinct guide the planning of the Geology Building Renovation project.

Specific Planning Guidelines

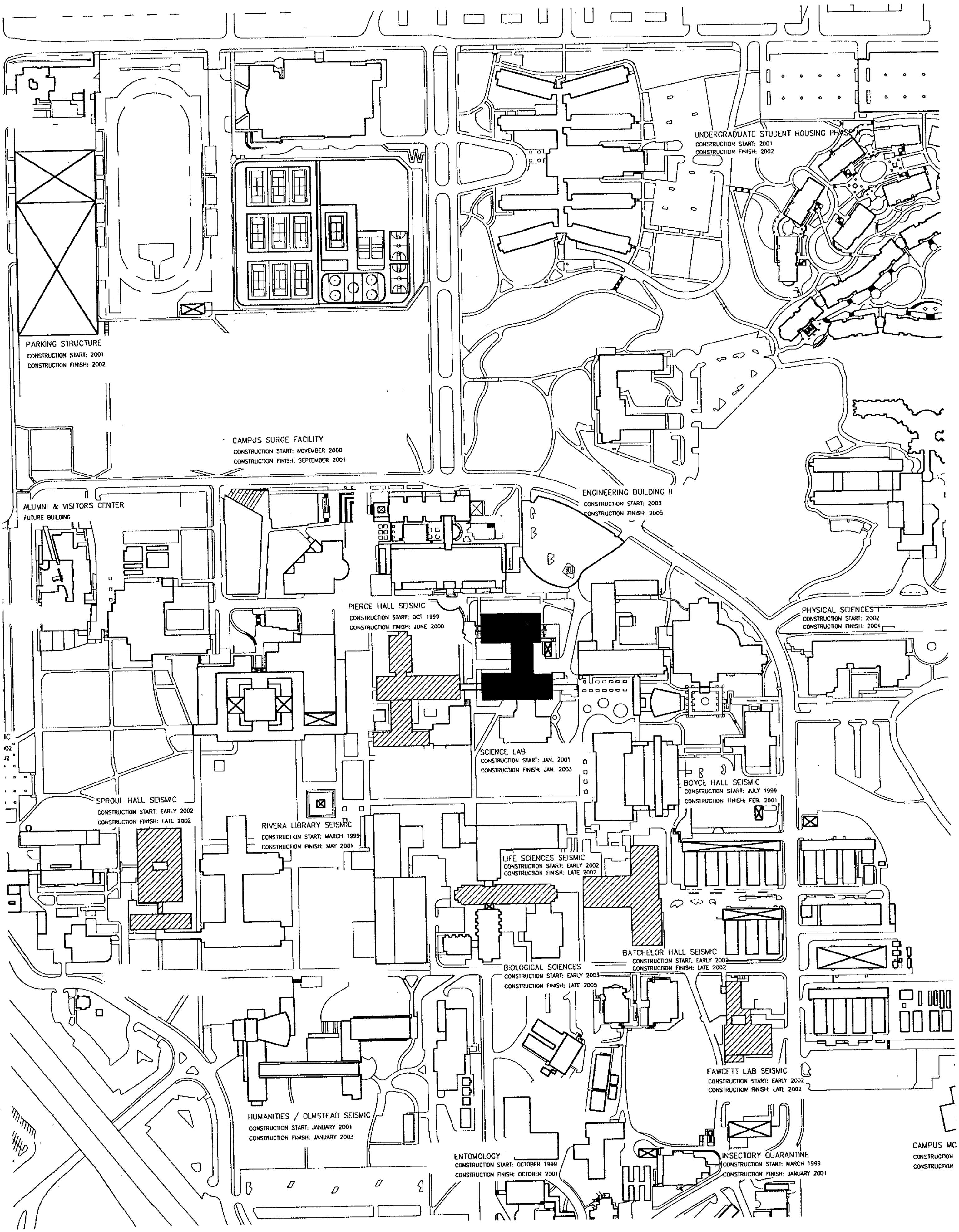
The CNAS Precinct Plan also identified a more specific set of design concepts intended to serve as a framework for the physical development of the college. Those concepts which

3 SITE LOCATION

relate to the Geology Building Renovation are summarized as follows:

- Maintain and reinforce the existing orthogonal grid of buildings and malls.
- Strengthen the definition of campus malls/walks by siting walls and arcades along a consistent setback line to clearly delineate edges of malls.
- Continue to develop the network of small building - related courtyards enclosed within development as a contrast to the large, campus-scale open spaces of the malls.
- Allow taller buildings and more dense development in the center of "blocks" between malls; step buildings up in height with increasing distance from malls and walks. Reduce heights in the southeastern foothills to maintain views between the campus and the hillsides.
- Develop a research zone surrounding the core, where sites for research units are interlaced with fingers of natural open space and or naturalized transition plantings.
- Extend malls, walks, passages and view corridors outward from the park-like landscape of the campus core to semi-natural landscapes within the precinct, such as Picnic Hill, and to the precinct perimeter beyond to connect with surrounding natural open spaces such as the Botanic Gardens, hills and arroyo system.
- Extend the system of "passages" connecting through buildings, arcades, and courtyards as a shady, enclosed alternative to the campus malls for circulation through the precinct.
- Landscape malls and walks as relatively linear corridors lined with walls, arcades and alleys of trees for shade.
- Landscape the meandering "passages" through courtyards and buildings with an informal, rich garden landscape.
- Identify small plazas to serve as focal points and centers of activity within each neighborhood.
- Include courtyards in buildings or groups of buildings wherever possible. Connect vertical circulation into courtyards to encourage chance meetings between users.

Implementation of the goals and objectives of the CNAS Precinct Plan will be essential to the successful completion of the Geology Building Renovation project and to the future development of the Earth Sciences/Environmental Sciences sub-precinct.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CONSTRUCTION START: 2001
CONSTRUCTION FINISH: 2002
PARKING STRUCTURE
CONSTRUCTION START: 2001
CONSTRUCTION FINISH: 2002
CAMPUS SURGE FACILITY
CONSTRUCTION START: NOVEMBER 2000
CONSTRUCTION FINISH: SEPTEMBER 2001
ENGINEERING BUILDING II
CONSTRUCTION START: 2003
CONSTRUCTION FINISH: 2005
ALUMNI & VISITORS CENTER
FUTURE BUILDING
PIERCE HALL SEISMIC
CONSTRUCTION START: OCT 1999
CONSTRUCTION FINISH: JUNE 2000
PHYSICAL SCIENCES I
CONSTRUCTION START: 2002
CONSTRUCTION FINISH: 2004
SCIENCE LAB
CONSTRUCTION START: JAN. 2001
CONSTRUCTION FINISH: JAN. 2003
BOYCE HALL SEISMIC
CONSTRUCTION START: JULY 1999
CONSTRUCTION FINISH: FEB. 2001
SPROUL HALL SEISMIC
CONSTRUCTION START: EARLY 2002
CONSTRUCTION FINISH: LATE 2002
RIVERA LIBRARY SEISMIC
CONSTRUCTION START: MARCH 1999
CONSTRUCTION FINISH: MAY 2001
LIFE SCIENCES SEISMIC
CONSTRUCTION START: EARLY 2002
CONSTRUCTION FINISH: LATE 2002
BATCHELOR HALL SEISMIC
CONSTRUCTION START: EARLY 2002
CONSTRUCTION FINISH: LATE 2002
BIOLOGICAL SCIENCES
CONSTRUCTION START: EARLY 2003
CONSTRUCTION FINISH: LATE 2005
FAWCETT LAB SEISMIC
CONSTRUCTION START: EARLY 2002
CONSTRUCTION FINISH: LATE 2002
HUMANITIES / OLMSTEAD SEISMIC
CONSTRUCTION START: JANUARY 2001
CONSTRUCTION FINISH: JANUARY 2003
ENTOMOLOGY
CONSTRUCTION START: OCTOBER 1999
CONSTRUCTION FINISH: OCTOBER 2001
INSECTORY QUARANTINE
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CONSTRUCTION FINISH: JANUARY 2001
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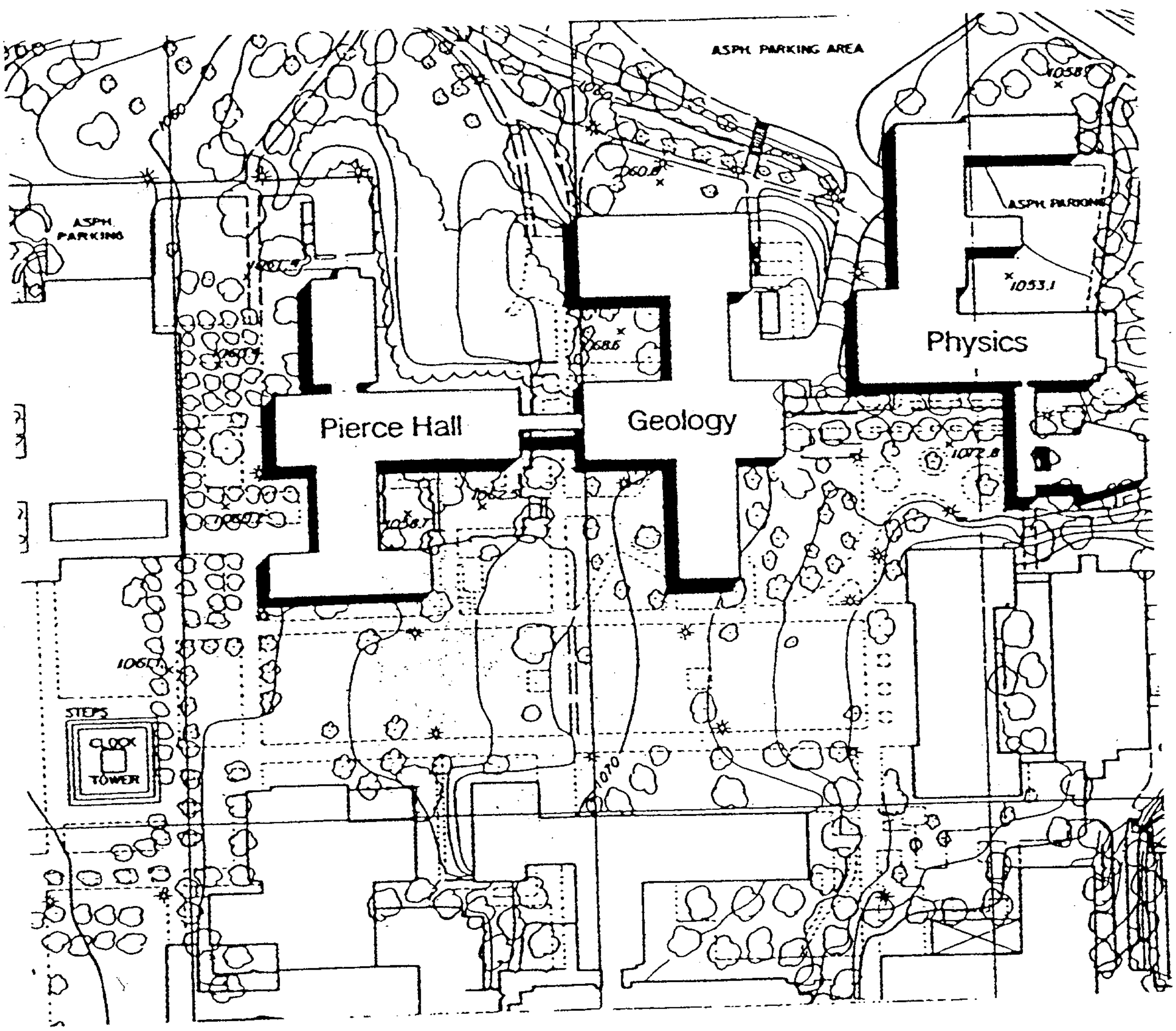
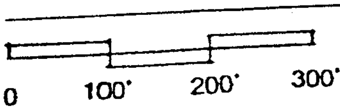
Vicinity Map



Site Plan



4.1 ANALYSIS OF EXISTING CONDITIONS

General

The Geology Building is located just north of the Carillon Mall. The building is situated between Pierce Hall and the Physics Building. It was constructed in two phases; the south portion of the building in 1953 and the north portion in 1959. The Geology Building is a free-standing structure with one connecting link bridge at the second level to the adjacent Pierce Hall. It has a dock level loading area located on the east side of the structure. A free-standing chemical storage building is also located in this loading dock area.

The original Geology Building was a four level structure with an area breakdown as follows:

Subbasement Level	5,501 ASF	13,160 GSF
Basement Level	12,628 ASF	20,560 GSF
First Level	23,585 ASF	33,906 GSF
Second Level	20,268 ASF	35,470 GSF
Total	***61,982 ASF****	***103,096 GSF***

* **Note**: *The 61,992 original building asf was derived from take-offs from the floor plans. There is a slight discrepancy between this figure and the FDX figure.*

The 1953 portion of the building was constructed with a two story laboratory space at the north and a one story wing to the south. The 1959 addition matched the two story section of laboratory space, continued it to the north and provided an additional two story basement level at the furthest north end. The end result was a four story section at the north end of the building, a two story section at the mid point of the building and a one story section at the south wing. Refer to the attached Building Massing Diagram in this section.

The Geology Building has comparatively low site utilization. This is especially true for the one story southern portion of the structure which contained miscellaneous offices and a sloped floor lecture hall with seating for approximately 105 people. This south wing was also surrounded by large open landscaped areas and patios.

In April 2001, the one story south wing of the Geology Building was demolished to make way for the Science Laboratories Building. The demolition of the south wing resulted in a reduction of 3,156 ASF and 5,367 GSF. Upon completion, the Science Laboratories Building will connect to the second level of the Geology Building resulting in the reduction of an additional 280 ASF.

4.2 FUNCTIONAL DESCRIPTIONS

Department of Earth Sciences

The Department of Earth Sciences is a major occupant of the Geology Building and utilizes approximately 22,598 assignable square feet. The department includes the following

components:

1. Geology
2. Geography
3. Geophysics
4. Geochemistry
5. Paleontology
6. Seismology

The department occupies portions of the subbasement level, basement level and first level of the Geology Building. Several areas in the subbasement level and basement level are used as storage rooms for rock, mineral, paleontology and fossil storage. These storage needs require convenient access to loading dock facilities. The heavy weight of the stored materials is also a structural consideration. Large testing equipment is also a weight consideration. The department uses vibration sensitive equipment (i.e. microprobe equipment) and vibration producing equipment which will require special placement consideration. The Geochemistry component, comprising approximately one third of the total department space, is the primary user of fumehoods for the department. The department requires convenient access to chemical storage facilities and will also require clean power to operate a computer networking system.

Department of Environmental Sciences

The Department of Environmental Sciences is another primary occupant of the Geology Building and presently occupies approximately 21,882 assignable square feet in the Geology Building. The department occupies some limited space on the basement level and on the first level, but is presently the sole occupant of the second level of the Geology Building. The department also occupies space in Bourns Hall and in various greenhouses and field buildings. Faculty in the Department of Environmental Sciences conduct research in these and other areas:

1. Environmental chemistry of soils and water
2. Environmental microbiology and bioremediation
3. Environmental toxicology
4. Hydrology and chemical transport in soils
5. Environmental economics, management, and policy
6. Atmospheric chemistry

The Geology Building presently houses all of these research areas except the last (which is carried out in Fawcett Lab). The existing building is inadequate for the proper operations of the Department of Environmental Sciences. The age and condition of the major building utility systems is insufficient for plumbing , mechanical and electrical systems operation, and the laboratories do not meet modern safety or cleanliness standards. The department will require significantly upgraded facilities to effectively operate and to carry out its research mission.

Institute of Geophysics and Planetary Physics

The Institute of Geophysics and Planetary Physics (IGPP) occupies approximately 6,919 assignable square feet in the Geology Building. The IGPP includes the following components:

1. Earth Sciences (in the Geology Building)
2. Astrophysics (in the Physics Building)

The Institute works in the field and in laboratories and consequently needs convenient access to vehicles and the loading dock. IGPP shares laboratories with the Earth Sciences Department and the Physics Department. The Institute functions need to be more centralized to improve efficiency and operation. The Institute programs in geophysics and astrophysics are primarily a dry lab operation with access requirements to some large equipment. However, the programs in geothermics and geochemistry are heavy users of chemistry and rock and mineral processing facilities. The Institute requires storage space for rock samples and includes both active storage and archival material. Again, the main functional requirement of the institute is the need to consolidate operations into a more centralized configuration.

Other Programs

The Geology Building also houses a general assignment classroom, Geology Museum, and previously, a Physical Science Library. The general assignment classroom occupies Room 1408 in the north wing. The museum and library are both located in the center wing. The Physical Science Library relocated to the new Science Library. The space is presently being used as temporary storage while the Rivera Library is undergoing a major seismic upgrade. It is anticipated that the temporary library storage will be moved back into Rivera Library by Fall 2001. The Geology Museum is located in the wide corridor connecting the two wings of the building. The Museum performs a major recruitment and service function offering self-guided tours to students and visitors. This function should be maintained in any future building plans. The operation now occurs within a fire-rated exit corridor which is not permitted by present Building Codes. Some display features can be provided in corridors but storage cases and other "furniture" will need to be located out of the exit path. Presently, approximately 3000 s.f. is dedicated to this operation.

4.3 MATERIALS AND FINISHES

General

The following is a review of existing building materials and finishes. If the existing building layout, in general, is to remain substantially intact, then the extent of renovation of these finishes may be primarily cosmetic. Where new construction is undertaken, the new architectural finishes and materials should be consistent with the quality materials and methods used on the existing structure. Some features of the building will require demolition and new construction due to the need to access areas for changes in the utility systems or changes required to comply with code requirements.

4 ANALYSIS OF EXISTING

Floors

Primary floor material used throughout the Geology Building is vinyl asbestos tile (VAT). It has been maintained in acceptable condition through a regular campus housekeeping program. Some areas within laboratory spaces have been subjected to more abuse and show evidence of severe wear, chipping and deterioration. In some cases, liquids have migrated through the joints of the VAT and some delamination has occurred.

Since the VAT is an asbestos containing material, it must be removed to be in compliance with campus standards. New vinyl composition tile (VCT) can be installed in circulation areas, storage rooms and offices. If wet laboratory functions remain within the building, corrosion resistant seamless vinyl flooring would be preferable. In offices, classrooms, dry labs or less intensive wet labs used for teaching, VCT would be an acceptable flooring material. Some areas within the basement used for general storage and some offices and laboratories in the subbasement have an exposed concrete surface with a sealed finish. These floors are generally in good condition and the floor should remain as it exists.

Walls

There are several types of wall materials and finishes in the existing building. The materials and finishes include:

1. Structural brick with plaster and paint.
2. Reinforced concrete with plaster finish and paint.
3. Steel studs with plaster finish.
4. Steel studs with gypsum board finish and paint.

The existing walls are generally in good repair and in most cases would require minimal patching and repainting. Walls and wall finishes typically extend from the floor to the bottom of the floor deck or roof, since most laboratory areas have no ceiling. The existing wall/floor base is a 4" topset rubber base. Due to the installation of new flooring to replace the existing VAT, the existing base would be removed throughout the facility and a new topset rubber base would be installed. If sheet vinyl is installed, then a coved sheet vinyl base would be installed in those specific rooms.

Ceilings

Existing laboratory spaces typically have no ceiling with exposed painted structure and exposed utility systems including piping, mechanical ductwork, electrical conduit and electrical lighting. It would be preferable to maintain the operation as an exposed system for both accessibility and economy. Several of the exposed systems would be effected in the renovation and the new elements would require a new paint finish. Based on asbestos reports, exposed pipes have insulation containing asbestos. These reports did not identify any spray-on asbestos material.

The main corridor ceiling consists of a concealed spline acoustic tile attached to the bottom of a lined return air mechanical plenum space above the ceiling. Current codes do not allow a corridor ceiling to be used as a return air plenum. After a ducted return mechanical system is installed, a new standard lay-in ceiling should replace the concealed spline ceiling.

Windows and Frames

The existing window system in the Geology Building is damaged and does not seal. Building occupants have complained about leaks, the infiltration of dust and insects, noise, and difficulty maintaining stable interior temperatures. Because the existing window system is almost fifty years old, it is recommended that the windows, frames and sunscreens be replaced.

The renovation scope and budget provide for the replacement of the window system. The new glazing should be Solar Control Low E glass or an acceptable equal one inch (1") thick double glazed insulating glass with a U-Value of 0.037 and solar heat gain coefficient of 0.44.

Window Coverings

Most windows in the facility are equipped with venetian blinds. These blinds have a two inch blade and are typically in good to poor condition. In some areas the blinds had been removed or are inoperable. It would be appropriate to replace all of the blinds in the facility with new mecho shades. The new shades can be used to darken laboratories or other spaces and to control heat gain or glare within offices and laboratories.

Door and Hardware

Existing corridor doors to laboratories and offices are typically solid core wood with a birch face veneer and natural stain and lacquer finish. The doors are in fair condition. Doors typically do not have a fire rating label as this was not a requirement at the time of construction. All doors onto corridors require a 20-minute fire rating label. Laboratories using chemicals in the building require a 1-hour fire rating label. All laboratories over 200 s.f. require the addition of a second exit door to meet code requirements.

Existing door hardware consists of door knobs which are not in compliance with handicap accessibility requirements. In addition, most doors do not have the required 18 inch clearance between the wall and the strike surface. The doors, frames and hardware sets will need to be replaced during the renovation.

Toilet Rooms

Toilet room finishes consist of ceramic mosaic floor tile and base with glazed ceramic tile on walls and wainscoting. Ceilings consist of painted gypsum board or plaster. Toilet room partitions are porcelain enameled steel construction. Existing toilet rooms are generally in fair condition. The existing rooms and fixtures are not accessible to the disabled. The renovation plan needs to modify rooms such that toilet stalls, lavatories, mirrors, entrance doorways, vestibules and turn around spaces will be in compliance with disabled access requirements. Based on the anticipated extent of the renovation for disabled accessibility, toilet room finishes will need to be replaced because it is not possible to match the older materials and finishes for patching after modifications. The link connecting the Geology Building and the Science Labs Building will also contain ADA complying toilet rooms on the first and second floors. The fixture count should be confirmed at the time of final design.

Exterior Finishes

The brick exterior consists of Norman face brick laid up with one third bond weathered horizontal joints and flush vertical joints. Windows consist of single paned glass in operable steel frames. New roof mounted mechanical equipment will require modifications to the existing roofing system. In 2000, the building roof was replaced with a new polyurethane roof.

4.4 SUBBASEMENT

The Subbasement contains approximately 5,501 ASF of space. At present, this area of the building is accessible by a non-code complying stair located at the west end of the North Wing and an exterior service stair (also non-code complying) located at the east end of the North Wing. The Subbasement does not have elevator access. The floor-to-floor height of 10'-3" and existing duct work and piping result in minimal clearances.

The renovation scope proposes to upgrade the west stair and to construct a new elevator and stair at the east end of the North Wing. These improvements will provide code complying access to the Subbasement. Separately, the Phase 3 HVAC Deferred Maintenance project will provide upgraded air supply to the Subbasement.

Because of the minimal clearances the Subbasement is not an appropriate location for traditional research and instructional activities. It is recommended that the space be used for support functions such as the following:

- Storage
  - Collections
  - Archives
  - Files
- Shops
- Calibration Labs
- Special Function Labs

4.5 LABORATORY BENCHWORK AND EQUIPMENT

Laboratory Benchwork

Existing laboratory benchwork consists of wood base cabinets with drawer and door assemblies and intermittent knee spaces. The base cabinets and matching wall cabinets are a birch finish material with a natural stain and clear lacquer finish. Benchtops consist of acid resistant standard "stone" laboratory benchtop material in a gray or black color and transite counter tops. Benchtops are equipped with two tier open shelving units and utility monuments for process vacuum, natural gas and compressed air. The layout of the lab benches, fume hoods and gas cylinder storage racks is typically not in compliance with present day Good Laboratory Practices (G.L.P.). Lab benches are typically in island configurations which allow for good circulation, but fume hoods are often located adjacent to laboratory exit doors. Fume hoods usually involve the most hazardous laboratory operations and should be located in the far corners of laboratory space away from the path of travel to the exit doors for safety consideration. To accomplish this, reconfiguration of the laboratory benchwork is required. Because the existing benchwork is over forty years old and in poor condition, it should be replaced.

Laboratory Equipment

The existing fume hoods are typically in poor and/or inoperable condition. The campus Environmental Health and Safety Department conducted an inventory of existing fume hoods and their state of repair (see appendix) which identifies which of the fume hoods are inoperable or operating poorly. The deficiencies include, but are not limited to:

1. Asbestos panel lining in the cabinet.
2. No laminated safety glass sash.
3. No self closing doors for solvent storage in base cabinets.
4. No containment lips around cup sinks.
5. No flow controls for air velocity.
6. No emergency power shut-off.
7. No audible and visual alarms.

The renovation scope should include the replacement of all fume hoods that are to remain.

Electrical Power, Process Cooling and Makeup Air

The demands for utility services for laboratory equipment are more extensive than the original facility was designed to accommodate. Current laboratory research utilizes more benchtop equipment and freestanding equipment. Extensive benchtop lab equipment is more conveniently serviced by a continuous plug mold mounted on the edge of the benchtop shelving unit. Some lab equipment and special instrumentation require process cooling water for operation. This is not available in the Geology Building. If required, it can be provided by one of two methods depending on the size of the need. If a small quantity of process cooling water (generally supplied at between 55 and 60°F) is required, this is normally handled by small water cooling units (i.e., Neslabs) which produce low gpm, high head flows. If a large quantity of process water is required, this can be handled by a secondary process cooling loop fed by the building chilled water system.

Equipment Weight, Vibration and Noise

Some equipment is very heavy and may require special structural consideration. Vibration control is an issue for both vibration producing equipment and vibration sensitive equipment. Vibration producing equipment should be mounted on spring isolators or dampening devices. Vibration sensitive equipment should be mounted on heavy inertia base tables. These tables could also require special structural consideration. If possible, the equipment should be located in the lower floors of the building.

Some equipment is noise producing and will require special noise isolation features if placed within a laboratory. New walls should be constructed to maintain appropriate acoustic separation and isolation when equipment is located in separate equipment rooms. The recommended criteria for various spaces are tabulated below:

Space Category	Noise Criterion
• Laboratories	PNC-50
• Conference Rooms	PNC-35
• Lounges and Seminar Rooms	PNC-35
• Private Offices	PNC-35
• Reception Areas, Lobbies, Open Offices	PNC-40
• Corridors, Stairways, (nonsensitive listening)	PNC-50
• Classrooms	PNC-35

4.6 HAZARDOUS MATERIAL HANDLING

General

The handling and distribution of chemicals, gas cylinders and hazardous waste disposal is critical to the safe operation of the departments that will occupy the Geology Building at the completion of the renovation project. Proper protocol is governed campus wide by the Environmental Health and Safety Department. Their management procedures dictate the day-to-day operations of the departments.

Chemical Handling Distribution

Chemicals are primarily stored in a separate chemical storage building located adjacent to the loading dock on the east side of the Geology Building. Chemicals are delivered from the storage area to the point of use by standard chemical carts. Chemicals typically come in one gallon containers and are pre-mixed to avoid on-site chemical mixing or open system dispensing requirements. Once delivered to the laboratories, the chemicals are utilized in research conducted either on open laboratory benches or within fume hoods. Unused chemicals are stored for long periods of time either within approved chemical storage cabinets or within the laboratory fume hoods. Used chemicals are stored in approved containers for pickup by the

EH&S Department for disposal off-site by an approved vendor.

A complete list of laboratory chemicals used by departments is included in the appendix of this report. The chemical quantities stored within the laboratory must be kept within the guidelines of Table 9-A and Table 9-B of the Uniform Building Code to maintain the present occupancy group rating.

Gas Cylinder Handling and Distribution

Gas cylinder distribution is handled similarly to chemical distribution. Gas cylinders delivered to the loading dock of the Geology Building are stored and then distributed to the various departments. Inside the laboratory, standard cylinders are placed in approved racks with safety chain straps to hold them in place. Some large cylinder gases and other storage containers are stored in the exit corridors and hallways. This is not an acceptable or approved storage method. A complete list of cylinder gases is included in the appendix of this report and, storage quantities must be maintained at the levels allowed in UBC Table 9-A and 9-B.

Hazardous Waste Handling and Distribution

All hazardous wastes are collected in small quantities by the Environmental Health and Safety Department and disposed of off-site by approved methods. Although the Geology Building apparently has a waste treatment system, it is inoperable at this time. This method is quite expensive and a detailed analysis of exact chemical quantities should be reviewed in relation to the cost of a waste treatment system. It may be more economical to install an acid neutralization system for the building depending on the future use of the facility. Guidelines for handling and disposal of hazardous wastes are dictated by the Environmental Protection Agency (E.P.A.) as well as Building Codes and Fire Codes. Ultimately, the operation must be reviewed in detail by the Environmental Health and Safety Department and the Campus Fire Marshal as well.

Asbestos Abatement

The University of California, Riverside contracted with a consulting firm in 2001 to perform an evaluation of asbestos and lead based paint in the Geology Building. The report prepared by Ambient Environmental Inc., is included in the appendix of this report. JLP Architects, Inc. is not an asbestos consultant and a comprehensive evaluation is beyond the scope of this report, but based on the findings of the report and discussions with the campus Environmental Health and Safety Department some features can be highlighted.

The Geology Building contains asbestos in the following areas:

1. Vinyl asbestos tile (VAT) on floors and baseboard mastic.
2. Asbestos insulation around mechanical piping and fittings.
3. Transite counter tops.
4. Transite piping and fumehoods.

5. Transite sinks.

Based on a discussion with the campus Environmental Health and Safety Department, the campus policy would allow materials to remain in place if they do not pose a risk of being damaged or becoming friable. Due to the need for new flooring in the Geology Building, the existing vinyl asbestos tile flooring should be removed and disposed of by certified methods and new vinyl composition tile installed in the building. The asbestos in the mechanical pipe insulation is subject to damage during the renovation and should be removed and disposed of by certified methods. The Geology Building contains other miscellaneous asbestos containing materials. These include the asbestos lining on the inside face of the fume hood cabinets in laboratories. These fume hoods require special handling and disposal to comply with state requirements.

Hazardous Materials abatement costs have been identified in the statement of probable construction cost contained in this report.

4.7 DISABLED ACCESS

Handicap Access

Handicap accessibility requirements are governed by California State Title 24. Title 24 requirements outline the building regulations for disabled access design. The requirements for Title 24 are enforced by the Office of the State Architect. Title 24 covers all aspects of disabled accessibility to a building. Although some requirements might be negotiable, current requirements are mandated for all parts of the building with the renovation of this facility.

The Geology Building had some modifications to accommodate disabled access which include: handicap accessible parking spaces at the rear of the building, new handicap access ramps and a building elevator. The proposed remodeling of the Geology Building will necessitate more extensive facility renovation for disabled access. These will include, but not be limited to the following:

1. Additional ramps.
2. Stairs with special tread nosing striping and new handrails.
3. Doors will be required to have lever handles and 36" minimum width. Additionally an 18" side clearance at the strike side of the jamb will be required. This could necessitate relocating some laboratory benchwork.
4. Drinking fountains will be required to be handicap accessible.
5. Toilet rooms will need to be modified which will include water closets, toilet stalls sizes, urinal mounting heights, lavatory mounting and traps, mirrors, sink faucet controls, installation of grab bars, etc.
6. Alarms will be required to be both audible and visual.
7. Signage will be required at all door locations identifying functions of rooms.
8. Automatic door operators.

Note: The existing elevator in the Geology Building will be upgraded as part of a separate deferred maintenance project.

Controls and operating devices for building systems will require mounting height modifications to appropriate levels. These will include light switches, thermostat controls, fire alarm pull stations, etc. These items are also addressed in more detail in the engineering sections of this report.

4.8 CODES AND REGULATIONS

General

Various codes and regulatory agencies will have jurisdiction over the proposed renovation of the Geology Building. Complying with these codes and agency requirements will have a significant effect on the future operation of the building and the construction requirements for the renovation.

Codes and Regulatory Agencies

The following list includes various codes, ordinances, regulations, industry organizations and federal, state and local agencies that are applicable to the renovation of the Geology Building:

1. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
2. American National Standards Institute (ANSI)
3. American Society for Testing and Materials (ASTM)
4. Americans with Disabilities Act (ADA)
5. California Occupational Safety and Health Act (Cal OSHA)
6. California Environmental Protection Agency (EPA)
7. California Building Code (CBC) and standards
8. California office of the State Architect (OSA) Handicap Compliance Unit
9. California Administrative Code (CAC) Title 8, 9, 10, 20, 24, 25
10. National Electric Code (NEC)
11. National Fire Protection Association (NFPA)
12. Sheet Metal and Air Conditioning Contractor National Association (SMACNA)
13. South Coast Air Quality Management District (SCAQMD)
14. State Fire Marshal (SFM)
15. Underwriters Laboratories (UL)
16. Uniform Fire Code (UFC) and standards
17. Uniform Building Code (UBC) and standards with California amendments
18. Uniform Plumbing Code (UPC)
19. Uniform Mechanical Code (UMC)

Building Code Analysis

Based on the requirements of Table 5-A in the Uniform Building Code, the existing Geology

Building operates under both Occupancy Group B-2 (educational purposes) and Occupancy Group A-3 (assembly room). Maintaining the B-2 occupancy group for the laboratories requires chemical and gas quantities to be within the limits of Table 9-A and 9-B of the Uniform Building Code. If quantities exceed those limits, the facility will be classified as an H occupancy. Based on Table 5-D of the Uniform Building Code, the Geology Building is of Construction Type III-1 hour. This will allow a B-2 occupancy to be four stories in height and an A-3 occupancy to be two stories in height. A basement is not considered a floor level, but since the existing Geology Building has both a basement and subbasement this may be subject to interpretation regarding allowable floor area when reviewed by the State Fire Marshal. All renovation concepts assume the Geology Building will be used for general office and less intensive research laboratories. These uses will probably not involve large quantities of chemicals and consequently the building operation will remain a B-Occupancy and not an H-Occupancy.

5 CONCEPTUAL LAB DESIGN

5.1 INTRODUCTION

The success of the Geology Building Renovation project will be dependent on the extent to which the existing facility can be modified and adapted to support current and future research programs in Earth and Environmental Sciences. This section of the Detailed Project Program describes the issues which should be considered in planning and designing the laboratory components of the building in order to support the academic and research functions to be housed in the building.

5.2 FLEXIBILITY/ADAPTABILITY

The renovation of the Geology Building must respond to changes in laboratory function, support services, and equipment that have taken place since the building was designed and constructed almost fifty years ago. The renovation must provide the building with as much inherent flexibility to adapt to future changes in research, and technology as possible. Most importantly, this must be achieved within the physical limitations of the existing building.

There are four key elements which influence the level of flexibility and adaptability that can be achieved in the renovation of an existing building:

- Existing Building Structure
- Modular Design approach
- Utility Distribution Strategy
- Mechanical, Electrical and Plumbing Systems Capacity
- Laboratory Casework

5.2.1 EXISTING BUILDING STRUCTURE

The modular approach to planning and design of a laboratory facility provides a methodology to develop a predictable pattern for the layout of casework and equipment within each lab and the distribution of piped utilities. In the design of a new building, the module is the basis for establishing the structural grid. The use of a repetitive module establishes an organization for all the physical elements of the building. It increases efficiency, ease of construction, serviceability, and the capability for functional change. Structural elements such as columns, shear walls, elevator shafts, and stairs are located so as not to compromise the ability to expand or reduce the size of the laboratory suites. In the case of an existing building such as the Geology Building, the basic planning module must be modified to fit within the existing building structure.

5.2.2 MODULAR LABORATORY DESIGN

The width of the basic planning module for recently designed laboratory buildings on the UCR campus such as the Entomology Building or the adjacent Science Labs Building is 10'-6". Two times this 10'-6" dimension results in 21'-0" - the width of a structural bay. Each 10'-6" dimension allows for two 2'-6" deep counters on either side of a central 5'-0" wide aisle, and six inches for a wall. The five foot aisle is sufficient for a wheelchair to turn 360 degrees or for two people to work back-to-back.

The width of the existing structural grid in the Geology Building is 14'-6" and the depth is 29'-0" in the south wing and 29'-2" in the north wing. After allowing 3" from the centerline for a partial wall thickness, the result is a basic planning module of 14'-0" x 28'-6" (approximately 400 ASF).

During the development of the Detailed Project Program, the planning team studied the existing Geology Building module and developed a Modified Planning Unit. The Modified Planning Unit consists of three modules (approximately 1200 ASF) and creates a generic laboratory suite which will include two peninsula and two perimeter benches. The perimeter benches are each capable of accommodating a six foot fumehood. The typical research lab suite will also include a contiguous support module. It should be noted that the generic laboratory suites have been planned using a width of 10'-6".

5.2.3 UTILITY DISTRIBUTION STRATEGY

Access to central building utilities in each laboratory module is essential to the flexible, long-term use of the laboratory suites in the Geology Building. Access to basic utility services and points of connection to the individual lab modules should be standardized and will include the following:

Plumbing

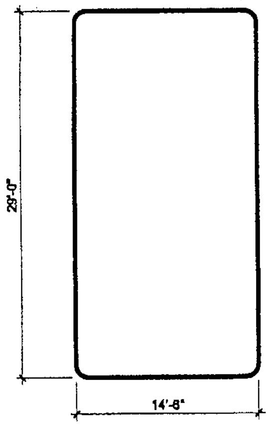
- Natural Gas
- Vacuum
- Industrial Hot and Cold Water
- Deionized Water
- Localized Specialty Gas Plumbing (i.e. CO2, N2, Argon, etc.)

Electrical

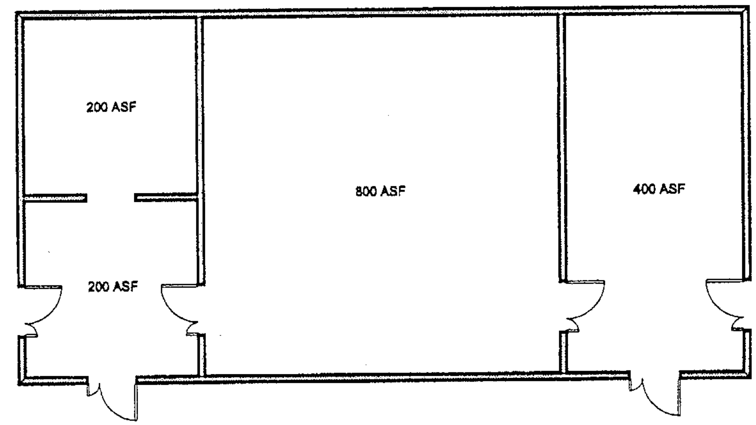
The design intent is to provide a dedicated electrical distribution panel for each laboratory suite with 20%-40% spare capacity. Basic service at each panel will include 110V and 208V-3 phase. Although a building wide UPS system is not anticipated, demand for clean power to the laboratory suites is critical. A power surge protection device at each panel serving the laboratory suite may be the most cost-effective strategy to address this issue. Emergency power will be provided to support both life safety and specialized equipment.

Telecommunications and Data

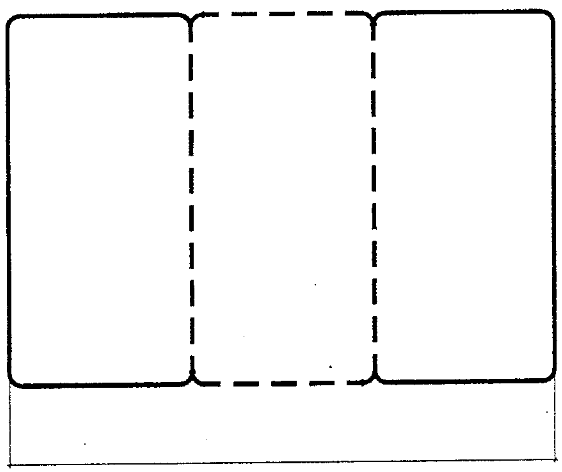
A voice, data and video communication system will be incorporated in the design to support both office and laboratory spaces. Within the laboratory, distribution will occur at the benchtop via a double channel surface mounted raceway. Duplex outlets will be appropriately spaced. A keypad system will be required to control access to the research laboratory areas of the building.



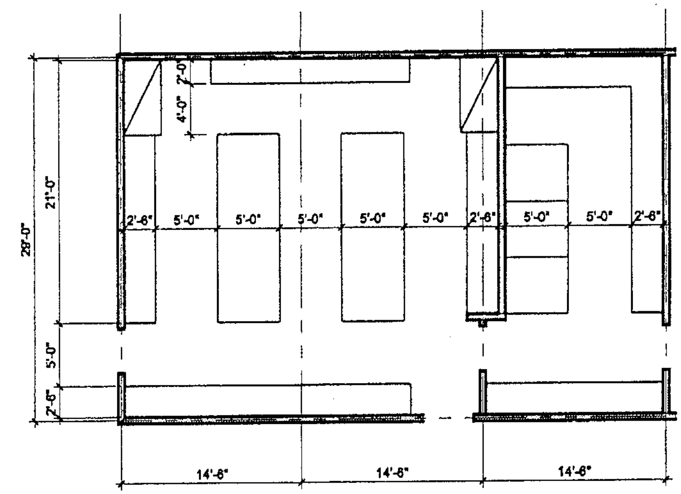
BASIC MODULE



PERMUTATIONS OF EXISTING BUILDING MODULE



3 MODULE LAB SUITE



MODIFIED PLANNING UNIT

MODULAR LABORATORY DESIGN

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
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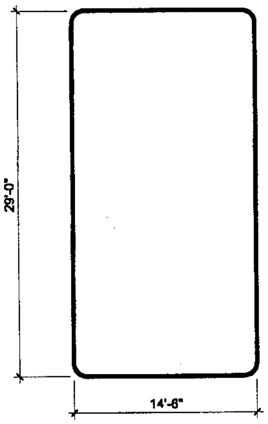
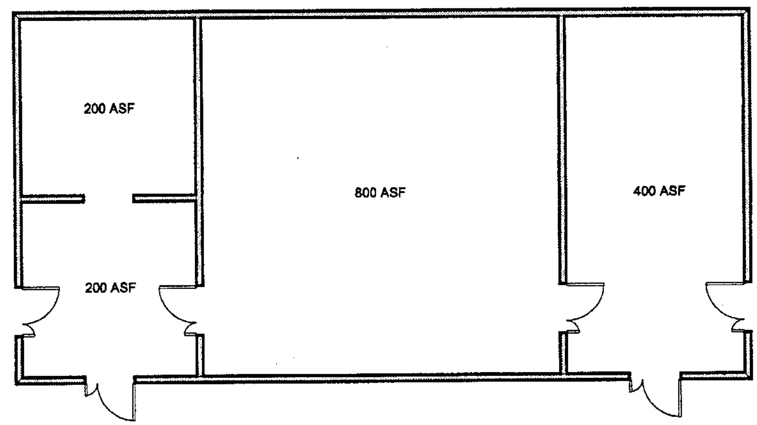
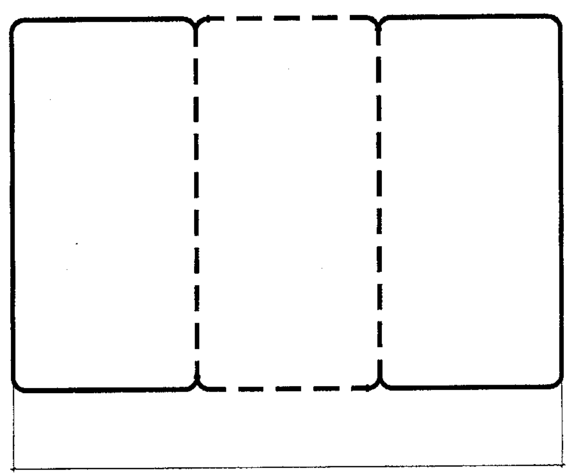
APRIL 30, 2001



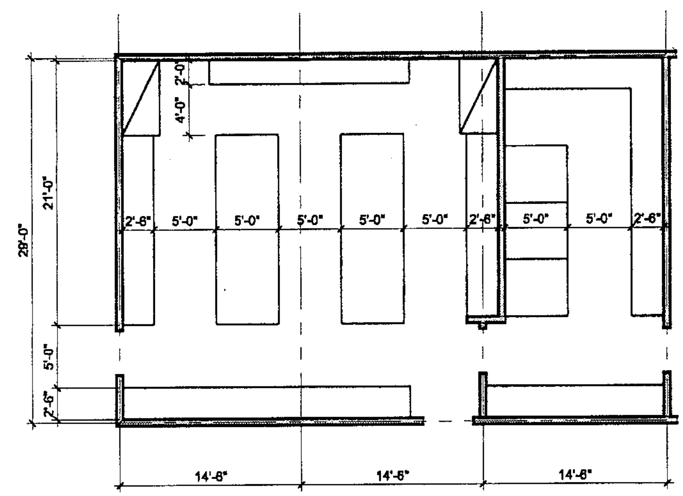
BASIC MODULE



PERMUTATIONS OF EXISTING BUILDING MODULE



3 MODULE LAB SUITE



MODIFIED PLANNING UNIT

GEOLOGY BUILDING RENOVATION

UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

APRIL 30, 2001

5.2.4 MECHANICAL, ELECTRICAL & PLUMBING SYSTEMS CAPACITY

The first of a series of phased Deferred Maintenance (DM) projects to replace the supply and exhaust air systems in the Geology Building are now in design. The preliminary phasing plan calls for completion of the Phase 1 HVAC DM Project in the center wing from 9/01 to 9/02; Phase 2 HVAC DM in the south wing is scheduled for construction from 7/03 to 1/05; and Phase 3 HVAC DM in the north wing is scheduled from 9/03 to 3/05. The supply air handlers, exhaust fan system and controls will be sized to accommodate current departments and existing systems. Electrical and plumbing support for the mechanical replacements will be included in the DM projects. All renewals to interior spaces will be addressed in the renovation scope.

The final design for the Geology Building Renovation project will need to be carefully coordinated with the Deferred Maintenance projects.

5.2.5 LABORATORY CASEWORK

The laboratory casework system is one of the key elements in the overall flexibility of a laboratory building. The selection process for a system is critical if it is to match the budget with the desired level of flexibility for a variety of users over the life cycle of the facility. There are four major "industry standard" casework systems which should be evaluated during the design phase of the project. These include (a) the standard floor mounted system, (b) the C-frame System, (c) the End Rigger System, and (d) the Unistrut system. All four basic systems and variations must be carefully studied for the selection of the most appropriate system for each functional unit of this project.

Each system has advantages and may be distinguished by:

- first cost
- the degree of flexibility/adaptability
- the degree of utility flexibility/serviceability
- the availability of compatible components in the future
- storage capacity

General Requirements

In order to provide maximum access for utility servicing and future changes, it is recommended that all utility distribution occur in the lab and not in the partitions. It should be noted that sinks, including cup sinks, are fixed elements regardless of the selected casework system.

In compliance with the ADA Title III requirements, a select number of the laboratory benches and workstations must be accessible to the disabled. It is the responsibility of the University to determine the quantity and location of these workstations.

Standard Floor Mounted System

This casework system is the traditional floor mounted system and may be either built-in-place or pre-manufactured modular design. The counter top is continuous and mounted on the top of the base cabinets. Overhead cabinets are typically mounted only against a solid wall. Counter tops over floor mounted cabinets have no major load limitations. They do have fixed heights and are not easily adjusted to accommodate the changing needs in a lab. The overall system is inflexible and requires skilled personnel to relocate the base cabinets and knee spaces to adapt to changes. The support and suspension system is basically the floor and fixed partitions and as a result, all elements are fixed. Backing is required in the walls for the installation of either overhead cabinets or open shelving. Access to the piped utilities is limited. Cabinets are available in wood, steel, or plastic laminate finishes.

An example of this system are the standard lab furniture system manufactured by Hamilton, Kewaunee, and others.

C-Frame System

The C-Frame system has a tubular steel frame in the shape of a C that the counter top and cabinets are mounted on. One leg of the "C" rests on the floor and the other supports the lower cabinets and the counter top. The counter tops may be specified in modular lengths between the frames. This allows for the removal of entire units to make room for floor standing equipment. The vertical leg extends above the counter top and supports the upper cabinets, open shelving or equipment. The C-Frame system has horizontal flexibility since the lower cabinets are easily removed and replaced, thus creating a knee space in a different location. Utilities are more accessible for repairs or changes. There is less storage space than in the floor mounted system but there is also easy cleanup underneath the lower cabinets. C-Frame cabinets can be constructed of wood, steel or plastic laminate. The system may be fabricated locally or be specified from a proprietary source which makes the availability of components in the future dependent upon the original manufacturer.

An example of this system is the suspended casework system by Hamilton.

End Rigger/L-Frame/Leg Frame Suspended System

These systems have an enclosed tubular steel service chase behind the lower casework. This chase unit is stabilized laterally by either end-rigger panels at the ends of the casework or legs. A tubular steel frame is supported off the service chase. In one design, the counter top rests on top of a steel frame and the lower cabinets are suspended from below the frame by clips. In another design, the counter rests on leg frames, and the base cabinets may be supported on the floor or suspended from the top by clips.

Vertical framing members in the service chase extend above the counter top to support overhead cabinets or open shelving. The lower cabinets may be easily removed and replaced, and the counter top framing may also be raised and lowered. The vertical height of the lower cabinets is determined by the height of the counter top. Flexibility is the major advantage to this system. All elements may be changed as needs dictate. The service chase provides easy access to utilities. There is less storage in the suspended base cabinet system, but clean up is easy below the cabinets. The counter tops come in sections creating joints at the spine and at adjacent tops. The cost is higher than the floor mounted system but generally less than the C-Frame system. The cabinets are available in wood, steel, and plastic laminate finishes.

The system must be specified from a proprietary source which makes the availability of components in the future dependent upon the original manufacturer. Examples of this system and variations are the Hamilton Multiflex, and the Kewaunee Versalab.

Unistrut System

The Unistrut System should not be referred to as an integrated system in the same manner as the others since it is usually customized by various suppliers.

The heart of the suspension system is an industrial vertical open channel that extends from the floor to the structure above. The wall elements are hung from brackets on the vertical channel, the base cabinets are usually specified with adjustable nylon and/or stainless glides and are free standing. The counter tops and back splash are supported by large brackets attached to the vertical channel which are adjustable. Leg frames may be required at the knee spaces where the counter is expected to carry additional heavy loads. Additional loads may be placed on the counter tops that are over base cabinets by adjusting the glides of the base cabinets to pick up some of the load and transmit it to the floor. The only fixed elements are the vertical channels.

This is the most flexible/adjustable of all the systems, however, it is usually customized for each project which in turn requires great attention to detail during design. The channels and brackets are available from Unistrut and other suppliers. The other components, shelving, wall hung cabinets, base cabinets and counter tops, are available from any of the standard casework suppliers and local cabinetmakers.

Laboratory Casework Systems-Summary

The selection of the casework system to be used in the Geology Building Renovation should be made using the Criteria outlined in this section at the time the final design is completed. Each system has advantages and disadvantages. In comparing these four systems, the major issues are function, degree of flexibility, and cost. Standard floor mounted casework in a modular design will probably satisfy the needs of the departments that will occupy the building at the completion of the renovation.

Laboratory Counter Tops

The type of counter top should also be carefully chosen to fit the use. Laboratory counter tops are available in a variety of materials from Epoxy resin, Wood, Stainless Steel and Plastic

Laminate. The selection process for individual functions is best left to the design phase and conferring with faculty and staff.

Fume Hood Base Cabinets

Fume Hood base cabinets may be simple storage cabinets of the same material and design as the selected casework. In some cases there will be a need for acid storage units. There will be a requirement for accessibility to fume hoods for the disabled and the University should decide the number and location of these fume hoods during the design phase. Flammable solvents will not be stored under fume hoods but in code approved cabinets that are vented into the fume hood exhaust system downstream from the hood cabinet.

The primary purpose of the fume hood is as a safety device to protect people working with hazardous materials. An inward flow of air to the hood provides personal protection for the researcher at the fume hood and others within the lab. All vapors or particulates generated or released within the hood are contained, diluted and exhausted through the fume hood exhaust ducts and released outside the building.

It is good laboratory practice to move air from the least hazardous areas to more hazardous areas. This is true for individual rooms and for the building as a whole. For example, it is advisable that air movement flow from the corridor into the lab and through the fume hood. Fume hoods should be located away from any drafts which may disturb this directional air flow. Examples of systems or activities which should be considered in the placement of fume hoods are room ventilation supply and exhaust, operable windows, room doors which constantly open and shut, and main routes of circulation. Personnel should always be able to exit away from and without passing a fume hood.

It is suggested for energy conservation and to control operating costs that a variable air volume (VAV) system be incorporated into the building renovation. As part of this system there will be control valves on three components within the room: supply air, general exhaust, and fume hood exhaust. This system will maintain correct pressurization (in most cases the laboratory should have negative pressure relative to the corridor), temperature and air change rate in the research labs.

The operation of these components will be controlled by a room thermostat and occupancy sensor. The sash sensor will be located on the sash of each fume hood. It will give an indication of the sash position. A room thermostat will be located in each laboratory area. The valves on the supply and exhaust ductwork will be modulated in response to signals from both the sash sensor and the room thermostat. The sash sensor will act to enable the correct face velocity to be maintained at the fume hood. The room thermostat will act to be maintained in the laboratory. Occupancy sensors will regulate face velocity as personnel approach the hoods.

When air volume is modified in the laboratory, pressure sensors located in the supply and exhaust ductwork will modify the performance of the supply air handling unit and exhaust fans.

5 CONCEPTUAL LAB DESIGN

Specialty Hoods

If special hoods such as perchloric acid, strong acid or radioisotope hoods are required, they should not be located in the Geology Building but should be consolidated in the Science Labs Building and Pierce Hall. The duct work necessary to accommodate these specialty hoods is not present in the Geology Building.

Special hood configurations and materials designated for the use of hot aqua regia should be investigated during the design phase.

Snorkel exhausts may be required for certain laboratory procedures.

Canopy hoods will be required as necessary for the containment and removal of heat, steam, combustion products, vapors, mist, objectionable odors and or dust from specific laboratory equipment. This equipment includes, but is not limited to, growth chambers, rock cutting and grinding, and crushing equipment, etc.

Vented flammable storage cabinets should be installed in all labs, containing fume hoods. The location of cabinets should be reviewed by Environmental Health & Safety and the Campus Fire Marshal during the design phase.

5.3 LABORATORY SAFETY FEATURES

Details of laboratory safety design shall be consistent with the draft version of the UCR, Environmental Heath & Safety, Laboratory Safety Design Guide. Variances from these requirements should be reviewed with the Environmental Health & Safety Office.

It is anticipated that the most likely occupants of the Geology Building will not be researchers who use large quantities of highly hazardous classes of chemicals. Therefore, the building may be classified as a B-occupancy building. Fixed emergency eyewash and safety showers will be provided within each lab suite. A dedicated closet for emergency response supplies must be provided on each floor of the building. An emergency gas shut-off valve, located adjacent to the main lab entrance door, will be provided for each laboratory suite. All fumehoods will be equipped with low flow alarms. Fumehood sashes shall be equipped with at least 1/4-inch thick safety glass.

The emergency generator supporting the Geology Building must be sized to keep both the supply and exhaust fans operating at a level to maintain at least half the normal ventilation rate within the laboratory spaces, in addition to the other requirements for life safety and specializes equipment.

5.4 OTHER LABORATORY DESIGN FEATURES

Special laboratory design features for the Geology Building Renovation:

- The fumehood diversity factor is 40-60% for the research labs, assuming that a sash sensor, occupancy sensor, and sash management are provided.
- The fumehood face velocity must remain at a minimum of 100 feet per minute with the sash in the full open position.

6.1 OVERVIEW

The Geology Building Renovation project will provide approximately 58,546 assignable square feet (ASF) of new research labs, lab support, office, conference, and administrative space for the departments of Earth Sciences, Environmental Sciences and the Institute of Geophysics and Planetary Physics. Due to the addition of a new stair, elevator and shaft, the gross square footage (GSF) of the building will be approximately 100,309 GSF at the completion of the renovation. It is anticipated that these numbers will change as the renovation proceeds. ASF totals for the renovation schemes that are developed will vary due to changes in the configuration of the spaces in the building.

This section of the Detailed Project Program provides a summary of the program elements to be included in the proposed Geology Building Renovation project. The summary includes a listing of space categories and associated net assignable areas. Until released space is provided in Pierce Hall, the instructional spaces and general assignment classroom will remain in the Geology Building.

6.2 PROGRAM WORKLOAD

Concurrent with the development of the modular approach to the building renovation, workload projections were developed for the Departments of Earth Sciences (including IGPP) and Environmental Sciences (see 6.2 Workload Projections 2000-01 through 2010-11). Section 6.8, Space Program By Category, delineates the proposed asf that can be achieved upon completion of all phases of the building renovation. This also assumes relocation of the general assignment classroom and all instructional laboratories to Pierce Hall. Examination of the workload projections shows that at 2000-01, Earth Sciences has a faculty FTE of 13 (all housed in the Geology Building), and Environmental Sciences has a faculty FTE of 24 (12 are currently housed in Geology and 12 are housed in Bourns Hall.) The proposed space program (Sec. 6.8) indicates that upon completion of the building renovation, 17 Earth Sciences faculty could be accommodated in the Geology Building. Based on workload projections, this would accommodate the growth needs of the department out to 2006-07. It must be noted, however, that completion of all of the renovation work is not scheduled to occur until Fall 2007. For Environmental Sciences, upon completion of the Geology Building renovations, it would accommodate 15 faculty FTE. Ten faculty will be housed in the Science Labs Building upon its completion in 2003. The combined faculty FTE of 25 represents the faculty FTE projection for 2000-01.

The combined existing asf assigned to Earth Sciences and IGPP in the Geology Building is 29,517 asf. Upon completion of the Geology Building Renovation project, the combined asf will be 29,875 asf. Through a more efficient utilization of space, additional faculty can be accommodated.

The existing asf assigned to Environmental Sciences in the Geology Building is 21,882 asf. Upon completion of the Geology Building Renovation project, it will have 21,965 asf.

The programming committee endorsed two guidelines during the DPP development: (1) the Geology Building will house the majority of the Earth Sciences/IGPP programs; and (2) the Environmental Sciences department will be housed on the second floor of the Geology Building

6.2 WORKLOAD PROJECTIONS 2001-01 THROUGH 2010-11

			Projected									
DEPARTMENT		**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**	**2010-11**
Earth Sciences	**Faculty FTE**	12.75	13.75	14.75	14.75	15.75	16.75	16.75	17.75	17.75	18.75	19.75
	TA FTE	4.25	4.52	4.72	4.96	5.15	5.31	5.58	5.85	6.09	6.37	6.55
	Graduate HC	24	24	26	26	27	28	29	30	31	32	33
	Post doc HC	2	3	3	3	3	3	4	4	4	4	4
Environmental Sciences	**Faculty FTE**	24.26	26.26	26.76	27.76	26.26	29.26	29.76	30.26	30.76	31.26	31.76
	TA FTE	3.59	3.82	3.99	4.19	4.36	4.5	4.72	4.95	5.15	5.39	5.54
	Graduate HC	31	31	33	34	35	36	37	39	40	41	43
	Postdoc HC	19	20	21	23	24	26	27	29	30	32	33
TOTAL	**Faculty FTE**	37.01	40.01	41.51	42.51	44.01	46.01	46.51	48.01	48.51	50.01	51.51
	TA FTE	7.84	8.34	8.71	9.15	9.51	9.81	10.3	10.8	11.24	11.76	12.09
	Graduate HC	55	55	59	60	62	64	66	69	71	73	76
	Postdoc HC	21	23	24	26	27	29	31	33	34	36	37

Source:
Faculty FTE from CNAS Faculty Allocation Plan (06/07/00)
TA FTE from 2001-02 SpaceAnalysis Tables
Graduate Headcount from UCR General Campus Headcount Enrollments (Over Enrolled 11/27/00)
Postdoc Headcount from 2001-02 SpaceAnalysis Tables

6.2 WORKLOAD PROJECTIONS 2001–01 THROUGH 2010–11

DEPARTMENT		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
						Projected						
EARTH SCIENCES	Faculty FTE	12.75	13.75	14.75	14.75	15.75	16.75	16.75	17.75	17.75	18.75	19.75
	TA FTE	4.25	4.52	4.72	4.96	5.15	5.31	5.58	5.85	6.09	6.37	6.55
	Graduate HC	24	24	26	26	27	28	29	30	31	32	33
	Post doc HC	2	3	3	3	3	3	4	4	4	4	4
ENVIRONMENTAL SCIENCES	Faculty FTE	24.26	26.26	26.76	27.76	26.26	29.26	29.76	30.26	30.76	31.26	31.76
	TA FTE	3.59	3.82	3.99	4.19	4.36	4.5	4.72	4.95	5.15	5.39	5.54
	Graduate HC	31	31	33	34	35	36	37	39	40	41	43
	Postdoc HC	19	20	21	23	24	26	27	29	30	32	33
TOTAL	Faculty FTE	37.01	40.01	41.51	42.51	44.01	46.01	46.51	48.01	48.51	50.01	51.51
	TA FTE	7.84	8.34	8.71	9.15	9.51	9.81	10.3	10.8	11.24	11.76	12.09
	Graduate HC	55	55	59	60	62	64	66	69	71	73	76
	Postdoc HC	21	23	24	26	27	29	31	33	34	36	37

Source:
Faculty FTE from CNAS Faculty Allocation Plan (06/07/00)
TA FTE from 2001-02 SpaceAnalysis Tables
Graduate Headcount from UCR General Campus Headcount Enrollments (Over Enrolled 11/27/00)
Postdoc Headcount from 2001-02 SpaceAnalysis Tables

and expand into the Science Lab Building, Pierce Hall, and the Chemical sciences Building as new and release space becomes available.

The proposed phasing of the Geology renovations is dependent on the timing of the HVAC deferred maintenance project which is occurring in three phases; and upon completion of both Science Labs Building (2003) and the Physical Sciences Building (2005) to provide release space. Currently, the schedule calls for completion of the renovation work in 2007.

It appears that the short-term needs of Earth Sciences can be met, but addressing the long-term needs is more problematic due to the timing of the renovation work. For example, upon renovation, the subbasement can provide some relief space for limited uses such as support and storage. The most pressing problem is with the Department of Environmental Sciences. Because of the timing issues noted above, there is no identifiable space for this program to grow past 2000-01. One possible short-term solution would entail maintaining space in Bourns Hall until completion of the Physical Sciences Building when Pierce Hall becomes available.

6.3 MASTER SPACE LIST

SPACE CATEGORIES	ROOM CODE
Instructional Space	
• General Assignment Class Rooms	110
• Instructional Labs	260
• Services & Support Areas	265
• Instructional Computer Labs	270
Office & Office Support Space	
• Academic Office	310
• Other Office	320
• Office Service	335
• Conference	340
Research Lab & Lab Support Space	
• Basic & Applied Research Labs (wet or dry)	210
• Research Computer Labs	210
• Services & Support Areas	225
• Scholarly Activity	250
• Graduate Student Office	211

The following spaces are included as part of the gross square footage of the building and were considered when distributing the program within the framework of two floors, a basement and a subbasement:

- Circulation - Stairs, Elevators & Corridors
- Lobby
- Public Restrooms
- Communications Closets
- Electrical Closets
- Janitor Closets
- Loading Dock

6.4 SPACE STANDARDS

• Geology Building Basic Planning Module	400 ASF
• Modified Planning Unit (3 Module)	1,200 ASF
• Faculty Office	135 ASF
• Post Doctoral Fellows	60 ASF/PD
• Teaching Assistants	40 ASF/TA
• Graduate Student Research Assistant	50 ASF/GS

6.5 EXISTING SPACE BY PLANNING MODULE

Subbasement		5,501 ASF
Basement		
North Wing	21.0 Modules @ 400 ASF/each	8,400 ASF
North Wing	Miscellaneous	421 ASF
Center Wing	Miscellaneous	1,213 ASF
South Wing	Miscellaneous	2,594 ASF
Subtotal		***12,628 ASF***
1st Floor		
North Wing	20.0 Modules @ 400 ASF/each	8,000 ASF
North Wing	Miscellaneous	108 ASF
Center Wing	6.0 Modules @ 400 ASF each	2,400 ASF
South Wing	21.0 Modules @ 400 ASF each	8,400 ASF
South Wing	Miscellaneous	316 ASF
Loading Dock		1,205 ASF
Subtotal		***20,429 ASF***
2nd Floor		
North Wing	20.0 Modules @ 400 ASF each	8,000 ASF
North Wing	Miscellaneous	120 ASF
Center Wing	7.0 Modules @ 400 ASF each	2,800 ASF
South Wing	22.0 Modules @ 400 ASF each	8,800 ASF

South Wing	Miscellaneous	548 ASF
Subtotal		***20,268 ASF***
Building Total		***58,826 ASF***

****Note:** ASF total does not reflect reduction of 280 ASF for new connecting corridor to Science Labs Building. Miscellaneous space category represents all space outside the planning module.*

6 SPACE PROGRAM

6.6 EXISTING SPACE BY FLOOR

FLOOR LEVEL	NORTH WING	CENTER WING	SOUTH WING	SINGLE STORY WING	LOADING DOCK AREA	ASF	GSF
Subbase.	5,501					5,501	13,160
Basement	8,821	1,213	2,594			12,628	20,560
1st Floor	8,108	2,400	8,716	3,156	1,205	23,585	33,906
2nd Floor	8,120	2,800	9,348			20,268	35,470
Original Total	***30,550***	***6,413***	***20,658***	***3,156***	***1,205***	***61,982***	***103,096***
Demolition of Single Story Wing				(3,156)		(3,156)	(5,367)
Construction of 2nd Flr Connecting Corridor to Science Labs Building			(280)			(280)	
Revised Total						***58,546***	***97,729***

6.7 PROPOSED SPACE PROGRAM BY FLOOR

FLOOR LEVEL	NORTH WING	CENTER WING	SOUTH WING	DOCK AREA	ASF	GSF
Subbasement *(Support/Storage Shared)*	5,501				5,501	13,845
Basement *(Earth Sciences/IGPP)*	8,821	1,213	2,594		12,628	21,085
1st Floor *(Environmental Sciences/Earth Sciences/IGPP)*	8,108	2,400	8,716		19,224	28,019
Loading Dock Shared				1,205	1,205	1,205
2nd Floor *(Environmental Sciences)*	8,120	2,800	9,068		19,988	36,155
Proposed Total	***30,550***	***6,413***	***20,378***	***1,205***	***58,546***	***100,309***

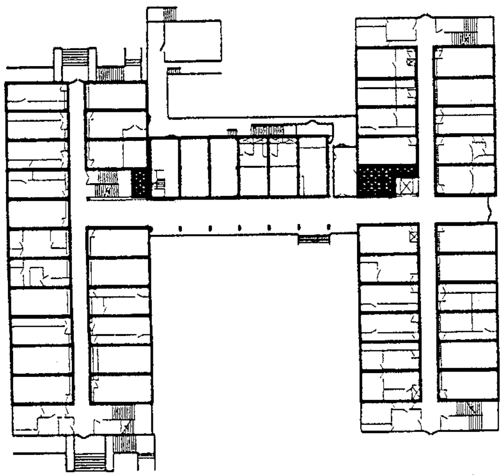
******Note:*** *the following adjustment has been made to exhibit 6.7, resulting in an increase in the building GSF; 2,580 GSF has been added for the new stair/elevator/shaft that is proposed for the east end of the North Wing.*

6.8 PROPOSED SPACE PROGRAM BY CATEGORY

	NO. of MODULE	ASF PER MODULE	ASF PER RM	NO. of RMS	TOTAL ASF
Environmental Sciences					
• *Research Labs*					
Primary Research Lab/Support *(8 Faculty)*	3.0	400	1,200	8	9,600
Economics/Mgmt./Policy *(incl. 7 Faculty Research & Office Space/10 GSR) (see RDC drawing)*	6.0	400	2,400	1	2,400
Subtotal					***12,000***
• *Research Lab Support*					
GIS Computer Lab	1.0	400	400	1	400
Incubators/Growth Chambers	2.0	400	800	1	800
Mineralogy Instrumentation Lab	1.0	400	400	1	400
Analytical Chemistry Instrument. Lab	2.0	400	800	1	800
Walk-in Cold Room	1.0	400	400	1	400
Soil Sediment Physical Character. Lab	2.0	400	800	1	800
Subtotal					***3,600***
• *Offices*					
Faculty (8)	2.70	400	135	8	1,080
Graduate Students (21)	2.60	400	50	21	1,050
Post Docs (19)	2.85	400	60	19	1,140
Teaching Assistants (1 Office for 4 TA)	0.40	400	40	1	160
Emeriti (1 Office for 2 Emeriti)	0.30	400	135	1	135
Subtotal					***3,565***
• *Departmental Office*	7.00	400	400	7	2,800
Subtotal					***2,800***
Total Environmental Sciences					***21,965***
Earth Sciences/IGPP					
• *Research Labs*					
Research Lab/Lab Support (17 Faculty)	2.0	400	800	17	13,600
Subtotal					***13,600***

6 SPACE PROGRAM

	NO. of MODULE	ASF PER MODULE	ASF PER RM	NO. of RMS	TOTAL ASF
• *Research Lab Support*					
Acid Room	0.5	400	200	1	200
UCR/USGS Digital Mapping Lab	1.0	400	400	1	400
Research Collections Support	1.0	400	400	1	400
Rock Mechanics Machine Shop	1.0	400	400	1	400
Optical Polishing Lab	1.0	400	400	1	400
Museum/Collections Support	1.0	400	400	1	400
Mass Spectrometry Lab	2.0	400	800	1	800
GIS Computer Research Lab	2.0	400	800	1	800
Geophysics Field Logistics Lab	1.0	400	400	1	400
Geology Field Logistics Room	1.0	400	400	1	400
Fossil Prep Room	2.0	400	800	1	800
Electronics Lab	1.0	400	400	1	400
Digital Imaging & Microscopy	2.0	400	800	1	800
Darkroom	0.5	400	200	1	200
Computer Modeling Lab	1.0	400	400	1	400
Subtotal					***7,200***
• *Other Support*					
Rock Prep & Storage (saws, grinding, crushing, sieving)	6.16	400	2,465	1	2,465
Subtotal					***2,465***
• *Offices*					
Faculty (17)	0.5	400	135	17	2,295
Graduate Students (28)	3.5	400	1,200	1	1,400
Post Docs (3)	0.3	400	120	1	180
Teaching Assistants (5)	0.4	400	160	1	200
Emeriti Office (1 Office for 2 Emeriti)	0.34	400	135	1	135
Subtotal					***4,210***
• *Departmental Offices*	6.0	400	400	6	2,400
Subtotal					***2,400***
Total Earth Sciences/IGPP					***29,875***
Building Support					
• *Loading Dock*	N.A.	N.A.	1,205	1	1,205
• *Subbasement*	N.A.	N.A.	5,501	1	5,501
Total Building Support					***6,706***
Building Total					***58,546***

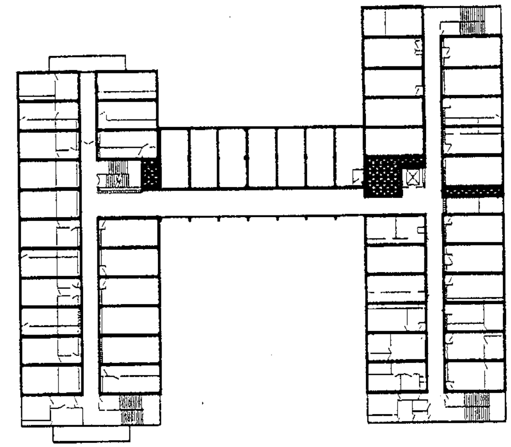


LEGEND:

47 MODULES @ 400 ASF

MISCELLANEOUS SPACE @ 424 ASF

FIRST FLOOR
EARTH SCIENCE / I.G.P.P. / ENVIRONMENTAL SCIENCE

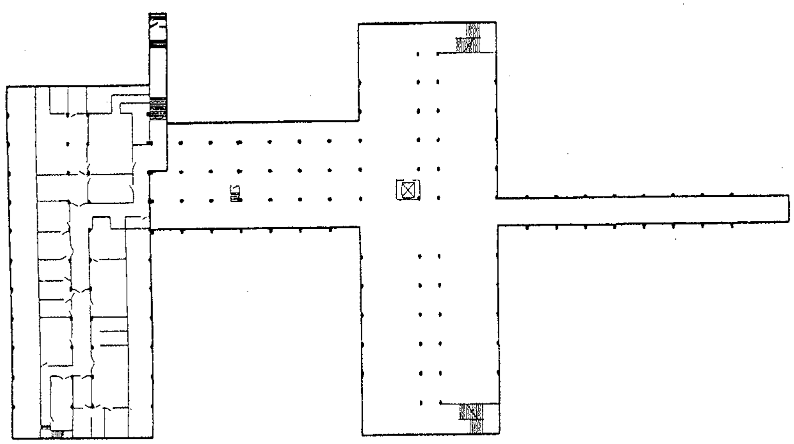


LEGEND:

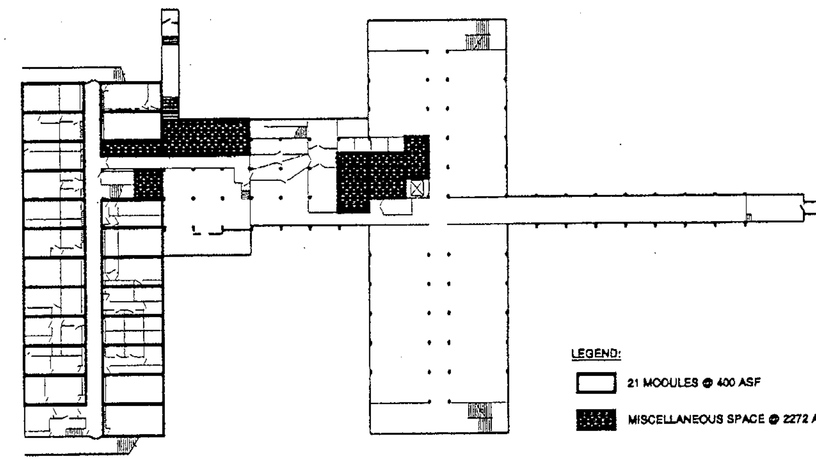
49 MODULES @ 400 ASF

MISCELLANEOUS SPACE @ 666 ASF

SECOND FLOOR
ENVIRONMENTAL SCIENCE



SUB-BASEMENT



LEGEND:

21 MODULES @ 400 ASF

MISCELLANEOUS SPACE @ 2272 ASF

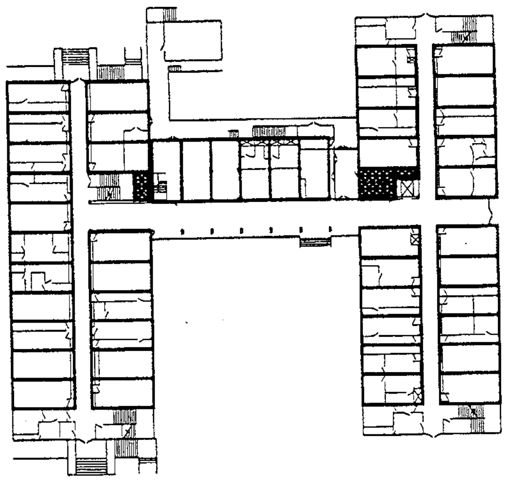
BASEMENT
EARTH SCIENCE / I.G.P.P.

EXISTING BUILDING PLANNING MODULE

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

JULY 18, 2001

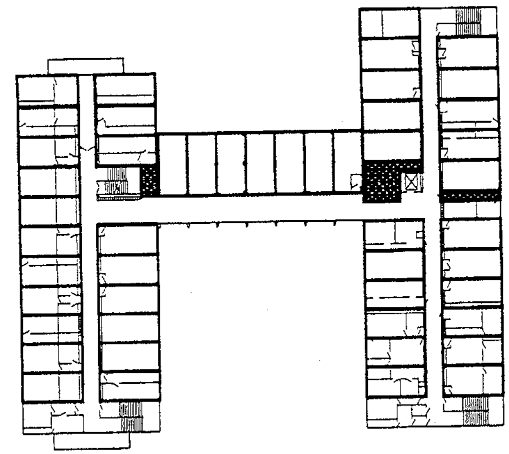


FIRST FLOOR
EARTH SCIENCE / I.G.P.P.

LEGEND:

47 MODULES @ 400 ASF

MISCELLANEOUS SPACE @ 424 ASF

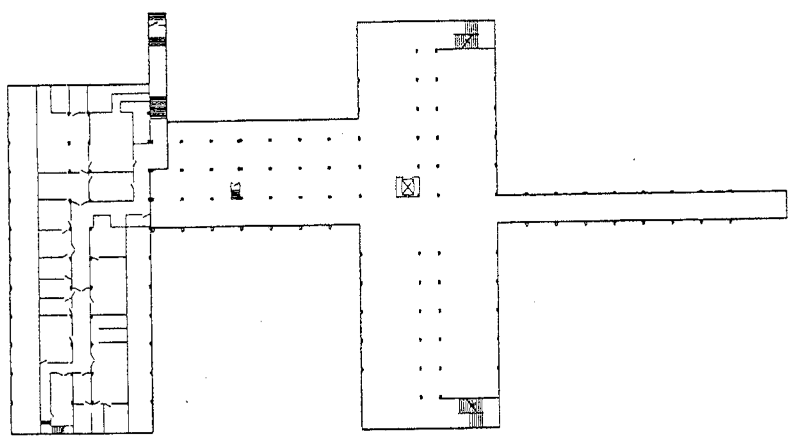


SECOND FLOOR
ENVIRONMENTAL SCIENCE

LEGEND:

50 MODULES @ 400 ASF

MISCELLANEOUS SPACE @ 668 ASF



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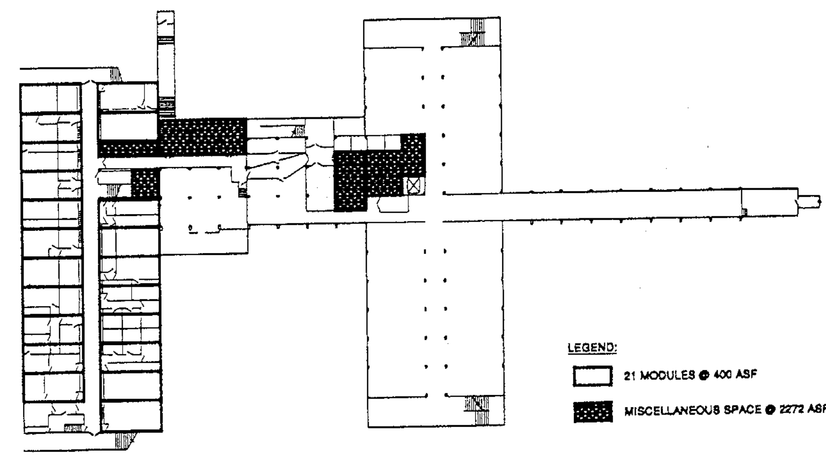

BASEMENT
EARTH SCIENCE / I.G.P.P.

LEGEND:

21 MODULES @ 400 ASF

MISCELLANEOUS SPACE @ 2272 ASF

EXISTING BUILDING PLANNING MODULE

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

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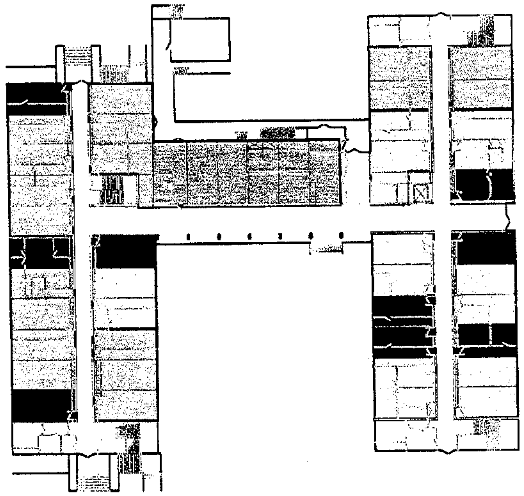
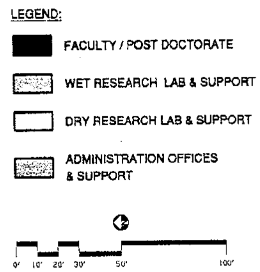
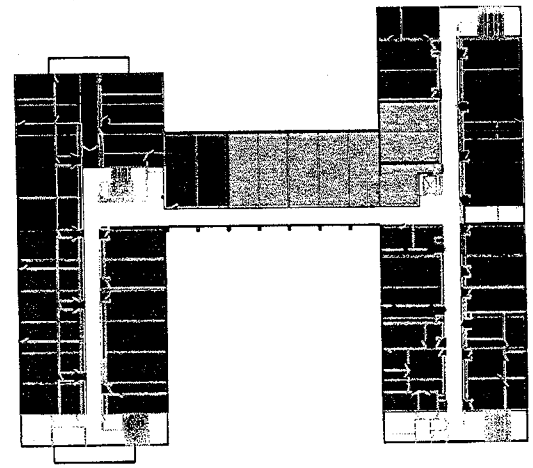
JULY 18, 2001

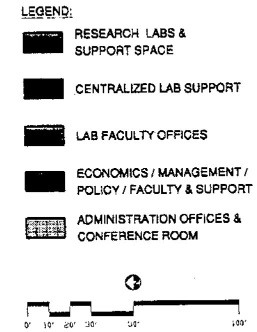


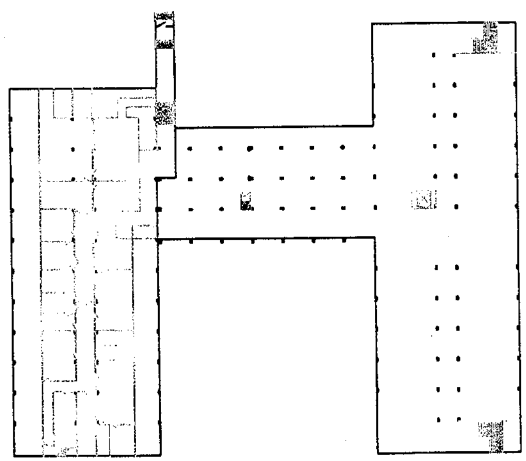
FIRST FLOOR
DEPARTMENT OFEARTH SCIENCES / I.G.P.P.



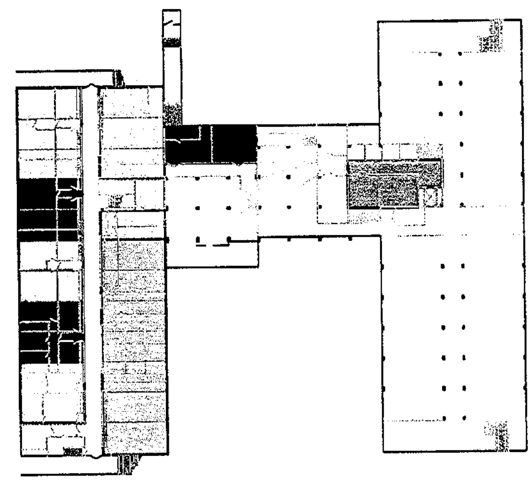


SECOND FLOOR
DEPARTMENT OF ENVIRONMENTAL SCIENCES

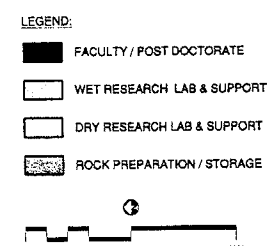




SUB-BASEMENT
TO BE DETERMINED



BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.



FUNCTIONAL PLANS

GEOLOGY BUILDING RENOVATION

UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
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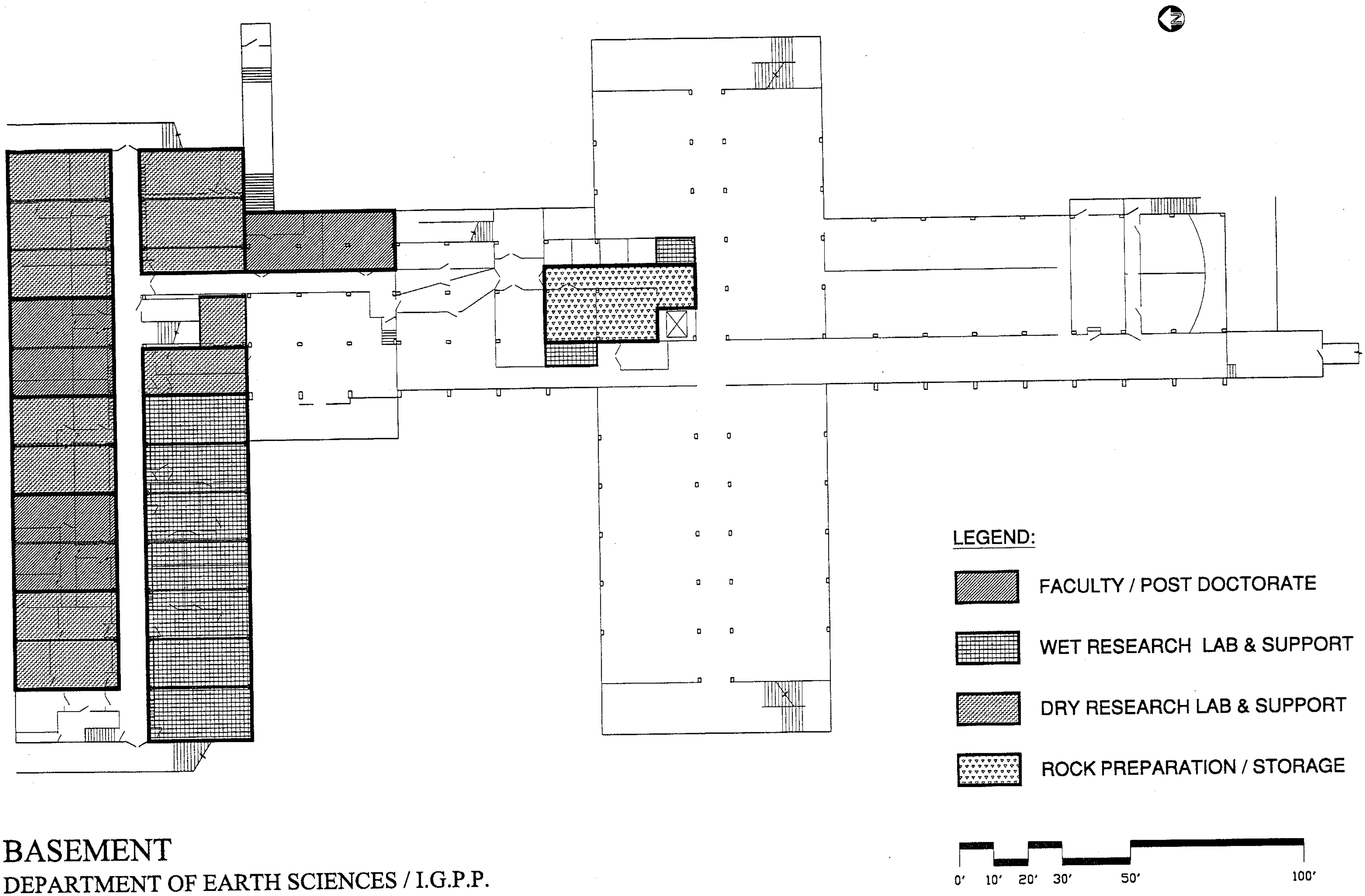
JUNE 19, 2001

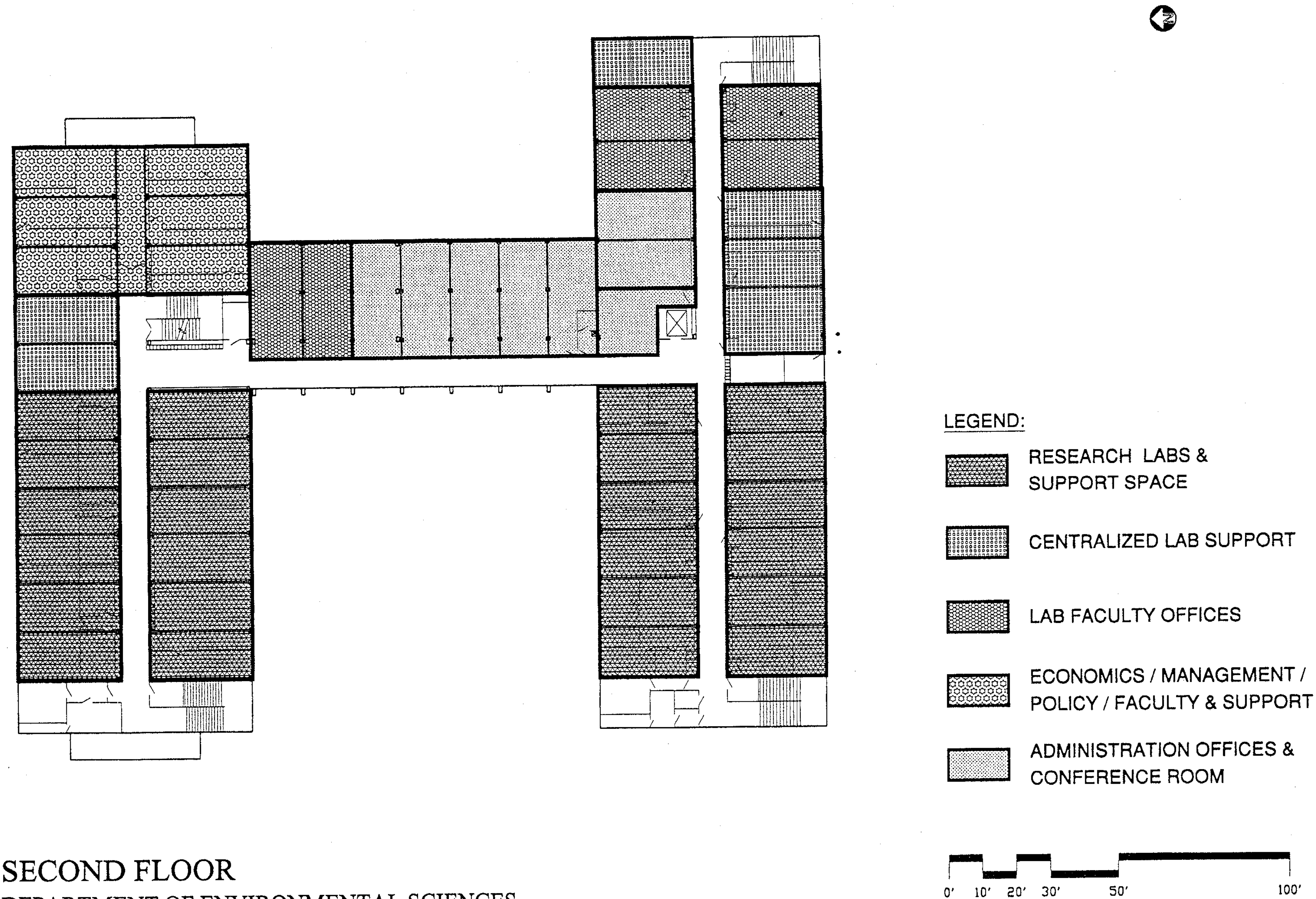


BASEMENT

DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

FIRST FLOOR

DEPARTMENT OFEARTH SCIENCES / I.G.P.P.



SECOND FLOOR
DEPARTMENT OF ENVIRONMENTAL SCIENCES

7 ROOM DESIGN CRITERIA

7.0 ROOM DESIGN CRITERIA

The following pages contain generic room design criteria sheets for the primary research labs for the Earth Sciences and Environmental Sciences departments. It should be stressed that this program is based on a generic module for the Primary Research Laboratories and Laboratory Support Spaces. This module is to be adapted by the inclusion of interior elements to respond to the various requirements of individual laboratory needs during the design phase.

The space assigned to individual functions is a permutation or combination of the existing Geology Building module, that is, increments of the basic module of 400 ASF. See Section 5.0 for a discussion of the module. The basic planning module is 14'-0" wide and 28'-6" deep.

Legend

ICW	Industrial cold water
IHW	Industrial hot water
DI	Deionized water
LA	Laboratory air
LG	Laboratory gas
LV	Laboratory vacuum
UPS	Uninterrupted power system

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

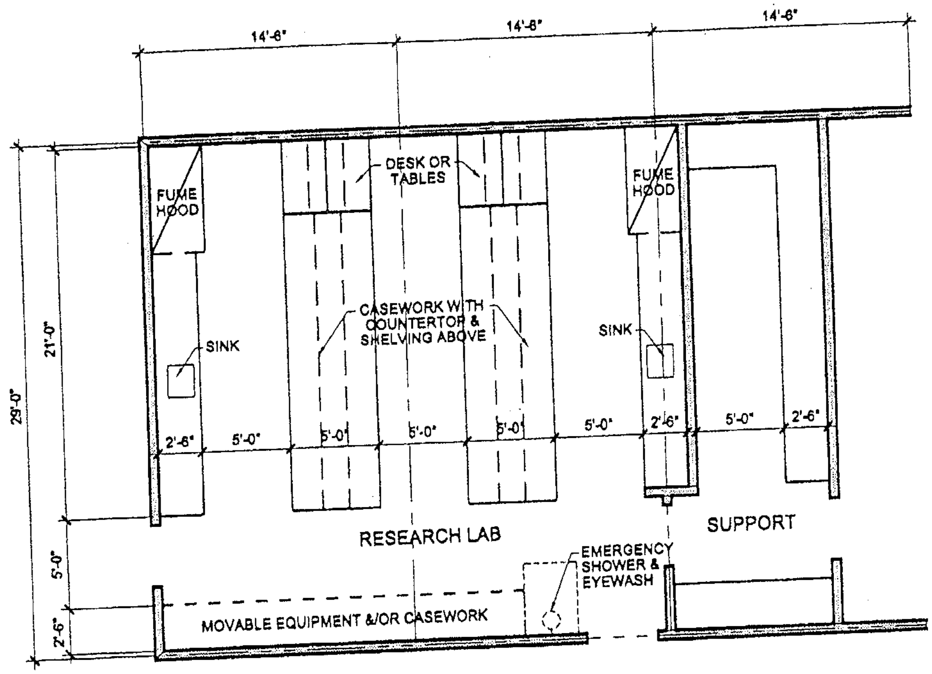
ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Environmental Sciences Primary Research Lab**
ASF	1,200 ASF (3 Modules)
CURRENT USE	NA
PLANNED USE	Chemical, physical, and biological experiments involving soils and water.
OCCUPANTS	4 - 6
SECURITY	Keyed lockable door(s). Dept to provide key-pad security system. Box and conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	New & Existing gypsum board
FLOOR	Sheet vinyl with top set base
CEILING	Exposed
CEILING HEIGHT	12'-0"
DOORS/WINDOWS	1 Corridor door 4'-0" /doors to support labs 3'-6"
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed in utility chase between benches.
PLUMBING	Epoxy sinks (2) located on walls, (1) @ 31"Wx12"D & (1) @ 42"Wx12"D. ICW/IHW/DI/LA/LG/LV (2) clusters on each side of the bench.
POWER	• 208 V Single phase at each hood and in open walls. • Dual channel Raceway with single duplex outlets at 2'-0" O.C. • Emergency power: for every 3 modules allow 2 emergency power circuits (1 in Lab/ 1 in support lab). • UPS to be provided by users.
LIGHTING	• Types of fixtures, TBD. • Lighting Level - 65 footcandles general; 100 footcandles task • Daylight Sensor • Task lighting as needed.

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

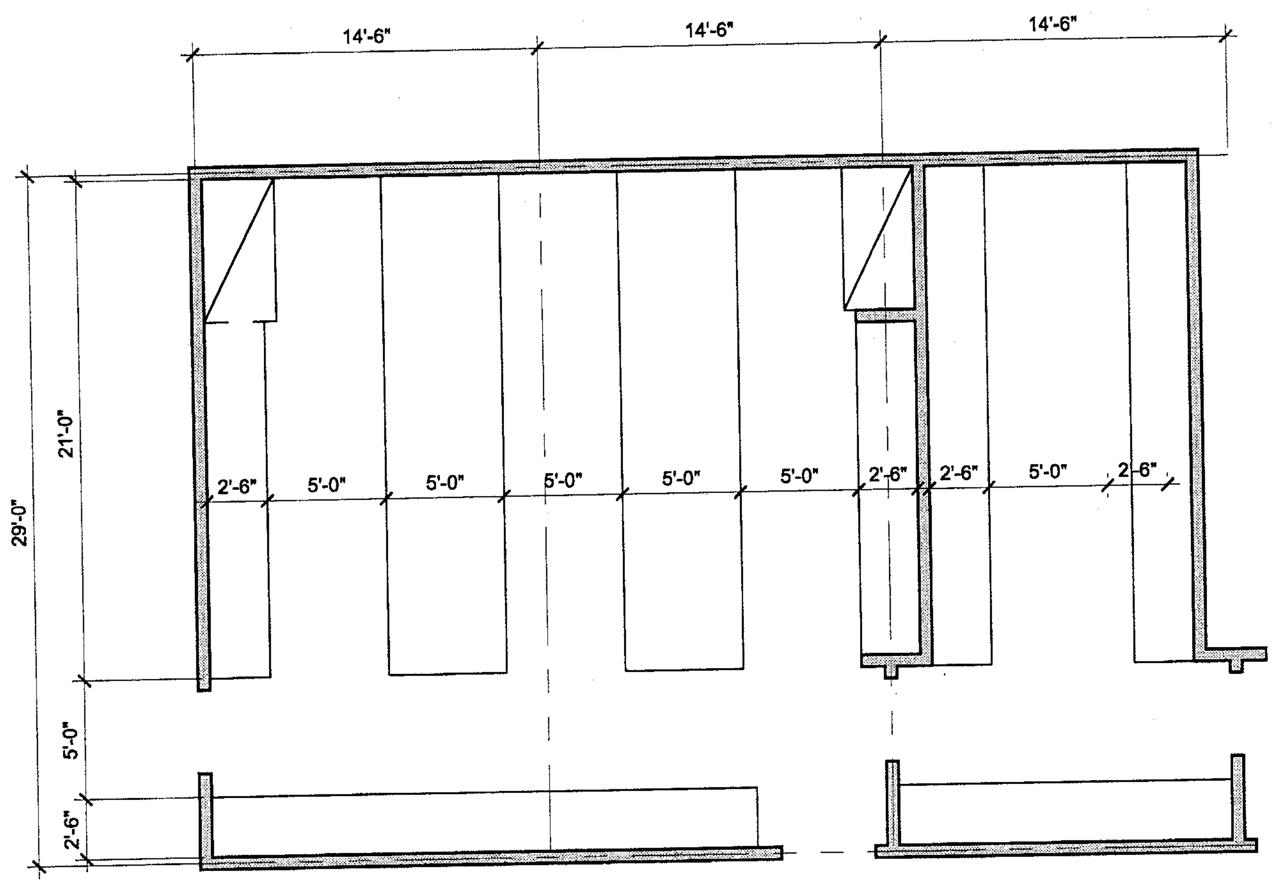
COMMUNICATIONS	• Telephone (voice) lines - 2/lab data lines - 8/lab (1/bench) provide dual channel raceway.
CASEWORK	• 30" wide (front to back) • open shelving above bench • Exposed utilities • (2) sinks on walls, (1) @31"Wx12"D & (1) @ 42"Wx12"D. • 36" high benches
GROUP 1 EQUIPMENT	2 6'-0" fume hoods with vented storage cabinets below (1 for flammables and 1 for corrosives) eye wash/ safety shower at main entry door.
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	• (1) snorkel as add alternate in main lab. • One snorkel per support lab.



ENVIRONMENTAL SCIENCES PRIMARY RESEARCH LAB

SCALE : 3/16" = 1'- 0"

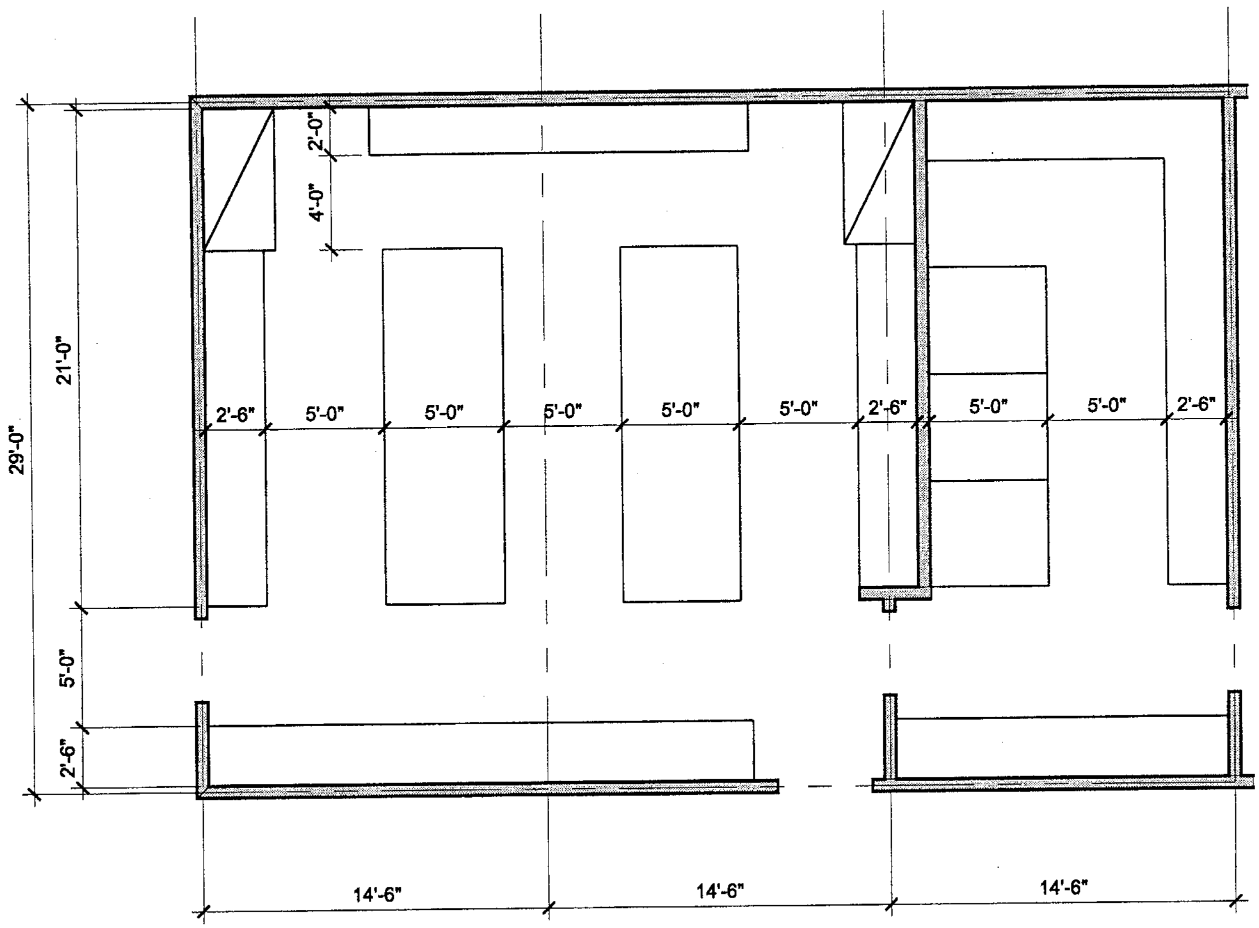
APRIL 30, 2001



ENVIRONMENTAL SCIENCES PRIMARY RESEARCH LAB

SCALE : 1/8" = 1'- 0"

JUNE 25, 2001



MODIFIED PLANNING UNIT

ENVIRONMENTAL SCIENCES PRIMARY RESEARCH LAB

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

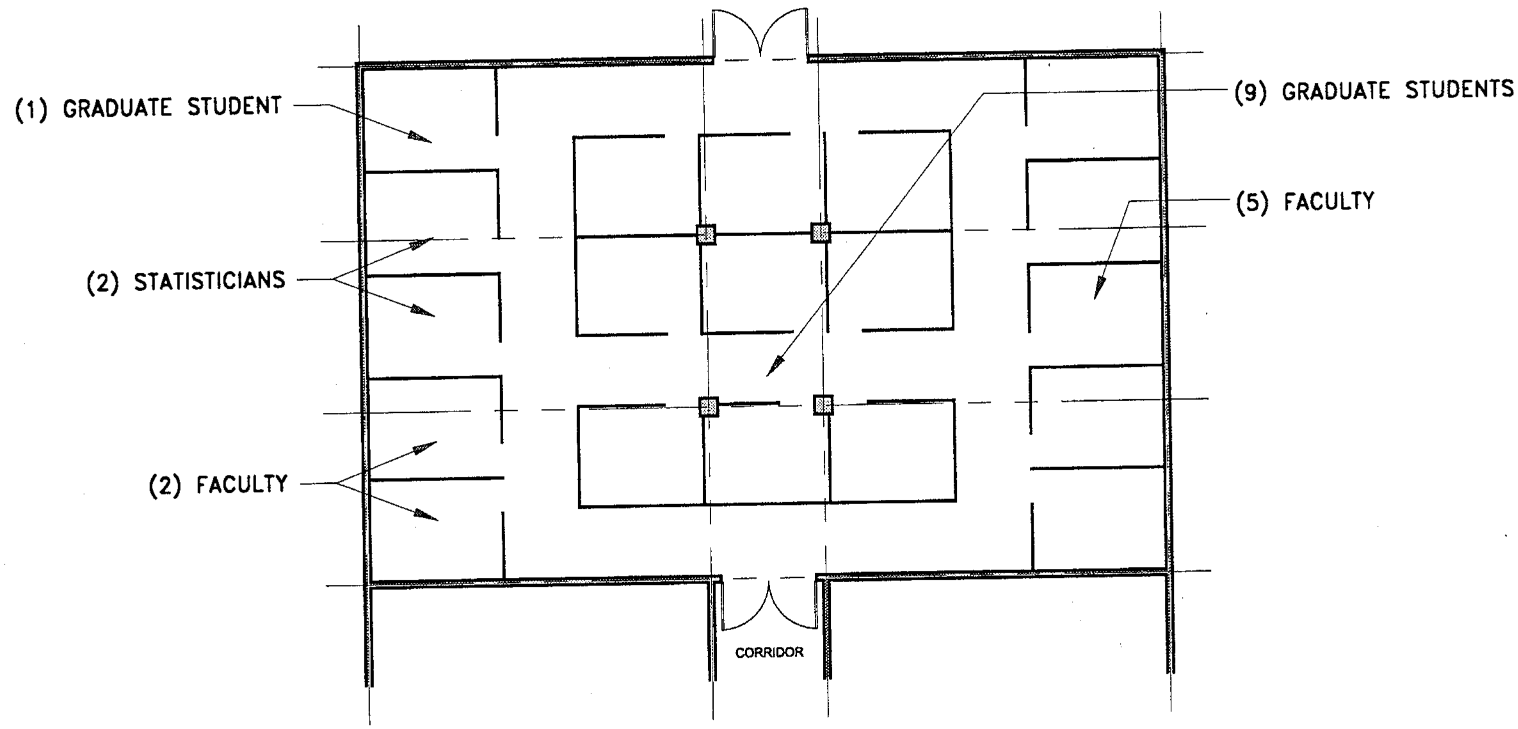
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Environmental Sciences Economics/Management/Policy Faculty**
ASF	2,400 ASF (6) Modules
CURRENT USE	NA
PLANNED USE	Computer modeling & simulations of public policy as it relates to the management of natural resources.
OCCUPANTS	7 faculty/ 2 statisticians/ 10.5 graduate students
SECURITY	Keyed lockable doors. Dept. to provide key pad security system. Box and conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	new & existing gypsum board
FLOOR	carpeting - low static
CEILING	exposed
CEILING HEIGHT	12'-0"
DOORS/WINDOWS	corridor door 4'-0" office doors 3'-0"
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	none
PLUMBING	none
POWER	4 emergency power circuits
LIGHTING	indirect lighting 65 foot candles general types of fixtures TBD

ROOM DESIGN CRITERIA

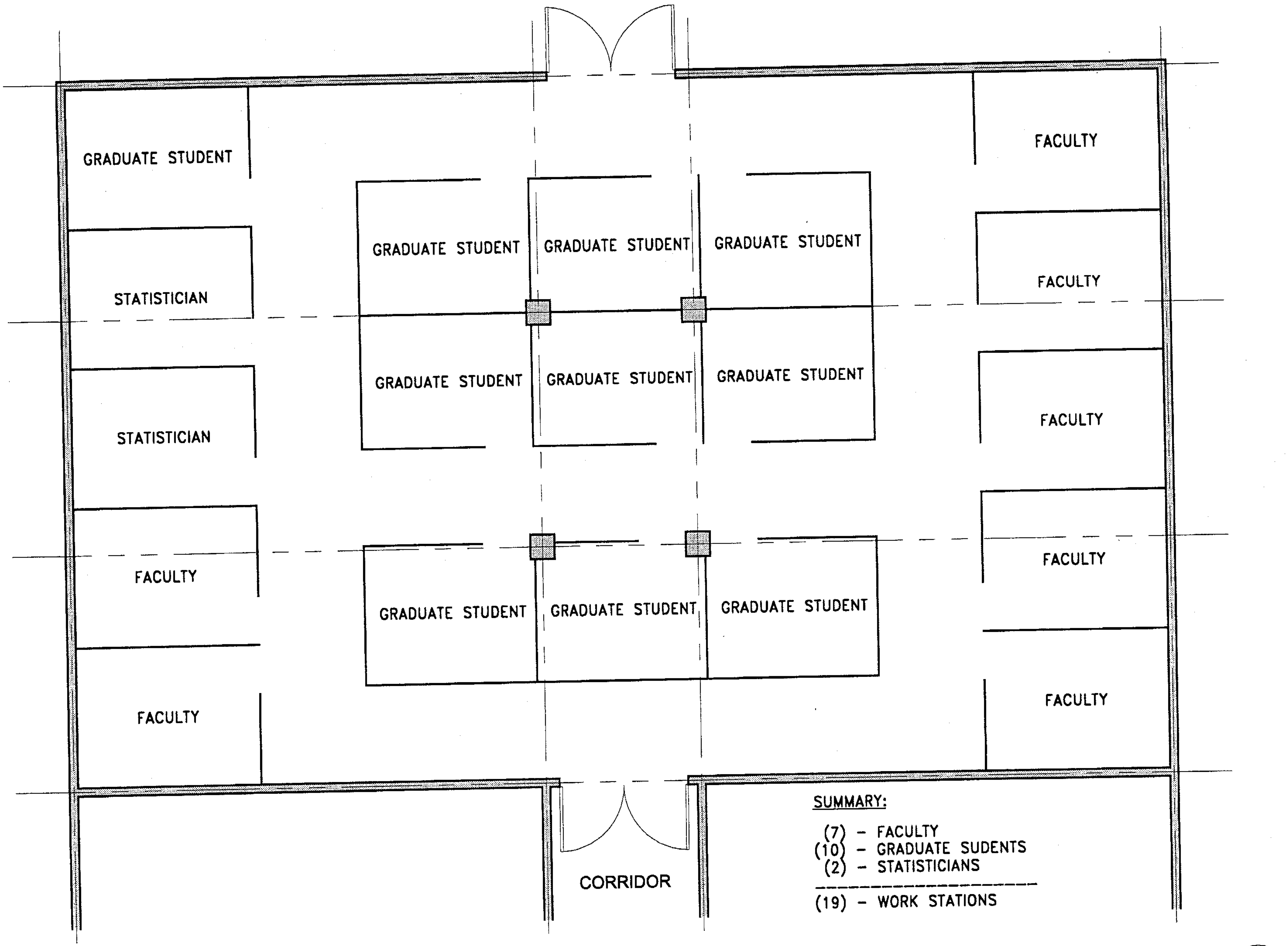
COMMUNICATIONS	1 voice/2 data lines/faculty (7/14) 20 data lines for graduate students 4 misc. data lines + (2) extra voice lines
CASEWORK	none
GROUP 1 EQUIPMENT	none
GROUP 2 EQUIPMENT	• (1) computer/faculty member-7 • (1) computer/(2) graduate students - 5
FURNISHINGS	open landscape furniture
SPECIAL NEEDS	small conference area



ENVIRONMENTAL SCIENCE ECONOMICS, MANAGEMENT, POLICY FACULTY

SCALE : 1/16" = 1'- 0"

JUNE 19, 2001



ENVIRONMENTAL SCIENCE ECONOMICS, MANAGEMENT, POLICY FACULTY

JUNE 19, 2001

SCALE : 1/8" = 1'- 0"

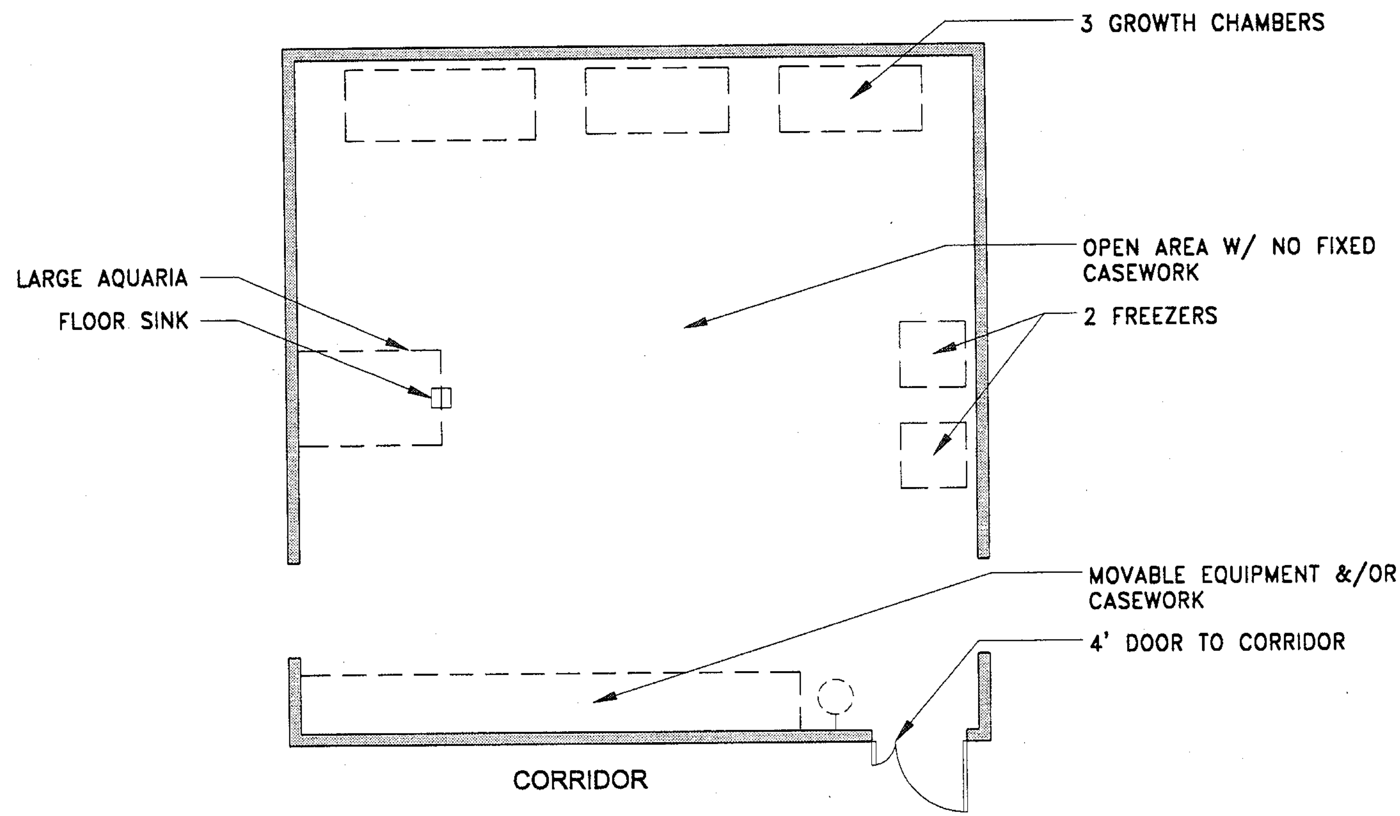
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Environmental Sciences Incubators and Growth Chambers**
ASF	800 ASF (2 modules)/(1) in Geology & (1) in Pierce
CURRENT USE	NA
PLANNED USE	Central Support Labs
OCCUPANTS	1-2
SECURITY	Keyed Lockable Door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	new and existing gypsum board
FLOOR	sheet vinyl with base integral cove base
CEILING	exposed
CEILING HEIGHT	12'-0"
DOORS/WINDOWS	3'-6" door(s) 4'-0" corridor door
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating) 50°F-90°F variable temperature in growth chambers; high heat generation from equipment
PIPING	exposed
PLUMBING	floor sink(s)
POWER	• 208 V/single phase/60 amp, (4) @ 30 amps each, (5) 110V circuits @ 20 amps. • Equipment requires significant power.
LIGHTING	same as Primary Lab

ROOM DESIGN CRITERIA

COMMUNICATIONS	(1) telephone/(1) data line
CASEWORK	none
GROUP 1 EQUIPMENT	• (3) growth chambers/incubators/large aquaria • (2) freezers
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	equipment generates heat



ENVIRONMENTAL SCIENCES INCUBATORS & GROWTH CHAMBERS

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

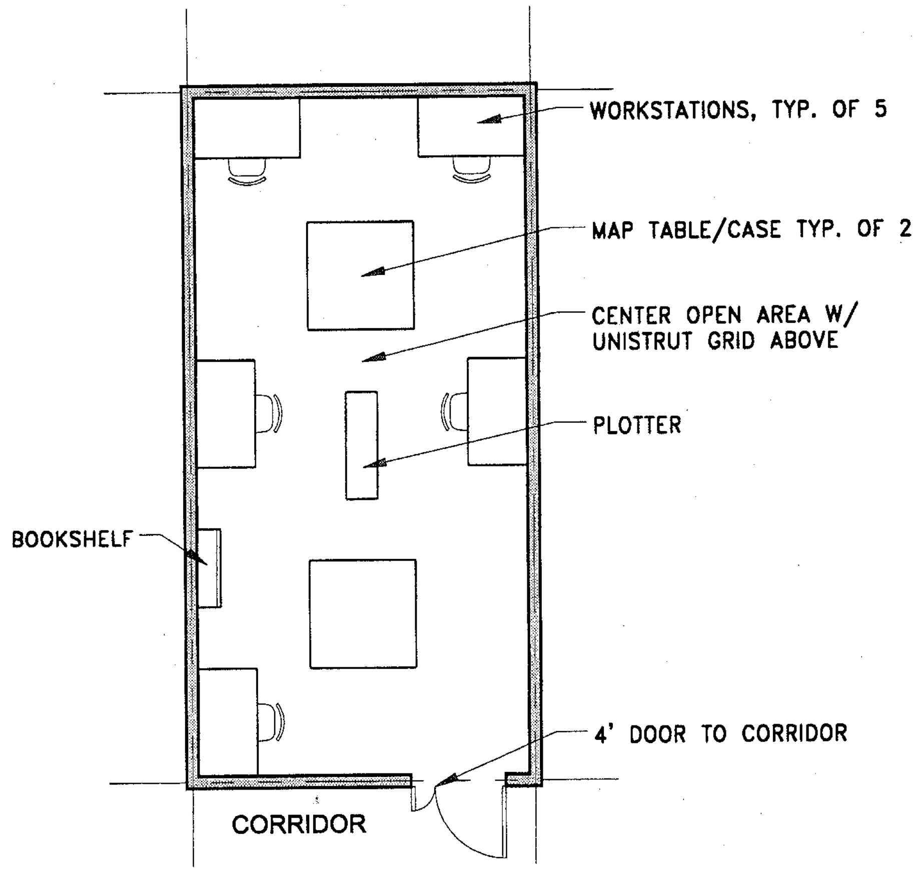
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	Environmental Sciences GIS Computer Labs
ASF	400 ASF (1 Modules), 1 in Geology and 1 in Pierce
CURRENT USE	NA
PLANNED USE	Central Support Labs
OCCUPANTS	
SECURITY	Keyed Lockable Door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	new and existing gypsum board
FLOOR	carpet - low static
CEILING	exposed
CEILING HEIGHT	12'-0"
DOORS/WINDOWS	3'-6" doors 4'-0" corridor door
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	none
PLUMBING	none
POWER	all circuits surge protected emergency power circuits TBD
LIGHTING	indirect lighting/65 foot candles general fixtures TBD

ROOM DESIGN CRITERIA

COMMUNICATIONS	18 data lines per 400 ASF module. 2 voice lines
CASEWORK	none
GROUP 1 EQUIPMENT	none
GROUP 2 EQUIPMENT	computers & plotters
FURNISHINGS	TBD
SPECIAL NEEDS	Grid in ceiling to deliver power & data lines.



ENVIRONMENTAL SCIENCES GIS COMPUTER LABS

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

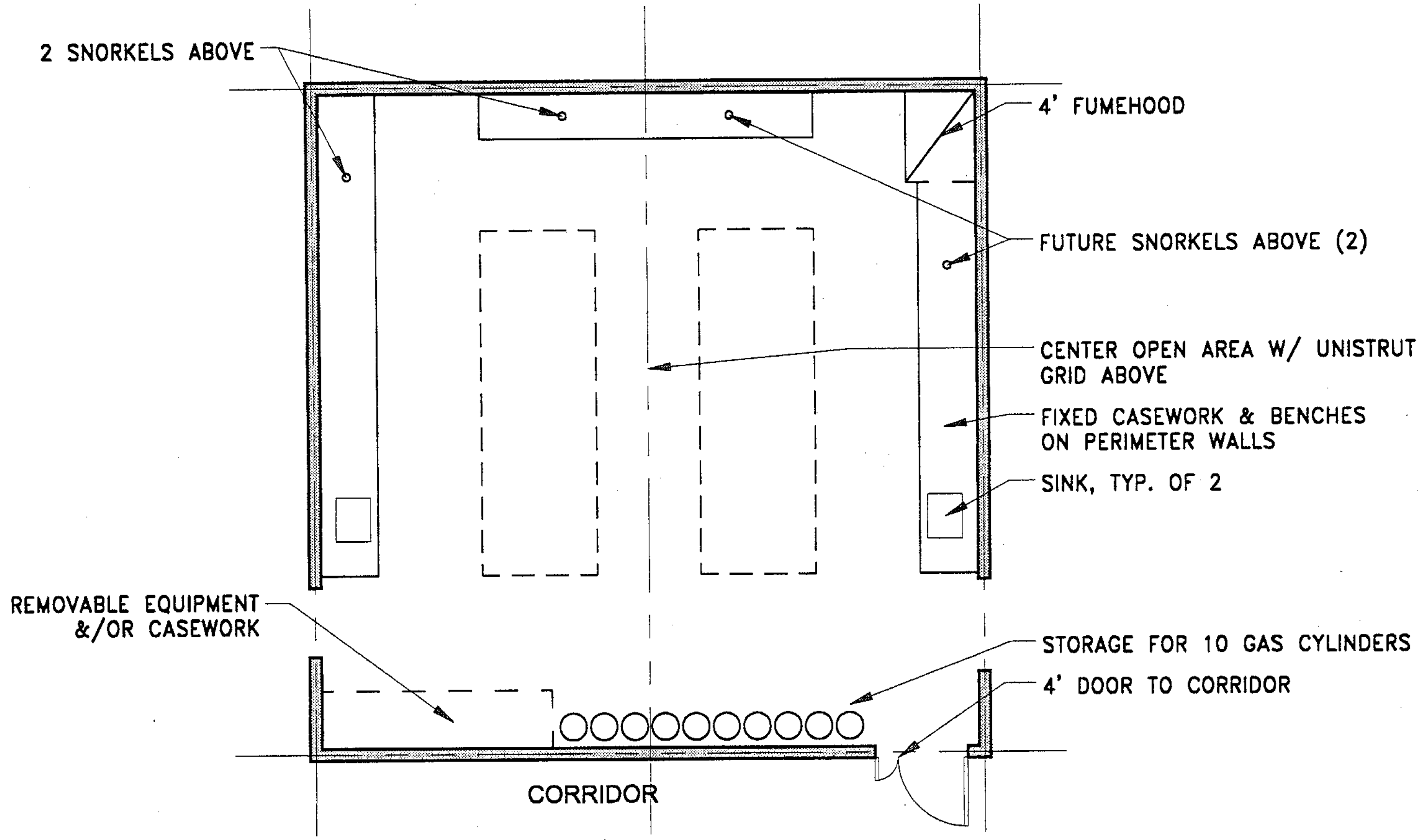
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Environmental Sciences Analytical Chemistry Instrumentation Lab**
ASF	800 ASF (2 modules)
CURRENT USE	NA
PLANNED USE	Central Support Lab - Carbon Analysis & Chromatography
OCCUPANTS	2
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	new & existing gypsum board
FLOOR	sheet vinyl with top set base
CEILING	drop ceiling if possible
CEILING HEIGHT	12'-0"
DOORS/WINDOWS	3'-6" door(s) 4'-0" corridor door
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating), Fume hood to operate with full vertical sash opening (100 FPM); each snorkel sized for 100CFM; minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV (2) sinks, epoxy 24" or 31"
POWER	At least (2) outlets - 208 V/single phase/60 amp. At least (6) 20A 110V circuits. (2) 110V emergency power circuits.
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	• (1) data line/bench plus (4) data, (2) voice in unistrut grid. • (2) voice lines, (1) per bench
CASEWORK	• Fixed casework on perimeter walls with 2 small sinks. (See plumbing) • 36" high benches • Center area open with unistrut grid above.
GROUP 1 EQUIPMENT	• (1) 4'-0" fume hood • (2) snorkels, provide for (4) more in the future.
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	cylinder storage for (10) gas cylinders



ENVIRONMENTAL SCIENCES ANALYTIC CHEMISTRY INSTRUMENTATION LAB

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

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GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

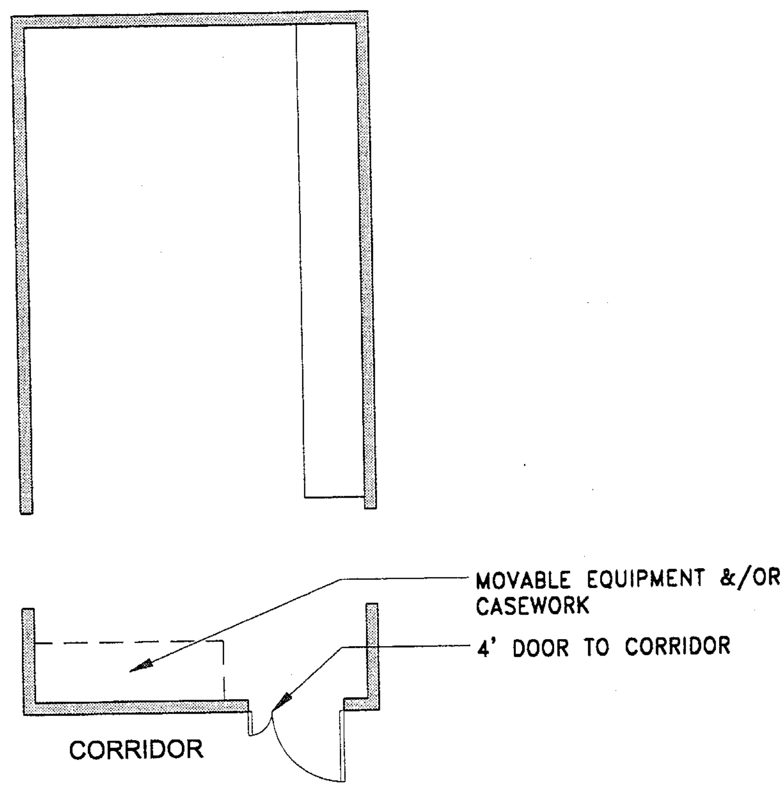
ROOM NAME/NUMBER	**Environmental Sciences Minerology Instrumentation Laboratory**
ASF	400 ASF (1 module)
CURRENT USE	NA
PLANNED USE	Central Support Lab
OCCUPANTS	2
SECURITY	Keyed lockable door(s). Department to provide keypad security system. Box and conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	new & existing gypsum board
FLOOR	sheet vinyl with top set base
CEILING	exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	3'-6" doors 4'-0" corridor door
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); equipment generates high internal heat.
PIPING	exposed
PLUMBING	TBD
POWER	• 208 V single phase/60 amp • 208V SP 30 amp chiller
LIGHTING	same as Primary Lab

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION

JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	• 1 telephone Line • 2 data line/bench
CASEWORK	Minimum fixed benches
GROUP 1 EQUIPMENT	none
GROUP 2 EQUIPMENT	none
FURNISHINGS	TBD
SPECIAL NEEDS	Vibration sensitive. Do not locate near elevator or stairway. XRD generates 5300 BTU's per hour.



ENVIRONMENTAL SCIENCES MINEROLOGY INSTRUMENTATION

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Environmental Sciences Walk-in Cold Room**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Central Support Lab
OCCUPANTS	1-2
SECURITY	Keyed Lockable Door(s). Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	TBD
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	3'-6" door(s) 4'-0" Corridor door
WINDOW COVERINGS	Mecho shades
MECHANICAL	4°C room requires 50 CFM supply air from central system and 50 CFM exhaust
PIPING	TBD
PLUMBING	TBD
POWER	208 V/Single phase/60 Amp Emergency Power TBD
LIGHTING	TBD

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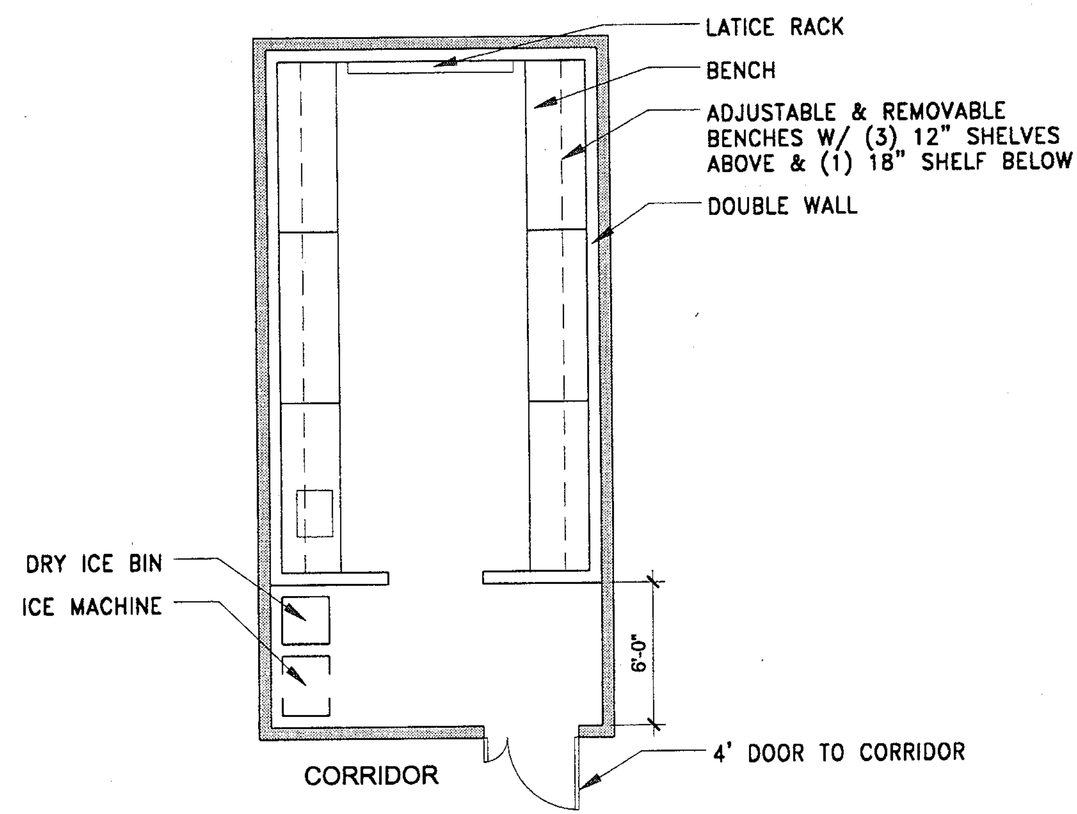
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	TBD
CASEWORK	Bench in the Cold Room
GROUP 1 EQUIPMENT	Front Refrigerator/Rear Freezer
GROUP 2 EQUIPMENT	
FURNISHINGS	
SPECIAL NEEDS	



ENVIRONMENTAL SCIENCES WALK-IN COLD ROOM

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

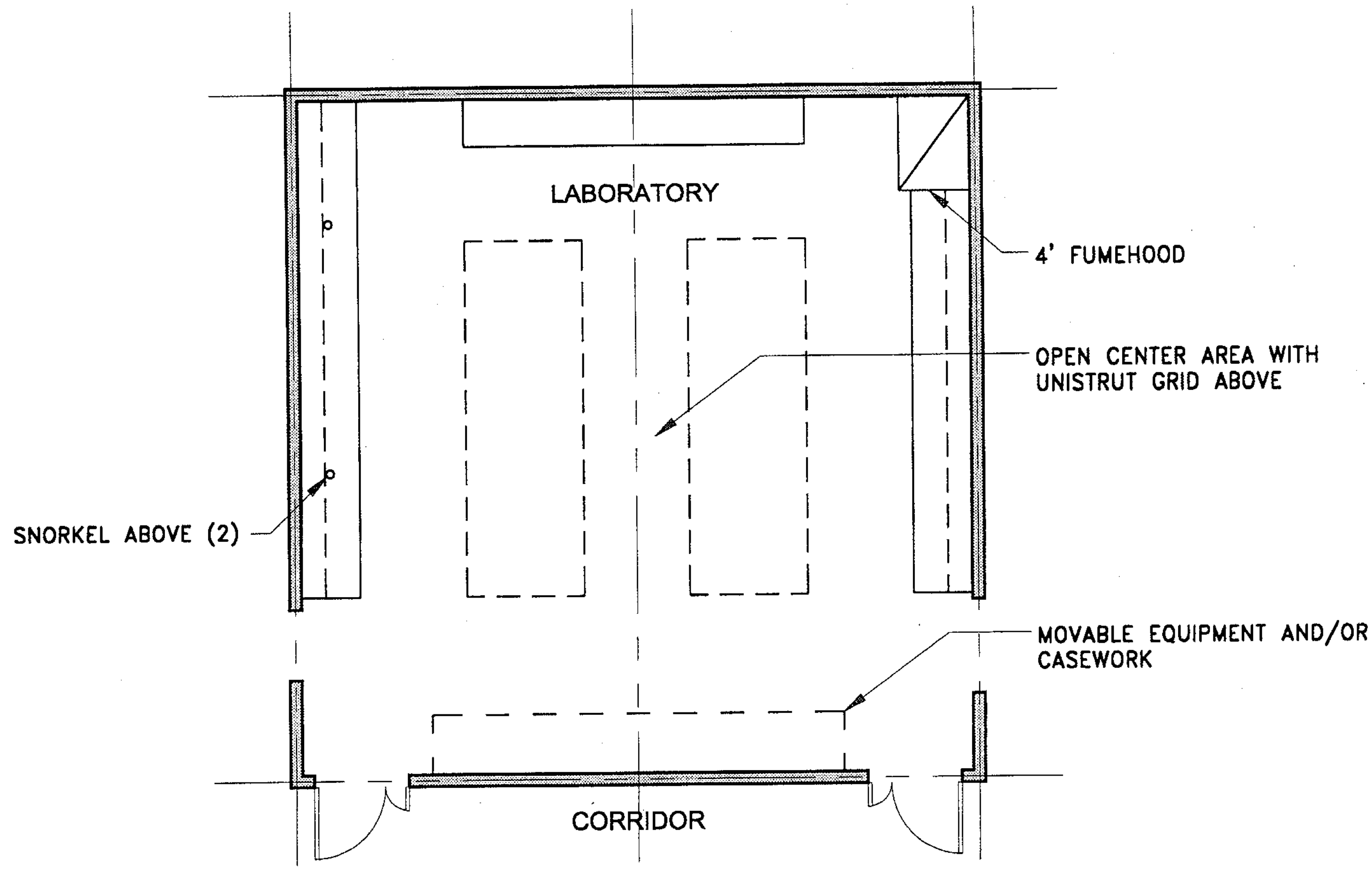
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Environmental Sciences Soil/Sediment Physical Characterization Lab**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Central Support Lab
OCCUPANTS	3-4
SECURITY	Keyed Lockable Door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	3'-6" door(s) 4'-0" Corridor door
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); each snorkel sized for 100 CFM; minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV
POWER	208 V/Single phase/60 Amp
LIGHTING	65 Foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	1 Data Line/bench 2 Voice Lines
CASEWORK	• Fixed casework on perimeter walls with 2 small sinks • 36" High benches • Center Area open with unistrut grid move
GROUP 1 EQUIPMENT	1 4'-0" Fume hood 2 Snorkels
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



SOIL / SEDIMENTATION PHYSICAL CHARACTERIZATION LAB

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Primary Wet Research Lab - Large**
ASF	1200 ASF (3 Modules)
CURRENT USE	NA
PLANNED USE	Chemical, physical and biological experiments involving groundwaters, rocks, sediments and fossils
OCCUPANTS	3
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	8' double door to corridor 8' secure double door to dock/courtyard 4' corridor door 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM). VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV 2 floor drains Emergency eyewash station see 3 sinks under "casework" below
POWER	120 and 240 V, 60 amp, including outlets in center
LIGHTING	65 foot candles general; 100 footcandles task
COMMUNICATIONS	2 data lines, 2 voice lines

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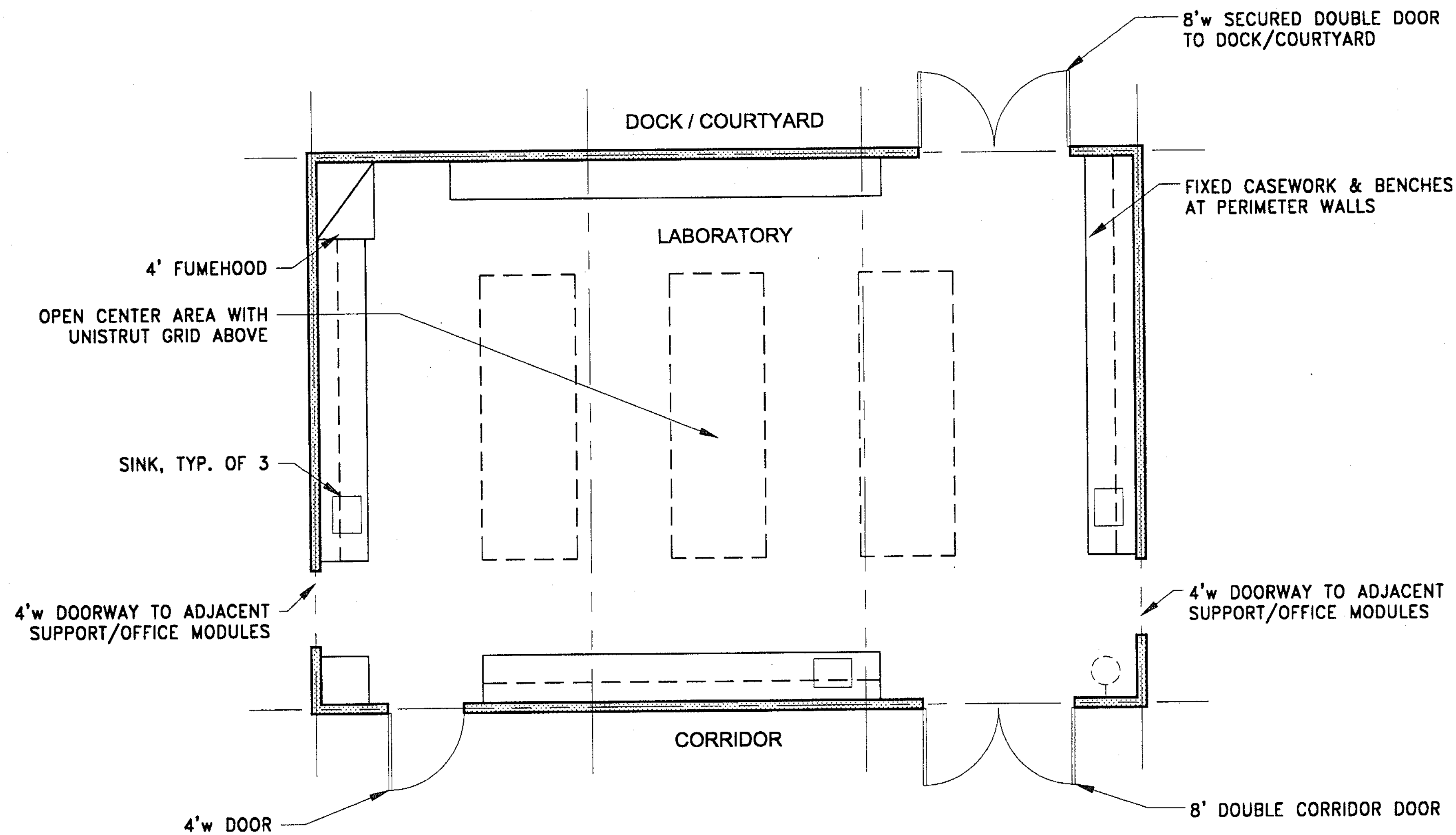
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

CASEWORK	• Fixed waterproof casework on perimeter walls with 3 small sinks • 36" high waterproof benches along walls • Center Area open with unistrut grid above
GROUP 1 EQUIPMENT	1 4'-0" Fume hood
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Minimal floor vibration for optical and instrumental stability. Heavy floor load support for mass spectrometers and high-pressure rock anvils.



EARTH SCIENCE PRIMARY WET RESEARCH LAB - LARGE (3 MODULES)

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

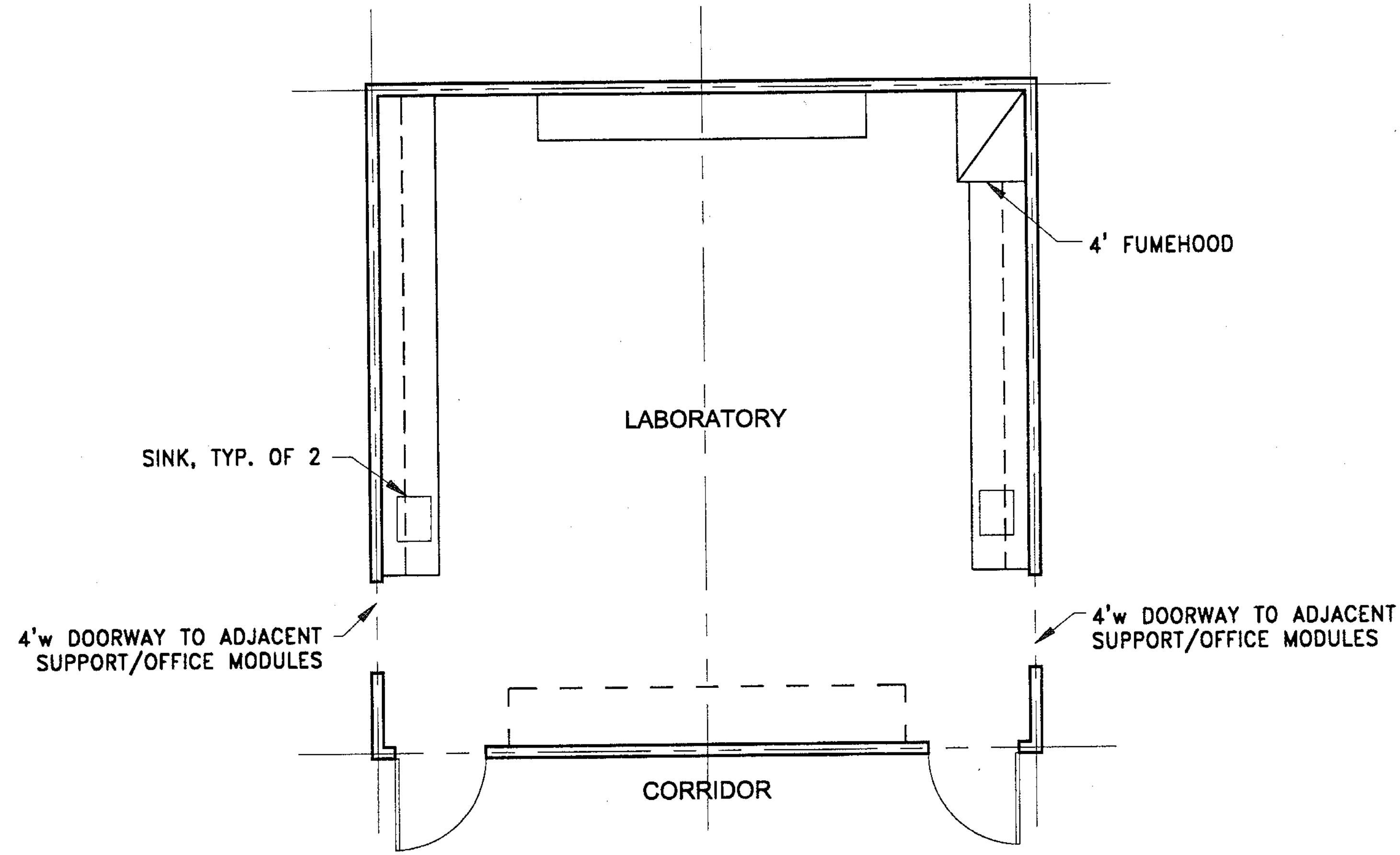
ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Primary Wet Research Lab - Small**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Chemical, physical and biological experiments involving groundwaters, rocks, sediments and fossils
OCCUPANTS	2
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	two 4' corridor doors 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling) 68°F (heating); Fume hoods to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV 2 floor drains Emergency eyewash station see 2 sinks under "casework" below
POWER	120 and 240 V, 60 amp, including outlets in center
LIGHTING	65 foot candles general; 100 foot candles task

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	2 data lines, 2 voice lines
CASEWORK	• Fixed waterproof casework on perimeter walls with 2 small sinks • 36" high waterproof benches in center, along walls
GROUP 1 EQUIPMENT	2 4'-0" Fume hoods
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Minimal floor vibration for optical and instrumental stability. Heavy floor load support for mass spectrometers and high-pressure rock anvils.



EARTH SCIENCES PRIMARY WET RESEARCH LAB - SMALL (2 MODULES)

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

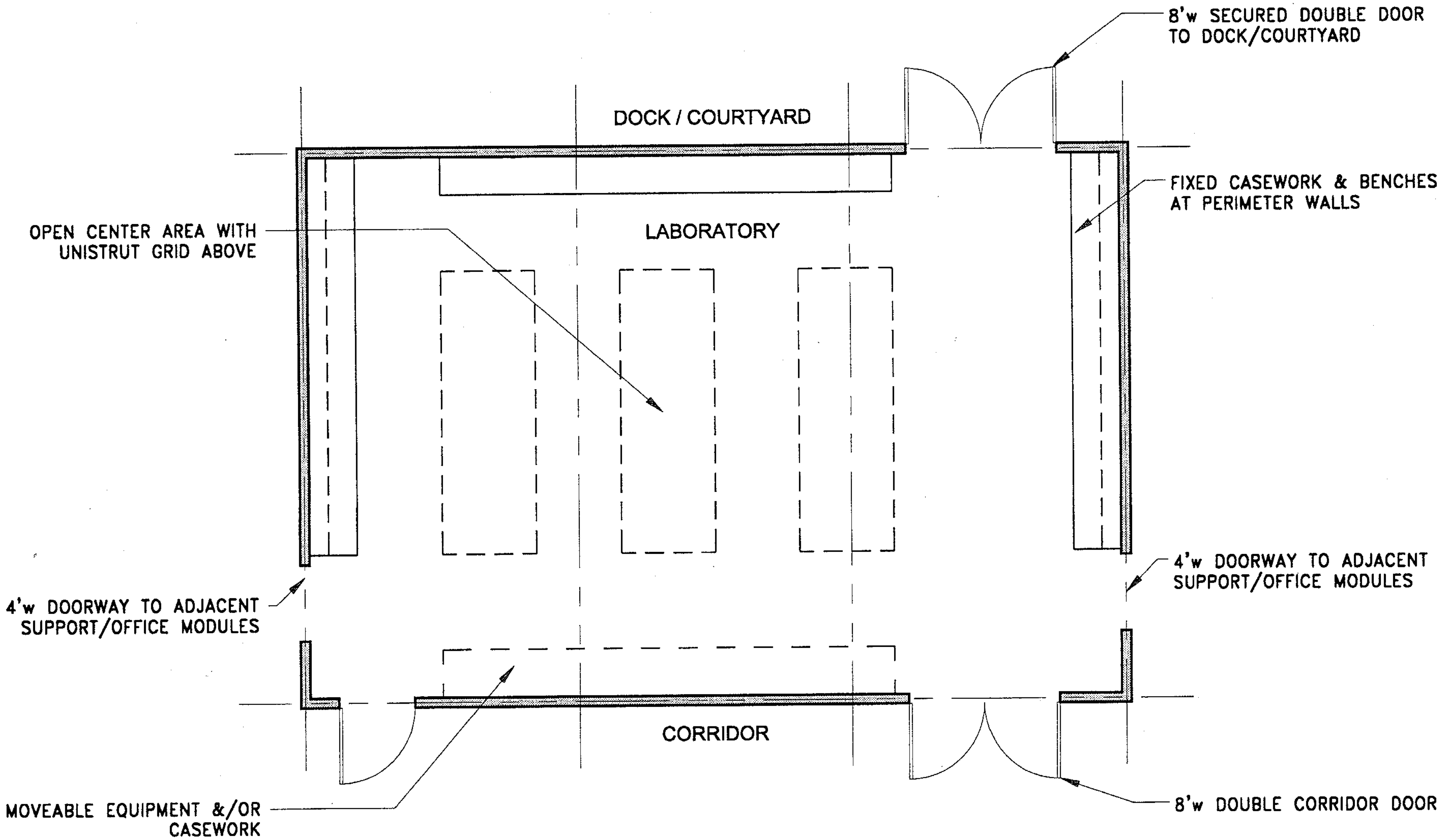
ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Primary Dry Research Lab - Large**
ASF	1200 ASF (3 Modules)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
OCCUPANTS	4
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	4' corridor door 8' double corridor door 8' secure double door to dock/courtyard 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling) 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	TBD
POWER	120 and 240 V, 60 amp, including outlets in center, flush with vinyl floor surface; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCE PRIMARY DRY RESEARCH LAB - LARGE

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

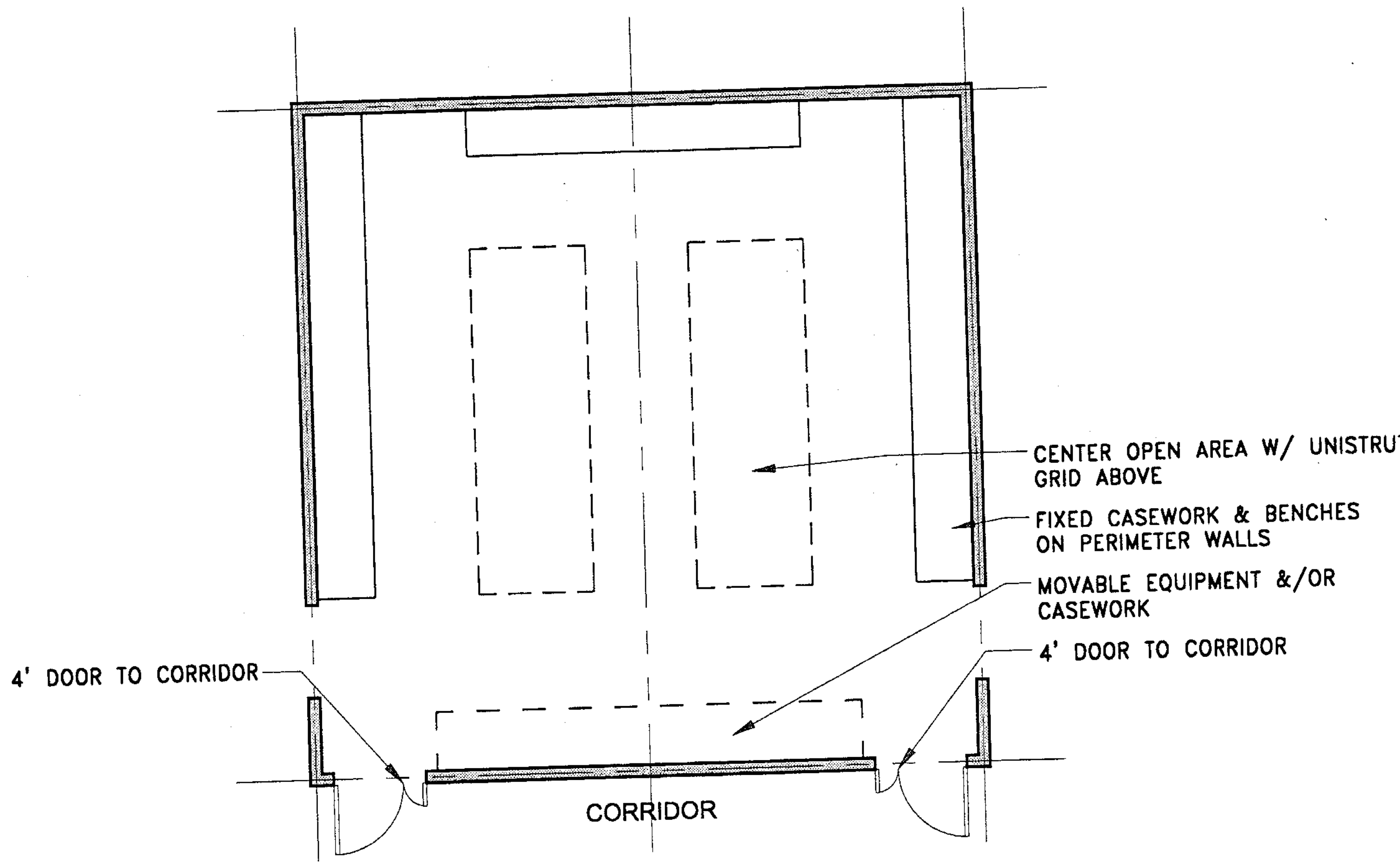
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Primary Dry Research Lab - Small**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	(2) 4' corridor doors 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling) 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center, flush with vinyl floor surface; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCES PRIMARY DRY RESEARCH LAB - SMALL

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

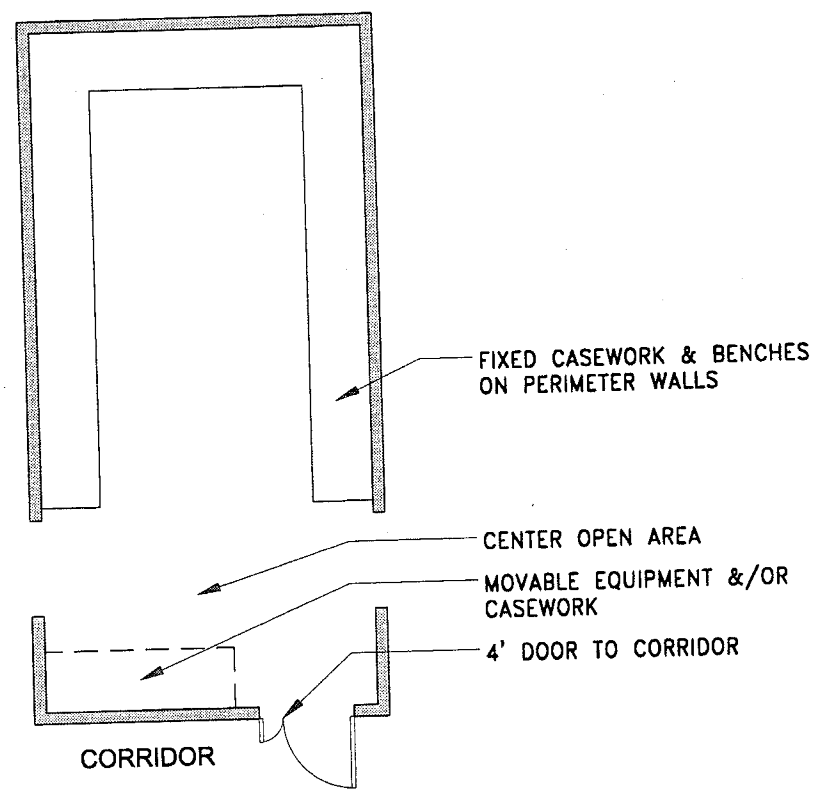
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Museum/Collections Support**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	(2) 4' corridor doors 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center, UPS for servers
LIGHTING	65 footcandles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCES MUSEUM / COLLECTION SUPPORT

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

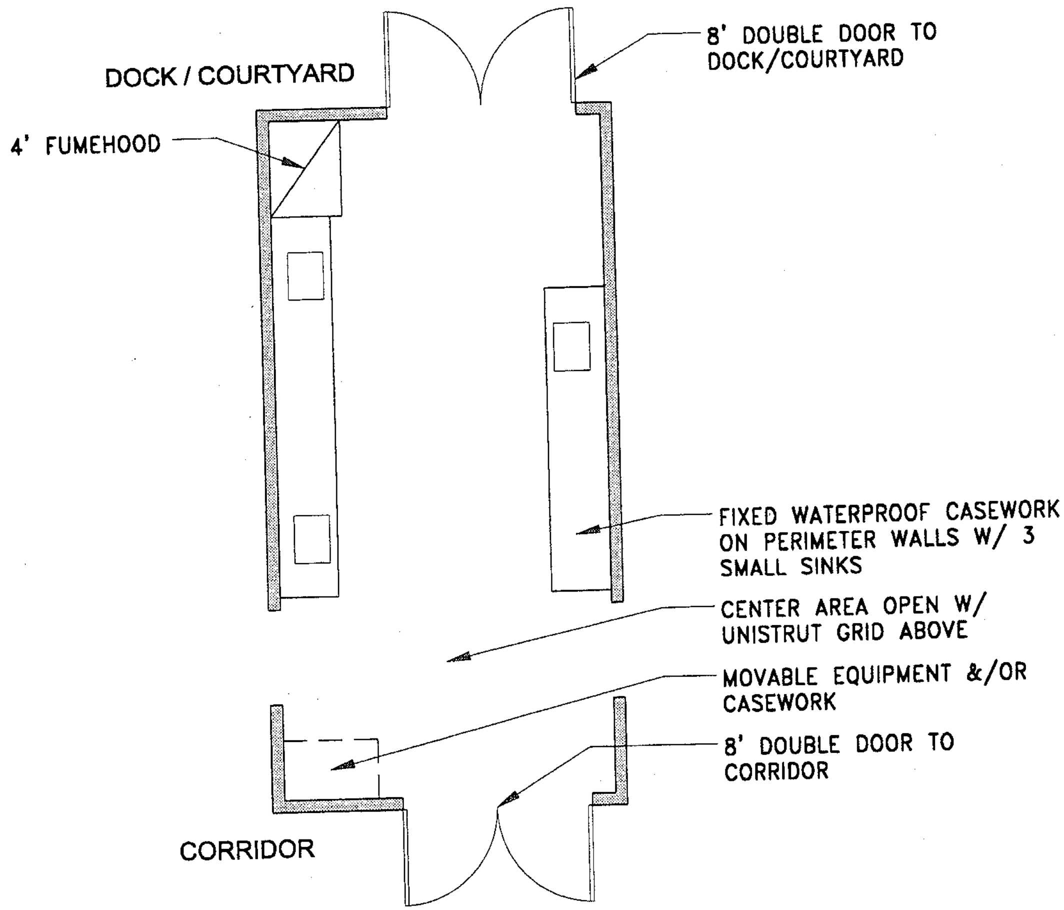
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Darkroom**
ASF	200 ASF (0.5 Module)
CURRENT USE	NA
PLANNED USE	Chemical, physical and biological experiments involving groundwaters, rocks, sediments and fossils
OCCUPANTS	3
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	8' double door to corridor 8' secure double door to dock/courtyard 4' corridor door 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV 2 floor drains Emergency eyewash station see 3 sinks under "casework" below
POWER	120 and 240 V, 60 amp, including outlets in center
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	2 data lines, 2 voice lines
CASEWORK	• Fixed waterproof casework on perimeter walls with 3 small sinks • 36" high waterproof benches along walls • Center Area open with unistrut grid above
GROUP 1 EQUIPMENT	1 4'-0" Fume hood
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Minimal floor vibration for optical and instrumental stability. Heavy floor load support for mass spectrometers and high-pressure rock anvils.



EARTH SCIENCES DARKROOM

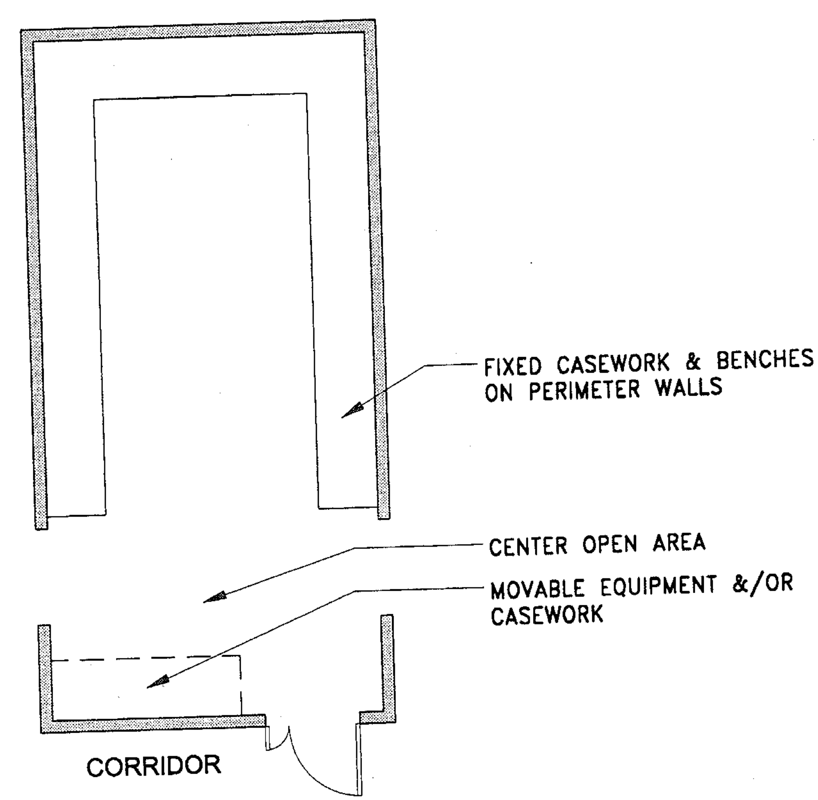
SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Research Collections Support**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	(2) 4' corridor doors 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating)
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task
COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCES RESEARCH COLLECTIONS SUPPORT

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

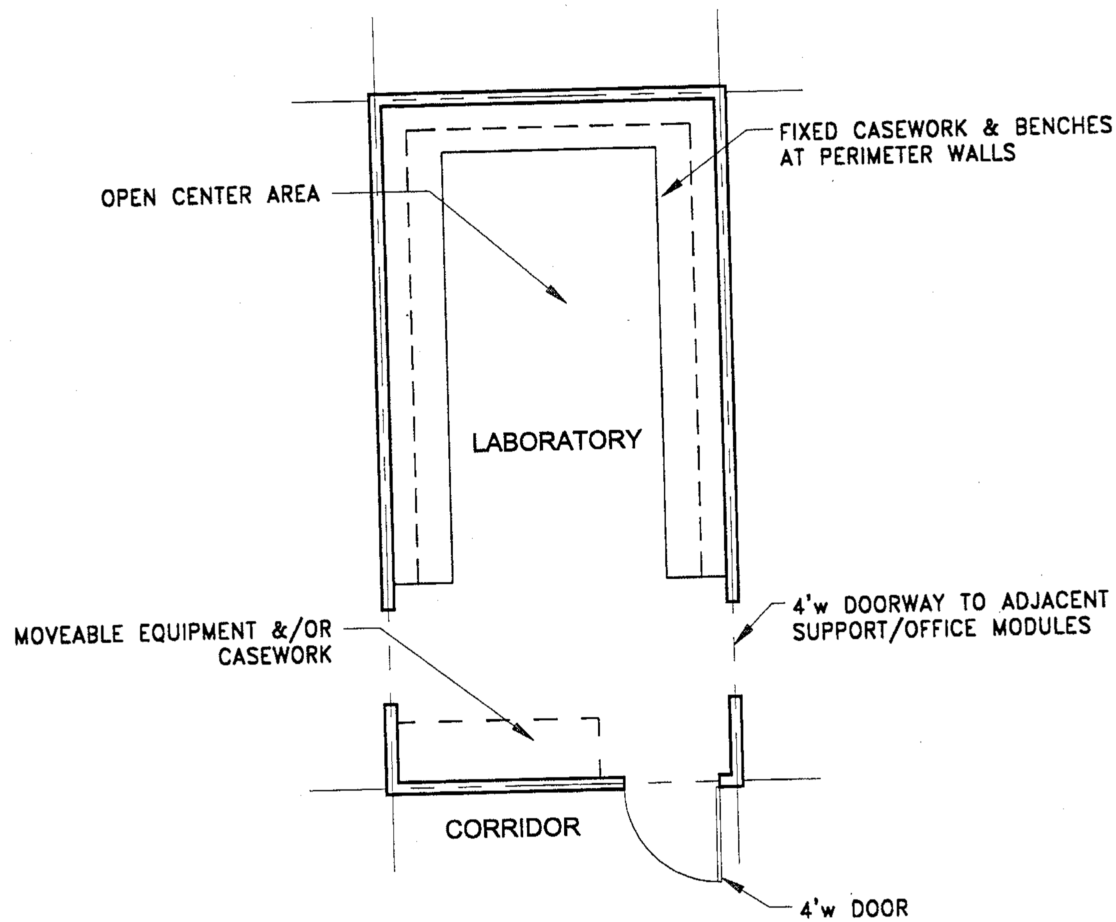
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Electronics Laboratory**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	(2) 4' corridor doors 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCE ELECTRONIC LABORATORY

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

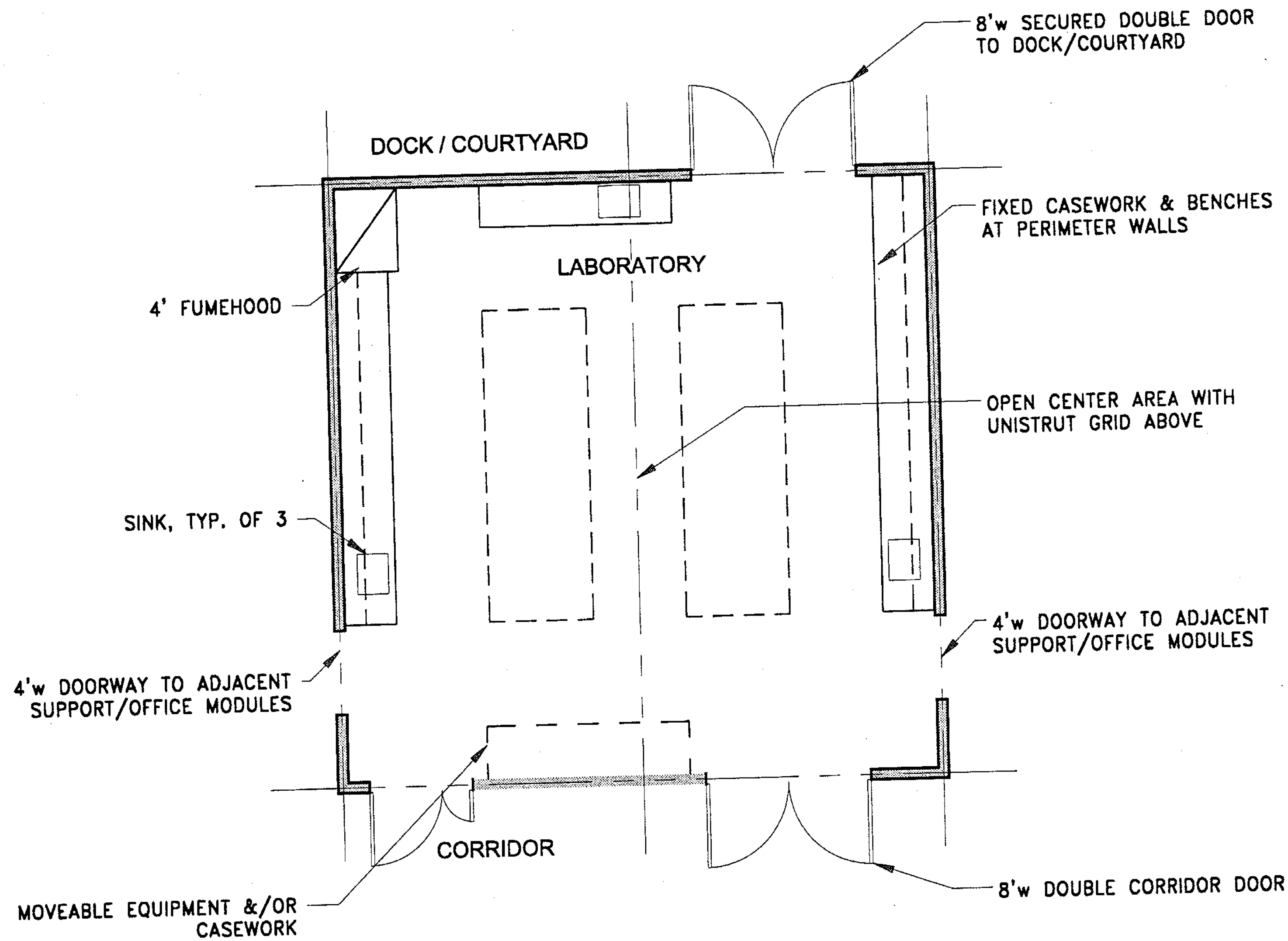
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Fossil Prep Room**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Chemical, physical and biological experiments involving groundwaters, rocks, sediments and fossils
OCCUPANTS	3
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	• 8' double door to corridor • 8' secure double door to dock/courtyard • 4' corridor door • 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV • 2 floor drains • see 3 sinks under "casework" below
POWER	120 and 240 V, 60 amp, including outlets in center
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	2 data lines, 2 voice lines
CASEWORK	• Fixed waterproof casework on perimeter walls with 3 small sinks • 36" high waterproof benches along walls • Center Area open with unistrut grid above
GROUP 1 EQUIPMENT	1 4'-0" Fume hood
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Minimal floor vibration for optical and instrumental stability. Heavy floor load support for mass spectrometers and high-pressure rock anvils.



FOSSIL PREP. ROOM

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

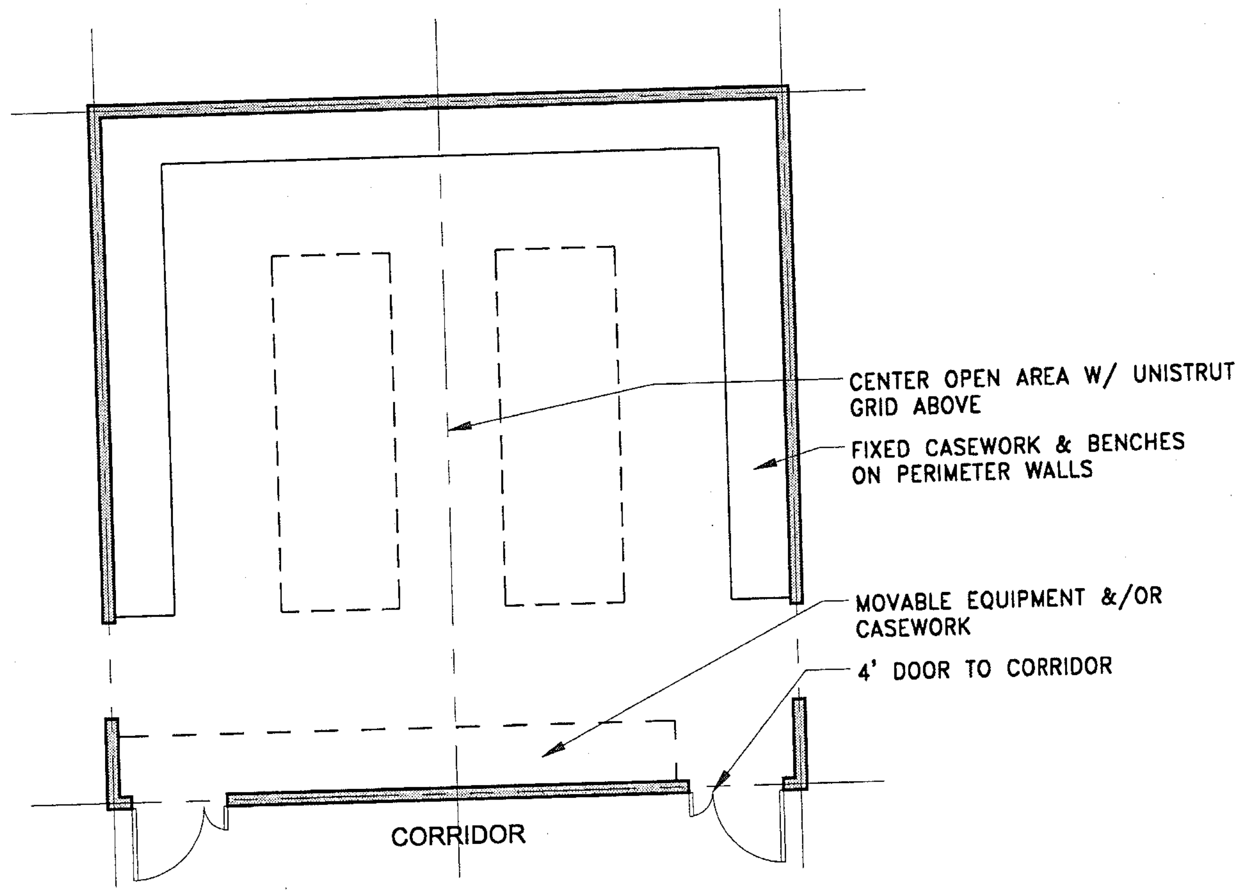
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences GIS Computer Research Lab**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study.
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	(2) 4' corridor doors 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center, UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCES GIS COMPUTER RESEARCH LAB

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

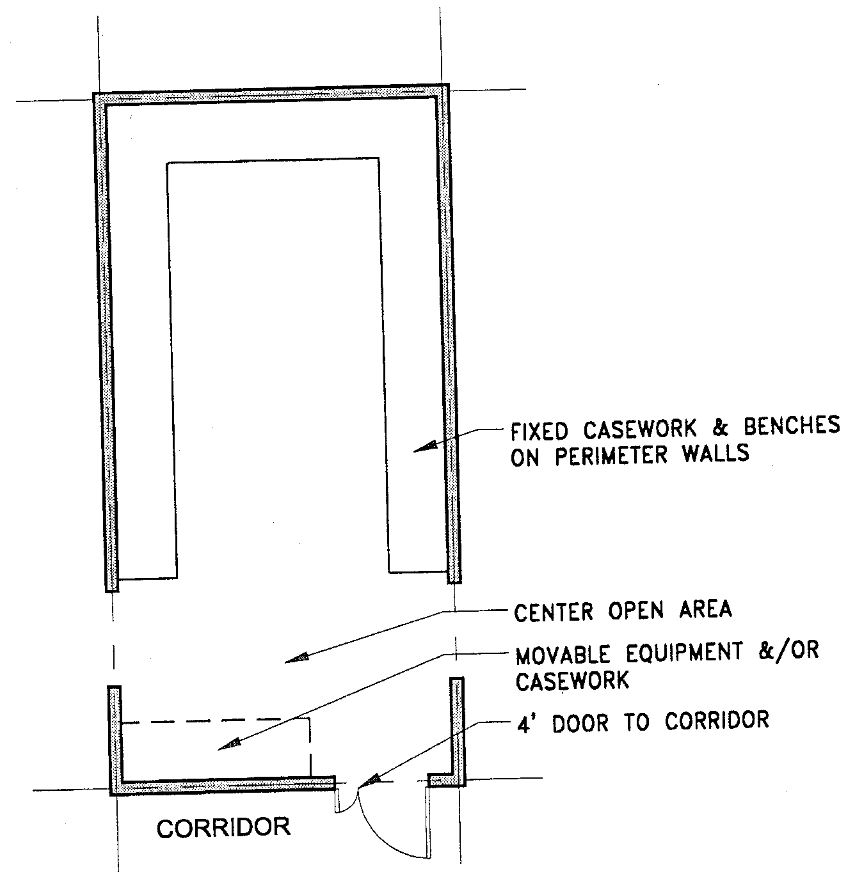
ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Geophysics Field Logistics Lab**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	• (2) 4' corridor doors • 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task.

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCES GEOPHYSICS FIELD LOGISTICS ROOM

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION

JLP #01-03

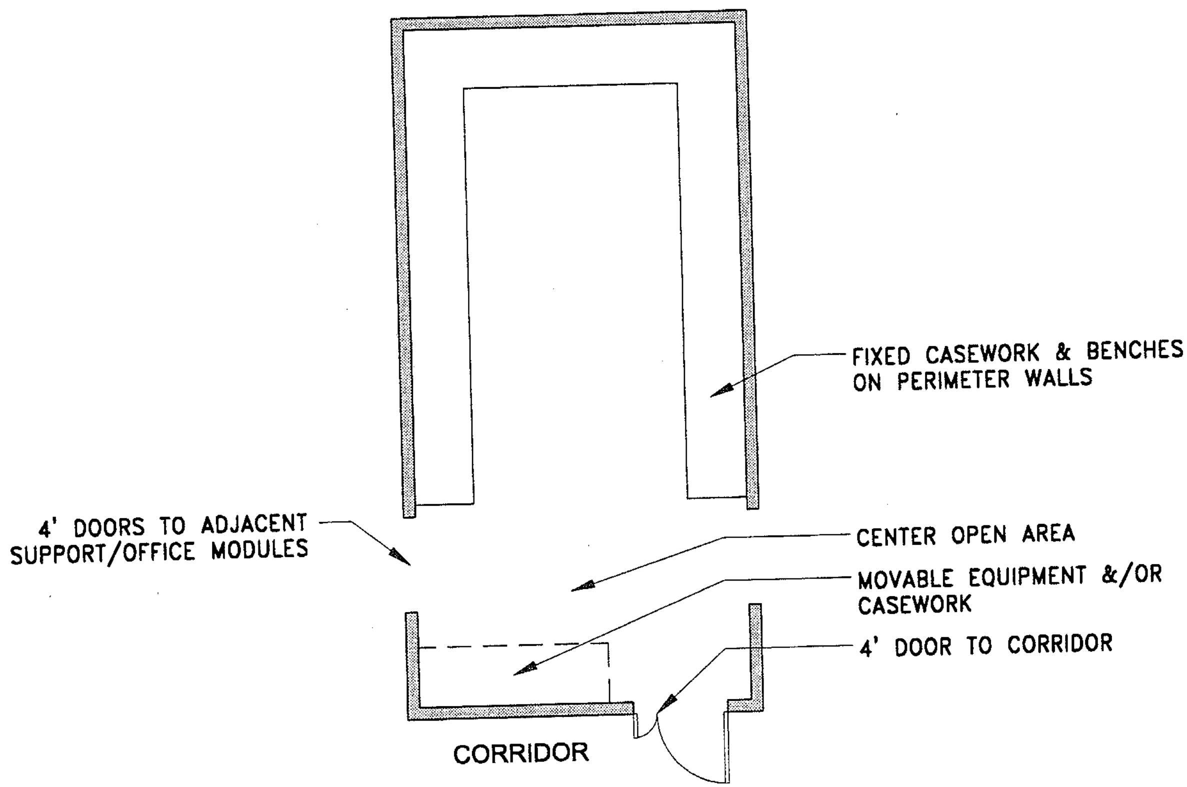
ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Geology Field Logistics Room**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	• (2) 4' corridor doors • 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task.

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCES GEOLOGY FIELD LOGISTICS LAB

JUNE 19, 2001

SCALE : 1/8" = 1'- 0"

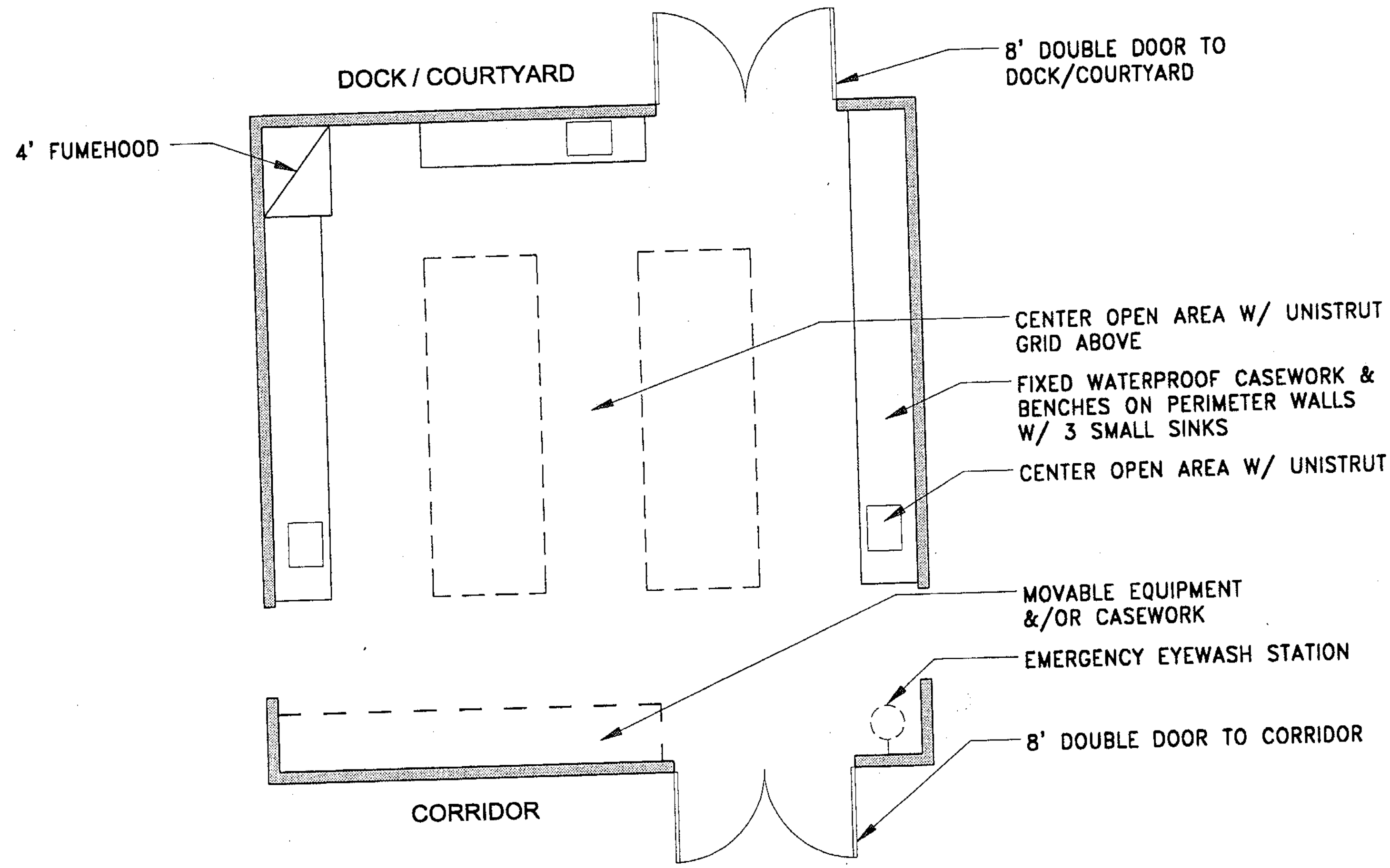
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Mass Spectrometry Lab**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Chemical, physical and biological experiments involving groundwaters, rocks, sediments and fossils
OCCUPANTS	3
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	8' double door to corridor 8' secure double door to dock/courtyard 4' corridor door 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/LA/LV • 2 floor drains • see 3 sinks under "casework" below
POWER	120 and 240 V, 60 amp, including outlets in center
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	2 data lines, 2 voice lines
CASEWORK	• Fixed waterproof casework on perimeter walls with 3 small sinks • 36" high waterproof benches along walls • Center Area open with unistrut grid above
GROUP 1 EQUIPMENT	1 4'-0" Fume hood
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Minimal floor vibration for optical and instrumental stability. Heavy floor load support for mass spectrometers and high-pressure rock anvils.



EARTH SCIENCES MASS SPECTROMETRY LAB

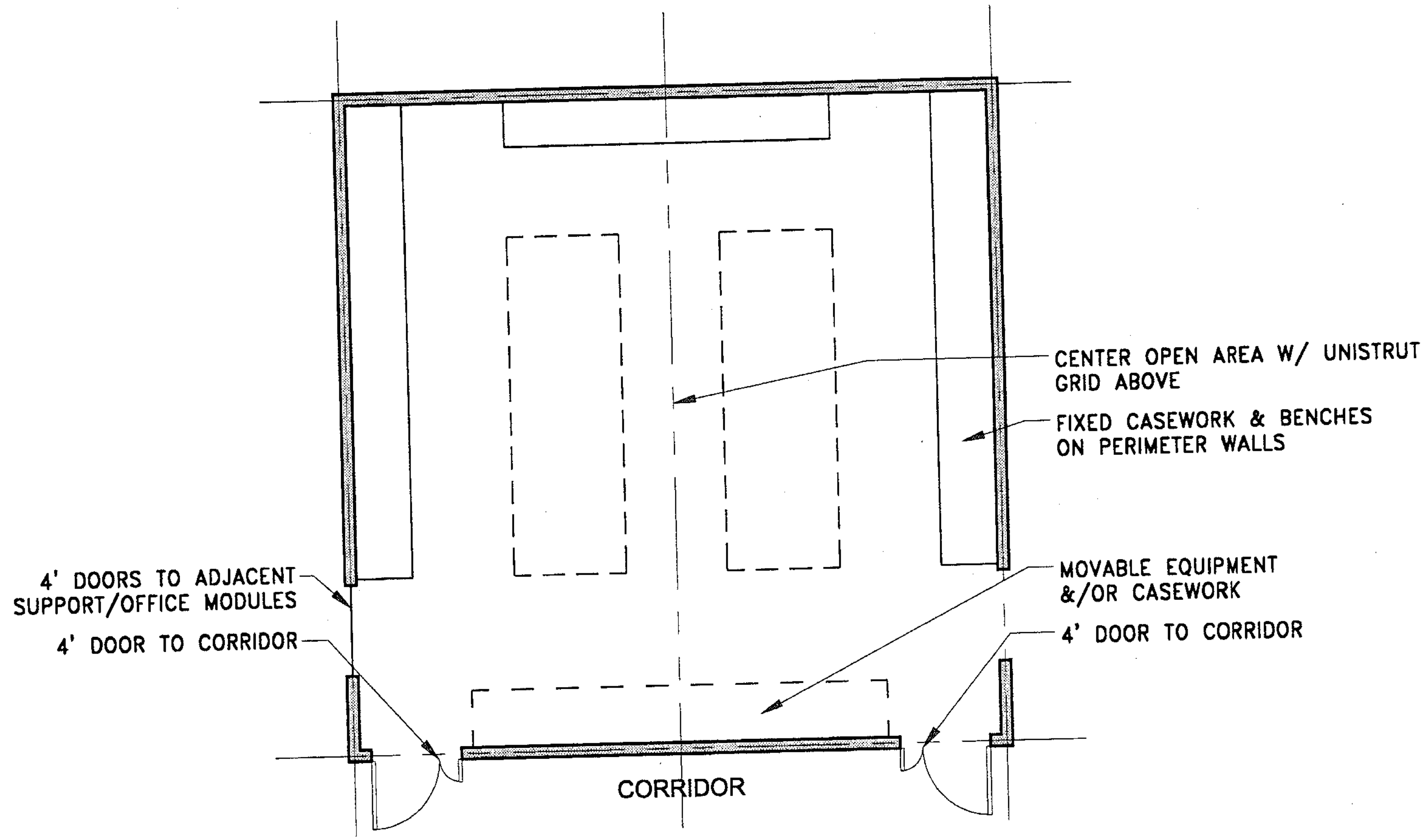
JUNE 19, 2001

SCALE : 1/8" = 1'- 0"

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences UCR/USGS Digital Mapping Lab**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	(2) 4' corridor doors 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating)
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task.
COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCES UCR/USGS DIGITAL MAPPING LAB

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION

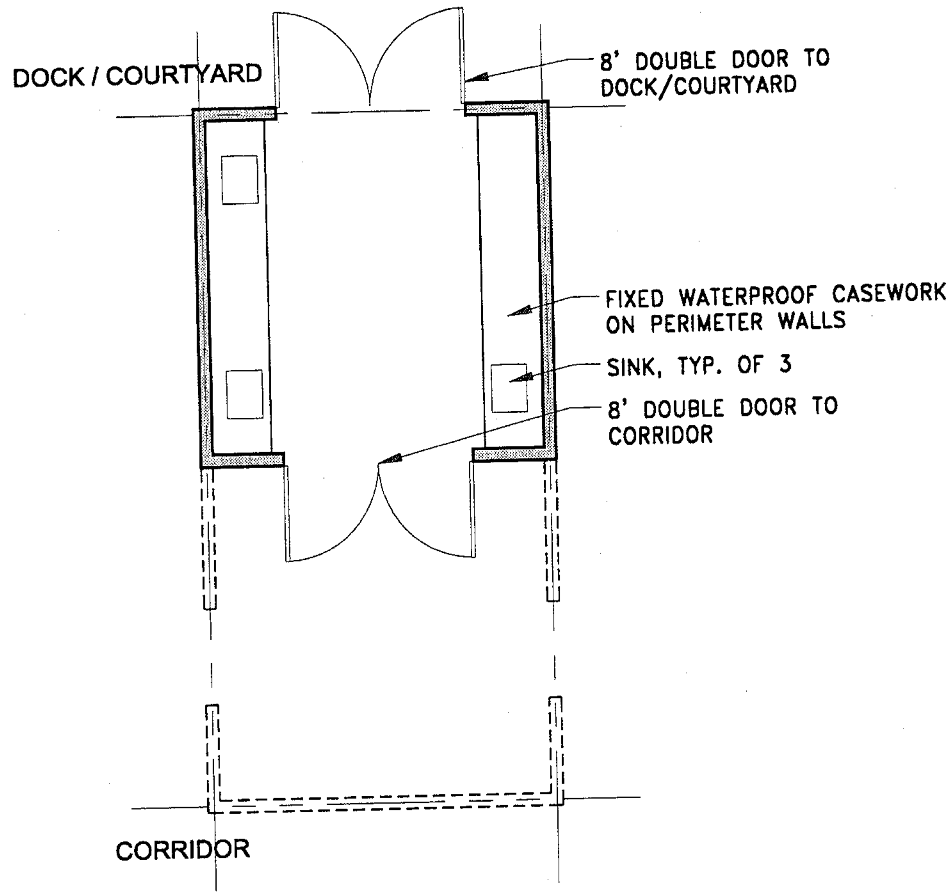
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Acid Room**
ASF	200 ASF (0.5 Module)
CURRENT USE	NA
PLANNED USE	Chemical, physical and biological experiments involving groundwaters, rocks, sediments and fossils.
OCCUPANTS	3
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	• 8' double door to corridor • 8' secure double door to dock/courtyard • 4' corridor door • 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV • 2 floor drains • see 3 sinks under "casework" below
POWER	120 and 240 V, 60 amp, including outlets in center, flush with vinyl floor surface
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	2 data lines, 2 voice lines
CASEWORK	• Fixed waterproof casework on perimeter walls with 3 small sinks. • 36" high waterproof benches along walls. • Center Area open with unistrut grid above.
GROUP 1 EQUIPMENT	1 4'-0" Fume hood
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Minimal floor vibration for optical and instrumental stability. Heavy floor load support for mass spectrometers and high-pressure rock anvils.



EARTH SCIENCES ACID ROOM

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

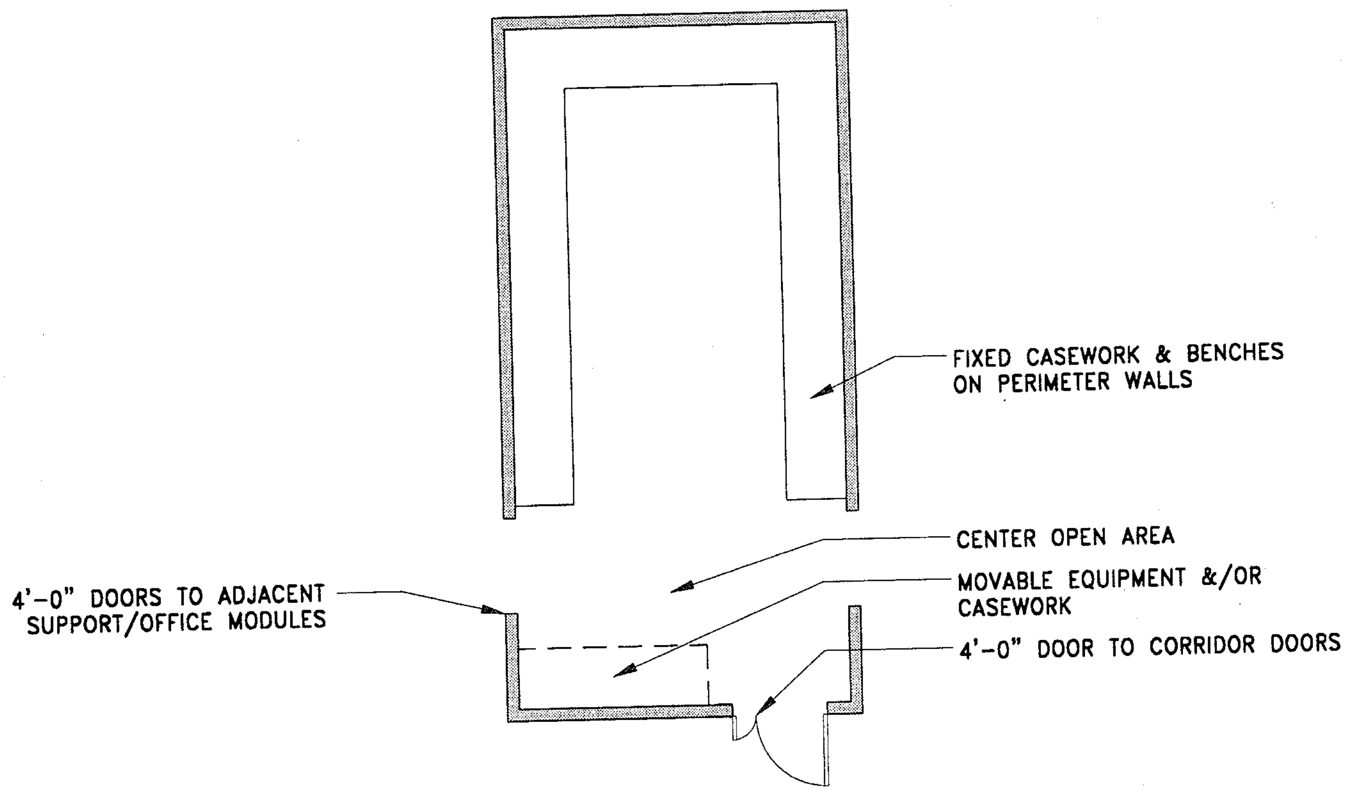
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	Earth Sciences Computer Modeling Laboratory
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	• (2) 4' corridor doors • 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCES COMPUTER MODELLING LABORATORY

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

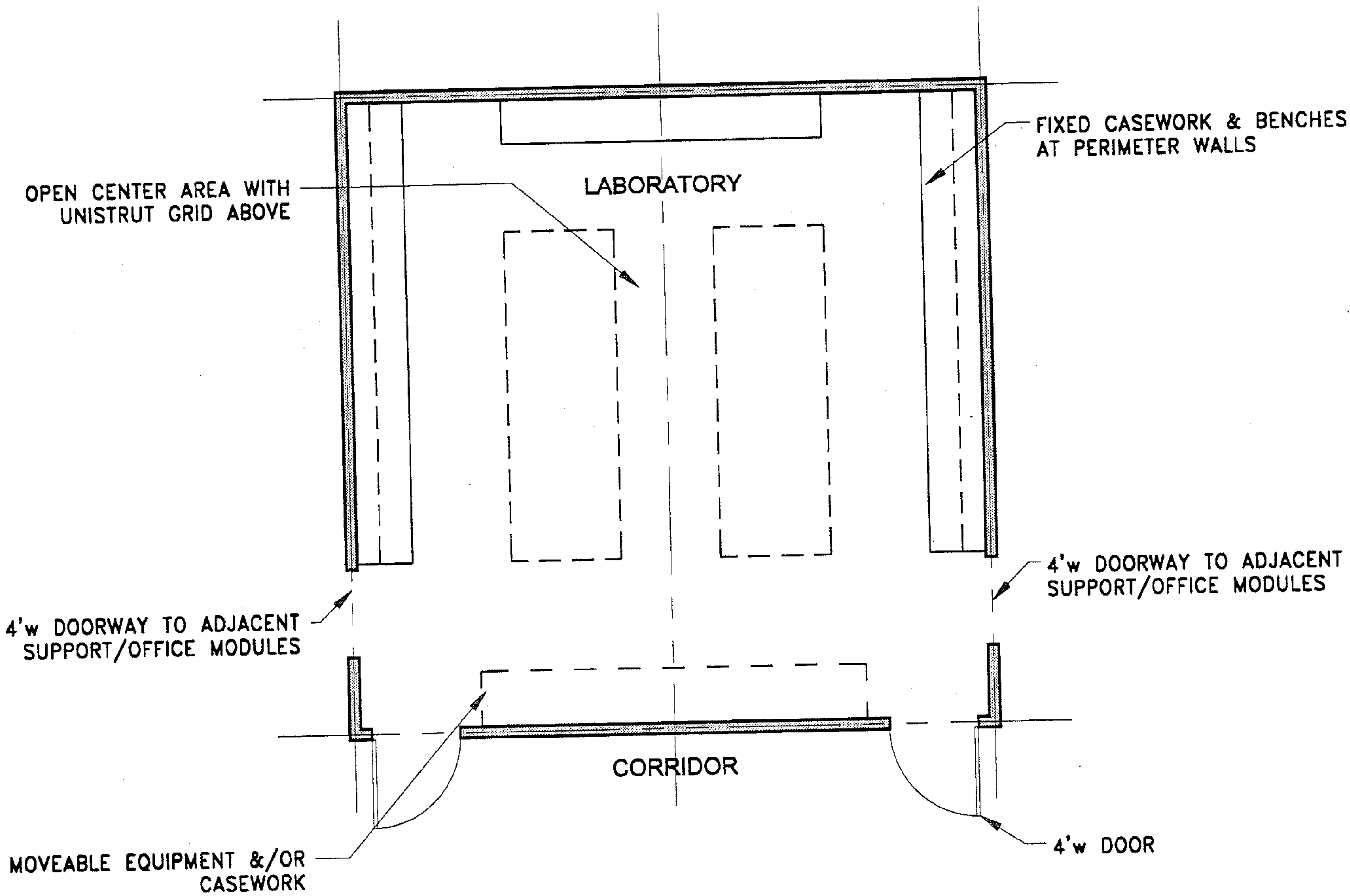
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Digital Imaging & Microscopy**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Computational modeling and simulations; map digitizing, plotting; macroscopic and microscopic rock and fossil study
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Covered
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	• (2) 4' corridor doors • 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LV
POWER	120 and 240 V, 60 amp, including outlets in center; UPS for servers
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	4 data lines, 2 voice lines
CASEWORK	• Fixed casework and benches on perimeter walls • Center Area open
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCE DIGITAL IMAGING & MICROSCOPY

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION

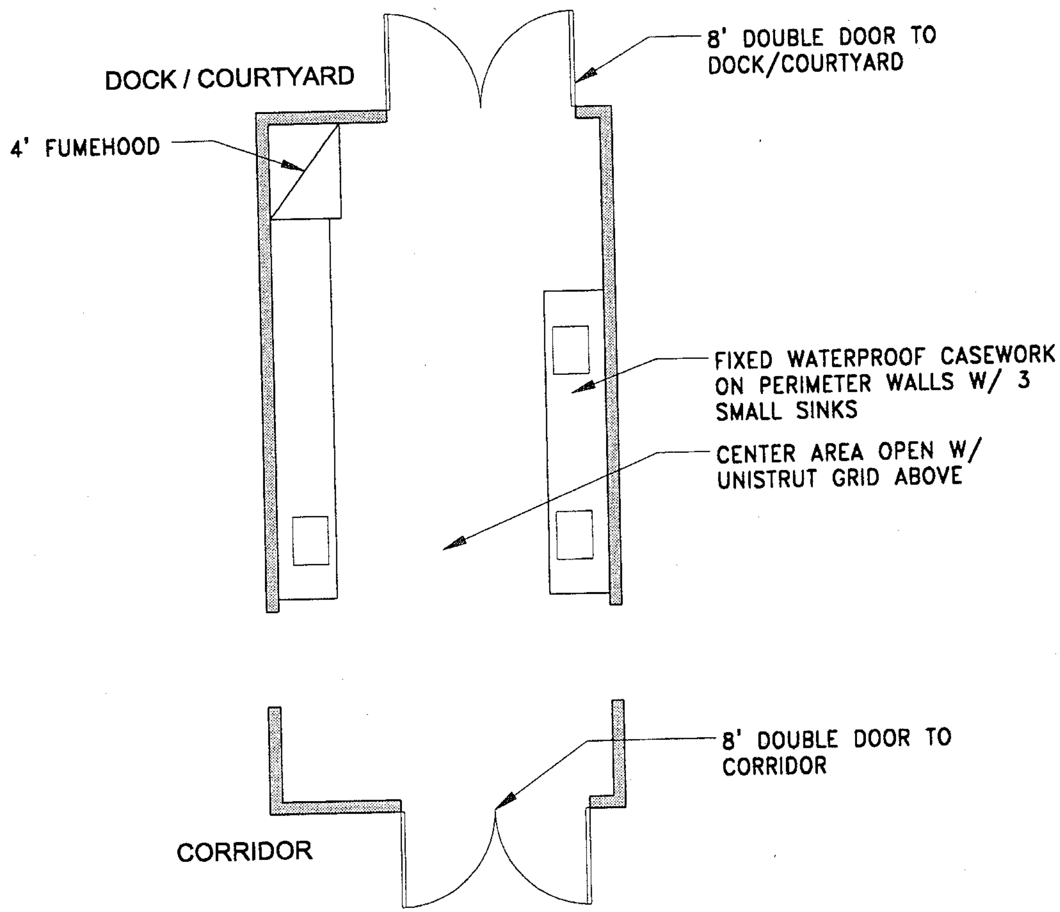
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Rock Mechanics Machine Shop**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Chemical, physical and biological experiments involving groundwaters, rocks, sediments and fossils
OCCUPANTS	3
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	8' double door to corridor 8' secure double door to dock/courtyard 4' corridor door 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV 2 floor drains see 3 sinks under "casework" below
POWER	120 and 240 V, 60 amp, including outlets in center
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	2 data lines, 2 voice lines
CASEWORK	• Fixed waterproof casework on perimeter walls with 3 small sinks • 36" high waterproof benches along walls • Center Area open with unistrut grid above
GROUP 1 EQUIPMENT	1 4'-0" Fume hood
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Minimal floor vibration for optical and instrumental stability. Heavy floor load support for mass spectrometers and high-pressure rock anvils.



EARTH SCIENCES ROCK MECHANICS MACHINE SHOP

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

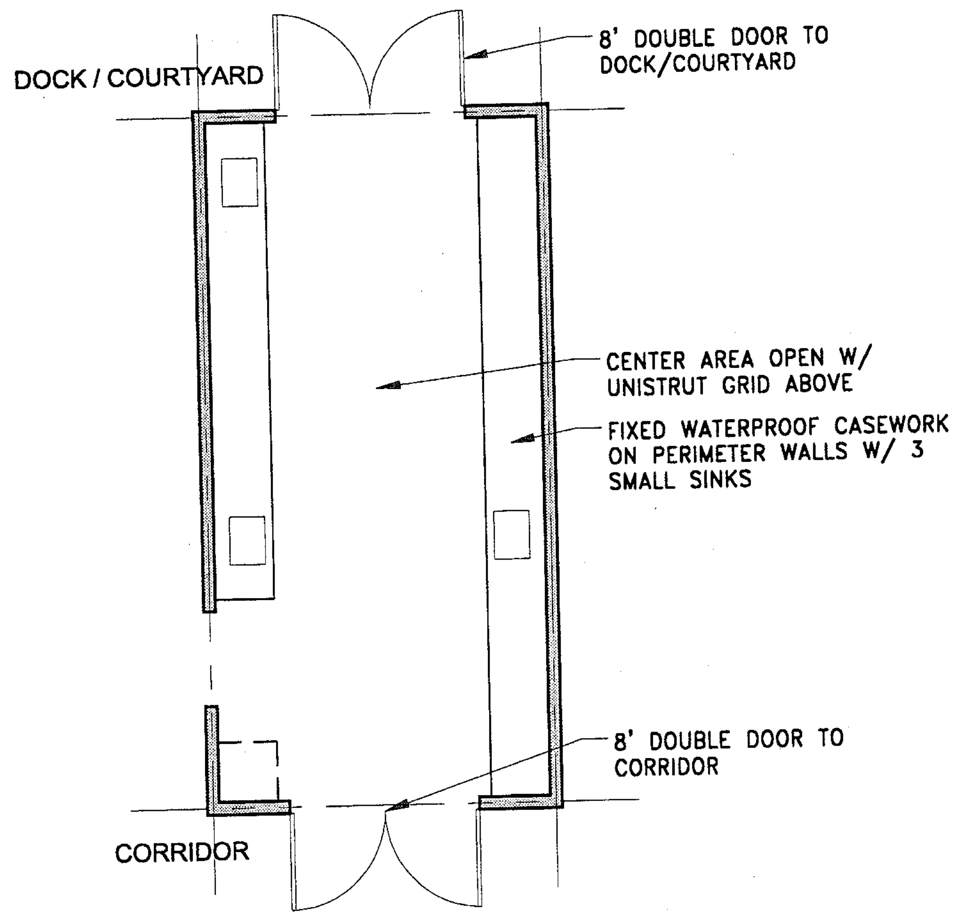
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Sciences Optical Polishing Lab**
ASF	400 ASF (1 Module)
CURRENT USE	NA
PLANNED USE	Chemical, physical and biological experiments involving groundwaters, rocks, sediments and fossils
OCCUPANTS	3
SECURITY	Keyed lockable door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	8' double door to corridor 8' secure double door to dock/courtyard 4' corridor door 4' doors to adjacent support/office modules
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV 2 floor drains Emergency eyewash station see 3 sinks under "casework" below
POWER	120 and 240 V, 60 amp, including outlets in center
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	2 data lines, 2 voice lines
CASEWORK	• Fixed waterproof casework on perimeter walls with 3 small sinks • 36" high waterproof benches along walls • Center Area open with unistrut grid above
GROUP 1 EQUIPMENT	1 4'-0" Fume hood
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Minimal floor vibration for optical and instrumental stability. Heavy floor load support for mass spectrometers and high-pressure rock anvils.



EARTH SCIENCES OPTICAL POLISHING LAB

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

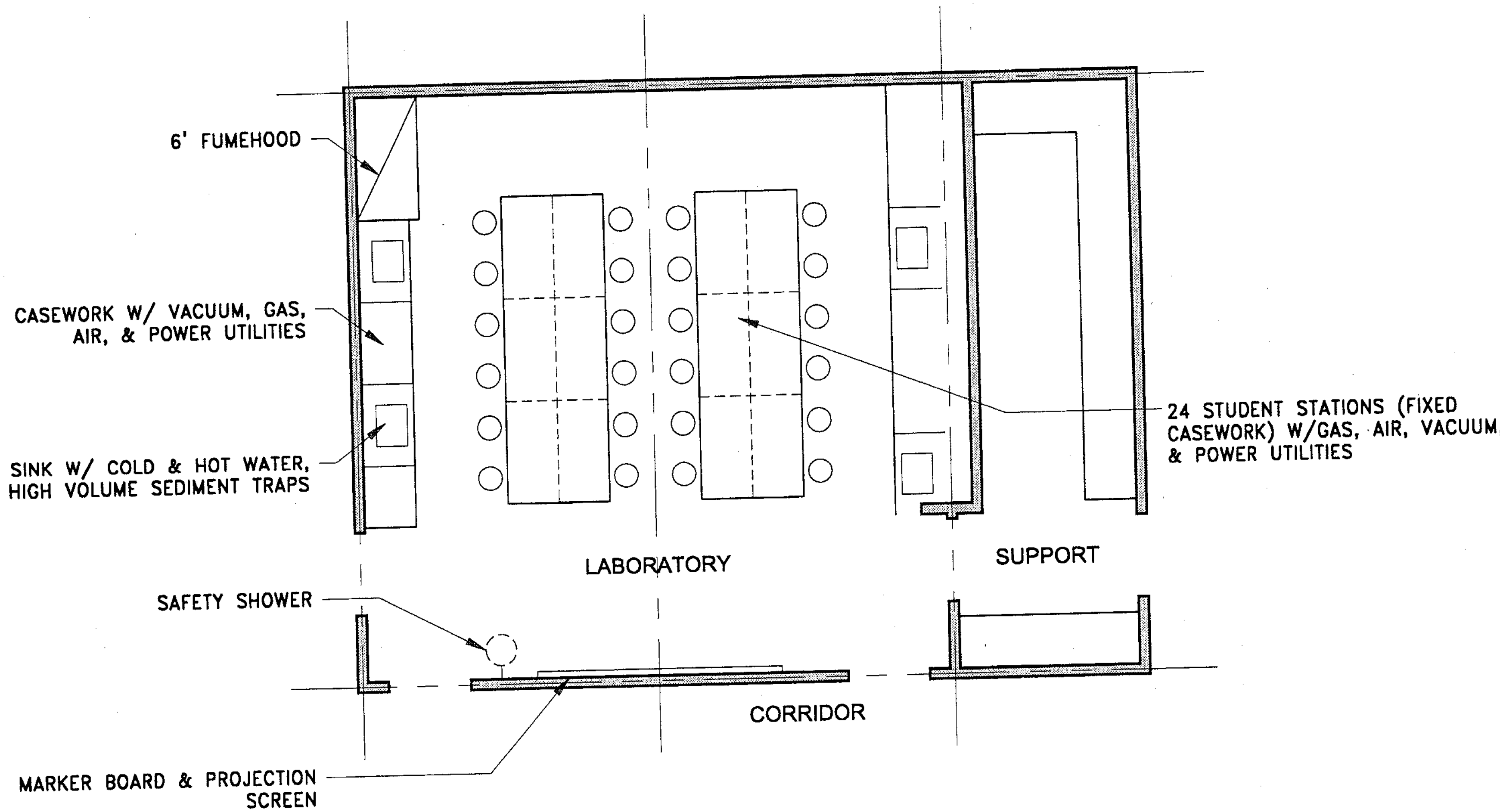
UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	Earth Sciences Instructional Lab No. 1
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Undergraduate instruction for Geomorphology, Physical Geology & Geophysics, Paleontology
OCCUPANTS	24 Student Stations
SECURITY	Keyed Lockable Door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New & Existing Gypsum Board
FLOOR	• Sheet Vinyl with Top Set Base
CEILING	• Exposed
CEILING HEIGHT	TBD
DOORS/WINDOWS	4'-0" door(s) to support lab 3'-6".
WINDOW COVERINGS	Mecho shades; blackout must be possible.
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV
POWER	120V Convenience Outlets, Single Duplex; Clean Power
LIGHTING	65 foot candles general; 100 foot candles task.

ROOM DESIGN CRITERIA

COMMUNICATIONS	Telephone, Data Outlets, A.V. TBD
CASEWORK	Fixed Demonstration Bench & Casework
GROUP 1 EQUIPMENT	(1) 6'-0" fumehood w/vented storage cabinet below; eye wash/safety shower @ main entry door.
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Storage & preparation area needs to be adjacent to the lab.



EARTH SCIENCE INSTRUCTIONAL LAB NO. 1

JUNE 19, 2001

SCALE : 1/8" = 1'- 0"

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GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Earth Science Instructional Lab No. 2**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Undergraduate Instruction
OCCUPANTS	24 Student Stations
SECURITY	Keyed Lockable Door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	• 12'-0"
DOORS/WINDOWS	4'-0" door(s) to support lab 3'-6".
WINDOW COVERINGS	Mecho shades
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 FPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	ICW/IHW/DI/LA/LG/LV
POWER	120V Convenience Outlets, Single Duplex
LIGHTING	65 foot candles general; 100 foot candles task.

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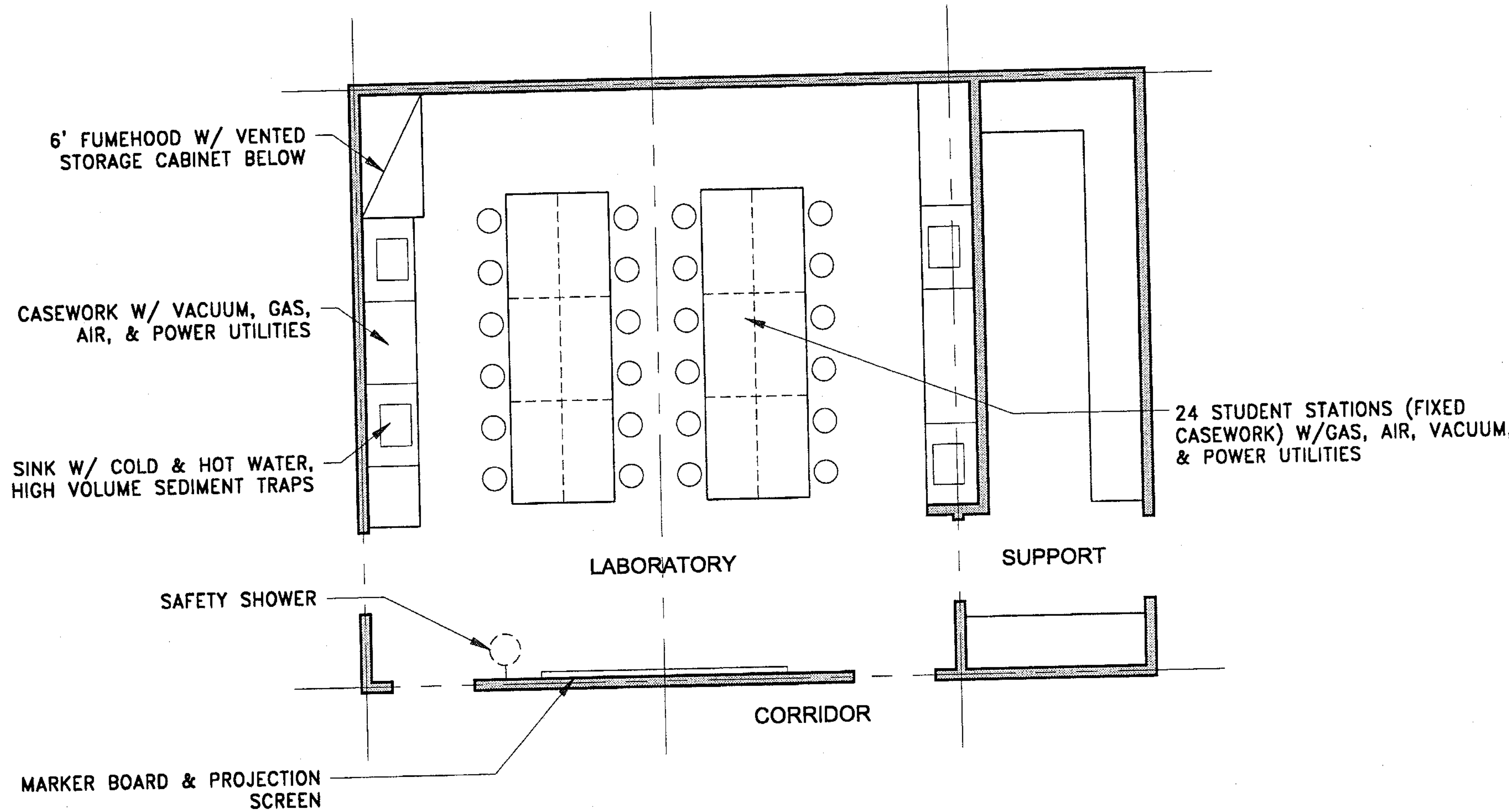
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	Telephone, Data Outlets, A.V. TBD
CASEWORK	Fixed Demonstration Bench & Casework
GROUP 1 EQUIPMENT	(1) 6'-0" fumehood w/vented storage cabinet below; eye wash/safety shower @ main entry door.
GROUP 2 EQUIPMENT	Microscope Storage
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



EARTH SCIENCE INSTRUCTIONAL LAB NO. 2

JUNE 19, 2001

SCALE : 1/8" = 1'- 0"

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GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Environmental Sciences Instructional Laboratory**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Undergraduate instructional programs in soils, soil chemistry, soil microbiology, soil mineralogy, environmental sampling.
OCCUPANTS	24 Students & Instructor
SECURITY	Keyed Lockable Door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New & Existing Gypsum Board
FLOOR	• Sheet Vinyl with Top Set Base
CEILING	• Exposed
CEILING HEIGHT	TBD
DOORS/WINDOWS	Corridor door(s) 4'-0"; door to to support space 3'-6".
WINDOW COVERINGS	Mecho shades; blackout must be possible.
MECHANICAL	74°F (cooling); 68°F (heating); Fume hood to operate with full vertical sash opening (100 RPM); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	LA/LG/LV @ Student & Instructor workstations (4) 20"x30"x12" sinks with high volume sediment traps.
POWER	Designated clean power; 110V @ student & instructor workstations.
LIGHTING	65 foot candles general; 100 foot candles task.

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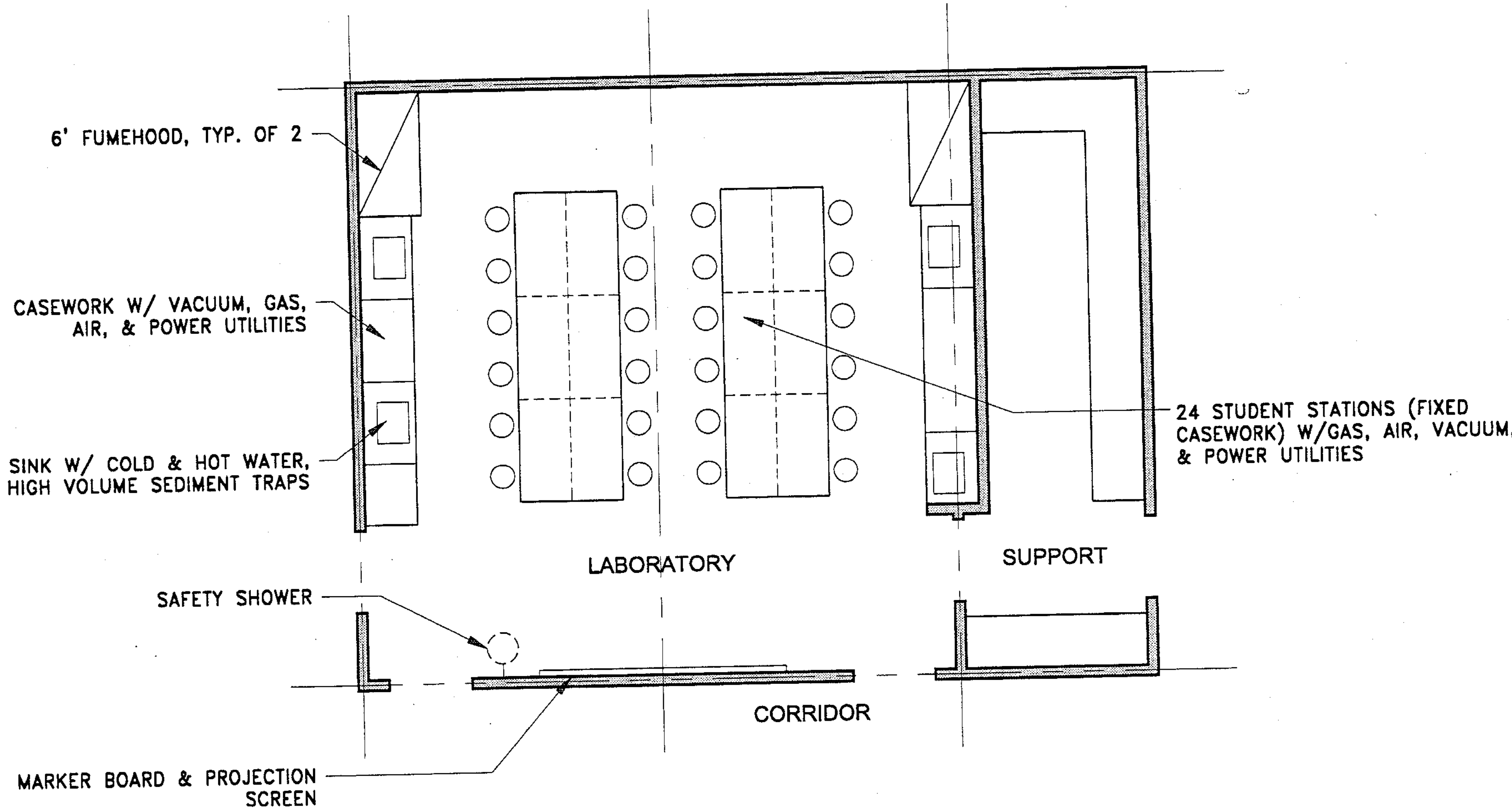
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	Telephone, data, video TBD.
CASEWORK	(24) student stations & instructor/demonstration station (fixed casework).
GROUP 1 EQUIPMENT	(2) fumehoods, emergency shower & eyewash; marker board, projection screen.
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	Gas cylinder storage & adjacent support/storage space.



ENVIRONMENTAL SCIENCE INSTRUCTIONAL LAB

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

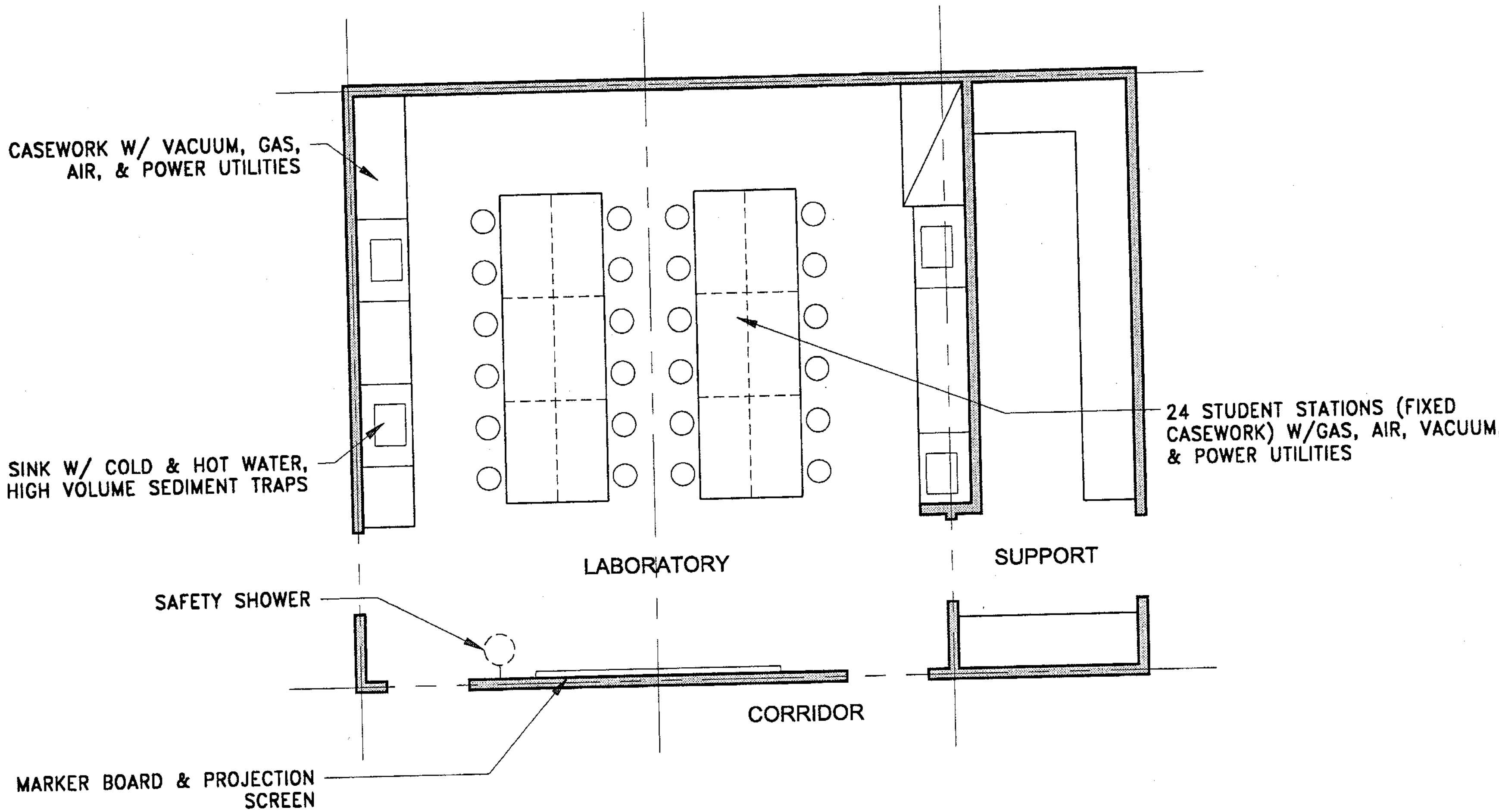
ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**Shared Instructional Laboratory**
ASF	800 ASF (2 Modules)
CURRENT USE	NA
PLANNED USE	Flexible laboratory to be shared by the departments of Earth Sciences & Environmental Sciences.
OCCUPANTS	24 Students & Instructor
SECURITY	Keyed Lockable Door. Department to provide keypad security system. Box & conduit to be provided. Contractor to salvage existing devices for reinstallation.
FINISHES:	
WALL	• New and Existing gypsum board
FLOOR	• Sheet vinyl with top set base
CEILING	• Exposed
CEILING HEIGHT	TBD
DOORS/WINDOWS	
WINDOW COVERINGS	Mecho shades, Blackout Curtains
MECHANICAL	74°F (cooling); 68°F (heating); minimum VAV airflow setting equal to 8-12 AC/HR
PIPING	Exposed
PLUMBING	TBD
POWER	TBD
LIGHTING	65 foot candles general; 100 foot candles tas.

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM DESIGN CRITERIA

COMMUNICATIONS	TBD
CASEWORK	TBD
GROUP 1 EQUIPMENT	TBD
GROUP 2 EQUIPMENT	TBD
FURNISHINGS	TBD
SPECIAL NEEDS	TBD



SHARED INSTRUCTIONAL LAB

SCALE : 1/8" = 1'- 0"

JUNE 19, 2001

8

PHASING PLAN

8.1 PRELIMINARY SCHEDULE

The following issues will influence the schedule for the Geology Building Renovation project:

- Approved funding for the Deferred Maintenance and Renewal projects.
- Approved funding for completion of the HVAC and Exhaust System Upgrade Deferred Maintenance projects.
- Completion of the Science Laboratory Building during the summer of 2003.
- Completion of the Physical sciences Building in October of 2005.
- The degree to which Pierce Hall must be renovated to accommodate the instructional facilities which will be relocated from the Geology Building.

8.2 PHASING PLAN

Space Released in Center Wing:	**Summer 2001**
• Basement	2,616 ASF
• First Floor	2,479 ASF
• Second Floor	4,603 ASF
Total	*9,698 ASF*

Phase 1/HVAC DM Center Wing: **9/01 - 9/02**

Phase 1A/Architectural Renewal: **9/02 - 9/03**

Renovation of Center Wing and Relocate Following Spaces into Center Wing:

Earth Sciences Administration:

Room #	
• 1424	550 ASF
• 1430	60 ASF
• 1432	19 ASF
• 1432A315 ASF	
• 1432BA	90 ASF
• 1432BB	97 ASF
• 1432D 62 ASF	
Total	*1,284 ASF*

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Environmental Sciences Administration:

• 2208	348 ASF
• 2208A 72 ASF	
• 2208B174 ASF	
• 2208D175 ASF	
• 2208E 272 ASF	
• 2217	323 ASF
• 2217A165 ASF	
• 2217B140 ASF	
• 2207	200 ASF
• 2205	67 ASF
• 2204	30 ASF
• 2202	80 ASF
Total	***2,046 ASF***

Science Labs Building Complete: **6/2003**

Relocate Following labs to new Science Lab Building:

<u>Room #</u>

Chang	
• 2265	
• 2265AB	
• 2456	1,454 ASF
Crowley	
• 2233	
• 2247	
• 2247AB	
• 2460H	2,032 ASF
Parker	
• 2410	
• 2414	
• 2416	
• 2460BC	1,205 ASF
Lanoil	
• 2413	
• 2413A	1,581 ASF
Gan	
• 2433	775 ASF

8 PHASING PLAN

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Stein
- 2226
- 2226AB 1,104 AS

Schlenk
- 2229
- 2268
- 2268AB
- 2285 1,580 ASF

Department
- 2460
- 2460AEFG
- 2337 1,690 ASF

Total	***11,421 ASF***

Phase 2/HVAC DM South Wing (Includes design for Phases 2 and 3): **9/02 - 1/05**

Phase 3/HVAC DM North Wing: **9/03 - 3/05**

Phase 2A/Architectural Renewal: **1/05 - 1/06**

South Wing/ Second Floor: Complete Renovation

South Wing/First Floor West:

- Relocate Academic Offices - Rooms 1220/1224/1230 to 1424/1432.
- Relocate Morton and McKibben/William Labs to North Wing/Second Floor.
- Relocate GIS Lab to North Wing/ Second Floor.
- Renovate South Wing.

Physical Sciences Building Complete: **1/2005**

Relocate following class labs and general assignment classroom to released space in Pierce Hall that becomes available upon completion of new Physical Sciences Building.

Room #
- 1407
- 1408
- 1409
- 1421
- 1444

8 PHASING PLAN

Phase 3A/Architectural Renewal: **4/05 - 4/06**

North Wing/Second Floor

- Relocate Farmer (Rooms 2424/2428/2430), Letey (Rooms 2440/2442/2444), Paige (Room 2452) and Wu (Room 2454) *to* South Wing/Second Floor.
- Complete Renovation of North Wing/Second Floor.

North Wing/First Floor

- Previously vacated or relocated to Pierce Hall at Completion of Physical Sciences Building (Rooms 1407/1408/1409/1421/1444).
- Relocate Rooms 1448-1468 to First Floor West.
- Renovate First Floor/East (Rooms 1448-1468).
- Reoccupy Rooms 1448-1468.
- Renovate First Floor/West (Rooms 1407-1444).

North Wing/Basement

- Relocate Basement Spaces to First and Second Floor North Wing.
- Renovate Basement.

Phase 4A/Architectural Renewal: **4/06 - 4/07**

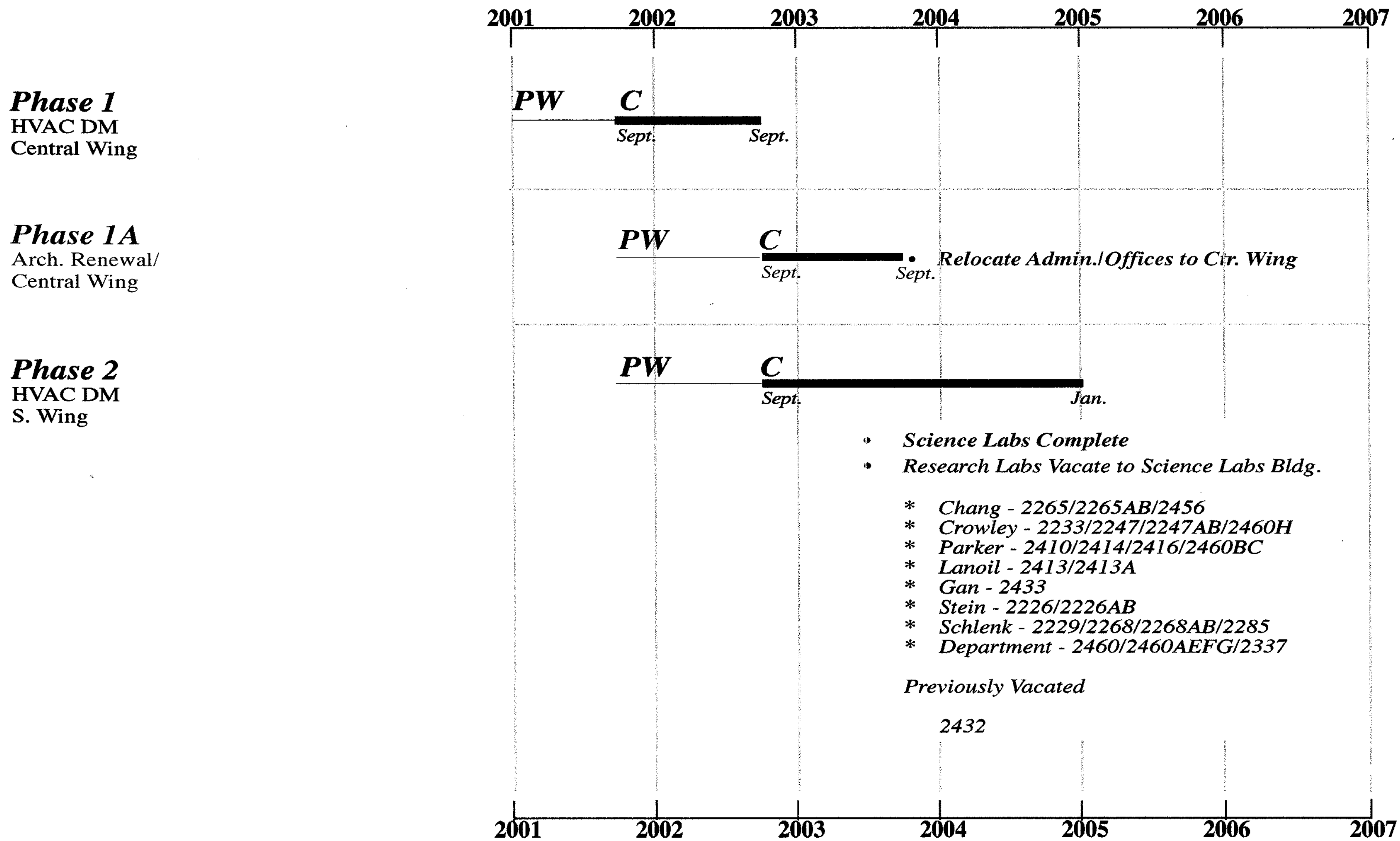
South Wing/First Floor East

- Relocate Green Lab to Basement (Rooms 1260/1270/1311/1323).
- Relocate Hughes and McKibben Labs (Rooms 1251/1263).
- Renovate South Wing/First Floor East.

Geology Building Renovation Project Complete

UCR GEOLOGY BUILDING RENOVATION Page 1

JLP #01-03.1/UCR #950446



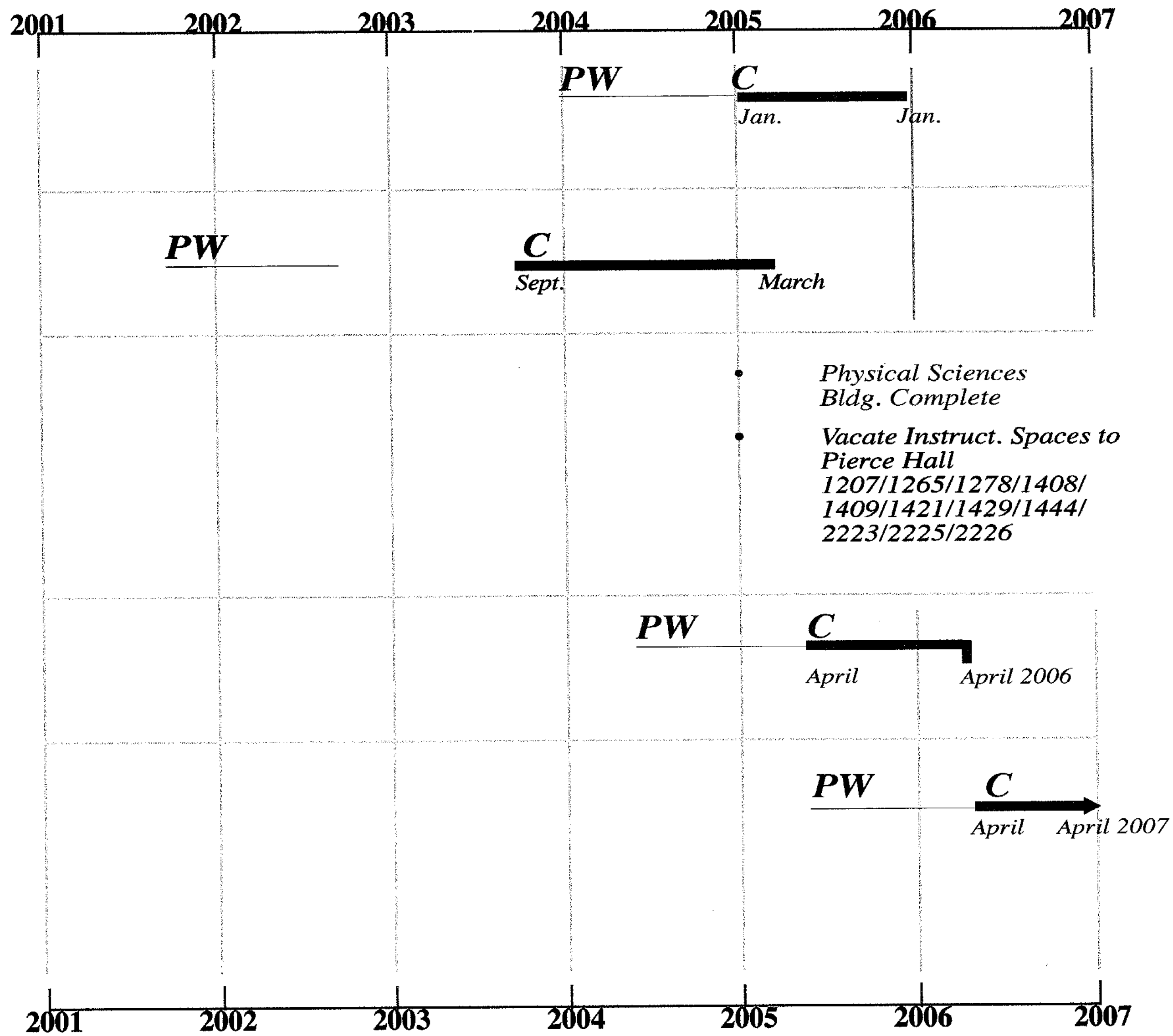
JLP #01-03.1/UCR #950446

Phase 2A
Architectural Renewal
S. Wing/2nd Floor/1st Floor West

Phase 3
HVAC DM
N. Wing

Phase 3A
Architectural Renewal
N. Wing/S. Wing First Floor

Phase 4A
Architectural Renewal
S. Wing/ First Floor East



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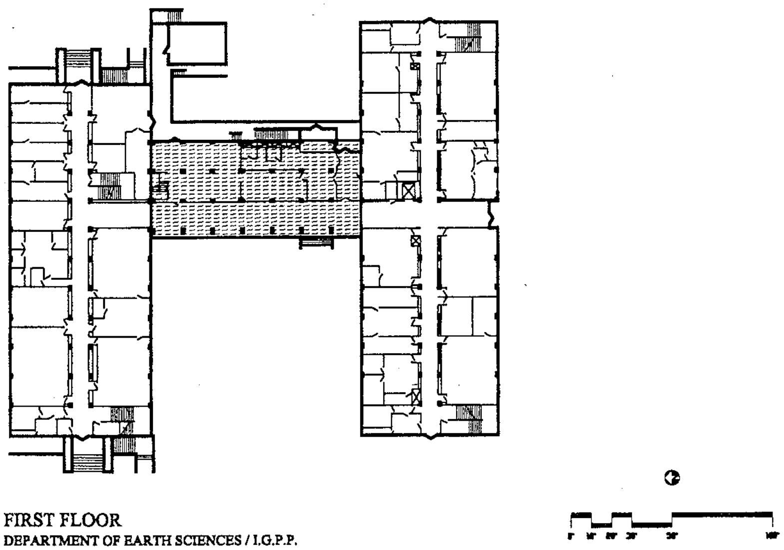
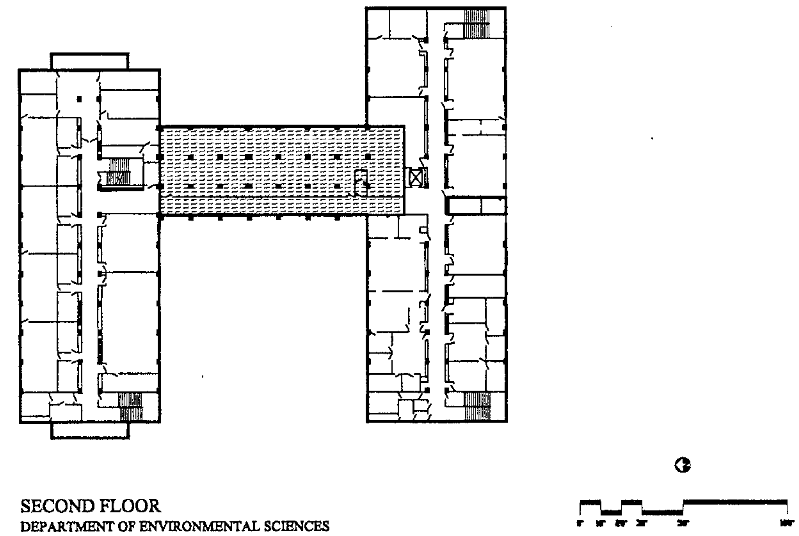


FIRST FLOOR
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.



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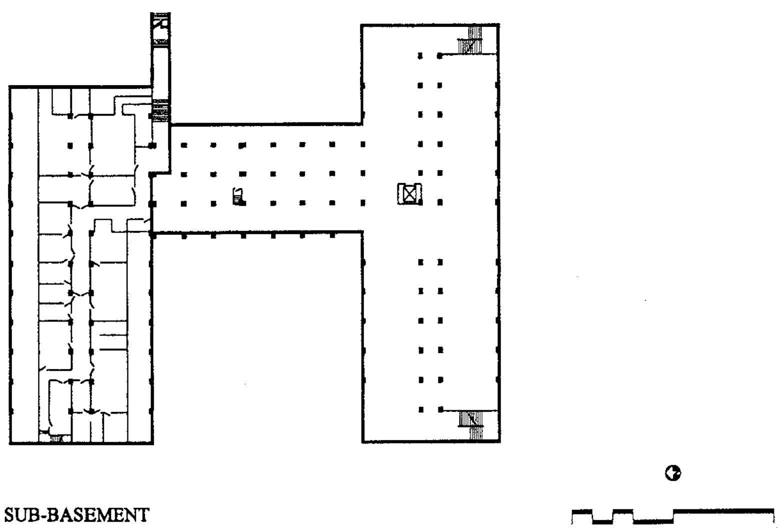
DEPARTMENT OF ENVIRONMENTAL SCIENCES



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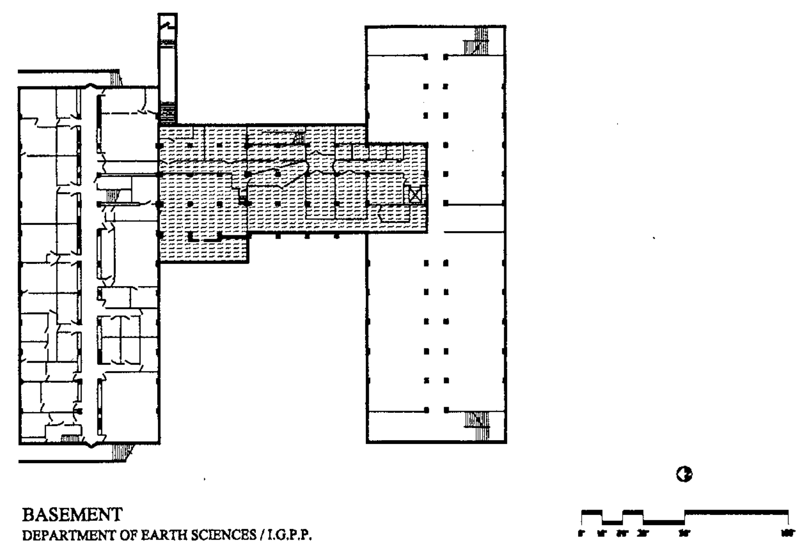
TO BE DETERMINED



BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 1 HVAC DEFERRED MAINTENANCE: 9/01 - 9/02

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

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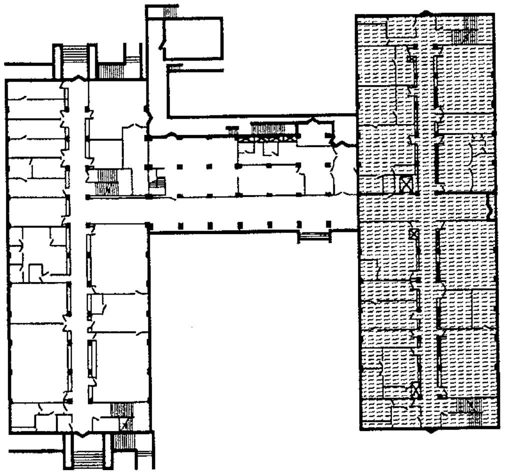
AUGUST 3, 2001



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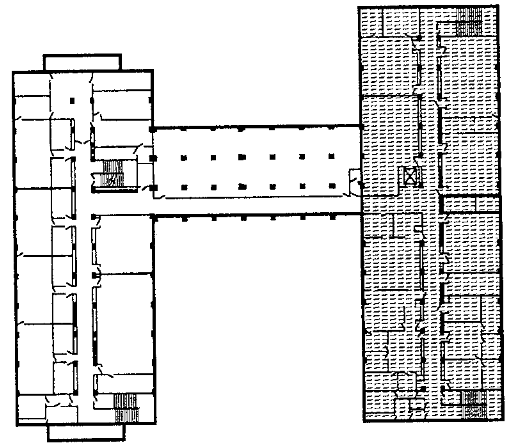

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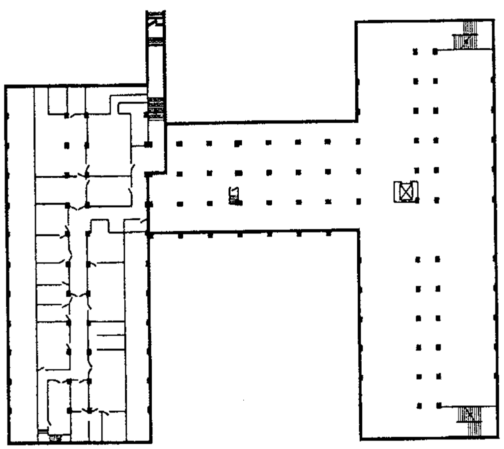
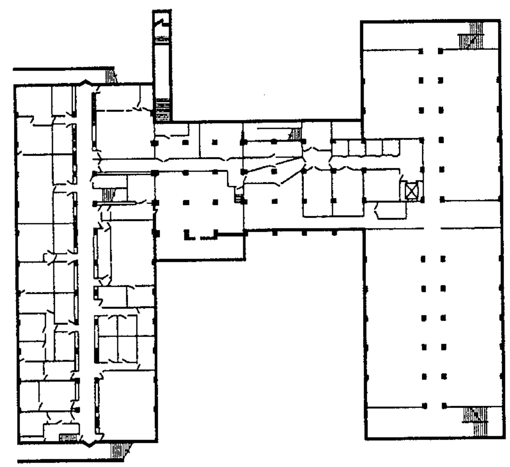
DEPARTMENT OF ENVIRONMENTAL SCIENCES



SUB-BASEMENT
TO BE DETERMINED



BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 2 HVAC DEFERRED MAINTENANCE: 9/02 - 1/05

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

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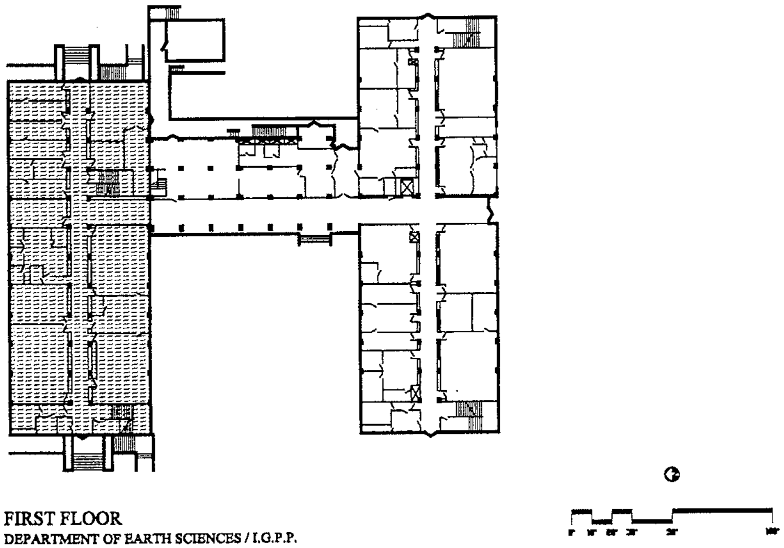

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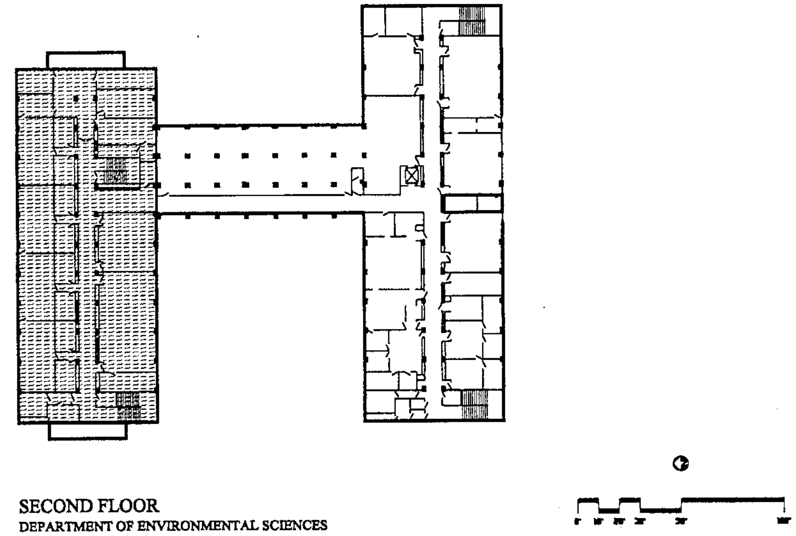

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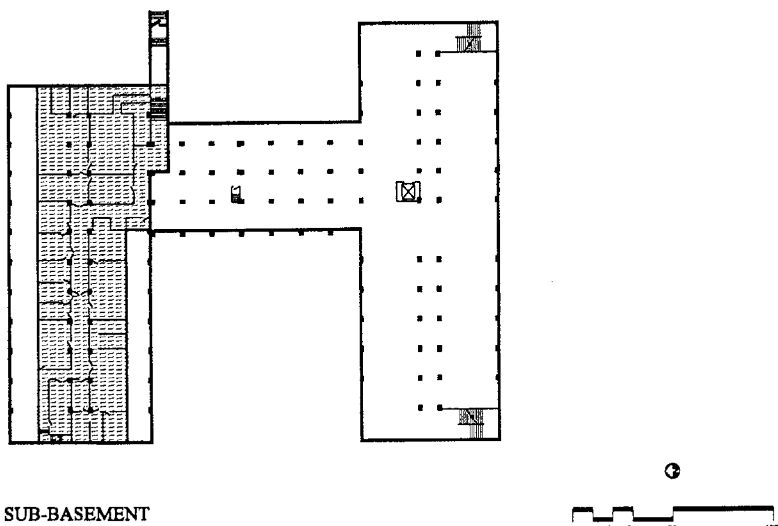

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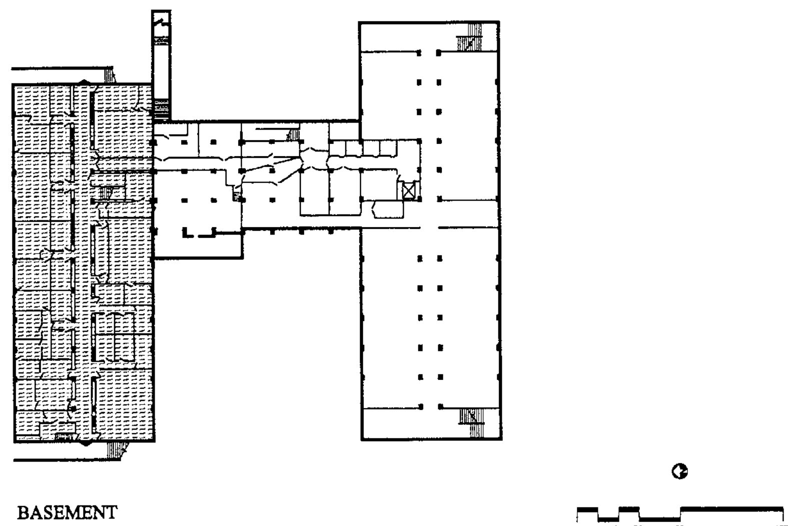

BASEMENT
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PHASE 3 HVAC DEFERRED MAINTENANCE: 9/03 - 3/05

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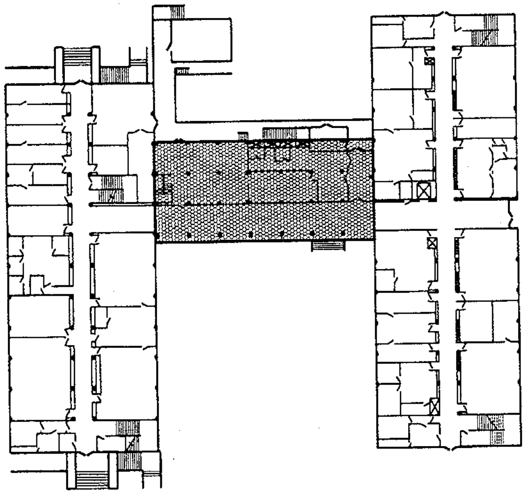
AUGUST 3, 2001



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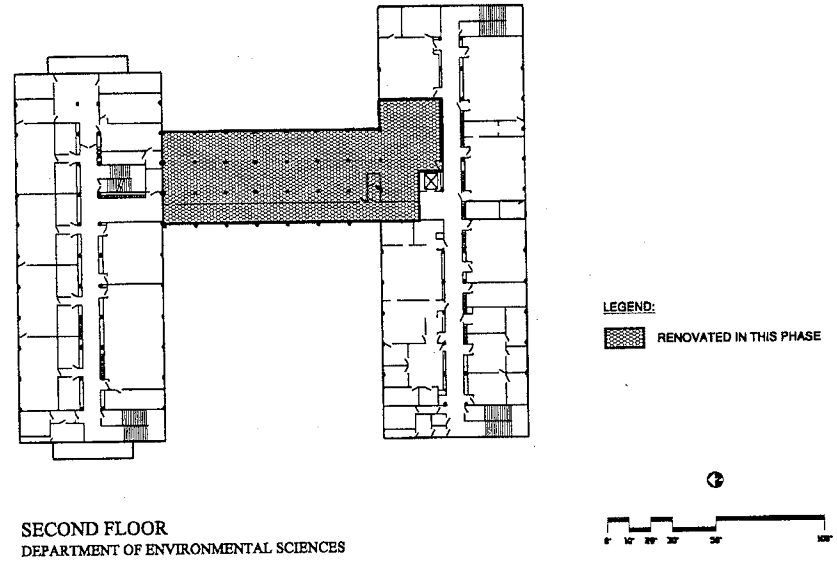

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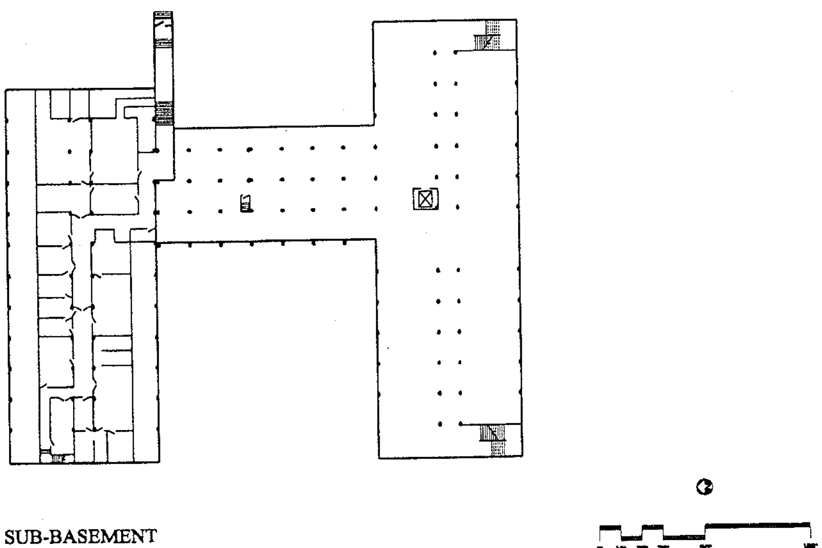

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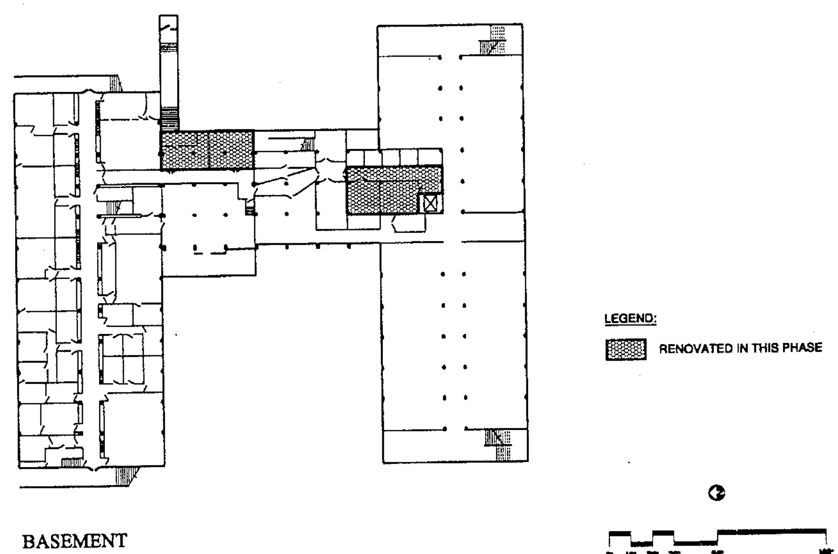

BASEMENT
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PHASE 1A / ARCHITECTURAL RENEWAL: 9/02 - 9/03

GEOLOGY BUILDING RENOVATION

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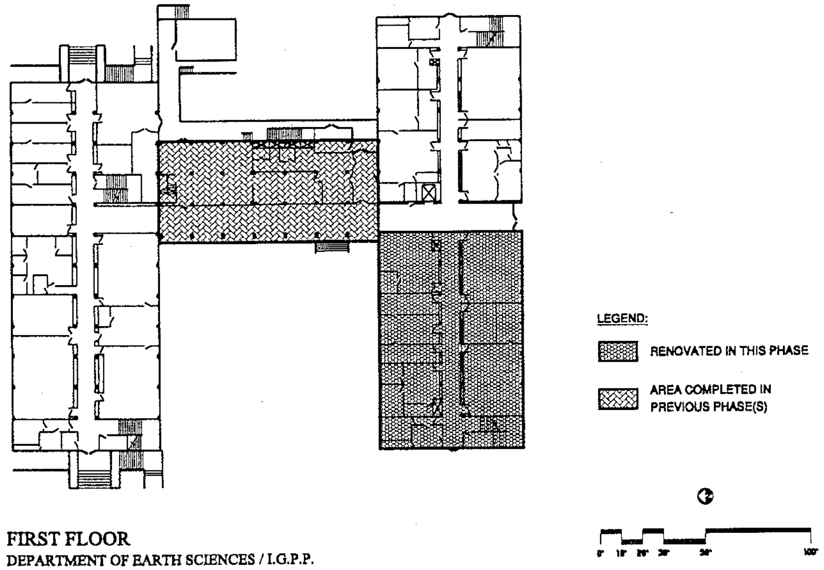
JUNE 20, 2001



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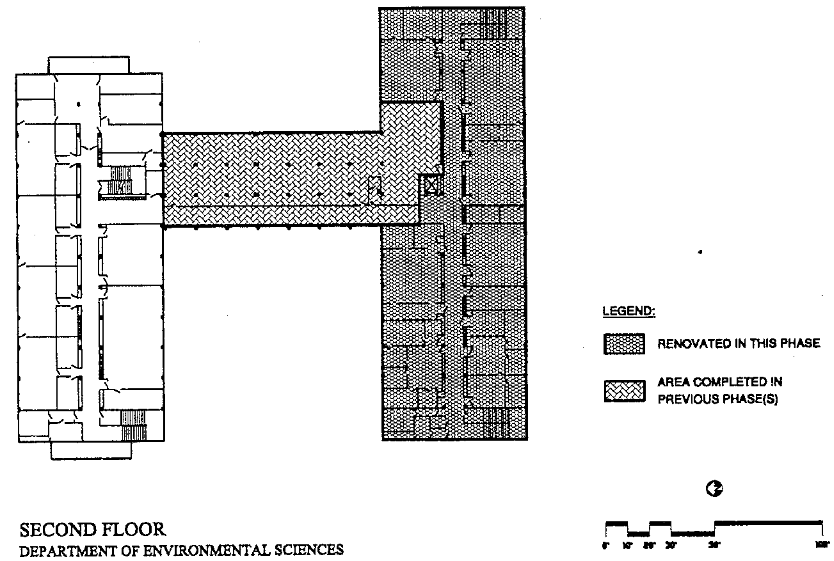

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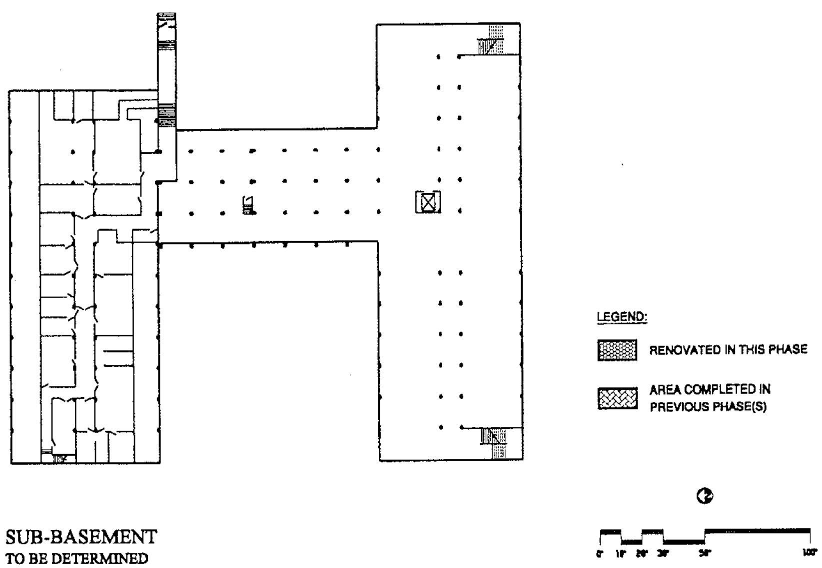

SUB-BASEMENT
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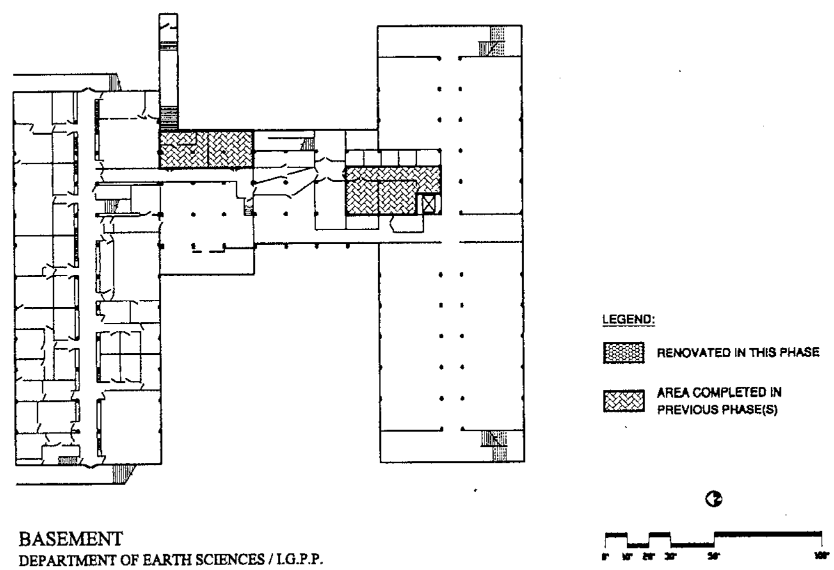

BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 2A / ARCHITECTURAL RENEWAL: 9/03 - 9/04

GEOLOGY BUILDING RENOVATION
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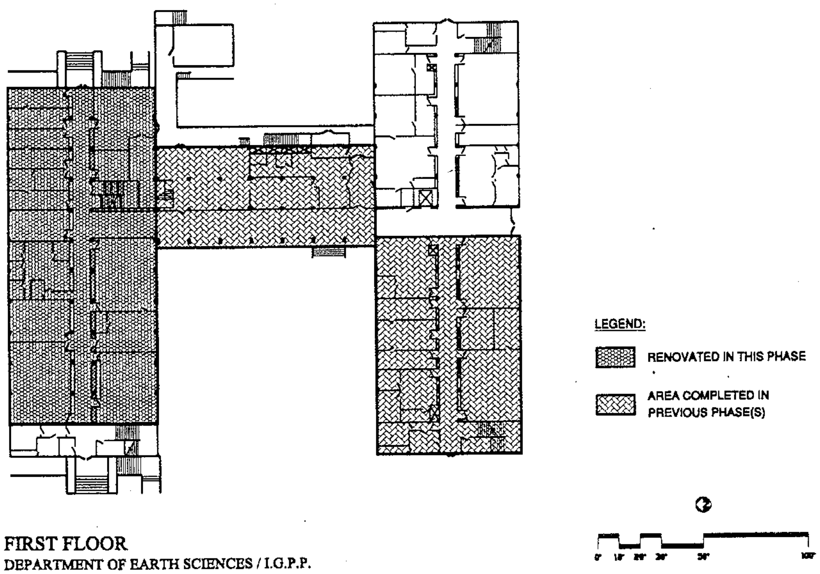
JUNE 20, 2001



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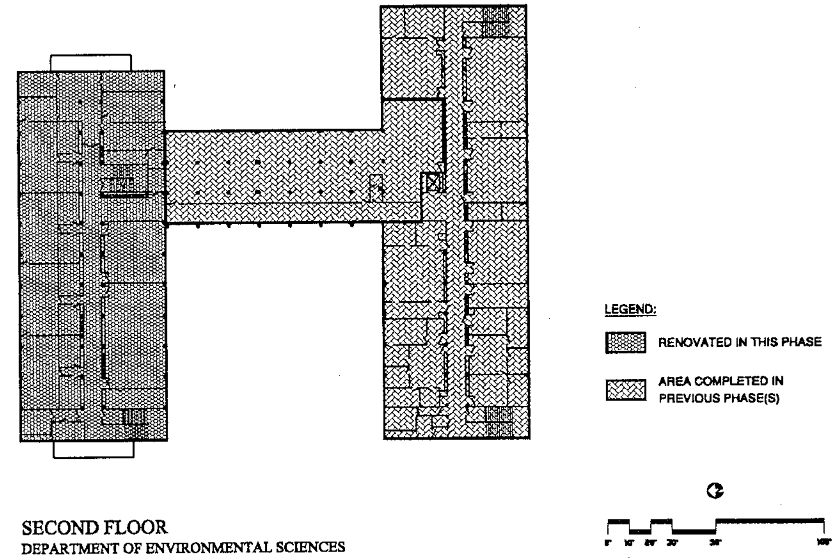

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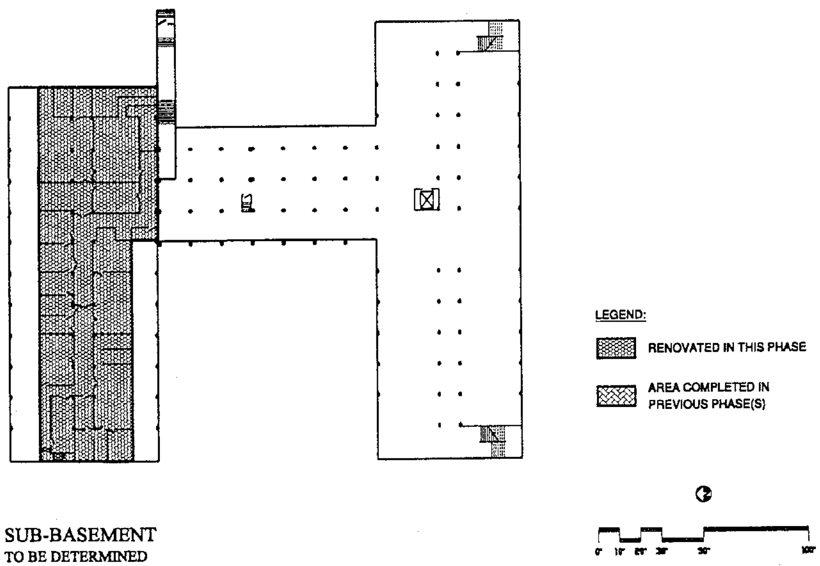
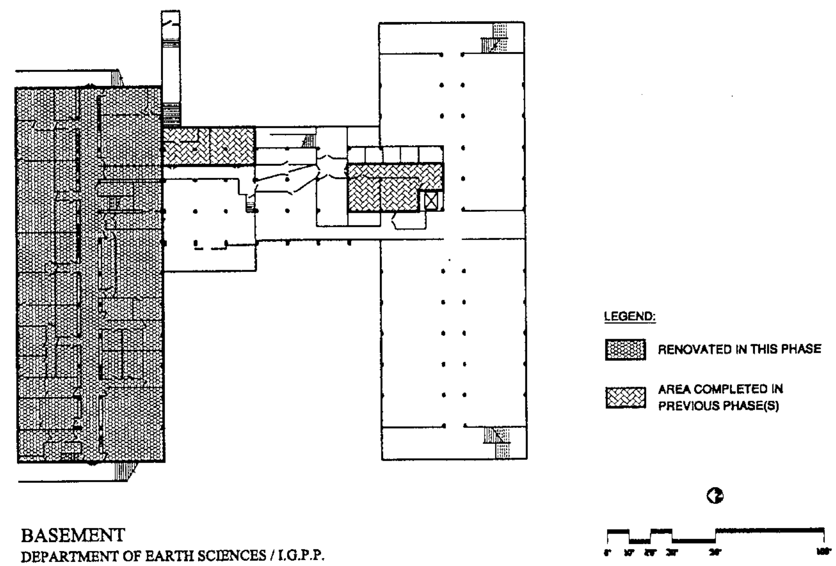
DEPARTMENT OF ENVIRONMENTAL SCIENCES



SUB-BASEMENT
TO BE DETERMINED



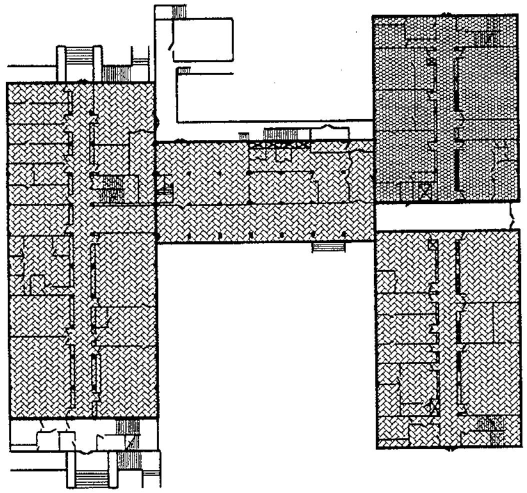
BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 3A / ARCHITECTURAL RENEWAL: 10/05 - 10/06

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

JUNE 20, 2001

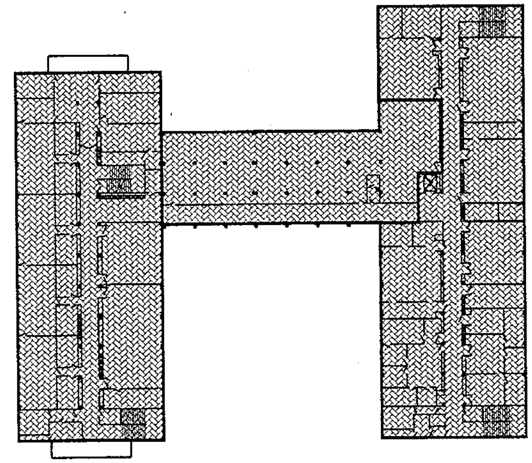


LEGEND:

RENOVATED IN THIS PHASE

AREA COMPLETED IN PREVIOUS PHASE(S)

FIRST FLOOR
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

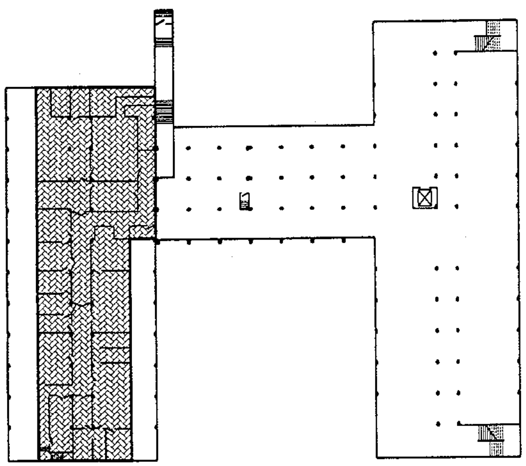


LEGEND:

RENOVATED IN THIS PHASE

AREA COMPLETED IN PREVIOUS PHASE(S)

SECOND FLOOR
DEPARTMENT OF ENVIRONMENTAL SCIENCES

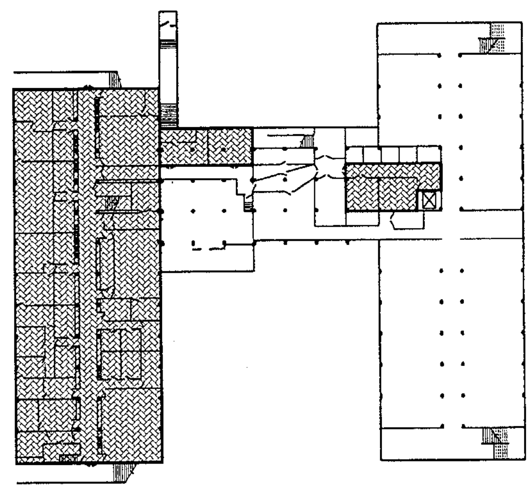


LEGEND:

RENOVATED IN THIS PHASE

AREA COMPLETED IN PREVIOUS PHASE(S)

SUB-BASEMENT
TO BE DETERMINED



LEGEND:

RENOVATED IN THIS PHASE

AREA COMPLETED IN PREVIOUS PHASE(S)

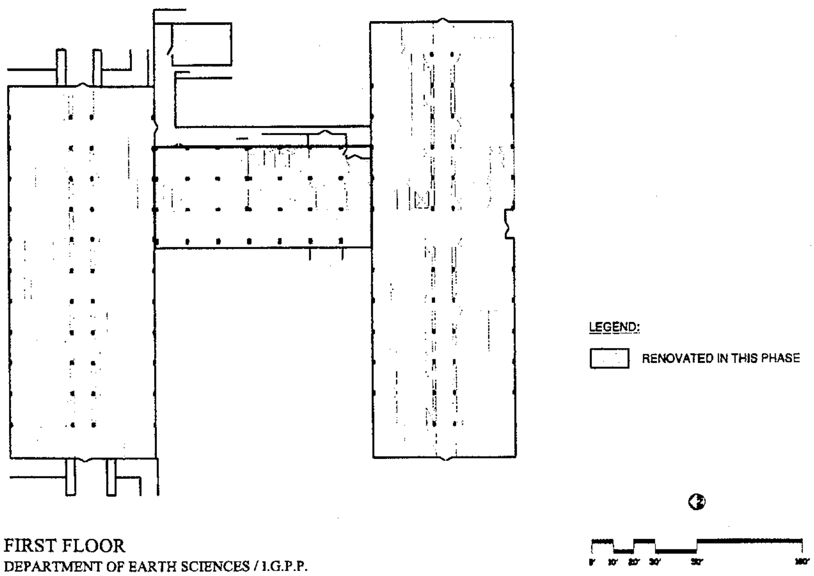
BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 4A / ARCHITECTURAL RENEWAL: 10/06 - 10/07

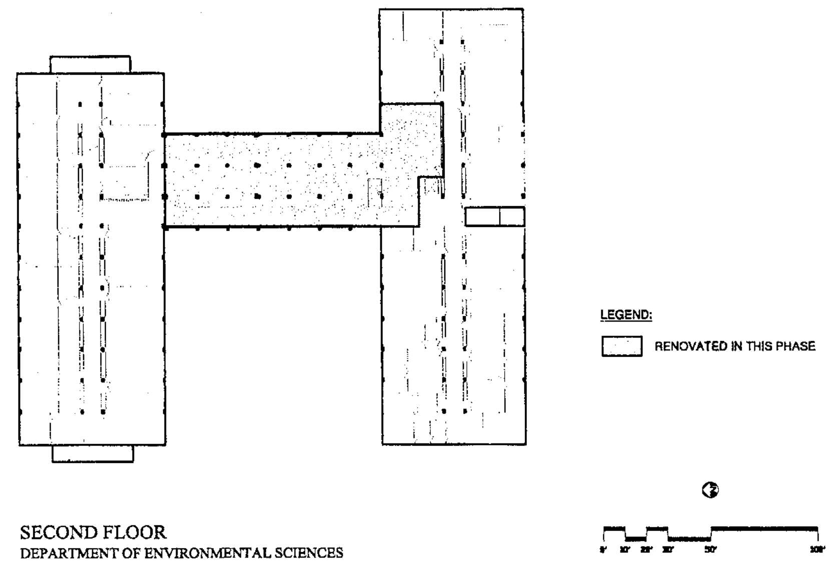
GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

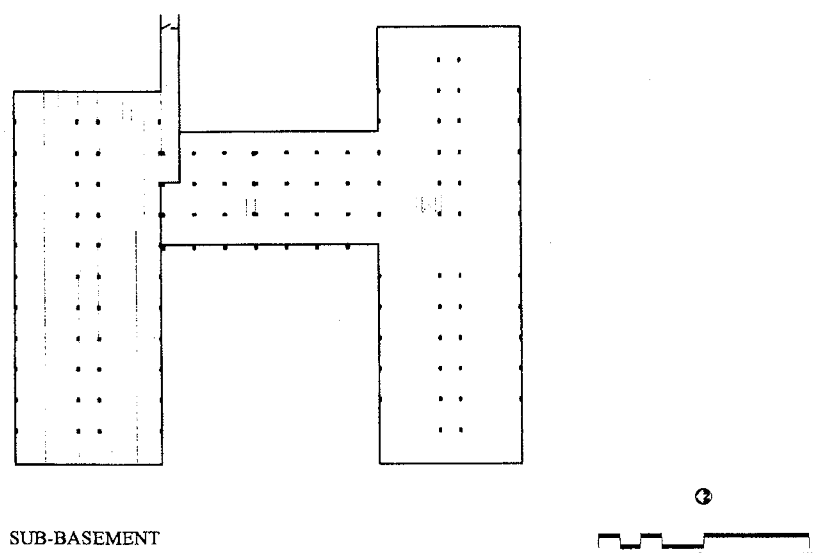
JUNE 20, 2001



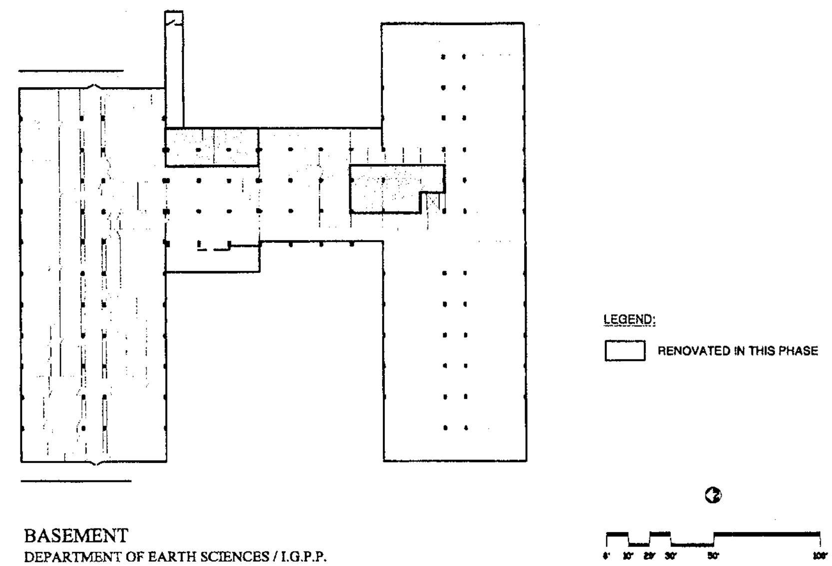
FIRST FLOOR
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.



SECOND FLOOR
DEPARTMENT OF ENVIRONMENTAL SCIENCES



SUB-BASEMENT
TO BE DETERMINED



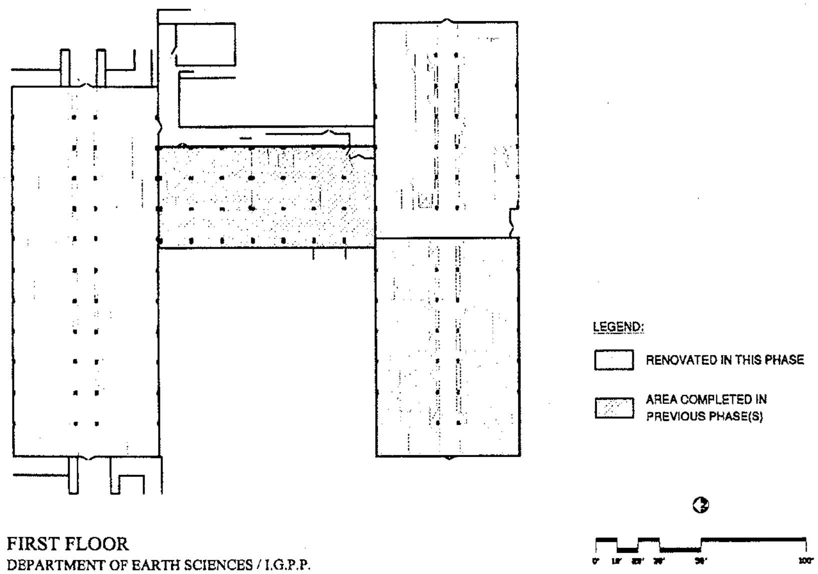
BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 1A

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

JUNE 20, 2001



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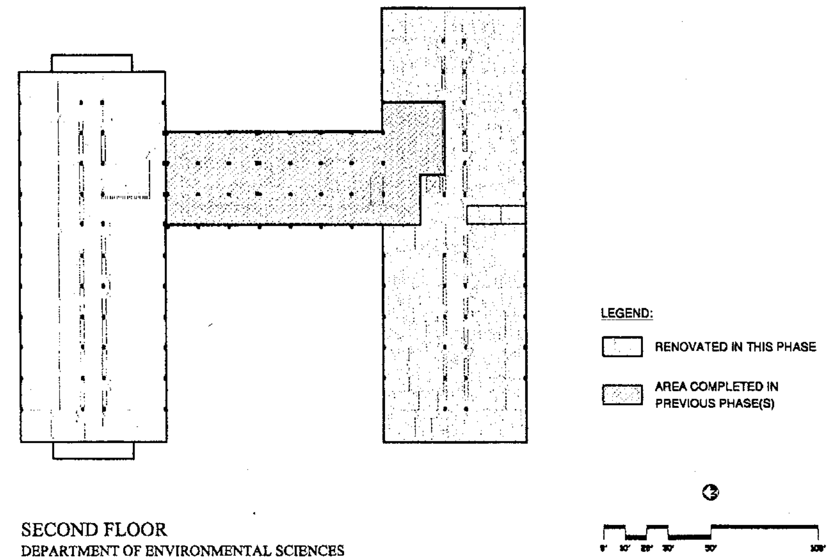
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.



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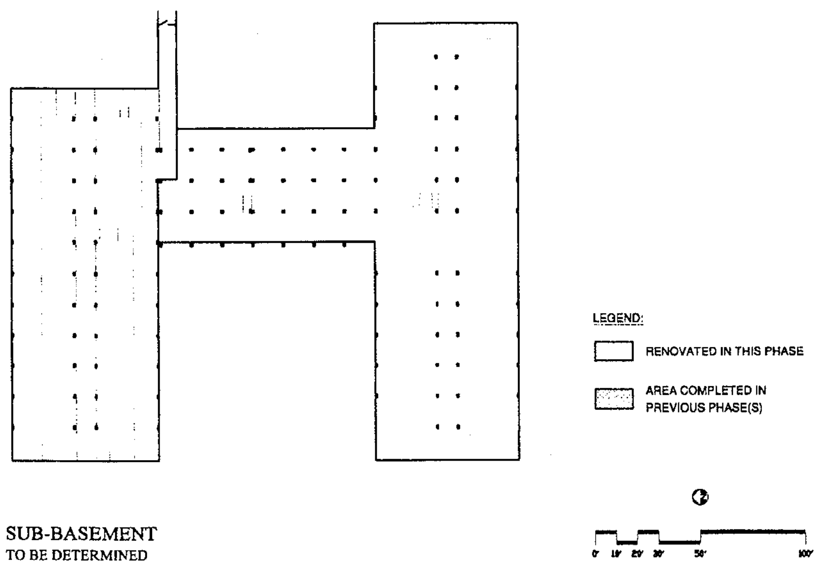
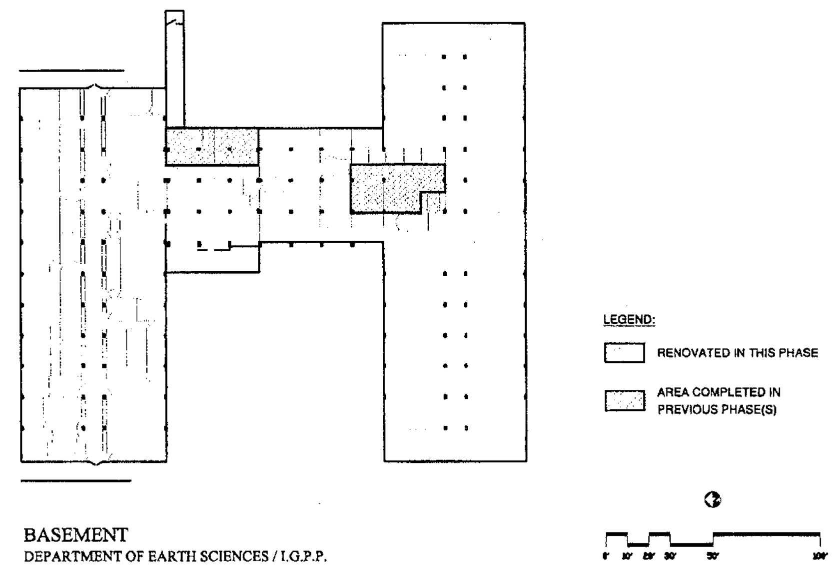
DEPARTMENT OF ENVIRONMENTAL SCIENCES



SUB-BASEMENT
TO BE DETERMINED



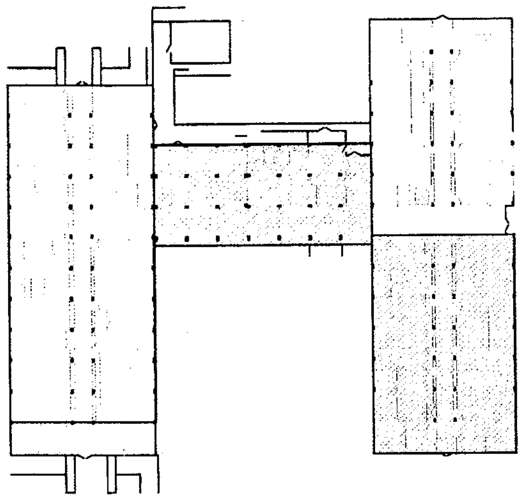
BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 2A

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

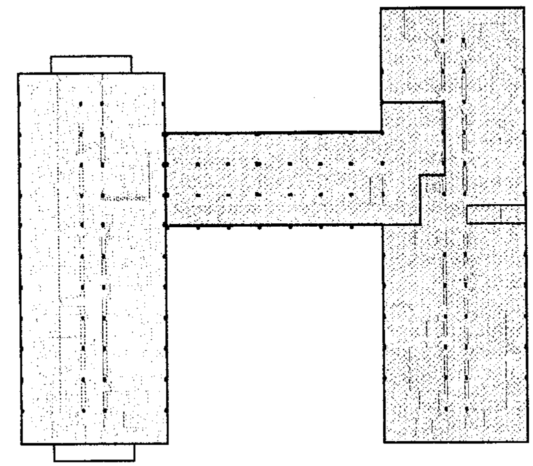
JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

JUNE 20, 2001



FIRST FLOOR
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

LEGEND:
RENOVATED IN THIS PHASE
AREA COMPLETED IN PREVIOUS PHASE(S)



SECOND FLOOR
DEPARTMENT OF ENVIRONMENTAL SCIENCES

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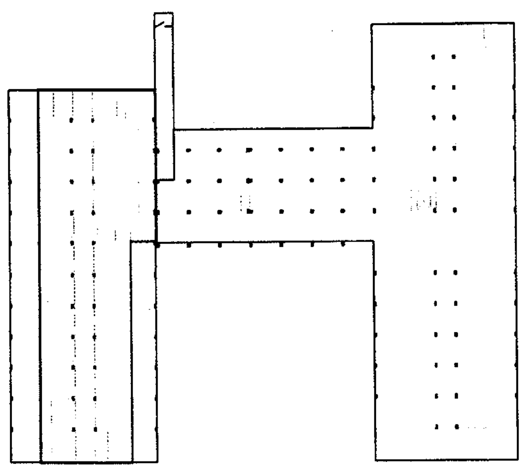
AREA COMPLETED IN PREVIOUS PHASE(S)



SUB-BASEMENT
TO BE DETERMINED

LEGEND:
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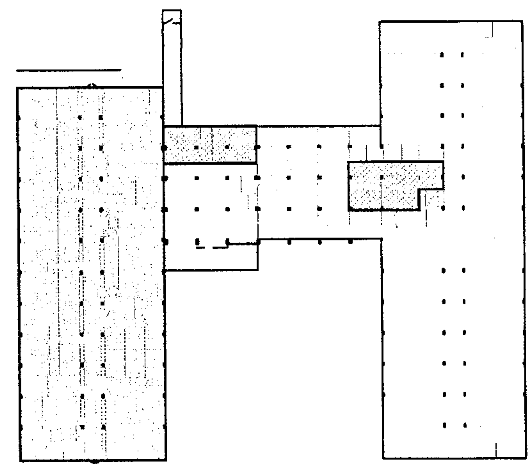
AREA COMPLETED IN PREVIOUS PHASE(S)



BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

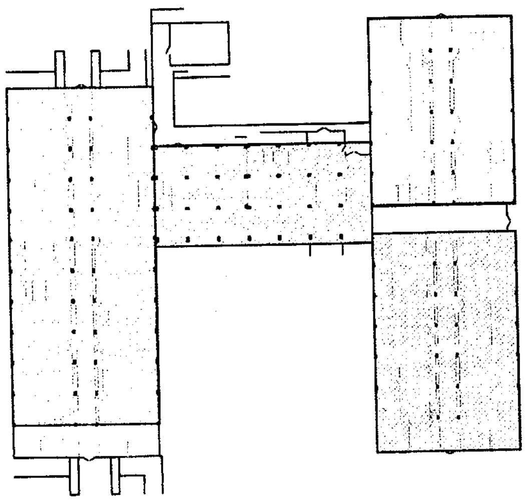
LEGEND:
RENOVATED IN THIS PHASE
AREA COMPLETED IN PREVIOUS PHASE(S)

PHASE 3A

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

JUNE 20, 2001

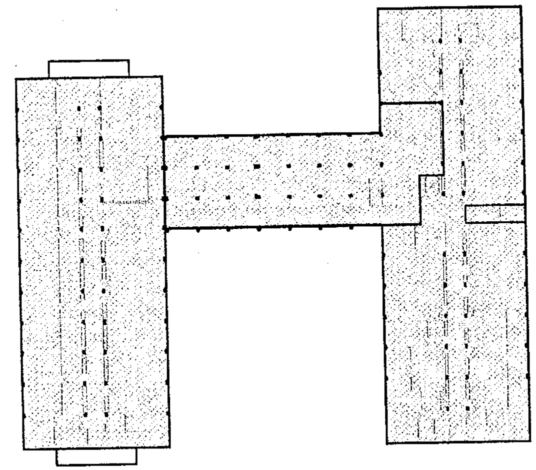


LEGEND:

RENOVATED IN THIS PHASE

AREA COMPLETED IN PREVIOUS PHASE(S)

FIRST FLOOR
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

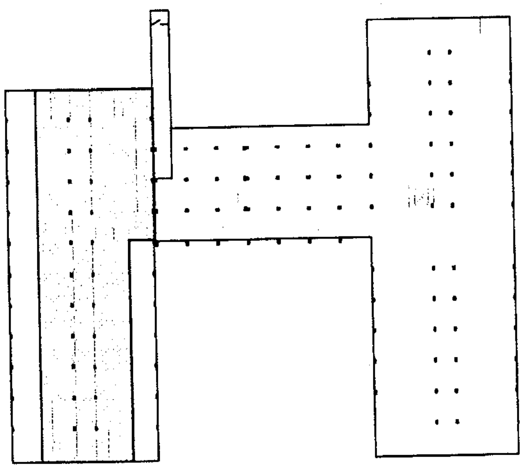


LEGEND:

RENOVATED IN THIS PHASE

AREA COMPLETED IN PREVIOUS PHASE(S)

SECOND FLOOR
DEPARTMENT OF ENVIRONMENTAL SCIENCES

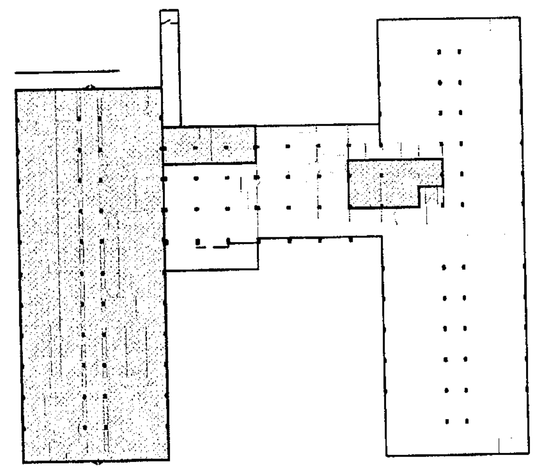


LEGEND:

RENOVATED IN THIS PHASE

AREA COMPLETED IN PREVIOUS PHASE(S)

SUB-BASEMENT
TO BE DETERMINED



LEGEND:

RENOVATED IN THIS PHASE

AREA COMPLETED IN PREVIOUS PHASE(S)

BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 4A

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

JUNE 20, 2001

Submitted By

CAMPBELL-ANDERSON & ASSOCIATES, INC.

August 1, 2001

University of California, Riverside
Riverside, California

GEOLOGY BUILDING RENOVATION

Programming Estimate

INDEX

Section I

Main Summary

COST PLAN SUMMARY

Riverside Campus CCCI 4019 EPI 2564

PROJECT TITLE: Geology Building Renovation August 2001
University of California, Riverside

		Unit Construction Cost With Markup Separate		Unit Construction Cost Including Markup	
		$/OGSF	TOTAL $	$/OGSF	TOTAL $
1	Foundation	0.29	28,710	0.33	32,712
2	Vertical Structure	5.81	567,536	6.62	646,651
3	Floor and Roof Structure	3.21	313,290	3.65	356,963
4	Exterior Cladding	10.20	997,024	11.62	1,136,009
5	Roofing	0.15	14,318	0.17	16,314
	Subtotal 1-5 Shell	19.66	1,920,878	22.40	2,188,648
6	Interior Partitions & Doors	8.80	859,736	10.02	979,583
7	Interior Finishes	10.84	1,059,662	12.35	1,207,379
	Subtotal 6-7 Interiors	19.64	1,919,398	22.38	2,186,962
8	Functional Equipment	39.90	3,899,601	45.46	4,443,205
9	Vertical Transportation	1.53	149,501	1.74	170,341
	Subtotal 8-9 Eqmt/Vtcl. Trans.	41.43	4,049,102	47.21	4,613,547
10	Plumbing	15.68	1,531,916	17.86	1,745,465
11	HVAC	24.43	2,387,500	27.84	2,720,318
12	Electrical	24.76	2,419,643	28.21	2,756,941
13	Fire Protection	2.61	254,776	2.97	290,292
	Subtotal 10-13 M&E	67.47	6,593,835	76.88	7,513,016
Building 1-13 Total (CIB Line 1)		148.20	14,483,213	168.86	16,502,173
14	Site Clearance (CIB Line 0)	14.21	1,388,685	16.18	1,581,124
15	Exterior Utilities (CIB Line 2)	0.00	0	0.00	0
16	Site Development (CIB Line 4)	0.00	0	0.00	0
	Subtotal 14-16 Site	14.21	1,388,685	16.18	1,581,124
Subtotal, Construction Cost		162.41	15,871,898	185.04	18,083,297
17	General Conditions and G.C. Overhead/Profit	22.63	2,211,399	0.00	N/A
Base Budget As Of Date Of Estimate		185.04	18,083,297	185.04	18,083,297

COST PLAN SUMMARY

Riverside Campus CCCI 4019 EPI 2564

ᴾROJECT TITLE: Geology Building Renovation
University of California, Riverside

August 2001

	Year	Ann. Infl.				
Base Budget As Of Date Of Estimate			185.04	18,083,297	185.04	18,083,297
Escalation from date of estimate to July 1, 2002 (Budget Year)	1.08	4.00%		781,198		
Escalation to midpoint of construction from July 1, 2002 to midpoint of constr.	2.70	5.00%		2,438,605		
ESTIMATED CONSTRUCTION BUDGET				21,303,100		

Building Area Data	
ASF:	57,521
OGSF:	97,729
Efficiency (ASF/OGSF):	0.59

EXCLUSIONS

- All professional fees.
- Construction contingency.
- Furniture, fixtures, and equipment (including telephone/data equipment).
- Costs associated with abnormal soil conditions.
- All soft costs.
- Inflation adjustment beyond a midpoint of construction of September 2004.

Section II

Phase 1A - Center Wing

COST PLAN SUMMARY

Riverside Campus | CCCI 4019 | EPI 2564

PROJECT TITLE: Geology Building Renovation
University of California, Riverside
Phase 1A - Center Wing

August 2001

		Unit Construction Cost With Markup Separate		Unit Construction Cost Including Markup	
		$/OGSF	TOTAL $	$/OGSF	TOTAL $
1	Foundation	0.00	0	0.00	0
2	Vertical Structure	0.00	0	0.00	0
3	Floor and Roof Structure	1.75	28,578	2.24	36,514
4	Exterior Cladding	3.52	57,545	4.50	73,526
5	Roofing	0.00	0	0.00	0
	Subtotal 1-5 Shell	5.27	86,123	6.74	110,040
6	Interior Partitions & Doors	6.58	107,373	8.40	137,191
7	Interior Finishes	6.58	107,373	8.40	137,191
	Subtotal 6-7 Interiors	13.15	214,746	16.80	274,382
8	Functional Equipment	1.86	30,424	2.38	38,873
9	Vertical Transportation	0.00	0	0.00	0
	Subtotal 8-9 Eqmt/Vtcl. Trans.	1.86	30,424	2.38	38,873
10	Plumbing	0.00	0	0.00	0
11	HVAC	17.25	281,693	22.04	359,921
12	Electrical	17.25	281,693	22.04	359,921
13	Fire Protection	4.14	67,559	5.29	86,320
	Subtotal 10-13 M&E	38.64	630,945	49.37	806,162
Building 1-13 Total (CIB Line 1)		58.92	962,238	75.29	1,229,456
14	Site Clearance (CIB Line 0)	18.10	295,573	23.13	377,655
15	Exterior Utilities (CIB Line 2)	0.00	0	0.00	0
16	Site Development (CIB Line 4)	0.00	0	0.00	0
	Subtotal 14-16 Site	18.10	295,573	23.13	377,655
Subtotal, Construction Cost		77.02	1,257,811	98.41	1,607,111
17	General Conditions and G.C. Overhead/Profit	21.39	349,300	0.00	N/A
Base Budget As Of Date Of Estimate		98.41	1,607,111	98.41	1,607,111

COST PLAN SUMMARY

Riverside Campus	CCCI 4019	EPI 2564	
PROJECT TITLE:	Geology Building Renovation University of California, Riverside Phase 1A - Center Wing	August 2001	

	Year	Ann. Infl.				
Base Budget As Of Date Of Estimate		98.41	1,607,111		98.41	1,607,111
Escalation from date of estimate to July 1, 2002 (Budget Year)	1.08	4.00%	69,427			
Escalation to midpoint of construction from July 1, 2002 to midpoint of constr.	0.90	5.00%	75,436			
ESTIMATED CONSTRUCTION BUDGET			1,751,974			

Building Area Data	
ASF:	9,698
OGSF:	16,330
Efficiency (ASF/OGSF):	0.59

EXCLUSIONS

- All professional fees.
- Construction contingency.
- Furniture, fixtures, and equipment (including telephone/data equipment).
- Costs associated with abnormal soil conditions.
- All soft costs.
- Inflation adjustment beyond a midpoint of construction of September 2004.

PROJECT: GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE
STAGE: PROGRAMMING - PHASE 1A, CENTER WING

LOCATION: RIVERSIDE, CALIFORNIA
DATE: 01-Aug-01

Element/Specification	Quantity		Unit Rate	Estimated Cost
1. FOUNDATION				Nil
	TO SUMMARY			$0
2. VERTICAL STRUCTURE				Nil
	TO SUMMARY			$0
3. FLOOR AND ROOF STRUCTURE				
1. Miscellaneous coring of existing floor slab for MP&E services	16,330	SF	1.75	28,578
	TO SUMMARY			$28,578
4. EXTERIOR CLADDING				
Window Replacement/Sunshades				
1. Removal and replacement of aluminum window system	1,014	SF	51.75	52,475
2. Internal sill/jamb and head treatment	1,014	SF	5.00	5,070
	TO SUMMARY			$57,545
5. ROOFING				Nil
	TO SUMMARY			$0

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 1A, CENTER WING	DATE:	01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
6. INTERIOR PARTITIONS AND DOORS					
1.	New internal partition and door: to office/ administration	9,698	SF	8.70	84,373
2.	Ditto: to corridors	2,000	SF	11.50	23,000
			TO SUMMARY		$107,373
7. INTERIOR FINISHES					
1.	New floor, wall and ceiling finishes: to office/ administration	9,698	SF	8.70	84,373
2.	Ditto: to corridors	2,000	SF	11.50	23,000
			TO SUMMARY		$107,373
8. FUNCTIONAL EQUIPMENT					
1.	Fittings and equipment: to office/administration	9,698	SF	2.90	28,124
2.	Ditto: to corridors	2,000	SF	1.15	2,300
			TO SUMMARY		$30,424
9. VERTICAL TRANSPORTATION					Nil
			TO SUMMARY		$0

PROJECT: GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE
LOCATION: RIVERSIDE, CALIFORNIA
STAGE: PROGRAMMING - PHASE 1A, CENTER WING
DATE: 01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
10. PLUMBING					Nil
		TO SUMMARY			$0
11. HVAC					
1.	HVAC systems to remainder of building	16,330	SF	17.25	281,693
		TO SUMMARY			$281,693
12. ELECTRICAL					
1.	Complete replacement of electrical systems to remainder of building	16,330	SF	17.25	281,693
		TO SUMMARY			$281,693
13. FIRE PROTECTION					
1.	Automatic sprinkler installation	16,330	SF	2.30	37,559
2.	Fire raiser/FDC/alarm	1	EA	15,000.00	15,000
3.	Backflow preventer assembly	1	EA	15,000.00	15,000
		TO SUMMARY			$67,559

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 1A, CENTER WING	DATE:	01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
14. SITE CLEARANCE					
1.	Complete internal demolition and removal of debris from site	16,330	SF	4.60	75,118
2.	Hazardous material abatement (per UCR report)	16,330	SF	13.50	220,455
			TO SUMMARY		$295,573
15. EXTERIOR UTILITIES					Nil
			TO SUMMARY		$0
16. SITE DEVELOPMENT					Nil
			TO SUMMARY		$0

Section III

Phase 2A - South Wing

COST PLAN SUMMARY

Riverside Campus | CCCI 4019 | EPI 2564

PROJECT TITLE: Geology Building Renovation
University of California, Riverside
Phase 2A - South Wing

August 2001

		Unit Construction Cost With Markup Separate		Unit Construction Cost Including Markup	
		$/OGSF	TOTAL $	$/OGSF	TOTAL $
1	Foundation	0.00	0	0.00	0
2	Vertical Structure	0.50	10,500	0.57	11,946
3	Floor and Roof Structure	1.75	36,869	1.99	41,946
4	Exterior Cladding	7.71	162,338	8.77	184,692
5	Roofing	0.00	0	0.00	0
	Subtotal 1-5 Shell	9.95	209,707	11.32	238,584
6	Interior Partitions & Doors	9.05	190,671	10.30	216,926
7	Interior Finishes	11.74	247,340	13.36	281,399
	Subtotal 6-7 Interiors	20.79	438,011	23.65	498,325
8	Functional Equipment	49.33	1,039,336	56.13	1,182,453
9	Vertical Transportation	1.45	30,534	1.65	34,739
	Subtotal 8-9 Eqmt/Vtcl. Trans.	50.78	1,069,870	57.77	1,217,191
10	Plumbing	19.27	405,985	21.92	461,889
11	HVAC	25.90	545,762	29.47	620,913
12	Electrical	26.39	556,089	30.03	632,662
13	Fire Protection	2.30	48,456	2.62	55,128
	Subtotal 10-13 M&E	73.87	1,556,292	84.04	1,770,593
Building 1-13 Total (CIB Line 1)		155.40	3,273,880	176.79	3,724,693
14	Site Clearance (CIB Line 0)	13.20	278,098	15.02	316,385
15	Exterior Utilities (CIB Line 2)	0.00	0	0.00	0
16	Site Development (CIB Line 4)	0.00	0	0.00	0
	Subtotal 14-16 Site	13.20	278,098	15.02	316,385
Subtotal, Construction Cost		168.60	3,551,978	191.81	4,041,078
17	General Conditions and G.C. Overhead/Profit	23.22	489,100	0.00	N/A
Base Budget As Of Date Of Estimate		191.81	4,041,078	191.81	4,041,078

COST PLAN SUMMARY

Riverside Campus	CCCI 4019	EPI 2564
PROJECT TITLE:	Geology Building Renovation University of California, Riverside Phase 2A - South Wing	August 2001

	Year	Ann. Infl.			
Base Budget As Of Date Of Estimate		191.81	4,041,078	191.81	4,041,078
Escalation from date of estimate to July 1, 2002 (Budget Year)	1.08	4.00%	174,575		
Escalation to midpoint of construction from July 1, 2002 to midpoint of constr.	1.90	5.00%	400,447		
ESTIMATED CONSTRUCTION BUDGET			4,616,100		

Building Area Data	
ASF:	13,169
OGSF:	21,068
Efficiency (ASF/OGSF):	0.63

EXCLUSIONS

- All professional fees.
- Construction contingency.
- Furniture, fixtures, and equipment (including telephone/data equipment).
- Costs associated with abnormal soil conditions.
- All soft costs.
- Inflation adjustment beyond a midpoint of construction of September 2004.

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 2A, SOUTH WING	DATE:	01-Aug-01

Element/Specification	Quantity	Unit Rate	Estimated Cost
1. FOUNDATION			Nil
	TO SUMMARY		$0
2. VERTICAL STRUCTURE			
1. Strengthening of existing columns to South Building	60 LF	175.00	10,500
	TO SUMMARY		$10,500
3. FLOOR AND ROOF STRUCTURE			
1. Miscellaneous coring of existing floor slab for MP&E services	21,068 SF	1.75	36,869
	TO SUMMARY		$36,869
4. EXTERIOR CLADDING			
Window Replacement/Sunshades			
1. Removal and replacement of aluminum window system	2,050 SF	51.75	106,088
2. Internal sill/jamb and head treatment	2,050 SF	5.00	10,250
3. Sunscreens	100 LF	460.00	46,000
	TO SUMMARY		$162,338

PROJECT: GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE
LOCATION: RIVERSIDE, CALIFORNIA
STAGE: PROGRAMMING - PHASE 2A, SOUTH WING
DATE: 01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
5. ROOFING					Nil
			TO SUMMARY		$0
6. INTERIOR PARTITIONS AND DOORS					
1.	New internal partitions and doors: to research labs	11,169	SF	11.50	128,444
2.	Ditto: to office/administration	2,000	SF	8.70	17,400
3.	Ditto: to restrooms	898	SF	11.50	10,327
4.	Ditto: to corridors	3,000	SF	11.50	34,500
			TO SUMMARY		$190,671
7. INTERIOR FINISHES					
1.	New floor, wall and ceiling finishes: to research labs	11,169	SF	13.80	154,132
2.	Ditto: to office/administration	2,000	SF	8.70	17,400
3.	Ditto: to restrooms	898	SF	46.00	41,308
4.	Ditto: to corridors	3,000	SF	11.50	34,500
			TO SUMMARY		$247,340

PROJECT: GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE
STAGE: PROGRAMMING - PHASE 2A, SOUTH WING

LOCATION: RIVERSIDE, CALIFORNIA
DATE: 01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
8. FUNCTIONAL EQUIPMENT					
1.	Laboratory casework including fume hoods	11,169	SF	80.50	899,105
2.	Replacement of lab equipment		ALLOWANCE		100,000
3.	Fittings and equipment: to restrooms	898	SF	34.50	30,981
4.	Ditto: to office/administration	2,000	SF	2.90	5,800
5.	Ditto: to corridors	3,000	SF	1.15	3,450
			TO SUMMARY		$1,039,336
9. VERTICAL TRANSPORTATION					
1.	ADA upgrades to existing stairs	21,068	SF	0.50	10,534
2.	ADA upgrades to existing elevator	1	EA	20,000.00	20,000
			TO SUMMARY		$30,534
10. PLUMBING					
1.	Replacement of plumbing systems: to restrooms	898	SF	23.00	20,654
2.	Ditto: to research labs	11,169	SF	34.50	385,331
			TO SUMMARY		$405,985

PROJECT: GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE
STAGE: PROGRAMMING - PHASE 2A, SOUTH WING

LOCATION: RIVERSIDE, CALIFORNIA
DATE: 01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
11. HVAC					
1.	HVAC systems: to restrooms	898	SF	5.75	5,164
2.	Ditto: to research labs	11,169	SF	34.50	385,331
3.	Ditto: to remainder of building	9,001	SF	17.25	155,267
		TO SUMMARY			$545,762
12. ELECTRICAL					
1.	Complete replacement of electrical systems: to research laboratories	11,169	SF	34.50	385,331
2.	Ditto: to remainder of building	9,899	SF	17.25	170,758
		TO SUMMARY			$556,089
13. FIRE PROTECTION					
1.	Automatic sprinkler installation	21,068	SF	2.30	48,456
		TO SUMMARY			$48,456

PROJECT: GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE
STAGE: PROGRAMMING - PHASE 2A, SOUTH WING

LOCATION: RIVERSIDE, CALIFORNIA
DATE: 01-Aug-01

Element/Specification	Quantity		Unit Rate	Estimated Cost
14. SITE CLEARANCE				
1. Complete internal demolition and removal of debris from site	21,068	SF	4.60	96,913
2. Hazardous material abatement (per UCR report)	21,068	SF	8.60	181,185
			TO SUMMARY	$278,098
15. EXTERIOR UTILITIES				Nil
			TO SUMMARY	$0
16. SITE DEVELOPMENT				Nil
			TO SUMMARY	$0

Section IV

Phase 3A - North Wing

COST PLAN SUMMARY

Riverside Campus | CCCI 4019 | EPI 2564

PROJECT TITLE: Geology Building Renovation
University of California, Riverside
Phase 3A - North Wing

August 2001

		Unit Construction Cost With Markup Separate		Unit Construction Cost Including Markup	
		$/OGSF	TOTAL $	$/OGSF	TOTAL $
1	Foundation	0.53	28,710	0.59	31,754
2	Vertical Structure	10.33	557,036	11.42	616,093
3	Floor and Roof Structure	4.39	236,968	4.86	262,091
4	Exterior Cladding	14.41	777,141	15.94	859,533
5	Roofing	0.27	14,318	0.29	15,836
	Subtotal 1-5 Shell	29.93	1,614,173	33.10	1,785,308
6	Interior Partitions & Doors	9.07	489,276	10.03	541,149
7	Interior Finishes	11.11	599,140	12.29	662,661
	Subtotal 6-7 Interiors	20.18	1,088,416	22.32	1,203,810
8	Functional Equipment	46.47	2,506,080	51.39	2,771,775
9	Vertical Transportation	2.21	118,967	2.44	131,580
	Subtotal 8-9 Eqmt/Vtcl. Trans.	48.67	2,625,047	53.83	2,903,354
10	Plumbing	18.47	996,245	20.43	1,101,867
11	HVAC	25.68	1,384,853	28.40	1,531,675
12	Electrical	26.08	1,406,669	28.85	1,555,804
13	Fire Protection	2.30	124,048	2.54	137,200
	Subtotal 10-13 M&E	72.53	3,911,815	80.22	4,326,546
Building 1-13 Total (CIB Line 1)		171.31	9,239,451	189.47	10,219,018
14	Site Clearance (CIB Line 0)	13.35	720,019	14.77	796,351
15	Exterior Utilities (CIB Line 2)	0.00	0	0.00	0
16	Site Development (CIB Line 4)	0.00	0	0.00	0
	Subtotal 14-16 Site	13.35	720,019	14.77	796,351
Subtotal, Construction Cost		184.66	9,959,470	204.24	11,015,369
17	General Conditions and G.C. Overhead/Profit	19.58	1,055,899	0.00	N/A
Base Budget As Of Date Of Estimate		204.24	11,015,369	204.24	11,015,369

COST PLAN SUMMARY

Riverside Campus	CCCI 4019	EPI 2564
PROJECT TITLE:	Geology Building Renovation University of California, Riverside Phase 3A - North Wing	August 2001

	Year	Ann. Infl.				
Base Budget As Of Date Of Estimate		204.24		11,015,369	204.24	11,015,369
Escalation from date of estimate to July 1, 2002 (Budget Year)	1.08	4.00%		475,864		
Escalation to midpoint of construction from July 1, 2002 to midpoint of constr.	2.90	5.00%		1,666,220		
ESTIMATED CONSTRUCTION BUDGET				13,157,453		

Building Area Data	
ASF:	29,819
OGSF:	53,934
Efficiency (ASF/OGSF):	0.55

EXCLUSIONS

- All professional fees.
- Construction contingency.
- Furniture, fixtures, and equipment (including telephone/data equipment).
- Costs associated with abnormal soil conditions.
- All soft costs.
- Inflation adjustment beyond a midpoint of construction of September 2004.

PROJECT: GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE
LOCATION: RIVERSIDE, CALIFORNIA
STAGE: PROGRAMMING - PHASE 3A, NORTH WING
DATE: 01-Aug-01

Element/Specification	Quantity		Unit Rate	Estimated Cost
1. FOUNDATION				
Elevator/Stair Addition				
1. Reinforced concrete strip footings	115	LF	90.00	10,350
2. Tie-in to existing foundation system	2	EA	2,340.00	4,680
Seismic Upgrade				
3. Installation of new reinforced concrete strip footing for new shear wall at basement level	30	LF	300.00	9,000
4. Tie-in to existing foundation system	2	EA	2,340.00	4,680
			TO SUMMARY	$28,710
2. VERTICAL STRUCTURE				
1. Installation of new 12" thick reinforced concrete shear walls including all necessary connections to existing structure	3,510	SF	115.00	403,650
2. Strengthening of existing walls at North Building basement	4,695	SF	32.67	153,386
			TO SUMMARY	$557,036

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 3A, NORTH WING	DATE:	01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
3. FLOOR AND ROOF STRUCTURE					
Elevator Addition					
1.	Reinforced concrete slab-on-grade over two layers of 2" sand with visqueen membrane on compacted sub-grade	830	SF	11.50	9,545
2.	Elevator pit	1	EA	7,500.00	7,500
3.	Suspended reinforced concrete floor construction	2,490	SF	40.00	99,600
4.	Suspended reinforced concrete roof slab construction	830	SF	34.50	28,635
General					
5.	Miscellaneous coring of existing floor slab for MP&E services	53,934	SF	1.70	91,688
				TO SUMMARY	$236,968
4. EXTERIOR CLADDING					
Elevator Addition					
1.	External walls to elevator addition	5,400	SF	34.50	186,300
Window Replacement/Sunshades					
2.	Removal and replacement of aluminum window system	7,169	SF	51.75	370,996
3.	Internal sill/jamb and head treatment	7,169	SF	5.00	35,845
4.	Sunscreens	400	LF	460.00	184,000
				TO SUMMARY	$777,141

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 3A, NORTH WING	DATE:	01-Aug-01

Element/Specification	Quantity	Unit Rate	Estimated Cost
5. ROOFING			
Elevator Addition			
1. Built-up roofing finish to new roof including insulation and flashings	830 SF	17.25	14,318
	TO SUMMARY		$14,318
6. INTERIOR PARTITIONS AND DOORS			
1. New internal partitions and doors: to research labs	27,612 SF	11.50	317,538
2. Ditto: to office/administration	2,207 SF	8.70	19,201
3. Ditto: to restrooms	1,897 SF	11.50	21,816
4. Ditto: to corridors	8,047 SF	11.50	92,541
5. Ditto: to new elevator addition	3,320 SF	11.50	38,180
	TO SUMMARY		$489,276
7. INTERIOR FINISHES			
1. New floor, wall and ceiling finishes: to research labs	27,612 SF	13.80	381,046
2. Ditto: to office/administration	2,207 SF	8.70	19,201
3. Ditto: to restrooms	1,897 SF	46.00	87,262
4. Ditto: to corridors	8,047 SF	11.50	92,541
5. Ditto: to new elevator addition	3,320 SF	5.75	19,090
	TO SUMMARY		$599,140

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 3A, NORTH WING	DATE:	01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
8. FUNCTIONAL EQUIPMENT					
1.	Laboratory casework including fume hoods	27,612	SF	80.50	2,222,766
2.	Replacement of lab equipment		ALLOWANCE		200,000
3.	Fittings and equipment: to restrooms	1,897	SF	34.50	65,447
4.	Ditto: to office/administration	2,207	SF	3.00	6,621
5.	Ditto: to corridors	8,047	SF	1.15	9,254
6.	Ditto: to new elevator addition	3,320	SF	0.60	1,992
			TO SUMMARY		$2,506,080
9. VERTICAL TRANSPORTATION					
1.	New hydraulic passenger elevator, 3,500-lb. capacity, four stops in line, 50'-0" total travel	1	EA	92,000.00	92,000
2.	ADA upgrades to existing stairs	53,934	SF	0.50	26,967
			TO SUMMARY		$118,967
10. PLUMBING					
1.	Replacement of plumbing systems: to restrooms	1,897	SF	23.00	43,631
2.	Ditto: to research labs	27,612	SF	34.50	952,614
			TO SUMMARY		$996,245

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 3A, NORTH WING	DATE:	01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
11. HVAC					
1.	HVAC systems: to restrooms	1,897	SF	5.75	10,908
2.	Ditto: to research labs	27,612	SF	34.50	952,614
3.	Ditto: to remainder of building	24,425	SF	17.25	421,331
			TO SUMMARY		$1,384,853
12. ELECTRICAL					
1.	Complete replacement of electrical systems: to research laboratories	27,612	SF	34.50	952,614
2.	Ditto: to remainder of building	26,322	SF	17.25	454,055
			TO SUMMARY		$1,406,669
13. FIRE PROTECTION					
1.	Automatic sprinkler installation	53,934	SF	2.30	124,048
			TO SUMMARY		$124,048

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 3A, NORTH WING	DATE:	01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
14. SITE CLEARANCE					
1.	Complete internal demolition and removal of debris from site	53,934	SF	4.60	248,096
2.	Hazardous material abatement (per UCR report)	53,934	SF	8.75	471,923
			TO SUMMARY		$720,019
15. EXTERIOR UTILITIES					Nil
			TO SUMMARY		$0
16. SITE DEVELOPMENT					Nil
			TO SUMMARY		$0

Section V

Phase 4A - South Wing

COST PLAN SUMMARY

Riverside Campus   CCCI 4019   EPI 2564

PROJECT TITLE: Geology Building Renovation
University of California, Riverside
Phase 4A - South Wing

August 2001

		Unit Construction Cost With Markup Separate		Unit Construction Cost Including Markup	
		$/OGSF	TOTAL $	$/OGSF	TOTAL $
1	Foundation	0.00	0	0.00	0
2	Vertical Structure	0.00	0	0.00	0
3	Floor and Roof Structure	1.70	10,875	2.19	14,003
4	Exterior Cladding	0.00	0	0.00	0
5	Roofing	0.00	0	0.00	0
	Subtotal 1-5 Shell	1.70	10,875	2.19	14,003
6	Interior Partitions & Doors	11.32	72,416	14.58	93,243
7	Interior Finishes	16.54	105,809	21.30	136,240
	Subtotal 6-7 Interiors	27.86	178,225	35.87	229,483
8	Functional Equipment	50.61	323,761	65.17	416,875
9	Vertical Transportation	0.00	0	0.00	0
	Subtotal 8-9 Eqmt/Vtcl. Trans.	50.61	323,761	65.17	416,875
10	Plumbing	20.27	129,686	26.10	166,984
11	HVAC	27.39	175,192	35.26	225,577
12	Electrical	27.39	175,192	35.26	225,577
13	Fire Protection	2.30	14,713	2.96	18,944
	Subtotal 10-13 M&E	77.35	494,783	99.59	637,083
Building 1-13 Total (CIB Line 1)		157.52	1,007,644	202.82	1,297,442
14	Site Clearance (CIB Line 0)	14.85	94,995	19.12	122,297
15	Exterior Utilities (CIB Line 2)	0.00	0	0.00	0
16	Site Development (CIB Line 4)	0.00	0	0.00	0
	Subtotal 14-16 Site	14.85	94,995	19.12	122,297
Subtotal, Construction Cost		172.37	1,102,639	221.94	1,419,739
17	General Conditions and G.C. Overhead/Profit	49.57	317,100	0.00	N/A
Base Budget As Of Date Of Estimate		221.94	1,419,739	221.94	1,419,739

COST PLAN SUMMARY

Riverside Campus	CCCI 4019	EPI 2564	
ᴾROJECT TITLE:	Geology Building Renovation University of California, Riverside Phase 4A - South Wing	August 2001	

	Year	Ann. Infl.			
Base Budget As Of Date Of Estimate		221.94	1,419,739	221.94	1,419,739
Escalation from date of estimate to July 1, 2002 (Budget Year)	1.08	4.00%	61,333		
Escalation to midpoint of construction from July 1, 2002 to midpoint of constr.	3.90	5.00%	288,828		
ESTIMATED CONSTRUCTION BUDGET			1,769,900		

Building Area Data	
ASF:	5,035
OGSF:	6,397
Efficiency (ASF/OGSF):	0.79

EXCLUSIONS

- All professional fees.
- Construction contingency.
- Furniture, fixtures, and equipment (including telephone/data equipment).
- Costs associated with abnormal soil conditions.
- All soft costs.
- Inflation adjustment beyond a midpoint of construction of September 2004.

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 4A, SOUTH WING	DATE:	01-Aug-01

Element/Specification	Quantity		Unit Rate	Estimated Cost
1. FOUNDATION				Nil
	TO SUMMARY			$0
2. VERTICAL STRUCTURE				Nil
	TO SUMMARY			$0
3. FLOOR AND ROOF STRUCTURE				
1. Miscellaneous coring of existing floor slab for MP&E services	6,397	SF	1.70	10,875
	TO SUMMARY			$10,875
4. EXTERIOR CLADDING				Nil
	TO SUMMARY			$0
5. ROOFING				Nil
	TO SUMMARY			$0

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 4A, SOUTH WING	DATE:	01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
6. INTERIOR PARTITIONS AND DOORS					
1.	New internal partitions and doors: to research labs	3,759	SF	11.50	43,229
2.	Ditto: to classrooms	1,076	SF	5.75	6,187
3.	Ditto: to corridors	2,000	SF	11.50	23,000
			TO SUMMARY		$72,416
7. INTERIOR FINISHES					
1.	New floor, wall and ceiling finishes: to research labs	3,759	SF	13.80	51,874
2.	Ditto: to classrooms	1,076	SF	28.75	30,935
3.	Ditto: to corridors	2,000	SF	11.50	23,000
			TO SUMMARY		$105,809
8. FUNCTIONAL EQUIPMENT					
1.	Laboratory casework including fume hoods	3,759	SF	80.50	302,600
2.	Fittings and equipment: to classrooms	1,076	SF	17.25	18,561
3.	Ditto: to corridors	2,000	SF	1.30	2,600
			TO SUMMARY		$323,761

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE
STAGE:	PROGRAMMING - PHASE 4A, SOUTH WING
LOCATION:	RIVERSIDE, CALIFORNIA
DATE:	01-Aug-01

Element/Specification		Quantity		Unit Rate	Estimated Cost
9. VERTICAL TRANSPORTATION					Nil
		TO SUMMARY			$0
10. PLUMBING					
1.	Replacement of plumbing systems to research labs	3,759	SF	34.50	129,686
		TO SUMMARY			$129,686
11. HVAC					
1.	HVAC systems: to research labs	3,759	SF	34.50	129,686
2.	Ditto: to remainder of building	2,638	SF	17.25	45,506
		TO SUMMARY			$175,192
12. ELECTRICAL					
1.	Complete replacement of electrical systems: to research laboratories	3,759	SF	34.50	129,686
2.	Ditto: to remainder of building	2,638	SF	17.25	45,506
		TO SUMMARY			$175,192

PROJECT:	GEOLOGY BUILDING RENOVATION UNIVERSITY OF CALIFORNIA, RIVERSIDE	LOCATION:	RIVERSIDE, CALIFORNIA
STAGE:	PROGRAMMING - PHASE 4A, SOUTH WING	DATE:	01-Aug-01

Element/Specification	Quantity		Unit Rate	Estimated Cost
13. FIRE PROTECTION				
1. Automatic sprinkler installation	6,397	SF	2.30	14,713
		TO SUMMARY		$14,713
14. SITE CLEARANCE				
1. Complete internal demolition and removal of debris from site	6,397	SF	4.60	29,426
2. Hazardous material abatement (per UCR report)	6,397	SF	10.25	65,569
		TO SUMMARY		$94,995
15. EXTERIOR UTILITIES				Nil
		TO SUMMARY		$0
16. SITE DEVELOPMENT				Nil
		TO SUMMARY		$0

10 PHASING PLAN ADDENDUM

10.1 EXECUTIVE SUMMARY

At the time the Detailed Project Program was being finalized, no source of funding had been identified. In August of 2001, $5.0 million of state funding was earmarked for the 2004-2005 budget year. As a consequence, an alternative plan for the phased implementation of the project has been developed and is contained in this addendum section of the DPP.

The revised plan assumes that construction of the project would be phased as follows:

- *Phase 1A:* June 2005 - December 2006 — $5,314,687.00
- *Phase 2A:* December 2006 - December 2007 — $2,749,881.00
- *Phase 3A:* December 2007 - December 2008 — $11,546,191.00
- *Phase 4A:* December 2008 - December 2009 — $4,343,644.00

It is important to note that prior to commencing work on Phase 3A, renovations to Pierce Hall must be completed to accommodate the relocation of class laboratories and the general assignment classroom. These renovations can begin in January of 2005 at the completion of the Physical Sciences Building. The scope and budget for the Pierce Hall renovations are not addressed in this document.

Please note that these are construction figure costs; assuming an additional 20% for soft costs would result in an estimated total project cost. The estimated construction cost for the project is $23,954,000.00. The higher construction cost is the result of starting construction in 2005 rather than 2002. However, because of the extended time frame for the project it is recommended that prior to the initiation of final design that the scope and budget for the project be confirmed.

10.2 PRELIMINARY SCHEDULE

The following issues will influence the schedule for the Geology Building Renovation project:

- Approved funding for the Deferred Maintenance and Renewal projects.
- Approved funding for completion of the HVAC and Exhaust System Upgrade Deferred Maintenance projects.
- Completion of the Science Laboratories Building during the summer of 2003.
- Completion of the Physical Sciences Building in January of 2005.
- The degree to which Pierce Hall must be renovated to accommodate the instructional facilities which will be relocated from the Geology Building and the funding necessary to complete the renovations.

10

PHASING PLAN ADDENDUM

10.3 PHASING PLAN

- **9.2001** Rivera Library Seismic Upgrade complete. Space released in the Center Wing of the Geology Building:
    - Basement 2,616 ASF
    - First Floor 2,479 ASF
    - Second Floor 4,603 ASF

• *Total*	*9,698 ASF*

- **9.01 - 9.02** Phase 1/DM Center Wing
- **9.02 - 1.05** Phase 2/HVAC DM South Wing (includes design for Phases 2 and 3).
- **6.03** Sciences Laboratories Building Complete

Relocate following labs to new Science Laboratories Building:

Room #

Chang
- 2265
- 2265AB
- 2456 — 1,454 ASF

Crowley
- 2233
- 2247
- 2247AB
- 2460H — 2,032 ASF

Parker
- 2410
- 2414
- 2416
- 2460BC — 1,205 ASF

Lanoil
- 2413
- 2413A — 1,581 ASF

Gan
- 2433 — 775 ASF

10

PHASING PLAN ADDENDUM

Stein
- 2226
- 2226AB — 1,104 ASF

Schlenk
- 2229
- 2268
- 2268AB
- 2285 — 1,580 ASF

Department
- 2460
- 2460AEFG
- 2337 — 1,690 ASF

Total	***11,421 ASF***

- **9.03 - 3.05** Phase 3/HVAC DM North Wing.
- **6.05 - 12.06** Phase 1A/architectural Renewal: Second Floor South Wing and Center Wing; Second Floor North Wing East.
- **1.05** Physical Sciences Building Complete.

Relocate following class laboratories and general assignment classroom to released space in Pierce Hall that becomes available upon completion of new Physical Sciences Building.

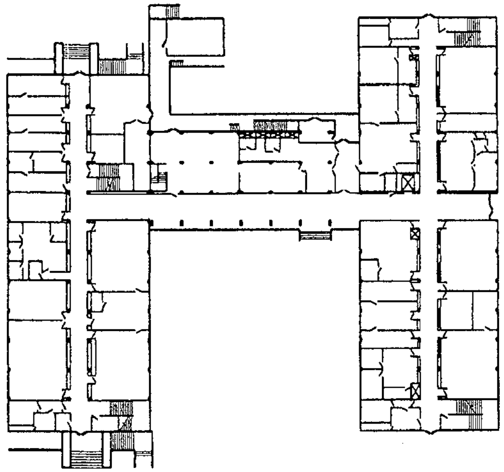
<u>Room #</u>

- 1407, 1408, 1409, 1421 and 1444.

12.06 - 12.07 Phase 2A/Architectural Renewal: First Floor Center Wing; completion of 2nd Floor North Wing.

12.07 - 12.08* Phase 3A/Architectural Renewal: First Floor North; Basement; Sub-basements; Construction of New Stair & Elevator

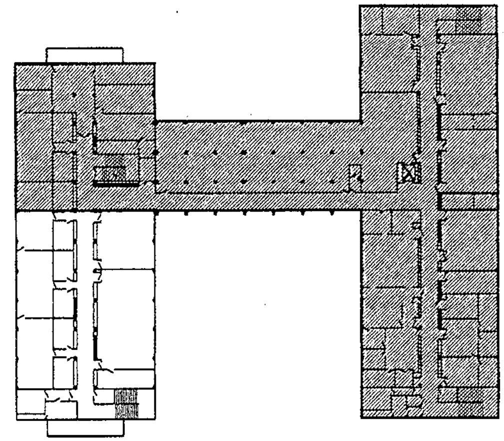
12.08 - 12.09 Phase 4A/Architectural Renewal: First Floor South Wing.



LEGEND:

RENOVATED IN THIS PHASE

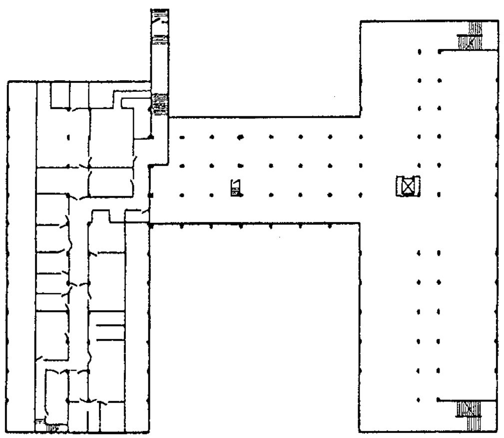
FIRST FLOOR
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.



LEGEND:

RENOVATED IN THIS PHASE

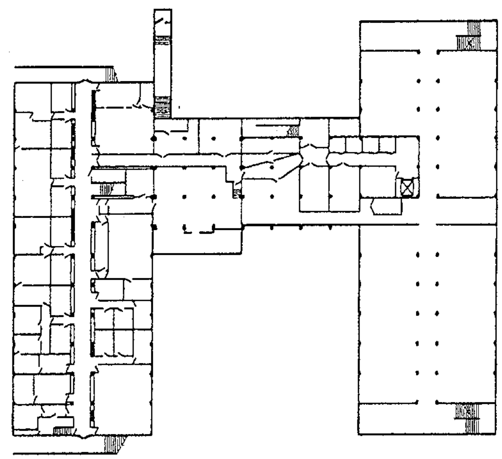
SECOND FLOOR
DEPARTMENT OF ENVIRONMENTAL SCIENCES



LEGEND:

RENOVATED IN THIS PHASE

SUB-BASEMENT
TO BE DETERMINED



LEGEND:

RENOVATED IN THIS PHASE

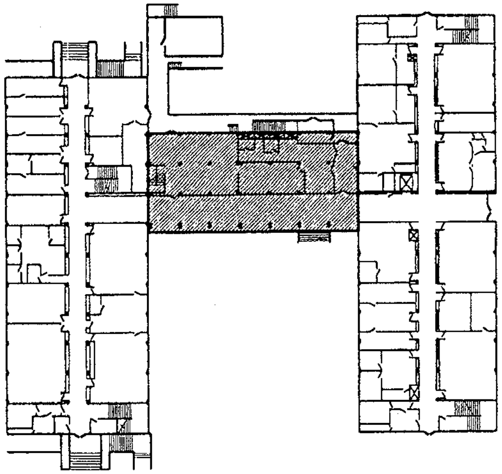
BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

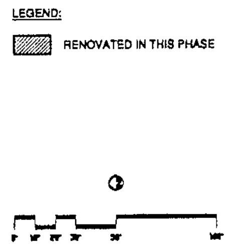
PHASE 1A / ARCHITECTURAL RENEWAL ADDENDUM
6/05 - 12/06

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

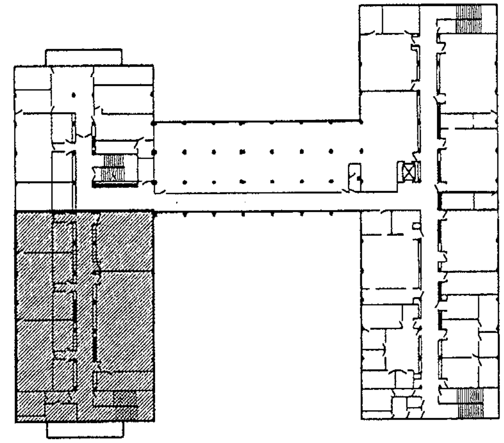
JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

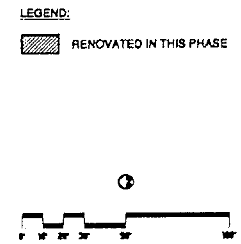
SEPTEMBER 14, 2001





FIRST FLOOR
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.





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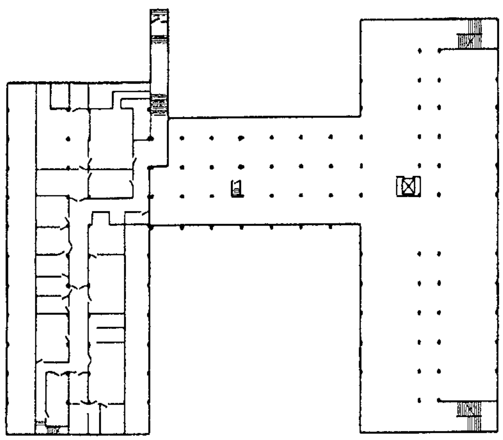

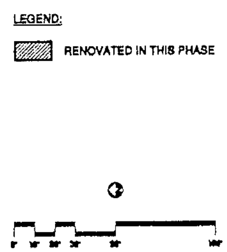

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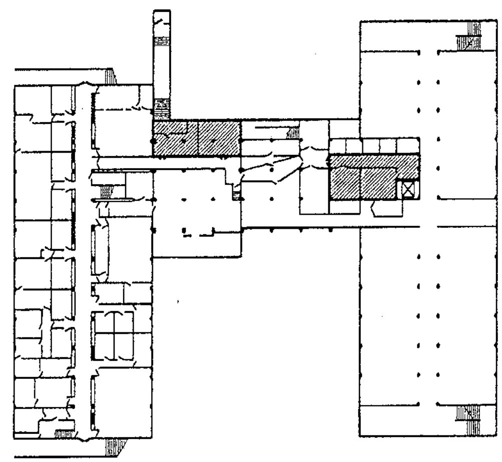
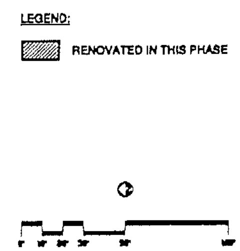




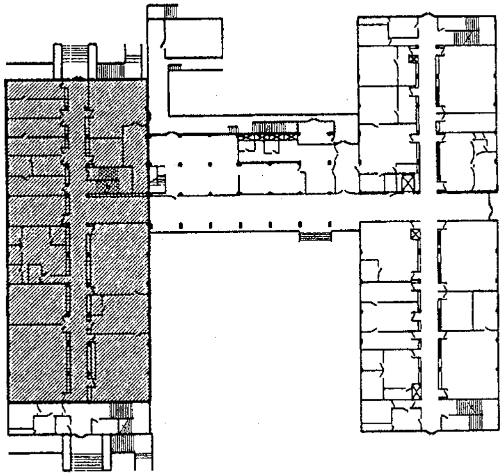
BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 2A / ARCHITECTURAL RENEWAL ADDENDUM
12/06 - 12/07

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

SEPTEMBER 14, 2001



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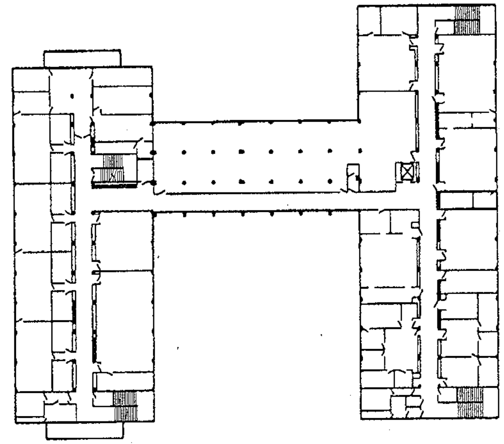

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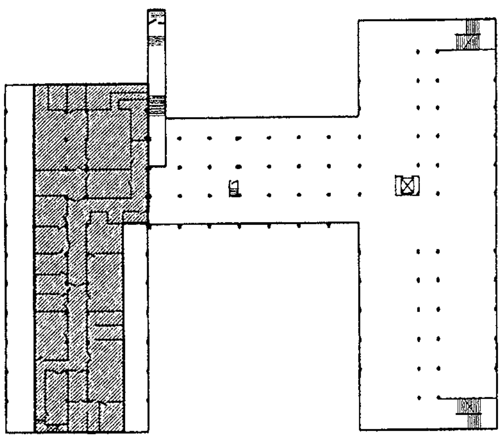

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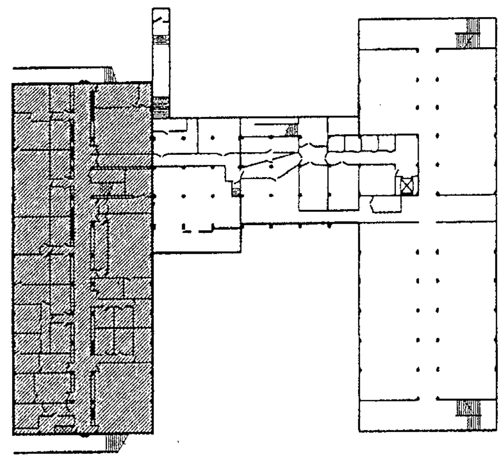

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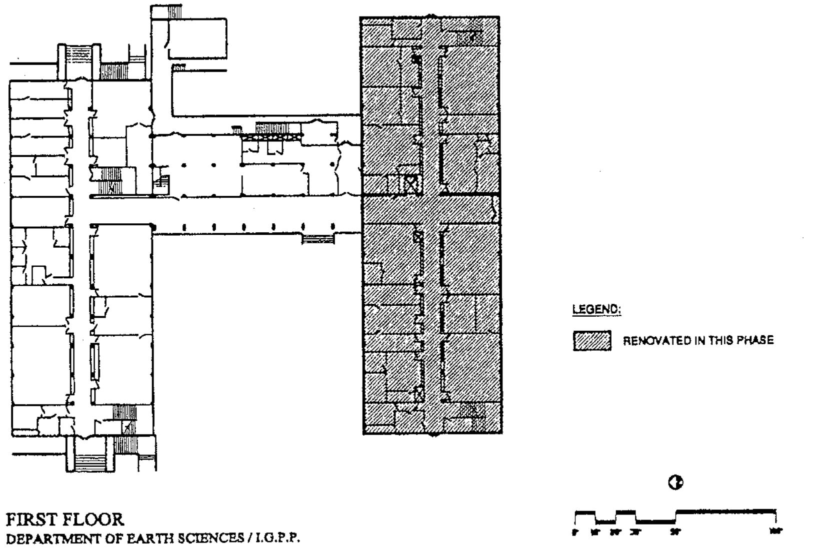
BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 3A / ARCHITECTURAL RENEWAL ADDENDUM
12/07 - 12/08

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

SEPTEMBER 14, 2001



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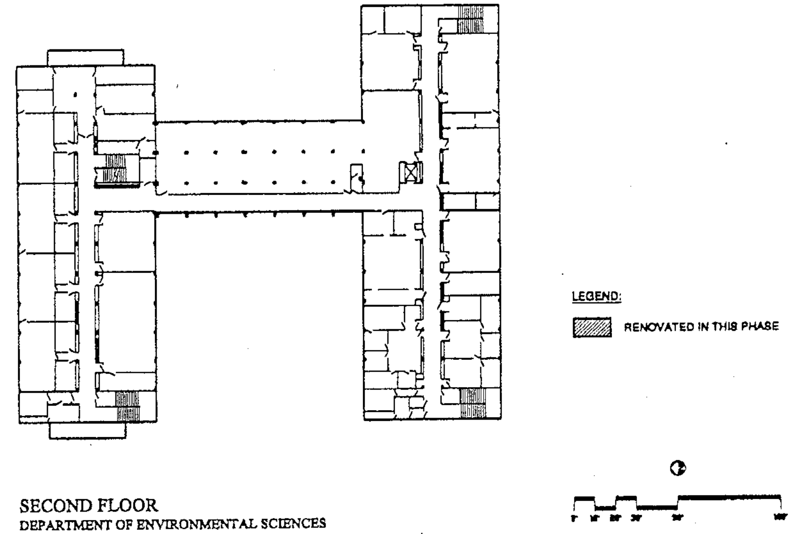

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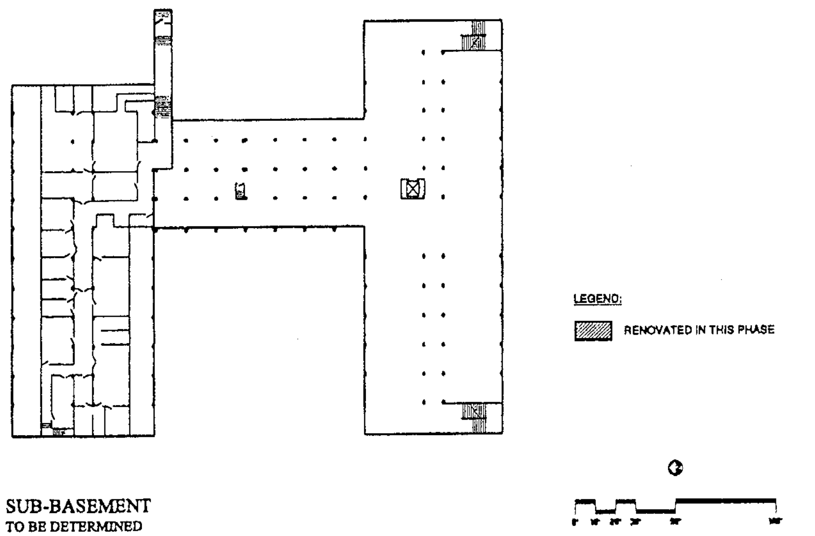

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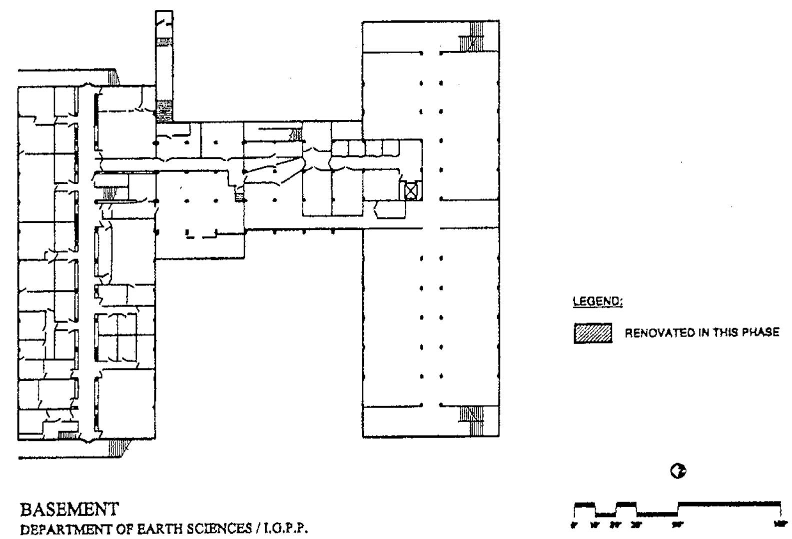

BASEMENT
DEPARTMENT OF EARTH SCIENCES / I.G.P.P.

PHASE 4A / ARCHITECTURAL RENEWAL ADDENDUM
12/08 - 12/09

GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

SEPTEMBER 14, 2001

jlp architects inc
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GEOLOGY BUILDING RENOVATION

PROJECT NO.: 950446

UNIVERSITY of CALIFORNIA
RIVERSIDE

DETAILED PROJECT PROGRAM

APPENDIX

AUGUST 2001

APPENDIX TABLE OF CONTENTS

jlp

APPENDIX TABLE OF CONTENTS

jlp

jlp architects inc

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MEETING REPORT

PROJECT:	*UCR Geology Bldg. Renovation*	**DATE:**	January 11, 2001 ***Revised & Reissued 2/22/2001***
PROJECT NO.:	JLP #01-03.1 UCR #950446	**RE:**	**Project Initiation Meeting**

ATTENDEES:	Polly Breitkreuz	UCR Office of Academic Planning & Budget, Space Management Inventory
	Kieron M. Brunelle	UCR College of Natural & Agricultural Srvcs.
	George MacMullin, P.E.	Project Manager/Engineer/Office of Design & Construction
	Lisa Peloquin	Project Manager, Capital & Physical Planning,
	James L. Pirdy, Architect	JLP Architects, Inc.

1.1 The purpose of the meeting was to initiate work on the programming and prearchitectural phase of the *Geology Building Renovation* project.

1.2 PROTOCOL

A. It was established that Lisa Peloquin will be the day-to-day contact between UCR and JLP Architects, Inc. (JLP).

B. Lisa also stressed that the group represented by she, Polly, Kieron and George would serve as UCR's programming/planning team and serve as a buffer between the JLP project team and the Geology Building Renovation committee which will be comprised primarily of faculty from the departments *Earth Sciences* and *Environmental Sciences.*

JLP/UCR C. The JLP team will meet with the UCR planning team prior to meetings with the larger *Geology Building Renovation* committee.

1.3 CONTRACT

JLP A. Lisa provided three (3) copies of the professional services agreement for Jim to review and execute.

UPDATE: Jim spoke with Lisa by telephone on 1.12.2001 and advised that he has signed all copies of the agreement and will return two (2) copies to UCR early next week.

JLP B. The contract contained the authorization for JLP Architects, Inc. to

Action	Item	Description
		proceed with the Programming and Prearchitectural Design phase of the work.
	1.4	PROJECT DOCUMENTATION
		A. The following documents regarding the Geology Building were made available to JLP:
		1. Geology Building Tables A-E dated 10/1/00, with attachments -internal document.
		2. Detailed Project Program for the Laboratory Center (Science Laboratory) completed by SRG Partnership dated 3/31/99.
		4. Geology Building Renovation Plan completed by Ehrlich-Rominger dated 3/93 - Final Report And Appendix.
		5. UCR Campus Building Survey for Asbestos Containing Materials completed by Med-Tox Associates dated 1/87-Vol. I and II.
		B. Lisa's office will make arrangements for JLP to meet with Pat Sandoval of the Office of Design and Construction who maintains all record and as-built drawings of campus building. The architects will review the available drawings and provide Pat with an itemized list of the documents needed by the planning team.
		UPDATE: Sharyl Murdock of the Office of Academic Planning and Budget called JLP on 1.12.2001. Pat Sandoval is out sick but she will attempt to arrange an appointment for Tuesday 1.16.2001.
	1.5	SCHEDULE - the following tentative schedule was discussed:
JLP/UCR		A. *January 11-19:* 1. Obtain available project documentation. 2. Preliminary review of documentation. 3. Authorize subconsultants.
UCR		B. *January 22-26*: schedule kick-off meeting with user committee.
		UPDATE: JLP will forward a more detailed preliminary schedule for review by UCR.
JLP		C. Approximately the first month of work will involve a review of existing conditions within the Geology Building and assessment of all planning documentation developed to date for the project. After completion of this work, the first programming workshop can be scheduled during the month of February.

Action	Item	Description
		D. Interviews with individuals or sub-groups within the department will follow the first workshop.
UCR		E. The Office of Academic Planning and Budget will assist JLP in scheduling appointments with other campus departments such as Environmental Health and Safety, Physical Plant, and Campus Computing.
JLP		F. For the Geology Building Renovation project, a preliminary cost estimate will be completed in March 2001; a Draft Detailed Project Program (DPP) will be completed in April 2001; and completion of a Final DPP will be the first week in May 2001.
	1.6	GENERAL DISCUSSION
		A. The UCR planning team stressed that the planning documentation provided is very preliminary. 1. The users are very supportive of the zoning of the building that has been proposed. This is illustrated in the block diagrams provided to JLP. 2. The key issue is for the JLP team to identify changes that need to be made to the building necessary to support low to medium intensity instruction and research.
		B. The ability to flexibly use the building in the future is a major concern. 1. Many of the present users may not remain in the building. 2. Generic/modular laboratory designs will more easily facilitate the desired flexibility.
		C. Surge space that will be available to enable the phased construction of the project will include the following areas: 1. The central area between the two wings currently occupied by library storage. 2. Approximately 3,000-4,000 s.f. of laboratory and office space which will be vacated.
		D. The UCR planning team would like to see the administrative areas and computer laboratories consolidated. Conference rooms will also be assigned to the College of Natural and Agricultural Sciences and not to the two departments who will occupy the building. This should facilitate more flexible use.

Action	Item	Description
		E. George MacMullin advised that a new polyurethane foam roof was installed on the building last summer.
UCR	1.7	BUDGET: Lisa Peloquin will provide JLP all available budget information on the project.

This report was prepared by *James Lawson Pirdy, A.I.A., Inc.* on January 16, 2000 and *Reissued on January 22, 2001.*

James Lawson Pirdy, A.I.A., Inc.

James L. Pirdy

James L. Pirdy, Architect
Principal

JLP/km

Lisa Peloquin to distribute to UCR

c.c. *Chris Smith, Degenkolb Engineers*
Alan Wilson, Bechard Long & Associates
Graham Anderson, Campbell-Anderson Associates

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MEETING REPORT

PROJECT: *UCR Geology Building Renovation*

DATE: January 16, 2001 ***Reissued 2.1.2001***

PROJECT NO.: JLP #01-03.1 UCR #950446

RE: Record Drawing Review

ATTENDEES:

James L. Pirdy, Architect — JLP Architects, Inc.

Patrick C. Sandoval — Drafting Technician, Office of Design & Construction

Action	Item	Description
	1.1	The purpose of the meeting was to review available record drawings on the Geology Building.
	1.2	Pat Sandoval made available the following documents for Jim Pirdy to review: A. Record drawings of the south wing of the *Geology Building* constructed in *1953*. B. Record drawings of the north wing of the *Geology Building* constructed in *1959*. C. Preliminary Construction documents for the *University Laboratory Building* to be constructed immediately to the south of the Geology Building.
UCR	1.3	Jim Pirdy requested that Pat send three (3) sets each of the drawings listed under Item 1.2 for use by the planning team on the *Geology Building Renovation* project. ***UPDATE: JLP received three sets of each of the drawing sets listed under item 1.2 on 1.22.2001***
UCR	1.4	Pat will also email CAD files of the concept drawings received from the Office of Academic Planning and Budget. ***UPDATE: Received by JLP on 1.30.2001***
	1.5	Jim advised Pat that it is the planning team's understanding that the Geology Building underwent a recent seismic upgrade. Drawings and specifications are needed to verify that the work has been completed.
UCR		A. Pat will search his drawing files to see if the information is available.

Action	**Item**	**Description**
	B.	When the documents are located he will forward two (2) sets to JLP.
		UPDATE: JLP received three(3) sets of drawings and specifications on 1.30.2001.
JLP	1.6	JLP will distribute all documents to subconsultants.

This report was prepared by *James Lawson Pirdy, A.I.A., Inc.* on February 1, 2001.

JLP Architects, Inc.

James L. Pirdy

James L. Pirdy, Architect
Principal

JLP/km

c.c. Lisa Peloquin

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *January 26, 2001*

PROJECT NO.: JLP #01-03.1/UCR #950446

Regarding: **Kickoff Mtg. - Programming & Prearchitectural Design Phase**

ATTENDEES:

Kristina Alagar	UCR Associates Students
Chris Bradley	JLP Architects, Inc.
Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Srvcs.
Harry Green	UCR IGPP/Earth Sciences
George MacMullin, P.E.	Project Manager/Engineer/Office of Design & Construction
Dave Parker	UCR Department of Environmental Sciences
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Michael Rettig	UCR Chemistry Department
Michael Woodburne	UCR Department of Earth Sciences

Action	Item	Description

1.1 Lisa Peloquin introduced herself and the other members of the UCR project team including Kieron Brunelle and George MacMullin. Polly Breitkreuz could not attend the meeting today.

A. Lisa introduced Jim Pirdy and Chris Bradley of JLP Architects, Inc. (JLP) who will lead the programming and prearchitectural design phase of the work on the *Geology Building Renovation* project.

B. A series of documents were provided to the attendees (see attachment) which included the following:

1. Kickoff Meeting Agenda
2. Preliminary Project Schedule
3. Summary/Project Description (draft)
4. Specific Project Goals and Objectives (draft)

1.2 JLP had prepared a board which included block diagrams of the primary areas to be contained in the Geology Building Renovation project (Basement, First Floor, Second Floor). (see attachment)

A. Jim Pirdy reviewed the block diagrams as they represent the architects understanding of how the university wishes to apportion

space in the Geology Building at the completion of the renovation project.

Action	Item	Description
		B. The diagrams illustrate a project of approximately 57,521 ASF and 97,729 GSF.
	1.3	Jim stressed the importance of understanding the constraints imposed by the existing building. The renovation plan must be developed with a thorough understanding of the limitations of the existing building.
		A. JLP has received record drawings of the building from UCR as well as other planning documentation. This has been distributed to the subconsultants.
UCR		B. UCR has not been able to locate record drawings of the seismic enhancement work that was completed over the last several years.
		UPDATE: JLP received an email from Pat Sandoval on 1.29.2001 advising he has forwarded the seismic upgrade drawings to Lisa Peloquin for shipping to JLP.
		C. The renovation plan must be coordinated with the completed seismic enhancement work and with deferred maintenance projects to upgrade/replace the HVAC supply and exhaust systems in the building which are in the early planning stages.
		D. George MacMullin is the project manager for these projects and Bechard Long & Associates (subconsultants to JLP) will be the engineers for the supply upgrade.
	1.4	The *Preliminary Schedule* was discussed. It is proposed that the planning team meet with the committee once a month until the *Detailed Project Program* (DPP) is completed.
		A. The first month of work will be devoted to assembling available documentation on the building and project, site visits, analysis and documentation of the Geology Building existing conditions. This analysis will be presented to the committee at the first workshop.
		1. Preliminary organization concepts will be presented in block diagram form at that time.
		2. Draft sections of the DPP will be presented to the committee for review and comment as they are completed.
		B. A second workshop will be conducted during March at which time a final building organization will be recommended with a preliminary master space list.
		1. A preliminary phasing plan will also be presented at that time.

Action	Item	Description

2. Surge Space will be a key element in the project phasing. Fewer phases encompassing larger areas of the building is the goal.

C. Following the second workshop, the planing team will conduct interviews with user groups to develop *Room Data Sheets* for all typical spaces in the project.

1. A final presentation of the draft DPP will be made in April.

2. Committee review comments will be incorporated into the document.

3. The final Detailed Project Program for the Geology Building Renovation project will be issued the first week of May.

D. Lisa Peloquin stated that a preliminary cost estimate for the project will need to be developed in March. Jim already has the cost planners, Campbell Anderson & Associates, scheduled to prepare the cost plan.

1.5 PROTOCOL

A. Lisa Peloquin will be the point of contact between the JLP team and the UCR planning committee. All project communications should flow through her.

B. Jim discussed the planning process as an interactive one. JLP will thoroughly document all meetings and workshops.

1. The importance of this process is to ensure that the planning team understands clearly what the committee members have said.

2. The Meeting Reports are also intended to stimulate thoughts, ideas and changes not discussed during the meetings.

C. Mike Woodburne would prefer to have written communications in an electronic format. He believes it is easier to review and respond in this format.

1.6 DISCUSSION

A. Mike Rettig asked if a budget for the project exists.

1. Lisa responded that none has been prepared for this project.

Action	Item	Description

2. Jim advised that a new university laboratory building in southern California costs approximately $300.00/GSF. $100.00/S.F. of this amount covers the building shell. In the case of the Geology Building, the shell already exists. Demolition and phasing costs would need to be added and the costs of the deferred maintenance projects subtracted. With these adjustments, the renovation costs should be similar to the costs for the interior fit-up of a new building.

3. It is reasonable to assume that the cost for the project will be more than $10.00 million and less than $20.0 million.

B. Harry Green asked when construction of the Geology Building Renovation project might commence.

1. Construction of the Sciences Laboratory 1 Building will be complete in 2003-4. At that time, a number of faculty will relocate from the Geology Building to the new facility. This will create surge space that will enable phasing.

2. Kieron stated that space currently being used as temporary storage for the library will be available this fall when the Rivera Library Seismic Upgrade project is completed. This can also be used as surge space.

3. Lisa stressed that the campus wants to have a plan and budget in place so that the work can proceed at the earliest possible time.

C. Dave Parker felt that the schedule was very ambitious. The Department of Environmental Sciences will be preoccupied with the recruitment of four (4) new faculty members between now and May.

1. He expressed concern about user interviews for faculty who are not yet on campus.

2. Jim stated that this constitutes a strong argument for designing generic rather than specific laboratories. He pointed to JLP's similar experience in designing the renovation for Bonner Hall at UCSD where the researchers had not yet been hired and team sizes were unknown.

D. Harry Green raised the issue of utilizing the area of the subbasement in the building.

1. This is problematic because it does not have code compliant exiting or an elevator. It also has inadequate ventilation.

Action	Item	Description

2. It would be a good location for the storage of rock collections or research activities which are sensitive to noise and vibration.

E. The existing roof areas of the Geology Building were discussed. Preliminary planning documentation recommends that new air handlers be located on the roof of the central wing with new exhaust fans at the ends of the north and south wings.

1. Ideally supply and exhaust systems should not be located at the same levels to eliminate the possibility of the reentrainment of fumes.

2. The mechanical units may also induce vibration.

3. The 1995 Precinct Plan called for the placement of Greenhouse structures on the roofs of buildings. The committee liked this idea if it can be achieved. Harry Green did express a concern about leaks.

4. Use of the Geology Building roof areas will be studied and coordinated with the mechanical supply and exhaust deferred maintenance projects.

F. Mike Rettig asked if new construction was "off the table".

1. Lisa stated that while earlier planning studies had recommended demolition of the Geology Building this option is not part of the current programming effort.

2. If the need for additional space arises, then new construction options may be evaluated in the future.

3. Jim stated that the planning team is looking at modifications to the building which will improve its function such as revising the entries or more energy efficient glazing but nothing that would alter the assignable square footage.

G. Mike Woodburne asked if the building is seismically sound.

1. Jim advised that it is the understanding that all work identified in a 1995 report necessary to upgrade the building seismically to make it code compliant has been completed.

UCR — 2. Design and Construction will locate the documents to confirm that the work has been completed.

Action	Item	Description

UPDATE: JLP received an email from Pat Sandoval on 1.29.2001 advising he has forwarded the seismic upgrade drawings to Lisa Peloquin for shipping to JLP.

H. Harry and Mike felt that equipment and instrumentation that is sensitive to vibration should be located on the lower floors of the building - preferably on grade. Jim pointed out that the subbasement is the only area of the building which actually sits on grade.

1.7 DEPARTMENT OF ENVIRONMENTAL SCIENCES

A. Dave Parker passed out a document entitled *Summary Analysis of Space: Environmental Sciences Department* (see attachment). The document reflects the best picture of what is going on in the department.

B. The document is consistent with the preliminary block diagrams discussed earlier which show the department occupying the entire second floor of the Geology Building at the completion of the renovation. The plan represents a net shortfall of 3,000 ASF.

C. The department academic plan was reviewed and summarized as follows:

1. Six (6) new laboratory faculty.
2. Three (3) new management/policy/economics faculty.
3. Expanded instructional space.
4. A larger departmental conference room (capacity of 35).
5. A second, smaller conference room with video conferencing capabilities.

D. Since the space available is less than that which is required to accommodate the desired academic plan, the following solutions are being discussed:

1. Gains in efficiency of space utilization through such things as "miniaturization".
2. Increasing the net/gross ratio.
3. Occupying space in Pierce Hall.
4. Increasing utilization of the first floor in Geology.

Action	Item	Description
		5. Retaining space in Bourns Hall indefinitely.
		6. Curtailing departmental growth.
		E. In spite of the anticipated space limitations, sentiment within the department is that it is better to be "shoehorned" into the available space than spread out. Proximity of faculty and research teams to facilitate interaction is important.
		F. The departmental summary included a phasing plan.
		1. The plan attempts to minimize the number of moves for faculty.
		2. It is based on the vacated space which becomes available when the Science Laboratories 1 Building is completed.
		3. Jim pointed out that with the additional space vacated by the library it may be possible to vacate the entire second floor/south wing.
		G. The department sees the south wing being used for medium intensity wet lab space and the north wing for dry lab space (management and policy work).
	1.8	EARTH SCIENCES
		A. Mike Woodburne raised the issue of flexibility in reconfiguring the available space.
		1. Jim stated that the north and south wings have different structural systems which may allow the depth and configurations of spaces to be altered.
JLP		2. The planning team will develop diagrams which illustrate the structure and shafts within the building for the first workshop.
		3. Lisa felt that this exercise should inform the HVAC deferred maintenance projects.
		B. Harry and Kieron felt that program assumptions should be developed based on departmental missions and future needs. How will space planning for the renovation support this?
		C. Mike stated that teaching areas are very important to the Earth Sciences Department.

Action	Item	Description
	1.9 "Aspirations and Nightmares"	
		A. Dave stated that the Environmental Sciences Department would like to see an "ugly duckling turned into a swan".
		1. They are concerned about phasing and surge space during the renovation and the impact of the HVAC work.
		2. Dave felt that the Sciences Laboratories 1 Building was "over engineered". Generic laboratories in the Geology Building Renovation will provide more flexibility.
		3. The proximity of offices to laboratories is not a major concern in the Environmental Sciences Department.
		B. Mike Woodburne expressed concern about losing any functional space.
	1.10	BUILDING AND SITE CIRCULATION
		A. A consensus was expressed that teaching and administrative functions that cause high student traffic should be concentrated on the first floor of the building.
		1. If possible, the building should be made more open and accessible at the first level to facilitate this.
		2. Pedestrian traffic through the building should be discouraged.
JLP/UCR		B. Kieron presented a site plan which illustrated existing, new and future buildings in the CNAS. The planning team will obtain this drawing and study the anticipated pedestrian traffic.
		UPDATE: JLP received an email on 1.29.2001 containing the drawing file.
UCR	1.11	WORKSHOP #1: Lisa Peloquin's office will coordinate the scheduling of a work session for the week of February 12-16, 2001.

Action	Item	Description

This report was prepared by *JLP Architects, Inc.* on February 5, 2001.

JLP Architects, Inc.

James L. Pirdy, Architect
Principal
JLP/km

Lisa Peloquin to distribute to UCR
c.c. Chris Smith, Degenkolb Engineers
Alan Wilson, Bechard Long & Associates

Graham Anderson, Campbell-Anderson Associates

Enclosures:
- Kickoff Meeting Agenda
- Preliminary Schedule
- Executive Summary/Project Description
- Project Background/Goals & Objectives
- Block Diagrams (3)
- Summary Analysis of Space:
  Environmental Sciences Department

JLP
ARCHITECTS
INC

UCR GEOLOGY BUILDING RENOVATION

JLP #01-03.1/UCR #950446

KICKOFF MEETING AGENDA

- *Introductions* - Lisa Peloquin
    - Protocol
    - Standard meeting time(s)
- *Our Understanding of the Geology Building Renovation Project* - JLP
    - General Description
    - Block Diagrams (exhibit)
- *Preliminary Workplan & Schedule* - JLP
    - Obtain & review available documentation.
    - Site & building existing conditions analysis.
    - Mechanical deferred maintenance projects (coordination).
- *Specific Project Objectives* - Discussion - JLP/Commitee
    - Exhibit - Preliminary Outline of specific project objectives
    - Concerns - "aspirations & nightmares?"
    - Issues:
        - Generic vs. specific labs.
        - Relationship of labs & offices (proximity).
        - Building entries - where is the front door?

UCR GEOLOGY BUILDING RENOVATION

JLP #01-03.1/UCR #950446

PRELIMINARY SCHEDULE	ACTIVITY

1.11.2001	• Project Initiation Meeting
	  • Establish Protocol.
	  • Project Orientation.

1.15 - 1.19.2001	• Obtain existing documentation on Geology Building. • Execute Professional Services Agreement. • Subconsultant Authorizations. • Distribute Documentation.

1.26.2001	• Kickoff Meeting
	  • Discussion of the planning process & preliminary schedule.
	  • General discussion of departmental culture and needs.
	• Planning team walk-through of Geology Building.

1.22 - 2.9.2001	• Review of existing building documentation. • General confirmation of Geology Building existing conditions.

2.12 - 2.16.2001	• *Workshop #1*
	  • Review existing conditions data.
	  • Present preliminary building organization concepts (block diagrams).
	  • Discussion of laboratory modularity, flexibility, and adaptability.
	  • Present draft DPP sections re: campus context, overview of departments, and existing conditions.

2.19 - 3.9.2001	• Refine building organization concept. • Meetings with research groups/begin detailed development of typical spaces. • Complete site and campus analysis (if relevant to the building renovation).

3.12 - 3.16.2001	• *Workshop #2*
	  • Recommend final building organization including a preliminary master space list.
	  • Discussion of laboratory prototypes.
	  • Present preliminary phasing plan.
	  • Discussion of building finishes.

3.19 - 4.13.2001

- User Group Interviews
- *Develop Room Data Sheets* for all typical spaces in the renovation project.
- Meetings with Physical Plant; Media, communications and computing resources; and Environmental Health, and Safety.
- Develop building systems design criteria:
  - Structural
  - Plumbing and Utility Piping
  - Electrical
  - Vibration/Noise/Acoustical
  - Security
- Develop fire protection plan.
- Develop control zone(s) plan.
- Finalize phasing plan.
- Preliminary Statement of Probable Cost (March 2001)

4.16 - 4.20.2001

- Presentation of draft DPP/predesign and programming materials to programming committee.
- Incorporate campus review comments.

4.23.- 5.11.2001

- Completion of final Detailed Project Program document.

5.15.2001

- *Final Document Issued*
  - Primary Program Document
  - Appendix

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1 EXECUTIVE SUMMARY

1.1 PROJECT DESCRIPTION

The *Geology Building Renovation* project will renovate the existing instructional and research facility of approximately 57,521 assignable square feet to house programs for the Departments of Earth Sciences, Environmental Sciences and the Institute for Geophysics and Planetary Physics. The renovated structure will provide modern laboratory facilities needed to support state-of-the art instructional and research programs.

Primary Objectives of the *Geology Building Renovation* project.

- Replace existing outmodeled and unsafe instructional and research space with new, state-of-the-art facilities.
- Create a generic, adaptable building that responds to changing technological and functional requirements for the departments of Earth Sciences, Environmental Sciences and the Institute of Geophysics and Planetary Physics.
- Encourage and support safe and high quality academic instruction and research.
- Create a building which stimulates students, faculty and visitors and invites people into the worlds of Earth Sciences and Environmental Sciences by creating interaction zones internally and externally.

1.2 SITE CONSIDERATIONS

The College of Natural and Agricultural Sciences covers 57 acres on the eastern edge of the UC Riverside campus. The CNAS defines the eastern portion of the Carillon Mall and serves as the transition from the geometric orthogonal campus grid to the organic foothills, arroyo flood control zone, and botanical gardens to the east.

The planning team met with a committee of building users from the Department of Earth Sciences, Environmental Sciences and the Institute for Geophysics and Planetary Physics Representatives from the Office of Planning, Design and Construction and the CNAS Dean's Office to explore program requirements, site options, conceptual building organizations and improvements to the building interior.

The Detailed Project Program has been developed as the initial step in the design process. It represents a comprehensive summary of programmatic information and a detailed description of departmental and campus requirements for the Geology Building Renovation project to date.

JLP ARCHITECTS INC

1

EXECUTIVE SUMMARY

The program is the assessment of the spatial and functional requirements for the group of individuals who will work within a building. In addition to delineating and quantifying the spaces to be included in the building, the program is intended to reflect the goals and philosophies of those entities to be housed in the facility, the concepts for how those individuals will function in those spaces and to identify important issues that should be considered during the design of the building.

2.6 INSTITUTE OF GEOPHYSICS AND PLANETARY PHYSICS MISSION

Section to be completed.

2.7 FACILITIES GOALS & OBJECTIVES

Building Organization Objectives

- Organization should foster disciplinary interaction, even between laboratories which may be located on different floors.
- Research laboratory floors should be designed to be efficient, flexible, and minimize unnecessary travel between support space, yet create accessible shared/reassignable support space.
- A strong relationship between the laboratories and the faculty offices should be maintained.
- Public entrances to the building should be easily identified from the exterior.
- Spaces with greater public functions should be located on or near the ground floor.
- Circulation patterns should be straightforward and clearly delineated.
- Vertical circulation should be easily found and convenient to use.
- Corridors and doorways should be sized to accommodate movement of large pieces of equipment and should create an environment different from that of the labs. This may be accomplished through the use of light, color, and materials.
- Security requirements for the labs must be maintained, but interaction and movement through the building should be encouraged.
- Casual interaction should be encouraged by including spaces which are inviting and are located where people will naturally meet.
- The quality, type, and amount of light in a space should be appropriate to the function and tasks to be performed in a space.
- The building and laboratories should be adaptable to the changes in technology and science.
- The building should facilitate great research.

Objectives for the Building Systems

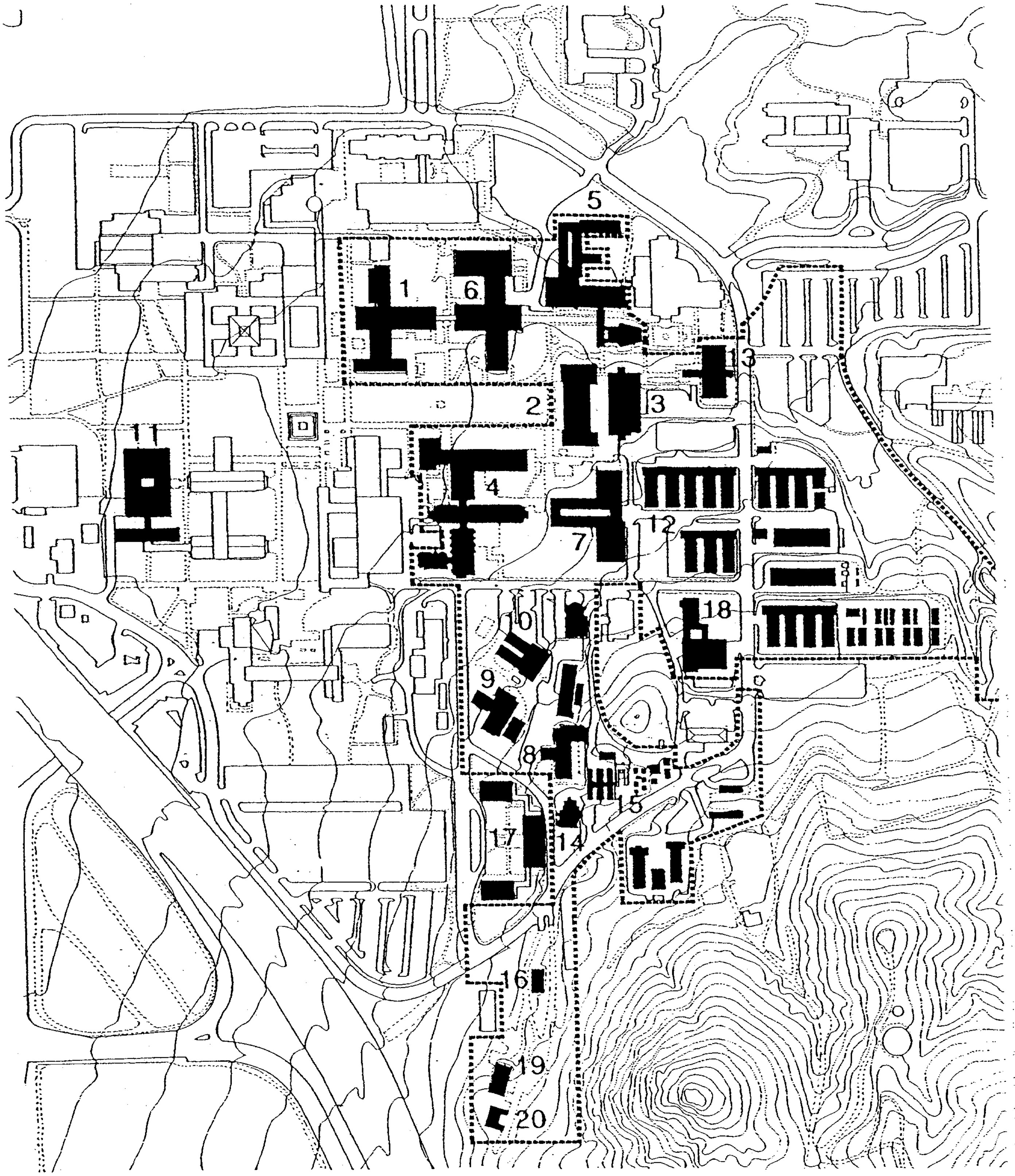
- The building planning should include building systems, e.g., structural, HVAC, electrical and lighting, and plumbing which reflect the needs of the laboratory environments. The systems should be developed in a coordinated fashion. This should result in the development of an efficient building.
- The selection of building components should include a full analysis of first cost, running costs, and maintenance costs. Energy efficient equipment should be selected wherever possible and practical.
- The design of the building systems should reflect the needs of the building program. The systems should also be designed to give as much flexibility in future renovation as possible.
- The building program may include spaces which will only function successfully in a fully controlled environment, e.g., vibration, humidity, lighting, acoustics, temperature, and air movement. The building envelop should be designed as a buffer zone between the Riverside environment and the building occupants.

Objectives of the Precinct Planning Process if Applicable to this Site

- The building should maintain and reinforce the existing orthogonal grid of buildings and malls yet respond to the characteristics of the site.
- The building site plan should strengthen the definition of campus malls and walks by siting the building along a consistent set back line.
- The building design should continue to develop the network of building-related enclosed courtyards within the precinct.
- When developing buildings on sloping sites, include basement level parking and service areas. Pedestrian and service circulation should be kept separate.
- Site public spaces and walks to capture views to surrounding natural areas and vistas of the campus below.
- Consider views of buildings. Conceal rooftop mechanical equipment including exhaust fans and air handling units, integrate vents into the building architecture, and design roof forms to contribute positively to views from adjacent buildings and open spaces.

Objectives of the Building Massing and Site Planning

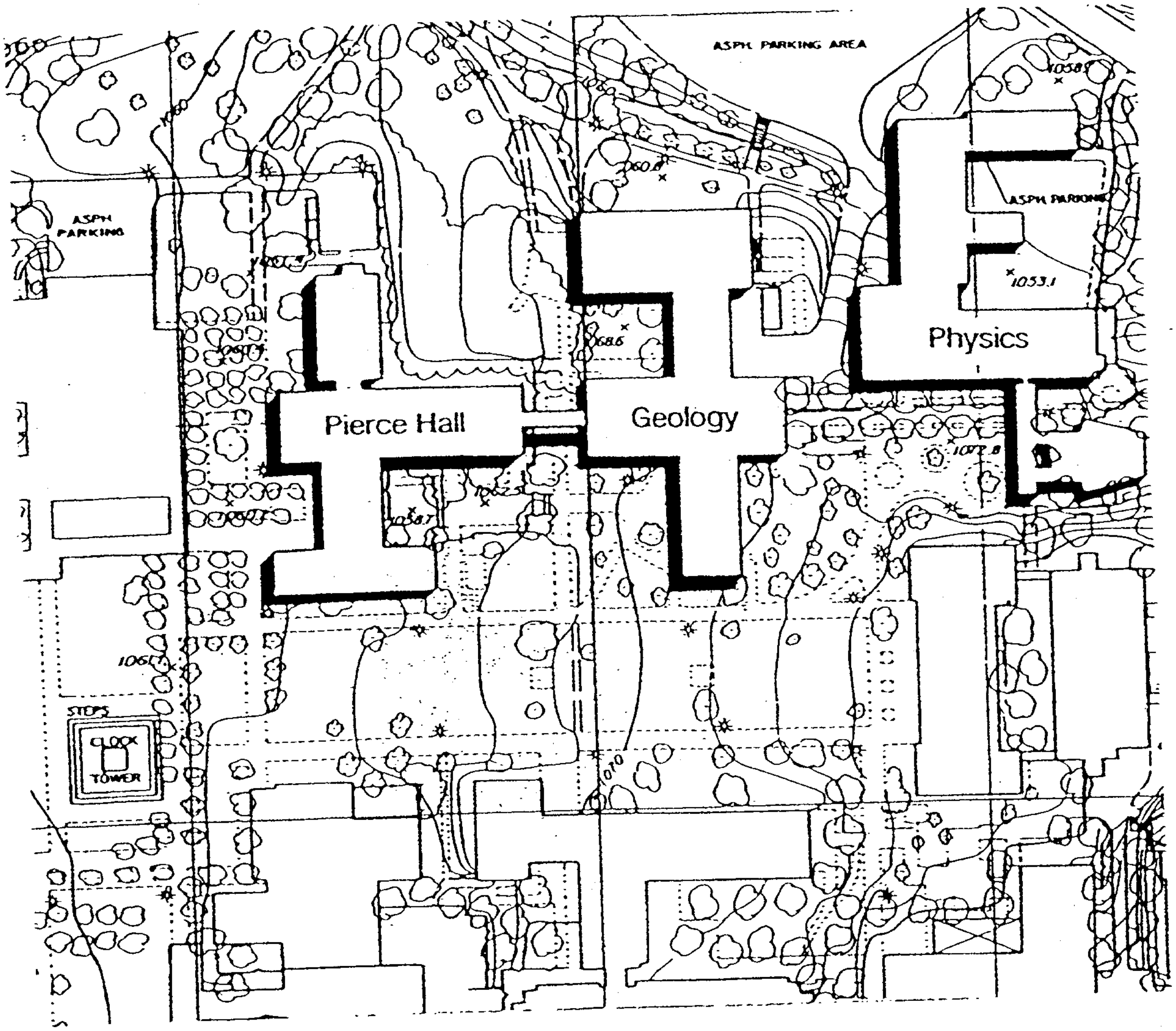
Section to be completed.



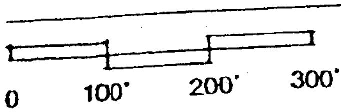
4.5 EXISTING STRUCTURES SUMMARY CNAS BUILDINGS

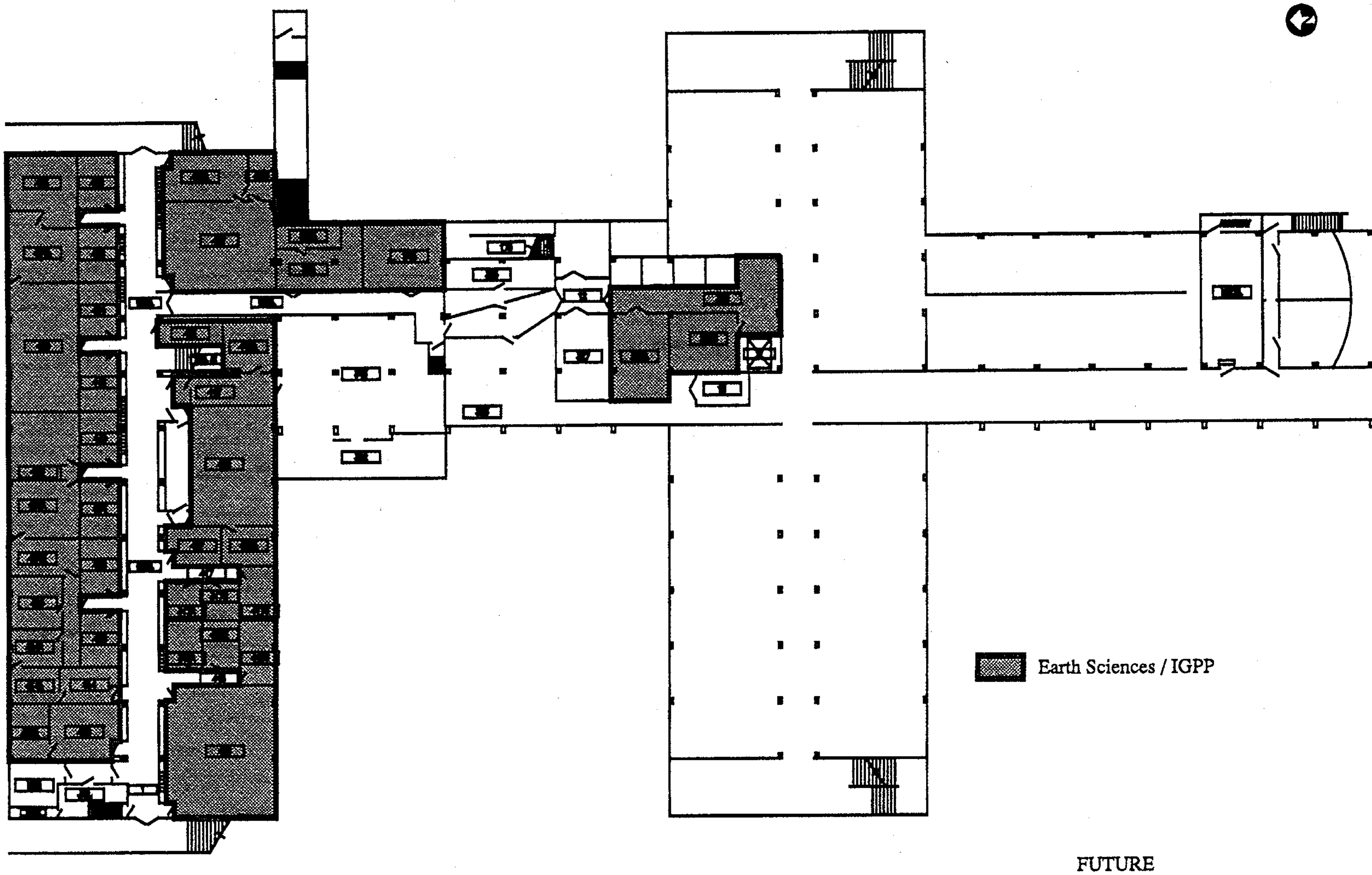
4.0 EXISTING FACILITIES CNAS MASTER SPACE PLAN

·cinity Map



Site Plan





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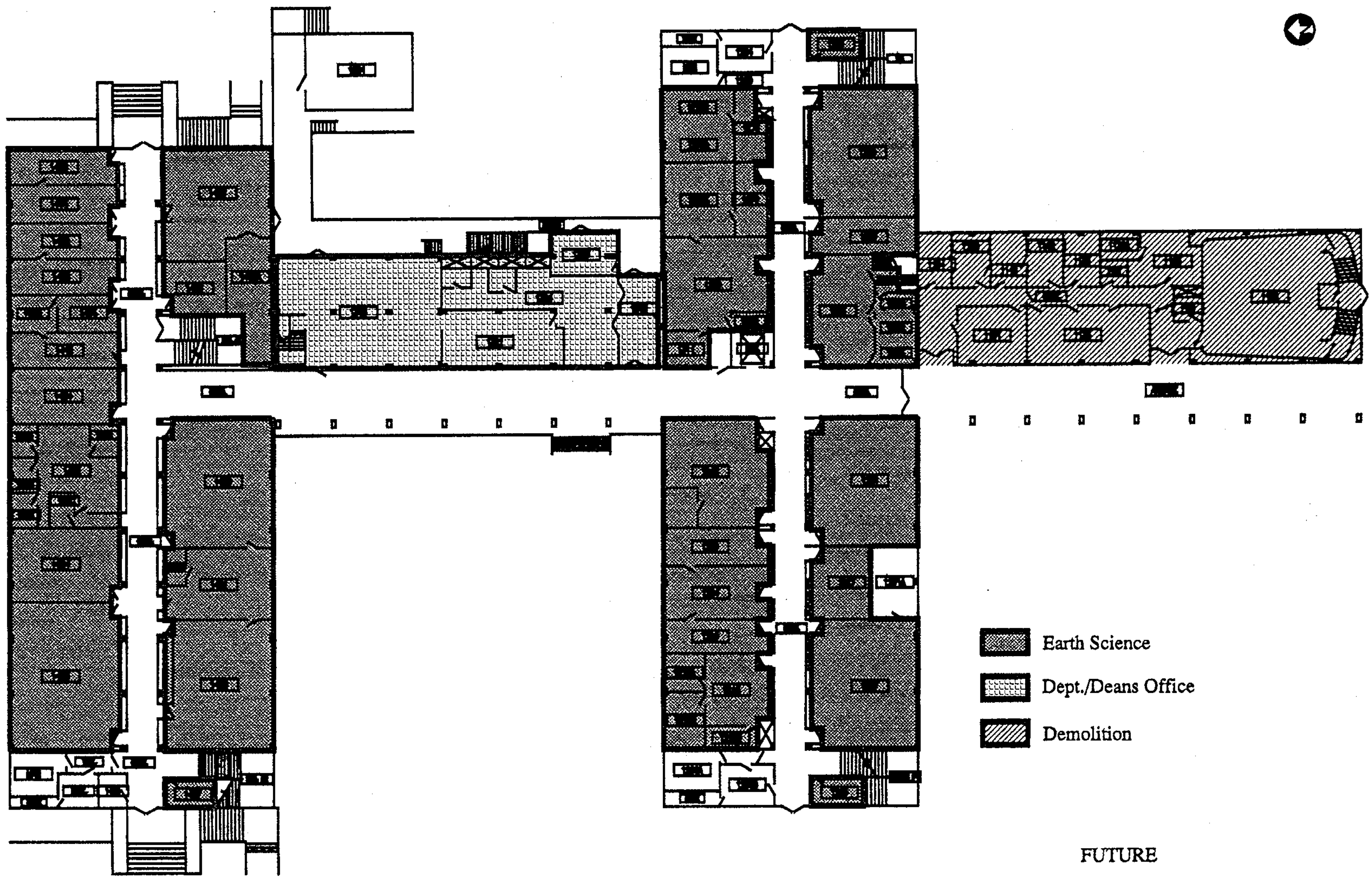
OFFICE OF DESIGN & CONSTRUCTION

GEOLOGY
UNIVERSITY OF CALIFORNIA RIVERSIDE

BASEMENT FLOOR PLAN

PROJECT NO:	SHEET NO:
DATE: 10-3-00	G-0



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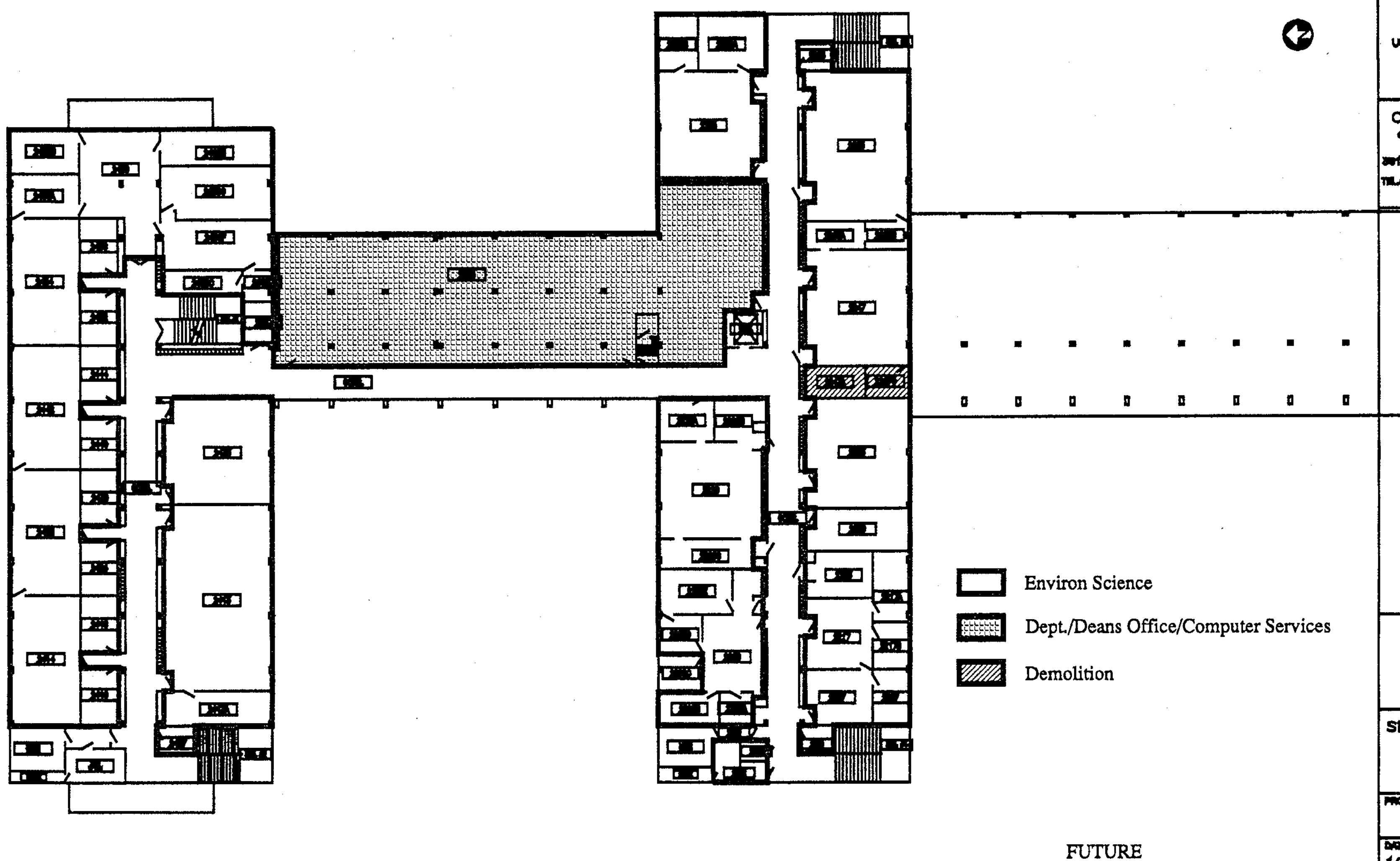
FIRST FLOOR PLAN

PROJECT NO:	SHEET NO:
DATE: 10—4—00	G—1



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UNIVERSITY OF CALIFORNIA RIVERSIDE

SECOND FLOOR PLAN

PROJECT NO:

SHEET NO: G—2

DATE: 10—4—00

Summary Analysis of Space: Environmental Sciences Department

I. Exisiting Space	ASF
Geology, 2nd floor	15,052
Geology, 1st floor	2,183
Geology, basement	2,987
Geology, south wing	1,568
Bourns, B wing	10,810
Bourns, A wing	2,918
TOTAL ASF:	**35,518**
II. Assumed Gains and Losses	
acquire Geology 2413, 2413A	1,581
acquire 100% of Geology 2335 (library)	4,413
Lab Sciences I, floors 2 and 3	15,365
lose all Geology basement	(2,987)
lose Geology south wing (demo)	(1,568)
lose all space in Bourns	(13,728)
NEW TOTAL:	**38,594**
NET GAIN:	**3,076**
TOTAL ASF, remodeled Geology Bldg (assumes no change in 1st floor ASF)	**23,229**

	Sep-01	Sep-02	Sep-03	Sep-04	Sep-05	Sep-06	# moves
Amrhein	Bourns - S	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	1
Graham	Bourns - S	Bourns - S	do	Geology - S (R)	do	Geology - S (R)	1
Meixner	Bourns - S	Bourns - S	do	Geology - S (R)	do	Geology - S (R)	1
Anderson	Bourns - N	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	1
Jury or REPL	Bourns - N	??	do	??	do	Geology - N (R)	2?
Frankenberger	Bourns - N	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	1
Yates	Bourns - N	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	1
			do		do		
Parker	Geology - N	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	1
Letey or REPL	Geology - N	Geology - N	do	**no lab**	do	Geology - N (R)	1
Farmer or REPL	Geology - N	Geology - N	do	**no lab**	do	Geology - N (R)	1
Wu	Geology - N	Geology - N	do	Geology - S (R)	do	Geology - S (R)	1
Crohn	Geology - N (B)	Geology - N (B)	do	Geology - S (R)	do	Geology - S (R)	1
			do		do		
Crowley	Geology - S	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	1
Chang	Geology - S	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	1
Schlenk	Geology - S	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	1
anaerobic micro (01)	Geology - S (2226)	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	do	Lab Sciences, 3rd fl	1
land resources (01)	**Geology - N**	**Geology - N**	do	Geology - S (R)	do	Geology - S (R)	1
CE water quality (01)	**Geology - N**	**Geology - N**	do	Geology - S (R)	do	Geology - S (R)	1
wetlands (02)	na	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	do	Lab Sciences, 2nd fl	1
groundwater hydrologist (02)	na	Parker's lab (G2414)	do	Geology - S (R)	do	Geology - S (R)	1
biometeorologist (02)	na	???	do	???	do	Geology - N (R)	1
professor "X" (04)	na	na	do	???	do	Geology - N (R)	1
# of econ/management faculty	4	4	6	6	6	6	
		Lab Sciences I		Geol south complete		Geol north complete	
		complete		evac Geology north			
		Evac Geol South					
		evac Bourns B north					
Faculty w/ Labs in:							
Bournes B north	4	0	0	0	do	0	
Bournes B south	3	2 to 3	2 to 3	0 (or 1?)	do	0	
Lab Sciences - 2nd Fl	--	5	5	5	do	5	
Lab Sciences - 3rd Fl	--	5	5	5	do	5	
Geology south	4	0	0	7	do	7	
Geology north	6	6	6	0	do	6	
Bourns A Offices:	7	~6	8	6	do	0	

Environmental Sciences Space Planning: Preliminary Assessment

Needs

Our "final" space allocations should accommodate existing faculty and staff, plus the following:

- ~6 new "laboratory" faculty
- ~3 new management/policy/economics faculty
- an expanded teaching space
- a larger departmental conference room (capacity = 35)
- a second, smaller conference room with videoconferencing capabilities

Possible solutions:

- gains in efficiency of space utilization
- increase in net/gross ratio
- occupying space in Pierce Hall
- increasing our utilization of the first floor in Geology
- retaining some lab space in Bourns Hall "indefinitely"
- becoming rather cramped
- curtailing our departmental growth

Bottom line:

- a preliminary analysis suggests that we are ~3000 ASF "short" if confined to Geology and Lab Sciences I as indicated
- the faculty must carefully address the tradeoff between space adequacy and proximity

ENVIRONMENTAL SCIENCES DEPARTMENT: SPACE PLANNING

Subset of Phasing Matrix: Ultimate Geology Occupants Only

	Sep-01	Sep-02	Sep-03	Sep-04	Sep-05	Sep-06	# moves
Graham	Bourns B (south)	Bourns B (south)	do	Geology - S (R)	do	Geology - S (R)	1
Meixner	Bourns B (south)	Bourns B (south)	do	Geology - S (R)	do	Geology - S (R)	1
Jury or REPL	Bourns B (north)	??	do	??	do	Geology - N (R)	**2?**
Letey or REPL	Geology - N	Geology - N	do	**no lab**	do	Geology - N (R)	1
Farmer or REPL	Geology - N	Geology - N	do	**no lab**	do	Geology - N (R)	1
Wu	Geology - N	Geology - N	do	Geology - S (R)	do	Geology - S (R)	1
Crohn	Geology - N (B)	Geology - N (B)	do	Geology - S (R)	do	Geology - S (R)	1
			do		do		
land resources (01)	**Geology - N**	**Geology - N**	do	Geology - S (R)	do	Geology - S (R)	**2**
CE water quality (01)	**Geology - N**	**Geology - N**	do	Geology - S (R)	do	Geology - S (R)	1
groundwater hydrologist (02)	na	Parker's lab (G2414)	do	Geology - S (R)	do	Geology - S (R)	1
biometeorologist (02)	na	???	do	???	do	Geology - N (R)	1
professor "X" (04)	na	na	do	???	do	Geology - N (R)	1
# of econ/management faculty	4	4	6	6	6	6	
		Lab Sciences I		Geol south complete		Geol north complete	
		complete		evac Geology north			
		Evac Geol South					
		evac Bourns B north					
Faculty w/ Labs in:							
Geology south	4	0	do	7	do	7	
Geology north	6	6	do	0	do	5	

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *February 15, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Workshop #1 - Programming & Pre-architectural Design Phase**

ATTENDEES:

Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Srvcs.
Donna Cooney	Department Administrator - Environmental Sciences
Harry Green	UCR IGPP/Earth Sciences
George MacMullin, P.E.	Project Manager/Engineer/Office of Design & Construction
Dave Parker	UCR Department of Environmental Sciences
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Chris Smith	Degenkolb Engineers
Yat – Sun Poon	Associate Dean – CNAS
Diana Thiel	Student Representative – UCR Department of Earth Sciences
Alan Wilson	Bechard Long & Associates
Michael Woodburne	UCR Department of Earth Sciences

Action	Item	Description

2.1 INTRODUCTION AND OVERVIEW

A. An agenda for the workshop was passed out.

B. Jim Pirdy opened the work session by emphasizing the importance of understanding the existing conditions (building structure and systems) of the Geology Building when developing a plan for its renovation. Unlike the design of a new building, the planning team is very much constrained by the existing conditions and is forced to design from the "outside in".

C. The primary objective of the meeting was to present to the committee a preliminary analysis of the existing conditions from each of the major design disciplines.

Action	Item	Description

2.2 STRUCTURAL

A. Jim introduced Chris Smith of *Degenkolb Engineers,* the consulting structural engineers on the planning team. Chris presented his firm's assessment of the UCR Geology Building.

B. Chris advised the committee that Degenkolb's assessment was based on the following:

1. A site visit to the building.

2. Review of the original structural drawings of the building and recent structural upgrade drawings.

3. Review of a previous structural analysis report.

4. Analysis based on FEMA 310 Life safety Criteria.

C. South Wing

1. Degenkolb's analysis of the South Wing identified seismic deficiencies associated with vertical discontinuities in several shear walls.

2. The columns on the first floor are not sufficient to accommodate the loads from the second floor shear walls.

3. The draft report (see attachment) prepared by Degenkolb recommends enhancement of four columns on the first floor and in the crawl space with six to eight inches of concrete.

D. North Wing

1. The assessment identified a similar discontinuous shear located along Grid 8 and recommended that the supporting column be strengthened.

2. It also identified a lack of shear walls above grade along the north elevation and recommended that shear walls be added.

E. Chris believes the recommended structural mitigation measures will elevate the Geology Building to a "life-safe" level, and that the work will not adversely impact the renovation scope of the building. He estimates the probable cost of the structural mitigation at less than three hundred thousand dollars ($300,000.00).

Action	Item	Description

F. Dave Parker asked how long before a *new* building would fall below a fair rating. Chris estimated this would occur in eight to ten years. Because the renovation may not be completed for several years, Dave wanted to know how we could avoid a "down-grading" of the building the day the doors open.

1. Chris advised that the FEMA 310 document will have a ten year cycle. The renovated Geology Building should have that time frame plus three to five years.

2. Chris also stated that the "knowledge curve" for buildings with structural systems such as Geology is starting to "flatten". Fewer seismic impacts can be anticipated in the future.

E. The issue of vibration was raised.

1. The existing building is a "relatively light" structure and is not as stiff as a new building.

2. Chris recommended the building users be selective about where vibration sensitive equipment is located (preferably near shear walls or columns).

3. Local isolation of vibration is also possible.

2.3 MECHANICAL/ELECTYRICAL/PLUMBING

A. Alan Wilson of *Bechard Long and Associates* was introduced and presented his firm's assessment of the Geology Building.

B. *Electrical* – the objectives of the proposed upgrade are as follows:

1. Support contemporary research.

2. Support the upgraded mechanical systems.

3. Make the building life-safe.

4. Provide clean power.

C. *Lighting* - existing systems and fixtures will be replaced to improve efficiency, provide better light levels and aesthetics within the building.

Action	Item	Description

D. *Signal Systems*-data and telecom systems have evolved significantly since the building was constructed in the 1950's. All systems including the fire alarm system will be replaced.

E. *Plumbing Systems* will be upgraded to support the mechanical retrofit, meet current codes, and solve problems that are currently being experienced in the building (i.e. condensate - removing moisture).

1. Building users need to identify the specific lab gases that are needed.

2. Several options will be studied for the retrofit of the acid waste system.

F. *HVAC System* - the upgrade of this system is more complex due to the significant changes which have occurred since the building was constructed. It is also complicated by the fact that the supply and exhaust systems will be replaced and upgraded as two separate contracts to be executed in multiple phases. They must be fully integrated at the completion of all phases.

1. Alan explained that a major issue to be resolved is environmental air quality. How clean of a building is required to support the instructional and research programs that will be accommodated? An academic research building is generally a Class 100,000 rated facility.

2. An examination of requirements for air quality and pressurization will have to be undertaken on a room-by-room basis.

3. The replacement of the 1953 and 1959 HVAC supply systems will occur in the following sequence: central wing, south wing, and north wing.

4. Location of the new air handlers is a major concern. It is preferable to place them lower in the building to separate them from the exhaust system. This approach also helps mitigate noise, vibration, and weight problems.

5. The size of the new air handlers is also an issue. Because they will be larger it is more efficient to have larger shafts for distribution of the air. If larger shafts are constructed in the interior of the building, this will impact the assignable square footage.

Action	Item	Description

6. It is assumed that, at the completion of the Geology Building Renovation, there will be approximately sixty (60) to sixty-four (64) fume hoods in the building (two six foot hoods per lab).

G. General Discussion of Systems Issues

BLA

1. Kieron Brunelle asked how much power is supplied to the building currently. Alan will verify this.

2. Dave Parker asked if emergency power could be sprinklered through the labs. Alan said yes. Currently an emergency generator located in Pierce Hall feeds Pierce, Science Lab 1, and Geology.

3. Harry Green felt that power needs will increase in the future. He also felt vibration will be an important future concern.

4. Mike Woodburne believes that thirty percent (30%) of the labs in the Earth Sciences department will require fume hoods for wet lab research. He does not think the makeup of his faculty will change over the next twenty years.

5. Dave Parker believes that the committee should look at the Geology Building "holistically". The new lab buildings being constructed on the UCR campus are very intense. He feels Geology should be a "mixed use" facility with a range of high and low intensity uses.

JLP/BLA

6. The planning team will study the replacement of the original, single pane glazing. It has a very low efficiency. A new system would significantly improve energy efficiency and comfort with in the building. Utility rebates may help to offset the cost.

2.4 ARCHITECTURAL - Jim gave an overview of the architectural existing conditions on the Geology Building. This information is detailed in the attached draft of DPP Section 5.0, *Analysis of Existing Conditions*.

2.5 PRELIMINARY BUILDING ORAGNIZATION

A. Drawings illustrating the *Proposed Zoning* of the building were presented. The block diagrams illustrate a preliminary allocation of space to the three departments who will occupy the building (see attachment).

Action	Item	Description

1. The diagrams illustrate a total assignable square footage (ASF) in the Geology Building of 57,521 ASF after the demolition of the south wing.

2. Utilization of the sub-basement which contains 5,501 ASF remains to be determined. It does not have elevator access or legal exits. Storage or mechanical space are possible uses.

B. Jim presented an analysis of the proposed zoning which is documented in *Section 3.6 Analysis of Proposed Program* (see attachment). If the subbasement can be fully utilized, the proposed zoning results in a deficit of 4,674 ASF. Jim stressed that this is only a preliminary analysis and much more detailed study needs to be undertaken.

2.6 GEOLOGY BUILDING STRUCTURAL GRID

A. Jim stated that the first step in verifying what program area can be accommodated within the building is to understand the existing structural grid. The existing grid determines the space planning module.

B. Jim presented drawings of the North and South Wings of the Geology Building illustrating the structural grids.

1. The North Wing is constructed on a grid of 29'-2" x 14'-6" with columns along the exterior of the building and columns and shear walls along the interior corridor wall.

2. The south Wing is constructed on a grid of 29'-0" x 14'-6" with columns at the perimeter of the building and along the interior corridor of type building.

3. The critical dimension is the 14'-6" width of the structure in both wings.

2.7 LABORATORY PLANNING

A. A *Conceptual Planning Module* was presented illustrating a conventionally accepted design for a functional and efficient lab module (see attachment).

1. The planning module is 10'-6" in width which allows for a 2'-6" lab bench on either side with a 5'-0" aisle in the middle and a 6" wall thickness.

Action	Item	Description
		2. The depth of the module was set at 29'-0" to match the structural grid of the Geology Building.
		3. By combining two to four modules an efficient laboratory suite is developed.
		4. The ideal structural grid for the building would be derived from the planning module (21'-0" x 29'-0").
		B. A second planning module entitled Existing Geology Building was presented (see attachment). This study was based on the actual structural grid of the building (29'-0" x 14'-6").
		1. It resulted in aisle widths that ranged from 9'-0" (too wide) to 4'-9" (too narrow).
		2. In some cases, the depths of the bench tops were less than the recommended 30".
JLP		3. The planning team will work with the departments to attempt to resolve these functional inefficiencies.
		C. Additional diagrams were presented to illustrate how the existing floors could be configured for laboratories and support spaces. These included larger, open instructional labs on the first floor of the South Wing.
		D. The laboratory planning module and arrangement of lab suites will be discussed in more detail with user groups from each of the departments involved on the project.
JLP		E. More detailed studies of the laboratory module and suite arrangements will be presented at the second workshop in March.
UCR	2.8	WORKSHOP #2 is scheduled for March 16, 2001 from 12:00 - 3:00 pm in the College Building North large conference room. Lisa Peloquin's office will schedule user group meetings with the individual departments.

Action	Item	Description

This report was prepared by *JLP Architects, Inc.* on February 26, 2001.

JLP Architects, Inc.

James L. Purdy

James L. Pirdy, Architect
Principal
JLP/km
Lisa Peloquin to distribute to UCR

c.c. *Chris Smith, Degenkolb Engineers*
Alan Wilson, Bechard Long & Associates
Graham Anderson, Campbell-Anderson Associates

Enclosures:

- Agenda Workshop #1
- Draft - Existing Building Structural assessment - Degenkolb Engineers
- Draft DPP Section 5.0 - Analysis of Existing Conditions
- Draft DPP Section 3.0 - Space Program
- Proposed Zoning
- Laboratory Planning Module
- Existing Geology Building (module)
    - Study 1
    - Study 2

JLP ARCHITECTS INC

UCR GEOLOGY BUILDING RENOVATION
JLP #01-03.1/UCR #950446

AGENDA WORKSHOP #1 **2.15.01 • 8:00 am**

- *Introduction/Announcements* — Lisa Peloquin
- *Overview* — Jim Pirdy
- *Preliminary Analysis of Existing Conditions*
  - Structural - Chris Smith, Degenkolb Engineers
  - Mechanical/Plumbing/Electrical - Alan Wilson, Bechard Long Associates
  - Architectural, Jim Pirdy, JLP Architects, Inc.
  - Discussion - impacts of existing conditions on the renovation plan for the Geology Building.
- *Preliminary Building Organization*
  - Block Diagrams
  - Analysis of Proposed Program
- *Laboratory Planning*
  - Conceptual Planning Module
  - Geology Building Module

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February 15, 2001

DRAFT

James L. Pirdy
JLP Architects, Inc.
260 Newport Center Drive
Suite 100
Newport Beach, CA 92660
Via email: jlpaia@earthlink.net

Reference: **EXISTING BUILDING STRUCTURAL ASSESSMENT GEOLOGY BUILDING RENOVATION PROJECT AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE [DEGENKOLB JOB NO. A10034.00]**

Dear Jim:

As requested, we have completed a structural assessment of the Geology Building, located on the University of California, Riverside campus. In order to perform this assessment we have conducted a site visit, reviewed both the original structural documents as well as the structural upgrade drawings, and reviewed a previous structural analysis report. In addition, we have performed a FEMA 310 analysis based on the building type and its site properties. The assessment primarily addressed the FEMA 310 Life Safety criteria; however, limited Immediate Occupancy assessment was also performed. The single story southern portion of the South Building, as referenced in Figure 7 of Appendix C, is to be demolished and was not part of this assessment.

STRUCTURAL SYSTEMS

The Geology Building consists of two individual buildings, separated by a 2-inch seismic expansion joint. The buildings are designated as the "South Building" and the "North Building." The project appears to have been phased with the South Building constructed first.

Both the South and North Buildings have been seismically upgraded. Nabih Youssef and Associates (NYA) prepared the construction documents for this upgrade dated, February 27, 1997The seismic upgrade appears to have been based upon a report dated December 6, 1995 and titled, "Seismic Evaluation Report" also prepared by NYA.

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SOUTH BUILDING

The South Building construction documents are dated May 1, 1952. The building consists of a basement plus two upper levels. An exterior elevation of the building can be seen in Figure 8. The South Building is a cast-in-place concrete structure with both reinforced masonry and reinforced concrete shear walls and is T-shaped in plan. Partial floor plans of this building can be found in Appendix A. The South Building is classified as a bearing wall system with a rigid diaphragm. The gravity system consists of a one-way concrete slab that spans to reinforced concrete beams spaced at 14'-6" on center. Shear walls and reinforced concrete columns support these beams. The basement walls are retaining. The foundations consist of conventional reinforced concrete pad or wall footings.

South Building structural improvements done in 1997 included the installation of reinforced concrete shear walls at grids E and H. Both walls are full height. In addition, three new concrete columns were installed immediately adjacent to existing concrete columns, providing additional strength to the existing columns. The new columns can be seen in Figure 10 of Appendix D.

NORTH BUILDING

The North Building construction documents are dated April 16, 1959. The building consists of a basement plus three upper levels. An exterior elevation of the building can be seen in Figure 11 of Appendix D. The North Building is also a cast-in-place concrete structure with both reinforced masonry and reinforced concrete shear walls. It however, is rectangular in shape with an open window wall at the northern face. An elevation of this open face can be seen in Figure 12 of Appendix D, and partial floor plans of this structure can be found in Appendix B. It is also classified as a bearing wall system with a rigid diaphragm. The gravity system consists of a one-way concrete slab that spans to reinforced concrete beams spaced at 14'-6" on center. Shear walls and reinforced concrete columns support these beams. The basement walls are partially retaining and the foundations consist of conventional reinforced concrete pad and wall footings.

North Building structural improvements in 1997 were limited to the upgrade of a single column spanning from the Ground floor to the First Level. This was performed through the use of a composite material or "fiber wrap."

FIELD INVESTIGATION

In order to observe the general condition of the building and to confirm the extent of the seismic upgrade performed in 1997, Chris Smith and Steven Oh of this office conducted a site visit on February 8, 2001. During the site visit, the layout of the original structure was generally verified for both the North and South Buildings.

The new shear walls and roof collector elements that were installed in the South Building as part of the recent structural upgrade were located and can be seen in Figure 9 of Appendix D, and the new column improvements appeared to have been installed per plan.

ASSESSMENTS

In order to assess each building, the upgrade drawings were reviewed in conjunction with the original structural drawings. Also used as a reference was the report generated by NYA in 1995.

The FEMA 310 document is the result of earthquake lessons learned in the 1990's and is the successor to FEMA 178. FEMA 310 retained the core concepts of FEMA 178, advancing and improving them. Some of the advancements as written in FEMA 310 include the "introduction of multiple performance levels, improved guidance for areas of moderate and low seismicity, and newly identified weak links in buildings." Although categorized as a "Prestandard," FEMA 310 is a consensus document that represents the most current thinking of structural engineering practice. Hence, FEMA 310 is the latest information and should be considered the latest version of FEMA 178.

Per FEMA 310, both the North and South Buildings are classified as C2, Concrete Shear Wall Buildings with Stiff Diaphragms. Although the buildings have a combined seismic resisting system of reinforced masonry and reinforced concrete shear walls, the large difference in stiffness between the brick and the concrete walls validates this evaluation approach. However, since both wall types were modeled and determined to resist lateral loads, a checklist was provide for the masonry shear wall type as well. The completed checklists and the identified seismic deficiencies may be found in the appendices corresponding to each building.

The University of California utilizes a seismic performance rating system. A summary of categories has been included in Appendix C. For the purposes of this report, a "Fair" rating by the University system would roughly correspond to the FEMA 310 criteria of Life Safe. A "Good" rating by the University system would be something better than the FEMA 310 criteria of Life Safe but would not necessarily meet FEMA 310's criteria for an Immediate Occupancy rating.

SOUTH BUILDING

The South Building seismic deficiencies are limited to the vertical discontinuities associated with some of the shear walls. There are a total of 4 discontinuous shear walls, all of which are located at the interior corridor of the building. Supporting each discontinuous shear wall are two reinforced concrete columns. The columns supporting these walls must be capable of supporting the load that can be delivered to the columns by the shear walls located directly above. In order to bring the structure up to a FEMA 310 Life Safe categorization, column strengthening should be performed.

In order to bring the South Building into compliance with the minimum requirements of the FEMA 310 Immediate Occupancy criteria, several additional structural items would need to be addressed. Shear wall strengthening would be required, as well as the strengthening of some foundation elements. Also, the diaphragm would need strengthening both for the reentrant corner and at diaphragm openings.

NORTH BUILDING

The North Building also exhibits several seismic deficiencies. Most could be related back to the very long north wall face that currently has no shear walls above the ground level. The deficiencies range from torsional irregularities and a weak story to inadequate and discontinuous shear walls.

Several walls were determined to have insufficient strength. Also, a discontinuous shear wall was located along Grid 8. It is recommended that the inadequate strength of the concrete column that supports the shear wall be addressed.

In order to bring the North Building into compliance with the FEMA 310 Immediate Occupancy requirements, several additional issues would need to be addressed. First, the extent of shear wall strengthening would need to be expanded. Second, some foundations would require strengthening. Finally, detailing issues such as additional trim reinforcing around openings in the diaphragms would be required.

CONCLUSIONS

Deficiencies still exist with the buildings that would prevent the building form being classified as either Life Safe or Fair per FEMA 310 or the University, respectively. Despite the construction performed in the 1997 seismic upgrade, the South Building deficiencies consist of shear wall discontinuities and inadequate strength in the columns that support them. At the North Building, the deficiencies that remain include shear wall strength deficiencies, a torsional irregularity, a weak story, and shear wall discontinuities and the related supporting column strength deficiencies.

RECOMMENDATIONS FOR FURTHER ACTION

In order to bring both the South and North Buildings up to a FEMA 310 Life Safe classification, it is recommended that the deficiencies noted in the conclusions be mitigated. To accomplish this, new elements and upgrading existing elements would be required. A summary for each building is included below.

SOUTH BUILDING

In order to mitigate the shear wall discontinuities, strengthening of the concrete columns that support these walls is recommended. Strengthening could be achieved through concrete encasement of the four columns located at Grids 3F, 3G, 13F, and 13G. A plan that includes this strengthening scheme and the column locations is located in Appendix A.

NORTH BUILDING

Although there are several deficiencies associated with the North Building, most can be resolved through the installation of shear walls along Grid Z at the north face of the building. These walls should be full height and can either be concentrated at the two corners of the building along one-and-a-half bays each or segmented out across three bays. The existing walls located at the basement level will most likely require some strengthening, either by strengthening the walls themselves or the adjacent columns. No foundation work is anticipated for this portion of strengthening. Also part of the recommended mitigation is the installation of a new two-level concrete shear wall along Grid 8. This shear wall would span from the Basement to the First Level and would require foundation work. Plans that include these strengthening schemes are located in Appendix B.

It is a pleasure to be of assistance on this University of California, Riverside project. Please do not hesitate to call if you have any questions.

Sincerely,

DEGENKOLB ENGINEERS

Brenda Guyader
Design Engineer

Christopher J. F. Smith
Principal

cc: File

APPENDIX A: SOUTH BUILDING

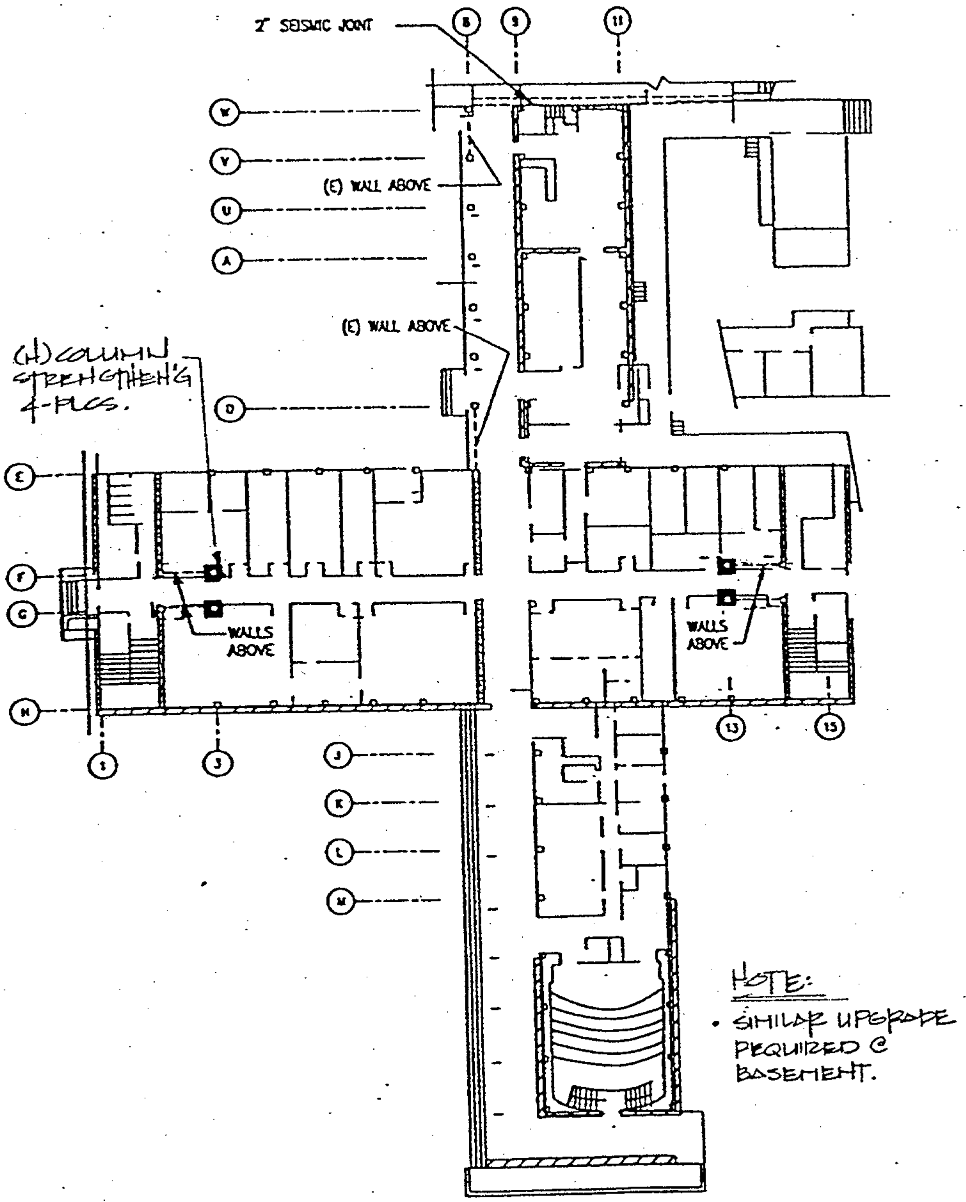
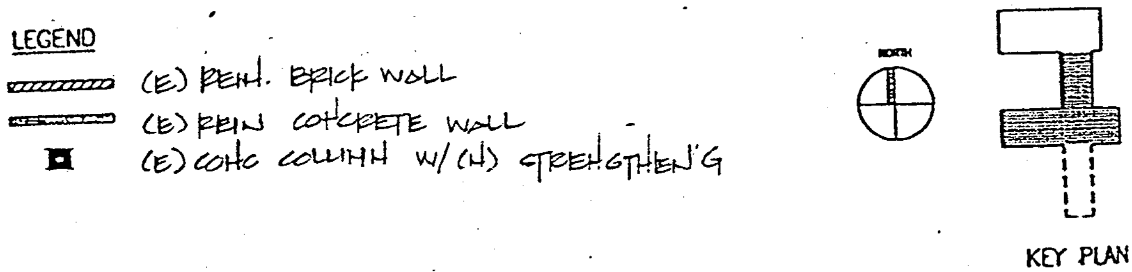


Figure 2: Ground Floor Plan



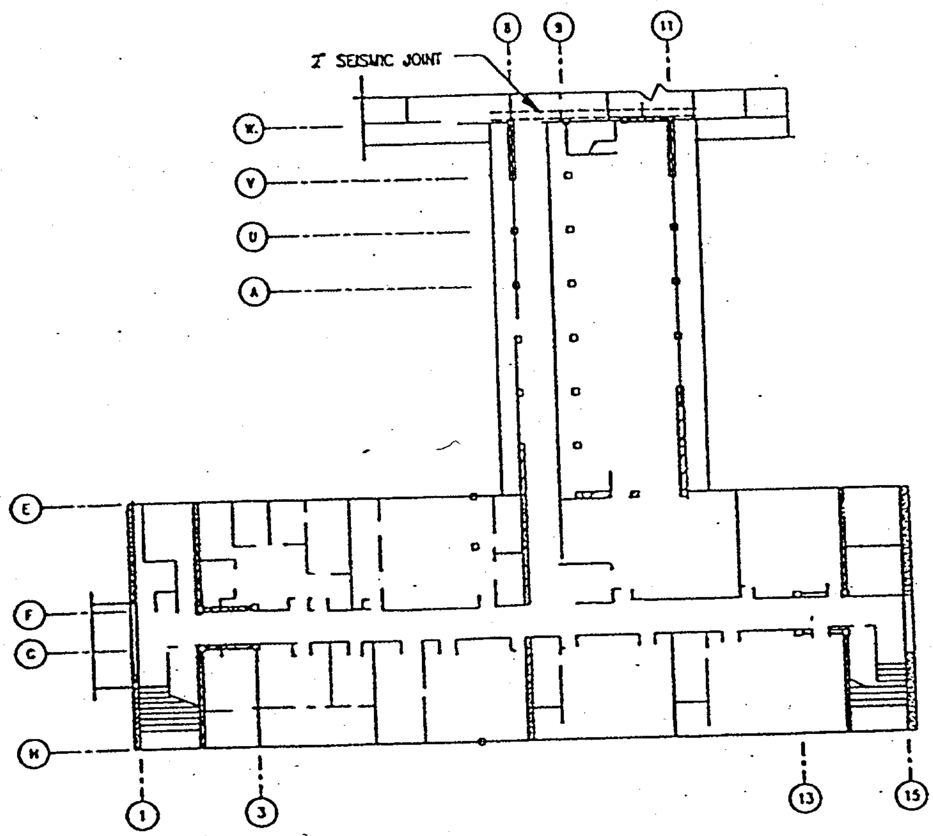
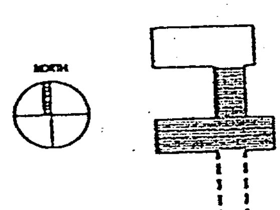


Figure 1: Second Floor Plan

LEGEND
(E) REIN. BRICK WALL
(E) REIN CONCRETE WALL
(E) CONC COLUMN W/(N) STRENGTHEN'G



KEY PLAN

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Building Name: Geology Building Renovation Project - South | Date: February 15, 2001

Building Address: University of California, Riverside | Page: 1 of 2

Job Number: A10034.00 Job Name: UCR Geol Bldg | By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

BUILDING SYSTEM

C	NC	N/A			Comments
☒	☐	☐	4.3.1.1	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation.	
☐	☐	☒	4.3.1.3	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure.	
☒	☐	☐	4.3.2.1	WEAK STORY: The strength of the lateral-force-resisting-system in any story shall not be less than 80% of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy	
☒	☐	☐	4.3.2.2	SOFT STORY: The stiffness of the lateral-force-resisting-system in any story shall not be less than 70% of the stiffness in an adjacent story above or below, or less than 80% of the average stiffness of the three stories above or below for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.3	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses.	
☐	☒	☐	4.3.2.4	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation.	Columns support discontinuous shear walls.
☒	☐	☐	4.3.2.5	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.6	TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.3.4	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements.	
☒	☐	☐	4.3.3.5	POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used.	
☒	☐	☐	4.3.3.9	CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern.	

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Building Address: University of California, Riverside		Page: 2 of 2	
Job Number: A10034.00	Job Name: UCR Geol Bldg	By: SO	Checked: CFS

FEMA 310 BASIC CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
			LATERAL FORCE RESISTING SYSTEM		
☒	☐	☐	4.4.1.6.1	COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical load carrying system.	
☒	☐	☐	4.4.2.1.1	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.4.2.2.1	SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 100 psi or 2 for Life Safety and Immediate Occupancy.	Tier 2 Analysis shows OK
☒	☐	☐	4.4.2.2.2	REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be greater than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18" for Life Safety and Immediate Occupancy.	
			CONNECTIONS		
☒	☐	☐	4.6.2.1	TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the shear strength of the walls for Immediate Occupancy.	Tier 2 Analysis shows OK
☒	☐	☐	4.6.3.5	WALL REINFORCING: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the strength of the walls for Immediate Occupancy.	

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Job Number: A10034.00	Job Name: UCR Geol Bldg	By: SO	Checked: CFS

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C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☒	☐	☐	4.4.1.6.2	DEFLECTION COMPATIBILITY: Secondary components shall have the shear capacity to develop the flexural strength of the elements for Life Safety and shall have ductile detailing for Immediate Occupancy.	
☐	☐	☒	4.4.1.6.3	FLAT SLABS: Flat slabs/plates classified as secondary components shall have continuous bottom steel through the column joints for Life Safety. Flat slabs/plates shall not be permitted for the Immediate Occupancy Performance Level.	
☐	☐	☒	4.4.2.2.3	COUPLING BEAMS: The stirrups in all coupling beams over means of egress shall be spaced at or less than d/2 and shall be anchored into the core with hooks of 135° or more for Life Safety and Immediate Occupancy. In addition, the beams shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy.	
☐	☐	☒	4.4.2.2.4	OVERTURNING: All shear walls shall have aspect ratios less than 4 to 1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.5	CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2.0, the boundary elements shall be confined with spirals or ties with spacing less than 8 d_b. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.6	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.7	WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the minimum unsupported height or length, nor less than 4". This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
				DIAPHRAGMS	
☒	☐	☐	4.5.1.1	DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors. In wood buildings, the diaphragms shall not have expansion joints.	
☒	☐	☐	4.5.1.4	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy.	
☐	☐	☒	4.5.1.7	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.

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C	NC	N/A			Comments
			DIAPHRAGMS		
☐	☐	☒	4.5.1.8	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
			CONNECTIONS		
☐	☐	☒	4.6.3.10	LATERAL LOAD AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy.	

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Building Address:	University of California, Riverside	Page:	1 of 2
Job Number:	A10034.00 Job Name: UCR Geol Bldg	By: SO	Checked: CFS

FEMA 310 BASIC CHECKLIST RM2.
REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

BUILDING SYSTEM

C	NC	N/A			Comments
☒	☐	☐	4.3.1.1	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation.	
☐	☐	☒	4.3.1.3	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure.	
☒	☐	☐	4.3.2.1	WEAK STORY: The strength of the lateral-force-resisting-system in any story shall not be less than 80% of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy	
☒	☐	☐	4.3.2.2	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70% of the stiffness in an adjacent story above or below or less than 80% of the average stiffness of the three stories above or below for Life-Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.3	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses.	
☐	☒	☐	4.3.2.4	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation.	Columns support discontinuous shear walls not strengthened.
☒	☐	☐	4.3.2.5	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.6	TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.3.4	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements.	
☒	☐	☐	4.3.3.7	MASONRY UNITS: There shall be no visible deterioration of masonry units.	
☒	☐	☐	4.3.3.8	MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar.	
☒	☐	☐	4.3.3.10	REINFORCED MASONRY WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern.	

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REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☒	☐	☐	4.4.2.1.1	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.4.2.4.1	SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 50 psi for Life Safety and Immediate Occupancy.	Tier 2 Analysis shows OK.
☒	☐	☐	4.4.2.4.2	REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls shall be greater than 0.002 for Life Safety and 0.003 for Immediate Occupancy of the wall with the minimum of 0.0007 for Life Safety and 0.001 for Immediate Occupancy in either of the two directions; the spacing of reinforcing steel shall be less than 48" for Life Safety and 24" for Immediate Occupancy; and all vertical bars shall extend to the top of the walls.	$\rho > 0.0025$
				DIAPHRAGMS	
☐	☐	☒	4.5.5.1	TOPPING SLAB: Precast concrete diaphragm elements shall be interconnected by a continuous reinforced concrete topping slab.	
				CONNECTIONS	
☒	☐	☐	4.6.1.1	WALL ANCHORAGE: Exterior concrete or masonry walls shall be anchored for out-of-plane forces at each diaphragm level with steel anchors or straps that are developed into the diaphragm.	Wall reinforcement dowels into slab at roof. Slab reinforcing doweled into walls and floors.
☒	☐	☐	4.6.2.1	TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the shear strength of the walls for Immediate Occupancy.	Tier 2 Analysis shows OK.
☐	☐	☒	4.6.2.3	TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements shall be doweled into the shear wall or frame elements for Life Safety and the dowels shall be able to develop the shear strength of the walls or frames for Immediate Occupancy.	
☐	☐	☒	4.6.3.5	WALL REINFORCING: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the strength of the walls for Immediate Occupancy.	
☒	☐	☐	4.6.4.1	GIRDER/COLUMN CONNECTION: There shall be a positive connection between the girder and the column support.	

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Job Number: A10034.00	Job Name: UCR Geol Bldg	By: SO	Checked: CFS

FEMA 310 SUPPLEMENTAL CHECKLIST RM2.

REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
			LATERAL FORCE RESISTING SYSTEM		
☐	☐	☒	4.4.2.2.6	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.4.4	PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than 30. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
			DIAPHRAGMS		
☒	☐	☐	4.5.1.4	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy.	
☒	☐	☐	4.5.1.6	OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls shall not be greater than 8 feet long for Life Safety and 4 ft. long for Immediate Occupancy.	
☐	☐	☒	4.5.1.7	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.5.1.8	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
			CONNECTIONS		
☒	☐	☐	4.6.1.3	ANCHOR SPACING: Exterior masonry walls shall be anchored to the floor and roof systems at a spacing of 4 ft. or less for Life Safety and 3 ft. or less for Immediate Occupancy.	

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Building Name: Geology Building Renovation Project - South
Date: February 15, 2001

Building Address: University of California, Riverside

Job Number: A10034.00 Job Name: UCR Geol Bldg
By: SO Checked: CFS

FEMA 310 GEOLOGIC SITE HAZARDS AND FOUNDATIONS CHECKLIST.

C	NC	N/A			Comments
				GEOLOGIC SITE HAZARDS	
☒	☐	☐	4.7.1.1	LIQUEFACTION: Liquefaction susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy.	Unlikely. Information was not available from CDMG.
☒	☐	☐	4.7.1.2	SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure.	
☒	☐	☐	4.7.1.3	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated.	Eight kilometers from San Jacinto Fault per 97 UBC maps.
				CONDITIONS OF FOUNDATIONS	
☒	☐	☐	4.7.2.1	FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure.	
☒	☐	☐	4.7.2.2	DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure.	
				CAPACITY OF FOUNDATIONS	
☐	☐	☒	4.7.3.1	POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 ft. for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.7.3.2	OVERTURNING: The ratio of the effective horizontal dimension, at the foundation level of the lateral-force-resisting system, to the building height (base/height) shall be greater than $0.6S_a$.	Tier 2 Analysis.
☒	☐	☐	4.7.3.3	TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C.	
☐	☐	☒	4.7.3.4	DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only.	
☐	☐	☒	4.7.3.5	SLOPING SITES: The grade difference from one side of the building to another shall not exceed one-half the story height at the location of embedment. This statement shall apply to the Immediate Occupancy Performance Level only.	

APPENDIX B: NORTH BUILDING

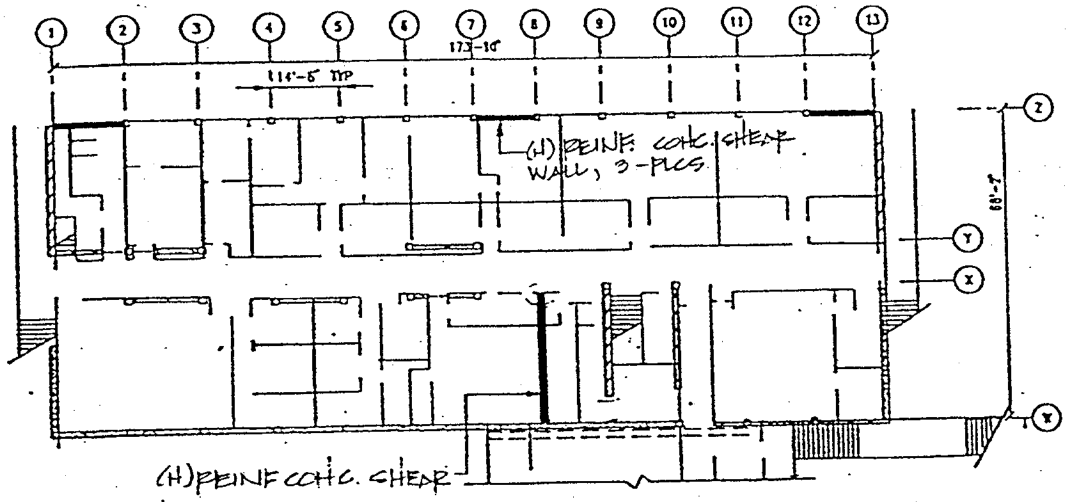


Figure 3: Ground Floor Plan

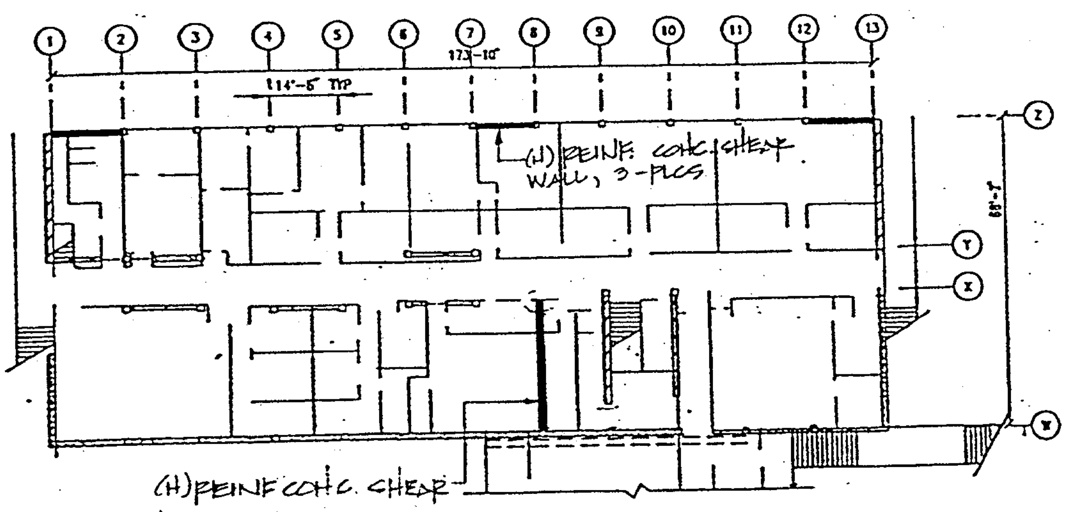
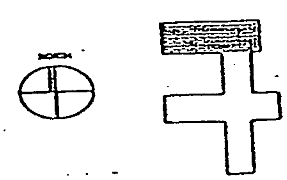


Figure 4: Basement Plan

LEGEND

(E) REINF. BRICK WALL
(E) REINF. CONCRETE WALL
(N) REINF. CONCRETE WALL



KEY PLAN

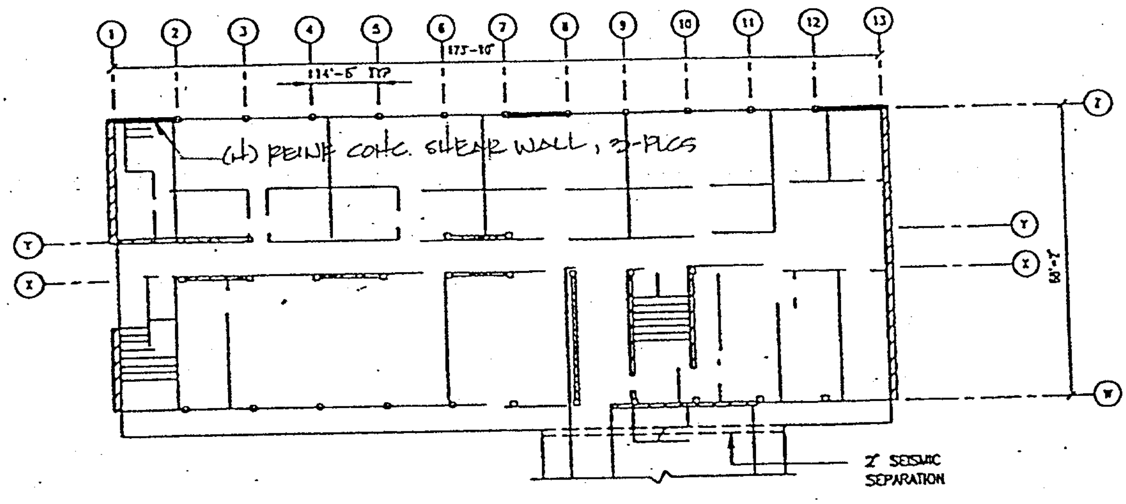


Figure 5: Second Floor Plan

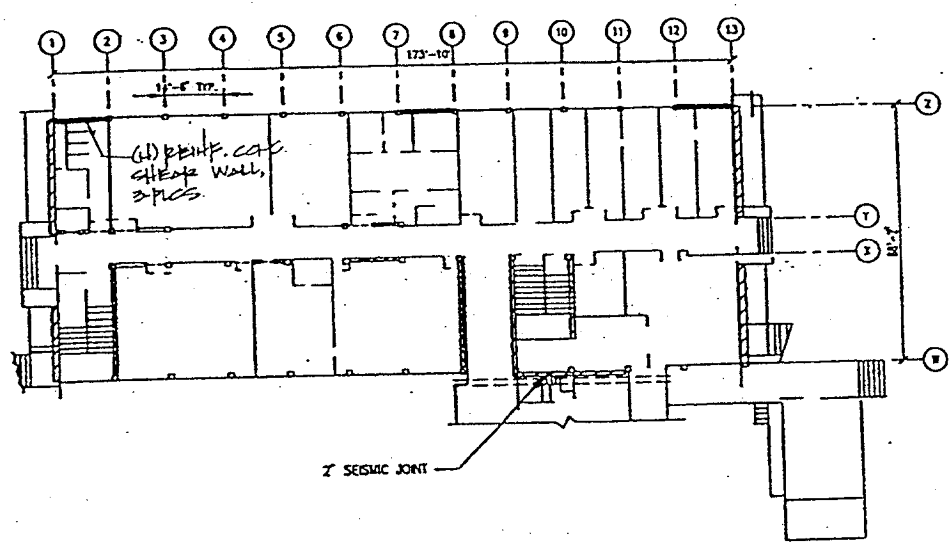
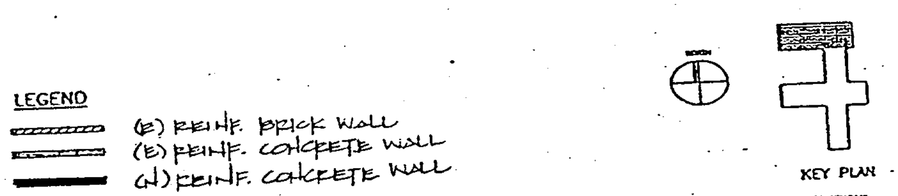


Figure 6: First Floor Plan



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Job Number: A10034.00 Job Name: UCR Geol Bldg

Date: February 15, 2001

By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

BUILDING SYSTEM

C	NC	N/A			Comments
☒	☐	☐	4.3.1.1	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation.	
☐	☐	☒	4.3.1.3	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure.	
☐	☒	☐	4.3.2.1	WEAK STORY: The strength of the lateral-force-resisting-system in any story shall not be less than 80% of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy	First floor is a weak story.
☒	☐	☐	4.3.2.2	SOFT STORY: The stiffness of the lateral-force-resisting-system in any story shall not be less than 70% of the stiffness in an adjacent story above or below, or less than 80% of the average stiffness of the three stories above or below for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.3	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses.	
☐	☒	☐	4.3.2.4	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation.	Columns that support discontinuous shear walls not strengthened.
☒	☐	☐	4.3.2.5	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy.	
☐	☒	☐	4.3.2.6	TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy.	Ground level.
☒	☐	☐	4.3.3.4	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements.	
☒	☐	☐	4.3.3.5	POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used.	
☒	☐	☐	4.3.3.9	CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern.	

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Page: 2 of 2
Job Number: A10034.00 Job Name: UCR Geol Bldg
By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

LATERAL FORCE RESISTING SYSTEM

C	NC	N/A			Comments
☒	☐	☐	4.4.1.6.1	COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical load carrying system.	
☒	☐	☐	4.4.2.1.1	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy.	
☐	☒	☐	4.4.2.2.1	SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 100 psi or 2 for Life Safety and Immediate Occupancy.	Walls at first floor are overstressed.
☒	☐	☐	4.4.2.2.2	REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be greater than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18" for Life Safety and Immediate Occupancy.	

CONNECTIONS

C	NC	N/A			Comments
☒	☐	☐	4.6.2.1	TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the shear strength of the walls for Immediate Occupancy.	Tier 2 Analysis shows OK
☒	☐	☐	4.6.3.5	WALL REINFORCING: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the strength of the walls for Immediate Occupancy.	

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Job Number: A10034.00   Job Name: UCR Geol Bldg   By: SO   Checked: CFS

FEMA 310 SUPPLEMENTAL CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

LATERAL FORCE RESISTING SYSTEM

C	NC	N/A			Comments
☐	☒	☐	4.4.1.6.2	DEFLECTION COMPATIBILITY: Secondary components shall have the shear capacity to develop the flexural strength of the elements for Life Safety and shall have ductile detailing for Immediate Occupancy.	Torsional irregularity condition will induce excessive displacements on the gravity columns.
☐	☐	☒	4.4.1.6.3	FLAT SLABS: Flat slabs/plates classified as secondary components shall have continuous bottom steel through the column joints for Life Safety. Flat slabs/plates shall not be permitted for the Immediate Occupancy Performance Level.	
☐	☐	☒	4.4.2.2.3	COUPLING BEAMS: The stirrups in all coupling beams over means of egress shall be spaced at or less than d/2 and shall be anchored into the core with hooks of 135° or more for Life Safety and Immediate Occupancy. In addition, the beams shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy.	
☐	☐	☒	4.4.2.2.4	OVERTURNING: All shear walls shall have aspect ratios less than 4 to 1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.5	CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2.0, the boundary elements shall be confined with spirals or ties with spacing less than 8 d_b. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.6	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.7	WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the minimum unsupported height or length, nor less than 4". This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.

DIAPHRAGMS

C	NC	N/A			Comments
☒	☐	☐	4.5.1.1	DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors. In wood buildings, the diaphragms shall not have expansion joints.	
☒	☐	☐	4.5.1.4	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy.	
☐	☐	☒	4.5.1.7	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.

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Building Address: University of California, Riverside | Page: 2 of 2

Job Number: A10034.00 Job Name: UCR Geol Bldg | By: SO Checked: CFS

FEMA 310 SUPPLEMENTAL CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
			DIAPHRAGMS		
☐	☐	☒	4.5.1.8	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
			CONNECTIONS		
☐	☐	☒	4.6.3.10	LATERAL LOAD AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy.	

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Building Address: University of California, Riverside | Page: 1 of 2

Job Number: A10034.00 Job Name: UCR Geol Bldg | By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST RM2.
REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				BUILDING SYSTEM	
☒	☐	☐	4.3.1.1	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation.	
☐	☐	☒	4.3.1.3	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure.	
☐	☒	☐	4.3.2.1	WEAK STORY: The strength of the lateral-force-resisting-system in any story shall not be less than 80% of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy	First floor is a weak story.
☒	☐	☐	4.3.2.2	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70% of the stiffness in an adjacent story above or below or less than 80% of the average stiffness of the three stories above or below for Life-Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.3	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses.	
☐	☒	☐	4.3.2.4	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation.	Columns support discontinuous shear walls not strengthened.
☒	☐	☐	4.3.2.5	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy.	
☐	☒	☐	4.3.2.6	TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy.	Ground level.
☒	☐	☐	4.3.3.4	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements.	
☒	☐	☐	4.3.3.7	MASONRY UNITS: There shall be no visible deterioration of masonry units.	
☒	☐	☐	4.3.3.8	MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar.	
☒	☐	☐	4.3.3.10	REINFORCED MASONRY WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern.	

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FEMA 310 BASIC CHECKLIST RM2.
REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☒	☐	☐	4.4.2.1.1	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy.	
☐	☒	☐	4.4.2.4.1	SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 50 psi for Life Safety and Immediate Occupancy.	Tier 2 Analysis shows walls at first floor are overstressed.
☒	☐	☐	4.4.2.4.2	REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls shall be greater than 0.002 for Life Safety and 0.003 for Immediate Occupancy of the wall with the minimum of 0.0007 for Life Safety and 0.001 for Immediate Occupancy in either of the two directions; the spacing of reinforcing steel shall be less than 48" for Life Safety and 24" for Immediate Occupancy; and all vertical bars shall extend to the top of the walls.	
				DIAPHRAGMS	
☐	☐	☒	4.5.5.1	TOPPING SLAB: Precast concrete diaphragm elements shall be interconnected by a continuous reinforced concrete topping slab.	
				CONNECTIONS	
☒	☐	☐	4.6.1.1	WALL ANCHORAGE: Exterior concrete or masonry walls shall be anchored for out-of-plane forces at each diaphragm level with steel anchors or straps that are developed into the diaphragm.	
☒	☐	☐	4.6.2.1	TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the shear strength of the walls for Immediate Occupancy.	Tier 2 Analysis
☐	☐	☒	4.6.2.3	TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements shall be doweled into the shear wall or frame elements for Life Safety and the dowels shall be able to develop the shear strength of the walls or frames for Immediate Occupancy.	
☐	☐	☒	4.6.3.5	WALL REINFORCING: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the strength of the walls for Immediate Occupancy.	
☒	☐	☐	4.6.4.1	GIRDER/COLUMN CONNECTION: There shall be a positive connection between the girder and the column support.	

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Building Address:	University of California, Riverside	Page:	1	of	1
Job Number:	A10034.00 Job Name: UCR Geol Bldg	By:	SO	Checked:	CFS

FEMA 310 SUPPLEMENTAL CHECKLIST RM2.
REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
			LATERAL FORCE RESISTING SYSTEM		
☐	☐	☒	4.4.2.2.6	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.4.4	PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than 30. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
			DIAPHRAGMS		
☒	☐	☐	4.5.1.4	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy.	
☒	☐	☐	4.5.1.6	OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls shall not be greater than 8 feet long for Life Safety and 4 ft. long for Immediate Occupancy.	
☐	☐	☒	4.5.1.7	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.5.1.8	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
			CONNECTIONS		
☒	☐	☐	4.6.1.3	ANCHOR SPACING: Exterior masonry walls shall be anchored to the floor and roof systems at a spacing of 4 ft. or less for Life Safety and 3 ft. or less for Immediate Occupancy.	

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Page: 1 of 1

Job Number: A10034.00 Job Name: UCR Geol Bldg
By: SO Checked: CFS

FEMA 310 GEOLOGIC SITE HAZARDS AND FOUNDATIONS CHECKLIST.

C	NC	N/A			Comments
				GEOLOGIC SITE HAZARDS	
☒	☐	☐	4.7.1.1	LIQUEFACTION: Liquefaction susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy.	Unlikely. Information was not available from CDMG.
☒	☐	☐	4.7.1.2	SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure.	
☒	☐	☐	4.7.1.3	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated.	Eight kilometers from San Jacinto Fault per 97 UBC maps.
				CONDITIONS OF FOUNDATIONS	
☒	☐	☐	4.7.2.1	FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure.	
☒	☐	☐	4.7.2.2	DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure.	
				CAPACITY OF FOUNDATIONS	
☐	☐	☒	4.7.3.1	POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 ft. for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.7.3.2	OVERTURNING: The ratio of the effective horizontal dimension, at the foundation level of the lateral-force-resisting system, to the building height (base/height) shall be greater than $0.6S_a$.	Tier 2 Analysis.
☒	☐	☐	4.7.3.3	TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C.	
☐	☐	☒	4.7.3.4	DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only.	
☐	☐	☒	4.7.3.5	SLOPING SITES: The grade difference from one side of the building to another shall not exceed one-half the story height at the location of embedment. This statement shall apply to the Immediate Occupancy Performance Level only.	

APPENDIX C: BUILDING PLAN & UNIVERSITY OF CALIFORNIA SEIMIC PERFORMANCE RATING SYSTEM

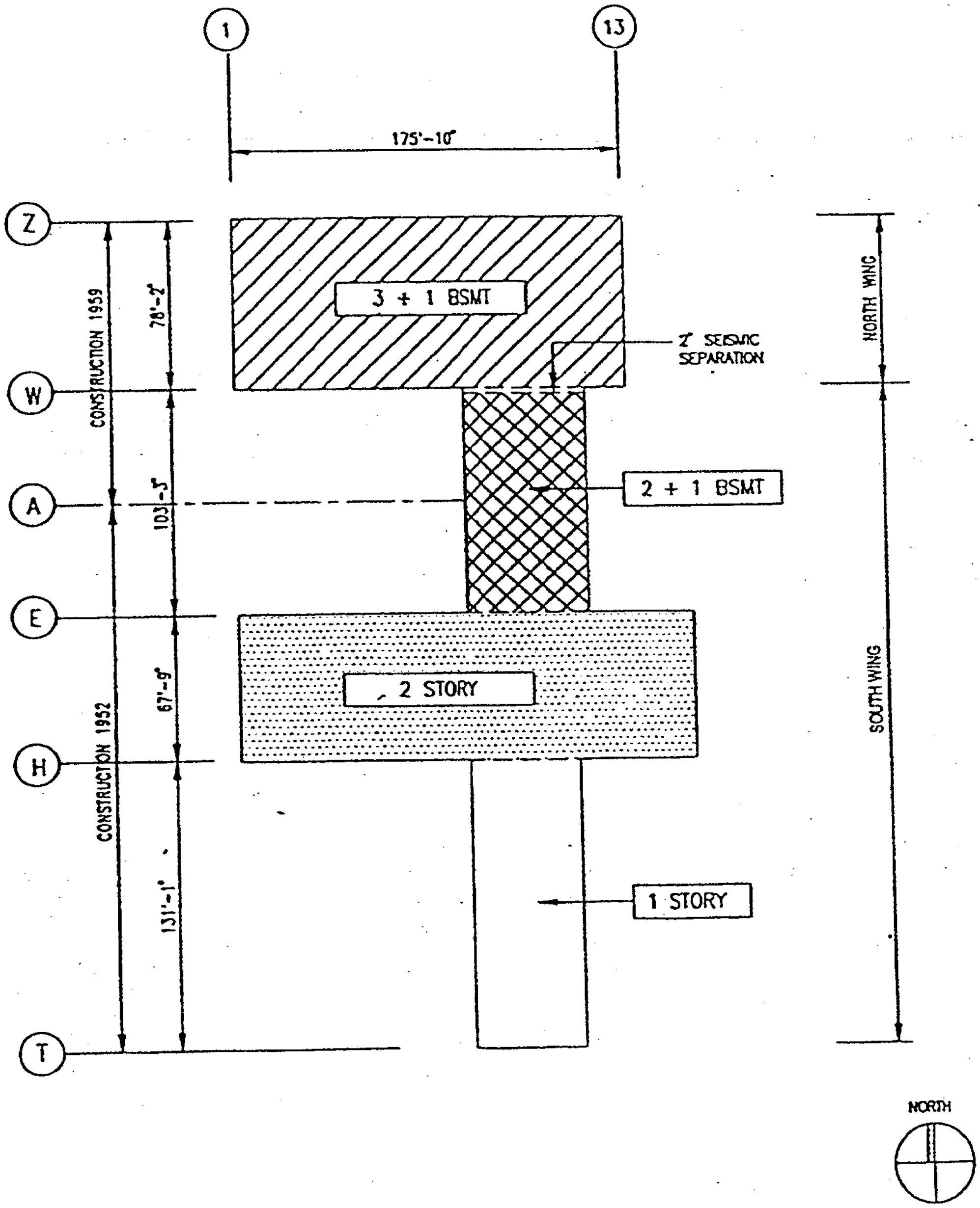

Figure 7: Building Plan

TABLE 1.0: University of California Seismic Performance Rating System

MEANING OF GOOD, FAIR, POOR, OR VERY POOR
SEISMIC PERFORMANCE RATINGS

GOOD seismic performance rating would apply to buildings and other structures whose performance during a major seismic disturbance* is anticipated to result in some structural and/or nonstructural damage and/or falling hazards** that would not significantly jeopardize life. Buildings and other structures with a GOOD rating would have a level of seismic resistance such that funds need not be spent to improve their seismic resistance to gain greater life safety and would represent an acceptable level of earthquake safety.

FAIR seismic performance rating would apply to building and other structures whose performance during a major seismic disturbance* is anticipated to result in structural and nonstructural damage and/or falling hazards** that would represent low life hazards. Buildings and other structures with a FIAR seismic performance rating would be given a low priority for expenditures to improve their seismic resistance and/or to reduce falling hazards so that the building could be reclassified GOOD.

POOR seismic performance rating would apply to buildings and the structures whose performance during a major seismic disturbance* is anticipated to result in significant structural and nonstructural damage and/or falling hazards** that would represent appreciable life hazards. Such buildings or structures either would be given a high priority for expenditures to improve their seismic resistance and/or to reduce falling hazards** so that the building could be reclassified GOOD, or would be considered for other abatement programs such as reduction of occupancy.

VERY POOR seismic performance rating would apply to buildings and other structures whose performance during a major seismic disturbance* is anticipated to result in extensive structural and nonstructural damage, potential structural collapse, and/or falling hazards** that would represent high life hazards. Such buildings or structures either would be given the highest priority for expenditures to improve their seismic resistance and/or to reduce falling hazards** so that the building could be reclassified GOOD, or would be considered for other abatement programs, such as reduction of occupancy.

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* Major seismic disturbance is defined for the purpose of these Seismic Performance Ratings as an earthquake at the site which would be given a Modified Mercalli Intensity Scale (as modified by Charles F. Richter in 1958) rating of at Least IX based on the description of the structural effects except that an intensity of VII can be utilized for buildings of the Davis and San Diego campuses. It is assumed that the intensity of ground shaking is not appreciable greater in areas rated MM X, MM XI, and MM XII than in areas rated MM IX. The damage descriptions in MM X, MM XI and MM XII relate more to the geologic features and non-building structures.

** Falling hazards are defined for the purposes of these Seismic Performance Ratings as potential falling or sliding hazards such as interior and exterior building elements including parapets, ornamentations, chimneys, walls and partitions, but excluding equipment, fixtures, ceilings, furniture, furnishings, and other contents. The falling hazards in the excluded list above should not be used in the determination of the Seismic Performance Rating of a building or structure but should be abated.

APPENDIX D: PHOTOS

Figure 8: South Building Exterior Elevation

Figure 9: Shear Wall Installed in South Building, 1997

Figure 10: Column Installed in South Building, 1997

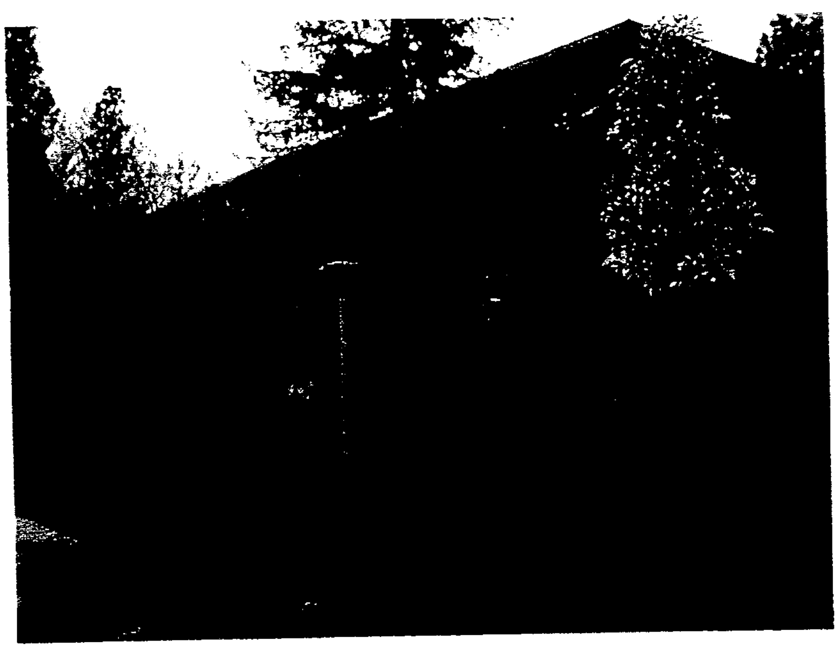

Figure 11: North Building Exterior Elevation

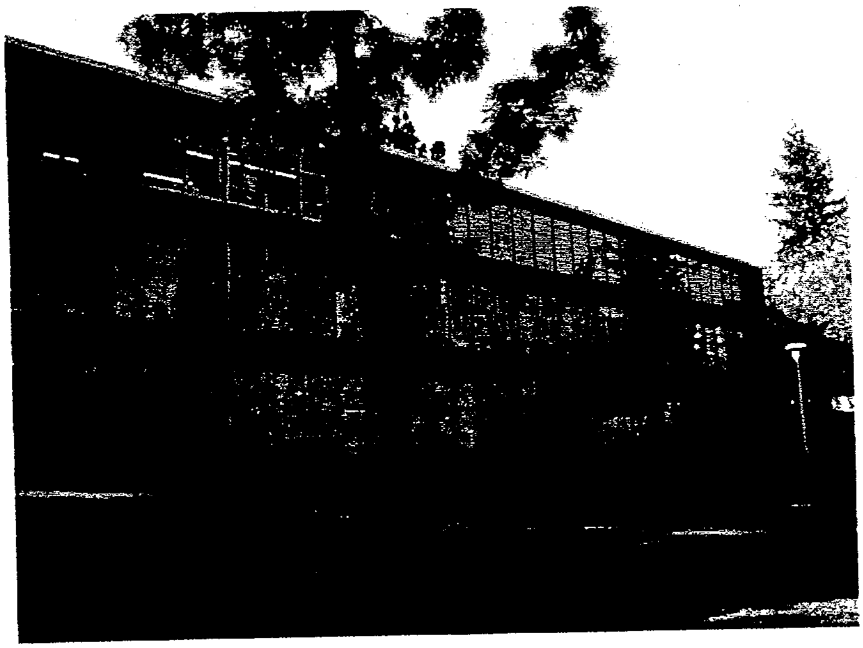

Figure 12: Open North Face of North Building

5.1 ANALYSIS OF EXISTING CONDITIONS

General

The Geology Building is located just north of the Carillon Mall. The building is situated between Pierce Hall and the Physics Building. It was constructed in two phases; the south portion of the building in 1953 and the north portion in 1959. The Geology Building is a free-standing structure with one connecting link bridge at the second level to the adjacent Pierce Hall. It has a dock level loading area located on the east side of the structure. A free-standing chemical storage building is also located in this loading dock area.

The Geology Building is a four level structure with an area breakdown as follows:

Subbasement Level	5,501 ASF	13,160 GSF
Basement Level	10,826 ASF	20,560 GSF
First Level	23,294 ASF	33,906 GSF
Second Level	21,056 ASF	35,470 GSF
Total	60,677 ASF	103,096 GSF

The 1953 portion of the building was constructed with a two story laboratory space at the north and a one story wing to the south. The 1959 addition matched the two story section of laboratory space, continued it to the north and provided an additional two story basement level at the furthest north end. The end result was a four story section at the north end of the building, a two story section at the mid point of the building and a one story section at the south wing. Refer to the attached Building Massing Diagram in this section.

The Geology Building has comparatively low site utilization. This is especially true for the one story southern portion of the structure which contains miscellaneous offices and a sloped floor lecture hall with seating for approximately 150 people. This south wing is also surrounded by large open landscaped areas and patios.

In March 2001, the south wing of the Geology Building will be demolished to make way for the Science Laboratories Building. The demolition of the south wing will result in a reduction of 3,156 ASF and 5,367 GSF.

FUNCTIONAL DESCRIPTIONS

Department of Earth Sciences

The Department of Earth Sciences is a major occupant of the Geology Building and utilizes approximately 22,598 assignable square feet. The department includes the following

components:

1. Geology
2. Geography
3. Geophysics
4. Geochemistry
5. Paleontology
6. Seismology

The department occupies portions of the sub-basement level, basement level and first level of the Geology Building. Several areas in the sub-basement level and basement level are used as storage rooms for rock, mineral, paleontology and fossil storage. These storage needs require convenient access to loading dock facilities. The heavy weight of the stored materials is also a structural consideration. Large testing equipment is also a weight consideration. The department uses vibration sensitive equipment (i.e. microprobe equipment) and vibration producing equipment which will require special placement consideration. The Geochemistry Department, comprising approximately one third of the total department space, is the primary user of fumehoods for the department. The department requires convenient access to chemical storage facilities and will also require clean power to operate a computer networking system.

Department of Environmental Sciences

The Department of Environmental Sciences is another primary occupant of the Geology Building and presently occupies approximately 21,882 assignable square feet in the Geology Building. The department occupies minor spaces on the basement level and the first level, but is the primary occupant of the second level of the Geology Building. The department also occupies space in the Chemistry Building (Pierce Hall) and in Greenhouses 6, 7 and 8. The Department of Soil and Environmental Sciences includes the following components:

1. Undergraduate Environmental Science
2. Graduate School Soil Science
3. Atmospheric Chemists
4. Resource Economists
5. Cooperative Extension
6. Hydrologist
7. USDA Adjunct Faculty

The existing Geology Building is not conducive to the proper operations of the Department of Soil and Environmental Sciences. The age and operation of the major building utility systems is insufficient for plumbing, mechanical and electrical systems operation. The department will require updated facilities to effectively operate.

Institute of Geophysics and Planetary Physics (I.G.P.P.):

The Institute of Geophysics and Planetary Physics occupies approximately 6,919 assignable square feet in the Geology Building. The IGPP includes the following components:

1. Earth Sciences (in the Geology Building)
2. Astrophysics (in the Physics Building)

The department works in the field and in laboratories and consequently needs convenient access to vehicles and the loading dock. IGPP shares laboratories with the Earth Sciences Department and the Physics Department. The institute functions need to be more centralized to improve efficiency and operation. The Institute programs in geophysics and astrophysics are primarily a dry lab operation with access requirements to some large equipment. However, the programs in geothermics and geochemistry are heavy users of chemistry and rock and mineral processing facilities. The department requires storage space for rock samples and includes both active storage and archival material. Again, the main functional requirement of the institute is the need to consolidate operations into a more centralized configuration.

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The Geology Building also houses a Geology Museum, and previously, a Physical Science Library. These are both located on the first floor of the building. The Physical Science Library relocated to the new Science Library. The space is presently being used as temporary storage while the Rivera Library is undergoing a major seismic upgrade. The Geology Museum is located in the wide corridor connecting the two wings of the building. The Museum performs a major recruitment and service function offering self-guided tours to students and visitors. This function should be maintained in any future building plans. The operation now occurs within a fire-rated exit corridor which is not permitted by present Building Codes. Some display features can be provided in corridors but storage cases and other "furniture" will need to be located out of the exit path and be included in a separate museum room. Presently, approximately 3000 s.f. is dedicated to this operation.

MATERIALS and finishes

General

The following is a review of existing building materials and finishes. If the existing building layout, in general, is to remain substantially intact, then the extent of renovation of these finishes may be primarily cosmetic. Where new construction is undertaken, the new architectural finishes and materials should be consistent with the quality materials and methods used on the existing structure. Some features of the building will require demolition and new construction due to the need to access areas for changes in the utility systems or changes required to comply with code requirements.

Floors

Primary floor material used throughout the Geology Building is vinyl asbestos tile (VAT). It has been maintained in acceptable condition through a regular campus housekeeping program. Some areas within laboratory spaces have been subjected to more abuse and show evidence of severe wear, chipping and deterioration. In some cases, liquids have migrated through the joints of the VAT and some delamination has occurred.

Since the VAT is an asbestos containing material, it must be removed to be in compliance with campus standards. New vinyl composition tile (VCT) can be installed in circulation areas, storage rooms and offices. If wet laboratory functions remain within the building, corrosion resistant seamless vinyl flooring would be preferable. In offices, classrooms, dry labs or less intensive wet labs used for teaching, VCT would be an acceptable flooring material. Some areas within the basement used for general storage and some offices and laboratories in the subbasement have an exposed concrete surface with a sealed finish. These floors are generally in good condition and the floor should remain as it exists.

Walls

There are several types of wall materials and finishes in the existing building. The materials and finishes include:

1. Structural brick with plaster and paint.
2. Reinforced concrete with plaster finish and paint.
3. Steel studs with plaster finish.
4. Steel studs with gypsum board finish and paint.

The existing walls are generally in good repair and in most cases would require minimal patching and repainting. Walls and wall finishes typically extend from the floor to the bottom of the floor deck or roof, since most laboratory areas have no ceiling. The existing wall/floor base is a 4" topset rubber base. Due to the installation of new flooring to replace the existing V.A.T., the existing base would be removed throughout the facility and a new topset rubber base would be installed. If sheet vinyl is installed, then a coved sheet vinyl base would be installed in those specific rooms.

Ceilings

Existing laboratory spaces typically have no ceiling with exposed painted structure and exposed utility systems including piping, mechanical ductwork, electrical conduit and electrical lighting. It would be preferable to maintain the operation as an exposed system for both accessibility and economy. Several of the exposed systems would be effected in the renovation and the new elements would require a new paint finish. Based on asbestos reports, exposed pipes have insulation containing asbestos. These reports did not identify any spray-on asbestos material.

The main corridor ceiling consists of a concealed spline acoustic tile attached to the bottom of a lined return air mechanical plenum space above the ceiling. Current codes do not allow a corridor ceiling to be used as a return air plenum. After a ducted return mechanical system is installed, a new standard lay-in ceiling should replace the concealed spline ceiling.

Window Coverings

Most windows in the facility are equipped with venetian blinds. These blinds have a two inch blade and are typically in good to poor condition. In some areas the blinds had been removed or are inoperable. It would be appropriate to replace all of the blinds in the facility with new mini blinds. The new blinds can be used to darken laboratories or other spaces and to control heat gain or glare within offices and laboratories.

Door and Hardware

Existing corridor doors to laboratories and offices are typically solid core wood with a birch face veneer and natural stain and lacquer finish. The doors are in fair condition. Doors typically do not have a fire rating label as this was not a requirement at the time of construction. All doors onto corridors require a 20-minute fire rating label. Laboratories using chemicals in the building require a 1-hour fire rating label. All laboratories over 200 s.f. require the addition of a second exit door to meet code requirements.

Existing door hardware consists of door knobs which are not in compliance with handicap accessibility requirements. In addition, most doors do not have the required 18 inch clearance between the wall and the strike surface. The doors, frames and hardware sets will need to be replaced during the renovation.

Toilet Rooms

Toilet room finishes consist of ceramic mosaic floor tile and base with glazed ceramic tile on walls and wainscoting. Ceilings consist of painted gypsum board or plaster. Toilet room partitions are porcelain enameled steel construction. Existing toilet rooms are generally in fair condition. The existing rooms and fixtures are not accessible to the disabled. The renovation plan needs to modify rooms such that toilet stalls, lavatories, mirrors, entrance doorways, vestibules and turn around spaces will be in compliance with disabled access requirements. Based on the anticipated extent of the renovation for disabled accessibility, toilet room finishes will need to be replaced because it is not possible to match the older materials and finishes for patching after modifications. There are also insufficient toilet facilities for women in the building. There are no female toilets in the basement and only one female toilet stall on the second floor. The fixture count should be confirmed.

Exterior Finishes

The brick exterior consists of Norman face brick laid up with one third bond weathered horizontal joints and flush vertical joints. Windows consist of single paned glass in operable steel frames.

New roof mounted mechanical equipment will require modifications to the existing roofing system. In 2000, the building roof was replaced with a new polyurethane roof.

Laboratory Benchwork and Equipment

Laboratory Benchwork

Existing laboratory benchwork consists of wood base cabinets with drawer and door assemblies and intermittent knee spaces. The base cabinets and matching wall cabinets are a birch finish material with a natural stain and clear lacquer finish. Benchtops consist of acid resistant standard "stone" laboratory benchtop material in a gray or black color. Benchtops are equipped with two tier open shelving units and utility monuments for process vacuum, natural gas and compressed air. The layout of the lab benches, fume hoods and gas cylinder storage racks is typically not in compliance with present day Good Laboratory Practices (G.L.P.). Lab benches are typically in island configurations which allow for good circulation, but fume hoods are often located adjacent to laboratory exit doors. Fume hoods usually involve the most hazardous laboratory operations and should be located in the far corners of laboratory space away from the path of travel to the exit doors for safety consideration. To accomplish this, reconfiguration of the laboratory benchwork is required. Because the existing benchwork is over forty years old and in poor condition, it should be replaced.

Laboratory Equipment

The existing fume hoods are typically in poor and/or inoperable condition. The campus Environmental Health and Safety Department conducted an inventory of existing fume hoods and their state of repair (see appendix) which identifies which of the fume hoods are inoperable or operating poorly. The code violations include, but are not limited to:

1. Asbestos panel lining in the cabinet.
2. No laminated safety glass sash.
3. No self closing doors for solvent storage in base cabinets.
4. No containment lips around cup sinks.
5. No flow controls for air velocity.
6. No emergency power shut-off.
7. No audible and visual alarms.

The renovation scope should include the replacement of all fume hoods that are to remain.

Electrical Power, Process Cooling and Makeup Air

The demands for utility services for laboratory equipment are more extensive than the original facility was designed to accommodate. Current laboratory research utilizes more benchtop equipment and freestanding equipment. Extensive benchtop lab equipment is more conveniently serviced by a continuous plug mold mounted on the edge of the benchtop shelving unit. Some lab equipment and special instrumentation require process cooling water for operation. This is not available in the Geology Building. The utility requirements for the renovated building are addressed in more detail in the engineering sections contained in this report.

Equipment Weight, Vibration and Noise

Some equipment is very heavy and may require special structural consideration. Vibration control is an issue for both vibration producing equipment and vibration sensitive equipment. Vibration producing equipment should be mounted on spring isolators or dampening devices. Vibration sensitive equipment should be mounted on heavy inertia base tables. These tables could also require special structural consideration. If possible, the equipment should be located in the lower floors of the building.

Some equipment is noise producing and will require special noise isolation features if placed within a laboratory. New walls should be constructed to maintain appropriate acoustic separation and isolation when equipment is located in separate equipment rooms. The recommended criteria for various spaces are tabulated below:

Space Category	Noise Criterion
Laboratories	PNC-45
Conference Rooms	PNC-25
Lounges and Seminar Rooms	PNC-30
Private Offices	PNC-35
Library Areas	PNC-35

Reception Areas, Lobbies, Open Offices	PNC-40
Corridors, Stairways, (nonsensitive listening)	PNC-50
Classrooms	PNC-30
Lecture Hall	PNC-30

Hazardous material handling

General

The handling and distribution of chemicals, gas cylinders and hazardous waste disposal is critical to the safe operation of the departments that will occupy the Geology Building at the completion of the renovation project. Proper protocol is governed campus wide by the Environmental Health and Safety Department. Their management procedures dictate the day-to-day operations of the departments.

Chemical Handling Distribution

Chemicals are primarily stored in a separate chemical storage building located adjacent to the loading dock on the east side of the Geology Building. Chemicals are delivered from the storage area to the point of use by standard chemical carts. Chemicals typically come in one gallon containers and are pre-mixed to avoid on-site chemical mixing or open system dispensing requirements. Once delivered to the laboratories, the chemicals are utilized in research conducted either on open laboratory benches or within fume hoods. Unused chemicals are stored for long periods of time either within approved chemical storage cabinets or within the laboratory fume hoods. Used chemicals are stored in approved containers for pickup by the EH&S Department for disposal off-site by an approved vendor.

A complete list of laboratory chemicals used by departments is included in the appendix of this report. The chemical quantities stored within the laboratory must be kept within the guidelines of Table 9-A and Table 9-B of the Uniform Building Code to maintain the present occupancy group rating.

Gas Cylinder Handling and Distribution

Gas cylinder distribution is handled similarly to chemical distribution. Gas cylinders delivered to the loading dock of the Geology Building are stored and then distributed to the various departments. Inside the laboratory, standard cylinders are placed in approved racks with safety chain straps to hold them in place. Some large cylinder gases and other storage containers are stored in the exit corridors and hallways. This is not an acceptable or approved storage method. A complete list of cylinder gases is included in the appendix of this report and, storage quantities must be maintained at the levels allowed in UBC Table 9-A and 9-B.

Hazardous Waste Handling and Distribution

All hazardous wastes are collected in small quantities by the Environmental Health and Safety Department and disposed of off-site by approved methods. Although the Geology Building apparently has a waste treatment system, it is inoperable at this time. This method is quite expensive and a detailed analysis of exact chemical quantities should be reviewed in relation to the cost of a waste treatment system. It may be more economical to install an acid neutralization system for the building depending on the future use of the facility. Guidelines for handling and disposal of hazardous wastes are dictated by the Environmental Protection Agency (E.P.A.) as well as Building Codes and Fire Codes. Ultimately, the operation must be reviewed in detail by the Environmental Health and Safety Department and the Campus Fire Marshal as well. A hazardous materials study of the Geology Building is now underway. Information and recommendations will be incorporated into the document when the study is completed.

ASBESTOS ABATEMENT

The University of California, Riverside contracted with a consulting firm in 1987 to perform an evaluation of asbestos for several buildings on campus. The report prepared by Med-Tox and Associates is included in the appendix of this report. JLP Architects, Inc. is not an asbestos consultant and a comprehensive evaluation is beyond the scope of this report, but based on the findings of the Med-Tox report, cursory review of the facility, and discussions with the campus Environmental Health and Safety Department some features can be highlighted.

The Geology Building contains asbestos in primarily two areas:

1. Vinyl asbestos tile (VAT) on floors.
2. Asbestos insulation around mechanical piping.

Based on a discussion with the campus Environmental Health and Safety Department, the campus policy would allow materials to remain in place if it does not pose a risk of being damaged or becoming friable. The policy of the UCR office of Design and Construction, though, does not permit encapsulation of asbestos containing materials. Consequently, due to the need for new flooring in the Geology Building, the existing vinyl asbestos tile flooring should be removed and disposed of by certified methods and new vinyl composition tile installed in the building. The asbestos in the mechanical pipe insulation is subject to damage during the renovation and should be removed and disposed of by certified methods.
The Geology Building contains other miscellaneous asbestos containing materials. These include the asbestos lining on the inside face of the fume hood cabinets in laboratories. These fume hoods require special handling and disposal to comply with state requirements.

Asbestos abatement costs have been identified in the statement of probable construction cost contained in this report. A qualified asbestos abatement consultant should be contracted by the University to perform a comprehensive analysis of asbestos within the building, develop an abatement plan consistent with the University requirements and a corresponding cost estimate for removal by a certified abatement contractor. Asbestos abatement costs can be extensive and depending on the findings of a thorough evaluation, these costs could be a significant part of the overall renovation budget.

DISABLED ACCESS

Handicap Access

Handicap accessibility requirements are governed by California State Title 24. Title 24 requirements outline the building regulations for disabled access design. The requirements for Title 24 are enforced by the Office of the State Architect. Title 24 covers all aspects of disabled accessibility to a building. Although some requirements might be negotiable, current requirements are mandated for all parts of the building with the renovation of this facility.

The Geology Building has had some modifications to accommodate disabled access which include: handicap accessible parking spaces at the rear of the building, new handicap access ramps and a building elevator. The proposed remodeling of the Geology Building will necessitate more extensive facility renovation for disabled access. These will include, but not be limited to the following:

1. Additional ramps.
2. Stairs with special tread nosing striping and new handrails.
3. Elevators with operating buttons at approved mounting heights.
4. Raised signage and braille signage for floor locations and audible floor indicator signals.
5. Doors will be required to have lever handles and 36" minimum width. Additionally an 18" side clearance at the strike side of the jamb will be required. This could necessitate relocating some laboratory benchwork.
6. Drinking fountains will be required to be handicap accessible.
7. Toilet rooms will need to be modified which will include water closets, toilet stalls sizes, urinal mounting heights, lavatory mounting and traps, mirrors, sink faucet controls, installation of grab bars, etc.
8. Alarms will be required to be both audible and visual.
9. Signage will be required at all door locations identifying functions of rooms.
10. Automatic door operators.

Controls and operating devices for building systems will require mounting height modifications to appropriate levels. These will include light switches, thermostat controls, fire alarm pull stations, etc. These items are also addressed in more detail in the engineering sections of this report.

CODES AND REGULATIONS

General

Various codes and regulatory agencies will have jurisdiction over the proposed renovation of the Geology Building. Complying with these codes and agency requirements will have a significant effect on the future operation of the building and the construction requirements for the renovation.

Codes and Regulatory Agencies

The following list represents various codes, ordinances, regulations, industry organizations and federal, state and local agencies that are applicable to the renovation of the Geology Building:

1. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
2. American National Standards Institute (ANSI)
3. American Society for Testing and Materials (ASTM)
4. Americans with Disabilities Act (ADA)
5. California Occupational Safety and Health Act (Cal OSHA)
6. California Environmental Protection Agency (EPA)
7. California Building Code (CBC) and standards
8. California office of the State Architect (OSA) Handicap Compliance Unit
9. California Administrative Code (CAC) Title 8, 9, 10, 20, 24, 25
10. National Electric Code (NEC)
11. National Fire Protection Association (NFPA)
12. Sheet Metal and Air Conditioning Contractor National Association (SMACNA)
13. South Coast Air Quality Management District (SCAQMD)
14. State Fire Marshal (SFM)
15. Underwriters Laboratories (UL)
16. Uniform Fire Code (UFC) and standards
17. Uniform Building Code (UBC) and standards with California amendments
18. Uniform Plumbing Code (UPC)
19. Uniform Mechanical Code (UMC)

Building Code Analysis

Based on the requirements of Table 5-A in the Uniform Building Code, the existing Geology Building operates under both Occupancy Group B-2 (educational purposes) and Occupancy

Group A-3 (assembly room). Maintaining the B-2 occupancy group for the laboratories requires chemical and gas quantities to be within the limits of Table 9-A and 9-B of the Uniform Building Code. If quantities exceed those limits, the facility will be classified as an H occupancy. Based on Table 5-D of the Uniform Building Code, the Geology Building is of Construction Type III-1 hour. This will allow a B-2 occupancy to be four stories in height and an A-3 occupancy to be two stories in height. A basement is not considered a floor level , but since the existing Geology Building has both a basement and sub-basement this may be subject to interpretation regarding allowable floor area when reviewed by the State Fire Marshal. All renovation concepts assume the Geology building will be used for general office, general classroom, instructional laboratory space, and less intensive research laboratories. These uses will probably not involve large quantities of chemicals and consequently the building operation will remain a B-Occupancy and not an H-Occupancy.

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General

The Geology Building is located just north of the Carillon Mall. The building is situated between Pierce Hall and the Physics Building. It was constructed in two phases; the south portion of the building in 1953 and the north portion in 1959. The Geology Building is a free-standing structure with one connecting link bridge at the second level to the adjacent Pierce Hall. It has a dock level loading area located on the east side of the structure. A free-standing chemical storage building is also located in this loading dock area.

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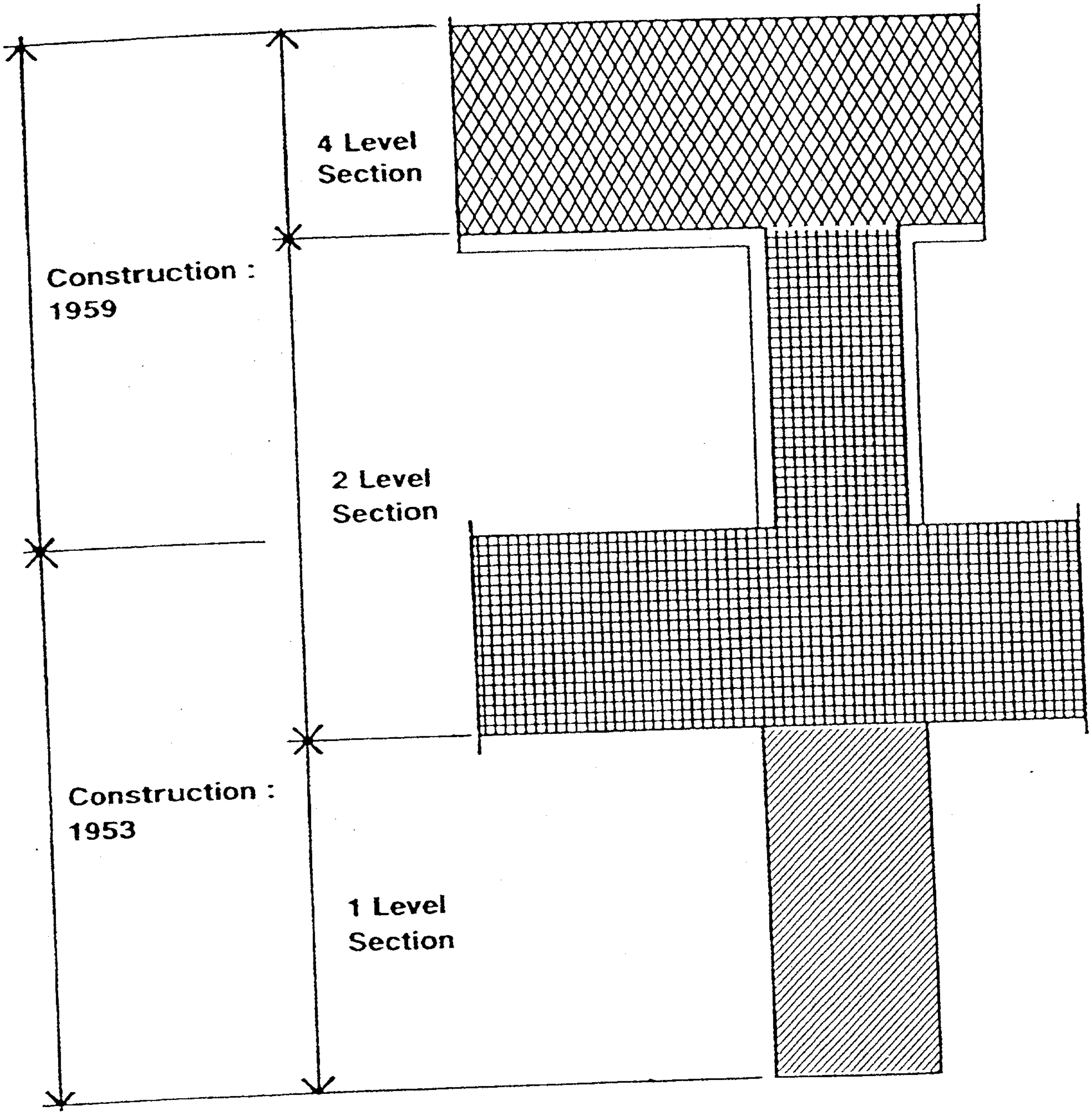

Building Massing Diagram

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3. Steel studs with plaster finish.
4. Steel studs with gypsum board finish and paint.

The existing walls are generally in good repair and in most cases would require minimal patching and repainting. Walls and wall finishes typically extend from the floor to the bottom of the floor deck or roof, since most laboratory areas have no ceiling. The existing wall/floor base is a 4" topset rubber base. Due to the installation of new flooring to replace the existing V.A.T., the existing base would be removed throughout the facility and a new topset rubber base would be installed. If sheet vinyl is installed, then a coved sheet vinyl base would be installed in those specific rooms.

Ceilings

Existing laboratory spaces typically have no ceiling with exposed painted structure and exposed utility systems including piping, mechanical ductwork, electrical conduit and electrical lighting. It would be preferable to maintain the operation as an exposed system for both accessibility and economy. Several of the exposed systems would be effected in the renovation and the new elements would require a new paint finish. Based on asbestos reports, exposed pipes have insulation containing asbestos. These reports did not identify any spray-on asbestos material.

The main corridor ceiling consists of a concealed spline acoustic tile attached to the bottom of a lined return air mechanical plenum space above the ceiling. Current codes do not allow a corridor ceiling to be used as a return air plenum. After a ducted return mechanical system is installed, a new standard lay-in ceiling should replace the concealed spline ceiling.

Window Coverings

Most windows in the facility are equipped with venetian blinds. These blinds have a two inch blade and are typically in good to poor condition. In some areas the blinds had been removed or are inoperable. It would be appropriate to replace all of the blinds in the facility with new mini blinds. The new blinds can be used to darken laboratories or other spaces and to control heat gain or glare within offices and laboratories.

Door and Hardware

Existing corridor doors to laboratories and offices are typically solid core wood with a birch face veneer and natural stain and lacquer finish. The doors are in fair condition. Doors typically do not have a fire rating label as this was not a requirement at the time of construction. All doors onto corridors require a 20-minute fire rating label. Laboratories using chemicals in the building require a 1-hour fire rating label. All laboratories over 200 s.f. require the addition of a second exit door to meet code requirements.

Existing door hardware consists of door knobs which are not in compliance with handicap accessibility requirements. In addition, most doors do not have the required 18 inch clearance between the wall and the strike surface. The doors, frames and hardware sets will need to be replaced during the renovation.

Toilet Rooms

Toilet room finishes consist of ceramic mosaic floor tile and base with glazed ceramic tile on walls and wainscoting. Ceilings consist of painted gypsum board or plaster. Toilet room partitions are porcelain enameled steel construction. Existing toilet rooms are generally in fair condition. The existing rooms and fixtures are not accessible to the disabled. The renovation plan needs to modify rooms such that toilet stalls, lavatories, mirrors, entrance doorways, vestibules and turn around spaces will be in compliance with disabled access requirements. Based on the anticipated extent of the renovation for disabled accessibility, toilet room finishes will need to be replaced because it is not possible to match the older materials and finishes for patching after modifications. There are also insufficient toilet facilities for women in the building. There are no female toilets in the basement and only one female toilet stall on the second floor. The fixture count should be confirmed.

Exterior Finishes

The brick exterior consists of Norman face brick laid up with one third bond weathered horizontal joints and flush vertical joints. Windows consist of single paned glass in operable steel frames.

New roof mounted mechanical equipment will require modifications to the existing roofing system. In 2000, the building roof was replaced with a new polyurethane roof.

Laboratory Benchwork and Equipment

Laboratory Benchwork

Existing laboratory benchwork consists of wood base cabinets with drawer and door assemblies and intermittent knee spaces. The base cabinets and matching wall cabinets are a birch finish material with a natural stain and clear lacquer finish. Benchtops consist of acid resistant standard "stone" laboratory benchtop material in a gray or black color. Benchtops are equipped with two tier open shelving units and utility monuments for process vacuum, natural gas and compressed air. The layout of the lab benches, fume hoods and gas cylinder storage racks is typically not in compliance with present day Good Laboratory Practices (G.L.P.). Lab benches are typically in island configurations which allow for good circulation, but fume hoods are often located adjacent to laboratory exit doors. Fume hoods usually involve the most hazardous laboratory operations and should be located in the far corners of laboratory space away from the path of travel to the exit doors for safety consideration. To accomplish this, reconfiguration of the laboratory benchwork is required. Because the existing benchwork is over forty years old and in poor condition, it should be replaced.

Laboratory Equipment

The existing fume hoods are typically in poor and/or inoperable condition. The campus Environmental Health and Safety Department conducted an inventory of existing fume hoods and their state of repair (see appendix) which identifies which of the fume hoods are inoperable or operating poorly. The code violations include, but are not limited to:

1. Asbestos panel lining in the cabinet.
2. No laminated safety glass sash.
3. No self closing doors for solvent storage in base cabinets.
4. No containment lips around cup sinks.
5. No flow controls for air velocity.
6. No emergency power shut-off.
7. No audible and visual alarms.

The renovation scope should include the replacement of all fume hoods that are to remain.

Electrical Power, Process Cooling and Makeup Air

The demands for utility services for laboratory equipment are more extensive than the original facility was designed to accommodate. Current laboratory research utilizes more benchtop equipment and freestanding equipment. Extensive benchtop lab equipment is more conveniently serviced by a continuous plug mold mounted on the edge of the benchtop shelving unit. Some lab equipment and special instrumentation require process cooling water for operation. This is not available in the Geology Building. The utility requirements for the renovated building are addressed in more detail in the engineering sections contained in this report.

Equipment Weight, Vibration and Noise

Some equipment is very heavy and may require special structural consideration. Vibration control is an issue for both vibration producing equipment and vibration sensitive equipment. Vibration producing equipment should be mounted on spring isolators or dampening devices. Vibration sensitive equipment should be mounted on heavy inertia base tables. These tables could also require special structural consideration. If possible, the equipment should be located in the lower floors of the building.

Some equipment is noise producing and will require special noise isolation features if placed within a laboratory. New walls should be constructed to maintain appropriate acoustic separation and isolation when equipment is located in separate equipment rooms. The recommended criteria for various spaces are tabulated below:

Space Category	Noise Criterion
Laboratories	PNC-45
Conference Rooms	PNC-25
Lounges and Seminar Rooms	PNC-30
Private Offices	PNC-35
Library Areas	PNC-35

Reception Areas, Lobbies, Open Offices	PNC-40
Corridors, Stairways, (nonsensitive listening)	PNC-50
Classrooms	PNC-30
Lecture Hall	PNC-30

Hazardous material handling

General

The handling and distribution of chemicals, gas cylinders and hazardous waste disposal is critical to the safe operation of the departments that will occupy the Geology Building at the completion of the renovation project. Proper protocol is governed campus wide by the Environmental Health and Safety Department. Their management procedures dictate the day-to-day operations of the departments.

Chemical Handling Distribution

Chemicals are primarily stored in a separate chemical storage building located adjacent to the loading dock on the east side of the Geology Building. Chemicals are delivered from the storage area to the point of use by standard chemical carts. Chemicals typically come in one gallon containers and are pre-mixed to avoid on-site chemical mixing or open system dispensing requirements. Once delivered to the laboratories, the chemicals are utilized in research conducted either on open laboratory benches or within fume hoods. Unused chemicals are stored for long periods of time either within approved chemical storage cabinets or within the laboratory fume hoods. Used chemicals are stored in approved containers for pickup by the EH&S Department for disposal off-site by an approved vendor.

A complete list of laboratory chemicals used by departments is included in the appendix of this report. The chemical quantities stored within the laboratory must be kept within the guidelines of Table 9-A and Table 9-B of the Uniform Building Code to maintain the present occupancy group rating.

Gas Cylinder Handling and Distribution

Gas cylinder distribution is handled similarly to chemical distribution. Gas cylinders delivered to the loading dock of the Geology Building are stored and then distributed to the various departments. Inside the laboratory, standard cylinders are placed in approved racks with safety chain straps to hold them in place. Some large cylinder gases and other storage containers are stored in the exit corridors and hallways. This is not an acceptable or approved storage method. A complete list of cylinder gases is included in the appendix of this report and, storage quantities must be maintained at the levels allowed in UBC Table 9-A and 9-B.

Hazardous Waste Handling and Distribution

All hazardous wastes are collected in small quantities by the Environmental Health and Safety Department and disposed of off-site by approved methods. Although the Geology Building apparently has a waste treatment system, it is inoperable at this time. This method is quite expensive and a detailed analysis of exact chemical quantities should be reviewed in relation to the cost of a waste treatment system. It may be more economical to install an acid neutralization system for the building depending on the future use of the facility. Guidelines for handling and disposal of hazardous wastes are dictated by the Environmental Protection Agency (E.P.A.) as well as Building Codes and Fire Codes. Ultimately, the operation must be reviewed in detail by the Environmental Health and Safety Department and the Campus Fire Marshal as well. A hazardous materials study of the Geology Building is now underway. Information and recommendations will be incorporated into the document when the study is completed.

ASBESTOS ABATEMENT

The University of California, Riverside contracted with a consulting firm in 1987 to perform an evaluation of asbestos for several buildings on campus. The report prepared by Med-Tox and Associates is included in the appendix of this report. JLP Architects, Inc. is not an asbestos consultant and a comprehensive evaluation is beyond the scope of this report, but based on the findings of the Med-Tox report, cursory review of the facility, and discussions with the campus Environmental Health and Safety Department some features can be highlighted.

The Geology Building contains asbestos in primarily two areas:

1. Vinyl asbestos tile (VAT) on floors.
2. Asbestos insulation around mechanical piping.

Based on a discussion with the campus Environmental Health and Safety Department, the campus policy would allow materials to remain in place if it does not pose a risk of being damaged or becoming friable. The policy of the UCR office of Design and Construction, though, does not permit encapsulation of asbestos containing materials. Consequently, due to the need for new flooring in the Geology Building, the existing vinyl asbestos tile flooring should be removed and disposed of by certified methods and new vinyl composition tile installed in the building. The asbestos in the mechanical pipe insulation is subject to damage during the renovation and should be removed and disposed of by certified methods.
The Geology Building contains other miscellaneous asbestos containing materials. These include the asbestos lining on the inside face of the fume hood cabinets in laboratories. These fume hoods require special handling and disposal to comply with state requirements.

Asbestos abatement costs have been identified in the statement of probable construction cost contained in this report. A qualified asbestos abatement consultant should be contracted by the University to perform a comprehensive analysis of asbestos within the building, develop an abatement plan consistent with the University requirements and a corresponding cost estimate for removal by a certified abatement contractor. Asbestos abatement costs can be extensive and depending on the findings of a thorough evaluation, these costs could be a significant part of the overall renovation budget.

DISABLED ACCESS

Handicap Access

Handicap accessibility requirements are governed by California State Title 24. Title 24 requirements outline the building regulations for disabled access design. The requirements for Title 24 are enforced by the Office of the State Architect. Title 24 covers all aspects of disabled accessibility to a building. Although some requirements might be negotiable, current requirements are mandated for all parts of the building with the renovation of this facility.

The Geology Building has had some modifications to accommodate disabled access which include: handicap accessible parking spaces at the rear of the building, new handicap access ramps and a building elevator. The proposed remodeling of the Geology Building will necessitate more extensive facility renovation for disabled access. These will include, but not be limited to the following:

1. Additional ramps.
2. Stairs with special tread nosing striping and new handrails.
3. Elevators with operating buttons at approved mounting heights.
4. Raised signage and braille signage for floor locations and audible floor indicator signals.
5. Doors will be required to have lever handles and 36" minimum width. Additionally an 18" side clearance at the strike side of the jamb will be required. This could necessitate relocating some laboratory benchwork.
6. Drinking fountains will be required to be handicap accessible.
7. Toilet rooms will need to be modified which will include water closets, toilet stalls sizes, urinal mounting heights, lavatory mounting and traps, mirrors, sink faucet controls, installation of grab bars, etc.
8. Alarms will be required to be both audible and visual.
9. Signage will be required at all door locations identifying functions of rooms.
10. Automatic door operators.

Controls and operating devices for building systems will require mounting height modifications to appropriate levels. These will include light switches, thermostat controls, fire alarm pull stations, etc. These items are also addressed in more detail in the engineering sections of this report.

CODES AND REGULATIONS

General

Various codes and regulatory agencies will have jurisdiction over the proposed renovation of the Geology Building. Complying with these codes and agency requirements will have a significant effect on the future operation of the building and the construction requirements for the renovation.

Codes and Regulatory Agencies

The following list represents various codes, ordinances, regulations, industry organizations and federal, state and local agencies that are applicable to the renovation of the Geology Building:

1. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
2. American National Standards Institute (ANSI)
3. American Society for Testing and Materials (ASTM)
4. Americans with Disabilities Act (ADA)
5. California Occupational Safety and Health Act (Cal OSHA)
6. California Environmental Protection Agency (EPA)
7. California Building Code (CBC) and standards
8. California office of the State Architect (OSA) Handicap Compliance Unit
9. California Administrative Code (CAC) Title 8, 9, 10, 20, 24, 25
10. National Electric Code (NEC)
11. National Fire Protection Association (NFPA)
12. Sheet Metal and Air Conditioning Contractor National Association (SMACNA)
13. South Coast Air Quality Management District (SCAQMD)
14. State Fire Marshal (SFM)
15. Underwriters Laboratories (UL)
16. Uniform Fire Code (UFC) and standards
17. Uniform Building Code (UBC) and standards with California amendments
18. Uniform Plumbing Code (UPC)
19. Uniform Mechanical Code (UMC)

Building Code Analysis

Based on the requirements of Table 5-A in the Uniform Building Code, the existing Geology Building operates under both Occupancy Group B-2 (educational purposes) and Occupancy

Group A-3 (assembly room). Maintaining the B-2 occupancy group for the laboratories requires chemical and gas quantities to be within the limits of Table 9-A and 9-B of the Uniform Building Code. If quantities exceed those limits, the facility will be classified as an H occupancy. Based on Table 5-D of the Uniform Building Code, the Geology Building is of Construction Type III-1 hour. This will allow a B-2 occupancy to be four stories in height and an A-3 occupancy to be two stories in height. A basement is not considered a floor level , but since the existing Geology Building has both a basement and sub-basement this may be subject to interpretation regarding allowable floor area when reviewed by the State Fire Marshal. All renovation concepts assume the Geology building will be used for general office, general classroom, instructional laboratory space, and less intensive research laboratories. These uses will probably not involve large quantities of chemicals and consequently the building operation will remain a B-Occupancy and not an H-Occupancy.

3.3 EXISTING SPACE BY FLOOR

FLOOR LEVEL	NORTH WING	CENTER WING	SOUTH WING	SINGLE STORY WING	LOADING DOCK AREA	ASF	GSF
Subbase.	5,501					5,501	13,160
Basement	8,210	2,616				10,826	20,560
1st Floor	7,895	2,479	8,559	3,156	1,205	23,294	33,906
2nd. Floor	8,084	4,603	8,369			21,056	35,470
Current Total	29,690	9,698	16,928	3,156	1,205	60,677	103,096
Demolition of Single-Story Wing				(3,156)		(3,156)	(5,367)
Revised Total						*57,521*	*97,729*

3.4 PROPOSED SPACE PROGRAM BY WING

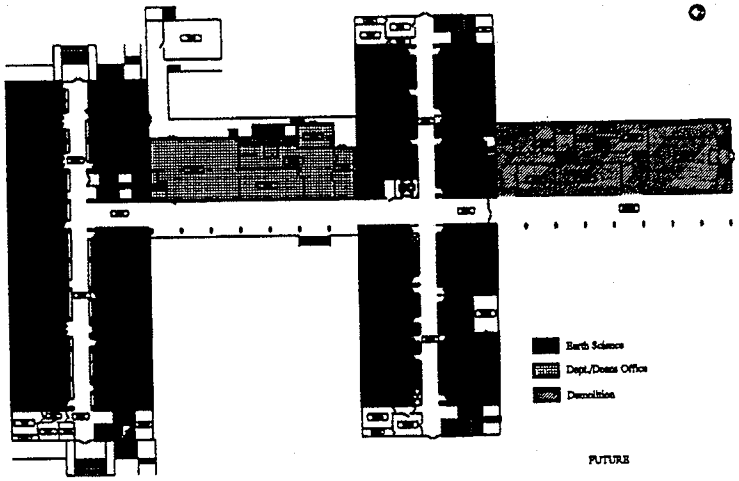
ROOM TYPE	NORTH WING	CENTER WING	SOUTH WING	LOADING DOCK AREA	TOTAL
Classroom	**1,076**				**1,076**
Class Lab/Svc	**1,987**	**1,493**			**3,480**
Open Lab		**1,704**	**843**		**2,547**
Research/Svc	**23,323**	**12,517**		**673**	**36,513**
Scholarly Activity		**1,214**			**1,214**
Academic Office			**4,590**		**4,590**
Other Office/Svc			**3,465**		**3,465**
Conference			**800**		**800**
Storage	**3,304**			**532**	**3,836**
Total	***29,690***	***16,928***	***9,698***	***1,205***	***57,521***

3.5 PROPOSED SPACE PROGRAM BY DEPARTMENT AND ROOM TYPE

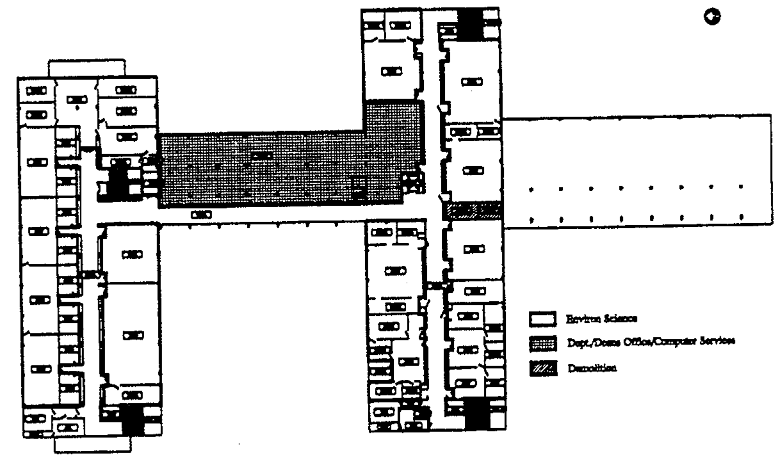
Program	Class Rm	Open Lab	Cls Lab/ Cls Lab Svc	Othr Acad Ofc	Ofc/ Ofc Svc	Storage	Rsrch	Schol Act	Conf	Ttl
Classrm	1,076									1,076
Chemistry						532				532
Earth Sci.		50	3,421	1,890	1,415	1,238	11,540	594		20,148
Environ. Sci.		2,497		2,025	2,050	975	19,749	620		27,916
IGPP			59	675		1,091	5,224			7,049
Dean's Ofc.									800	800
Total	***1,076***	***2,547***	***3,480***	***4,590***	***3,465***	***3,836***	***36,513***	***1,214***	***800***	***57,521***

3.6 ANALYSIS OF PROPOSED PROGRAM

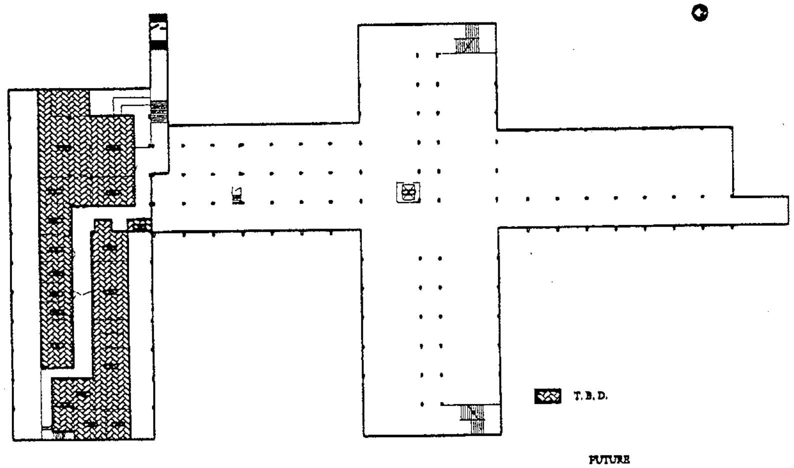
Floor	Space Available	Proposed Program	+/-
Subbasement	5,501 ASF	TBD	+5,501 ASF
Basement	10,826 ASF	IGPP 7,049 Earth Sci. 3,049 ASF 10,826 ASF	
First Floor	20,138 ASF	Earth Sci. 16,371 ASF Dept/Dean 2,479 ASF	
		18,850 ASF	+1,288 ASF
Second Floor	21,056 ASF	Env. Sci. 27,916 ASF Dept./Dean 4,603 ASF	
		32,519 ASF	- 11,463 ASF
	57,521 ASF	**62,195 ASF**	**-4,674 ASF**



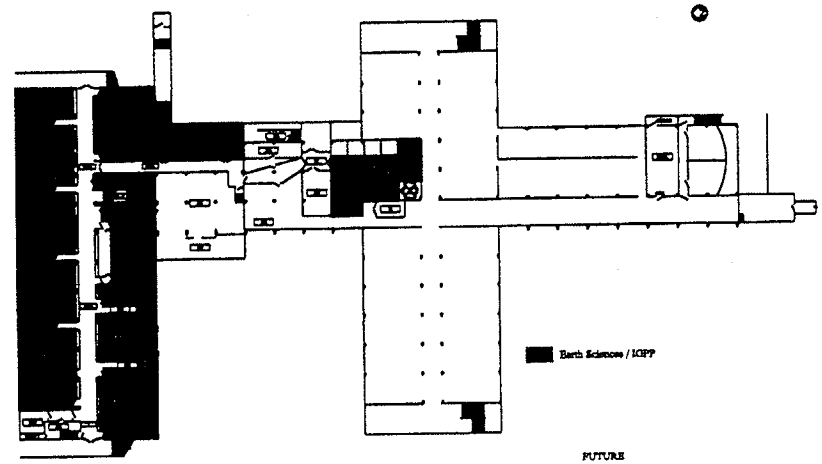
FIRST FLOOR



SECOND FLOOR



SUB-BASEMENT

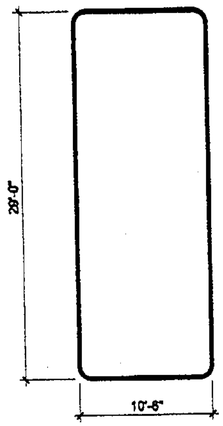


BASEMENT

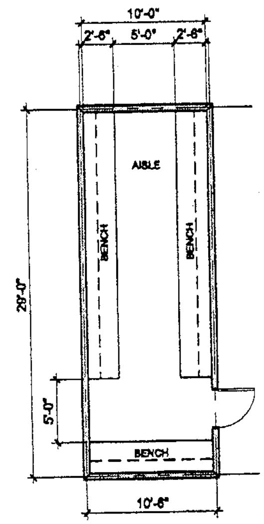
PROPOSED ZONING
GEOLOGY BUILDING RENOVATION

UNIVERSITY OF CALIFORNIA, RIVERSIDE

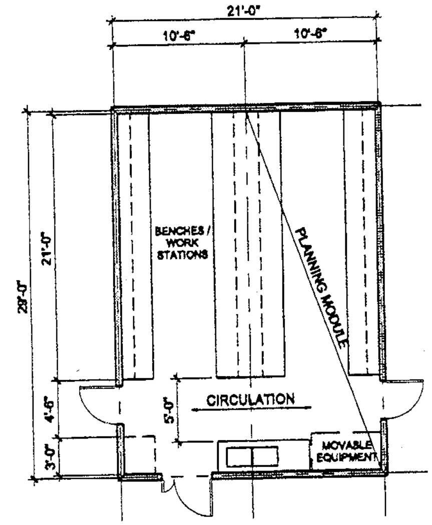
JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS



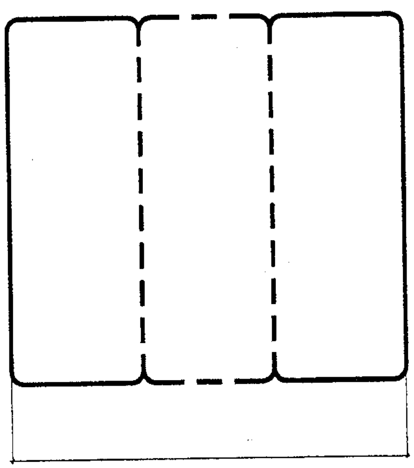
BASIC MODULE



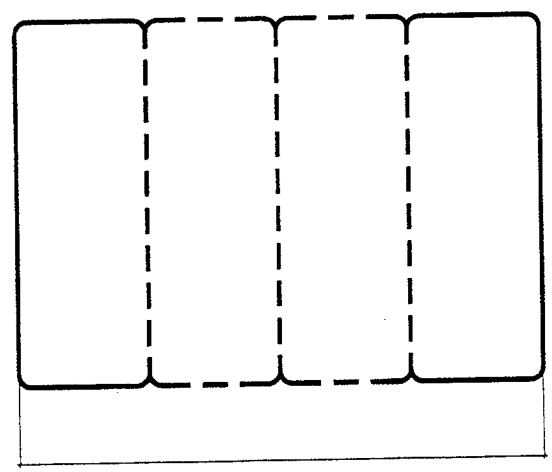
FIT UP



2 MODULES



3 MODULE LAB SUITE

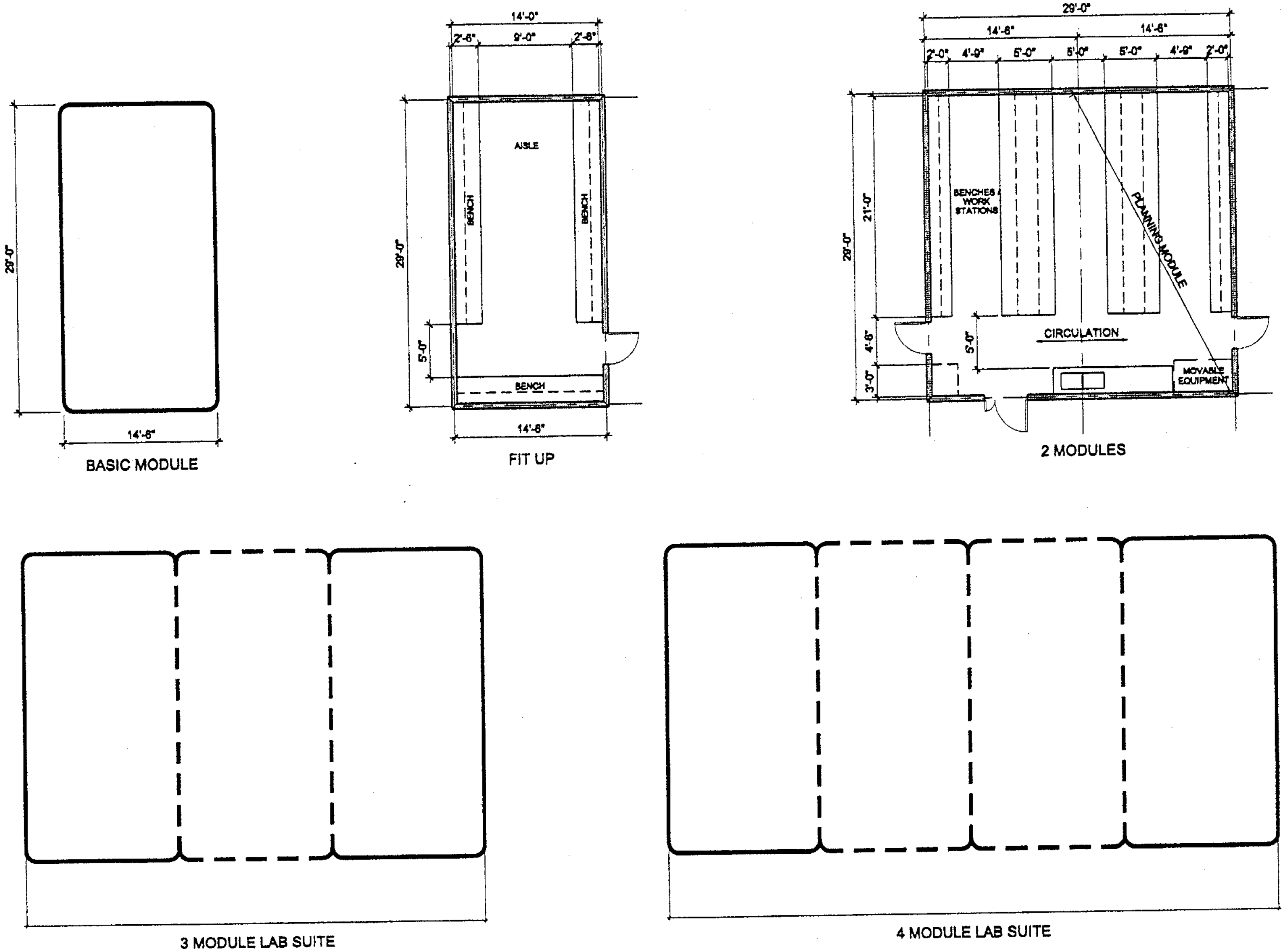


4 MODULE LAB SUITE

LABORATORY PLANNING MODULE

UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS



EXISTING GEOLOGY BUILDING

UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
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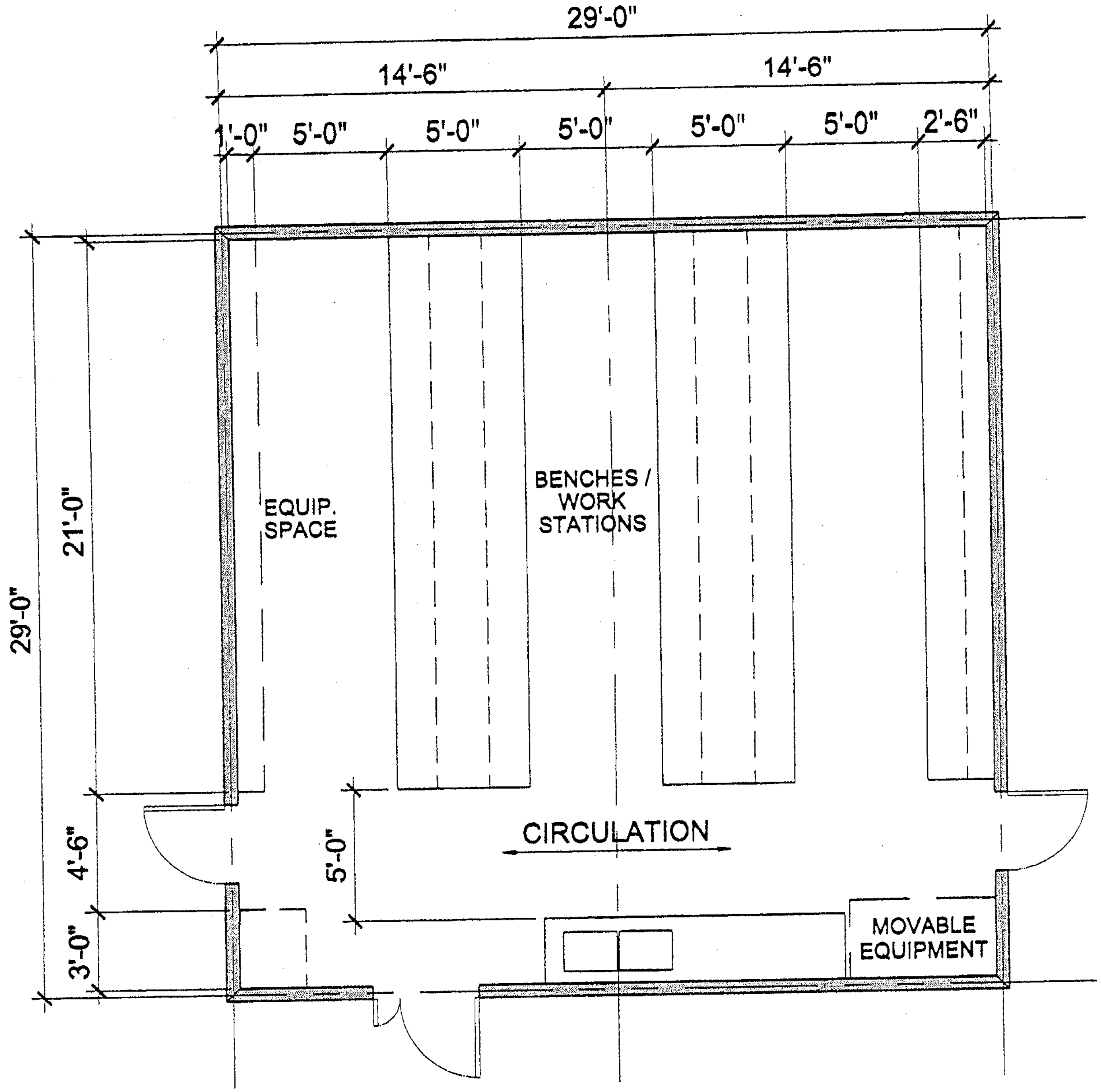
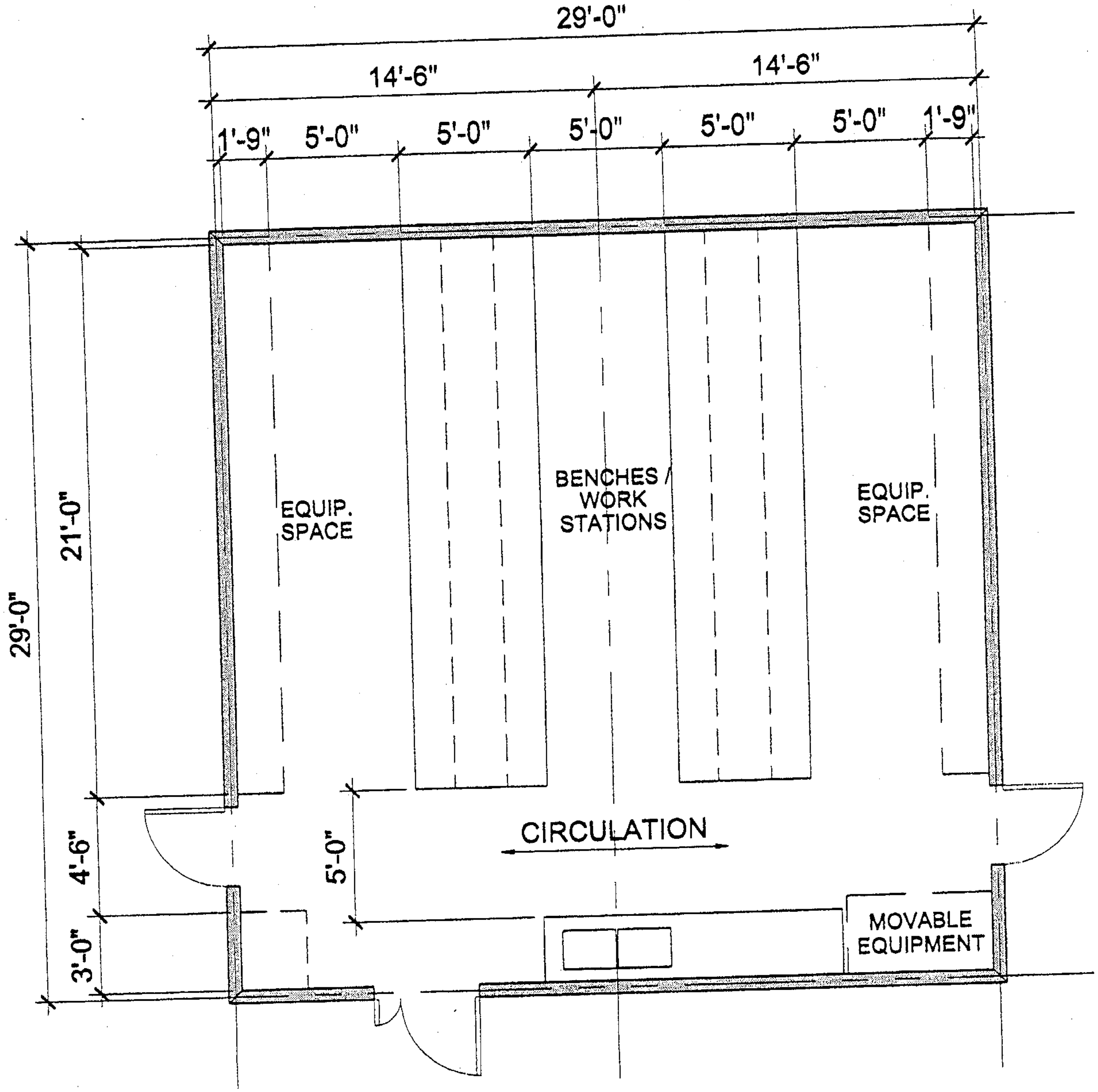

29'-0"
14'-6"
14'-6"
1'-0"
5'-0"
5'-0"
5'-0"
5'-0"
5'-0"
2'-6"
EQUIP. SPACE
BENCHES / WORK STATIONS
CIRCULATION
MOVABLE EQUIPMENT
29'-0"
21'-0"
4'-6"
3'-0"
5'-0"

STUDY 1


29'-0"
14'-6"
14'-6"
1'-9"
5'-0"
5'-0"
5'-0"
5'-0"
5'-0"
1'-9"
29'-0"
21'-0"
4'-6"
3'-0"
EQUIP. SPACE
BENCHES / WORK STATIONS
EQUIP. SPACE
5'-0"
CIRCULATION
MOVABLE EQUIPMENT

STUDY 2

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *February 22, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase**

ATTENDEES:		
	Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
	Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Sciences
	George MacMullin, P.E.	Project Manager/Engineer/Office of Design & Construction
	Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
	James L. Pirdy, Architect	JLP Architects, Inc.
	Alan Wilson	Bechard Long & Associates

Action	**Item**	**Description**

3.1 GENERAL INFORMATION

A. George MacMullin advised that the Hazardous Materials Study for the Geology Building is in progress and should be complete by the end of March.

B. Polly Breitkreuz will produce an updated projection of faculty by department for the Geology Building.

C. Kieron Brunelle advised that the existing Radioisotope Laboratory located in Pierce Hall will remain eliminating the need for a similar facility in the Geology Building. None will be included in the renovation program.

3.2 Alan Wilson of Bechard Long and Associates gave a progress report on the Geology Building HVAC upgrade project.

A. Alan and his team have now had time to develop some initial concepts for the project.

B. In both the North and South Wings, BLA proposes to use the ceiling area above the corridors to provide new main supply ducts.

Action	Item	Description
		1. The system will continue to operate as a constant volume system until the individual laboratories are renovated at which time it will be converted to a variable volume system.
		2. Existing points of connection within the labs will be maintained until the renovation occurs. At that time all branch ducting and registers will be replaced.
		C. The goal is to put as much work in place as possible without disrupting the occupied spaces.
		1. This will be achieved by prefabricating as much of the ductwork as possible.
		2. Installation will take place during eight to ten hour evening periods or over weekends.
		D. The location for the replacement air handlers was discussed.
		1. The Central Wing AHU will be the smallest. BLA is proposing to place the new unit in the basement area where the abandoned chillers are located.
		2. BLA is studying the subbasement area for the North Wing AHU.
		3. No location has been determined for the South Wing.
		E. No final location has been determined for the new supply shafts. The university is concerned that larger shafts within the building will reduce the assignable square footage.
UCR		F. The UCR Office of Design and Construction and Office of Academic Planning and Budget will investigate to see replacing if the glazing in the building will qualify as a deferred maintenance project.
	3.3	PROGRAMMING AND SPACE PLANNING ISSUES
		A. George MacMullin asked that JLP do an evaluation of the cost and feasibility of renovating the subbasement for code complying assignable square footage.
		1. This would require the addition of an elevator, modifications to the stairs and miscellaneous ADA improvements.

Action	Item	Description

2. George also questioned the clearances.

B. Kieron identified priorities for use of the center wing as follows:

1. Departmental Administrative Offices.
2. GIS Computer Lab (Geographic Information Service).
3. Conference Room
4. Faculty Offices

C. Thirty-four (34) faculty offices of approximately 135 ASF are needed in the building. Some of these offices could be located outside of the center wing.

D. The Earth Sciences and Environmental Sciences computer labs need to be consolidated in the renovation.

1. This will be an open lab with 25 workstations which will serve both departments.
2. The GIS lab is separate.

E. Room 1408 on the first floor of the North Wing was recently renovated. Jim stressed that in its current location it does not fit the proposed zoning of the building which is to dedicate the first floor of the South Wing to instructional programs.

1. This places instructional programs in the Geology Building adjacent to the teaching labs on the first floor of the Science Lab Building.
2. It will also minimize student traffic through areas of the Geology Building where research activities are located.

F. Kieron and Lisa provided floor plans with notes on current space locations for faculty and administrative offices, computer labs and faculty labs which will be vacated when the science lab building is complete.

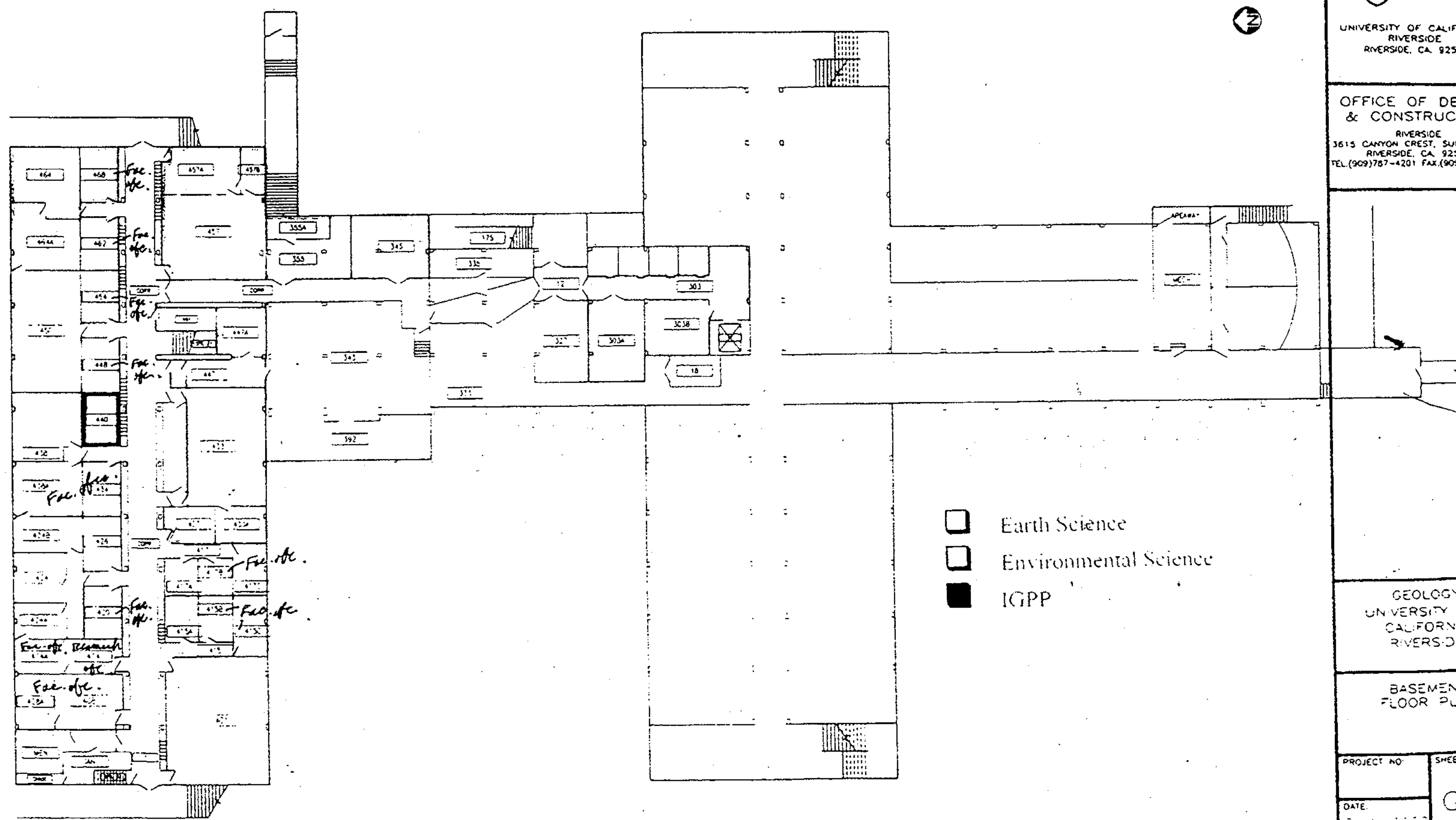
1. The central Wing of the Geology Building will be vacant during the summer of 2001.
2. Administrative and faculty offices could be relocated at that time.

Action	Item	Description
		3. Kieron asked that the planning team look for ways to merge functions between the two departments to maximize the use of available space.
JLP		4. JLP will use the information to develop a preliminary phasing plan for discussion at the March 16th Workshop.
	G.	Office space will need to be provided for teaching assistants and graduate students.
		1. Teaching assistants need offices. These could be shared.
		2. Graduate students could have desk space in labs.
UCR		3. Lisa and Polly will provide the planning team with projections on the number of teaching assistants and graduate students that need to be accommodated.
UCR	H.	Jim asked for clarification regarding the program for the Institute for Geophysics and Planetary Physics (IGPP). What is it and what is needed?
	I.	Lisa and Kieron stressed the importance of flexibility in the renovation plan and design. The labs should be as generic as possible because many of the people who occupy the building will not be there in the future.
		1. The open lab concept should be pursued.
		2. Environmental science labs on the third floor of Bourns Hall employ the open lab concept.

This report was prepared by *JLP Architects, Inc.* on March 5, 2001.

JLP Architects, Inc.

James L. Pirdy, Architect
Principal
JLP/km
Lisa Peloquin to distribute to UCR
c.c. Chris Smith, Degenkolb Engineers
Alan Wilson, Bechard Long & Associates
Graham Anderson, Campbell-Anderson Associates
Enclosures:
- Block floor plans with notes



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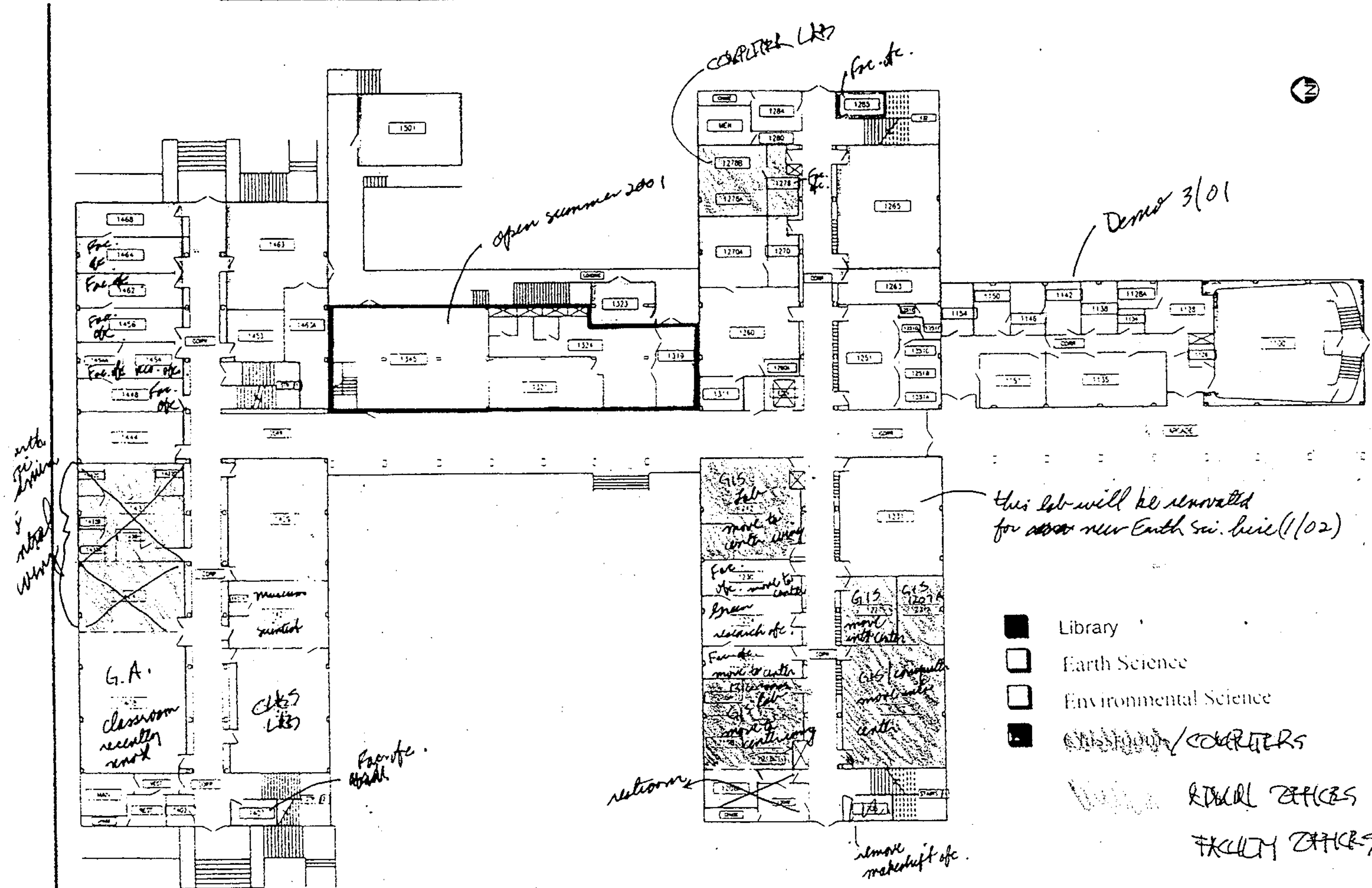
BASEMENT
FLOOR PLAN

PROJECT NO:	SHEET NO:
DATE: 2-1-2000	G-0



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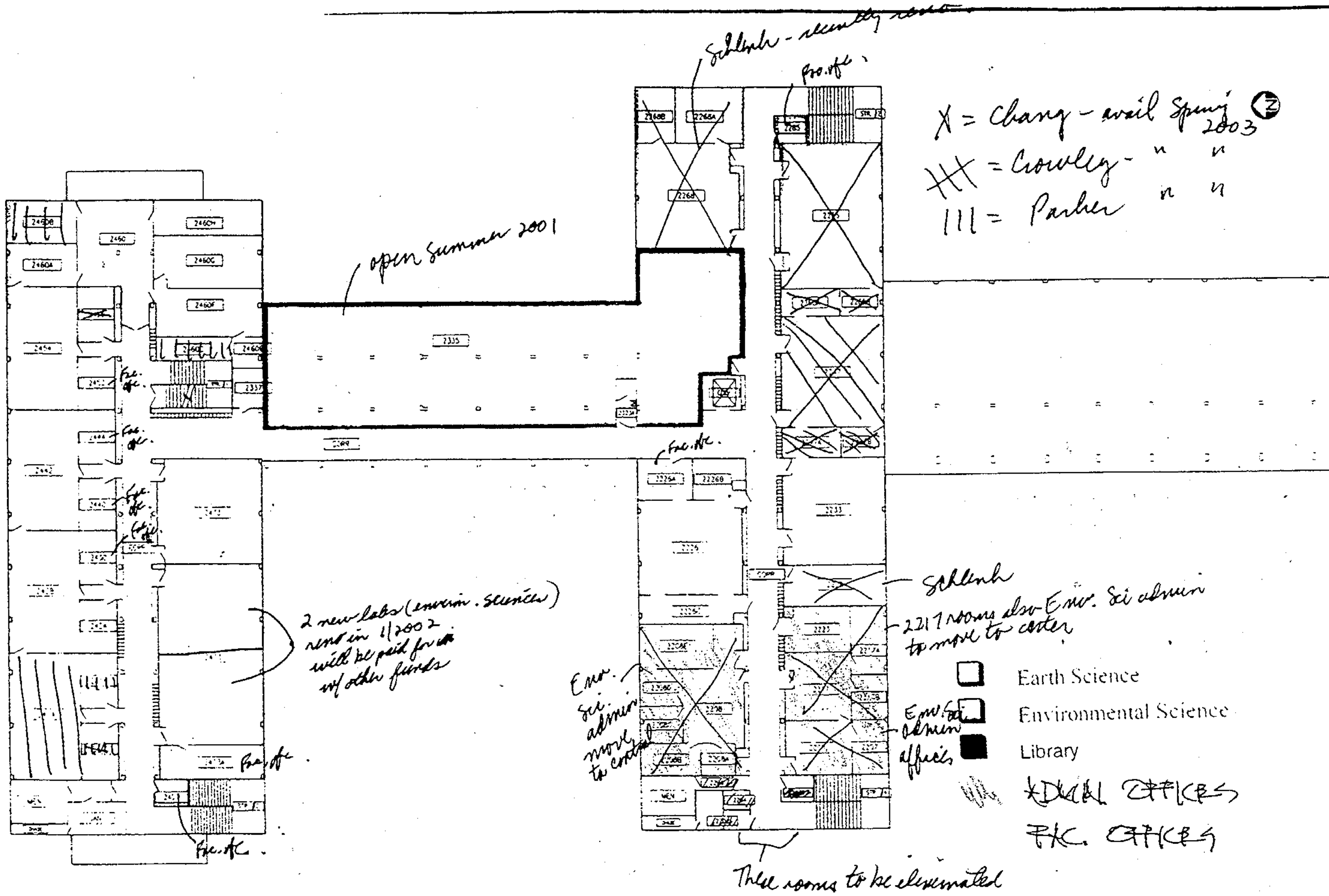
FIRST FLOOR PLAN

PROJECT NO	SHEET NO
DATE 2-1-2000	G—1



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SECOND FLOOR PLAN

PROJECT NO:

DATE
2-1 2000

SHEET NO:
G-2

2-22-01

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 2, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase - Meeting with Department of Earth Sciences**

ATTENDEES:

Barbara Badarak	MSO Earth Sciences
Chris Bradley	JLP Architects, Inc.
Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Sciences
Mary Droser	Professor Earth Sciences
George MacMullin, P.E.	Project Manager/Engineer/Office of Design & Construction
Mike McKibben	Associate Professor, Earth Sciences
Richard Minnich	Professor Earth Sciences
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Mike Woodburne	Chair, Earth Sciences

Action	Item	Description

4.1 INTRODUCTION

A. Lisa Peloquin opened the meeting by saying that previous discussions regarding the *Geology Building Renovation* project have focused on the existing conditions of the building.

B. The purpose of this meeting is to learn about the program needs of the Department of Earth Sciences.

4.2 GENERAL INFORMATION - Jim Pirdy gave an overview of the work completed to date and stressed the importance for the planning team to understand existing conditions within the building and the need to fit proposed programs into the available area.

A. Diagrams illustrating the proposed zoning of the Geology Building were presented (see attachment). These diagrams show the

Action	Item	Description

Department of Earth Sciences occupying the basement and portions of the first floor.

B. *Basic Laboratory Module*: a prototypical laboratory module based on the existing structural grid of the building was presented (see attachment).

1. The proposed module has aisle widths that range from 4'-0" to 4'-6". In a new building these widths would be 5'-0".

2. Based upon discussions between JLP and the *Division of the State Architect*, the narrower widths will be acceptable as long as a continuous path off travel is maintained for an individual in a wheel chair.

3. The "Basic Module" is very similar to recently completed Environmental Science Laboratories located in Bourns Hall.

C. Two studies which combine the Basic Module into laboratory suites were presented (see attachment).

1. *Study #1* placed support spaces between each double module laboratory suite with a shared entry vestibule.

2. *Study #2* placed two double module laboratory suites adjacent to each other with support spaces at the ends.

D. *Laboratory Functional Diagrams*: the laboratory module and suite studies are the basis for developing a preliminary overall organization within the building for research, instruction and support space.

1. Scheme *#1* (see attachment) is based on study 2.

2. Scheme *#2* (see attachment) is based on study 1.

3. The purpose of the Laboratory Functional Diagrams was to develop a preliminary assessment of how many principal investigators can be accommodated within the existing building.

4.3 DEPARTMENT OF EARTH SCIENCES PROGRAM NEEDS

Mike Woodburne distributed a handout entitled *Department of Earth Sciences Space Considerations 3.2.01* (see attachment).

Action	Item	Description

A. The department currently has an academic faculty of twelve (12), twenty-two (22) graduate students, five (5) post docs, three (3) adjunct and two (2) Emeritus Faculty and support staff occupying approximately 22,000 ASF.

B. Growth to the year 2010 projects an additional nine (9) faculty and twenty-three (23) to twenty-eight (28) graduate students plus support staff. Mike estimates that the department will require at least 40,000 ASF to accommodate this expansion.

C. With this projected growth, the existing assignable square footage in the Geology Building is insufficient to accommodate the Department of Earth Sciences with three academic units competing for a finite amount of space.

D. Mike feels the subbasement of the building is critical and its renovation should be a high priority.

1. Jim pointed out that it does not have legal stairs or an elevator and the floor-to-floor height is only 10'-3".

2. Lisa Peloquin advised that JLP has been directed to develop a cost benefit analysis for the renovation of the subbasement.

E. Additional reconfiguration scenarios for increasing space in the building were discussed.

1. An addition to the building is not presently a viable alternative.

2. Elimination of the central corridor in the South Wing (instructional labs) would increase efficiency and provide central support and storage space for collections that are used in teaching.

F. Jim gave an overview of the laboratory spaces which would be assigned to the Department of Earth sciences and IGPP.

1. Scheme #1 provides 15 labs for ES/IGPP and 8 instructional labs (to be apportioned among the three academic units).

2. Scheme #2 provides 14 labs for ES/IGPP and 8 instructional labs (to be apportioned among the three academic units).

Action	Item	Description

3. These counts assume that each lab suite is approximately 812 ASF exclusive of support space. The placement of the support spaces impacts the overall number of labs.

G. The *Earth Sciences Museum* (seismograph, mineral, rock and fossil displays) located in the corridor of the central wing of the first floor was discussed. It is a major public relations and recruiting resource.

1. Visitors include elementary, middle, and high school students.
2. The museum is also used for departmental instruction.
3. Jim advised that the museum can continue to function in its current location as long as any exhibit cases are moved out of the corridor.
4. Richard would like to accommodate informal gathering with seating, coffee, etc.
5. JLP has designed a similar informal gathering space in the lobby of the Basic Sciences Building at UCSD.

4.4 GENERAL DISCUSSION

A. A concern was expressed about the fact that most instructional labs are currently located in the North Wing while two labs containing heavy equipment are located on the first floor of the South Wing which has been designated for teaching in the renovation plan.

1. The cost to move the heavy equipment and recalibrate it may be very high.
2. The proposed location of the instructional labs is intended to place them adjacent to the instructional labs on the first floor of the new *Science Labs 1* building.
3. It is also intended to reduce pedestrian traffic, congestion and noise in the areas of the Geology Building where research functions are located.
4. This "clustering" of instructional spaces adjacent to the Carillon Mall is part of the CNAS Masterplan.

Action	Item	Description

B. Lisa Peloquin feels the generic approach to the laboratory design will promote flexibility as the size and composition of research teams changes over time.

C. In order to complete the Detailed Project program, the planning team needs specific projections to the year 2007 for the following:

1. Number of principal investigators.

2. Number of instructional labs.

D. The DPP will define the numbers and establish the design criteria. Final design will take place as the project is funded. This may take place in phases.

1. Deferred maintenance projects to replace the HVAC supply and exhaust systems will begin this summer.

2. The building renovation, subject to funding, is expected to be phased.

3. While a preliminary cost estimate will not be completed until the end of March, the renovation project is expected to cost between $10.0 million and $15.0 million.

E. *Laboratory Planning Module*: the Earth Sciences department expects to have a mix of wet and dry labs.

1. Dry labs which rely heavily on the use of computers will also require space to accommodate working library materials and map cases.

2. Flexibility with the size of the lab and offices is important.

3. Earth Sciences would prefer to reduce lab space and increase office space.

UCR/ES *The representatives were requested to provide the sizes and specifications of specialty furnishings and equipment such as the map cases.*

4. Earth Sciences faculty have a strong preference for offices in proximity to the labs. They also prefer Scheme 2 of the Laboratory Functional Diagrams.

Action	Item	Description

5. Mike felt that two (2) fumehoods would be the maximum that any of one lab would require. He believes some investigators will only need one. Some hoods may require special linings because of acids that are used.

F. Loading Dock: this area is very important to the receiving, processing and storing of field specimens for the department.

1. Presently a corridor runs directly through the Fossil Prep Room.

2. The redesign of this area should provide facilities for receiving and storage, field logistics support, fossil preparation, and an acid room.

G. Rock Preparation: this facility presently located in the basement has special needs.

1. It generates noise, vibration, dust and dangerous vapors, which are a result of the lubricants used.

2. These constitute an environmental hazard to students and faculty.

H. Geochronologist

1. The Earth Sciences Department expects to hire a Geochronologist in the near future.

2. This investigator will require a large wet Chemistry laboratory with specialized equipment.

3. The investigator will also require some clean room capability.

UCR/ES 4. The department will provide to the planning team an equipment list with sizes and design specifications including the classification of the clean room.

I. Graduate Students and Teaching Assistants

1. Work space needs to be provided for graduate students and teaching assistants.

Action	Item	Description
UCR/ES	2.	The Department will provide information on the specific numbers which must be accommodated and the preferred location (within or outside of the labs).
	3.	Office space for teaching assistants needs to be provided separate from the labs. This space will be used on a rotating basis for student conferences.

This report was prepared & distributed by *JLP Architects, Inc.* on 3.20.2001.

JLP Architects, Inc.

James L. Purdy

James L. Pirdy, Architect
Principal
JLP/km

Lisa Peloquin to distribute to UCR

c.c. *Chris Smith, Degenkolb Engineers*
Alan Wilson, Bechard Long & Associates
Graham Anderson, Campbell-Anderson Associates

Enclosures:
- Block floor plans with notes

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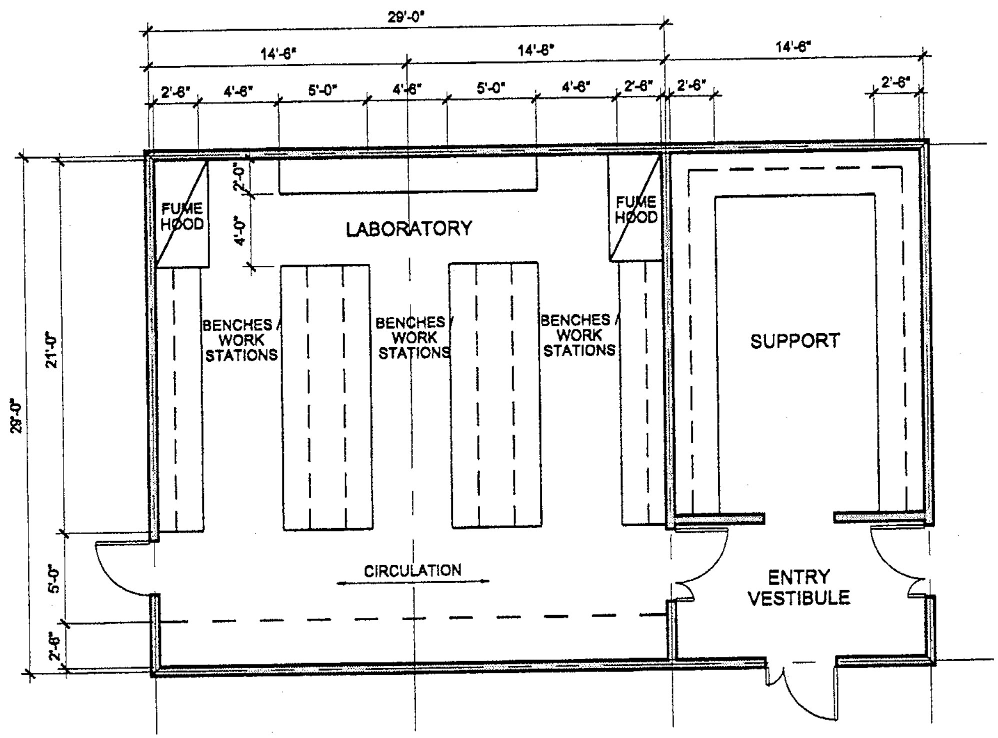
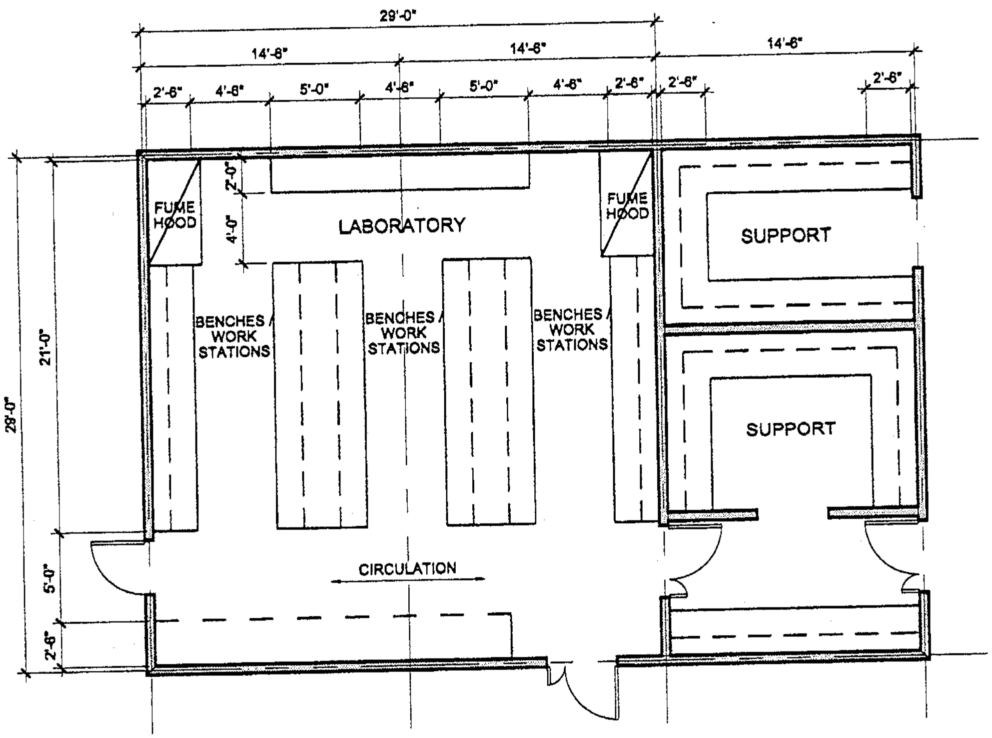


BASIC MODULE

SCALE : 3/16" = 1'- 0"

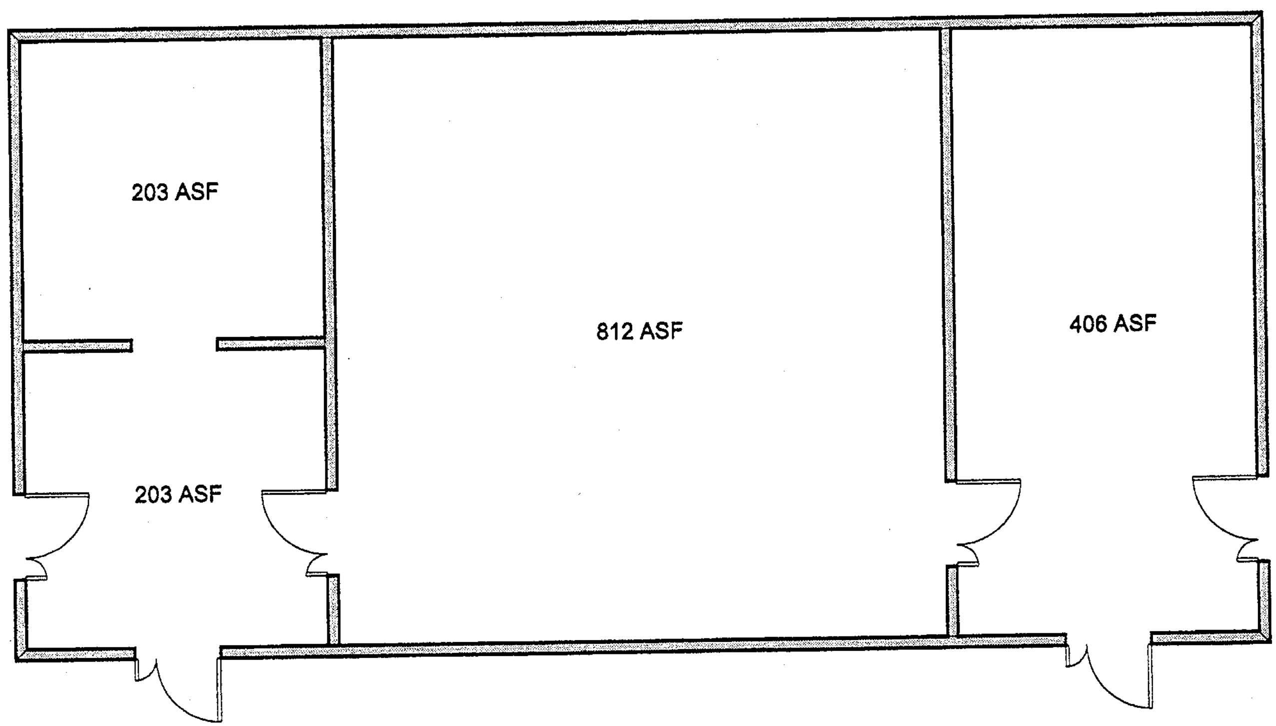
MARCH 2, 2001



BASIC MODULE

SCALE : 3/16" = 1'- 0"

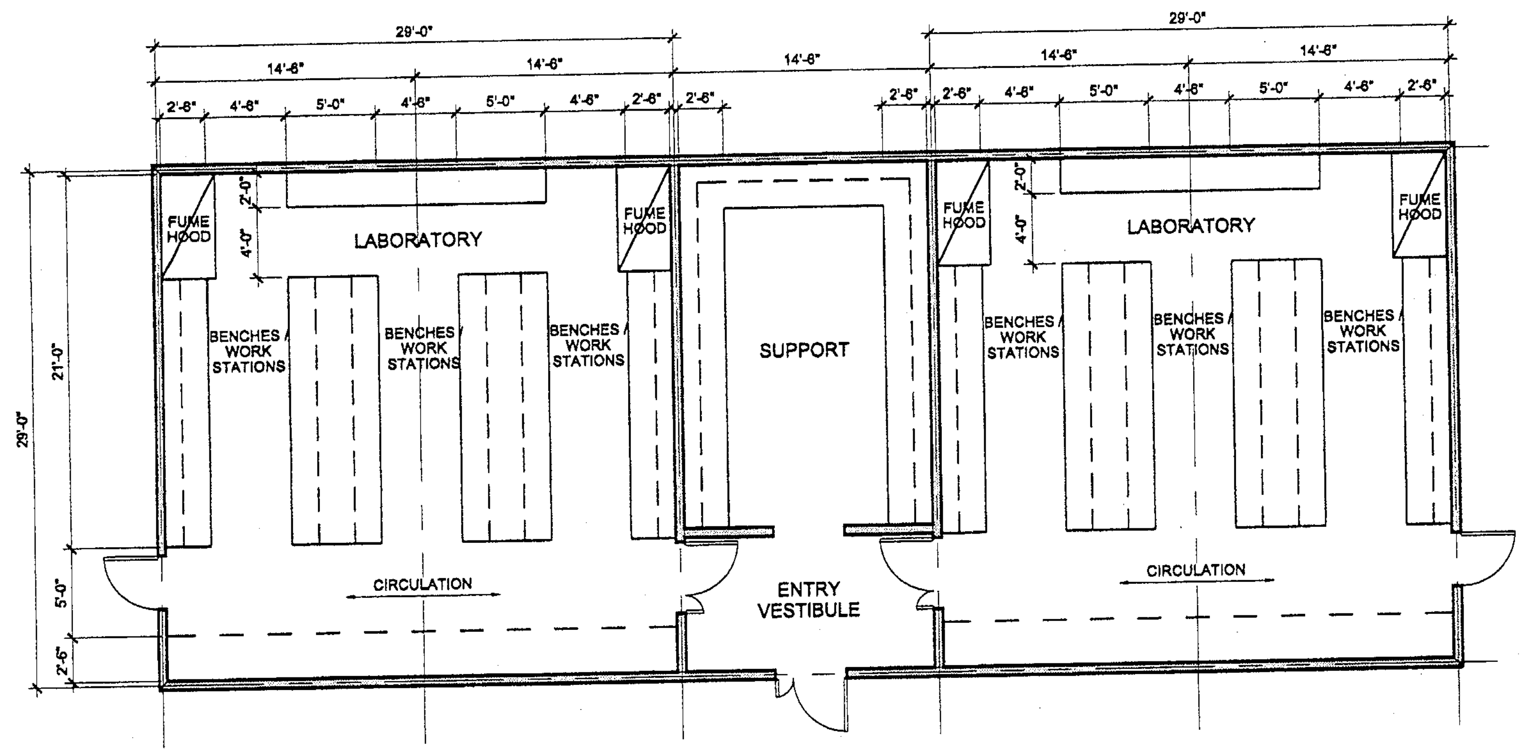
MARCH 2, 2001



PERMUTATIONS OF EXISTING BUILDING MODULE

SCALE : 3/16" = 1'- 0"

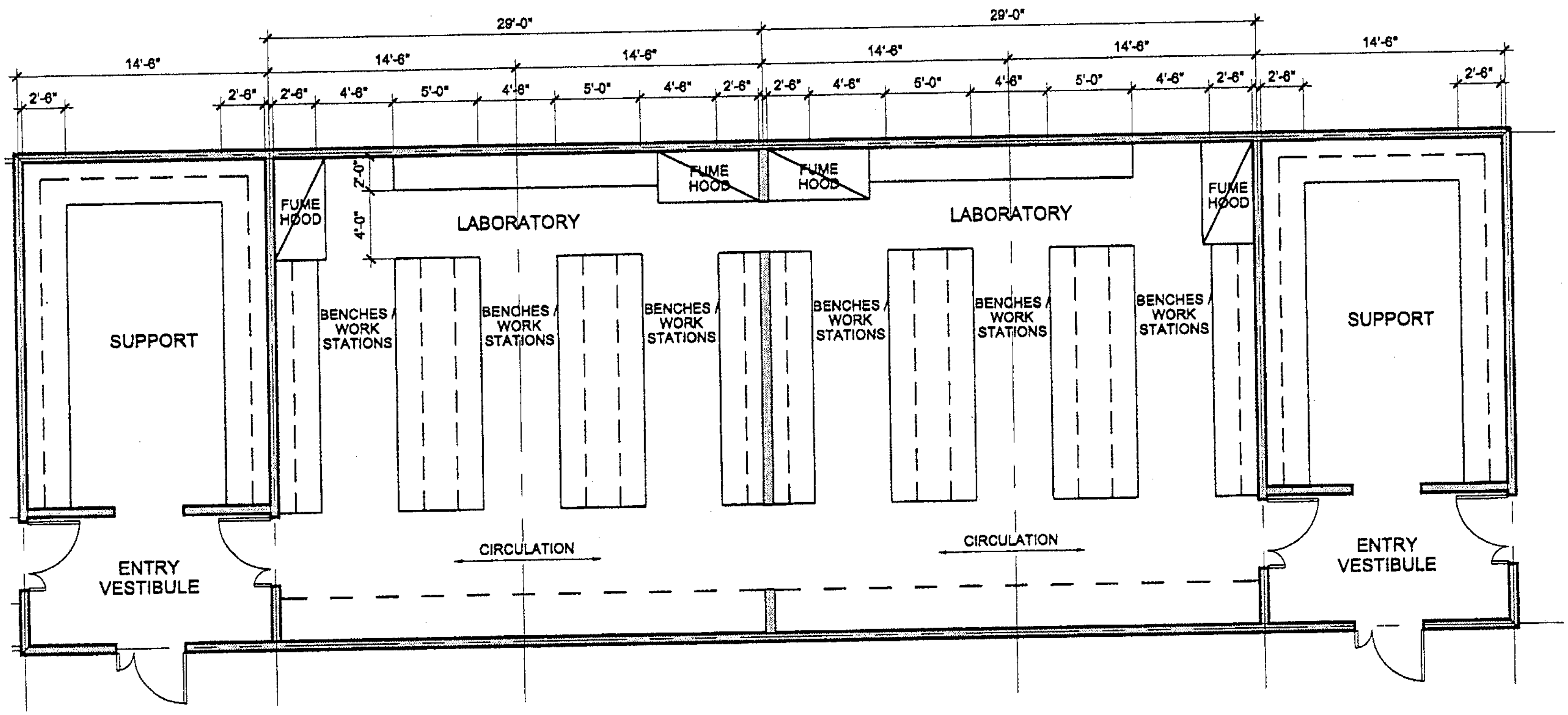
MARCH 6, 2001



STUDY 1

SCALE : 3/16" = 1'- 0"

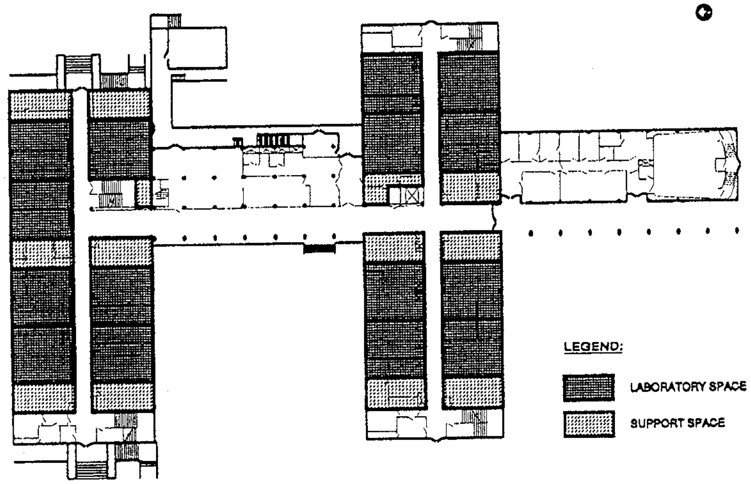
MARCH 2, 2001



STUDY 2

SCALE : 3/16" = 1'- 0"

MARCH 2, 2001



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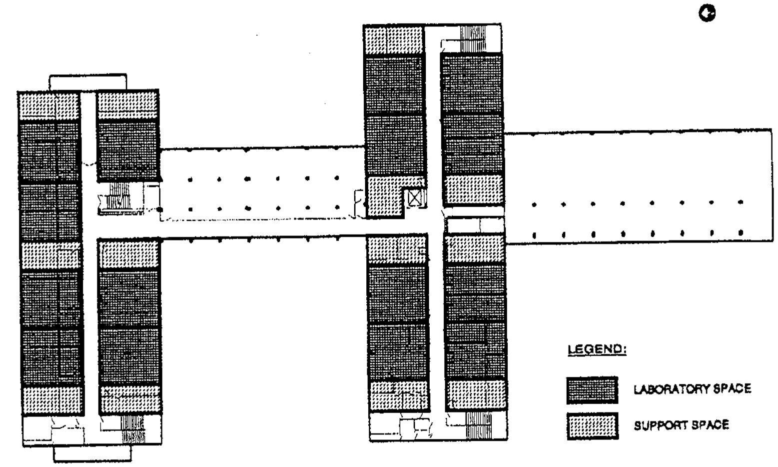

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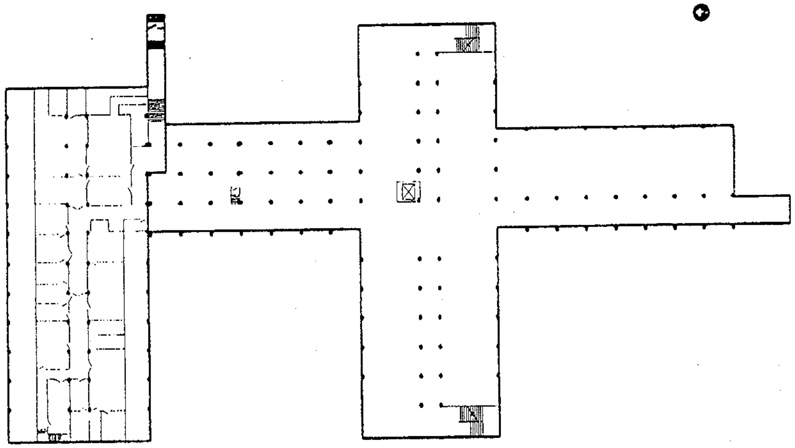
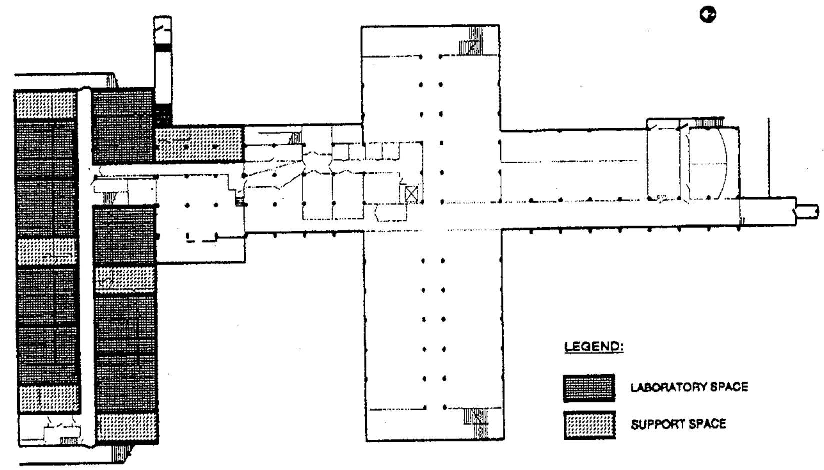


SUB-BASEMENT



BASEMENT

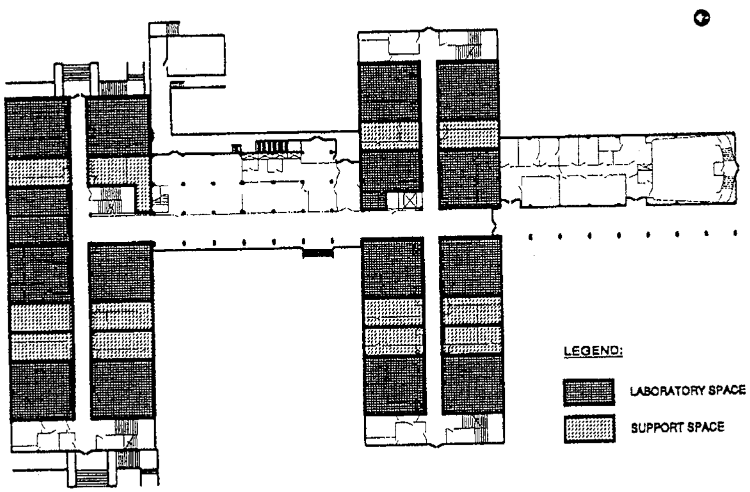
LABORATORY FUNCTIONAL DIAGRAMS
SCHEME 1

GEOLOGY BUILDING RENOVATION

UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

MARCH 2, 2001



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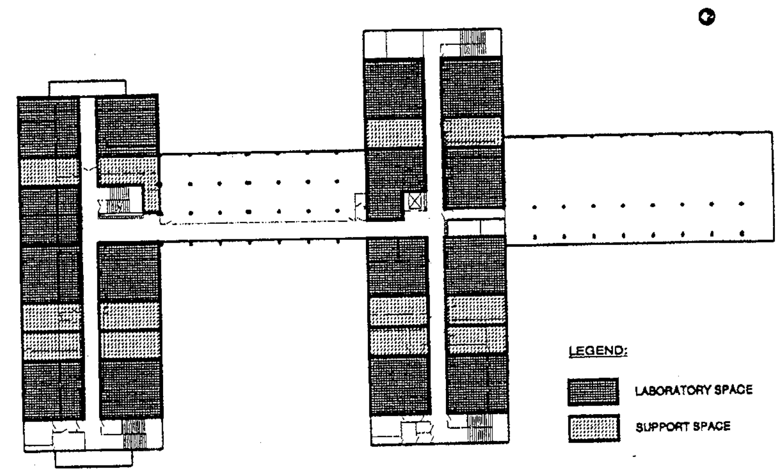

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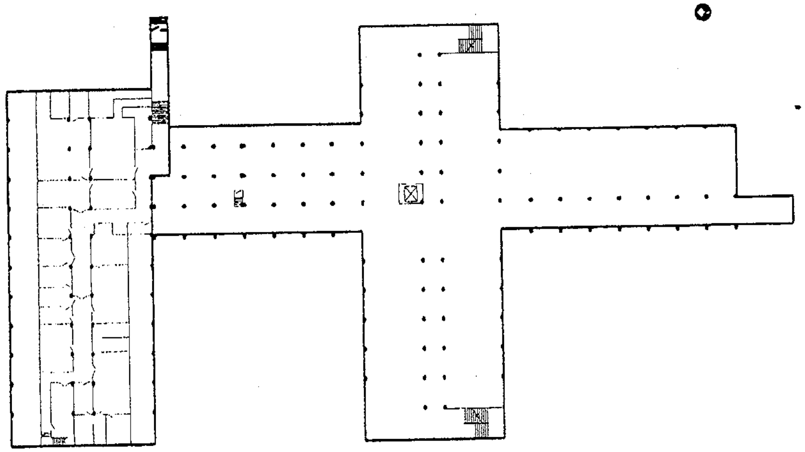

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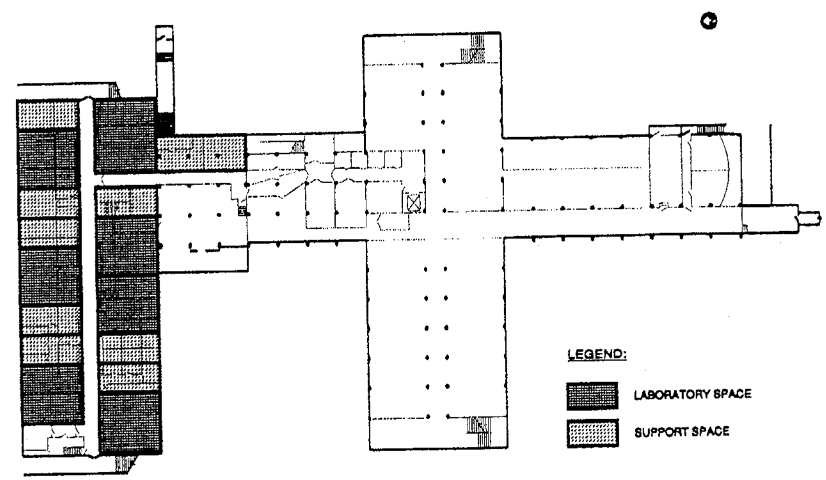

BASEMENT

LABORATORY FUNCTIONAL DIAGRAMS
SCHEME 2

GEOLOGY BUILDING RENOVATION

UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

MARCH 2, 2001

Dept. of Earth Sciences Space Considerations
3-02-01

Bottom Line:

At present, we cannot fit into the Geology Building. We have a faculty member temporarily located in Bourns (office and dry lab) and at present 2 geochemists share an already small wet lab. We are currently interviewing for a third geochemist. He/She will initially have to share this wet lab. We are in a growth mode and anticipate hiring at least one new faculty member a year.

Earth Sciences now has 12 headcount academic faculty (9.75 FTE), 22 graduate students, 4.5 FTE in academic support, 0.5 FTE in technical support, three adjunct and two emeritus professors in asf of ca 22,000. Projecting campus growth of 70% by 2010, we envision proportional growth in Earth Sciences, to wit:

- Based on growth proportional to campus to 2010 (and the life of this renovation project) we project an additional 9 faculty and graduate student increase to 45 or 50.
- Using the same formulas and programmatic reasons we envision an increase of academic support staff by 2 FTE and technical support by 2 FTE.
- Using these formulas Earth Sciences asf will need to be a minimum of ca 40,000 asf.

With this level of growth, there is virtually no way for Earth Sciences operations to fit into the full first floor and basement of the geology building (presupposing full occupancy 1265 and 1278) = 28,000 asf total.

Three academic units are competing for space in Geology Building footprint. This is an impossible constriction imposed on the current footprint.

With this in mind, we envision four reconfiguration scenarios:

1) Renovate sub-basement so that it is viable dry lab or teaching lab space (this is critical for any solution)
2) Eliminate interior hallways to expand space, utilizing external access to classrooms as is done in the new Humanities Bldg.?
3) Laterally expand the cross bar in the H – e.g. the current Phy. Sci. Library space?
4) Add another floor to the building?

Space details: (this is status quo, not projected increase, for use as model when considering increase and renovations)

Research type summary of faculty – amount/configuration of space not included – only very general TYPE of research lab.

Computer labs (means mainly dry activities)	Chemistry labs (means fume and other capabilities; water)
Tenure-track faculty:	
Droser	Green
Hughes	Kennedy
Lee	McKibben
Minnich	Williams
Oglesby	
Owen	
Park	
Sadler	
Woodburne	
Adjunct faculty:	
Scott	Dobrzhinetskaya (IGPP)
Morton	

In addition we are currently interviewing for a:

Biogeochemist

Additional immediate faculty hires (next 3 years) include:

Vertebrate paleontologist
Structural geologist
Geophysicist

Geochronologist: large chemistry lab

Office and support staff:

MSOs/Secretaries: 5 FTE
Museum scientist: ½ FTE with an additional FTE proposed

Other space not individually assigned

1) fossil, rock and mineral working collections	- teaching
2) digital imaging, microscopes etc.	- teaching and research
3) GIS	- teaching and research
4) darkroom (wet facilities)	- research
5) rock prep room – grinding wheels, saws etc (needs hood; wet facilities)	- research and teaching
6) fossil prep room (needs hood; wet facilities)	- research and teaching
7) acid room (needs hood; wet facilities)	- research
8) loading dock and exterior specimen storage	- research and teaching

Other concerns:
Significance of Hallway Museum –

The Earth Sciences Museum (seismograph, mineral, rock and fossil displays) is a major public relations and recruiting arena for the campus – it experiences a weekly to daily influx of visitors including hundreds of grade, middle and high school students.

- Our own classes use the Museum in laboratory assignments in lower division courses.
- Our own classes use the Museum as integral instruction device for upper division majors.

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 2, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase/Environmental Review**

ATTENDEES:

Chris C. Bradley	JLP Architects, Inc.
Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
Nitta Bullock	Senior Physical Planner/Office of Academic Planning & Budget
Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Sciences
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Tricia D. Thasher	Senior Environmental Project Manager/Office of Design & Construction

Action	Item	Description

5.1 GENERAL INFORMATION

A. Lisa Peloquin and Jim Pirdy gave an overview of the proposed *Geology Building Renovation* project.

1. The gross square footage of the building will be reduced when the South Wing is demolished to construct the Science Laboratory Building.

2. Two Deferred Maintenance projects are underway to replace the supply and exhaust air systems of the building.

3. No additions to the building are planned.

5.2 GENERAL EXTERIOR BUILDING IMPACTS: - Tricia and Nitta asked what impacts the renovation would have on the exterior appearance of the building.

A. Mechanical system upgrades will include the following impacts:

1. Replacement of the exhaust fans and stacks

Action	Item	Description

2. Manifolding of the exhaust ducts on the roof.

3. New exterior supply air shafts.

B. Structural and Architectural impacts:

1. Shear walls will be added to the north elevation of the building to mitigate seismic deficiencies.

2. The original single pane glazing and sunscreens will be replaced.

3. If the subbasement is made accessible an elevator and code complying stairs will be required.

5.3 ENVIRONMENTAL CONCERNS

A. The major concerns expressed by Tricia and Nitta were that mechanical equipment located on the roof of the building be minimized and screened.

B. Any new exterior shaft should be architecturally integrated with the building.

C. Jim and Chris responded that no equipment other than the replacement of exhaust fans and stacks and the manifolded ducting is planned for the roof.

D. New shear walls and any supply shafts will be integrated with the existing building architecture.

This report was prepared and distributed by *JLP Architects, Inc.* on 3.20.2001.

JLP Architects, Inc.

James L. Pirdy

James L. Pirdy, Architect
Principal
JLP/km

Lisa Peloquin to distribute to UCR
c.c. *Chris Smith, Degenkolb Engineers*
Alan Wilson, Bechard Long & Associates
Graham Anderson, Campbell-Anderson Associates

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 2, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase/Student Special Services**

ATTENDEES:

Chris C. Bradley	JLP Architects, Inc.
Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
Hector Correa	UCR TAPS Parking Services
Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Sciences
George MacMullin, P.E.	Project manager/Engineer/Office of Design & Construction
J.A. Martin	UCR TAPS Parking Services
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Tricia D. Thrasher	Senior Environmental Project Manager/Office of Design & Construction
Suzanne Trotca	UCR Services for Students with Disabilities

Action	Item	Description

6.1 GENERAL INFORMATION

A. Lisa Peloquin and Jim Pirdy gave an overview of the proposed *Geology Building Renovation* project.

1. The gross square footage of the building will be reduced when the South Wing is demolished to construct the Science Laboratory Building.

2. Two Deferred Maintenance projects are underway to replace the supply and exhaust air systems of the building.

3. No additions to the building are planned.

6.2 HANDICAPPED ACCESSIBILITY

A. Suzanne reviewed current handicapped access to the building.

Action	Item	Description

1. The east entry to the South Wing has a temporary ("adhoc") ramp. The renovation project should replace this with a permanent ramp and an electric door.

2. An electric door presently exists at the entrance to the South Wing where the Geology Building will connect to the new Science Laboratory Building. This access should be maintained.

3. Access to the Basement level is via ramps located at the east and west ends of the North Wing.

4. The subbasement of the building does not have disabled access.

B. Path of travel for disabled individuals involves parking in the loading dock area and proceeding around the east end of the South wing and down the temporary ramp into the building.

C. Suzanne suggested the following accessibility improvements be added to the renovation scope.

1. A ramp access from the Central Courtyard.

2. Elevator access to the Basement and Subbasement.

3. Toilet rooms in the Basement and Subbasement if these areas are occupied.

D. Toilet Rooms

1. Jim advised that the renovation scope will include gutting and reconstructing all toilet rooms for disabled access.

2. If necessary, the fixture count will be reduced to provide adequate space.

3. It was also pointed out that the new *Science Laboratory Building* will have toilet rooms and an elevator adjacent to the South Wing of the Geology Building.

6.3 LABORATORIES AND SUPPORT SPACE

A. Suzanne stated that her department has received no complaints regarding access to existing spaces within the Geology Building.

Action	Item	Description

B. The renovation scope should include accessible workstations, fumehoods and eyewashes (5%).

C. Computer stations also need to be accessible with both sitting and standing positions.

6.4 PARKING

A. The Geology Building loading area is one of the drop points for the ADA tram.

B. Consideration is being given to dedicating the parking lot east of Boyce Hall exclusively to handicapped parking. There is not currently enough H.C. parking in the core of the campus.

This report was prepared & distributed by *JLP Architects, Inc.* on March 20, 2001.

JLP Architects, Inc.

James L. Pirdy, Architect
Principal
JLP/km

Lisa Peloquin to distribute to UCR
c.c. Chris Smith, Degenkolb Engineers
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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 6, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase/Telecommunications and Media**

ATTENDEES:

Kieron M. Brunelle	Educational Fac. Planning Consultant, UCR College of Natural & Agricultural Sciences
Jill C. Hishmeh	UCR Manager Communications Services
Patricia R. Knapik	UCR Associate Director Media Resources
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Curtiss Rosten	UCR Engineering & Technical Services Manager

Action	Item	Description

7.1 Lisa Peloquin gave an overview of the Geology Building Renovation project.

A. The single-story portion of the South Wing will be demolished to create space for the new *Sciences Laboratory 1* building.

B. The decision has been made to renovate the Geology Building rather than to demolish it. Because no surge space is available, the construction will have to be phased.

C. A major Deferred Maintenance project is underway to replace the HVAC supply and exhaust systems. This work will also be phased and will need to be coordinated with the overall renovation project.

D. A traditional Detailed Project Program is being developed to define the renovation scope and budget. No funding source has been identified as yet.

7.2 Jim asked the representatives to describe the telecommunications and media resources what needs to be provided in the instructional labs and any general assignment classrooms.

A. Room 1408 in the Geology Building is a recently renovated general assignment classroom and is a good example.

Action	Item	Description

B. Room 1408 is equipped with the following resources:

1. Projection Screen
2. Data/Video Projector
3. VCR
4. CD/DVD Player
5. Amplifier and speakers
6. Document Camera
7. Data and Power Connections at each Student Station
8. Zone lighting (15%/33%/60%/100% light levels)

C. Patricia felt that it was important to provide for the projection of any type of digital content.

1. Each instruction station should have a data port.

2. A direct telephone line, if possible, to Media Resources for instructor assistance is desired.

3. Media Resources would like to have the capacity for satellite downlinks although no requests have been made for this by any departments.

4. A "hard" connection (jack) in the ceiling for future wireless data connection should be provided.

5. At least one voice communication jack per classroom is needed.

7.3 Cabling

A. Jill Hishmeh advised that it has been very difficult to pull cable in the Geology Building.

B. Jill provided information on the location of cabling to the Geology Building and the location of existing communication equipment closets (see attachments).

1. Room 345 contains the hub for the first floor and basement.

2. Room 1408 has a separate hub.

3. Room 1311 contains the hub for the second floor.

Action	Item	Description
UCR Comm. Serv.	C.	The Geology Building needs additional fiber optic capacity and more communications equipment closets. Jill will provide information on the standards that are being developed for the campus.
	D.	At least one 8'x10' communication equipment closet should be provided per floor/per wing in the renovation plan.
	E.	CAT 5E should be incorporated into any new project or renovation currently being planned on the campus.
UCR	7.4	Jim Pirdy requested that UCR provide as-built drawings of recently renovated general assignment classroom 1408. ***UPDATE: These drawings have been received by JLP.***

This report was prepared & distributed by *JLP Architects, Inc.* on 3.20.2001.

JLP Architects, Inc.

James L. Pirdy

James L. Pirdy, Architect
Principal
JLP/km

Lisa Peloquin to distribute to UCR

c.c. *Chris Smith, Degenkolb Engineers*
Alan Wilson, Bechard Long & Associates
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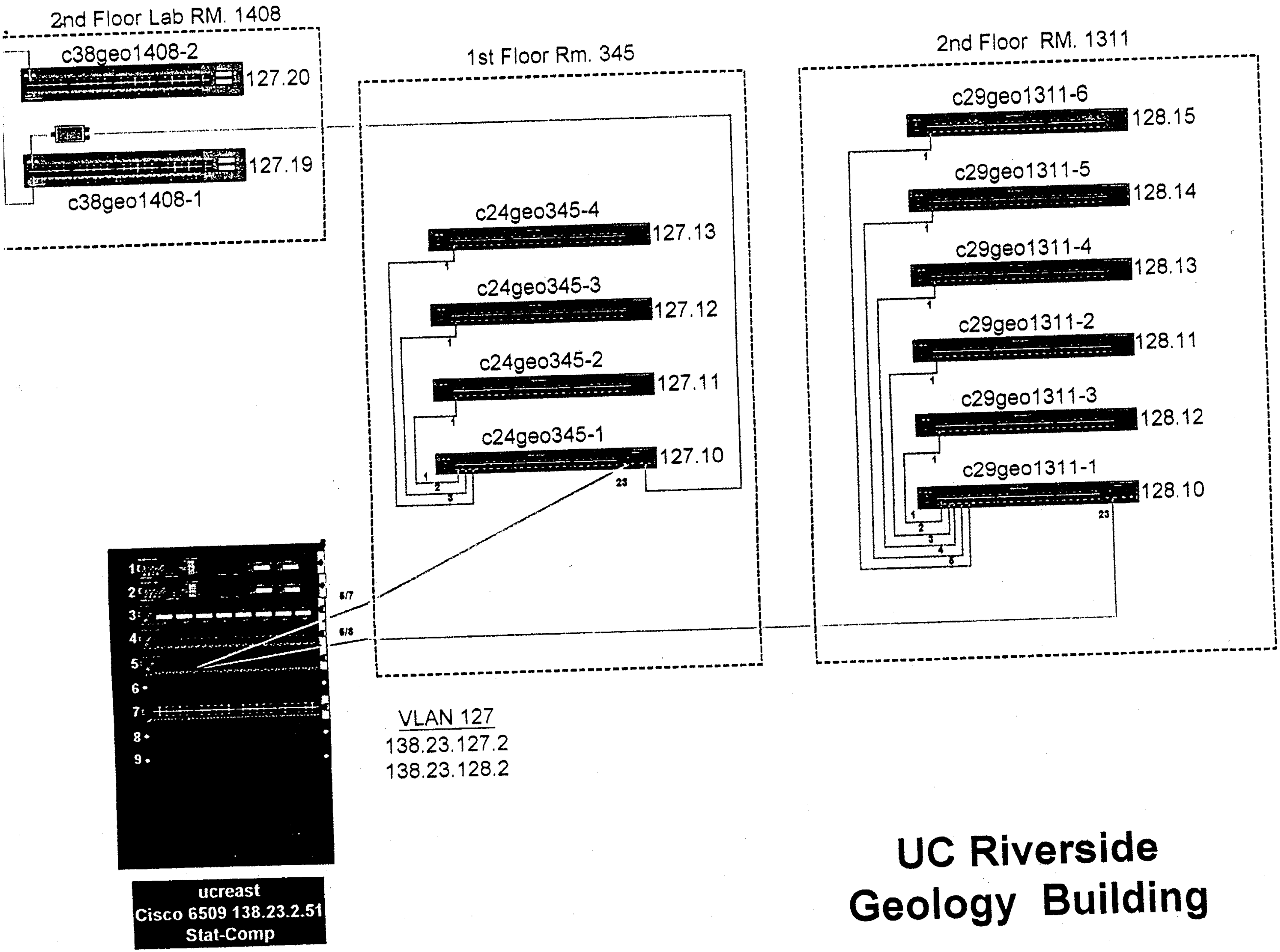
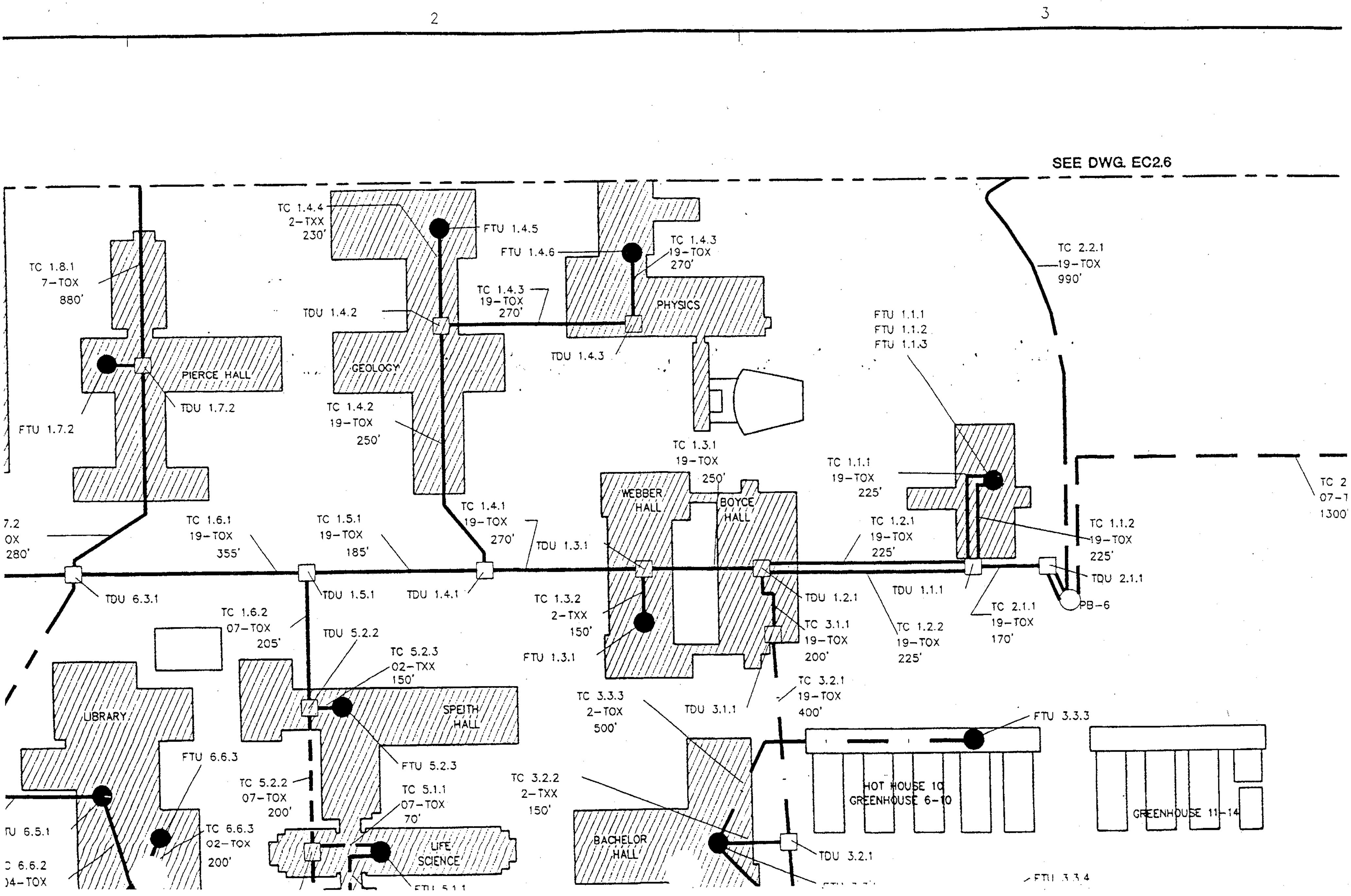


UC Riverside Geology Building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2-TXX
150'
HOT HOUSE 10
GREENHOUSE 6-10
GREENHOUSE 11-14
TC 6.6.3
02-TOX
200'
LIFE SCIENCE
BACHELOR HALL
TDU 3.2.1

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 6, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase/Meeting with Campus Fire Marshal**

ATTENDEES:

	Kieron M. Brunelle	Educational Fac. Planning Consultant, UCR College of Natural & Agricultural Sciences
	Scott D. Corrin	UCR Campus Fire Marshal EH&S
	Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
	James L. Pirdy, Architect	JLP Architects, Inc.

Action	Item	Description

8.1 GENERAL INFORMATION

Lisa Peloquin and Jim Pirdy gave an overview of the proposed *Geology Building Renovation* project to Scott.

8.2 FIRE SPRINKLERS

A. The Geology Building presently only has fire sprinklers in the basement.

B. The existing fire sprinkler riser located in the basement will be used to support the new Science Laboratories Building.

C. Scott feels that if the fire sprinkler system is extended throughout the building as a part of the renovation project, utilization of hazardous chemicals by building users could double.

8.3 FIRE ALARM SYSTEM

A. The fire alarm system should be upgraded and should provide smoke detection in every space in the building. The upgrade should include ADA complying strobes.

B. The existing fire alarm control panel, located in Room 327 of the basement, has been recently upgraded to an addressable analogue system. The upgraded panel has enough capacity to serve the remainder of the building.

Action	Item	Description

8.4 EXITING

A. Because a change in use is proposed for the building and because the renovation will fully sprinkler the building and add smoke detectors, the stairs can remain unenclosed.

1. ADA upgrades will be required.

2. A two-hour rating of the shafts will not be required.

3. Sprinklers and smoke detectors will eliminate the need for areas of safe refuge in the building.

B. Scott expressed concern about the subbasement. This area needs legal stairs and an elevator.

JLP C. Scott feels the building can remain a B occupancy. If control zones of 10,000 s.f. or less are established, larger open labs can be accommodated within the renovated building. Scott will need to review the following to establish this:

1. Exiting Plan
2. Control Zone Plan

8.5 EMERGENCY GENERATOR

A. The Geology Building does not have its own emergency generator. An existing emergency generator located in the Physics Building currently serves Physics, the Geology Building, Pierce Hall and the new Science Laboratories Building.

B. The capacity of this generator is not sufficient to serve the connected load.

C. Scott believes the emergency generator that serves Bourns Hall has spare capacity.

JLP D. JLP Architects, Inc. will forward this information to Bechard Long & Associates, consulting engineers for the development of the DPP document.

Action	Item	Description

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JLP Architects, Inc.

James L. Pirdy, Architect
Principal
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Lisa Peloquin to distribute to UCR

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 6, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase/Meeting with Department of Environmental Sciences**

ATTENDEES:

Chris C. Bradley	JLP Architects, Inc.
Polly Breitkreuz	Space Management - UCR Academic Planning & Budget
Kieron M. Brunelle	Educational Fac. Planning Consultant, UCR College of Natural & Agricultural Sciences
Donna Cooney	Department of Environmental Sciences, UCR
Tom Meixner	Department of Environmental Sciences, UCR
Dave Parker	Department of Environmental Sciences, UCR
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Kurt Schwabe	Department of Environmental Sciences, UCR
Lao ShengWu	Department of Environmental Sciences, UCR

Action	Item	Description

9.1 INTRODUCTION AND PROJECT BACKGROUND

A. Lisa Peloquin gave an introduction to the project.

B. Jim Pirdy gave an overview of the work completed to date and stressed the importance for the planning team to understand existing conditions within the building and the need to fit proposed programs into the available area.

1. Diagrams illustrating the proposed zoning of the Geology Building were presented (see attachment). These diagrams show the Department of Environmental Sciences occupying the second floor.

2. Basic Laboratory Module: a prototypical laboratory module based on the existing structural grid of the building was presented (see attachment).

   a. The proposed module has aisle widths that range from 4'-0" to 4'-6". In a new building these widths would be 5'-0".

Action	Item	Description

b. Based upon discussions between JLP and the *Division of the State Architect,* the narrower widths will be acceptable as long as a continuous path of travel is maintained for an individual in a wheel chair.

c. The "Basic Module" is very similar to recently completed Environmental Science Laboratories located in Bourns Hall.

3. Two studies which combine the Basic Module into laboratory suites were presented (see attachment).

a. *Study #1* placed support spaces between each double module laboratory suite with a shared entry vestibule.

b. *Study #2* placed two double module laboratory suite adjacent to each other with support spaces at ends.

4. *Laboratory Functional Diagrams*: the laboratory module and suite studies are the basis for developing a preliminary overall organization within the building for research, instruction and support space.

a. *Scheme #1* (see attachment) is based on study 2.

b. *Scheme #2* (see attachment) is based on study 1.

c. The purpose of the Laboratory Functional Diagrams was to develop a preliminary assessment of how many principal investigators can be accommodated within the existing building.

C. Lisa Pointed out that the Central Wing will be zoned for non-laboratory uses such as administrative offices, faculty offices and the GIS Computer Lab.

D. The preliminary studies provide up to eight (8) instructional labs/classrooms to be located on the first floor of the South Wing.

E. Lisa acknowledged that the proposed renovation will not satisfy all of the Department of Environmental Sciences space needs.

1. The renovation planning along with projections that are being developed by Polly will determine what departmental spaces

Action	Item	Description

need to flow into Pierce Hall.

2. Expansion of the Geology Building is not presently an option because of site constraints. An expansion would require more area than is currently available.

F. If all goes well, depending on new buildings coming online, Kieron believes the Geology Building renovation can be completed in 3-5 years at a cost of $15.0 million dollars or more.

1. No source of funding has been identified.

2. The campus hopes to obtain additional Deferred Maintenance funds to off-set the cost.

9.2 DEPARTMENT OF ENVIRONMENTAL SCIENCES PROGRAM NEEDS

A. Dave Parker felt that the basic laboratory module is fine. He expressed concern about the 9'-0" space between the bench work in the support module - it is too wide and wastes too much space.

1. Jim showed an alternate study of the support module with a different subdivision of the space.

2. The faculty members felt that the alternate study was better.

3. Lao Sheng Wu did not like the shared entry vestibule. All of the users preferred to have entry directly into the laboratory space in order to maximize usable space in the support module. This would also make it easier to move large equipment in and out of the labs.

B. Dave emphasized the difficulty of planning for building occupants who are unknown because they have not yet been hired. His best projection is that by 2007, the Department will need to accommodate twelve (12) "wet" faculty and six (6) "dry" faculty.

1. Consequently, the concept of modular, flexible space that can be converted is very important.

2. The ability to expand and contract to respond to changing needs is important.

Action	Item	Description

C. Support Spaces provided in the Science Lab Building are "bare bones".

1. Spaces not included in the building that need to be provided in the Geology Renovation include a growth chamber and animal space.

2. Dave felt a ratio of 150 s.f. of support space per investigator should be the planning goal. This was the standard used in planning the Science Lab Building.

D. Dave passed out the Department of Environmental Science preliminary "Wish List" for Centralized Support Space (see attachment). The list itemized the following spaces:

1. Mineralogy Instrumentation Lab.
2. Radioisotope Facility
3. Rooms for Incubators, Growth Chambers, Aquaria, and Terraria.
4. Analytical Instrumentation Lab
5. Cold Room (walkin)
6. Physical Characterization of Soils/Sediments
7. GIS/Computer Lab

9.3 DEPARTMENT OF ENVIRONMENTAL SCIENCES ANCILLIARY FAILITIES

A. Donna expressed concern about how the Long Range Plan for the College of Natural and Agricultural Science would impact structures such as the "lean-to" building and Green House #6. Both of these structures are used by the Department for storage and processing of soils samples.

1. Kieron responded that there are no immediate plans to demolish these structures.

2. The long range plan calls for moving most of the greenhouses to the west campus and keeping only necessary ones on the "core" campus.

3. Lisa felt it would not be appropriate to move these functions into the Geology Building.

4. Dave advised that large trash can size soil samples go to the greenhouse. Small samples used for analysis go to the labs.

Action	Item	Description

Storage for small soil samples needs to be provided in the Geology Building.

Tom Meixner left the meeting at this point.

9.4 INSTRUCTIONAL SPACE NEEDS

A. Predicting the need for instructional spaces is difficult for the Department of Environmental sciences because of faculty turnover and uncertainty over projected growth.

1. They want to keep their options open because new faculty may want more instructional space.

2. At the same time they do not want to request space that may go unused.

3. Currently the Department does not teach many labs, mostly small specialized classes.

B. The Department needs two (2) Soils Labs

1. A twenty-four (24) student station lab which can accommodate dirty, messy, contaminated materials. The existing lab occupies room 1265.

2. A twelve (12) student station lab to teach more specialized courses. This lab could be shared.

C. Soils Lab (24 Student station)

1. This lab is a fairly conventional chemistry lab for study of soils.

2. The lab benches should not have any superstructure (reagent shelves) that would block views of the instructor demonstration area.

3. Two fumehoods are adequate.

4. Storage for microscopes should be provided.

D. Soils Lab (12 Student Stations)

1. This lab should be much more flexible.

Action	Item	Description
		2. It should be configured with low benches for dry use and simulations.
		3. It should be capable of providing overflow space for the larger teaching lab as well as supporting graduate level laboratory work.
		4. The benches should be fitted with data ports.
		E. A Prep Room between the two instructional labs is very desirable. Storage of materials and equipment is very important.
		F. Computer Lab: The campus would like to develop a generic computer lab of 24 station in the Geology Building which would be shared by Earth Sciences and Environmental sciences.
		1. The GIS platform would be incorporated into the shared lab.
		2. The lab would be managed by the campus computing.
UCR/AP&B		3. The problem is to resolve how the facility will be shared between the two departments. Polly will look into this issue.
		G. Dave described the Department's biggest problem with teaching labs as the lack of flexibility (high benches with services vs. low benches with no services - each has very different uses).
JLP		H. Kieron proposed the idea of teaching labs shared by Environmental science and Earth science. JLP will study the programming impacts to achieve this goal.
	9.5	DRY LABS: Kurt Schwabe gave an overview of the requirements for these facilities.
		A. These labs are primarily occupied by economists, policy specialists and statisticians.
		B. Approximately six (6) faculty will occupy these labs.
		1. Two (2) statisticians and nine (9) to twelve (12) graduate student need to be accommodated.
		2. A room to house computers is also required.

Action	Item	Description
		C. Kurt estimates that the total space requirement for these spaces is approximately double the space currently occupied in Bourns Hall (800 s.f.).
		1. This 1600 s.f. space does not include faculty offices.
		2. The research space could be one large room with a panelized open office system (similar to Bourns Hall A122).
		D. Telephone and data connections are important as this research group is very digitally oriented. Very little hard storage is needed.
	9.6	DEPARTMENT OFFICES
		A. The preliminary zoning of the second floor of the Geology Building calls for the Department Offices and faculty offices to be located in the Central Wing.
		1. The faculty liked the idea of clustering the administrative and faculty offices, and support areas in a central location.
JLP		2. Dave is concerned about fitting all of these spaces into the Central Wing. JLP will test this.
		B. The Department needs access to a conference room that will seat at least 33 people.
		1. This facility will be shared with Earth sciences.
		2. Dave would like to see the capability for video conferencing incorporated into the design.
		3. Kieron advised that this is being discussed in the Dean's Office, but the Geology Building may not be the right location for it.
		C. The departmental representatives felt strongly that office or desk space for graduate students should not be located within wet laboratories. Space should be found elsewhere.
		D. Teaching Assistants need office space where they can meet with undergraduate students.
		1. T.A. offices can be used on a rotating or scheduled basis.

Action	Item	Description

2. The number of T.A.'s is difficult to quantify.

UCR/AP&B

3. Polly will provide the planning team with an estimated total number.

9.7 BUILDING SECURITY

A. Donna expressed concern about building security. There have been numerous thefts of computers.

B. Jim advised that the levels of security (exterior building access, individual labs and offices) need to be defined. Security is a significant problem because the building is a 24/7 facility.

1. The proposed zoning of the building with instructional facilities concentrated on the first floor of the South Wing may help solve the problem.

2. The college is looking at card key access but this is very expensive.

9.8 MUSEUM

A. Frequent tours of this facility by K-12 students create a serious noise problem for adjacent offices and labs.

B. The DPP should address the need for acoustical attenuation of this space.

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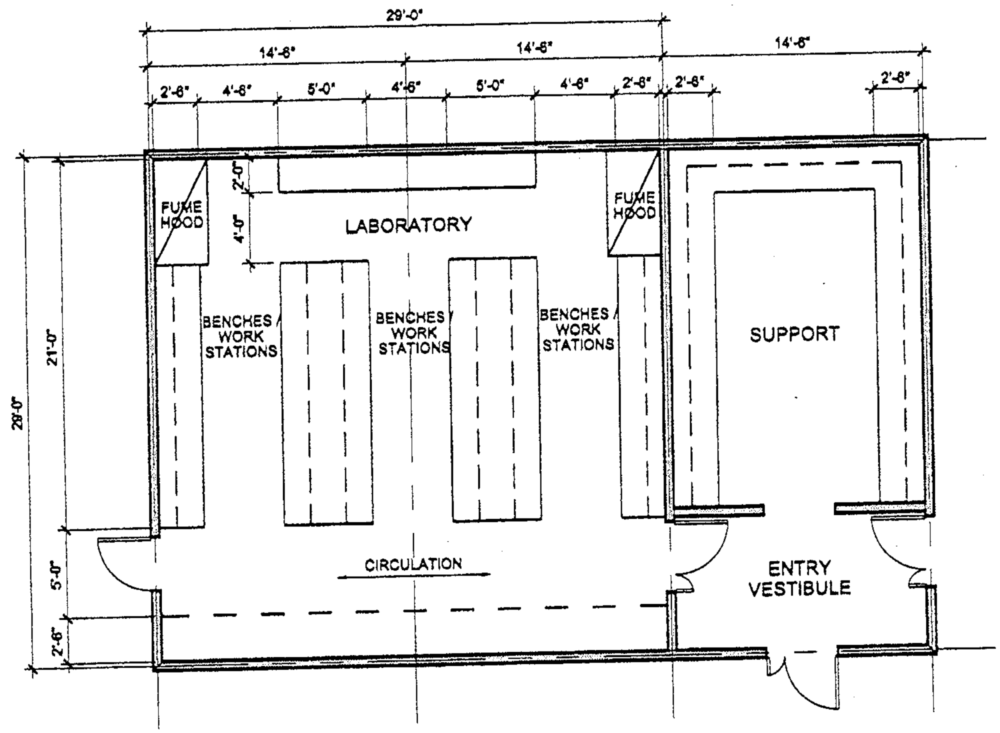
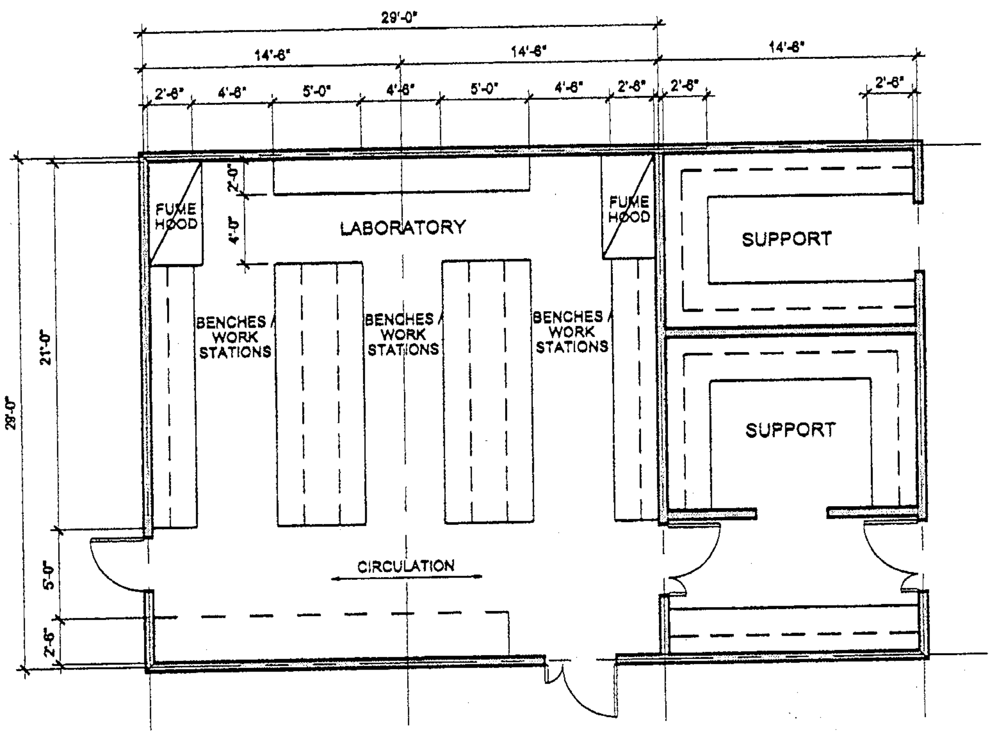


BASIC MODULE

SCALE : 3/16" = 1'- 0"

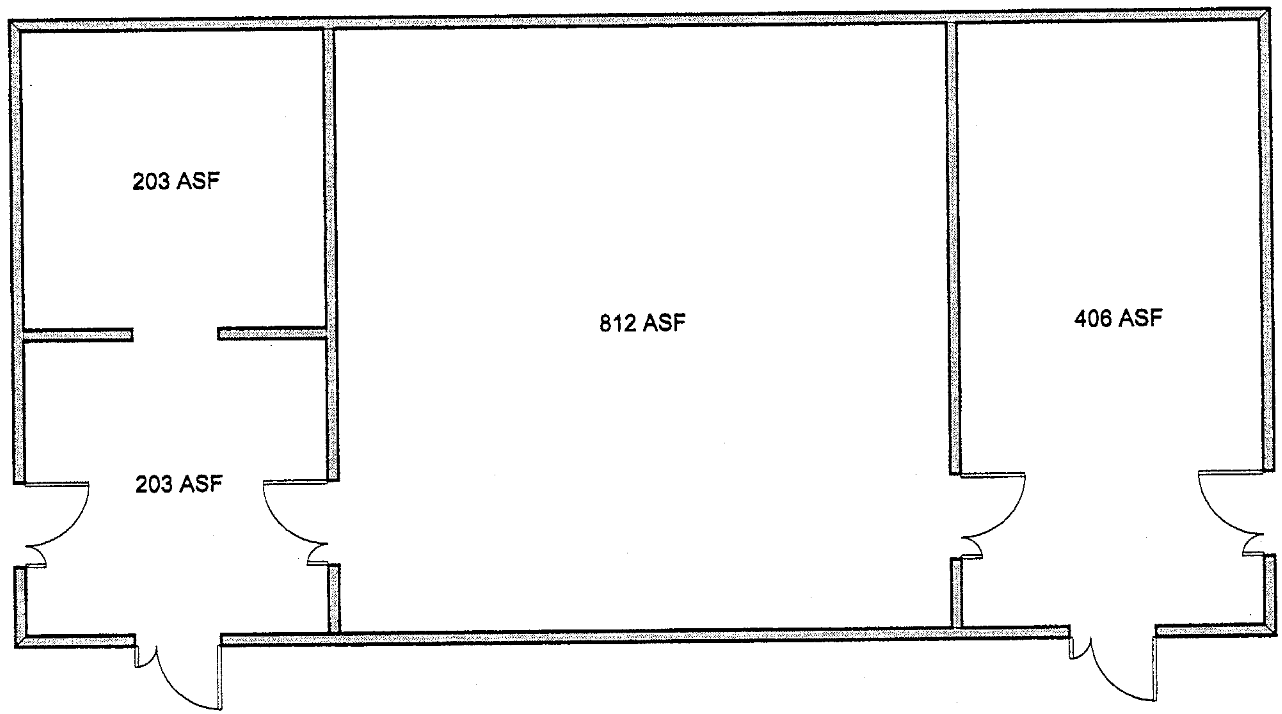
MARCH 2, 2001



BASIC MODULE

SCALE : 3/16" = 1'- 0"

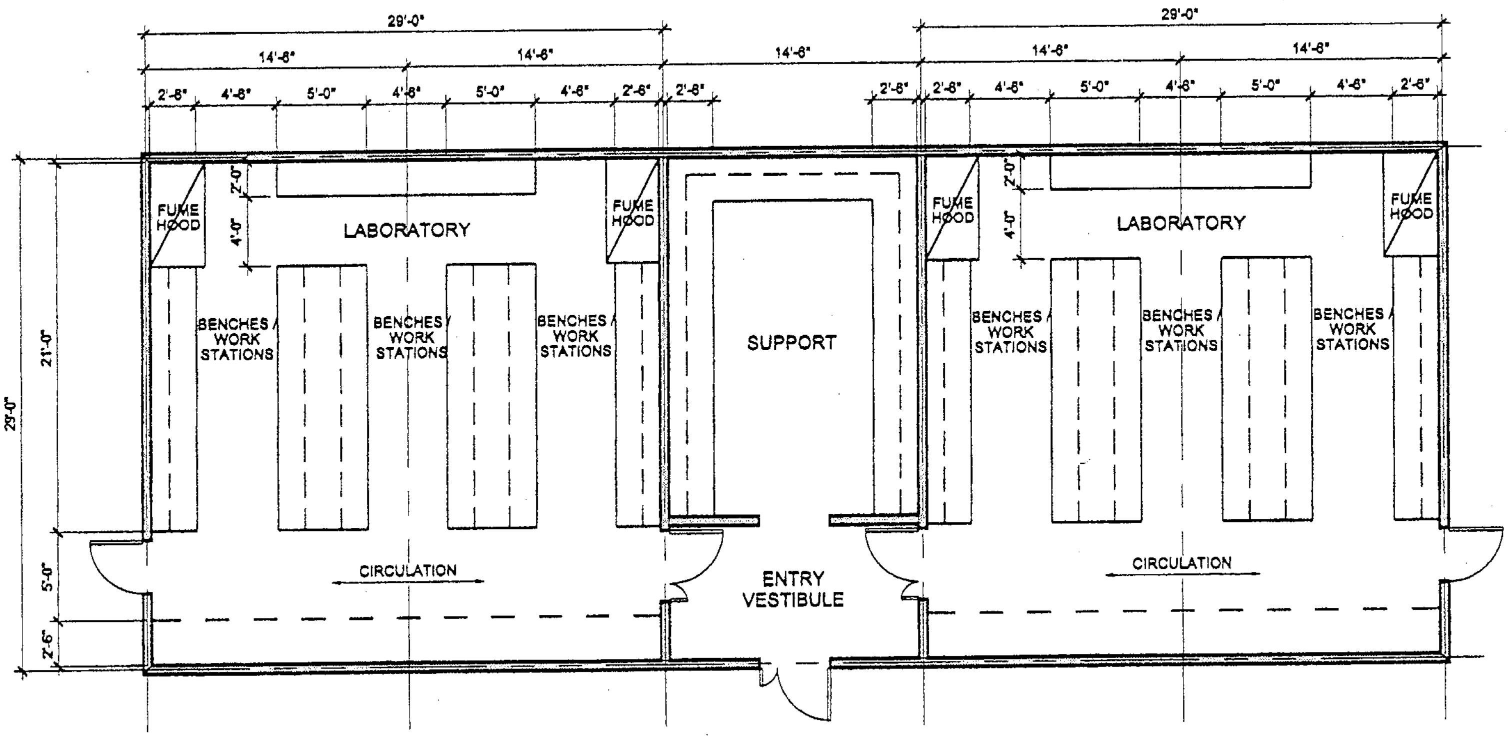
MARCH 2, 2001



PERMUTATIONS OF EXISTING BUILDING MODULE

SCALE : 3/16" = 1'- 0"

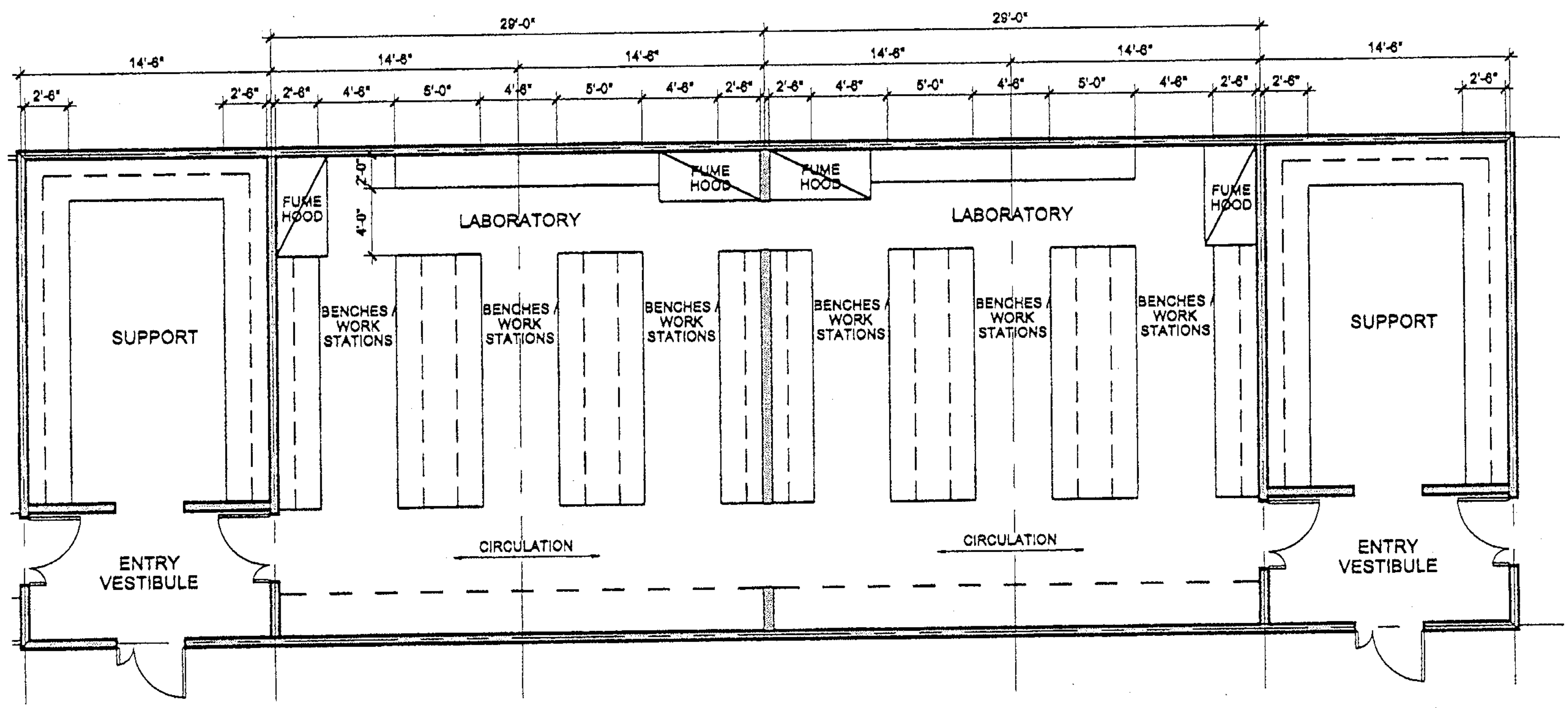
MARCH 6, 2001



STUDY 1

SCALE : 3/16" = 1'- 0"

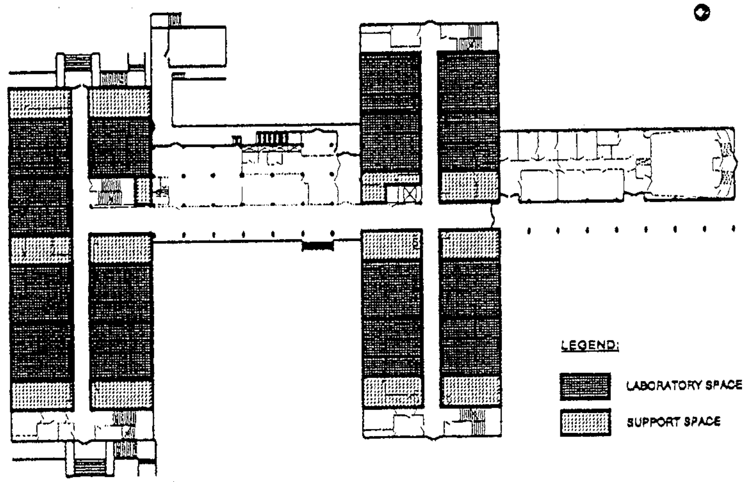
MARCH 2, 2001



STUDY 2

SCALE : 3/16" = 1'- 0"

MARCH 2, 2001



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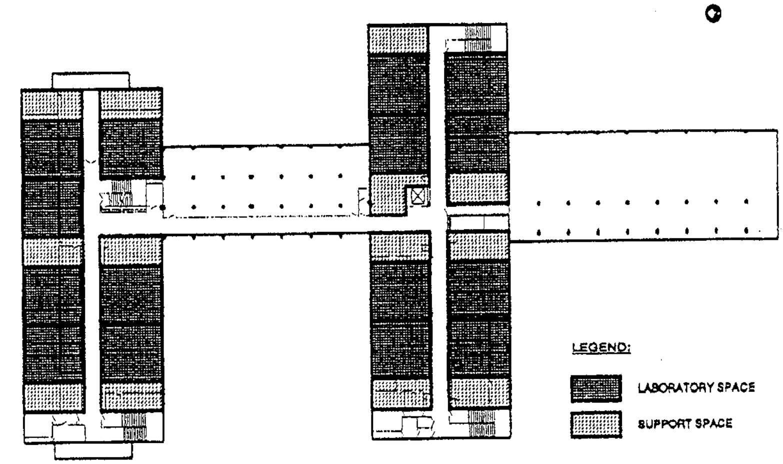

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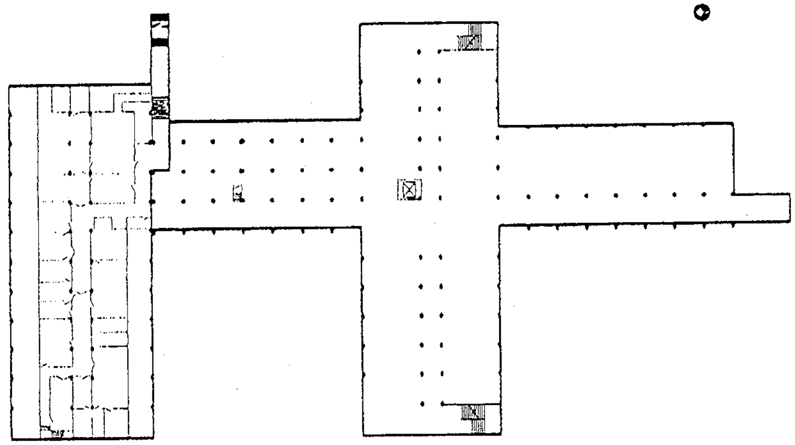
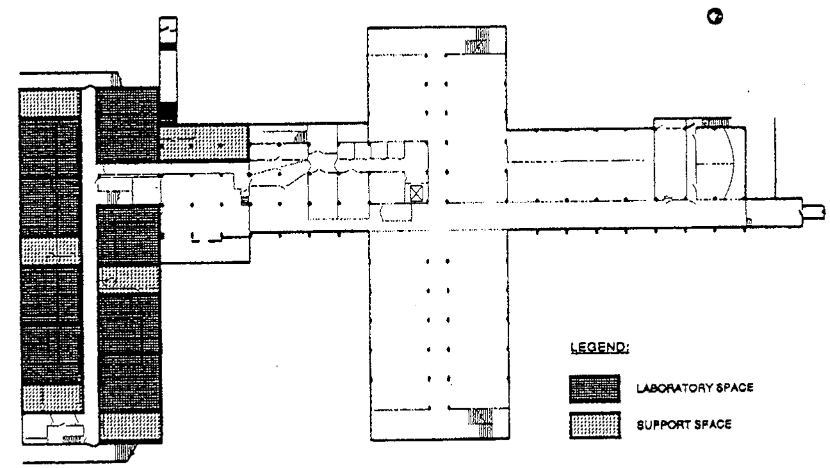


SUB-BASEMENT



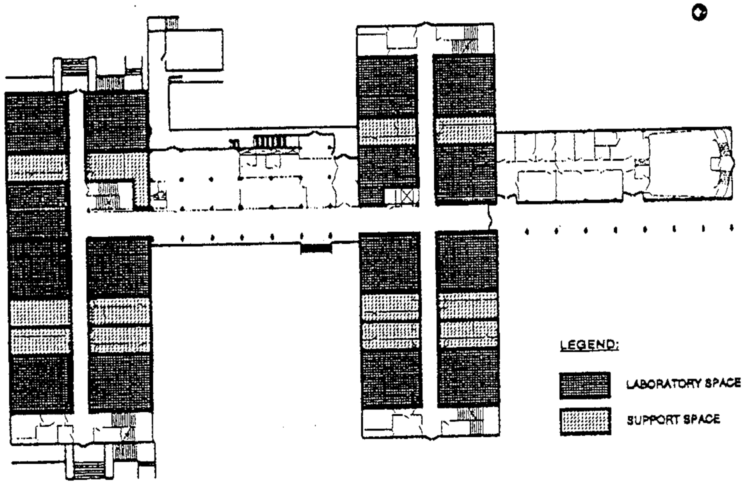
BASEMENT

LABORATORY FUNCTIONAL DIAGRAMS
SCHEME 1
GEOLOGY BUILDING RENOVATION

UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

MARCH 2, 2001



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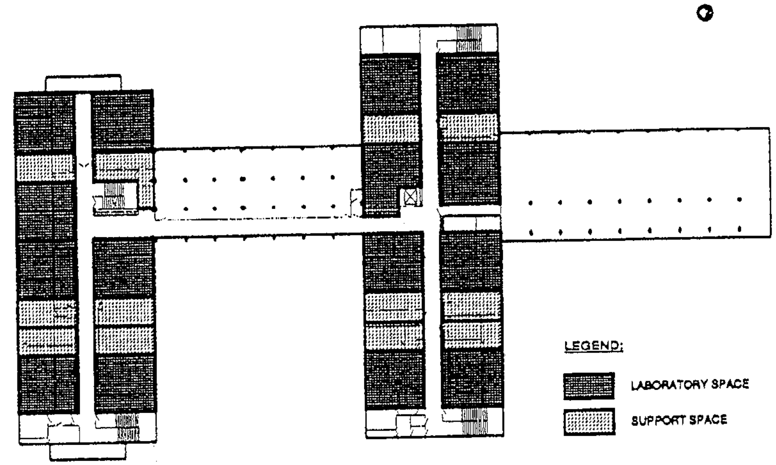

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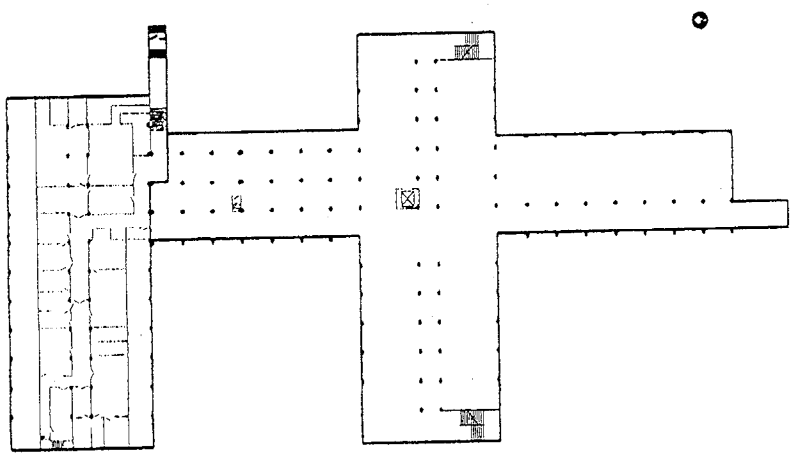

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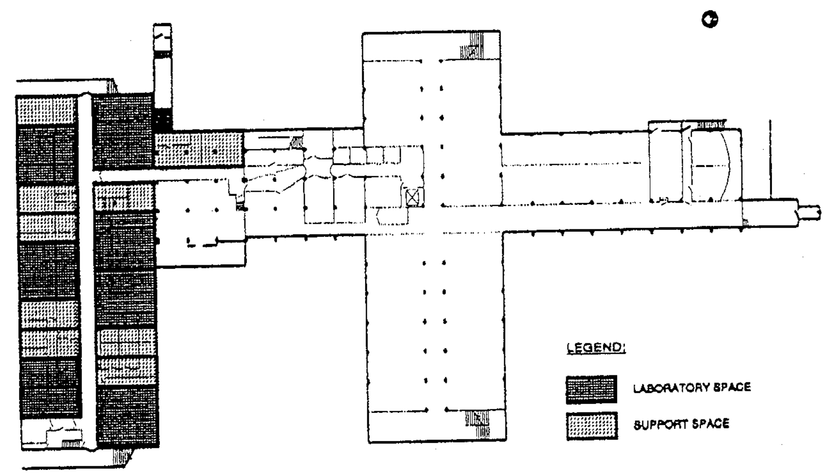

BASEMENT

LABORATORY FUNCTIONAL DIAGRAMS
SCHEME 2

GEOLOGY BUILDING RENOVATION

UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

MARCH 2, 2001

Environmental Sciences Department
Preliminary "Wish List" for Centralized Support Space in Remodeled Geology

1. Mineralogy instrumentation lab

    - ~275 ft^2
    - X-ray diffractometer, thermogravimetric analyzer, & related equipment
    - somewhat vibration sensitive

2. Radioisotope facility

    - ~275 ft^2
    - liquid scintillation counter, gamma counter
    - isotope storage, waste handling
    - fume hood (small)

3. Room(s) for incubators/growth chambers/aquaria/terraria

    - see current Geology 2229, 2460H
    - ~250 to 400 ft^2
    - extra power, esp. 220 V
    - extra cooling capacity

4. Analytical instrumentation lab

    - ~275 or 550 ft^2
    - continuous flow analyzers
    - carbon analyzers
    - chromatography
    - snorkels needed, probably no fume hood

5. Walk-in cold room

    - see Geology 426
    - include freezer section?

6. Physical characterization of soils, sediments

    - 300 to 500 ft^2
    - small fume hood?
    - flexible bench arrangement

7. GIS/computer lab (research)

    - size?
    - plenty of outlets, data lines
    - no fixed cabinetry?
    - curtailing our departmental growth

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 9, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: UCR Geology Bldg. Renovation/Physical Plant & Materials Management

ATTENDEES:

Dick Heller	UCR Physical Plant
King Henderson	UCR Director of Materials Management
Earl LeVoss	UCR Physical Plant
George MacMullin	UCR, OD&C
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.

Action	Item	Description

10.1 INTRODUCTION AND OVERVIEW

A. Lisa Peloquin and Jim Pirdy gave an overview of the Geology Building Renovation project scope and schedule.

B. The purpose of the meeting was to give the Physical Plant and Materials Management departments an opportunity to have input as the design criteria is developed for the project.

10.2 PHYSICAL PLANT

Earl Levoss stated that his department's major worries are the mechanical systems in campus buildings.

A. Electrical System

1. The Geology Building existing system is maxed out.

2. It is not on the 12KV campus system.

3. This should be changed during the renovation.

B. Emergency Generator

1. The Geology and Physics Buildings are currently served by an emergency generator in the basement of the Physics Building.

2. A project is underway to replace the existing emergency

Action	Item	Description

generator from a 150 KW natural gas unit to a 450 KW diesel powered unit.

3. The new generator will have sufficient capacity to provide power for emergency lighting and some circuits within the building.

4. No emergency power will be provided for the elevator and fumehoods.

5. No additional capacity will be provided to the Geology Building. Consequently, the renovation scope may need to include an additional generator.

6. A major problem is where to locate the new generator.

C. Lighting

1. The campus needs to be able to obtain replacement parts for light fixtures.

2. Manufacturers are sometimes a problem.

3. Custom light fixtures are a major problem. Physical Plant has had to replace custom fixtures in recently completed buildings because of the difficulty and expense of finding parts to maintain them.

4. All specified light fixtures should be as energy efficient as possible.

D. Plumbing

1. Physical Plant prefers American Standard and Sloan fixtures and components specified for restrooms.

2. In the labs they prefer Chicago, Water saver and T&N.

3. Dick Heller advised that the vacuum pumps in the Geology Building are fairly new (3 to 4 years) and are in good working order. A new tank is needed and the piping should be replaced.

4. The chilled water capacity in the building is adequate but it does not have proper circulation between the North and South Wings.

Action	Item	Description

JLP/BLA E. Compressed Air: Most labs have approximately 15-20 PSI. Several labs require 150-200 PSI. This system requires further investigation to develop the proper design criteria for the renovation.

F. Fire Alarm System

1. The Geology Building fire alarm panel is new and some of the devices have been upgraded.

2. The panel can accommodate 500 devices and it is believed that as many as 400 spares may remain.

JLP/BLA 3. The planning team needs to verify whether the existing panel can accommodate the renovation or if a new panel will be required.

G. Miscellaneous Items:

1. Window washing is a maintenance concern. This should be considered if the building's glazing and sunshades are replaced.

2. Floor coverings in the labs should either be a welded, seamless material or sealed concrete.

3. As a general rule, the Physical Plant Department prefers that specified controls and components be American Made and easily available.

10.3 MATERIALS MANAGEMENT

King Henderson advised that his departments main concern is access to the building. The existing loading dock access, which will be maintained, is fine.

This report was prepared & distributed by *JLP Architects, Inc.* on 3.20.2001.

JLP Architects, Inc.

James L. Pirdy, Architect
Principal
JLP/km

Lisa Peloquin to distribute to UCR
c.c. Chris Smith, Degenkolb Engineers/Alan Wilson, BLA/Graham Anderson, C.A

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 9, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **UCR Geology Building Renovation/Environmental Health & Safety**

ATTENDEES:		
	Kieron M. Brunelle	Educational Fac. Planning Consultant, UCR College of Natural & Agricultural Sciences
	George MacMullin	UCR, OD&C
	Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
	James L. Pirdy, Architect	JLP Architects, Inc.
	Russell Vernon, PhD.	Laboratory Research Specialist, UCR Environmental Health & Safety

Action	Item	Description

11.1 INTRODUCTION AND OVERVIEW

A. Lisa Peloquin and Jim Pirdy gave an overview of the Geology Building Renovation project. It was stressed that the renovated building will be a less intensive research facility with a reduction of approximately 40% of the fume hoods which are presently located in the building.

11.2 CHEMICAL INVENTORY

Russell Vernon provided a hazardous chemical inventory and drawings of the Geology Building illustrating where the items and amounts are located.

A. The inventory was developed in 1997. There is a legal requirement that this inventory be updated every (3) years. UCR has *not* done this.

B. Kieron asked why we need the inventory. Russell felt that the overall amount of hazardous chemicals was relatively low. He did point out that the Department of Environmental Sciences has an unusually higher amount of biological components.

UCR/EH&S 11.3 Russ advised that he UCR campus has a draft *Standard of Laboratory Design Guidelines.* Jim Pirdy requested that Environmental Health and Safety provide a copy of these guidelines to the planning team.

Action	Item	Description

11.4 LABORATORY DESIGN CRITERIA

A. EH&S prefers that the labs have ventilated storage cabinets for flammables and chemicals (ventilated to the fume hood exhaust system).

B. They also prefer to have separate locations for eating outside of the labs.

C. It is acceptable to have graduate student workstations (desks) in the labs as long as there is a low wall 15" to 18" above the bench top to separate the lab bench and desk.

D. EH&S prefers chemical resistant epoxy bench tops with a 1/4 front lip to prevent spills.

F. Task lighting on the bench tops is also desirable.

G. The only prechloric fumehood on the UCR campus is located in the Geology Building (Room 2247 or 2265). If the hood is replaced it should have a special interior lining.

11.5 SPECIAL PROBLEMS AND CONCERNS

A. The volume of acids used to date rocks are very high. These need to be removed daily from the building.

B. Kieron asked what the issues are regarding biohazards.

1. Viruses and bacteria are caught by filters in biosafety cabinets.

2. Vapors are not captured by filters.

UCR C. Russ emphasized that it is important to identify the presence of crystals in exhaust ducts that are the result of elevated levels of prechloric acid in order to prevent explosions during demolition.

B. Donna Cooney of the Department of Environmental Sciences has raised the issue of indoor air quality in the building. Has any testing or sampling been done? Russ advised that none has been done recently.

C. The utilization of the subbasement was discussed.

1. Russ believes that one hour or more per day requires that the

Action	Item	Description
		subbasement be considered an occupied space.
		2. Kieron believes the standard is four or more hours per day.

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Lisa Peloquin to distribute to UCR

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 9, 2001*

Revised (in bold italics) & Reissued on 4/16/01

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase/Meeting - Institute of Geophysics & Planetary Physics (IGPP)**

ATTENDEES:		
	Kieron M. Brunelle	Educational Fac. Planning Consultant, UCR College of Natural & Agricultural Sciences
	Harry Green	Director, Institute of Geophysics & Planetary Physics
	Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
	James L. Pirdy, Architect	JLP Architects, Inc.

Action	Item	Description

12.1 INTRODUCTION AND OVERVIEW

A. Lisa Peloquin gave a brief overview. The purpose of the meeting was to learn about the specific needs and requirements of the Institute of Geophysics & Planetary Physics (IGPP). Harry Green was asked to share his thoughts on where he sees the IGPP in five years - at the completion of the Geology Building Renovation - and five years beyond that.

12.2 IGPP RESEARCH DIRECTION

A. Harry feels the "crystal ball" approach - how it will be in the future - is very difficult. The current candidate for Director of the IGPP will help to focus this planning.

B. The unit is schizophrenic located in two buildings (Physics and Geology). He would like to see the unit have contiguous space but does not believe that is in the cards.

C. The direction of the research within the institute is away from wet chemistry and toward ***dry laboratory and*** field based geophysics (seismology and electromagnetic sounding). Consequently, new labs will be computer intensive.

D. UCR is the repository of a National Science Foundation funded consortium of researchers who study electromagnetic sounding and

Action	Item	Description

magnetotelluric work studies.

1. The purpose of the consortium is to provide state-of-the art instrumentation for this specialized research and eliminate the need for individual researchers to buy equipment.

2. Space is needed to house the consortium's equipment and for the technicians who service it.

C. Harry also sees the need for laboratories such as his own which are the inverse of the computer intensive labs previously described. He believes there will be more researchers like himself who will be studying earthquake physics.

1. His lab is not a traditional wet lab although it does use lab gases (vacuum, air, gas).

2. Harry's lab includes heavy machinery which requires significant amounts of clean, uninterruptible power. He would like to have sufficient emergency backup power to undertake much longer experiments.

3. The weight of the equipment is more of an issue than vibration (it is not vibration sensitive).

4. Some of the equipment can create electrical interference. If his lab remains in its present location, there are serious problems with bringing in additional heavy equipment.

5. Cleanliness is an issue. Grinding and polishing equipment needs to be separated from microscopes.

6. Harry needs open lab space that he can fill. Most of his heavy equipment sits on steel tables or is free-standing.

7. Harry's research program is ramping up. He has three proposals pending with the National Science Foundation. If he is successful, he may need additional space.

12.3 MISCELLANEOUS PLANNING ISSUES

A. Kieron asked if the IGPP will need an instrument lab (lasers, diamond anvils, etc.).

1. Harry believes ***multi-user*** analytical instrumentation should be centralized on the campus.

Action	Item	Description

2. The College should plan a significant space to house sophisticated instrumentation.

3. The facility should provide sufficient levels of cleanliness, vibration control, and protection against electrical interference.

4. The Geology Building subbasement might be a place to locate this facility

B. The existing high, open ceilings in the Geology Building work well.

C. Offices

1. Harry prefers his office down the hall from his lab and believes it gives him more privacy. His office should be "separate but near" (the central wing would be fine).

2. He would like his graduate students to be located close to the lab.

D. Phasing/Logistics

1. Harry needs to relocate to a fully remodeled lab. He will move one piece of equipment, get it up and running then shut down the old lab and relocate.

2. Harry refuses to move more than once.

12.4 MODIFIED PLANNING UNIT

A. Kieron stated that the Modified Planning Unit is the basis for planning the Geology Building Renovation project.

B. A certain assignable square footage will be allocated to each principal investigator.

1. Some will need more than the allocated space and others will need less.

2. The preliminary studies developed by JLP allocate three (3) 14'-6" x 29'-0" modules to each PI (approximately 1200 ASF) plus an office.

C. Harry felt that his research group could function within this type of modular approach ***but not within 3 modules.***

Action	Item	Description

This report was ***revised & reissued*** by *JLP Architects, Inc.* on 4.16. 2001.

JLP Architects, Inc.

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *March 16, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Workshop #2 - Programming & Pre-architectural Design Phase**

ATTENDEES:

Chris Bradley	JLP Architects, Inc.
Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Srvcs.
Harry Green	UCR IGPP/Earth Sciences
George MacMullin, P.E.	Project Manager/Engineer/Office of Design & Construction
Michael McKibben	UCR Department of Earth Sciences
Richard Minnich	UCR Department of Earth Sciences
Dave Parker	UCR Department of Environmental Sciences
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Arch.	JLP Architects, Inc.
Michael Rettig	UCR Chemistry Department
Yat – Sun Poon	Associate Dean – CNAS
Michael Woodburne	UCR Department of Earth Sciences

Action	Item	Description

13.1 PROJECT WORKPLAN STATUS

A. Jim Pirdy reviewed the progress made to date on the Programming and Pre-architectural Design Phase of the Geology Building Renovation project.

1. The planning team has completed the assessment of existing conditions in the building and the first series of meetings with the academic units who will occupy the building.

2. A Preliminary Master Space List summarizing the spaces to be included in the project will be presented later in the workshop.

3. A final series of meetings will be conducted during the next month to develop Room Design Criteria (RDC) for the typical spaces to be included in the project.

Action	Item	Description

B. A draft of the Detailed Project Program and a Preliminary Statement of Probable Cost for the project will be developed over the next month.

13.2 MECHANICAL SYSTEMS UPGRADE

A. Jim reviewed the progress of the mechanical systems upgrade project.

B. The project engineers Bechard Long & Associates (BLA) have presented a series of options for the replacement and upgrade of the HVAC system.

C. A drawing of the option selected by the university was reviewed. The selected approach can be summarized as follows:

1. A new air handler will be installed in the Basement to serve the Center Wing, Basement, and Subbasement spaces.

2. A second new air handler will be installed on the roof of the chemical storage building on the north-east side of the building which will serve the first and second floors in the north wing.

3. A third new air handler will be installed on the roof of the chemical dispensing room on the south-east side of the building which will serve the first and second floors of the south wing.

D. The project will be executed in phases dependant on the funding cycle.

1. George MacMullin advised that he expects the Phase 1 project (Center Wing) to take approximately one year to complete.

2. The project will include new branch ducts in the corridor ceilings.

E. George emphasized that the project is still in the conceptual design phase and that plans for the larger building renovation may impact the HVAC project.

F. A concern was raised about the entrainment of vapors from the chemical storage and dispensing facilities and from exhaust fumes in the loading dock area.

1. George explained that the air intakes on the new air handlers are being oriented to mitigate this problem.

Action	Item	Description

2. Dave Parker was unclear which department(s) are using the chemical storage facility.

3. Polly Breitkreuz advised that the main user is the Department of Chemistry. When the new chemistry building is completed the problem may be mitigated.

4. The building could be used for storage.

G. George summarized the advantages of the chosen scheme.

1. Existing systems can be maintained in operation during the installation of the new equipment.

2. No program space (ASF) is lost for equipment or shaft space.

3. The scope of the demolition work is minor.

13.3 LOBBY STRUCTURE

A. In previous meetings, various committee members have stressed the importance of the first floor of the Center Wing as an important public space within the building.

1. The Geology Museum and seismograph are located there and this function should be retained and enhanced if possible.

2. The courtyard entry to this space is also the "front door" to the building and there is an opportunity to make this space a very interactive place.

B. Jim advised that the planning team would like to open the space up to bring in more natural light and enhance views of the courtyard. The difficulty is that none of the available record drawings document the existing conditions.

1. Accordingly, Chris Smith of Degenkolb Engineers was asked to look at the existing structure in this area of the building.

2. His analysis indicates that large portions of the walls along the west side of the corridor can be removed without any adverse impact on the structural integrity of the building.

Action	Item	Description

C. Mike Rettig stated that disabled access to the building is a "nightmare" and he is concerned that it will be worse while the science labs building is under construction.

1. Jim advised that the planning team is studying the construction of an additional ramp in the courtyard.

2. Mike felt that this is the right place to have it.

13.4 SUBBASEMENT

A. Harry Green and Mike Woodbourne asked about use of the Subbasement.

B. To make the Subbasement accessible will require the construction of a new elevator, a new handicapped accessible stair and the upgrading of an existing stair.

C. Harry asked if it is possible to provide access at grade via a ramp.

1. The elevation differential makes this problematic.

2. It may be possible to construct a ramp off of the Engineering parking lot. This would have to be coordinated with the design of the *Engineering 2* building.

JLP 3. The planning team will investigate.

D. Harry reiterated that the subbasement is the only area in the building which is "on grade" and is potentially a good location for heavy, vibration inducing equipment.

1. Jim advised that the floor-to-floor height is only 10'-3" which is very low for a laboratory building.

2. A facility that accommodates heavy equipment would usually have very high structural bays.

E. Construction of the shear walls along the north elevation of the Geology Building will require excavation for footings.

1. There may be an opportunity to incorporate fumehood exhaust ducts as well as a ramp into the design.

Action	Item	Description

2. There are presently too many variables and the design is not advanced enough to determine whether or not this is feasible.

13.5 MEETING WITH ENVIRONMENTAL HEALTH AND SAFETY/ CAMPUS FIRE MARSHAL/PHYSICAL PLANT

A. Jim reported on meetings held with these important campus departments.

B. The preliminary scope of the Geology Building Renovation was reviewed. No issues arose that would significantly impact the project scope or budget.

C. Meeting reports summarizing the discussions have been forwarded to Lisa Peloquin.

13.6 BUILDING ORGANIZATION

A. A *Preliminary Master Space List* (see attachment) was circulated for review and discussion with the committee.

1. Spaces on the list were grouped by Room Code.

2. The purpose of the list is to identify the spaces which need to be included in the renovation program but not to quantify them.

B. The committee reviewed the Master Space List and requested the following additions/corrections:

1. Under Earth sciences/IGPP Lab support, GIS Computer Lab, Mass Spectrometer Lab, and Research Collections Support Space were added.

2. Under Environmental Sciences Lab Support, a Computer Dry Lab, Sample Intake and Preparation Room and Freezer Room were added.

4. An updated Master Space List incorporating the requested revisions is included as an attachment to this meeting report.

C. The Master Space List also listed the space standards which will be used in developing the renovation program.

1. The Modified Planning Unit consists of three Geology Building

Action	Item	Description

modules (approximately 1200 ASF). For initial planning purposes one Modified Planning Unit will be allocated to each faculty FTE.

2. The goal is to use the space standards to develop Room Design Criteria for flexible, generic spaces.

D. The goal of the next series of meetings is to develop Room Data Sheets (RDS) for each typical space to be included in the program (e.g. wet lab, dry lab. faculty office, etc.)

E. Jim reviewed revised block diagrams illustrating the allocation of space by floor and academic unit. The diagrams illustrated and summarized the number of modules allocated to each department.

1. It is very likely that the existing building will not accommodate all of the departments program needs.

2. This exercise will help the College understand what type of additional space needs to be planned.

13.7 SPACE ALLOCATION DISCUSSION

A. Mike Woodburne expressed strong reservations about the preliminary allocation of space. The Department of Earth Sciences believes the proposed allocations is a "severe contraction" of their present area. He provided a document entitled Earth Sciences Logistical Space Clusters (see attachment) outlining his department's space needs.

B. Mike McKibben felt that the clustering of researchers was important to the Department of Earth Sciences. Proximity of researchers with shared interests contributes to efficiency.

1. He would also prefer to see teaching activities located in the west wing with the main building entry from the courtyard.

2. Earth Sciences would like to see general assignment classroom 1408 remain in its present location.

3. Mike feels that his department benefits from having students around the research labs and collections.

C. Harry Green disagreed stating that he did not want "a million students going by my lab." He also wants the renovation phased so that he will

Action	Item	Description

only have to move once.

D. Dave Parker expressed concern that there will not be sufficient area to accommodate support space and faculty offices.

1. He also advised that the Department of Environmental Sciences is under pressure to move all of its faculty out of Bourns Hall.

2. If the Geology Building renovation is not complete by 2004-05, "we are sunk".

13.8 PIERCE HALL

A. Mike Rettig pointed out that the Chemistry Department will vacate Pierce Hall in 2004-055 when their new buildings is completed on Parking Lot 13.

1. The only Chemistry Department functions that will remain in the building are undergraduate instructional labs on the first floor.

2. This could provide expansion space when the Geology Building is maxed out.

B. Harry suggested that Pierce Hall might become the venue for instructional programs allowing research programs to be consolidated in the Geology Building.

C. George MacMullin advised that additional air handling capacity will be added to Pierce to support the Chemistry teaching labs.

1. When the faculty research labs move to the new building an additional 50,000 CFM of capacity will be gained.

2. If the instructional programs relocated from the Geology Building to Pierce have less intensive fumehood needs, this will be more flexible.

D. Mike McKibben asked that the phasing studies take into account the impact to ongoing research programs.

13.9 PRELIMINARY PHASING PLAN

A. Jim briefly discussed a Preliminary Phasing Plan. The plan illustrated two types of space:

Action	Item	Description
		1. Office and administrative areas which could be relocated into the Central Wing of the building when it is vacated by the library and the HVAC upgrade is completed.
		2. Faculty research groups that will relocate to the new Science Labs Building when it is completed in 2003-04.
	B.	The preliminary phasing study indicates that larger portions of the south wing will be available for renovation in the initial phase.
	13.10	NEXT STEPS
	A.	Final examinations at UCR are scheduled for the week of March 19th with Spring Break the following week. No meetings with the department will be scheduled during these two weeks.
UCR	B.	Lisa Peloquin's office will begin scheduling a second series of meetings for the week of April 2nd to review room design criteria.
JLP	C.	The committee requested that JLP provide the following material to assist them with their preparation: 1. Revised Master Space List 2. Sample Room Data Sheets 3. Existing Building Module diagrams without shading. ***UPDATE: These documents have been sent under separate cover to the campus.***

This report was prepared and distributed by *JLP Architects, Inc.* on March 29, 2001.

JLP Architects, Inc.

James L. Pirdy

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Lisa Peloquin to distribute to UCR
c.c. Chris Smith, Degenkolb Eng./Alan Wilson, Bechard Long Associates/Graham Anderson, Campbell-Anderson Associates
Attachments:
- *Revised Preliminary Master Space List*
- *Modified Planning Unit Studies (3)*
- *Existing Building Module Diagrams*
- *Earth sciences Logistical Space Cluster (3.13.2001)*

jlp

UCR GEOLOGY BUILDING RENOVATION

March 16, 2001

JLP PROJECT #01-03.1 /UCR #950446

3.0 PRELIMINARY MASTER SPACE LIST

SPACE CATEGORIES:	ROOM CODE
Office & Office Support Space	
• Office Service	335
• Academic Office	310
• Scholarly Activity	250
Research Lab & Lab Support Space	
• Basic & Applied Research Labs (wet or dry)	210
• Service & Support Areas	225
• Research Computer Labs	210
Instruction Lab & Lab Support Space	
• Instructional Labs	260
• Service and Support Areas	265
• General Assignment Classrooms	110
• Instructional Computer Labs	270

3.0 PRELIMINARY MASTER SPACE LIST *continued*

SPACE TYPE	NO. ROOMS	ASF	TOTAL ASF

Office/Office Support

- Faculty Office
- Conference/Seminar
- TA/Grad. Student Office
- Copy/Mail/Workroom
- Chair office
- MSO Office

Research Lab & Support

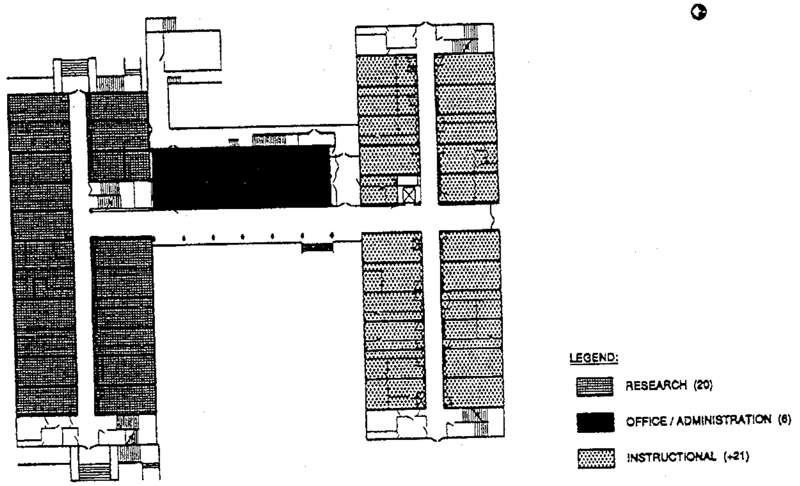
- Research Lab/Support (3 modules)
- Earth Sciences/IGPP Lab Support
  - Digital Imaging/Microscopes
  - Darkroom
  - Rock prep Room
  - Fossil Prep Room
  - Acid Room
  - Exterior Specimen Collection
  - Mass Spectrometer
  - Research Collections support Space
  - GIS Computer Lab
- Environmental Sciences Lab Support
  - Mineralogy Instrumentation Lab
  - Radioisotope Facility
  - Incubators/Growth Chambers/Aquaria/Terraria
  - Analytical Instrumentation Lab
  - Walkin Cold Room/Freezer
  - Physical Characterization Soils/Sediments
  - Computer dry Lab
  - Sample Intake & Prep.

3.0 PRELIMINARY MASTER SPACE LIST *continued*

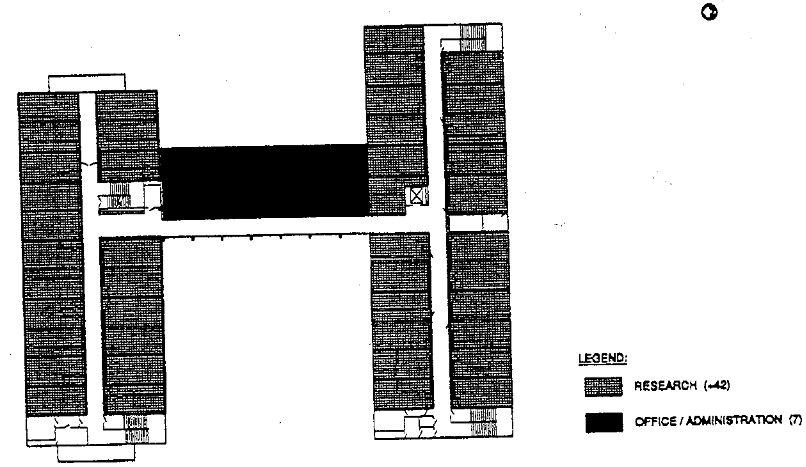
SPACE TYPE	NO. ROOMS	ASF	TOTAL ASF
Instructional Lab & Lab Support Space			
• Earth Science Instructional Lab	2		
• Environmental Science Instructional Lab	1		
• Shared (flexible) Instructional Lab	1		
• Open Computer Lab (24 Station)	1		
• General Assignment. Classroom (1408)	1		
• Earth Science Instructional Support Space			
• Fossil, Rock, Mineral Working Collections			
• Earth sciences Museum			
Subtotal			

SPACE STANDARDS:

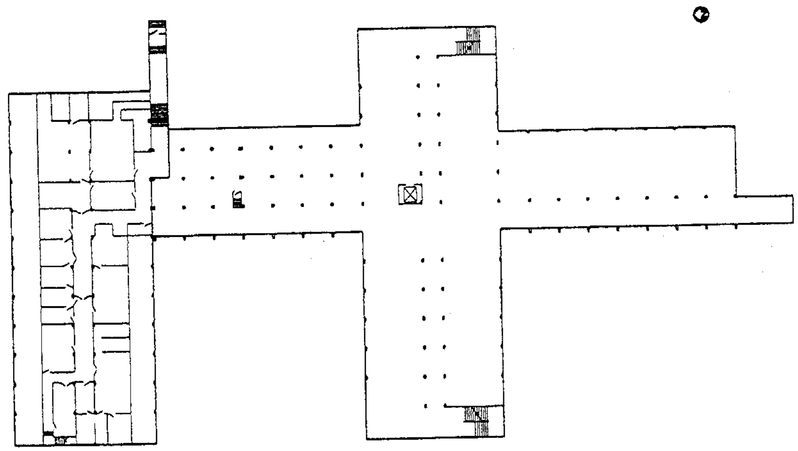
• Geology Building Basic Module	400 ASF
• Modified Planning Unit (3 Module)	1200 ASF
• Faculty Office	135 ASF
• Post Doctoral Fellows	60 ASF/PD
• Teaching Assistants	40 ASF/T
• Graduate Student Research Assistant	50 ASF/GS



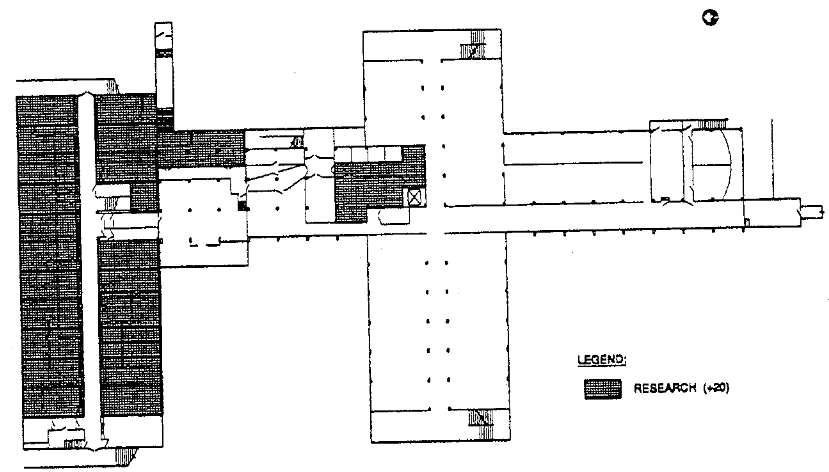
FIRST FLOOR
EARTH SCIENCE / I.G.P.P. / INSTRUCTIONAL



SECOND FLOOR
ENVIRONMENTAL SCIENCE



SUB-BASEMENT
TO BE DETERMINED



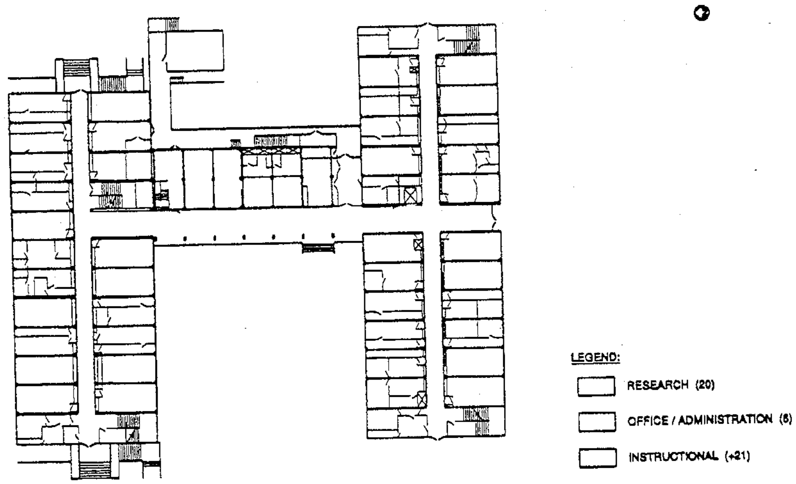
BASEMENT
EARTH SCIENCE / I.G.P.P.

EXISTING BUILDING MODULE

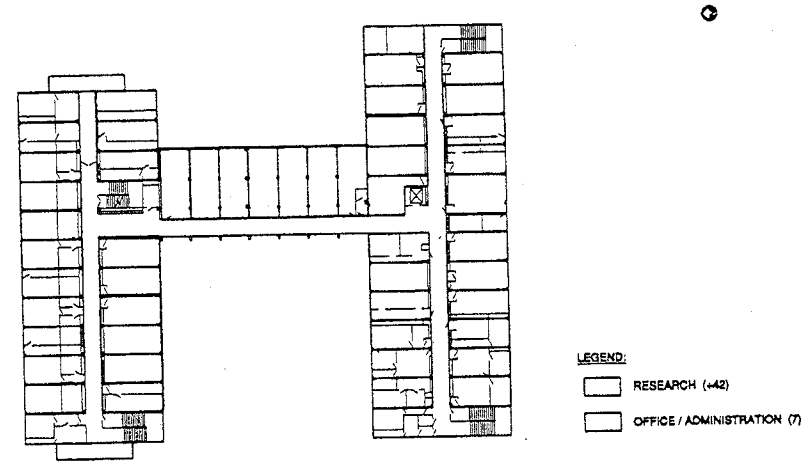
GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

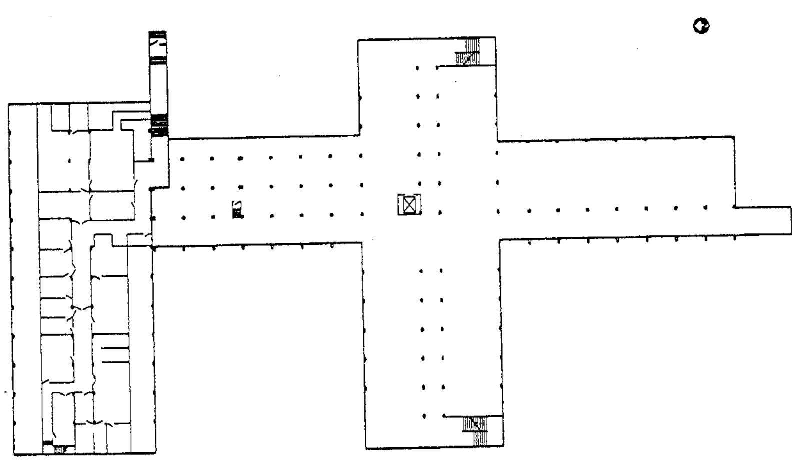
MARCH 19, 2001



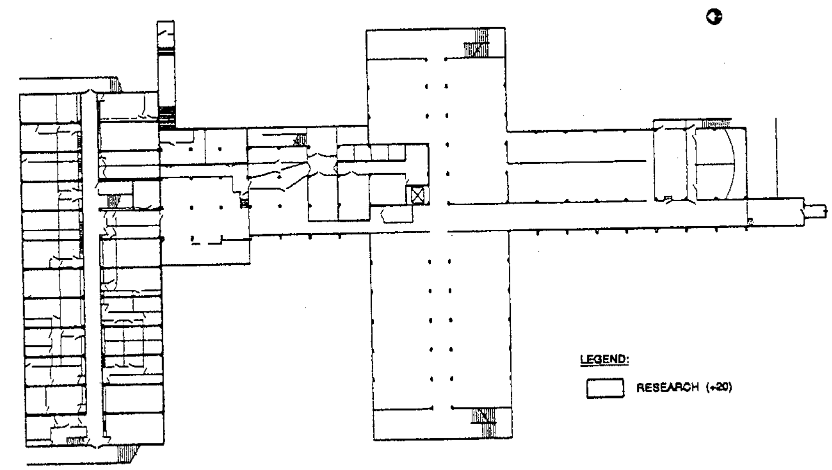
FIRST FLOOR
EARTH SCIENCE / I.G.P.P. / INSTRUCTIONAL



SECOND FLOOR
ENVIRONMENTAL SCIENCE



SUB-BASEMENT
TO BE DETERMINED



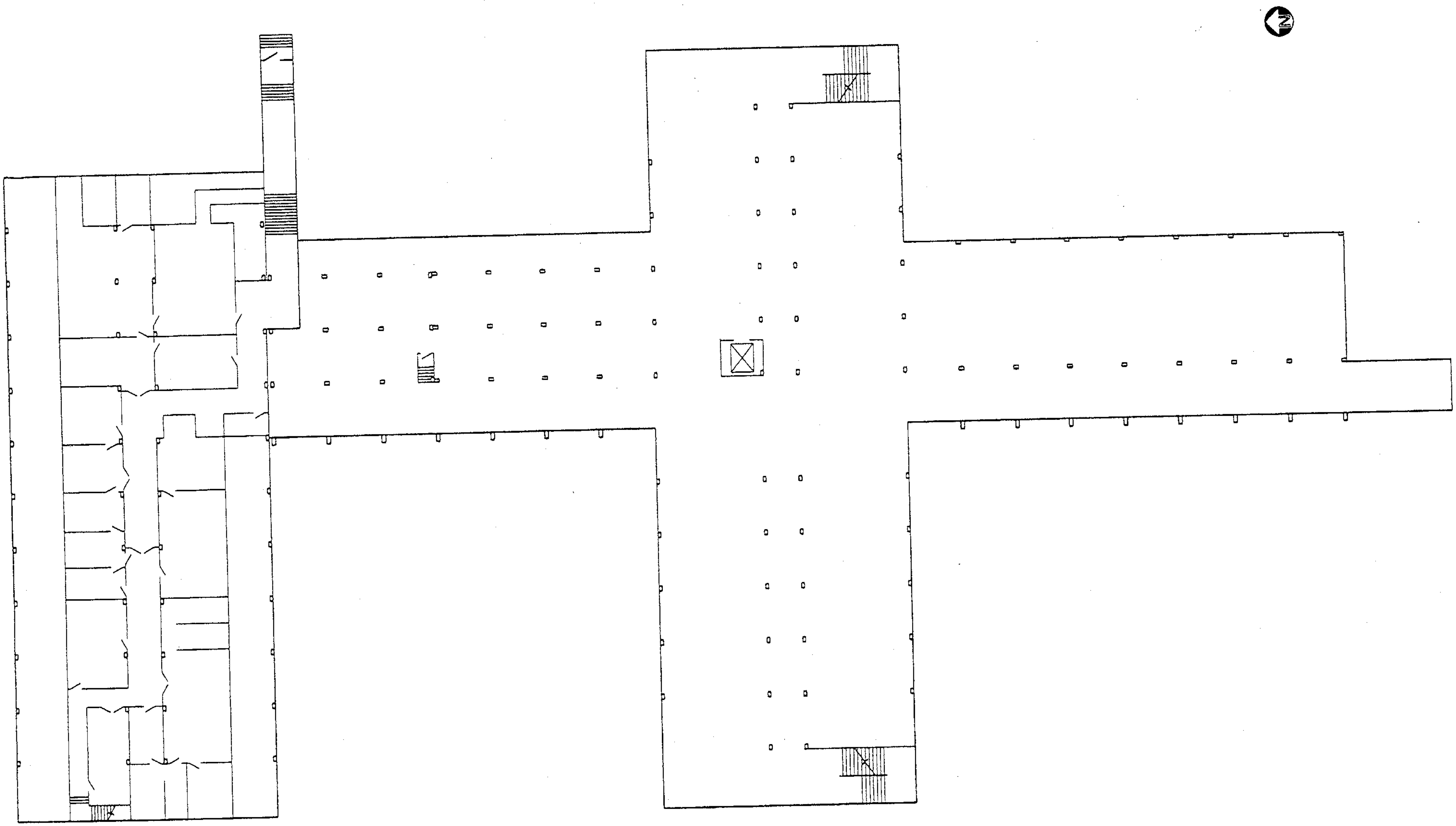
BASEMENT
EARTH SCIENCE / I.G.P.P.

EXISTING BUILDING MODULE

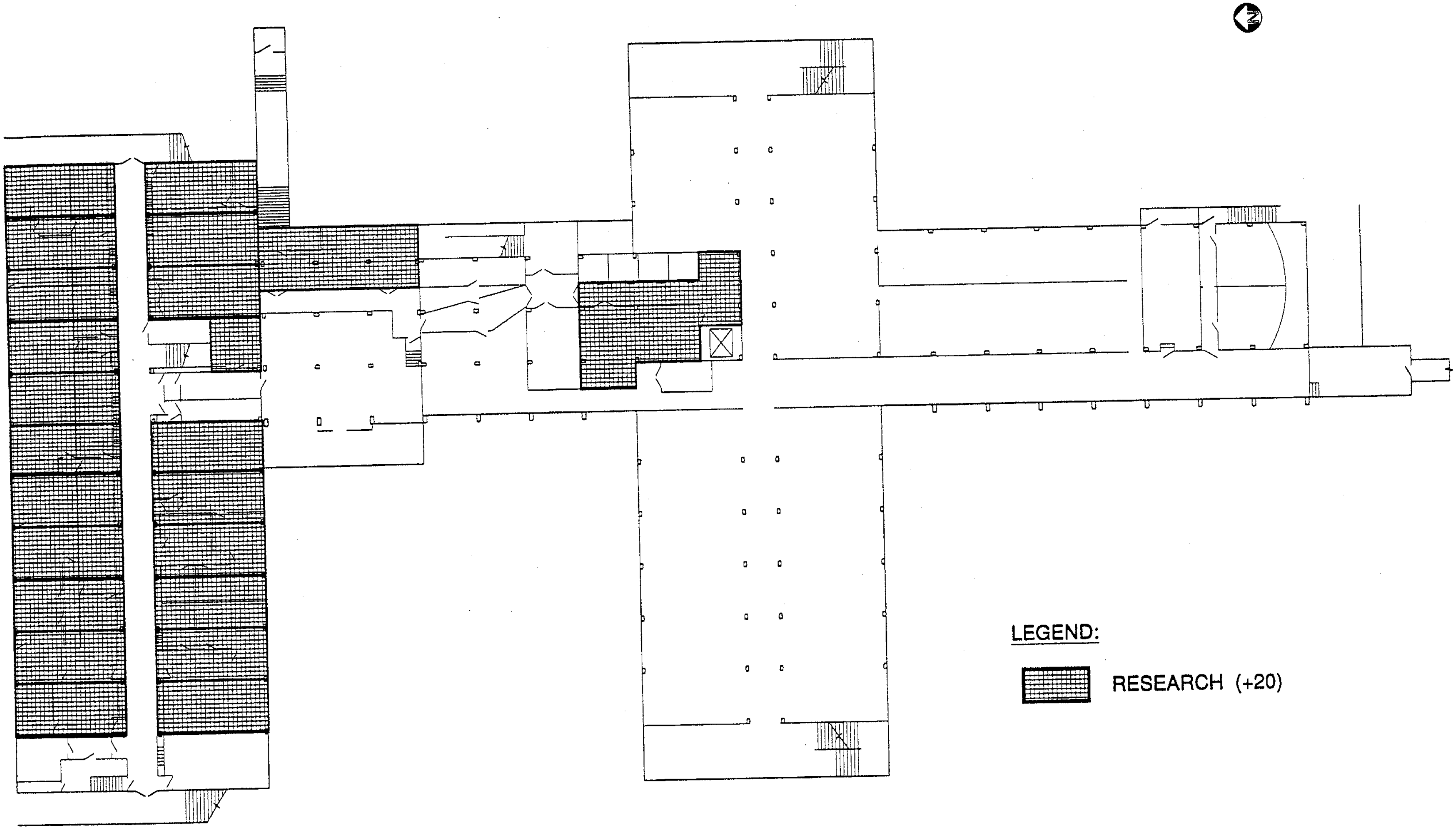
GEOLOGY BUILDING RENOVATION
UNIVERSITY OF CALIFORNIA, RIVERSIDE

JLP ARCHITECTS, INC.
ARCHITECTS PLANNERS CONSULTANTS

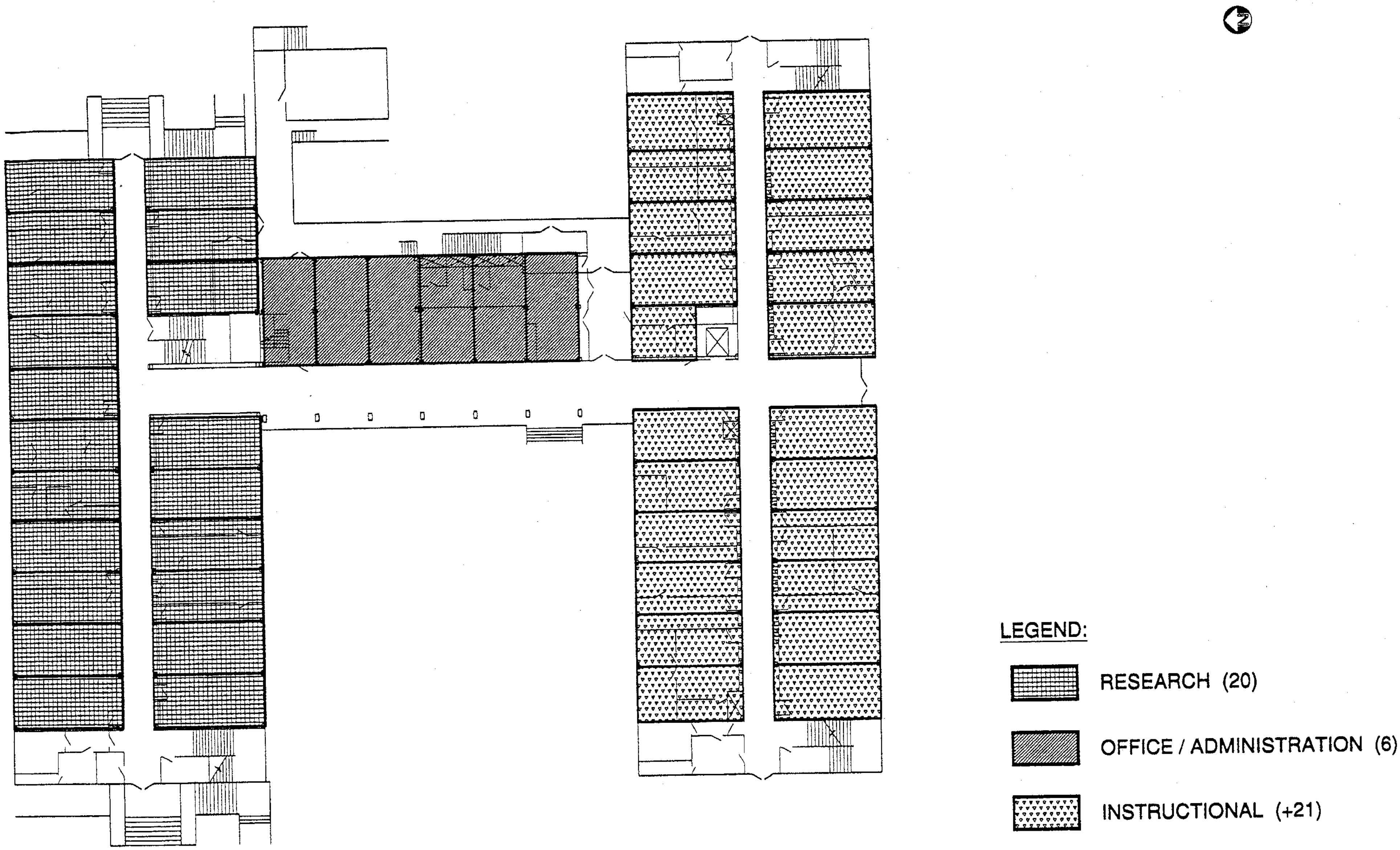
MARCH 19, 2001



SUB-BASEMENT
TO BE DETERMINED

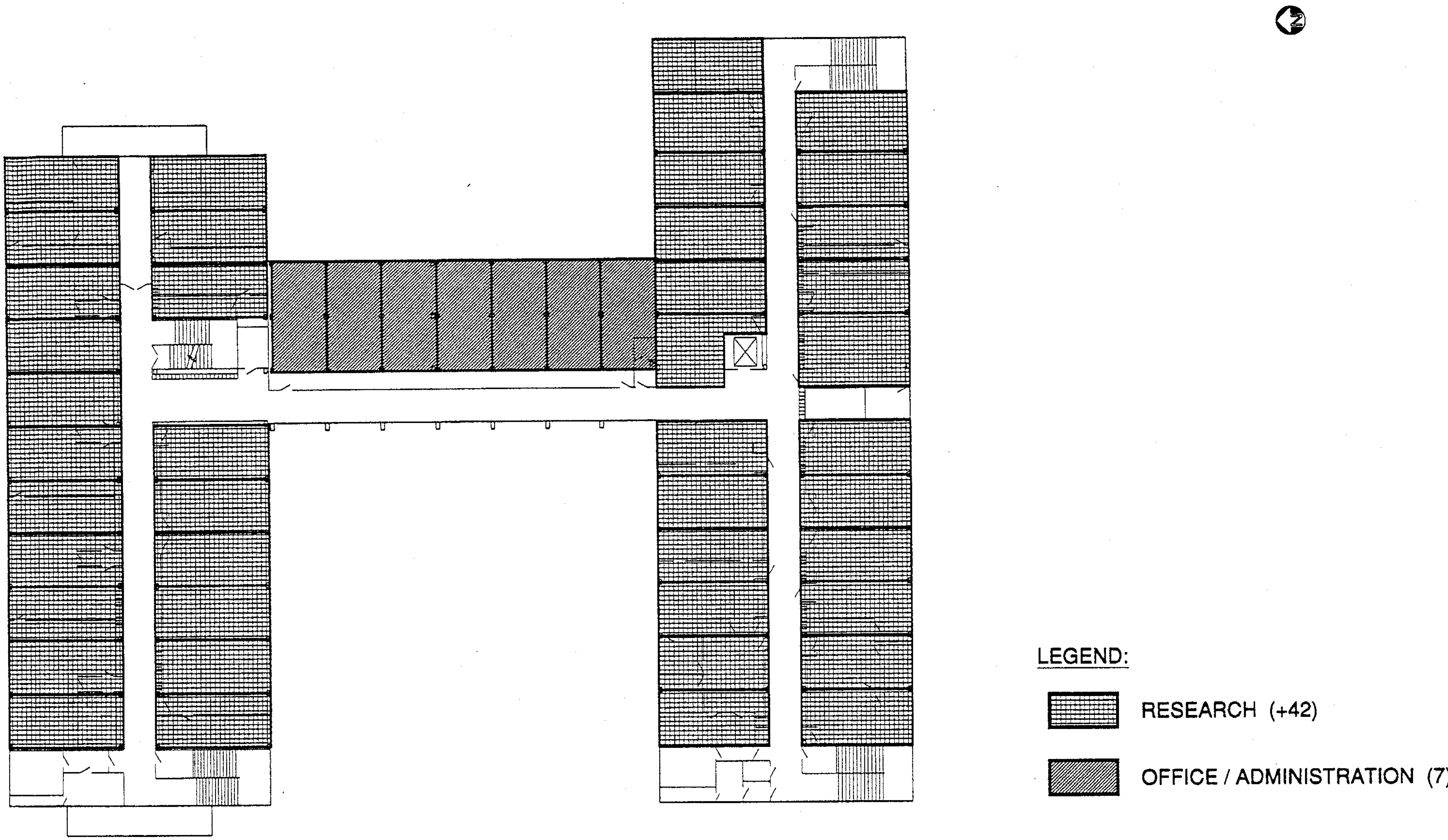


BASEMENT
EARTH SCIENCE / I.G.P.P.

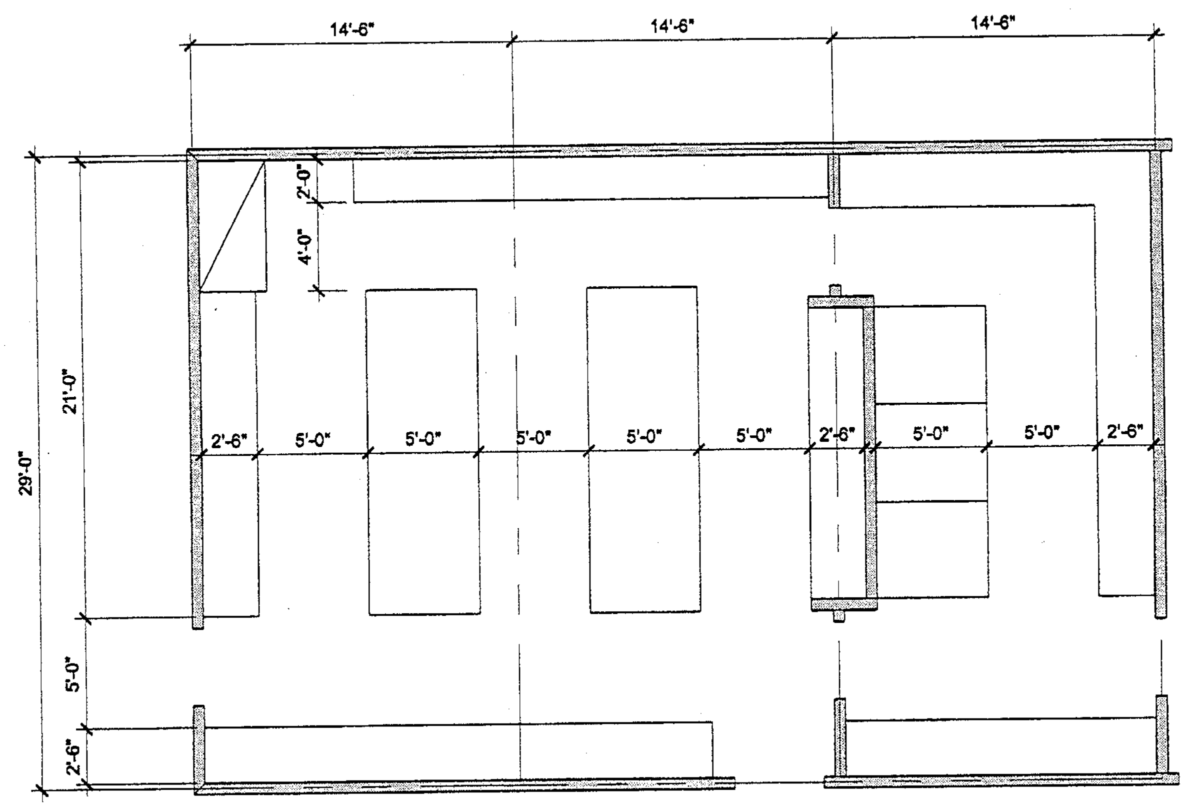


FIRST FLOOR

EARTH SCIENCE / I.G.P.P. / INSTRUCTIONAL



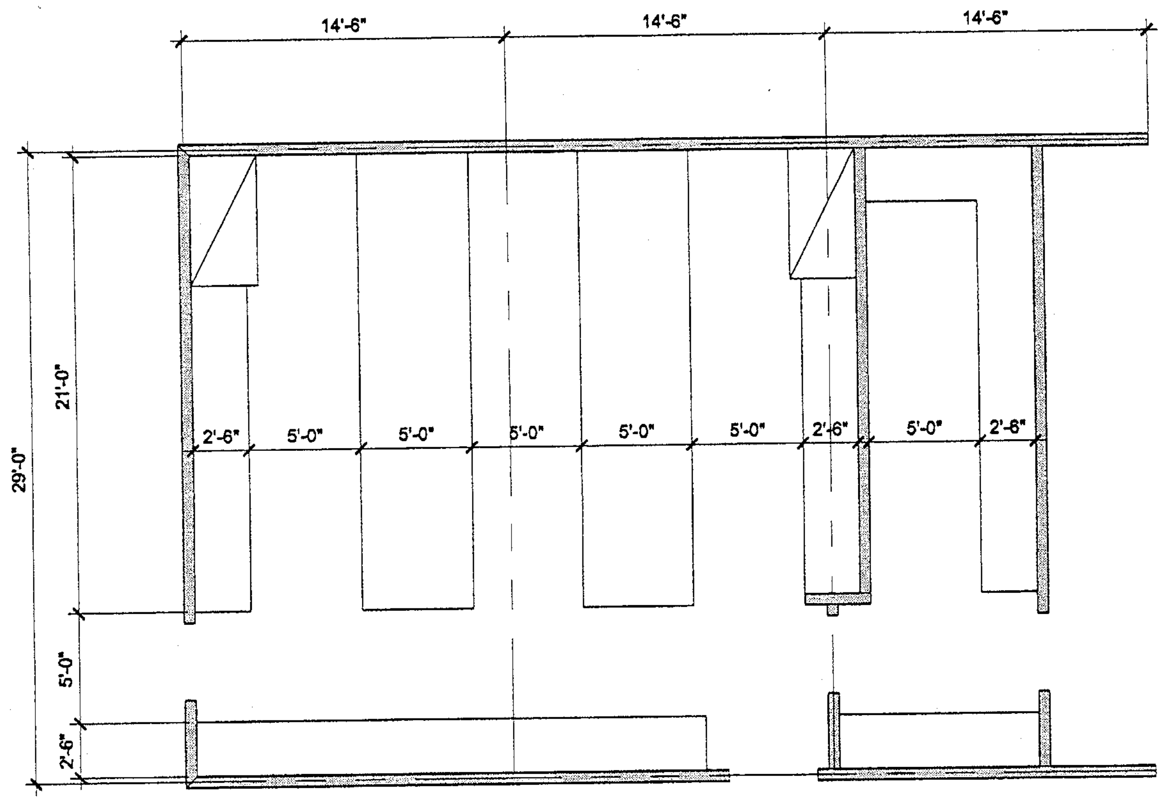
SECOND FLOOR
ENVIRONMENTAL SCIENCE



MODIFIED PLANNING UNIT

SCALE : 3/16" = 1'- 0"

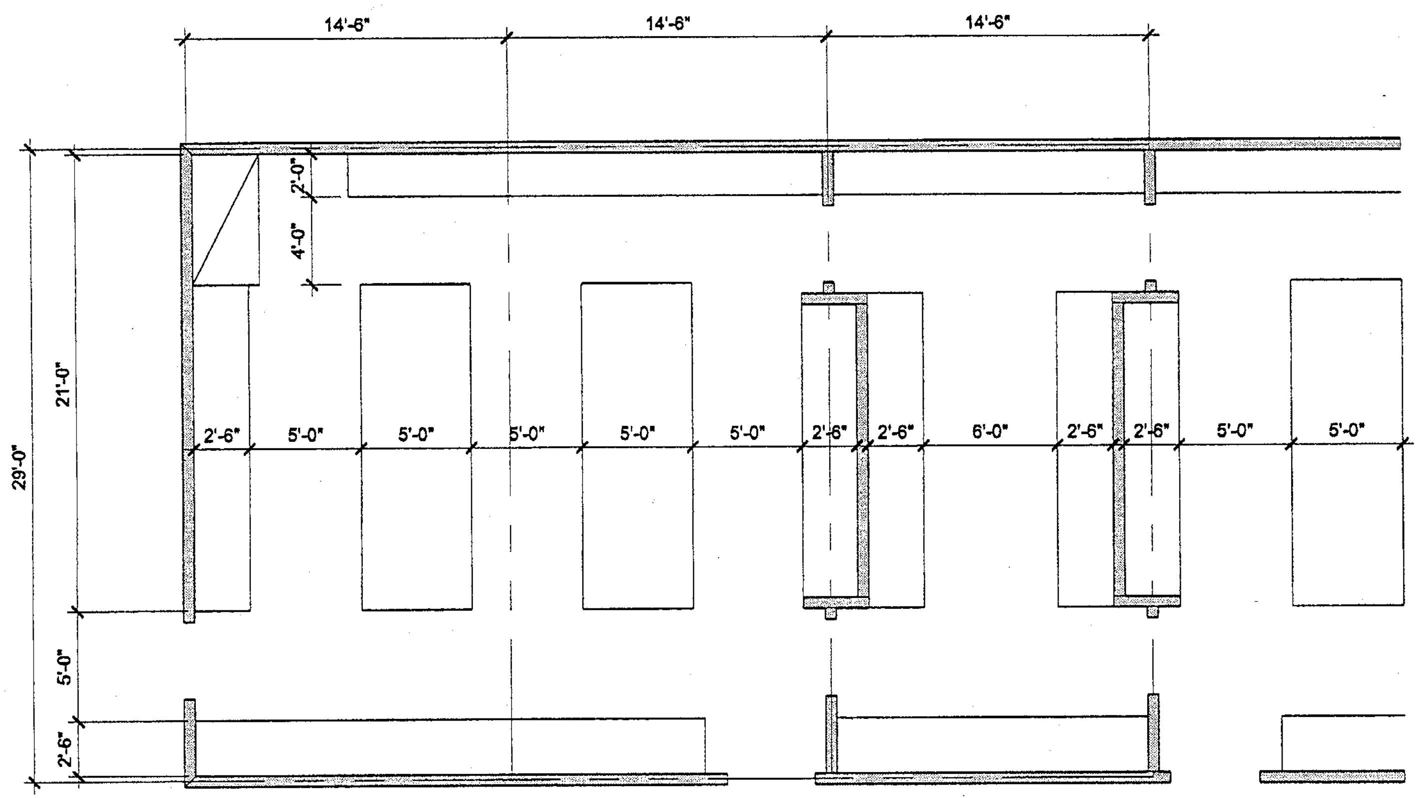
MARCH 16, 2001



MODIFIED PLANNING UNIT

SCALE : 3/16" = 1'- 0"

MARCH 16, 2001



MODIFIED PLANNING UNIT

SCALE : 3/16" = 1'- 0"

MARCH 16, 2001

Earth Sciences Logistical Space Clusters

03/13/2001

A. Basic Assumptions

1. Modular design utilized as per JLP concept (two module lab; office; one module support).

2. Minimize impact of renovations to academic program and research activities. Minimize logistics and costs of renovation; extremely heavy equipment remains in present location; extremely sensitive analytical equipment (mass spectrometers) remain in present location.

3. Cluster logistically similar research and teaching activities. Fume hood, etc., function focuses on south wing and the vertically stacked basement - 1st floor rooms on the northeast wing.

4. Confine large classrooms to west side of building for easy access to N-S traffic corridor. Experience shows that current classroom access via west side entries is sufficient; focuses traffic there, and is not detrimental to research or other activities in other parts of the building.

5. Space clusters are based on research and instructional logistics, grouping faculty researchers with similar space and logistical support needs.

6. Faculty areas/functions in **B** may be internally adjusted; provide for the office being near the laboratory.

B. Model: each faculty researcher requires up to 3.5 space modules (410 asf per module)
2 modules for lab (820 asf)
1.0 module for lab support/library/collections/GSRs/Post-docs (410 asf)
0.5 module for office (205 asf)

Researchers without large instruments/analytical facilities need less space.

C. Results

1. All of Earth Sciences faculty (headcount basis irrespective of % time assigned to IGPP) can be accommodated in the proposed revision, <u>and fully utilize available space</u>.
ANY PLAN TO USE ALL OF SOUTH WING FOR CLASSROOMS RESULTS IN LOSS OF AT LEAST 9 MODULES = REDUCTION OF EARTH SCIENCES' <u>CURRENT NEED</u> FROM 77 TO 68 MODULES = VIRTUAL IMPOSSIBILITY.
2. 3 of 4 classrooms (including already renovated current 1408) are sited on each of the two west wings.

3. Classrooms are provided with logistical support.

3. No other classrooms are sited in basement or 1st floor of Geology Building <u>(= 'loss of 4 from JLP model)</u>

5. One new hire (Biogeochemist) can be accommodated in existing space.

6. All subsequent hires (3-5 next few years) will require new space (sub-basement; 2nd floor).

7. Clusters of faculty/research areas are provided with some space sharing.

8. Present TA/Post Doctorate/Adjunct Professor activities can be accommodated within module-justified asf.

1. <u>Geochemistry/Experimental Tectonophysics</u> - 18.5 modules total

Biogeochemist (current recruit/incl. ½ Mass Spec lab)	3.5 modules
H. Green (incl. Tectonophysics lab and Machine shop)	3.5
M. McKibben (incl. Kinetics lab)	3.5
M. Kennedy (incl. Carbonate lab)	3.5
A. Williams (incl. ½ Mass Spec lab)	2.5
Digital Petrology and Microscopy Lab (shared)	2.0

2. <u>Geophysics/Hydrogeology</u> – 13 modules total

T. Lee	3.0
D. Ogelsby	3.0
S. Park	3.0
Electronics Laboratory (shared)	2.0
Computer Modeling Laboratory (shared)	2.0

3. <u>Geomorphology/GIS</u> – 9.5 modules total

R Minnich	1.5
L. Owen (incl. OSL lab and existing fume hood)	3.5
P. Sadler	1.5
UCR/USGS Digital Mapping Laboratory (shared)	1.0
GIS Research Laboratory and Support (shared)	2.0

4. <u>Paleoecology</u> – 14 modules total

M. Droser (incl. Paleoecol lab)	3.5
N. Hughes (incl. Morphometrics lab)	3.5
M. Woodburne (incl. Vert Paleo lab)	3.5
Paleo Prep Lab (shared, incl. acid room, corridor from loading dock to building hallway, 2 fume hoods)	3.0
Dark Room (shared, incl. hood)	0.5

5. <u>Other support</u> – 8 modules total

Rock Prep Labs (saws, grinding, polishing, crushing, sieving)	3.0 modules
Museum and Teaching support, Field Equipment	2.0
Dedicated TA offices	1.5
Dedicated Post-Doc/Visiting Sci. offices	1.5

6. <u>Earth Sciences Classrooms</u> – 9.5 modules total

GIS Teaching classroom (shared with college?)	1.5
Classroom with specimen benches (sink and fume hood)	2.0
Classroom with specimen benches	2.0
Classroom with specimen benches	2.0

2 Classroom support rooms (teaching collections)	2.0
7. Departmental Administration – 5	5.0

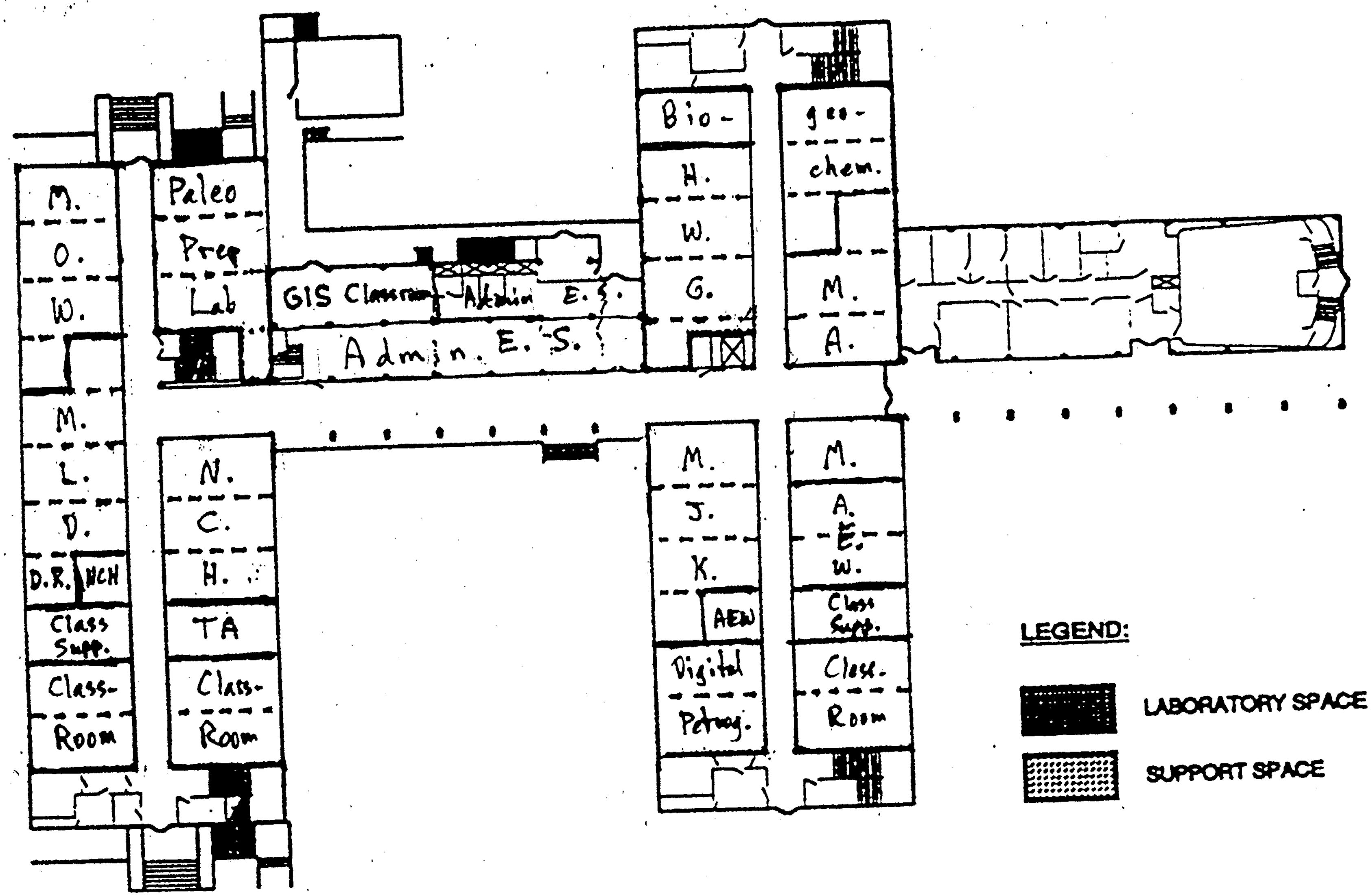
5 FTE MSO and office staff rooms
Chairman's room
Small conference room
Office supply room
Faculty mail room
Student mail room

Total Basement and 1st Floor 77

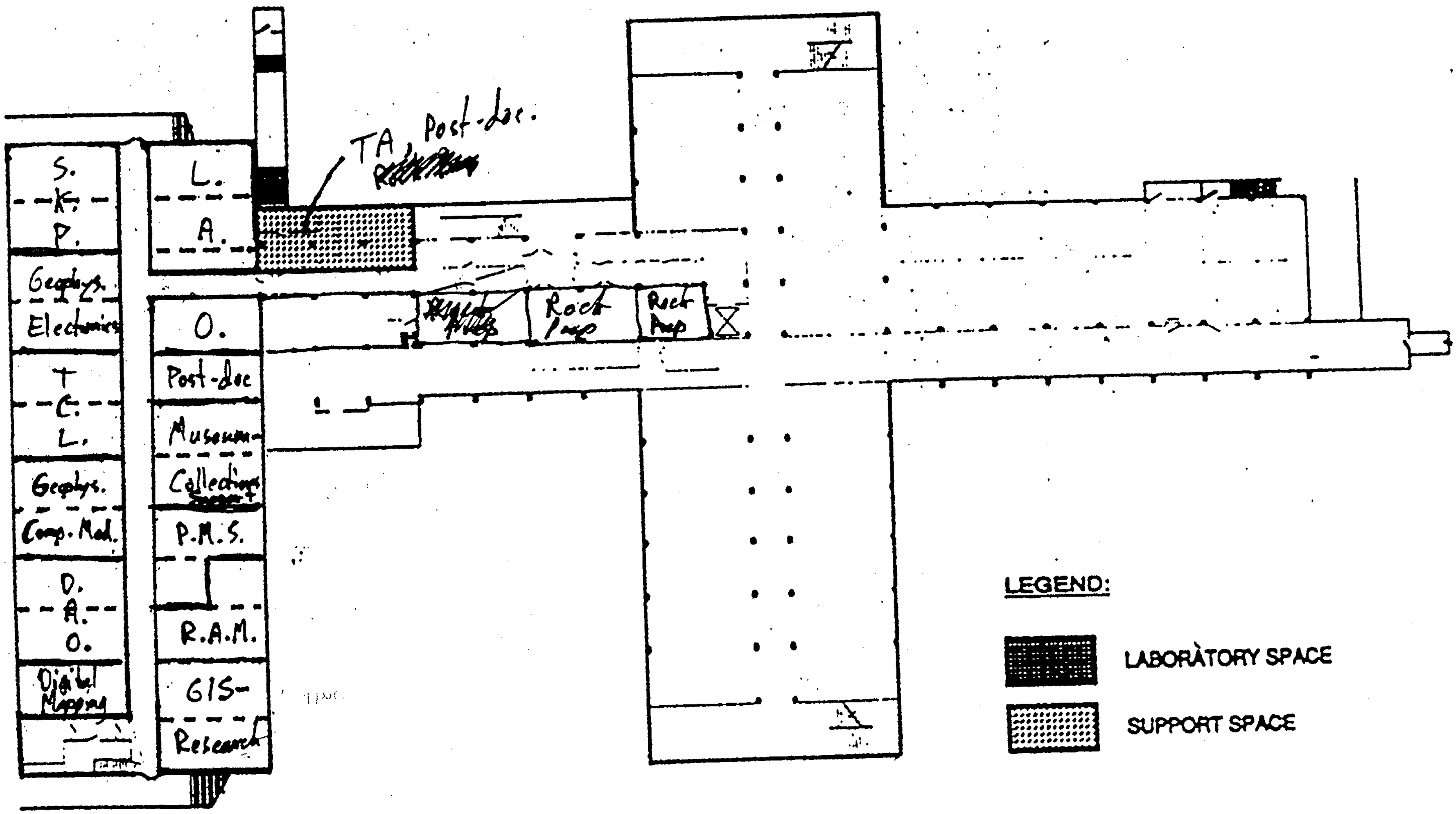
ANY PLAN TO USE ALL OF SOUTH WING FOR CLASSROOMS RESULTS IN LOSS OF AT LEAST 9 MODULES = REDUCTION OF EARTH SCIENCES CURRENT NEED FROM 77 TO 68 MODULES = VIRTUAL IMPOSSIBILITY.

8. Sub-basement storage – 6 modules total (does not include IGPP space)

Rock and fossil collections	6.0


M.
O.
W.
M.
L.
D.
D.R.
WCH
Class Supp.
Class-Room
Paleo Prep Lab
GIS Classroom
Admin E.S.
Admin E.S.
N.
C.
H.
TA
Class-Room
Bio-
H.
W.
G.
geo-chem.
M.
A.
M.
J.
K.
AEW
Digital Petrog.
M.
A.
E.
W.
Class Supp.
Class-Room
LEGEND:
LABORATORY SPACE
SUPPORT SPACE

FIRST FLOOR



S. K. P.
L. A.
TA, Post-doc.
Geophys. Electronics
O.
T. C. L.
Post-doc
Museum-
Collections
Geophys.
Comp. Mod.
P.M.S.
D. A. O.
R.A.M.
Digital Mapping
GIS-
Research
Rock Prep
Rock Prep
LEGEND:
LABORATORY SPACE
SUPPORT SPACE

BASEMENT

jlp architects
260 NEWPORT CENTER DRIVE SUITE 100 NEWPORT BEACH CA 92660 TELEPHONE 949 729-9250 FAX 949 721-9406 EMAIL Jpirdy@JLPArchitects.com

MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *April 4, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase/Meeting with Department of Environmental Sciences**

ATTENDEES:

Chris C. Bradley	JLP Architects, Inc.
Polly Breitkreuz	Space Management - UCR Academic Planning & Budget
Kieron M. Brunelle	Educational Fac. Planning Consultant, UCR College of Natural & Agricultural Sciences
Donna Cooney	Department of Environmental Sciences, UCR
Tom Meixner	Department of Environmental Sciences, UCR
Dave Parker	Department of Environmental Sciences, UCR
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Kurt Schwabe	Department of Environmental Sciences, UCR

Action	Item	Description

14.1 WORKPLAN STATUS

A. Kieron and Lisa advised that the decision has been made to move the Environmental Sciences and Earth Sciences class labs into Pierce Hall.

1. The instructional facilities will occupy space vacated by the Department of Chemistry when they move into the new Physical sciences Building.

2. This change will enable more space to be allocated for research labs in the Geology Building and to keep research groups together.

B. Jim advised that a meeting is scheduled with the cost estimator to begin development of a preliminary statement of probable cost for the project. A draft should be available within two weeks.

C. Jim has also received an outline of the mechanical, electrical and plumbing sections of the DPP from Bechard Long & Associates (BLA).

D. The work session with the Department of Earth Sciences is being

Action	Item	Description

rescheduled for the week of April 9th.

E. The purpose of this meeting is to finalize the space allocation in the Geology Building for the Department of Environmental Sciences and to begin to discuss specific room design criteria for the generic spaces which will be included in the program.

F. It was stressed that the design criteria should be general and not specific to any principal investigator.

14.2 DEPARTMENT OF ENVIRONMENTAL SCIENCES SPACE ALLOCATION

A. Dave Parker presented the department's "first pass" at clustering the research groups. He passed out the following documents: (see attachment)

1. Environmental Sciences:
Proposed Space Allocation in Geology and Pierce.

2. Environmental Sciences:
Centralized Support Labs

3. Planning Module Schematic:
Geology Second Floor Options 1, 1B, 2.

B. Dave stressed that all of the studies were based on the Modified Planning Unit (3 modules/researcher). In all of the options the Economics and Policy Management faculty are clustered in the northeast corner of the second floor.

C. The assumptions used in developing the studies include the the following:

1. Primary research spaces are bundled by affinity groups.

2. These groups allow elasticity or flexibility.

3. Administrative spaces occupy the entire center wing.

4. "Dry" research groups (economics and policy management) are clustered in the northeast corner of the floor.

5. Faculty offices are located close to the research labs.

Action	Item	Description

6. Support spaces occupy the remaining area.

D. This allocation results in a space short-fall of approximately 7500 sq. ft. which will be resolved when space is vacated in Pierce Hall.

E. The location of the shared conference room was discussed. The Department of Environmental Sciences would like to have it located on the second floor in the central wing.

1. Dave feels that it is not heavily used by Earth Sciences.

2. The conference rooms in the new Science Labs Building are small.

3. Environmental Sciences has a large and growing faculty and needs a large meeting space.

4. Kieron believes the overall plan must be studied before determining the final location.

F. Donna Cooney expressed concern about the large number of administrative staff who need to be accommodated.

1. Presently she has ten (10) FTE's. She expects this number to grow by 1.5 - 2.0 FTE's to accommodate additional student affairs personnel.

2. Dave also pointed out that the departments administrative staffing is heavily impacted by the USDA Salinity Lab.

3. Donna will send a detailed breakdown of the administrative FTE's to Lisa Peloquin.

G. Jim asked about the department's preference for the location of the support space in relationship to the primary research lab. JLP had presented two alternative studies at the March 2, 2001 meeting entitled Option1 and Option 2.

1. Dave expressed a preference for Option 2 which places the support space between the research labs.

2. The advantage of this option is the ability to share support space and equipment.
3. The support spaces represent the "elasticity" in the plan.

jlp

Action	Item	Description

4. To maximize flexibility, the department would like to see the utilities in the support labs in overhead racks not in the walls.

H. Central Wing

1. Schemes that place the corridor in the center were preferred.

2. This organization gives the most access to windows and maximizes natural light.

3. The department does not see the need to maintain the existing stair which connects the floors.

14.3 TIMELINE - Accommodating growth in the Department of Environmental Sciences.

A. Kieron stated that the Geology Building Renovation project is intended to address growth in the Department to the year 2004/2005 when the Physical Sciences Building comes on line.

B. In 2003, the Science Labs Building will come on line and the instructional chemistry labs will be relocated out of Pierce. This will create a block of space in Pierce Hall.

C. If the growth projections remain the same, the College should be able to address the Department of Environmental Sciences growth needs.

14.4 ROOM DESIGN CRITERIA

A. Jim introduced the discussion on Room Design criteria by referencing the sample RDC sheets which had been forwarded to the Department previously (see attachments).

1. These documents are not intended to describe a final design but rather to establish general design criteria for the generic spaces which will be included in the project.

2. These generic spaces include but are not limited to wet and dry research labs, support spaces, and administrative offices.

B. The following Department of Environmental Sciences space were discussed (Room Data sheets are included as attachments to this meeting report):

Action	Item	Description

1. Generic Primary Research Laboratory.
2. Economics/Management/Policy Research Laboratory
3. Mineralogy Instrumentation Support Laboratory
4. Incubators/Growth Chambers
5. Analytical Instrumentation Laboratory
6. Cold Room/Freezer Room
7. Soil/Sediment Physical Characterization Laboratory
8. GIS Computer Laboratories

C. Draft Room Design Criteria sheets have been developed documenting this information and included as attachments to this meeting report.

This report was prepared & distributed by *JLP Architects, Inc.* on 4/11/.2001.

JLP Architects, Inc.

James L. Pirdy, Architect
Principal
JLP/km

Lisa Peloquin to distribute to UCR

c.c. *Chris Smith, Degenkolb Engineers*
Alan Wilson, Bechard Long & Associates
Graham Anderson, Campbell-Anderson Associates

Enclosures:
- •Environmental Sciences: Proposed Space Allocation in Geology and Pierce
- •Environmental Sciences: Centralized Support Labs
- •Planning Module Schematic: Geology Second Floor Option 1
- •Planning Module Schematic: Geology Second Floor Option 1B
- •Planning Module Schematic: Geology Second Floor Option 2
- •Sample Room Design Criteria Sheet - (The Scripps Research Institute)
- •Sample Room Design Criteria Sheet - University of California Riverside Geology Building Renovation

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Environmental Sciences: Propsoed Space Allocation in Geology & Pierce
Research and Administration

I. Administration

current office & storage space	2094	
current SAO & lecturer offices	360	
growth, server, work space (approx)	250	
conference room (cap = 35)	800	
subtotal	3504	~ the 7 modules in center wing

II. Economics/Management/Policy Faculty

6 faculty offices at 135 ASF	810	
4 modules for students, computers, GIS, etc,	1600	
subtotal	2410	~ the 6 modules in the NE corner (2460 complex)

= the 42 planning modules

III. Laboratory Faculty in Geology (all 2nd floor)

8 full laboratory modules (3 modules ea)	9600	24 modules
6 centralized support modules	2400	6 modules
8 office space allocations*	2280	6 modules
subtotal	14280	

IV. Laboratory Faculty in Pierce (all 3rd floor)

4 full laboratory modules (3 modules ea)	4800
~4 centralized support modules	1600
4 office space allocations*	1140
subtotal	7540

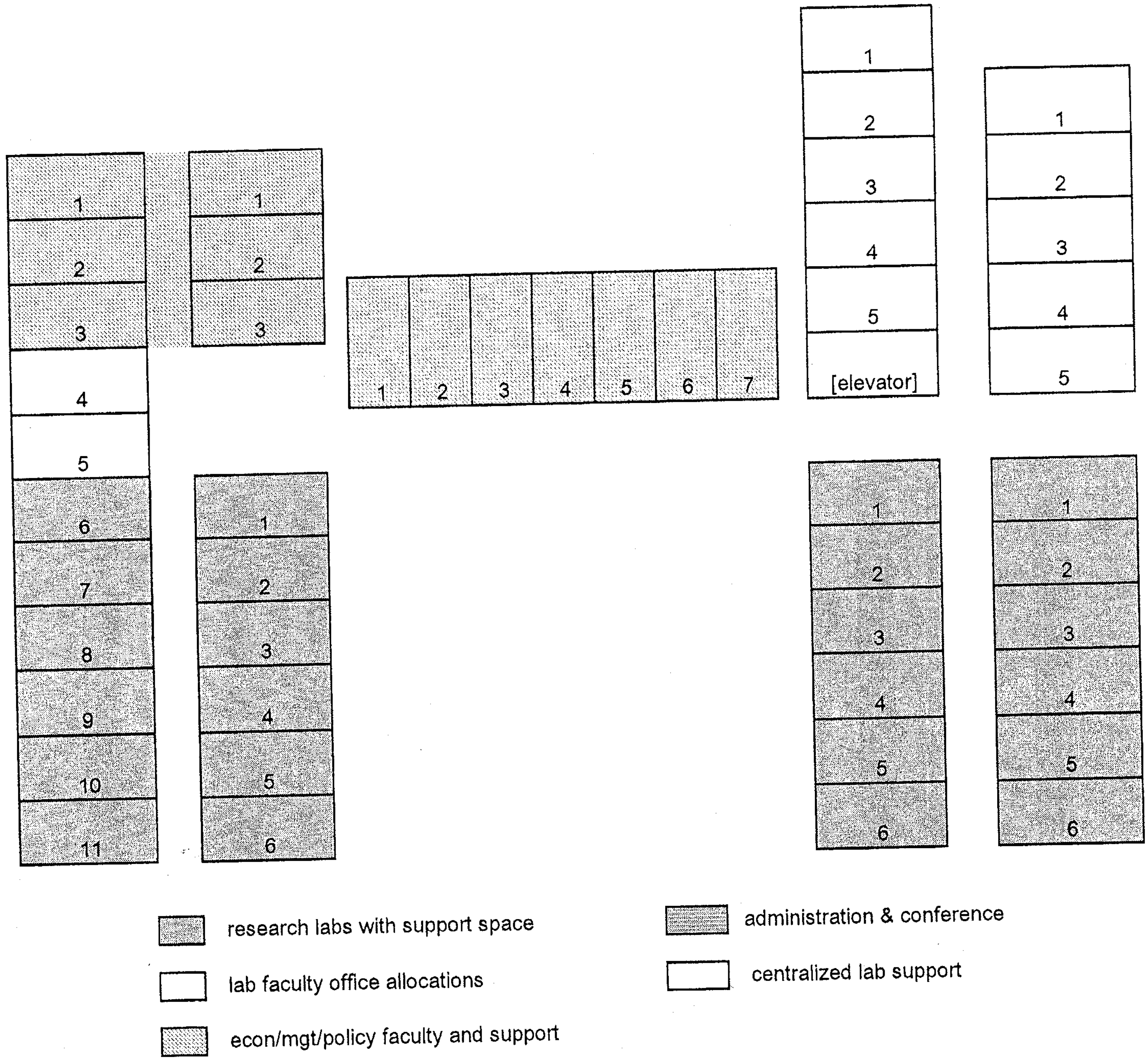
GRAND TOTAL, PIERCE & GEOLOGY **27,734**

* 1 PI @ 135 + 1 post-doc @ 60 + 2 GSR/TA @45 = 285 ASF each

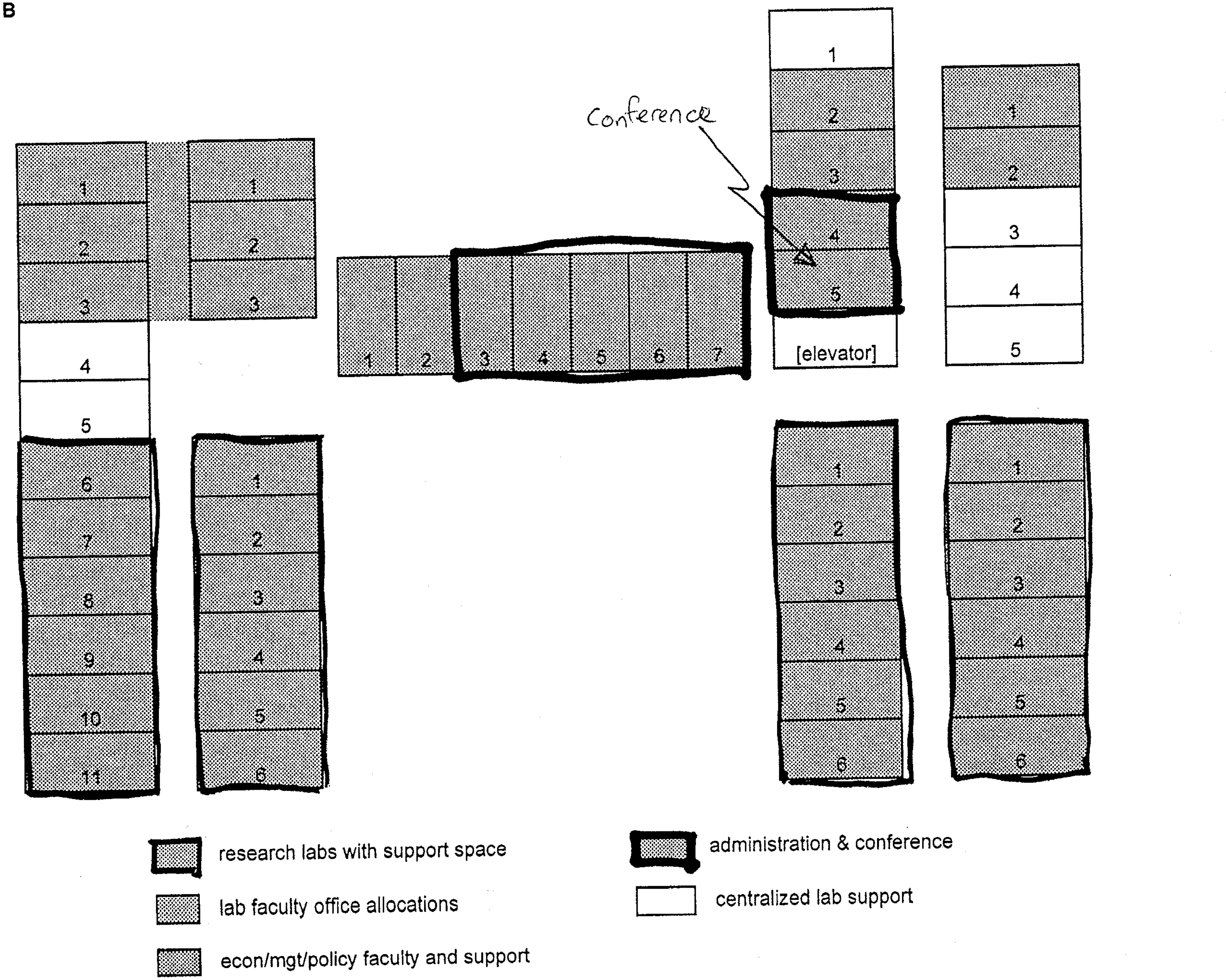
Environmental Sciences: Centralized Support Labs

Mineralogy instrumentation	1
Analytical chemistry	2
Radioisotope lab	1
Soil/sediment physical characterization	2
Computer/GIS labs	2
Incubators, growth chambers, etc	2
Cold room w/ freezer	1
TOTAL	11

Planning Module Schematic: Geology Second Floor
Option 1

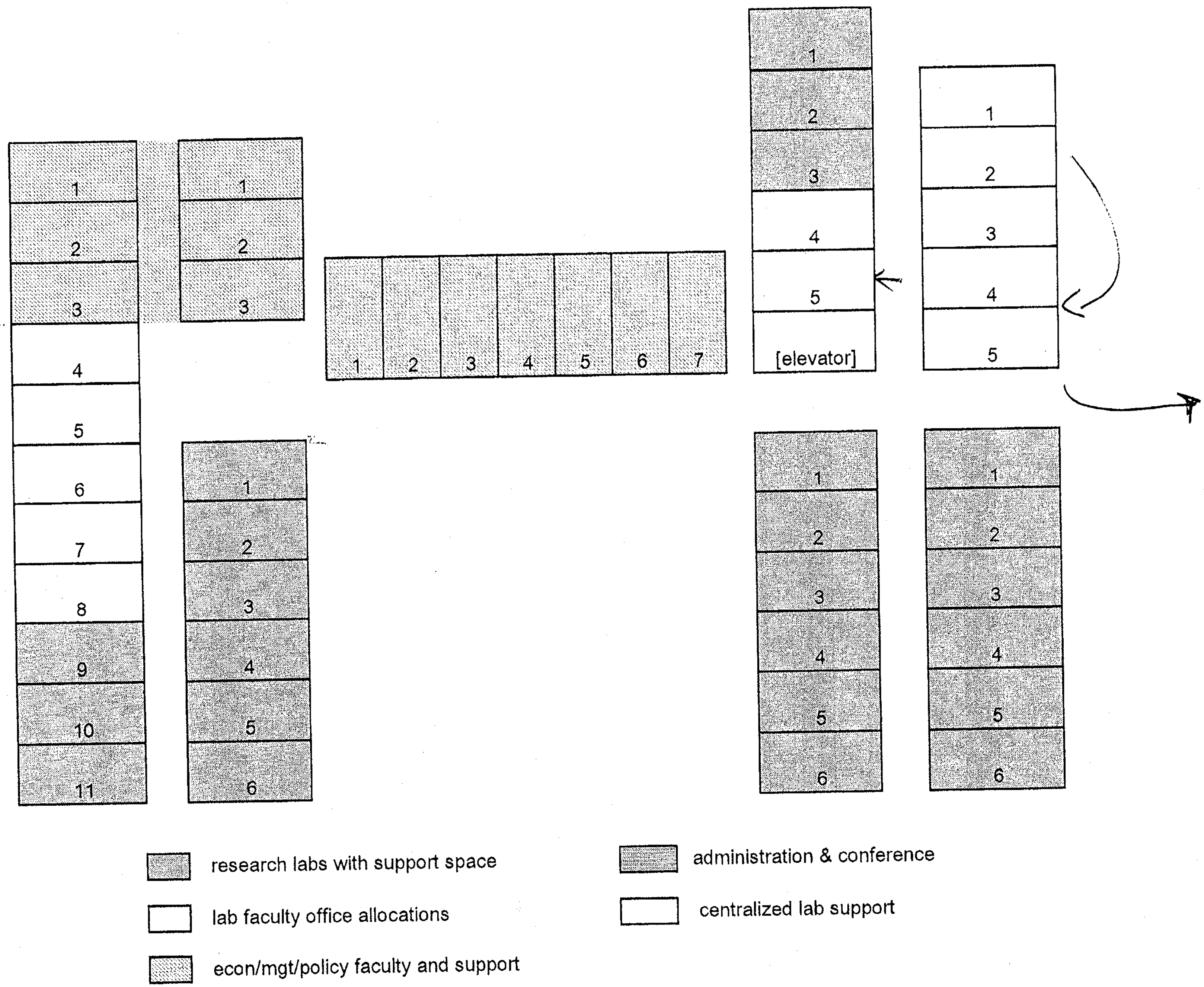


Planning Module Schematic: Geology Second Floor
Option 1B



Jim: Logistically, this may be best layout if you are going to bisect central wing

Planning Module Schematic: Geology Second Floor
Option 2



JLP

ARCHITECTS

INC

THE SCRIPPS RESEARCH INSTITUTE 3050 SCIENCES PARK ROAD
1ST & 2ND LEVEL EXPANSION

JLP #00-05.0

ANTIBODY CORE FACILITY EXPANSION

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER	**INSTRUMENT LAB ROOM 217**
ASF	456 sq. ft. (requested), 477 sq. ft. (provided)
CURRENT USE	Isolation Lab (vacant)
PLANNED USE	Instrument Lab
OCCUPANTS	2 Occasional?
SECURITY	Keyed lockable doors.
FINISHES:	
WALL	• New and existing gypsum board. • Semi gloss water based enamel.
FLOOR	Sheet vinyl with applied 4" rubber base.
CEILING	Standard SAT.
CEILING HEIGHT	8'-6"
DOORS/WINDOWS	• (1) 3'-6"x7'-0" door with window on corridor (20 min). • (1) 3'x0"x7'-0" door to Tissue Culture Room.
WINDOW COVERINGS	None
MECHANICAL	No. of air changes?
PIPING	Exposed in utility chase between benches.
PLUMBING	• Epoxy sink (28"x15"x12"D). • ICW, IHW, DI, type of fixture? Non-self closing valve on DI. • One cluster of LA, LG, LV at lab bench. • Provide DI above sink for nanopure.

. L P
A R C H I T E C T S
I N C

THE SCRIPPS RESEARCH INSTITUTE 3050 SCIENCES PARK ROAD
1ST & 2ND LEVEL EXPANSION
JLP #00-05.0

ANTIBODY CORE FACILITY EXPANSION

ROOM DESIGN CRITERIA

POWER	• Power requirements to be based on equipment list. • Provide dual channel raceway with single duplex outlets at 2'-0" O.C. • EM power at equipment and some instruments. Which? (deli case, refrigerator) • Users will provide UPS at computers as needed.
LIGHTING	• Types of fixtures? • Footcandles?
COMMUNICATIONS	• Telephone line? • (5) Data lines as shown on plan. • Provide dual channel raceway.
CASEWORK	• 30 inch wide (front to back) split benches with walk thru utility chase between. • Provide 5 to 6 ft. of extended vertical unistrut at back of bench to build rack for columns. • Open shelving above bench. • Tall storage unit with glass doors. • Wire rack shelving unit. • 24" flammable chemical undercounter storage.

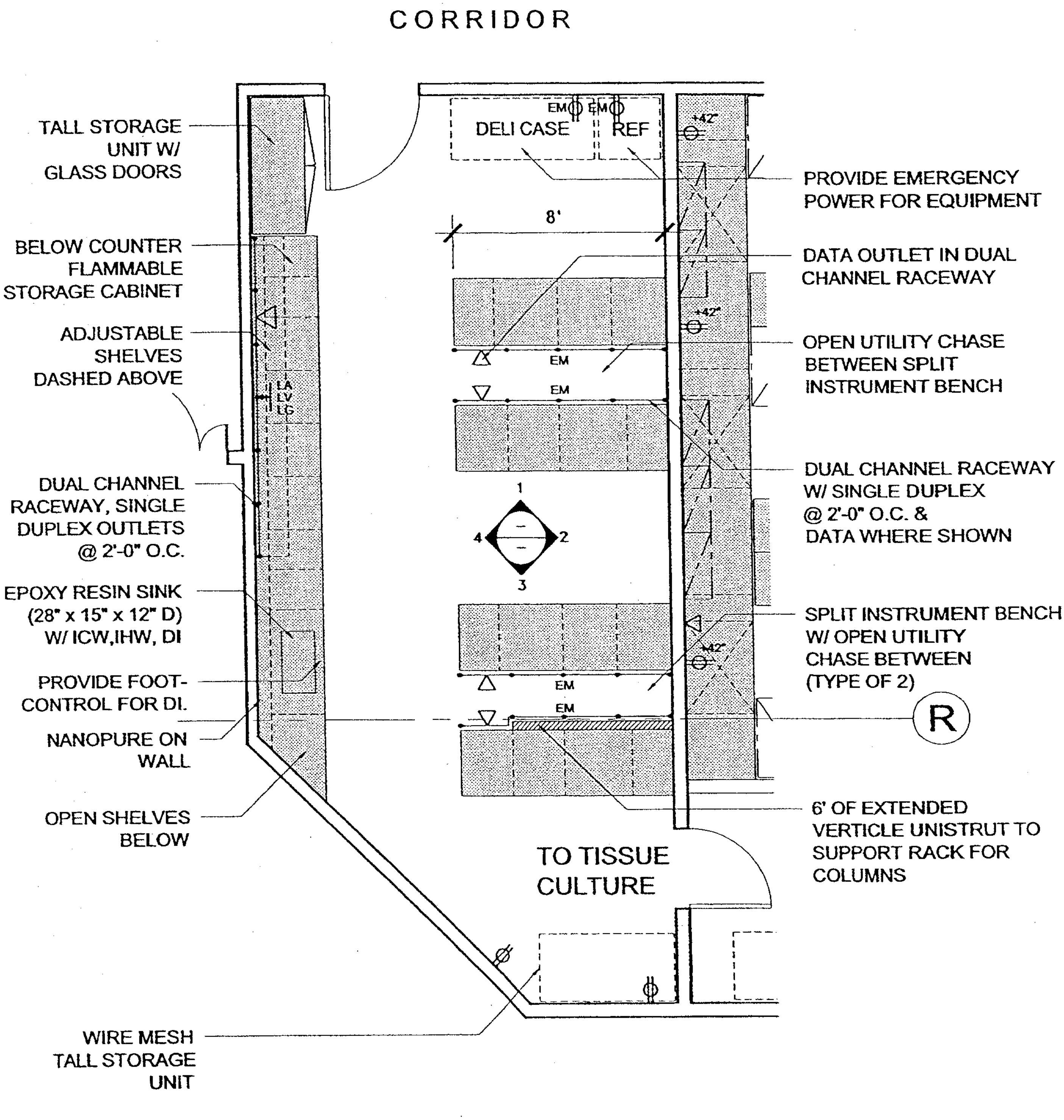
THE SCRIPPS RESEARCH INSTITUTE 3050 SCIENCES PARK ROAD
1ST & 2ND LEVEL EXPANSION

JLP #00-05.0

ANTIBODY CORE FACILITY EXPANSION

ROOM DESIGN CRITERIA

GROUP 1 EQUIPMENT	
GROUP 2 EQUIPMENT	• (1) Refrigerator • (1) delicase • Nanopure
FURNISHINGS	None
SPECIAL NEEDS	• The Instrument lab should be located with proximity to the Tissue Culture Room.



CORE EXPANSION
INSTRUMENT LAB ROOM 217

SCALE: 3/16" = 1'-0" AREA: 477 SQ. FT. DECEMBER 5, 2000

JLP ARCHITECTS, INC
ARCHITECTS PLANNERS CONSULTANTS

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION

JLP #01-03

ROOM TO BE DETERMINED

ROOM DESIGN CRITERIA

ROOM NAME/NUMBER ASF CURRENT USE PLANNED USE	
OCCUPANTS SECURITY FINISHES: WALL FLOOR CEILING CEILING HEIGHT	
DOORS/WINDOWS WINDOW COVERINGS	
MECHANICAL PIPING PLUMBING	

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION
JLP #01-03

ROOM TO BE DETERMINED

ROOM DESIGN CRITERIA

POWER LIGHTING	
COMMUNICATIONS	
CASEWORK GROUP 1 EQUIPMENT	

UNIVERSITY OF CALIFORNIA RIVERSIDE
GEOLOGY BUILDING RENOVATION

JLP #01-03

ROOM TO BE DETERMINED

ROOM DESIGN CRITERIA

GROUP 2 EQUIPMENT	
FURNISHINGS	
SPECIAL NEEDS	

jlp architects
260 NEWPORT CENTER DRIVE SUITE 100 NEWPORT BEACH CA 92660 TELEPHONE 949 729-9250 FAX 949 721-9406 EMAIL Jpirdy@JLPArchitects.com

MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *April 11, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Programming & Pre-architectural Design Phase - Meeting with Department of Earth Sciences**

ATTENDEES:

Barbara Badarak	MSO Earth Sciences
Chris Bradley	JLP Architects, Inc.
Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Sciences
Mary Droser	Professor Earth Sciences
Mike McKibben	Associate Professor, Earth Sciences
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Architect	JLP Architects, Inc.
Harry Green	UCR Earth Sciences/IGPP
Stephen Park	UCR Earth Sciences/IGPP

Action	Item	Description

15.1 WORKPLAN

A. Kieron advised that the decision has been made to move the Earth Sciences and Environmental Sciences class labs and general assignment classroom 1408 into Pierce Hall.

1. The instructional facilities will occupy space vacated by the Department of Chemistry when it moves to the new Physical Sciences Building.

2. This change will enable more space to be allocated for research labs in the Geology Building and to keep research groups together.

3. The GIS instructional lab will remain in the Geology Building.

B. Jim advised that he has met with the cost estimators for the project - Campbell Anderson & Associates - to begin development of a preliminary statement of probable cost for the project. A draft will be available on April 20, 2001.

Action	Item	Description

C. Jim has also received an outline of the mechanical, electrical and plumbing sections of the DPP from Bechard Long & Associates. JLP expects to receive a full draft of the document sections on April 23, 2001.

D. The purpose of this meeting is to finalize the space allocation in the Geology Building for the Department of Earth Sciences/IGPP and to begin to discuss specific room design criteria for the generic spaces which will be included in the program.

F. It was stressed that the design criteria should be general and not specific to any principal investigators.

15.2 DEPARTMENT OF EARTH SCINECES/IGPP SPACE ALLOCATION

A. All of the space in the basement and first floor of the Geology Building will be allocated to the Department of Earth Sciences and the IGPP.

B. Harry Green advised that a new director of the IGPP has been hired and that his appointment has major space implications.

1. The Dean has committed to IGPP two new positions including an earthquake physicist who will have space needs similar to Harry.

2. The IGPP will also require space for the director and five (5) administrative support staff.

3. Dr. Zank will have 3-4 researchers on his team.

4. Additional computer lab space of approximately 800 ASF is also needed.

5. When Harry overlays these additional space allocations, there is not enough space within the building to accommodate these needs.

C. Mike McKibbon also outlined the following additional space concerns:

1. A biogeochemist is currently being recruited by the department and no space has been located for this position.

2. A commitment was made last week by the Dean for a GIS position. This will require additional space.

Action	Item	Description

3. Earth Sciences/IGPP will completely fill the available space without these two positions. There is no expansion space beyond 2002-2003.

D. Kieron advised that the college has made an allowance for Zank's administrative space in the Geology Building. His labs will be located in the Physics Building.

1. A plan has been developed and approved to create additional space by adding a second floor in the area currently occupied by Plasma Physics.

2. Harry believes that Zank is operating with the understanding that his labs will be located in the Geology Building when the renovation is complete.

E. Office space is needed to accommodate visiting faculty. No additional research space is required.

F. The department faculty were meeting later in the day to review the five-year plan. Additional positions in the plan include the following:

1. Rock Mechanic
2. Geochronologist

15.3 TIMELINE - Accommodating growth in the Department of Earth Sciences.

A. Kieron stated that the Geology Building Renovation project is intended to address growth in the department to the year 2005-2006 when the Physical Sciences Building comes on line.

B. In 2003, the Sciences Labs Building will come on line providing release space in the Geology Building.

C. If the growth projections remain the same, the College should be able to address the growth needs of the Department of Earth Sciences/IGPP and the Department of Environmental Sciences.

1. 2006 will be the "saturation point" for the Geology Building.

2. The Department of Environmental science will "bleed" into Pierce Hall.

3. Pierce Hall is viewed as the "relief valve."

Action	Item	Description
BS		D. Kieron requested that the department identify clusters of research groups that could move to Pierce.
		E. All of the space allocations do not include use of the sub-basement. The planning team is in the process of defining the costs that will be necessary to make the space accessible and usable.
UCR/APB	15.4	GIS OPEN INSTITUTIONAL LAB: The department representatives requested that consideration be given to relocating the GIS Open Lab to Pierce Hall with the other instructional programs. Kieron and Lisa will review the request and advise the planning team.
	15.5	THE DEPARTMENT OF EARTH SCIENCES/IGPP were asked to revise the block diagrams illustrating how they wish to allocate the available space.
		A. They should begin with the Modified Planning unit of three modules per principal investigator.
		B. They were also requested to fill out the Room Design Criteria sheets which were forwarded previously. One RDC should be developed for each generic space in the departmental program.
		C. Copies will be forwarded to JLP on April 16, 2001.
JLP	15.6	JLP was requested to have the consulting structural engineers - Degenkolb Engineers - analyze the vibration characteristics and floor loading capacity of if the existing Geology Building.

This report was prepared & distributed by *JLP Architects, Inc.* on 4.12.2001.

JLP Architects, Inc.

James L. Pirdy

James L. Pirdy, Architect
Principal
JLP/km

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *May 16, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: **Workshop #3 - Programming & Pre-architectural Design Phase**

ATTENDEES:

Barbara Badarak	MSO - Department of Earth Sciences
Chris Bradley	JLP Architects, Inc.
Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Srvcs.
Harry Green	UCR IGPP/Earth Sciences
George MacMullin, P.E.	Project Manager/Engineer/Office of Design & Construction
Michael McKibben	UCR Department of Earth Sciences
Dave Parker	UCR Department of Environmental Sciences
Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
James L. Pirdy, Arch.	JLP Architects, Inc.
Michael Rettig	UCR Chemistry Department
Yat – Sun Poon	Associate Dean – CNAS
Michael Woodburne	UCR Department of Earth Sciences

Action	Item	Description

16.1 DRAFT DETAILED PROJECT PROGRAM - the purpose of the meeting was to review a draft of the DPP.

A. Lisa Peloquin requested that the committee members send their review comments to her within one week.

B. Harry Green advised that he could not meet that deadline and would be out of town until May 27th, 2001.

UPDATE: Lisa has requested that all committee comments be forwarded to her by May 30, 2001.

16.2 Jim Pirdy reviewed the Draft DPP. The following sections of the document were discussed.

A. *Section 4.0 - Analysis of Existing Conditions.*

1. Jim asked the committee members to review this section closely.

Action	Item	Description

2. It documents existing conditions within the Geology Building and is the basis for the request for funds to renovate the building.

3. If there are conditions not documented which committee members are aware of, it is very important that they be incorporated into the document.

B. *Section 5.0 - Space Program*

1. The instructional spaces have been removed from the Master Space List and Space program. They will be relocated to Pierce Hall after completion of the *Physical Sciences Building* to create more space for research labs.

2. Updated Functional Plans are included within this section which reflect the most recent allocation of space requested by the departments. Committee members were requested to review the drawings carefully to insure that they accurately reflect their intent.

C. *Section 6.0 - Conceptual Lab Design*

1. This section contains information on the existing building module and the *Modified Planning Unit* that has been developed for the Geology Building Renovation project.

2. Jim emphasized that the Modified Planning Unit will enable the design team to implement laboratory designs on a more conventional 10'-6" dimension.

3. The section also contains information on alternate laboratory casework systems.

D. Section 7.0 - Building Systems Criteria

1. Floor loading and vibration criteria have been added to this section of the DPP since the presentation to the committee of the building seismic evaluation.

2. A mechanical, electrical and plumbing systems Basis of Design has also been added.

E. *Section 9.0 - Cost Plan*

Action	Item	Description

1. The *Cost Plan* contained in the document is dated and was developed prior to the completion of a draft of the DPP to assist the Office of Academic Planning and Budget.

2. The cost estimator is working on a revised cost plan.

3. The revised cost plan needs to reflect the final schedule and phasing plan for the project.

G. *Section 11.0 - Room Design Criteria*

1. The committee was asked to review the RDC carefully as it will be the basis for the final design of the lab spaces.

JLP 2. Lisa Peloquin asked JLP to prepare RDC sheets for the instructional spaces which will be relocated to Pierce Hall.

UPDATE: Draft RDC sheets for the instructional spaces were delivered to Lisa Peloquin on 5.22.2001 for distribution and review.

16.3 The following additional drawings and documents were distributed to the committee.

A. *New Stair, Elevator and Shaft* (see attachment)

1. These will be located on the east end of the North Wing and are intended to increase access to the subbasement.

2. The proposed location enables the stair/elevator/shaft to be constructed outside the existing building which should minimize disruption during construction.

3. It is also adjacent to the loading dock.

4. The existing hoist will remain. George MacMullin advised that it has recently been upgraded.

B. *Subbasement Memorandum:* this document summarized the problems with the subbasement and recommended uses.

1. The floor-to-floor height of 10'-3" results in clear ceiling heights which are less than 8'-0" in areas of the subbasement.

Action	Item	Description

2. The space is not suitable for traditional laboratory and office space but can serve various support and storage functions.

3. The new stair/elevator on the east end of the North Wing and the renovated stair proposed for the west and will provide legal access/egress to the subbasement.

C. *Center Wing Drawings* (see attachment)

1. These drawings illustrate the departmental administrative offices to be located on the first and second floors of the center wing.

2. The drawings presented to the committee were the second iteration following the receipt by JLP of one set of review comments by each department.

16.4 PROJECT FUNDING

A. Lisa Peloquin advised that the UCR campus has been designated as a growth campus and, as such, all capital requests must support increased student enrollment.

1. Consequently, the state has advised the campus that it will fund only new buildings and not renovation projects.

2. The Office of Academic Planning and Budget is attempting to devise an alternate funding strategy which seeks Deferred Maintenance funds to complete the architectural renewal portions of the project.

B. The architectural renewal phases of the Geology Building Renovation project must follow completion of the HVAC DM projects (or simultaneously).

16.5 HVAC DEFERRED MAINTENANCE PROJECTS - George MacMullin provided the following update:

A. *Exhaust Fan Replacement Project*

1. The project is currently at 50% completion of construction documents.

2. The project will bid in June with construction starting during the summer.

Action	Item	Description

B. *Supply Air Project*

1. The 100% conceptual design has been approved.

2. Construction documents on Phase 1 (Center Wing) of the project will begin in one week.

3. George hopes to be able to fund some add alternates in the Phase 1 project.

4. The Phase 1 project will go out for bid in July with construction commencing in September and completion in September 2002.

5. The construction schedule is predicated on the 1st and 2nd floor spaces currently occupied by library storage being vacated.

C. *Phase 1 & 2 Funding*

1. George and Lisa advised that they are attempting to obtain funding for Phase 1 and 2 construction documents.

JLP 2. George needs to know which wing (North or South) to give priority. This will be dictated by the renovation phasing plan in the DPP.

16.6 PROJECT PHASING

A. Lisa stated that the phasing for the project is extremely complex and involves "a series of dominos" based on available funding.

B. The state directive that no capital funds can be used for renovation projects forces this project to compete with other areas of the campus for Deferred Maintenance Funds.

1. The problem is the magnitude of DM funds that are available.

2. If there is a surplus it will most likely go to fund the design phases.

3. DM funds are available in September of each year.

C. Jim presented a summary of the issues and factors that will impact the schedule and phasing of the Geology Building renovation project. These include the following:

Action	Item	Description

1. Approved funding for the proposed Deferred Maintenance and Renewal projects.

2. Approved funding for completion of the HVAC and Exhaust System Upgrade Deferred Maintenance projects.

3. Completion of the Science Laboratory Building during the summer of 2003.

4. Completion of the Physical Sciences Building in October of 2005.

5. The degree to which Pierce Hall must be renovated to accommodate the instructional facilities which will be relocated from the Geology Building.

D. Jim reviewed composite floor plans of the building which illustrated when different areas of the building would be vacated and available for renovation. It suggests that the South Wing/2nd Floor is the most logical second phase.

E. The Draft DPP also contains a preliminary schedule with three (3) DM project phases and three (3) Architectural Renewal phases the last of which would be completed in October of 2006.

1. Jim emphasized that completion of the DM projects is critical. It makes no sense to renovate space and then connect it to an old, dirty HVAC system.

2. Kieron and Yat-Sun Poon expressed concern about the impact a long, multi-phased schedule would have on faculty recruitment for the college. Dave Parker has the same concern for his department.

F. Lisa felt that the South Wing architectural renewal may require sub-phases due to the lack of adequate funds. This will only extend the overall schedule.

G. The consensus of the committee was that additional funding sources need to be sought so that the academic plan will not be compromised. If not, the Geology Building Renovation project could drag on for ten years.

16.7 PROJECT FUNDING - the committee summarized the following arguments

Action	Item	Description

for funding the project:

A. Much existing space within the building is not useable for contemporary research because of its deteriorated condition.

B. The building systems do not function properly resulting in hazardous indoor air quality which is a risk to the building inhabitants and their research.

C. The academic missions of the departments and the college are being jeopardized.

D. The full renovation and upgrade of the Geology Building is less expensive than the construction of a new building.

E. The smaller and more numerous the renovation projects, the less efficient and more expensive the combined projects become.

F. Dependence on DM funds for the project could significantly delay or kill the project.

This report was prepared and distributed by *JLP Architects, Inc.* on May 30, 2001.

JLP Architects, Inc.

James L. Purdy

James L. Pirdy, Architect
Principal
JLP/km
Lisa Peloquin to distribute to UCR
c.c. Chris Smith, Degenkolb Eng./Alan Wilson, Bechard Long Associates/Graham Anderson, Campbell-Anderson Associates
Attachments:
- *Draft DPP - provided to each committee member at the meeting.*
- *Drawings of new stair/elevator/shaft and retrofit of existing stair dated 5.2.02.*
- *Memorandum re recommended uses of the subbasement dated 5.16.01.*
- *Center Wing 1st floor drawing dated 5.9.01.*
- *Center Wing 2nd floor drawing dated 5.9.01.*

DRAFT

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MEETING REPORT

UCR GEOLOGY BUILDING RENOVATION *May 22, 2001*

PROJECT NO.: JLP #01-03.1 /UCR #950446

REGARDING: Project Phasing

ATTENDEES:		
	Polly Breitkreuz	Space Management -UCR Academic Planning & Budget
	Kieron M. Brunelle	Educational Facilities Planning Consultant, UCR College of Natural & Agricultural Sciences
	George MacMullin, P.E.	Project Manager/Engineer/Office of Design & Construction
	Lisa Peloquin	Project Manager, Capital & Physical Planning, Office of Academic Planning & Budget
	James L. Pirdy, Architect	JLP Architects, Inc.

Action	Item	Description
	17.1	Jim Pirdy provided the following documents:
UCR		A. Draft Room Design Criteria sheets for the instructional spaces that will be relocated to Pierce Hall.
JLP		B. Revised Section 5.0 of the DPP with corrections in the Space Program. Square footage adjustments that remain to be completed include the connecting corridor to the Science Labs Building and the addition of the new elevator, stair and mechanical shaft.
JLP		C. Drawings of the Center Wing illustrating the location of the proposed mechanical shafts for the Phase 1 Deferred Maintenance project. JLP will coordinate the final location of the shafts with the university's consulting engineers BLA, Inc.
	17.2	Lisa Peloquin advised that the CPEC presentation to the Chancellor will be delayed until the fall.
	17.3	The purpose of the meeting was to discuss the phasing of the Geology Building Renovation project.

Action	Item	Description

A. Kieron Brunelle passed out a document illustrating the college's projected hiring of FTE faculty through the year 2006/07 (see attachment).

B. The document shows the need for the Geology Building to accommodate thirty (30) principal investigators by the year 2005/06.

17.4 Released Space - the following areas within the Geology Building were identified as vacated on the referenced dates and available for renovation.

A. *Center Wing* 9.2001
1. Basement 2616 ASF
2. First Floor 2479 ASF
3. Second Floor 4603 ASF

B. *Center Wing* 9.2002 - Administrative areas which can be relocated to the Center Wing following the completion of the *Phase 1 HVAC Deferred Maintenance* project.

1. *Earth Sciences*

• 1424	550 ASF
• 1430	60 ASF
• 1432	19 ASF
• 1432A	315 ASF
• 1432BA	90 ASF
• 1432BB	97 ASF
• 1432D	62 ASF
• **Total**	**1284 ASF**

2. *Environmental Sciences*

• 2208	348 ASF
• 2208A	72 ASF
• 2208B	174 ASF
• 2208D	175 ASF
• 2208E	272 ASF
• 2217	323 ASF
• 2217A	165 ASF
• 2217B	140 ASF
• 2207	200 ASF
• 2205	67 ASF
• 2204	30 ASF
• 2202	80 ASF
• **Total**	**2046 ASF**

Action	Item	Description

C. South Wing/2nd Floor 10.2003 - Research groups that will relocate to the science Labs Building.

1. Chang *Lab*
   - 2265
   - 2265A
   - 2265B
   - 2456
   - Subtotal — *1454 ASF*

2. Crowley *Lab*
   - 2233
   - 2247
   - 2247A
   - 2247B
   - Subtotal — *1790 ASF*

3. Parker *Lab*
   - 2410
   - 2414
   - 2416
   - 2460B
   - 2460C
   - Subtotal — *1205 ASF*

4. Adjustment for connecting corridor to Science Lab Building (280 ASF)

   - **Total** — 4169 **ASF**

17.5 PHASING SCENARIOS

A. Lisa Peloquin directed that the following assumptions be used in developing the initial phasing plan.

1. Design and construction documents for all phases of the HVAC Deferred Maintenance Projects will be completed in 2001.

2. Phase I (Center Wing) will be constructed in 2001/2002.

3. Phase II (South Wing) will be constructed from 9.2002 to 9.2003.

Action	Item	Description

4. Phase III (North Wing) will be constructed from 9.2003 to 9.2004.

JLP B. Lisa asked that JLP propose a second "ideal" scenario.

17.6 GEOLOGY BUILDING CAPACITY

JLP A. Based upon the *modified planning unit* developed during the programming phase (3 modules/1200 ASF), JLP was asked to determine how many principal investigators can be accommodated within the Geology Building.

UPDATE: *A preliminary calculation is as follows:*

- *Basement - 22 modules/7 PI*
- *1st Floor - 41 modules/13 PI*
- *2nd Floor - 42 modules/14PI*

17.7 DPP DRAFT COMMENTS

A. George MacMullin gave a brief summary of his comments on the draft. He will forward them to Lisa Peloquin for transmittal to JLP.

B. Lisa has established a deadline of May 30, 2001 for receipt of all comments from the building users.

17.8 A meeting has been scheduled for June 1, 2001 from 8:30am - 11:30am to review phasing issues.

This report was prepared by *JLP Architects, Inc.* on May 23, 2001.

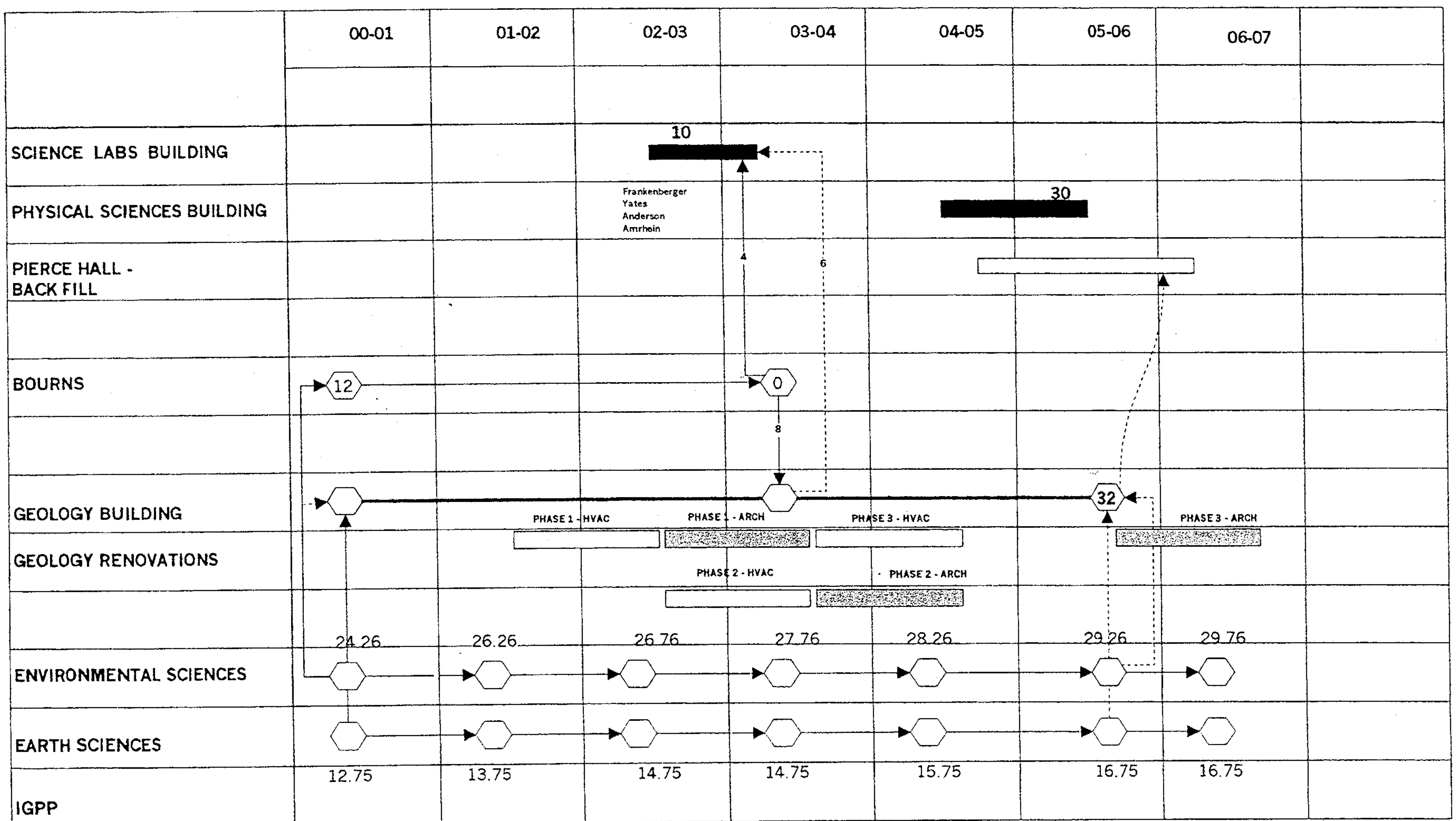
JLP Architects, Inc.

James L. Pirdy

James L. Pirdy, Architect
Principal
JLP/km
Lisa Peloquin to distribute to UCR

c.c. Chris Smith, Degenkolb Engineers
Alan Wilson, Bechard Long & Associates
Graham Anderson, Campbell-Anderson Associates

Enclosures:
- Brunelle Hiring Schedule



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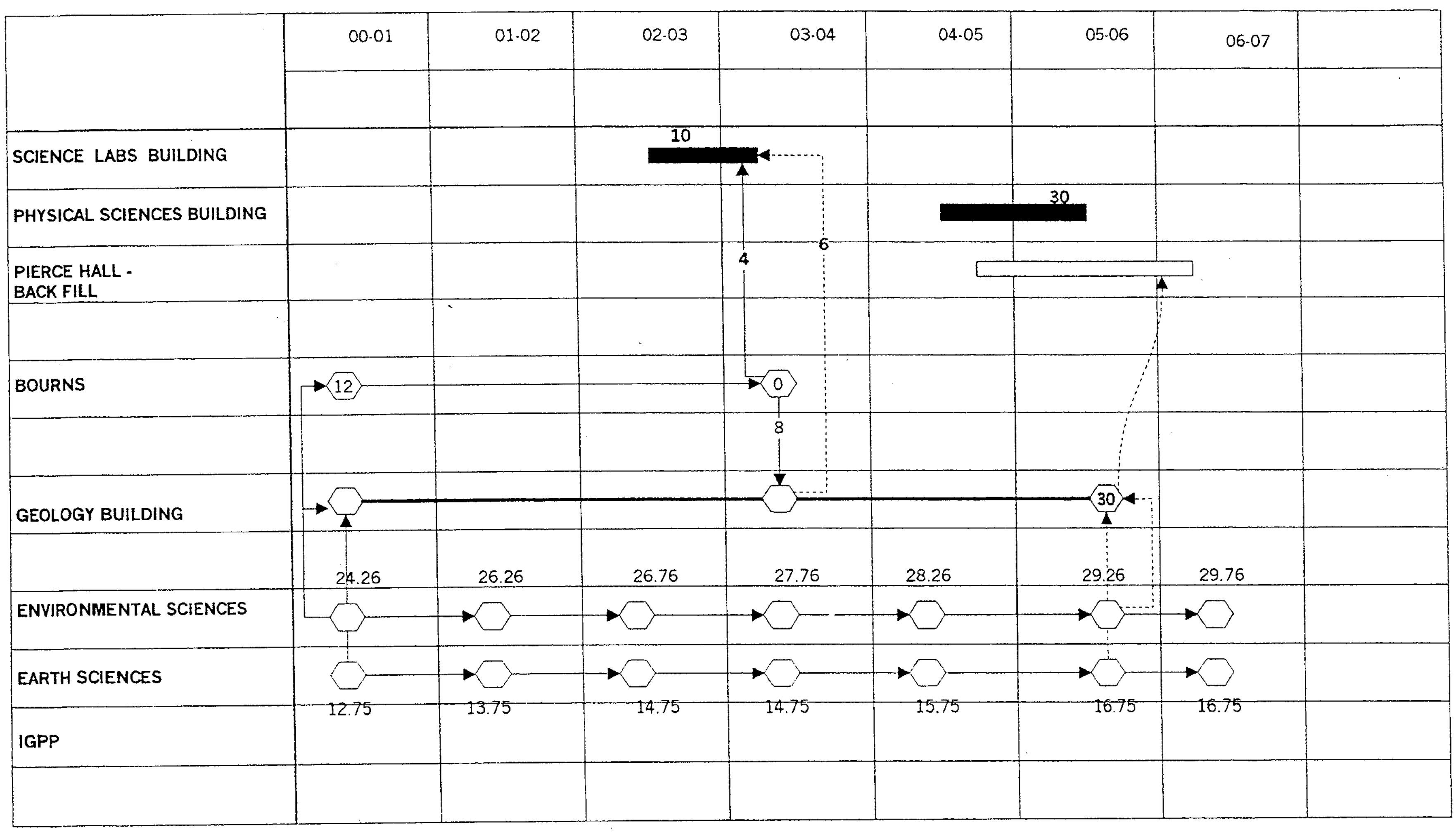

00-01
01-02
02-03
03-04
04-05
05-06
06-07
SCIENCE LABS BUILDING
PHYSICAL SCIENCES BUILDING
PIERCE HALL - BACK FILL
BOURNS
GEOLOGY BUILDING
ENVIRONMENTAL SCIENCES
EARTH SCIENCES
IGPP
10
30
4
6
12
0
8
30
24.26
26.26
26.76
27.76
28.26
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14.75
15.75
16.75
16.75

Degenkolb

San Francisco East
San Francisco West
Los Angeles
Portland
Oakland
San Diego
Salt Lake City

February 15, 2001

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Reference: **EXISTING BUILDING STRUCTURAL ASSESSMENT GEOLOGY BUILDING RENOVATION PROJECT AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE [DEGENKOLB JOB NO. A10034.00]**

Dear Jim:

As requested, we have completed a structural assessment of the Geology Building, located on the University of California, Riverside campus. In order to perform this assessment we have conducted a site visit, reviewed both the original structural documents as well as the structural upgrade drawings, and reviewed a previous structural analysis report. In addition, we have performed a FEMA 310 analysis based on the building type and its site properties. The assessment primarily addressed the FEMA 310 Life Safety criteria; however, limited Immediate Occupancy assessment was also performed. The single story southern portion of the South Building, as referenced in Figure 7 of Appendix C, is to be demolished and was not part of this assessment.

STRUCTURAL SYSTEMS

The Geology Building consists of two individual buildings, separated by a 2-inch seismic expansion joint. The buildings are designated as the "South Building" and the "North Building." The project appears to have been phased with the South Building constructed first.

Both the South and North Buildings have been seismically upgraded. Nabih Youssef and Associates (NYA) prepared the construction documents for this upgrade dated, February 27, 1997The seismic upgrade appears to have been based upon a report dated December 6, 1995 and titled, "Seismic Evaluation Report" also prepared by NYA.

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February 15, 2001

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Reference: **EXISTING BUILDING STRUCTURAL ASSESSMENT GEOLOGY BUILDING RENOVATION PROJECT AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE [DEGENKOLB JOB NO. A10034.00]**

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SOUTH BUILDING

The South Building construction documents are dated May 1, 1952. The building consists of a basement plus two upper levels. An exterior elevation of the building can be seen in Figure 8. The South Building is a cast-in-place concrete structure with both reinforced masonry and reinforced concrete shear walls and is T-shaped in plan. Partial floor plans of this building can be found in Appendix A. The South Building is classified as a bearing wall system with a rigid diaphragm. The gravity system consists of a one-way concrete slab that spans to reinforced concrete beams spaced at 14'-6" on center. Shear walls and reinforced concrete columns support these beams. The basement walls are retaining. The foundations consist of conventional reinforced concrete pad or wall footings.

South Building structural improvements done in 1997 included the installation of reinforced concrete shear walls at grids E and H. Both walls are full height. In addition, three new concrete columns were installed immediately adjacent to existing concrete columns, providing additional strength to the existing columns. The new columns can be seen in Figure 10 of Appendix D.

NORTH BUILDING

The North Building construction documents are dated April 16, 1959. The building consists of a basement plus three upper levels. An exterior elevation of the building can be seen in Figure 11 of Appendix D. The North Building is also a cast-in-place concrete structure with both reinforced masonry and reinforced concrete shear walls. It however, is rectangular in shape with an open window wall at the northern face. An elevation of this open face can be seen in Figure 12 of Appendix D, and partial floor plans of this structure can be found in Appendix B. It is also classified as a bearing wall system with a rigid diaphragm. The gravity system consists of a one-way concrete slab that spans to reinforced concrete beams spaced at 14'-6" on center. Shear walls and reinforced concrete columns support these beams. The basement walls are partially retaining and the foundations consist of conventional reinforced concrete pad and wall footings.

North Building structural improvements in 1997 were limited to the upgrade of a single column spanning from the Ground floor to the First Level. This was performed through the use of a composite material or "fiber wrap."

FIELD INVESTIGATION

In order to observe the general condition of the building and to confirm the extent of the seismic upgrade performed in 1997, Chris Smith and Steven Oh of this office conducted a site visit on February 8, 2001. During the site visit, the layout of the original structure was generally verified for both the North and South Buildings.

The new shear walls and roof collector elements that were installed in the South Building as part of the recent structural upgrade were located and can be seen in Figure 9 of Appendix D, and the new column improvements appeared to have been installed per plan.

ASSESSMENTS

In order to assess each building, the upgrade drawings were reviewed in conjunction with the original structural drawings. Also used as a reference was the report generated by NYA in 1995.

The FEMA 310 document is the result of earthquake lessons learned in the 1990's and is the successor to FEMA 178. FEMA 310 retained the core concepts of FEMA 178, advancing and improving them. Some of the advancements as written in FEMA 310 include the "introduction of multiple performance levels, improved guidance for areas of moderate and low seismicity, and newly identified weak links in buildings." Although categorized as a "Prestandard," FEMA 310 is a consensus document that represents the most current thinking of structural engineering practice. Hence, FEMA 310 is the latest information and should be considered the latest version of FEMA 178.

Per FEMA 310, both the North and South Buildings are classified as C2, Concrete Shear Wall Buildings with Stiff Diaphragms. Although the buildings have a combined seismic resisting system of reinforced masonry and reinforced concrete shear walls, the large difference in stiffness between the brick and the concrete walls validates this evaluation approach. However, since both wall types were modeled and determined to resist lateral loads, a checklist was provide for the masonry shear wall type as well. The completed checklists and the identified seismic deficiencies may be found in the appendices corresponding to each building.

The University of California utilizes a seismic performance rating system. A summary of categories has been included in Appendix C. For the purposes of this report, a "Fair" rating by the University system would roughly correspond to the FEMA 310 criteria of Life Safe. A "Good" rating by the University system would be something better than the FEMA 310 criteria of Life Safe but would not necessarily meet FEMA 310's criteria for an Immediate Occupancy rating.

SOUTH BUILDING

The South Building seismic deficiencies are limited to the vertical discontinuities associated with some of the shear walls. There are a total of 4 discontinuous shear walls, all of which are located at the interior corridor of the building. Supporting each discontinuous shear wall are two reinforced concrete columns. The columns supporting these walls must be capable of supporting the load that can be delivered to the columns by the shear walls located directly above. In order

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to bring the structure up to a FEMA 310 Life Safe categorization, column strengthening should be performed.

In order to bring the South Building into compliance with the minimum requirements of the FEMA 310 Immediate Occupancy criteria, several additional structural items would need to be addressed. Shear wall strengthening would be required, as well as the strengthening of some foundation elements. Also, the diaphragm would need strengthening both for the reentrant corner and at diaphragm openings.

NORTH BUILDING

The North Building also exhibits several seismic deficiencies. Most could be related back to the very long north wall face that currently has no shear walls above the ground level. The deficiencies range from torsional irregularities and a weak story to inadequate and discontinuous shear walls.

Several walls were determined to have insufficient strength. Also, a discontinuous shear wall was located along Grid 8. It is recommended that the inadequate strength of the concrete column that supports the shear wall be addressed.

In order to bring the North Building into compliance with the FEMA 310 Immediate Occupancy requirements, several additional issues would need to be addressed. First, the extent of shear wall strengthening would need to be expanded. Second, some foundations would require strengthening. Finally, detailing issues such as additional trim reinforcing around openings in the diaphragms would be required.

CONCLUSIONS

Deficiencies still exist with the buildings that would prevent the building form being classified as either Life Safe or Fair per FEMA 310 or the University, respectively. Despite the construction performed in the 1997 seismic upgrade, the South Building deficiencies consist of shear wall discontinuities and inadequate strength in the columns that support them. At the North Building, the deficiencies that remain include shear wall strength deficiencies, a torsional irregularity, a weak story, and shear wall discontinuities and the related supporting column strength deficiencies.

RECOMMENDATIONS FOR FURTHER ACTION

In order to bring both the South and North Buildings up to a FEMA 310 Life Safe classification, it is recommended that the deficiencies noted in the conclusions be mitigated. To accomplish this, new elements and upgrading existing elements would be required. A summary for each building is included below.

SOUTH BUILDING

In order to mitigate the shear wall discontinuities, strengthening of the concrete columns that support these walls is recommended. Strengthening could be achieved through concrete encasement of the four columns located at Grids 3F, 3G, 13F, and 13G. A plan that includes this strengthening scheme and the column locations is located in Appendix A.

NORTH BUILDING

Although there are several deficiencies associated with the North Building, most can be resolved through the installation of shear walls along Grid Z at the north face of the building. These walls should be full height and can either be concentrated at the two corners of the building along one-and-a-half bays each or segmented out across three bays. The existing walls located at the basement level will most likely require some strengthening, either by strengthening the walls themselves or the adjacent columns. No foundation work is anticipated for this portion of strengthening. Also part of the recommended mitigation is the installation of a new two-level concrete shear wall along Grid 8. This shear wall would span from the Basement to the First Level and would require foundation work. Plans that include these strengthening schemes are located in Appendix B.

It is a pleasure to be of assistance on this University of California, Riverside project. Please do not hesitate to call if you have any questions.

Sincerely,

DEGENKOLB ENGINEERS

Brenda Guyader
Design Engineer

Christopher J. F. Smith
Principal

cc: File

APPENDIX A: SOUTH BUILDING

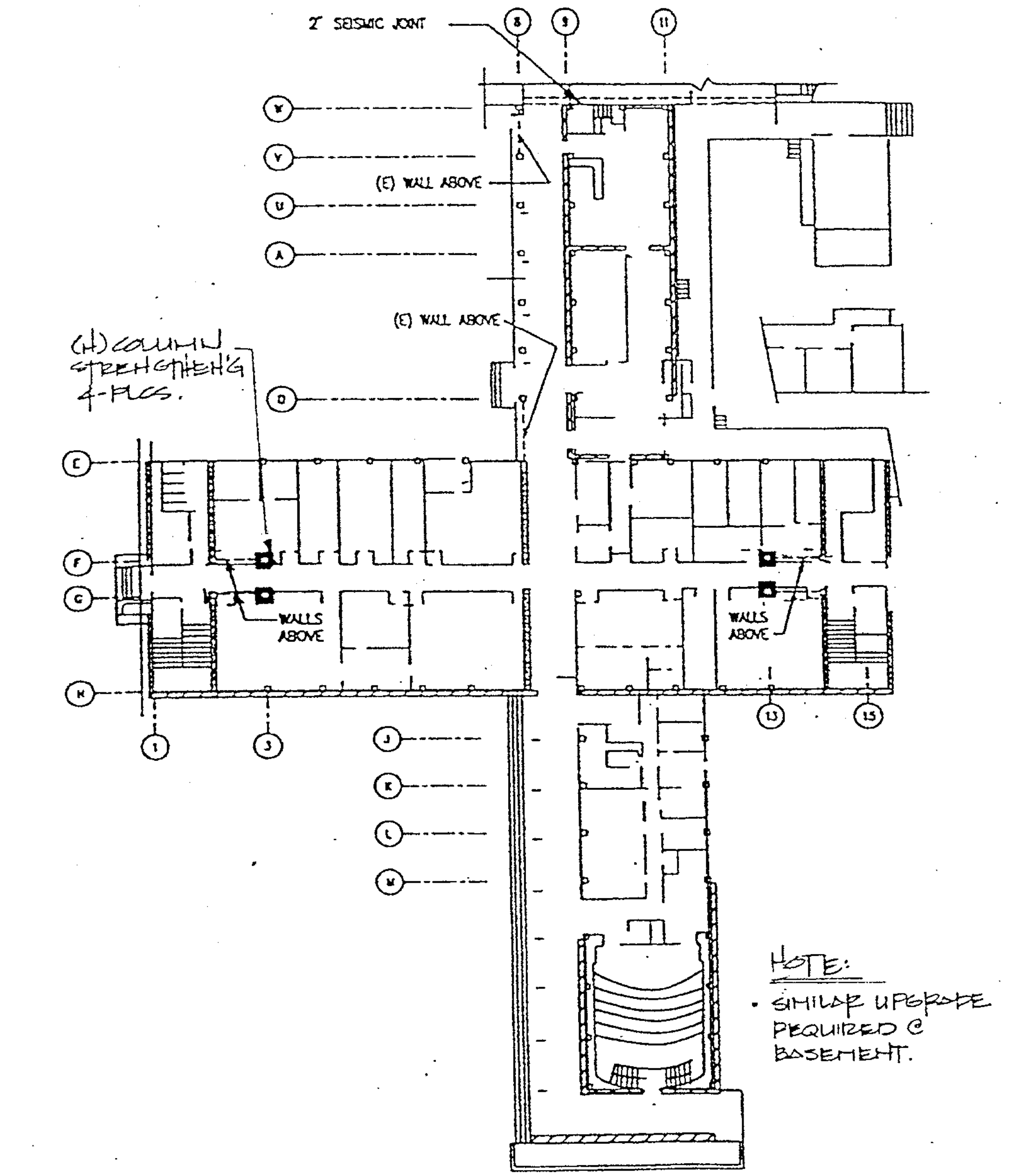


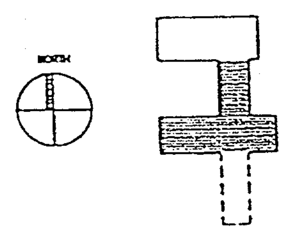
Figure 2: Ground Floor Plan

LEGEND

(E) REIN. BRICK WALL

(E) REIN CONCRETE WALL

(E) CONC COLUMN W/ (N) STRENGTHEN'G



KEY PLAN

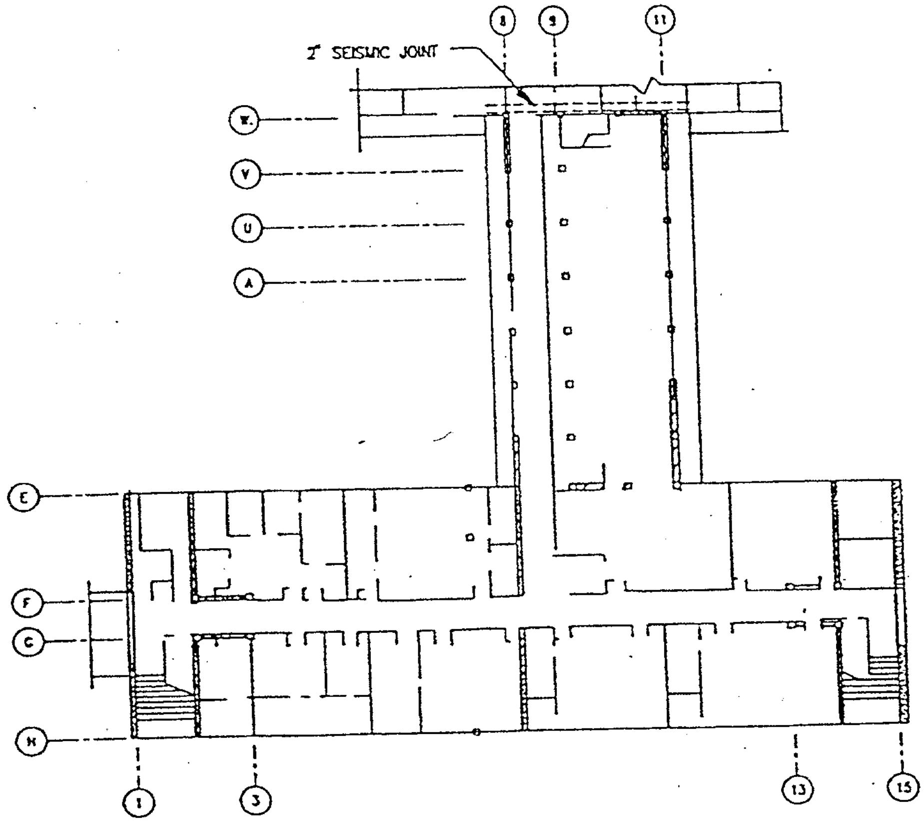


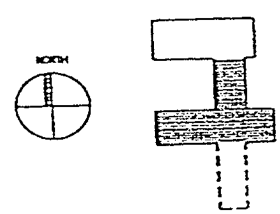
Figure 1: Second Floor Plan

LEGEND

(E) REIN. BRICK WALL

(E) REIN CONCRETE WALL

(E) CONC COLUMN W/ (N) STRENGTHEN'G



KEY PLAN

Degenkolb

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Fax 310-571-3547

Building Name: Geology Building Renovation Project - South | Date: February 15, 2001

Building Address: University of California, Riverside | Page: 1 of 2

Job Number: A10034.00 Job Name: UCR Geol Bldg | By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				BUILDING SYSTEM	
☒	☐	☐	4.3.1.1	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation.	
☐	☐	☒	4.3.1.3	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure.	
☒	☐	☐	4.3.2.1	WEAK STORY: The strength of the lateral-force-resisting-system in any story shall not be less than 80% of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy	
☒	☐	☐	4.3.2.2	SOFT STORY: The stiffness of the lateral-force-resisting-system in any story shall not be less than 70% of the stiffness in an adjacent story above or below, or less than 80% of the average stiffness of the three stories above or below for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.3	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses.	
☐	☒	☐	4.3.2.4	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation.	Columns support discontinuous shear walls.
☒	☐	☐	4.3.2.5	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.6	TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.3.4	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements.	
☒	☐	☐	4.3.3.5	POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used.	
☒	☐	☐	4.3.3.9	CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern.	

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Building Name: Geology Building Renovation Project - South   Date: February 15, 2001

Building Address: University of California, Riverside   Page: 2 of 2

Job Number: A10034.00   Job Name: UCR Geol Bldg   By: SO   Checked: CFS

FEMA 310 BASIC CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments

LATERAL FORCE RESISTING SYSTEM

C	NC	N/A			Comments
☒	☐	☐	4.4.1.6.1	COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical load carrying system.	
☒	☐	☐	4.4.2.1.1	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.4.2.2.1	SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 100 psi or 2 for Life Safety and Immediate Occupancy.	Tier 2 Analysis shows OK
☒	☐	☐	4.4.2.2.2	REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be greater than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18" for Life Safety and Immediate Occupancy.	

CONNECTIONS

C	NC	N/A			Comments
☒	☐	☐	4.6.2.1	TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the shear strength of the walls for Immediate Occupancy.	Tier 2 Analysis shows OK
☒	☐	☐	4.6.3.5	WALL REINFORCING: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the strength of the walls for Immediate Occupancy.	

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FEMA 310 SUPPLEMENTAL CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☒	☐	☐	4.4.1.6.2	DEFLECTION COMPATIBILITY: Secondary components shall have the shear capacity to develop the flexural strength of the elements for Life Safety and shall have ductile detailing for Immediate Occupancy.	
☐	☐	☒	4.4.1.6.3	FLAT SLABS: Flat slabs/plates classified as secondary components shall have continuous bottom steel through the column joints for Life Safety. Flat slabs/plates shall not be permitted for the Immediate Occupancy Performance Level.	
☐	☐	☒	4.4.2.2.3	COUPLING BEAMS: The stirrups in all coupling beams over means of egress shall be spaced at or less than d/2 and shall be anchored into the core with hooks of 135° or more for Life Safety and Immediate Occupancy. In addition, the beams shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy.	
☐	☐	☒	4.4.2.2.4	OVERTURNING: All shear walls shall have aspect ratios less than 4 to 1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.5	CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2.0, the boundary elements shall be confined with spirals or ties with spacing less than 8 d_b. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.6	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.7	WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the minimum unsupported height or length, nor less than 4". This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
				DIAPHRAGMS	
☒	☐	☐	4.5.1.1	DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors. In wood buildings, the diaphragms shall not have expansion joints.	
☒	☐	☐	4.5.1.4	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy.	
☐	☐	☒	4.5.1.7	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.

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Date: February 15, 2001
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Job Number: A10034.00 Job Name: UCR Geol Bldg
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FEMA 310 SUPPLEMENTAL CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
			DIAPHRAGMS		
☐	☐	☒	4.5.1.8	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
			CONNECTIONS		
☐	☐	☒	4.6.3.10	LATERAL LOAD AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy.	

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Date: February 15, 2001

Building Address: University of California, Riverside

Job Number: A10034.00 Job Name: UCR Geol Bldg
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FEMA 310 BASIC CHECKLIST RM2.

REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

BUILDING SYSTEM

C	NC	N/A			Comments
☒	☐	☐	4.3.1.1	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation.	
☐	☐	☒	4.3.1.3	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure.	
☒	☐	☐	4.3.2.1	WEAK STORY: The strength of the lateral-force-resisting-system in any story shall not be less than 80% of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy	
☒	☐	☐	4.3.2.2	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70% of the stiffness in an adjacent story above or below or less than 80% of the average stiffness of the three stories above or below for Life-Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.3	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses.	
☐	☒	☐	4.3.2.4	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation.	Columns support discontinuous shear walls not strengthened.
☒	☐	☐	4.3.2.5	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.6	TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.3.4	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements.	
☒	☐	☐	4.3.3.7	MASONRY UNITS: There shall be no visible deterioration of masonry units.	
☒	☐	☐	4.3.3.8	MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar.	
☒	☐	☐	4.3.3.10	REINFORCED MASONRY WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern.	

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Date: February 15, 2001
Building Address: University of California, Riverside

Job Number: A10034.00 Job Name: UCR Geol Bldg
By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST RM2.
REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☒	☐	☐	4.4.2.1.1	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.4.2.4.1	SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 50 psi for Life Safety and Immediate Occupancy.	Tier 2 Analysis shows OK.
☒	☐	☐	4.4.2.4.2	REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls shall be greater than 0.002 for Life Safety and 0.003 for Immediate Occupancy of the wall with the minimum of 0.0007 for Life Safety and 0.001 for Immediate Occupancy in either of the two directions; the spacing of reinforcing steel shall be less than 48" for Life Safety and 24" for Immediate Occupancy; and all vertical bars shall extend to the top of the walls.	$\rho > 0.0025$
				DIAPHRAGMS	
☐	☐	☒	4.5.5.1	TOPPING SLAB: Precast concrete diaphragm elements shall be interconnected by a continuous reinforced concrete topping slab.	
				CONNECTIONS	
☒	☐	☐	4.6.1.1	WALL ANCHORAGE: Exterior concrete or masonry walls shall be anchored for out-of-plane forces at each diaphragm level with steel anchors or straps that are developed into the diaphragm.	Wall reinforcement dowels into slab at roof. Slab reinforcing doweled into walls and floors.
☒	☐	☐	4.6.2.1	TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the shear strength of the walls for Immediate Occupancy.	Tier 2 Analysis shows OK.
☐	☐	☒	4.6.2.3	TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements shall be doweled into the shear wall or frame elements for Life Safety and the dowels shall be able to develop the shear strength of the walls or frames for Immediate Occupancy.	
☐	☐	☒	4.6.3.5	WALL REINFORCING: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the strength of the walls for Immediate Occupancy.	
☒	☐	☐	4.6.4.1	GIRDER/COLUMN CONNECTION: There shall be a positive connection between the girder and the column support.	

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Building Name: Geology Building Renovation Project - South
Date: February 15, 2001
Building Address: University of California, Riverside
Page: 1 of 1
By: SO Checked: CFS
Job Number: A10034.00 Job Name: UCR Geol Bldg

FEMA 310 SUPPLEMENTAL CHECKLIST RM2. REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☐	☐	☒	4.4.2.2.6	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.4.4	PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than 30. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
				DIAPHRAGMS	
☒	☐	☐	4.5.1.4	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy.	
☒	☐	☐	4.5.1.6	OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls shall not be greater than 8 feet long for Life Safety and 4 ft. long for Immediate Occupancy.	
☐	☐	☒	4.5.1.7	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.5.1.8	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
				CONNECTIONS	
☒	☐	☐	4.6.1.3	ANCHOR SPACING: Exterior masonry walls shall be anchored to the floor and roof systems at a spacing of 4 ft. or less for Life Safety and 3 ft. or less for Immediate Occupancy.	

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Building Name: Geology Building Renovation Project - South | Date: February 15, 2001

Building Address: University of California, Riverside | Page: 1 of 1

Job Number: A10034.00 Job Name: UCR Geol Bldg | By: SO Checked: CFS

FEMA 310 GEOLOGIC SITE HAZARDS AND FOUNDATIONS CHECKLIST.

C	NC	N/A			Comments
				GEOLOGIC SITE HAZARDS	
☒	☐	☐	4.7.1.1	LIQUEFACTION: Liquefaction susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy.	Unlikely. Information was not available from CDMG.
☒	☐	☐	4.7.1.2	SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure.	
☒	☐	☐	4.7.1.3	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated.	Eight kilometers from San Jacinto Fault per 97 UBC maps.
				CONDITIONS OF FOUNDATIONS	
☒	☐	☐	4.7.2.1	FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure.	
☒	☐	☐	4.7.2.2	DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure.	
				CAPACITY OF FOUNDATIONS	
☐	☐	☒	4.7.3.1	POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 ft. for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.7.3.2	OVERTURNING: The ratio of the effective horizontal dimension, at the foundation level of the lateral-force-resisting system, to the building height (base/height) shall be greater than $0.6S_a$.	Tier 2 Analysis.
☒	☐	☐	4.7.3.3	TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C.	
☐	☐	☒	4.7.3.4	DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only.	
☐	☐	☒	4.7.3.5	SLOPING SITES: The grade difference from one side of the building to another shall not exceed one-half the story height at the location of embedment. This statement shall apply to the Immediate Occupancy Performance Level only.	

APPENDIX B: NORTH BUILDING

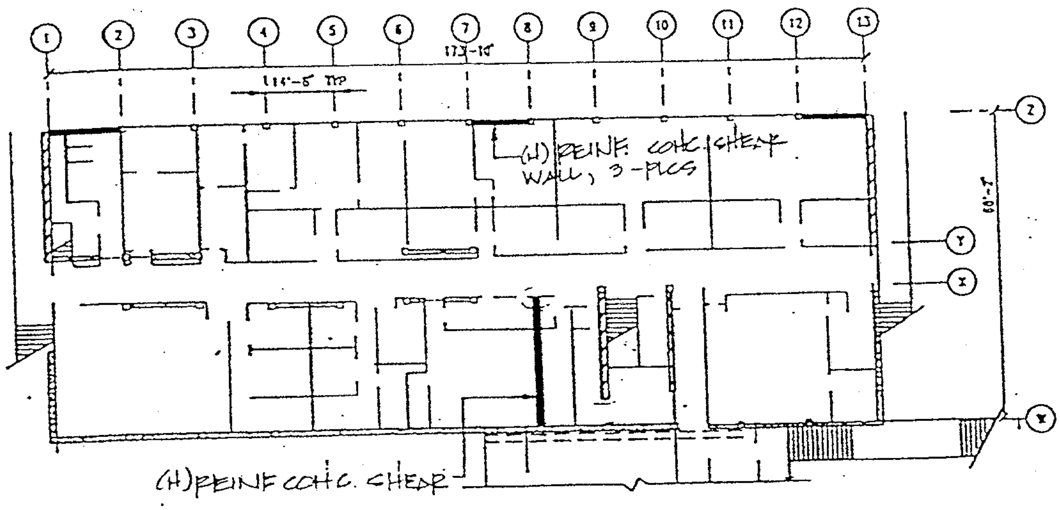


Figure 3: Ground Floor Plan

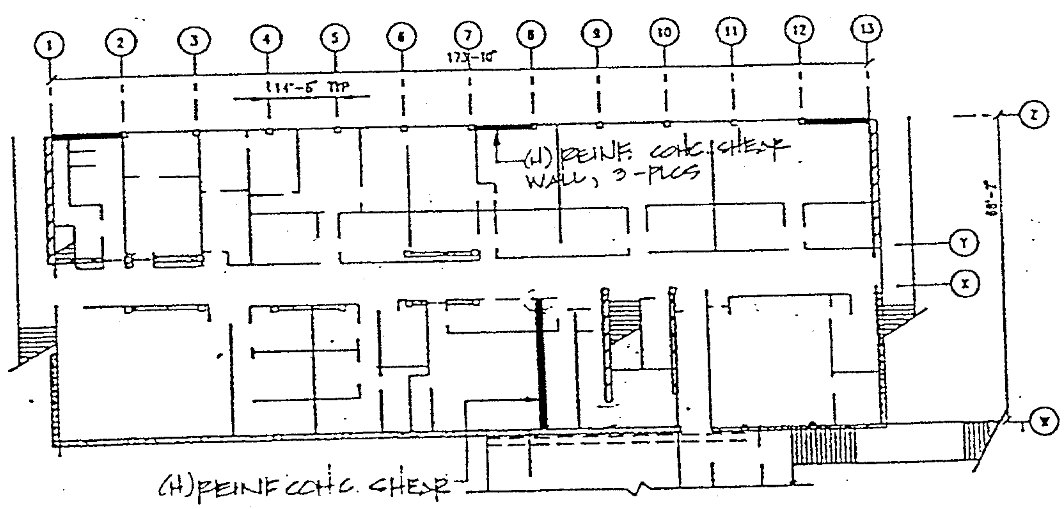
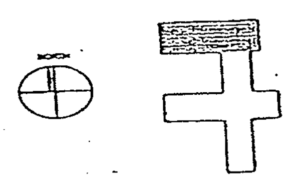


Figure 4: Basement Plan

LEGEND

(E) REINF. BRICK WALL
(E) REINF. CONCRETE WALL
(N) REINF. CONCRETE WALL



KEY PLAN

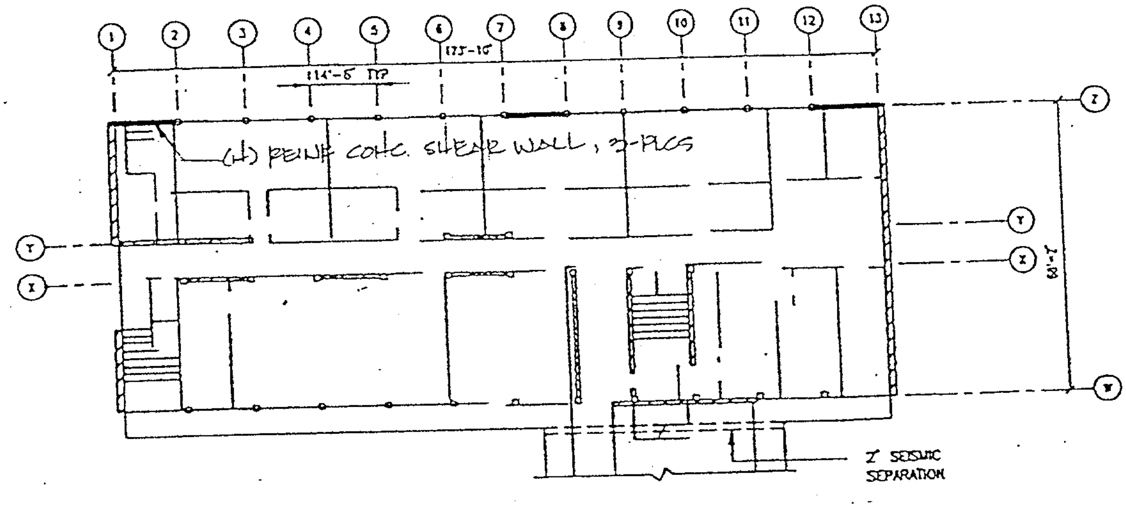


Figure 5: Second Floor Plan

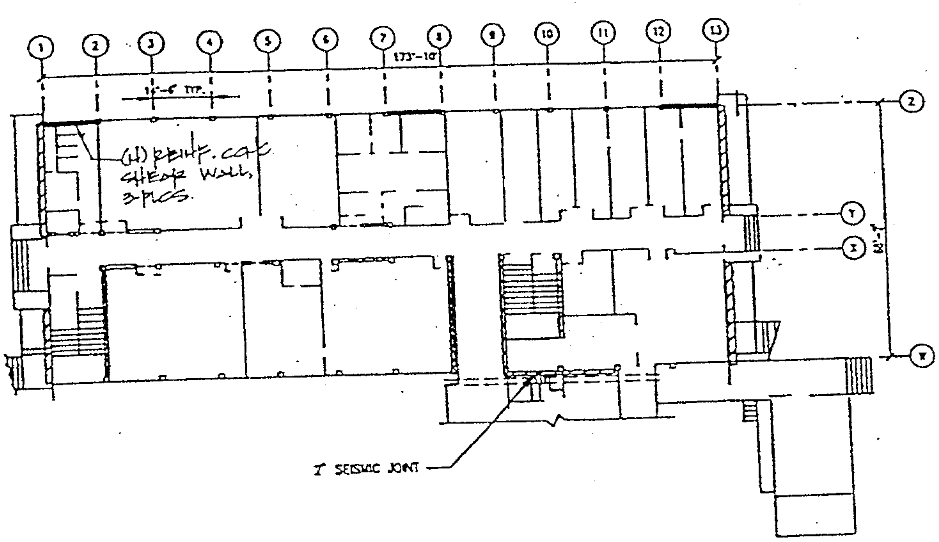
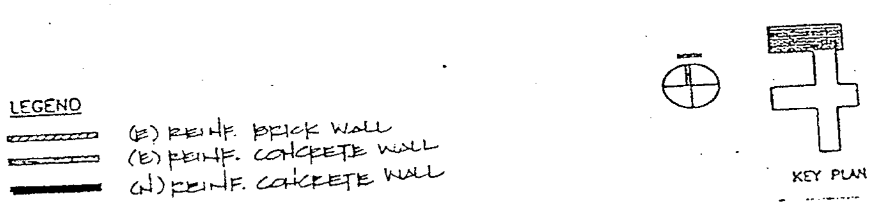


Figure 6: First Floor Plan



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Building Name: Geology Building Renovation Project - North
Date: February 15, 2001

Building Address: University of California, Riverside
Page: 1 of 2

Job Number: A10034.00 Job Name: UCR Geol Bldg
By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				BUILDING SYSTEM	
☒	☐	☐	4.3.1.1	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation.	
☐	☐	☒	4.3.1.3	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure.	
☐	☒	☐	4.3.2.1	WEAK STORY: The strength of the lateral-force-resisting-system in any story shall not be less than 80% of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy	First floor is a weak story.
☒	☐	☐	4.3.2.2	SOFT STORY: The stiffness of the lateral-force-resisting-system in any story shall not be less than 70% of the stiffness in an adjacent story above or below, or less than 80% of the average stiffness of the three stories above or below for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.3	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses.	
☐	☒	☐	4.3.2.4	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation.	Columns that support discontinuous shear walls not strengthened.
☒	☐	☐	4.3.2.5	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy.	
☐	☒	☐	4.3.2.6	TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy.	Ground level.
☒	☐	☐	4.3.3.4	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements.	
☒	☐	☐	4.3.3.5	POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used.	
☒	☐	☐	4.3.3.9	CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern.	

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Building Name:	Geology Building Renovation Project - North	Date:	February 15, 2001
Building Address:	University of California, Riverside	Page:	2 of 2
Job Number: A10034.00	Job Name: UCR Geol Bldg	By: SO	Checked: CFS

FEMA 310 BASIC CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☒	☐	☐	4.4.1.6.1	COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical load carrying system.	
☒	☐	☐	4.4.2.1.1	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy.	
☐	☒	☐	4.4.2.2.1	SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 100 psi or 2 for Life Safety and Immediate Occupancy.	Walls at first floor are overstressed.
☒	☐	☐	4.4.2.2.2	REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be greater than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18" for Life Safety and Immediate Occupancy.	
				CONNECTIONS	
☒	☐	☐	4.6.2.1	TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the shear strength of the walls for Immediate Occupancy.	Tier 2 Analysis shows OK
☒	☐	☐	4.6.3.5	WALL REINFORCING: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the strength of the walls for Immediate Occupancy.	

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Page: 1 of 2
Job Number: A10034.00 Job Name: UCR Geol Bldg
By: SO Checked: CFS

FEMA 310 SUPPLEMENTAL CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

LATERAL FORCE RESISTING SYSTEM

C	NC	N/A			Comments
☐	☒	☐	4.4.1.6.2	DEFLECTION COMPATIBILITY: Secondary components shall have the shear capacity to develop the flexural strength of the elements for Life Safety and shall have ductile detailing for Immediate Occupancy.	Torsional irregularity condition will induce excessive displacements on the gravity columns.
☐	☐	☒	4.4.1.6.3	FLAT SLABS: Flat slabs/plates classified as secondary components shall have continuous bottom steel through the column joints for Life Safety. Flat slabs/plates shall not be permitted for the Immediate Occupancy Performance Level.	
☐	☐	☒	4.4.2.2.3	COUPLING BEAMS: The stirrups in all coupling beams over means of egress shall be spaced at or less than d/2 and shall be anchored into the core with hooks of 135° or more for Life Safety and Immediate Occupancy. In addition, the beams shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy.	
☐	☐	☒	4.4.2.2.4	OVERTURNING: All shear walls shall have aspect ratios less than 4 to 1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.5	CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2.0, the boundary elements shall be confined with spirals or ties with spacing less than 8 d_b. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.6	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.2.7	WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the minimum unsupported height or length, nor less than 4". This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.

DIAPHRAGMS

C	NC	N/A			Comments
☒	☐	☐	4.5.1.1	DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors. In wood buildings, the diaphragms shall not have expansion joints.	
☒	☐	☐	4.5.1.4	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy.	
☐	☐	☒	4.5.1.7	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.

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Building Name:	Geology Building Renovation Project - North	Date:	February 15, 2001
Building Address:	University of California, Riverside	Page:	2 of 2
Job Number: A10034.00	Job Name: UCR Geol Bldg	By: SO	Checked: CFS

FEMA 310 SUPPLEMENTAL CHECKLIST C2. CONCRETE SHEAR WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
			DIAPHRAGMS		
☐	☐	☒	4.5.1.8	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
			CONNECTIONS		
☐	☐	☒	4.6.3.10	LATERAL LOAD AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy.	

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Building Name: Geology Building Renovation Project - North | Date: February 15, 2001

Building Address: University of California, Riverside | Page: 1 of 2

Job Number: A10034.00 Job Name: UCR Geol Bldg | By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST RM2.

REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

BUILDING SYSTEM

C	NC	N/A			Comments
☒	☐	☐	4.3.1.1	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation.	
☐	☐	☒	4.3.1.3	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure.	
☐	☒	☐	4.3.2.1	WEAK STORY: The strength of the lateral-force-resisting-system in any story shall not be less than 80% of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy	First floor is a weak story.
☒	☐	☐	4.3.2.2	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70% of the stiffness in an adjacent story above or below or less than 80% of the average stiffness of the three stories above or below for Life-Safety and Immediate Occupancy.	
☒	☐	☐	4.3.2.3	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses.	
☐	☒	☐	4.3.2.4	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation.	Columns support discontinuous shear walls not strengthened.
☒	☐	☐	4.3.2.5	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy.	
☐	☒	☐	4.3.2.6	TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy.	Ground level.
☒	☐	☐	4.3.3.4	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements.	
☒	☐	☐	4.3.3.7	MASONRY UNITS: There shall be no visible deterioration of masonry units.	
☒	☐	☐	4.3.3.8	MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar.	
☒	☐	☐	4.3.3.10	REINFORCED MASONRY WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern.	

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Building Name: Geology Building Renovation Project - North
Date: February 15, 2001

Building Address: University of California, Riverside

Job Number: A10034.00 Job Name: UCR Geol Bldg
By: SO Checked: CFS

FEMA 310 BASIC CHECKLIST RM2.
REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☒	☐	☐	4.4.2.1.1	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy.	
☐	☒	☐	4.4.2.4.1	SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 50 psi for Life Safety and Immediate Occupancy.	Tier 2 Analysis shows walls at first floor are overstressed.
☒	☐	☐	4.4.2.4.2	REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls shall be greater than 0.002 for Life Safety and 0.003 for Immediate Occupancy of the wall with the minimum of 0.0007 for Life Safety and 0.001 for Immediate Occupancy in either of the two directions; the spacing of reinforcing steel shall be less than 48" for Life Safety and 24" for Immediate Occupancy; and all vertical bars shall extend to the top of the walls.	
				DIAPHRAGMS	
☐	☐	☒	4.5.5.1	TOPPING SLAB: Precast concrete diaphragm elements shall be interconnected by a continuous reinforced concrete topping slab.	
				CONNECTIONS	
☒	☐	☐	4.6.1.1	WALL ANCHORAGE: Exterior concrete or masonry walls shall be anchored for out-of-plane forces at each diaphragm level with steel anchors or straps that are developed into the diaphragm.	
☒	☐	☐	4.6.2.1	TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the shear strength of the walls for Immediate Occupancy.	Tier 2 Analysis
☐	☐	☒	4.6.2.3	TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements shall be doweled into the shear wall or frame elements for Life Safety and the dowels shall be able to develop the shear strength of the walls or frames for Immediate Occupancy.	
☐	☐	☒	4.6.3.5	WALL REINFORCING: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the strength of the walls for Immediate Occupancy.	
☒	☐	☐	4.6.4.1	GIRDER/COLUMN CONNECTION: There shall be a positive connection between the girder and the column support.	

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Building Name: Geology Building Renovation Project - North
Date: February 15, 2001

Building Address: University of California, Riverside
Page: 1 of 1

Job Number: A10034.00 Job Name: UCR Geol Bldg
By: SO Checked: CFS

FEMA 310 SUPPLEMENTAL CHECKLIST RM2.

REINFORCED MASONRY BEARING WALL BUILDINGS WITH STIFF DIAPHRAGMS

C	NC	N/A			Comments
				LATERAL FORCE RESISTING SYSTEM	
☐	☐	☒	4.4.2.2.6	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.4.2.4.4	PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than 30. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
				DIAPHRAGMS	
☒	☐	☐	4.5.1.4	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy.	
☒	☐	☐	4.5.1.6	OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls shall not be greater than 8 feet long for Life Safety and 4 ft. long for Immediate Occupancy.	
☐	☐	☒	4.5.1.7	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
☐	☐	☒	4.5.1.8	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragms openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only.	IO only.
				CONNECTIONS	
☒	☐	☐	4.6.1.3	ANCHOR SPACING: Exterior masonry walls shall be anchored to the floor and roof systems at a spacing of 4 ft. or less for Life Safety and 3 ft. or less for Immediate Occupancy.	

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Building Name: Geology Building Renovation Project - South
Building Address: University of California, Riverside
Job Number: A10034.00 Job Name: UCR Geol Bldg

Date: February 15, 2001

By: SO Checked: CFS

FEMA 310 GEOLOGIC SITE HAZARDS AND FOUNDATIONS CHECKLIST.

C	NC	N/A			Comments
				GEOLOGIC SITE HAZARDS	
☒	☐	☐	4.7.1.1	LIQUEFACTION: Liquefaction susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy.	Unlikely. Information was not available from CDMG.
☒	☐	☐	4.7.1.2	SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure.	
☒	☐	☐	4.7.1.3	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated.	Eight kilometers from San Jacinto Fault per 97 UBC maps.
				CONDITIONS OF FOUNDATIONS	
☒	☐	☐	4.7.2.1	FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure.	
☒	☐	☐	4.7.2.2	DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure.	
				CAPACITY OF FOUNDATIONS	
☐	☐	☒	4.7.3.1	POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 ft. for Life Safety and Immediate Occupancy.	
☒	☐	☐	4.7.3.2	OVERTURNING: The ratio of the effective horizontal dimension, at the foundation level of the lateral-force-resisting system, to the building height (base/height) shall be greater than $0.6S_a$.	Tier 2 Analysis.
☒	☐	☐	4.7.3.3	TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C.	
☐	☐	☒	4.7.3.4	DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only.	
☐	☐	☒	4.7.3.5	SLOPING SITES: The grade difference from one side of the building to another shall not exceed one-half the story height at the location of embedment. This statement shall apply to the Immediate Occupancy Performance Level only.	

APPENDIX C: BUILDING PLAN & UNIVERSITY OF CALIFORNIA SEIMIC PERFORMANCE RATING SYSTEM

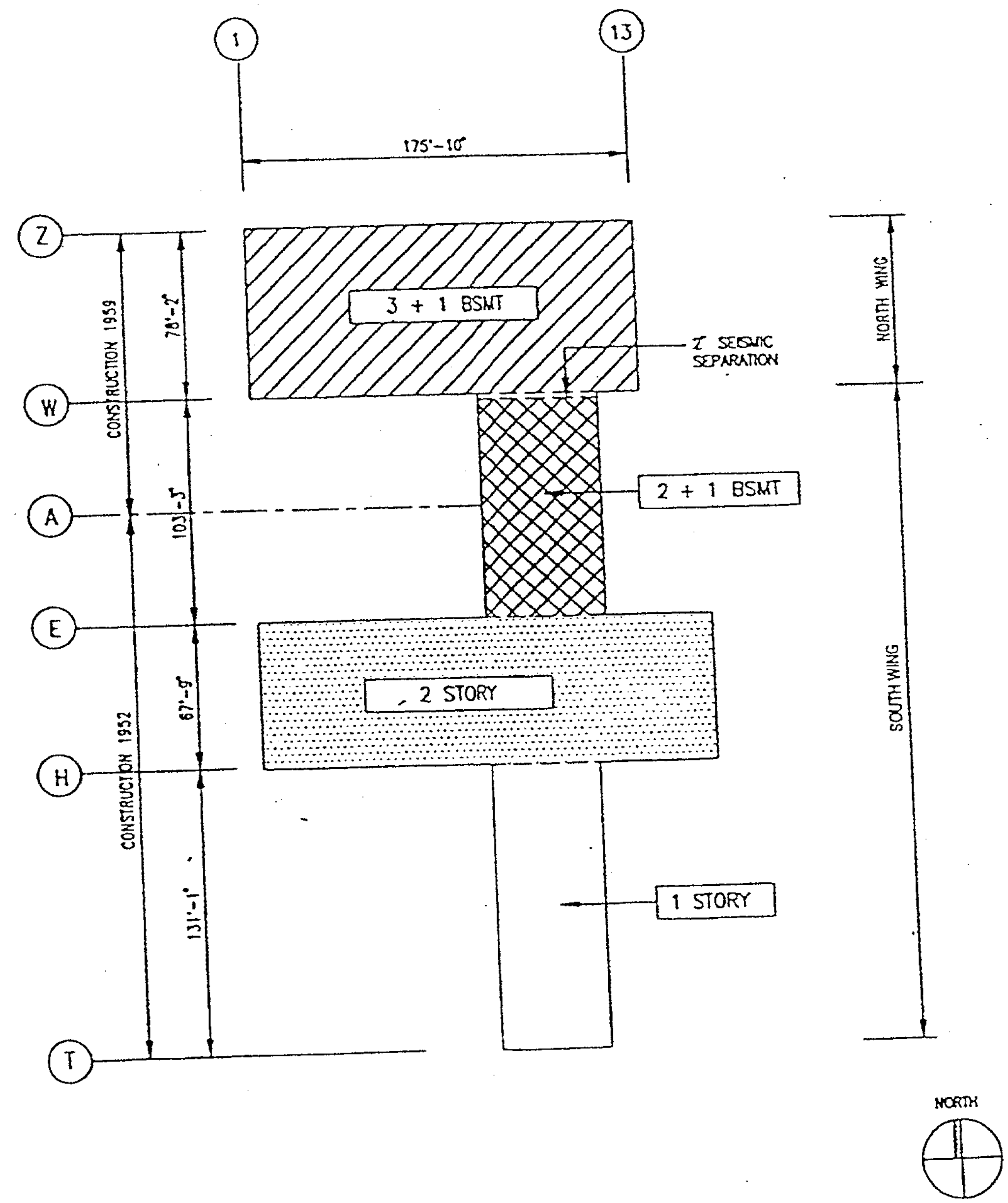

Figure 7: Building Plan

TABLE 1.0: University of California Seismic Performance Rating System

MEANING OF GOOD, FAIR, POOR, OR VERY POOR
SEISMIC PERFORMANCE RATINGS

GOOD seismic performance rating would apply to buildings and other structures whose performance during a major seismic disturbance* is anticipated to result in some structural and/or nonstructural damage and/or falling hazards** that would not significantly jeopardize life. Buildings and other structures with a GOOD rating would have a level of seismic resistance such that funds need not be spent to improve their seismic resistance to gain greater life safety and would represent an acceptable level of earthquake safety.

FAIR seismic performance rating would apply to building and other structures whose performance during a major seismic disturbance* is anticipated to result in structural and nonstructural damage and/or falling hazards** that would represent low life hazards. Buildings and other structures with a FIAR seismic performance rating would be given a low priority for expenditures to improve their seismic resistance and/or to reduce falling hazards so that the building could be reclassified GOOD.

POOR seismic performance rating would apply to buildings and the structures whose performance during a major seismic disturbance* is anticipated to result in significant structural and nonstructural damage and/or falling hazards** that would represent appreciable life hazards. Such buildings or structures either would be given a high priority for expenditures to improve their seismic resistance and/or to reduce falling hazards** so that the building could be reclassified GOOD, or would be considered for other abatement programs such as reduction of occupancy.

VERY POOR seismic performance rating would apply to buildings and other structures whose performance during a major seismic disturbance* is anticipated to result in extensive structural and nonstructural damage, potential structural collapse, and/or falling hazards** that would represent high life hazards. Such buildings or structures either would be given the highest priority for expenditures to improve their seismic resistance and/or to reduce falling hazards** so that the building could be reclassified GOOD, or would be considered for other abatement programs, such as reduction of occupancy.

---

* Major seismic disturbance is defined for the purpose of these Seismic Performance Ratings as an earthquake at the site which would be given a Modified Mercalli Intensity Scale (as modified by Charles F. Richter in 1958) rating of at Least IX based on the description of the structural effects except that an intensity of VII can be utilized for buildings of the Davis and San Diego campuses. It is assumed that the intensity of ground shaking is not appreciable greater in areas rated MM X, MM XI, and MM XII than in areas rated MM IX. The damage descriptions in MM X, MM XI and MM XII relate more to the geologic features and non-building structures.

** Falling hazards are defined for the purposes of these Seismic Performance Ratings as potential falling or sliding hazards such as interior and exterior building elements including parapets, ornamentations, chimneys, walls and partitions, but excluding equipment, fixtures, ceilings, furniture, furnishings, and other contents. The falling hazards in the excluded list above should not be used in the determination of the Seismic Performance Rating of a building or structure but should be abated.

APPENDIX D: PHOTOS

Figure 8: South Building Exterior Elevation

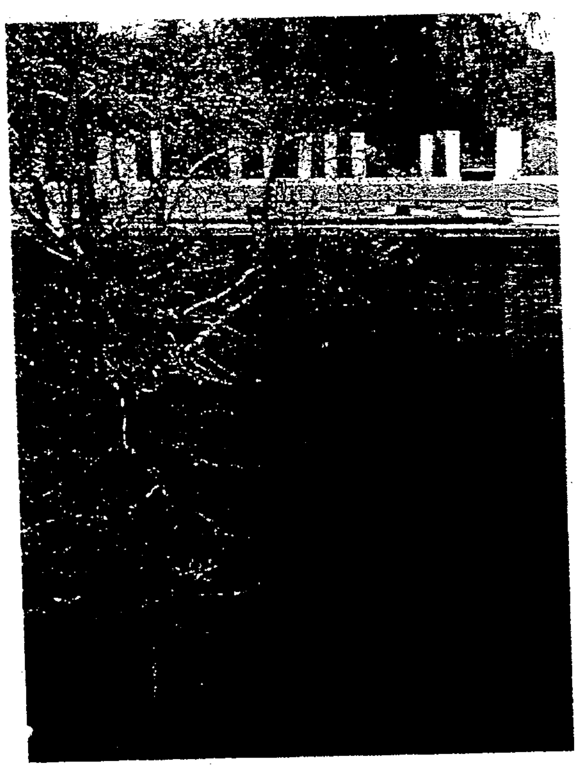

Figure 9: Shear Wall Installed in South Building, 1997

Figure 10: Column Installed in South Building, 1997

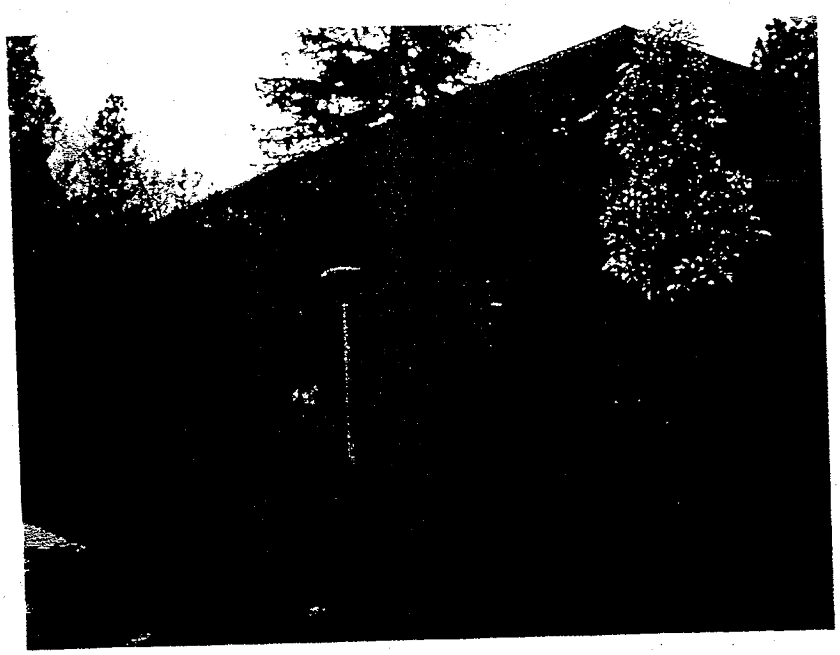

Figure 11: North Building Exterior Elevation

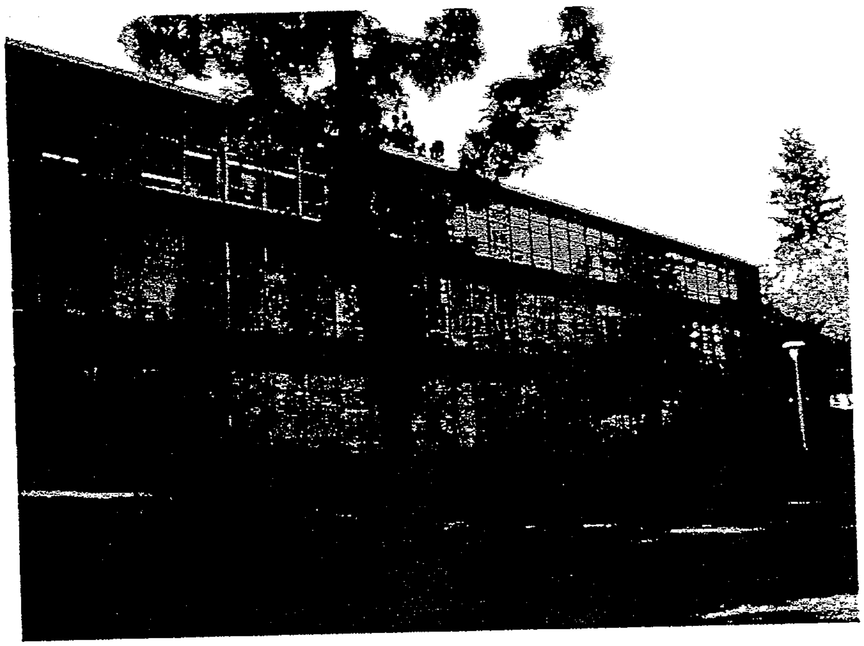

Figure 12: Open North Face of North Building

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San Francisco East
San Francisco West
Los Angeles
Portland
Oakland
San Diego
Salt Lake City

May 9, 2001

James L. Pirdy
JLP Architects, Inc.
260 Newport Center Drive
Suite 100
Newport Beach, CA 92660
Via email: jpurdy@jlparchitects.com

Reference: **EXISTING BUILDING STRUCTURAL ASSESSMENT GEOLOGY BUILDING RENOVATION PROJECT AT THE UNIVERSITY OF CALIFORNIA, RIVERSIDE [DEGENKOLB JOB NO. A10034.00]**

Dear Jim:

As requested, we have completed a preliminary assessment of the floor framing of the Geology Building, located on the University of California, Riverside campus. Our evaluation was based on the existing structural drawings for both the South and North Buildings dated May 1, 1952 and April 16, 1959, respectively. In addition, appropriate codes corresponding to the time the buildings were designed were consulted.

Included in our assessment were the typical live load capacities of the floors as well as the vibration properties of a typical floor bay. Because our analysis is based on typical bays in the building, a more exact analysis could yield higher values in localized areas that are non-typical. Our findings are summarized below and constitute a lower bound.

North Building

Ground Floor:	
Interior Bays:	100 psf
Exterior (End) Bays:	40 psf
First & Second Floors:	
Classroom Areas:	40 psf
Exit corridors:	100 psf

South Building

All Floor Levels:	
Classroom Areas:	40 psf
Exit corridors:	100 psf

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A typical bay was evaluated for its vibration characteristics and was found to be at a frequency of approximately 7 Hz. For reference, current buildings will typically be in the neighborhood of 10 Hz. It is recommended that the floor vibration properties are further evaluated to better understand the floor system and components are isolated appropriately to achieve the necessary response.

It is a pleasure to be of continued assistance on this University of California, Riverside project. Please do not hesitate to call if you have any questions or require any additional information.

Sincerely,

DEGENKOLB ENGINEERS

Brenda Guyader

Brenda Guyader
Design Engineer

Christopher J. F. Smith
Principal

cc: File

SECTION 15300 – FIRE PROTECTION SYSTEMS

A. GENERAL

All work shall be in strict conformance with but not limited to the current editions of:

Uniform Plumbing Code – UPC 1997
Uniform Building Code – UPC 1997
Uniform Fire Code - UPC 1997
University of California, Riverside Design Requirements
University of California, Riverside Fire Marshall Requirements
National Fire Protection Association (NFPA – 1998)
All other Authorities Having Jurisdiction

B. SYSTEM REQUIREMENT

1. General Work to be Included:

   a. All components and work necessary for a complete automatic fire sprinkler and standpipe system.

   b. If adequate water pressure is not available for the proper operation of the fire protection system, a fire water storage tank and electric motor driven fire pump, on emergency power, will be provided.

C. EXISTING SYSTEM DESCRIPTION

D. NEW SYSTEMS DESCRIPTION

1. The entire building shall be provided with a hydraulically calculated automatic fire sprinkler system for each occupancy classification.

2. Minimum densities for areas of coverage shall be determined by the University California Fire Marshal. Hydraulically calculate water protection systems. Form sheets, summary sheets, detailed work sheets and graphs shall be in strict accordance with the required and advisory provisions of NFPA 13; 7-3.

3. Tenant spaces shall be sized for Ordinary Hazard Group 1.

4. The system shall be designed for earthquakes and shall include all materials necessary to provide the system complete and ready for use. Design and install the system to give full consideration to blind spaces, piping, electrical equipment, ductwork and other construction and equipment in accordance with detailed drawings to be submitted for approval.

5. Devices and equipment for fire protection service shall be UL listed and FM approved for the specific purpose for which the item is used in sprinkler systems.

6. The Contractor shall contact the University California Fire Marshal for scheduling of a water flow test to determine available water supply information to be used as a basis for hydraulic calculations.

7. Materials:

   a. Above ground pipe and fittings:

      1) 2-inch and smaller: ASTM A53 or ASTM A135 Schedule 40 black steel pipe with ANSI B16.3 Class 150 malleable iron threaded fittings.

      2) 2 _-inch and larger: ASTM A135 Schedule 40 black steel pipe with ANSI B16.3 Class 150 malleable iron threaded fittings or rolled groove pipe with mechanical joint grooved coupling fittings; or ASTM A135 Schedule 10 welded steel pipe with rolled groove ends and mechanical joint grooved coupling fittings. Cut grooving of pipe will not be permitted.

      3) Flanged fittings: ANSI B16.1 Class 125 cast iron.

      4) Flanges: ANSI B16.1 Class 125 cast iron.

   b. Gate Valves:

      1) 4-inch and larger: UL listed and labeled, FM approved, 175 psi OS&Y type, iron body, bronze mounted.

      2) 3-inch and smaller: UL listed and labeled, FM approved, 175 psi OS&Y type, bronze body gate with solid wedge.

c. Check Valves: UL listed and labeled, FM approved, 175 psi iron body, bronze mounted, horizontal swing check valve with bolted bonnet and flanged end connections. Check valves shall be designed for replacement of internal parts without removal of valve body from piping with the exception that wafer check valves may be used with freestanding Fire Department Connections.

d. Butterfly Valves: UL listed and labeled, FM approved, 175 psi bronze body, threaded ends, stainless steel disc and stem, two inch maximum pipe size with integral tamper switch, and geared slow-close mechanism.

e. Drain Valve: UL listed and labeled, FM approved, 175 psi bronze body gate valve, OS & Y type, solid wedge bronze disc; or class 150, 400 lb. WWP, conventional port, bronze, two-piece construction ball valve.

f. Sprinkler Heads:

1) Spacing and number of heads shall comply with recommendations of NFPA 13 for type of occupancy involved.

2) Sprinkler Heads: UL listed and labeled and FM approved for installation in the hazard classification as indicated and by the agencies listed above; 165 degree F rated fusible link, _ inch orifice, standard response. Extended coverage heads are approved for use in light hazard areas only.

a) Ceiling Mounted: Pendant, natural brass with chrome finish, semi-recessed with matching adjustable metal escutcheon.

b) Exposed Piping: Upright or pendant type, natural brass finish.

c) Exterior and corrosive atmospheres: Teflon coated sprinklers.

g. Fire Pump (if required): UL listed, FM approved vertical turbine fire pump with controller. Installation shall include jockey pump and controller.

END OF SECTION

SECTION 15400 - PLUMBING SYSTEMS DESCRIPTIONS

A. CODES AND REGULATIONS

All work shall be in strict conformance with but not limited to the current editions of:

Uniform Plumbing Code – UPC 1997

Uniform Building Code – UPC 1997

Uniform Fire Code – UFC 1997

University of California, Riverside Design Requirements

University of California, Riverside Fire Marshall Requirements

National Fire Protection Association

All other Authorities Having Jurisdiction

B. SYSTEM REQUIREMENTS

1. General Work to be Included:

   a. Sanitary sewer drain, waste & vent - all spaces above ground level will drain by gravity to the campus sewer.
   b. Potable cold water will be provided from the campus main.
   c. Centralized domestic hot water system will be provided to serve lavatories and sinks.
   d. Laboratory Service Piping
   e. Drain Piping
   f. Sewage Ejector
   g. Sump Pumps
   h. Hot Water Circulation Pump
   i. Hot Water Heaters

C. EXISTING SYSTEMS DESCRIPTION

1. Existing Systems

   a. Piping: Industrial waste, soil/waste, storm, domestic cold, hot and re-circulating, compressed air, drain, gas, vacuum, distilled water, industrial cold water, industrial steam, vacuum return.

b. Fixtures: Water closets, lavatories, sink, urinals service sinks, laundry trays, drinking fountains, floor sinks, floor drains, deluge showers, roof drains, slop sink.

c. Equipment: Hot water exchanger, dilution tank, air compressor, sewage ejector, hot water circulation pump, vacuum pump, sump pumps, vacuum compressor.

D. NEW SYSTEMS DESCRIPTION

1. Materials:

a. Soil, Waste and Vent above Ground: Service-weight, no-hub cast-iron pipe and fittings.

b. Soil, Waste and Vent Below Ground and to 5'-0" Outside of Building: Service-weight, cast-iron hub & spigot pipe and fittings.

c. Water and Condensate Drain Piping Above Ground: Type 'L" hard-drawn copper type, ASTM B88, and wrought copper fittings, ANSI B1 6.22. All hot water supply piping shall be insulated with 1-inch thick fiberglass insulation for sizes up to 2-1/2 inch size, 1-1/2 inch thick above 2-inch size piping. Condensate drain piping above ceilings shall be insulated.

d. Water Piping Below Ground 4-inches and smaller: Type "K" hard-drawn copper tubing, ASTM B88, and wrought copper fittings ANSI B 16.22, silver brazed joints.

e. Natural Gas Piping: Buried piping shall be Polyethylene (P.E.) per ASTM D2513. Above grade shall be Schedule 40 black steel pipe per ASTM D2513.

f. Indirect Drains: Type "M" copper fittings, ANSI B16.22, solder joint type. Insulate with Manville Micro-Lok 650AP.

2. Plumbing Fixtures:

a. Water Closets, ADA Compliant: Handicap-height, vitreous china, wall mounted, floor outlet, low-flush toilet with flush valve.

b. Water Closet: Vitreous china, wall mounted, floor outlet, low-flush toilet with flush valve.

c. Urinal, ADA Compliant: Wall hung, vitreous china, low-flush urinal with flushometer. Mount at handicap height.

d. Urinal: Wall hung, vitreous china, low-flush urinal with flushometer.

e. Lavatory: Vitreous china wall hung lavatory with a single temperature-metering faucet.

f. Service Sink: Corner model, terrazzo mop service basin with vacuum breaker faucet.

g. Electric Water Cooler: Barrier-free, wall hung water cooler with push bar control and equipped for handicap usage.

3. Drains:

a. Floor Drains: Cast iron body floor drains with nickel bronze top, membrane clamp and adjustable collar.

b. Floor Sinks: Cast iron body receptor with acid-resistant coated interior, bottom dome strainer, seepage flange and grate.

4. Natural Gas System

5. Vacuum System

6. Laboratory Compressed Air System

7. Laboratory Waste System

8. Emergency Eyewash/Shower System

9. Distilled Water

10. Dilution System

END OF SECTION

SECTION 15800 – HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS DESCRIPTIONS

A. CODES AND REGULATIONS

All work shall be in strict conformance with, but not limited to:

Uniform Mechanical Code – UMC 1997

Uniform Building Code – UBC 1997

CEC Title 24 Energy Standards

University of California, Riverside Design Requirements

University of California, Riverside Fire Marshall Requirements

All other Authorities Having Jurisdiction

B. SYSTEM REQUIREMENTS

1. Summary:

   a. This project will renovate and replace the existing HVAC systems. The existing control system, and heating and cooling systems are in poor working condition or do not function at all. The design will replace all of the existing pneumatic control systems with a direct digital control (DDC) system.

   b. All new proposed work is based on building functioning as a laboratory building and 25 sq. ft./person.

2. General Work to be Included:

   a. Summer-Winter air conditioning for all occupied areas, including corridors and restrooms.

   b. The building will be served by 3 air handling systems. The systems will be sized to satisfy areas served and installed for each phase of construction. The duct systems will incorporate constant volume terminals for each lab area. The constant volume terminals shall be easily converted to Variable Air Volume (VAV) with future building upgrades.

   c. Ceiling mounted constant volume units will be Phoenix Control Valves exceeding the minimum Title 24 requirements.

   d. Toilet exhaust systems will be provided for all restrooms and janitor rooms.

e. General exhaust systems will be provided.

f. Building controls will be direct digital controls (DDC) with electric controllers.

g. Johnson Controls shall be listed as the UCR Campus Standards.

C. EXISTING SYSTEMS DESCRIPTIONS

1. The existing building is a two story, laboratory-use building. The South and part Central Wings were built in 1952, and the North and part Central Wings were built in 1959. Additional renovations to the North Wing were done in 1961.

2. The original 1952 mechanical system was heating and ventilating for the labs with ceiling mounted unit ventilators and hot water coils. The hot water heating system was produced from a steam to hot water heat exchanger and hot water pump. High pressure steam was reduced from 50-5# through a PRV. Lab hood exhaust was ducted to individual roof top utility sets. General exhaust was provided for the toilet rooms and corridors. Outside air for the unit ventilators was supplied through a plenum on the outside wall. The original control system was pneumatic. Asbestos laden products were used extensively.

3. The 1958 addition mechanical system was heating, ventilating and air conditioning for the new North Wing addition only. The HVAC system for the labs was ceiling mounted fan coil units with hot water and chilled water coils. Hot water heating system was produced from a hot water heat exchanger and h.w. pump. Cooling was provided by a centrifugal chiller located in the Ground Floor mechanical room and a cooling tower located on the roof of the Chemical Storage outbuilding. Two chilled water and two condenser water pumps were installed in the mechanical room. Lab hood exhaust was ducted to individual roof top utility sets. Toilet exhaust was provided. Outside air for the fan coil system was introduced from plenum supply fans located in the corridors. The outside air systems consists of fans, pre-cooling and pre-heating coils and filters. The control system was pneumatic.

4. In 1960 a additional chiller, chilled water and condenser water pumps were installed to provide cooling to the South Wing. New chilled water piping was run and connected to new coils in the original lab unit ventilators and built-up air handling units.

5. The cooling tower was removed during the period between the last addition and the present.

6. Central plant chilled water piping was installed in the building utility space during the period between the last addition and the present.

7. The existing unit ventilators, fan coil units, ductwork, air terminals and piping are original equipment and beyond life expectancy and service life. The existing pneumatic control system is beyond its service life.

8. The original chillers, condenser water pumps and piping, pre-cooling pump and piping will be removed due to their obsolescence.

9. The corridor outside air plenum fan systems and piping will be removed due to their obsolescence.

10. Existing hot water heating systems, heat exchangers, pumps, piping and expansion tanks, are original equipment and beyond their life expectancy and service life.

D. NEW SYSTEM DESCRIPTIONS

1. High efficiency air handling systems will provide the required heating and cooling for the building. The systems will be configured such that all major equipment is located within existing mechanical room and outside the building. This approach allows for ease of maintenance and minimal impact on existing building operations.

2. Existing lab fan coil units will be replaced with new constant volume terminals connected to new ductwork in corridor, and new hot water heating piping.

3. New DDC controls shall be installed.

4. Fume hood exhaust ductwork shall be coordinated with new roof top systems. (Roof exhaust systems are being designed by Henrikson Owen Engineers).

5. Chilled water, generated by the central plant, will be piped to the existing mechanical room and connected to new chilled water pumps. The point of connection for the new piping shall be made at the existing main lines between the entrance at the utility tunnel and the existing chiller plant.

6. New hot water heating system, heat exchanger, pumps, expansion tanks, and piping shall be installed.

7. The point of connection to the existing room air distribution systems should be determined during upcoming phases of the design. The intent is to compile the Bid Documents to satisfy the Construction Budget and provide a cost effective means of extending the air distribution for the future Building Renovation Project.

E. ENVIRONMENTAL DESIGN CONDITIONS

The following criteria will be used for sizing the heating and cooling plants:

1. Outdoor Ambient Design Conditions:

Summer (mean 1%):	115°F dB, 74°F mwB
Winter (99%):	30°F dB

Note: Weather data is based input from UCR Physical Plant.

2. Air Systems Sizing

The Air Handlers shall be sized based on the projected air quantities required for the eventual Building Renovation Project.

F. VENTILATION AIR REQUIREMENTS

Outdoor air for ventilation will be based on the American Society of Heating Ventilation and Air Conditioning Engineers (ASHRAE) Standard 62-1989, Ventilation for Acceptable Indoor Air Quality. Prior to completion of the project, the outdoor air quantities will be measured and balanced to meet the design requirements.

Outside air will be provided from new air handling units with 30% prefilters and 95% efficient final filters. Relief air from each building will be addressed using roof mounted upblast centrifugal relief vents.

G. ENERGY USE AND CONSERVATION

The Energy Efficiency Standard, Title 24, will be used to set the minimum performance requirements of this installation.

H. MISCELLANEOUS VENTILATION/EXHAUST SYSTEMS

The following exhaust system will be installed, it is assumed that outside ambient air shall provide makeup air to the exhausted area:

1. Elevator Machinery Rooms.
2. Electrical Room(s).

I. CONTROLS

1. An electronic direct digital control (DDC) system shall incorporate stand alone, remote control of the central plant building
2. The controls will automatically operate the HVAC system and provide the necessary change-over commands for the occupied and non-occupied temperature and ventilation schedules. The system shall provide the necessary monitoring, alarm, and by-pass for efficient energy management.
3. The controls will log tenants use of HVAC system during periods of system shut down (building off-hours)

END OF SECTION

SECTION 16000 - ELECTRICAL SYSTEM DESCRIPTION

A. CODES AND REGULATIONS

All work performed shall be new and installed in strict conformance with, but not limited to, the current governing codes and the requirements of the following:

National Electrical Code (NEC)
California Electrical Code (CEC) Title 24 Energy Standards
Uniform Building Code (UBC)
State Industrial Safety Orders (OSHA)
Air Pollution Control District (APCD)
National Electrical Manufacturers Association (NEMA)
American National Standards Institute (ANSI)
Institute of Electrical and Electronics Engineers (IEEE)
University of California, Riverside Design Requirements
University of California, Riverside Fire Marshall Requirements
All other Authorities Having Jurisdiction (AHJ)

B. SYSTEM REQUIREMENTS

1. Summary

a Demolish and replace all transformers, switchboards, motor control centers (MCC), and panelboards.

b Provide emergency power for the fire alarm system, emergency and exit lighting, and the HVAC system.

c Replace all detection, initiation, and notification devices and provide a new system connected to the existing Simplex 4020 Fire alarm control panel (FACP).

d Replace all lighting with high efficiency fluorescent lighting in labs, corridors, offices, etc.

C. SYSTEM DESCRIPTION

1. Electrical Distribution

a. Existing

The existing distribution system is served from a 4-way oil selector switch located in vault 4, south of the Geology building. A 4.16kV circuit in conduit runs in the utility tunnel to feed (3) 500 kVA transformers in the basement of the Geology Building.

The south wing of the building is served by one transformer, 4.16kV – 208Y/120V located in room 327. This transformer provides power for all lighting, lab, and building loads for this portion of the building. The transformer is labeled to contain Inerteen, a trade name for oil with polychlorinated biphenyl (PCB). PCBs are suspected carcinogens. A portion of the load on this transformer will be demolished under the Science Laboratory I project. No new loads will be added to the existing system under the new project.

The north and central wings of the building is served by a 4.16kV – 208Y/120V transformer which provides power for all lighting, lab, building loads, supply and exhaust air systems. This portion of the building also houses a 4.16kV – 480V transformer, which fed the chiller plant. Most of the chiller plant loads are not active since the building was switched to the campus chilled water system. Loads remaining on this transformer are several chilled water and hot water pumps. The chiller plant and transformers are located in room 343 and a below grade well outside of this room.

There are several concerns with the present configuration:

1) The south wing transformer containing PCBs presents a potential hazard in the event of a leak or tank rupture.

2) An oil-fused cutout (OFC) on the primary side protects the south wing transformer. OFCs have low fault interrupting ratings and can cause catastrophic damages and injury in the event of failure.

3) The 208Y/120V switchboard serving the south wing is of a manufacturer who is out of business (Zinsco). Though replacement parts are available from salvage, extending the life of the switchboard in this manner is not recommended.

4) The 208Y/120V switchboard serving the north and central wings is below the ceiling mounted chilled water line. This is in violation of the NEC required dedicated space above the switchboard.

b. Proposed: Disconnect and remove all components of the building distribution system. Provide a reconfigured system with one service entrance at 480Y/277V.

Provide a 12kV – 480Y/277V pad mounted transformer located outside of the building, just east of the chemical storage building. Conduit and cable to a new switchboard located in the basement. Provide secondary conduit and cabling, switchboards, panelboards, motor control centers, motor controllers, disconnect switches, and transformers to feed new and existing loads to remain. Disposal of the PCB transformer by legally approved means.

2. Emergency Power

a. Existing

The existing emergency power system consists of a 480V feed from the Physics Building through a 100A transfer switch. Loads served by the existing system are the fire alarm system, and exit lighting system. There is insufficient capacity to adequately provide power for egress lighting and lab exhaust system.

b. Proposed: Disconnect and remove transfer switch and feed from the Physics Building. Provide a dedicated emergency power system for the Geology Building.

Provide a dedicated emergency generator, transfer switch, and switchboard to distribute power to all life safety and other critical loads. Loads served by this generator are the fire alarm system, exit and egress lighting system, lab exhaust system (running at reduced speed), temperature-controlled rooms, and other critical receptacle loads.

3. Fire Alarm System

a. Existing

The existing fire alarm system is mainly comprised of non-coded manual pull stations and single station detectors. The Simplex 4020 fire alarm control panel (FACP) was installed recently and in excellent condition.

b. Proposed: Disconnect and remove all fire alarm devices. Provide a fully addressable fire alarm system.

Provide a fully addressable fire alarm system compatible with the existing Simplex 4020 fire alarm control panel (FACP). The fire alarm system must comply with NFPA and ADA requirements and consist of manual pull stations, combination audio/visual alarms, strobes, water flow and tamper switch connections, magnetic door holders, and single station detectors. Provide heat detectors, smoke detectors and duct detectors as necessary. Device location will be coordinated with the University's Fire Marshall. Install all fire alarm wiring in conduit.

4. Lighting Systems

a. Existing

Existing lighting system for most part is retrofitted pendant, recessed, and surface mounted fluorescent fixtures. In selected areas, surface and pendant mounted incandescent fixtures were fitted with PL type fluorescent retrofit kits. Some pendant mounted egg crate fixtures were without reflectors to produce direct/indirect lighting. The configuration of existing lighting in labs may not provide the most efficient distribution of light for the new lab layout.

b. Proposed: Disconnect and remove all lighting. Provide an energy efficient lighting system in compliance with California Title 24.

Provide UL-listed, energy-efficient fluorescent type lighting fixtures. Equip fluorescent fixtures with T-8 lamps and electronic ballasts. For all spaces exceeding 100 square feet, provide bi-level switching. Offices and other appropriate areas will include occupancy sensor switching. Task oriented lighting will be provided for under counter applications, and dimming systems as determined by the architect.

Emergency lighting will consist of unswitched general lighting fixtures for egress illumination, and exit sign lighting connected to the standby power system. Egress lighting will include an adequate number of fixtures to provide one foot-candle of illumination along the path of egress, including access and discharge to egress.

Exit signs shall be an edge-lit red, ceiling mount, recessed, housing with arrows as required, powered by long life light emitting diodes (LED's).

Proposed Light Fixture Schedule:

Area Served	Fixture Description
Exterior	
Electrical and Mechanical Rooms, Storage	Open reflector fluorescent surface or pendant
Offices	Parabolic reflector fluorescent recessed
Corridors	Parabolic reflector fluorescent recessed
Conference rooms	Parabolic reflector/directional fluorescent recessed
Restrooms	Cove fluorescent supplemented by compact fluorescent down lights
Lobby	Metal halide pendant
Laboratory general	Direct/Indirect fluorescent
Laboratory bench task	Lensed fluorescent individually switched
Temperature Controlled Rooms	Lensed fluorescent surface (temperature rated)
Dark room	Safe light
Exit Sign Lighting	LED Type Exit Sign

D. MATERIALS:

1. General: Major components of the electrical system shall to the furthest extent possible, be from the same manufacturer. This includes, but not limited to transformers, switchboards, motor control centers, motor controllers, panelboards, and disconnect switches. Third party original equipment will not be permitted.

2. All switchboards, panelboards, transformers, light fixtures, etc. will be supported/secured in accordance with seismic zone 4 requirements.

3. Raceways: Conduit shall be as follows

   a Rigid galvanized steel (RGS) – exterior and indoors where conduit is subject to damage

   b Electrical metallic tubing (EMT) – interior, concealed and exposed. EMT conduits will use compression type fittings only.

   c Polyvinyl chloride (PVC) – corrosive environment, and underground.

   d Flexible metal conduit or liquid tight flexible metal conduit – connection to equipment subject to vibration and lighting.

   e Two channel surface raceways for communication and power at locations determined by the architect.

4. 600V conductors shall be THHN/THWN or XHHW insulated copper. Solid conductors for #10 AWG and below, standard for #8 AWG and larger. All feeders and branch circuit will be provided with a green ground wire, sized in accordance with NEC.

5. Switchboards shall have UL listed with enclosures suitable for the application – NEMA 1, indoors; NEMA 3R, outdoors. Switchboards shall have copper bussing with molded case individually mounted mains, and group mounted distribution breakers. Switchboards shall have an AIC rating capable of interrupting the maximum calculated fault value. Switchboard circuit breakers shall be fully rated. Series rated circuit breakers shall not be used. Switchboards shall be mounted on a 4" housekeeping pad. Acceptable manufacturers are General Electric, Cutler-Hammer/Westinghouse, or Square D.

6. Panelboards shall have UL listed with enclosures suitable for the application – NEMA 1, indoors; NEMA 3R, outdoors. Panelboards shall have copper bussing with bolt-on type, branch circuit breakers. Panel directories will be typewritten. 25% extra capacity will be provided in each panelboard. Panelboards shall have AIC capable of interrupting the maximum calculated fault value. All panelboards shall be keyed alike. Panelboard circuit breakers shall be fully rated. Series rated circuit breakers shall not be used. Acceptable manufacturers are General Electric, Cutler-Hammer/Westinghouse, or Square D.

7. The pad-mounted transformer shall be installed on a concrete pad, insulated with less flammable liquid, dead front construction, 95 kV BIL, fused, and radial feed type. Transformer primary and secondary winding shall be copper.

8. High voltage cabling shall consist of copper, 133% insulated, 15 kV, EPR with PVC jacket in concrete encased ducts.

9. Generator set engine shall be four-stroke diesel fueled, single bearing, wye connected, brushless, revolving field, solid state exciter generator. Generator shall be equipped with enclosed circuit breakers, and industrial grade controls and relays. Automatic transfer switches shall be four-pole double throw with 400-millisecond minimum transfer time.

10. Transformers 600V or less shall be UL listed with enclosures suitable for the application – NEMA 1, indoors; NEMA 3R, outdoors. Transformers shall have copper windings and rated at 80°C rise above an ambient temperature of 40°C. Acceptable manufacturers are General Electric, Cutler-Hammer/Westinghouse, or Square D.

11. All motor disconnect switches shall be heavy duty type, and UL listed with enclosure suitable for the application - NEMA 1, indoors, NEMA 3R, outdoors. Acceptable manufacturers are General Electric, Cutler-Hammer/Westinghouse, or Square D.

12. Commercial grade wiring devices (receptacles, toggle switches, and cover plates).

13. Telephone and data cabling, devices, and cover plates shall be in accordance with the University's requirements. All devices and cabling shall be Category 5E or better.

14. Security System - (To be determined.)

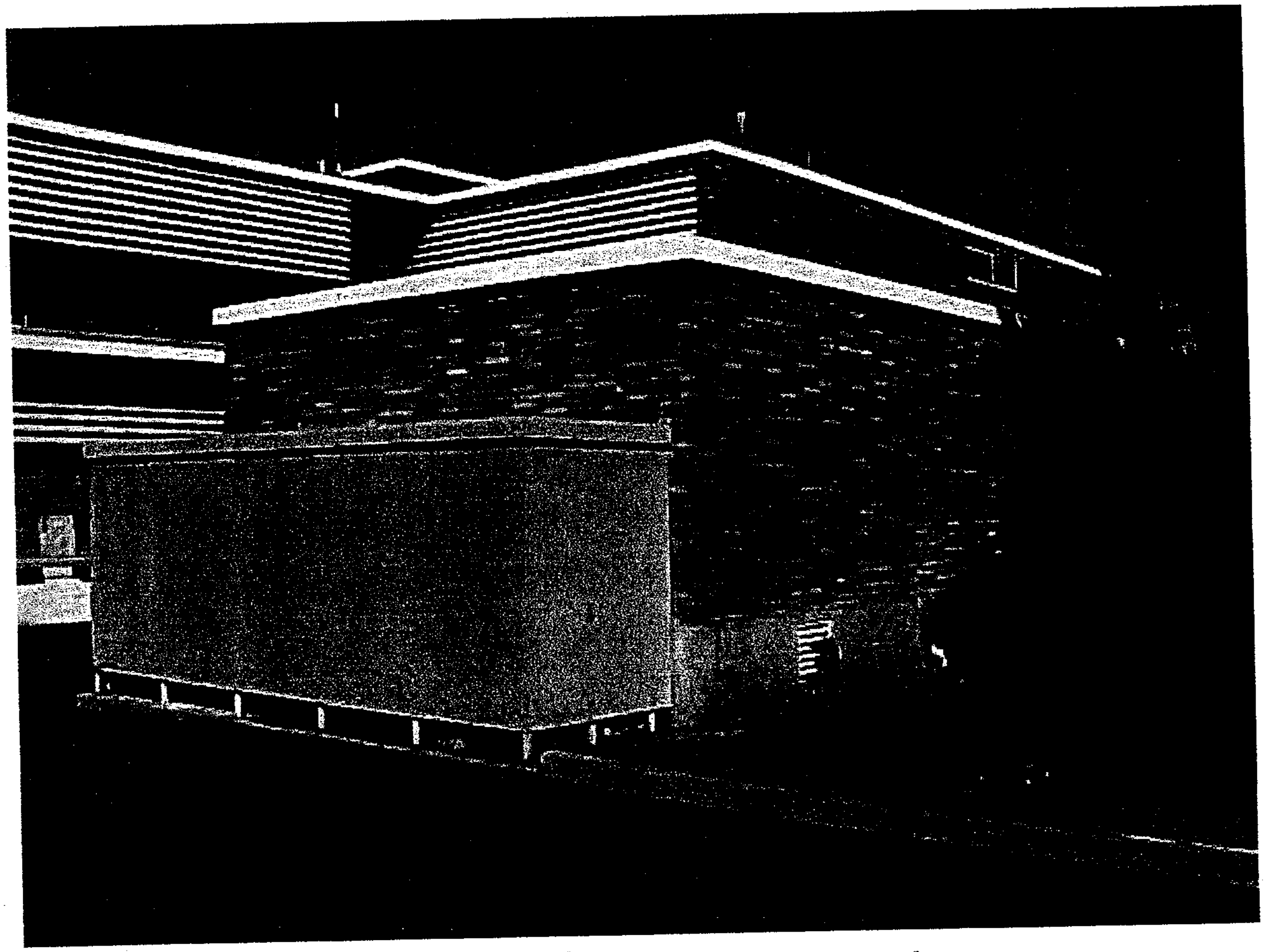


Figure 1 - Proposed Transformer Location

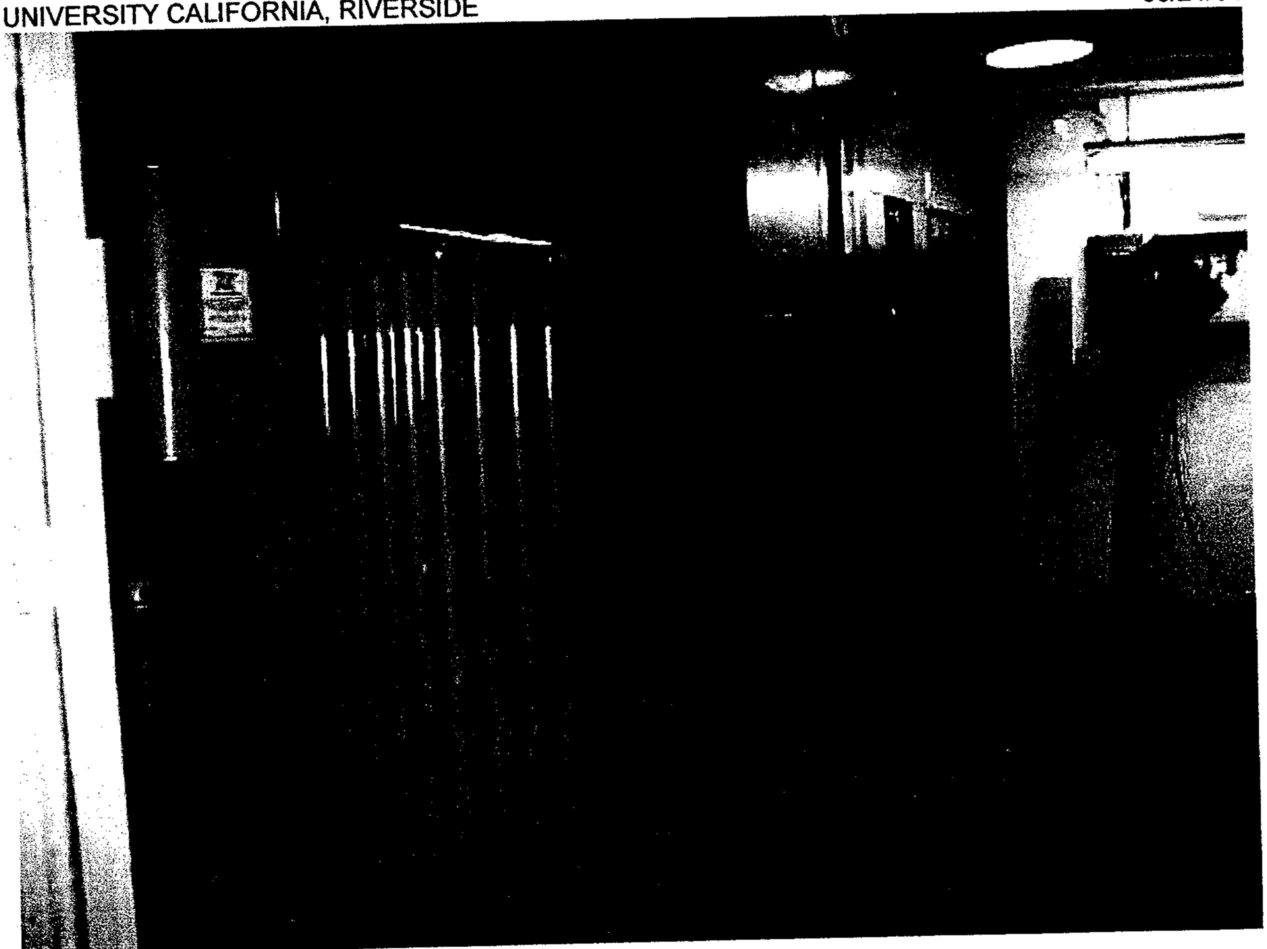


Figure 2 - South Wing PCB Transformer and Main Switchboard

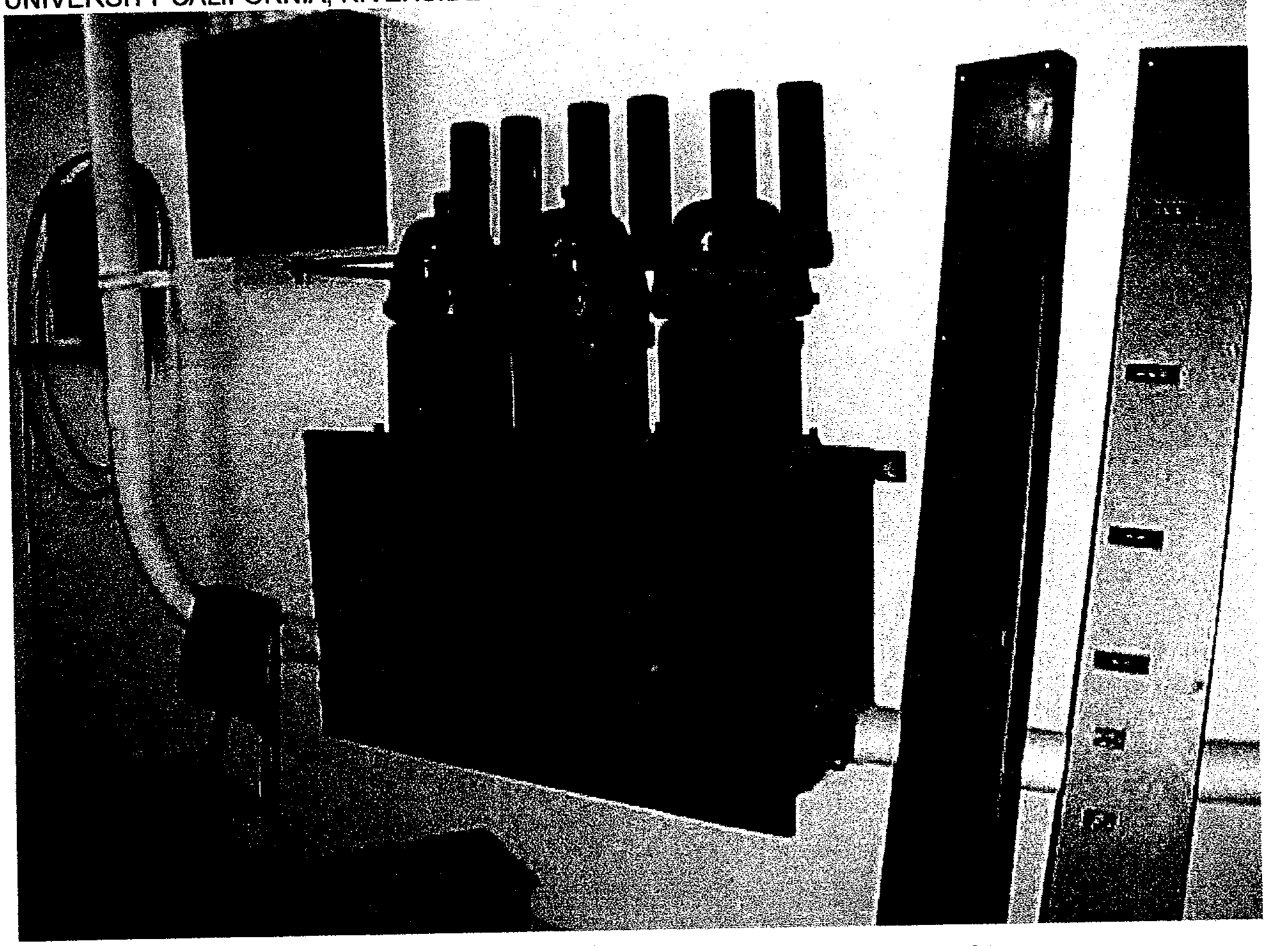


Figure 3 - South Wing Oil Fused Cutouts (OFC)

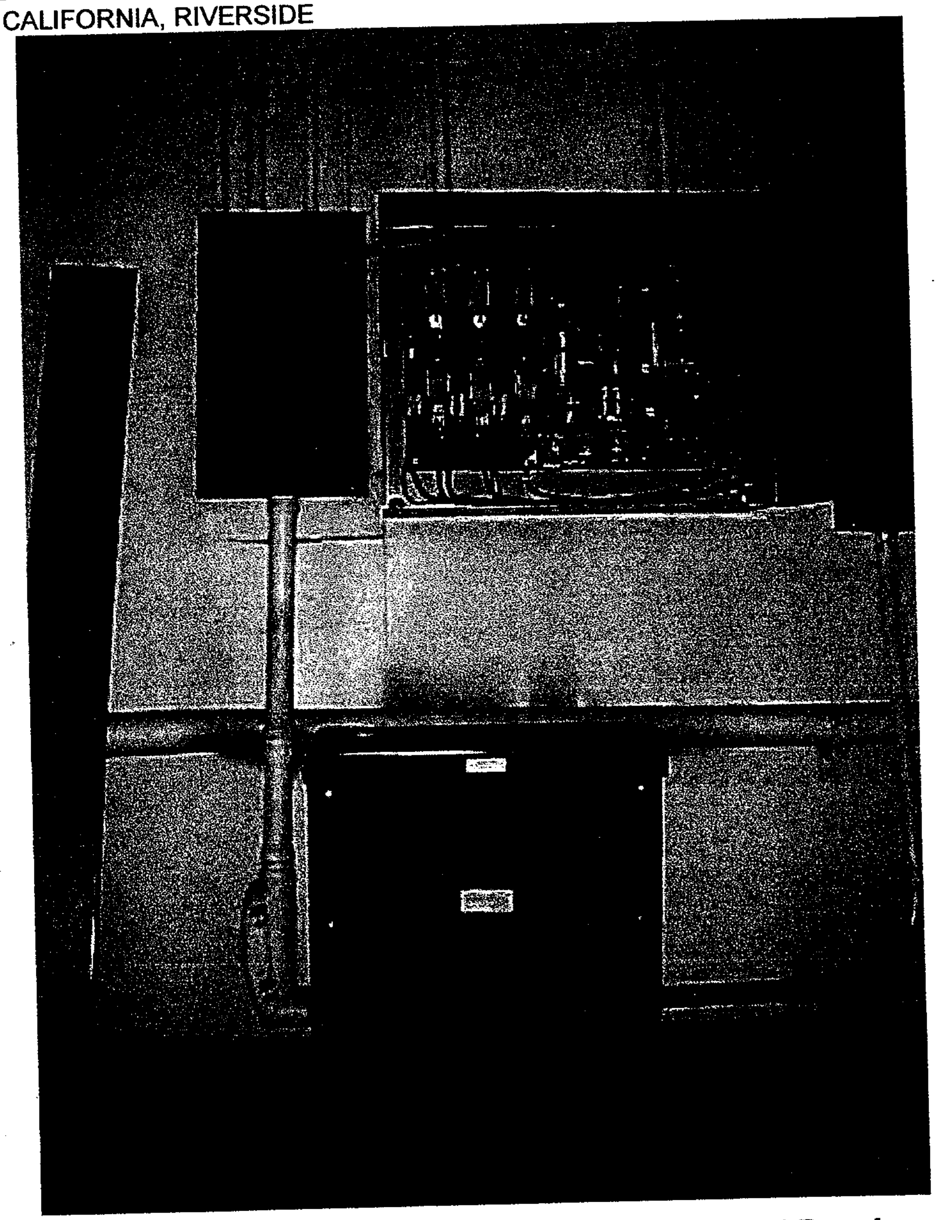


Figure 4 - Emergency ATS, Transformers, and Panel

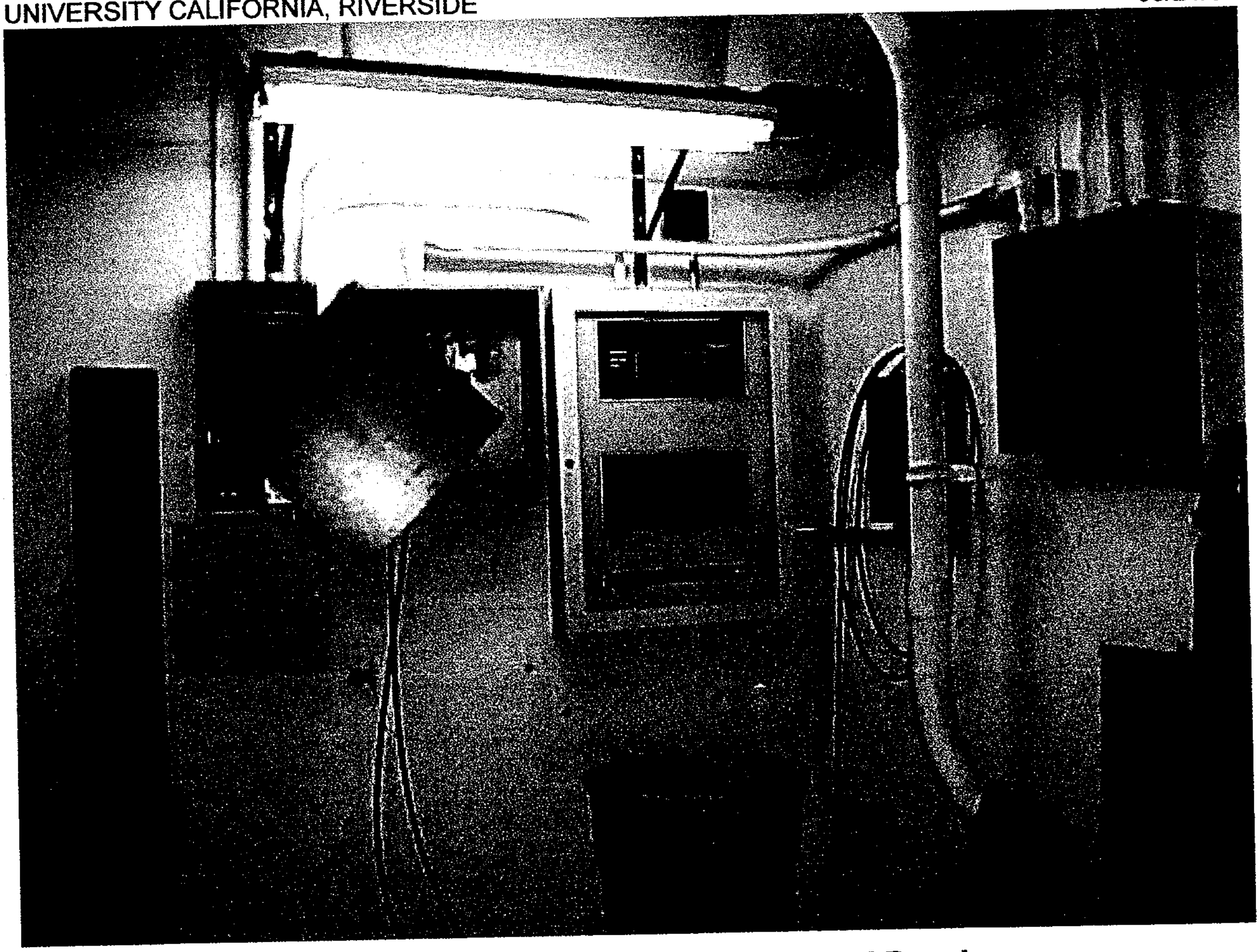


Figure 5 - Building Fire Alarm Control Panel

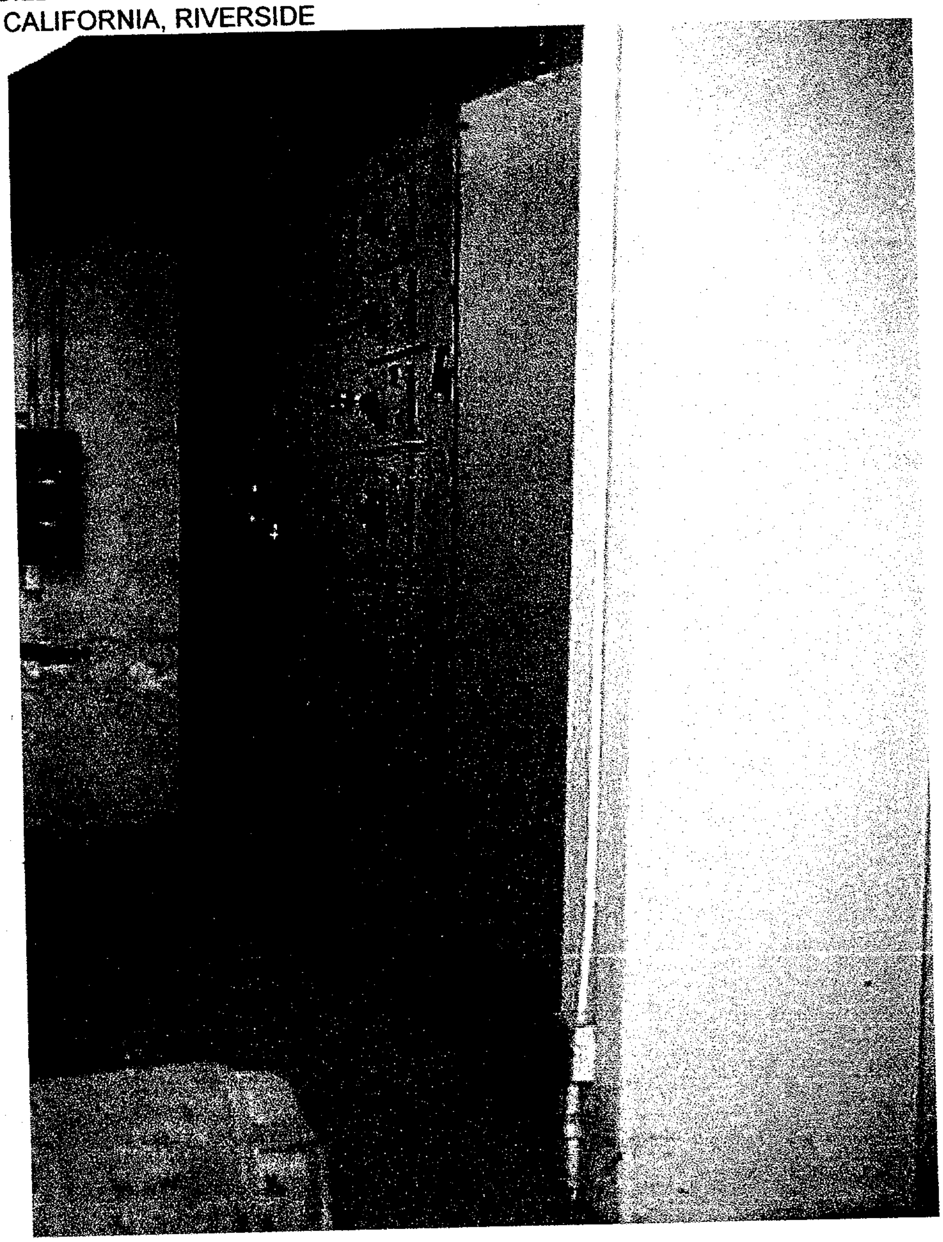


Figure 6 - Chiller Plant Motor Control Center

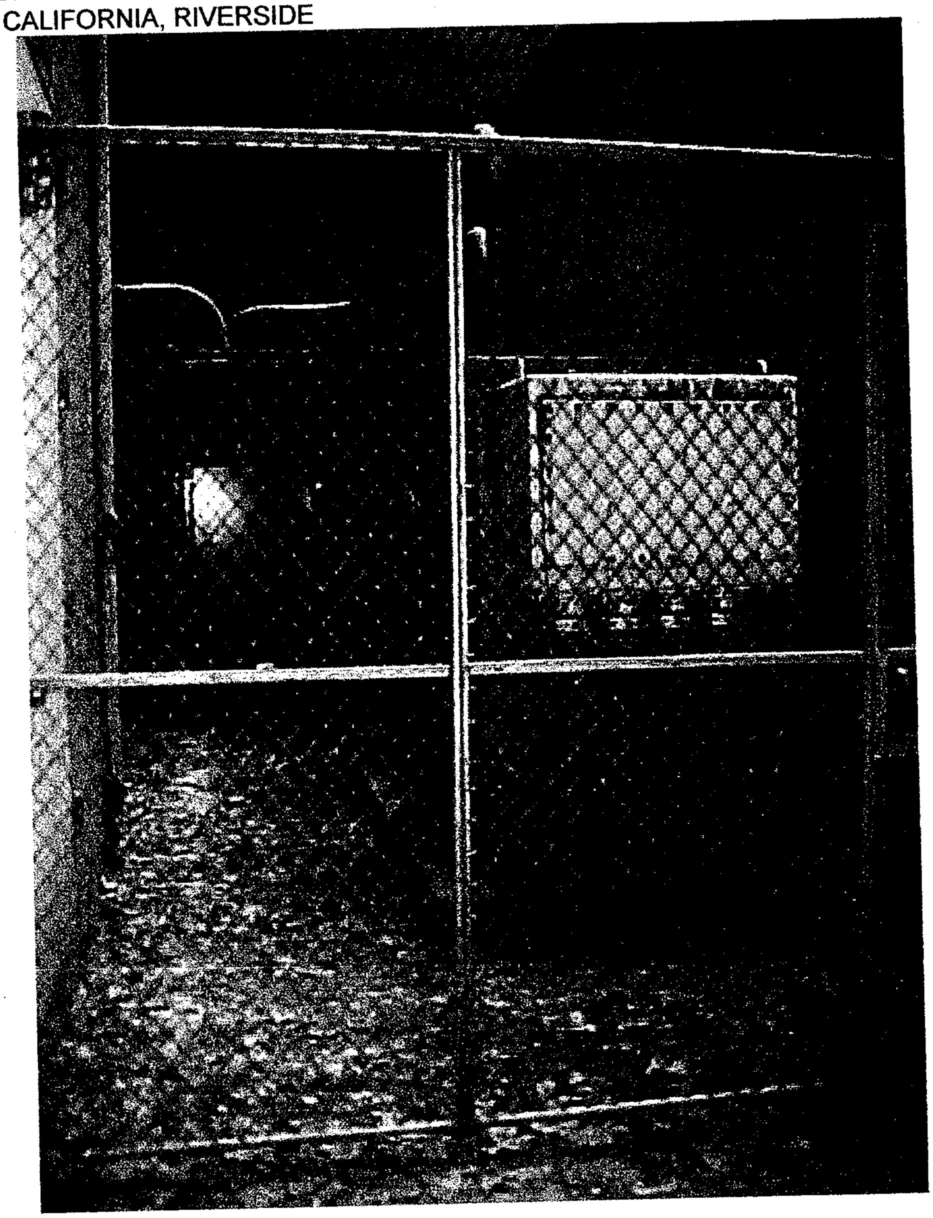


Figure 7 - Transformer Well

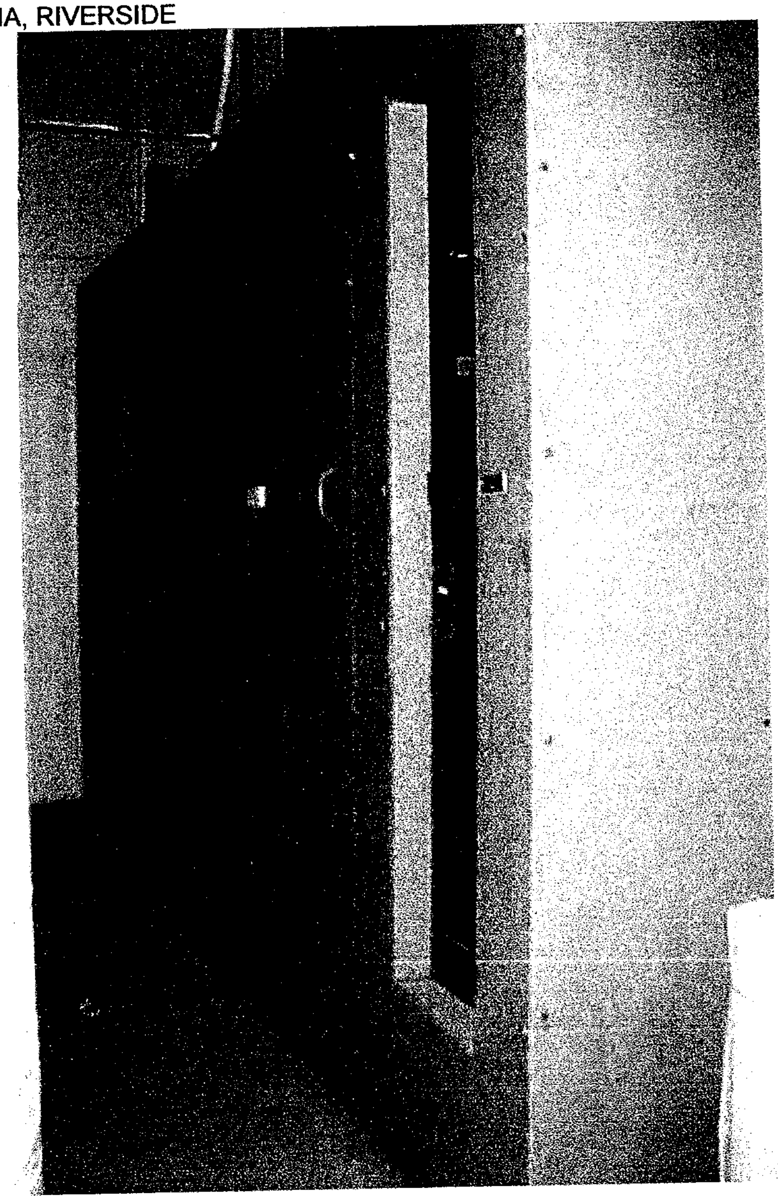


Figure 8 - North and Central Wing Main Switchboard (View 1)

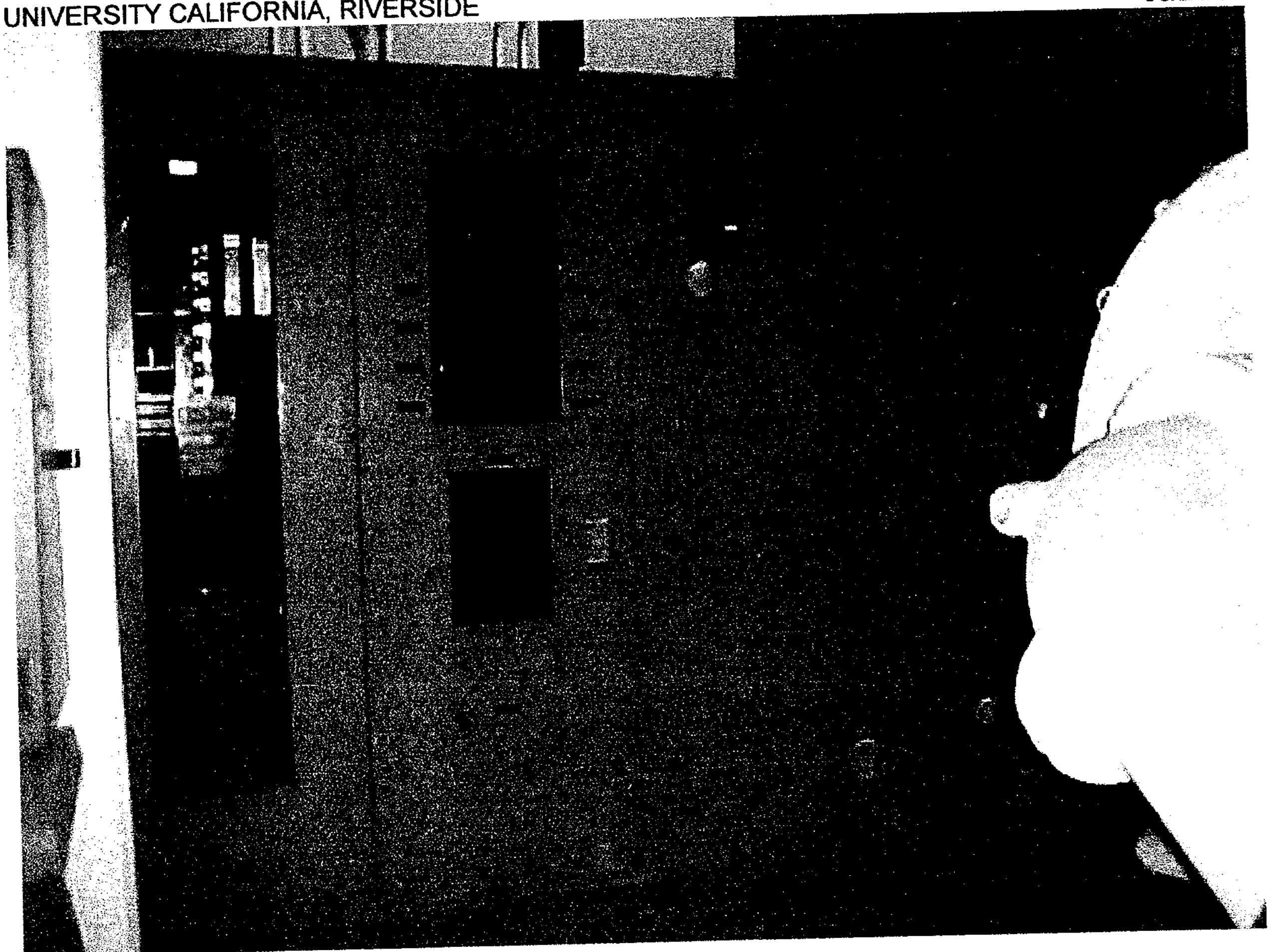
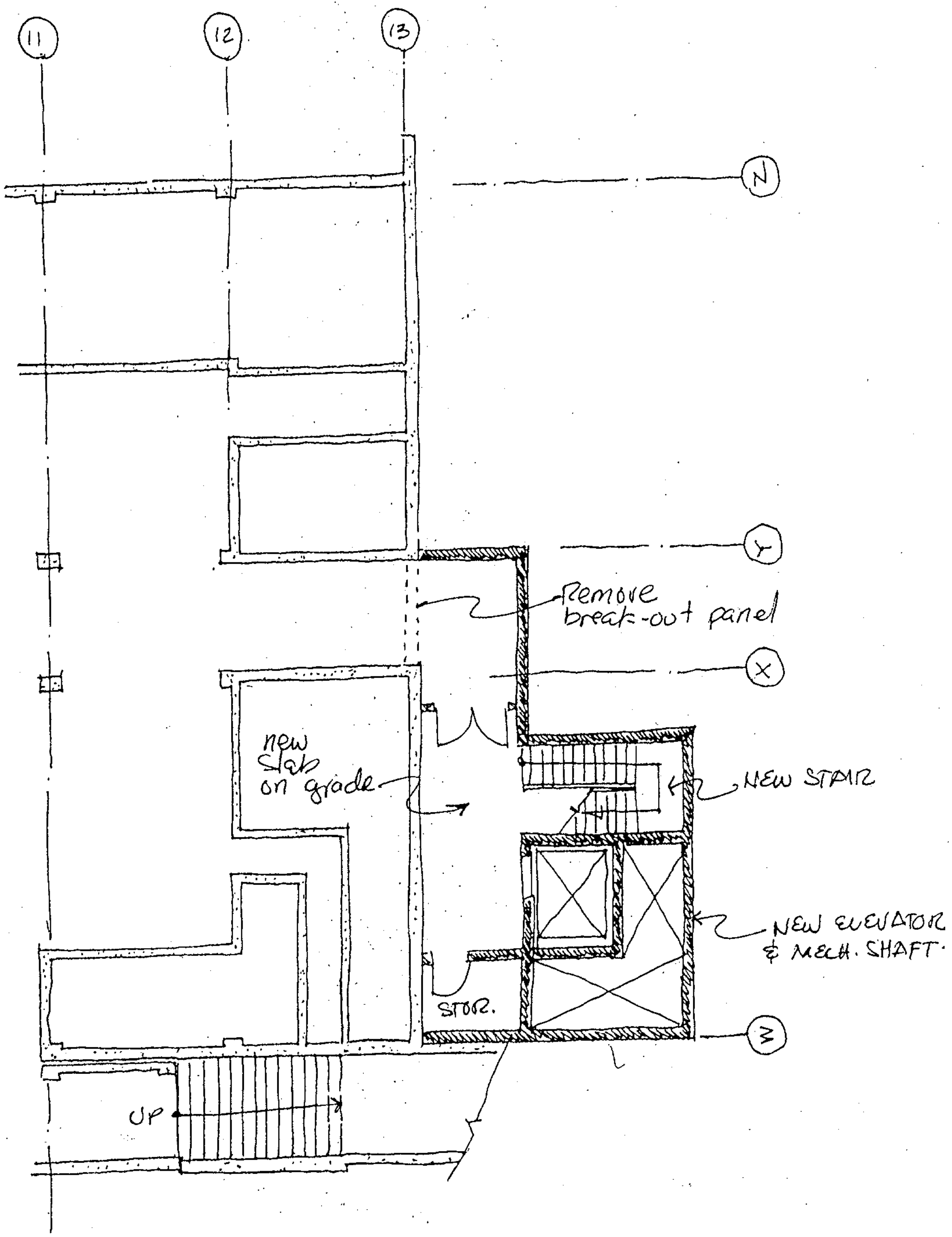


Figure 9 - North and Central Wing Main Switchboard (View 2)

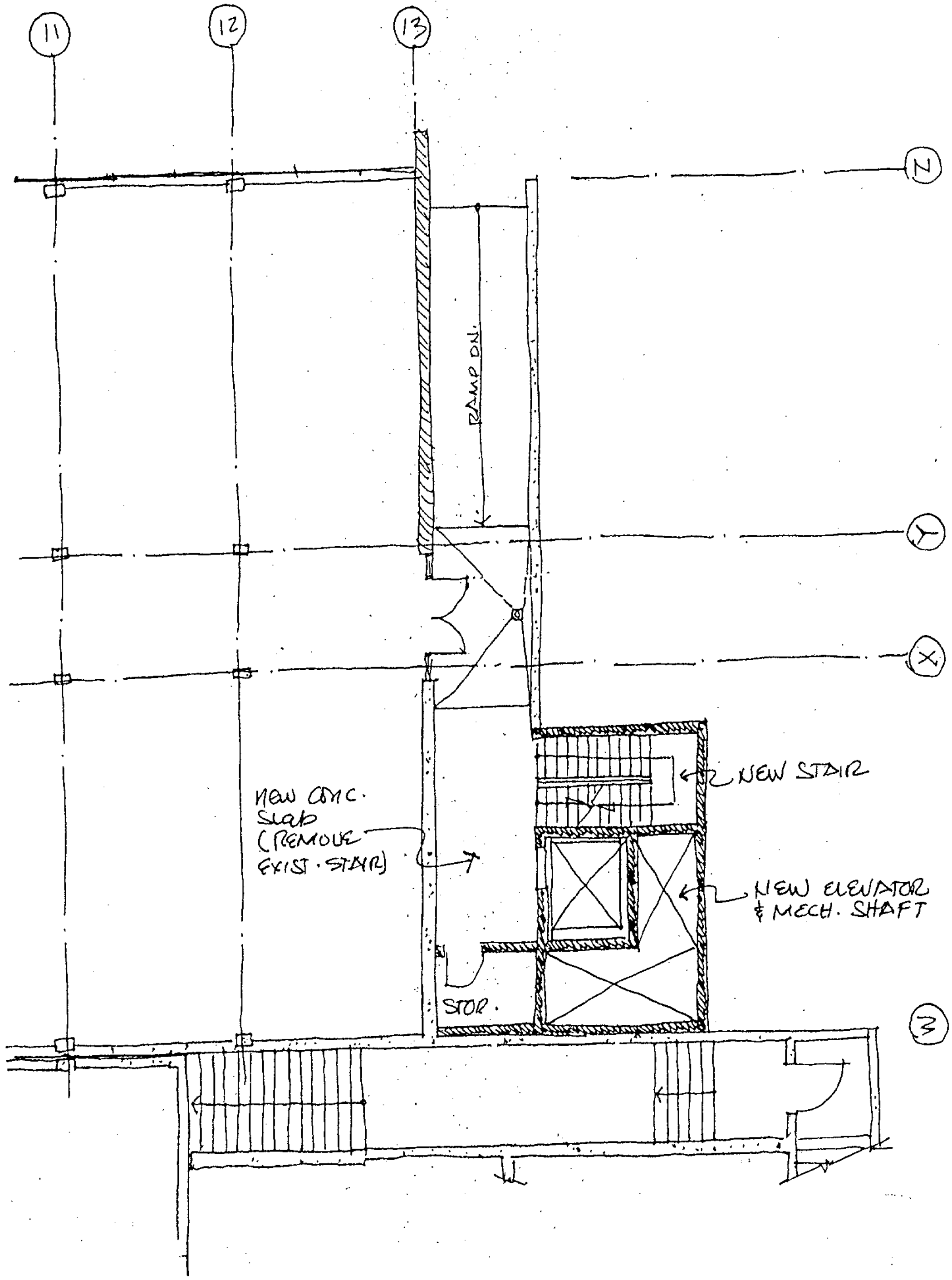
END OF SECTION



NEW STAIR & ELEVATOR
SUB-BASEMENT PLAN

GEOLOGY BUILDING RENOVATION
U.C. RIVERSIDE

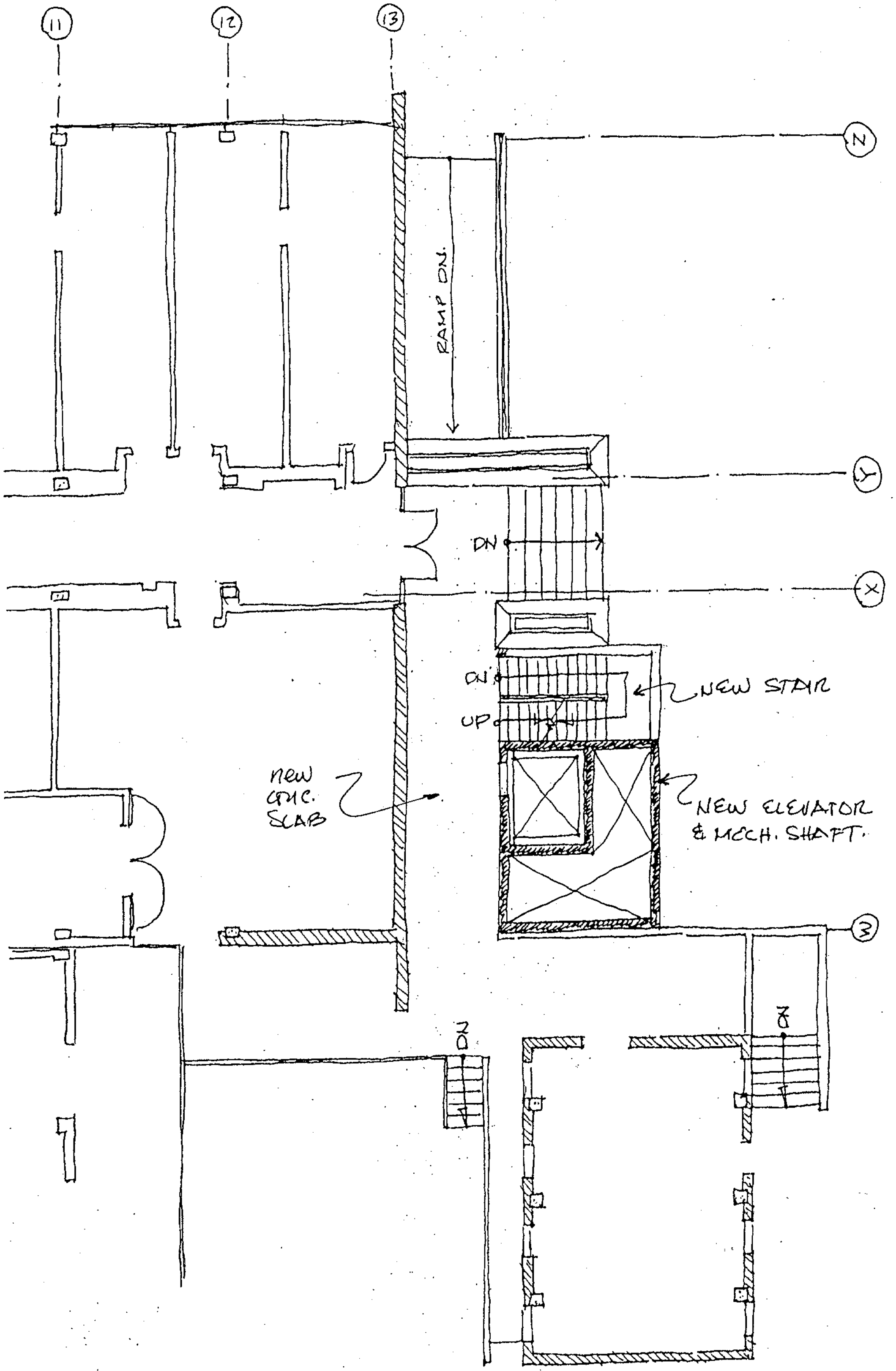
SCALE 3/16" = 1'-0"   05/02/01



NEW STAIR & ELEVATOR
BASEMENT PLAN

GEOLOGY BUILDING RENOVATION
U.C. RIVERSIDE

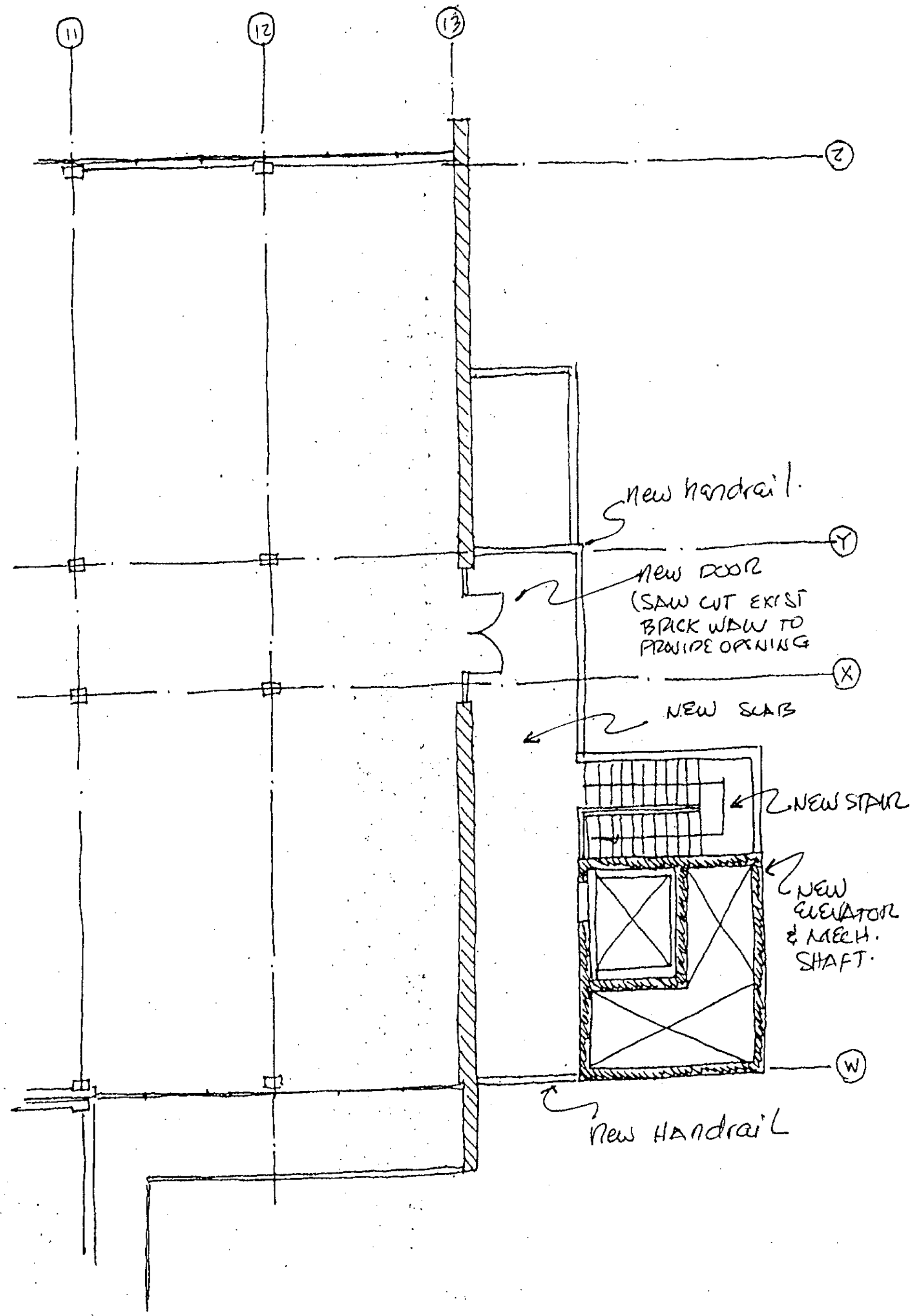
SCALE 3/16" = 1'-0"   05/02/01



NEW STAIR & ELEVATOR
FIRST FLOOR PLAN

GEOLOGY BUILDING RENOVATION
U.C. RIVERSIDE

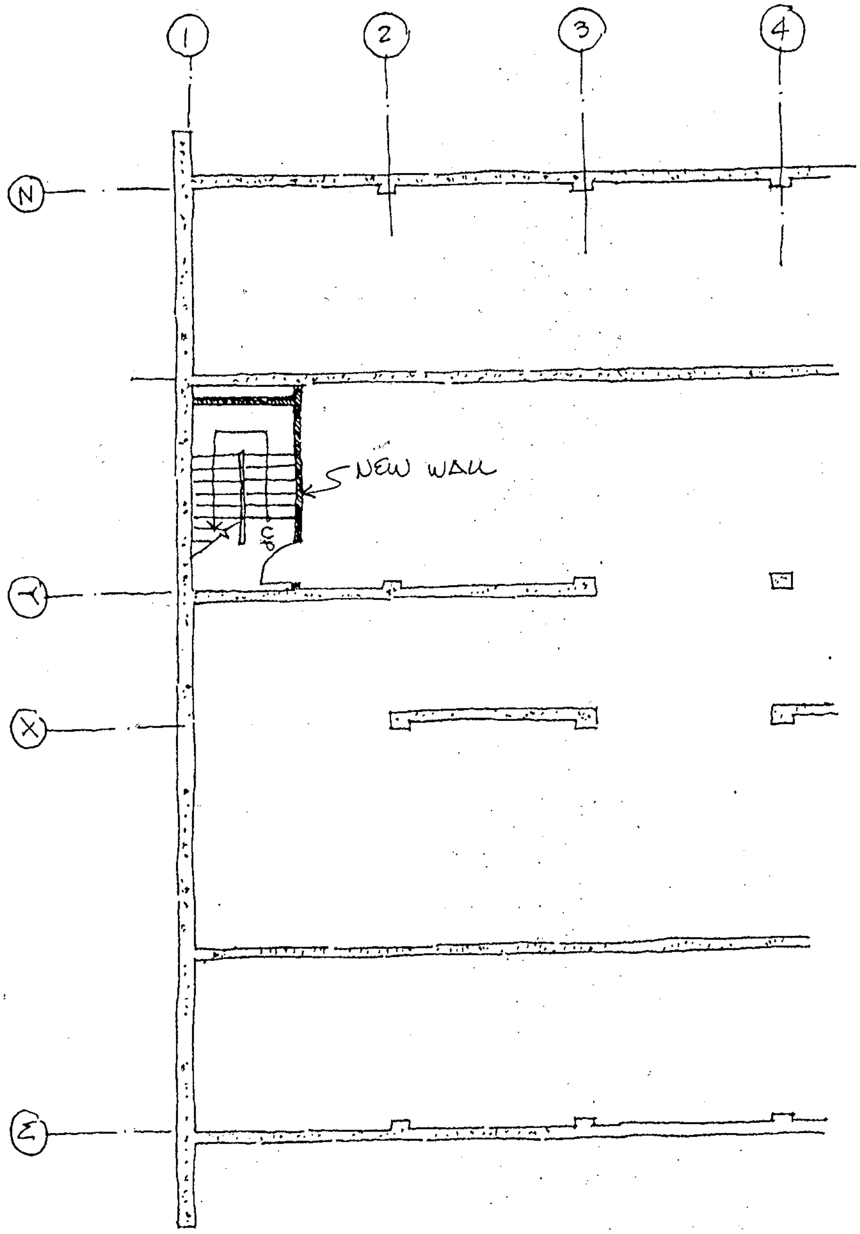
SCALE 3/16" = 1'-0"   05/02/01



NEW STAIR & ELEVATOR
2ND FLR. PLAN

GEOLOGY BUILDING RENOVATION
U.C. RIVERSIDE

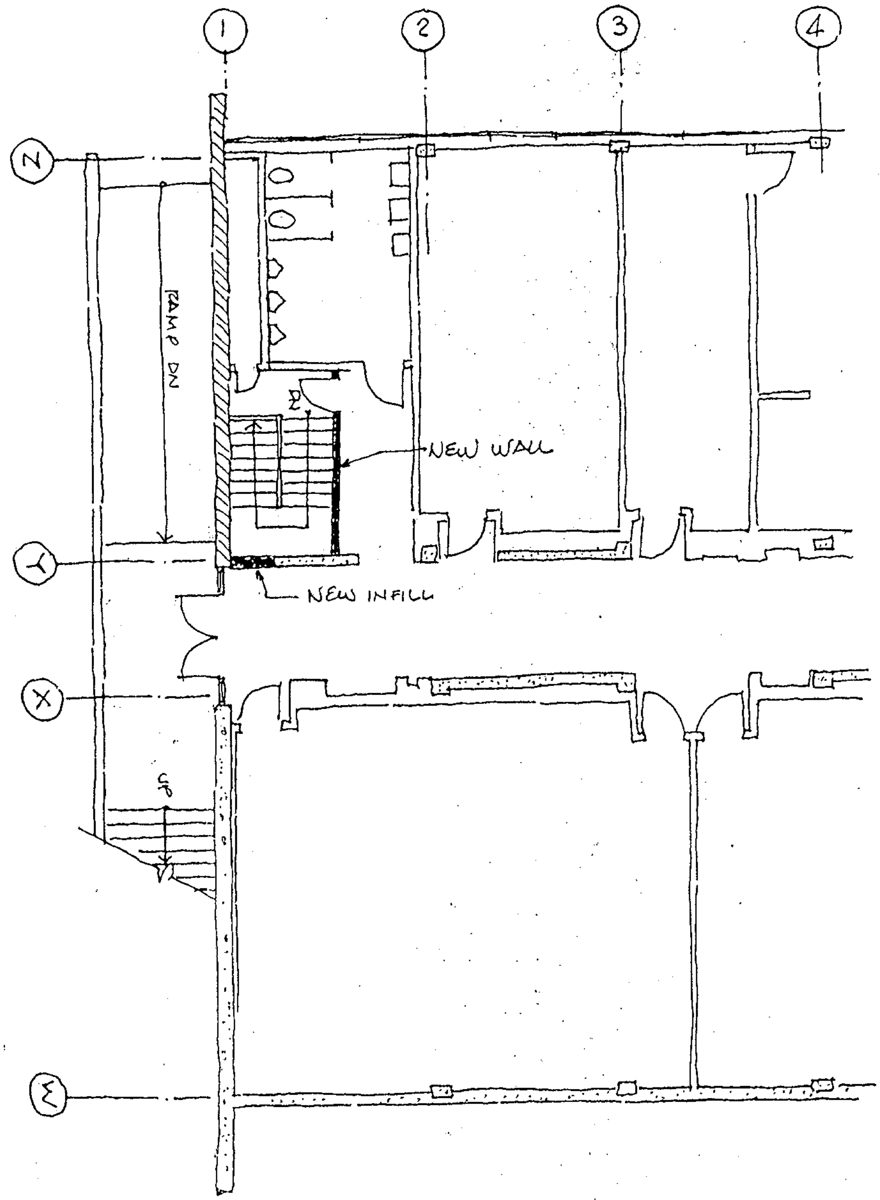
SCALE 3/16 = 1'-0"   05/02/01



NEW STAIR
SUB-BASEMENT PLAN

GEOLOGY BUILDING RENOVATION
U.C. RIVERSIDE

SCALE 3/16" = 1'-0"   05/02/01

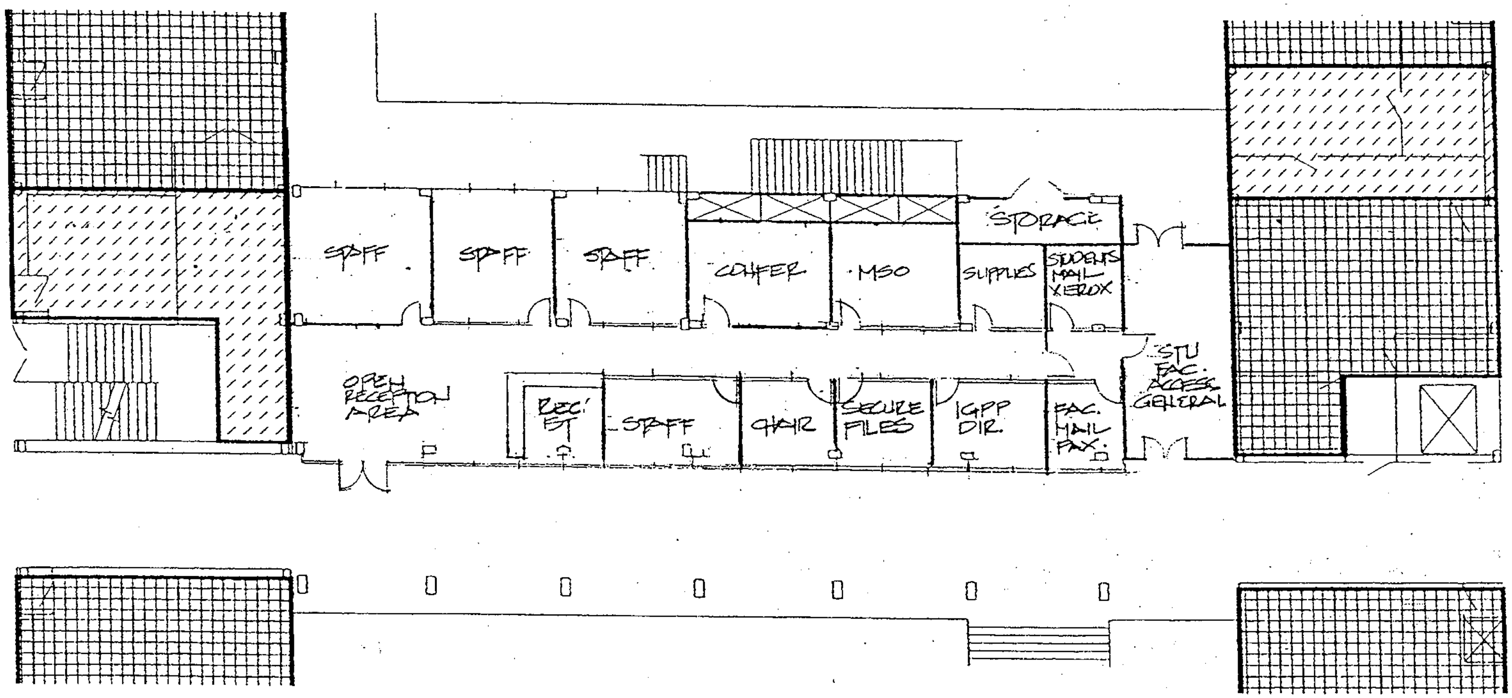


NEW STAIR
BASEMENT PLAN

GEOLOGY BUILDING RENOVATION
U.C. RIVERSIDE

SCALE 3/16" = 1'-0"

05/02/01



DEPARTMENT OF
EARTH SCIENCES / IGPP

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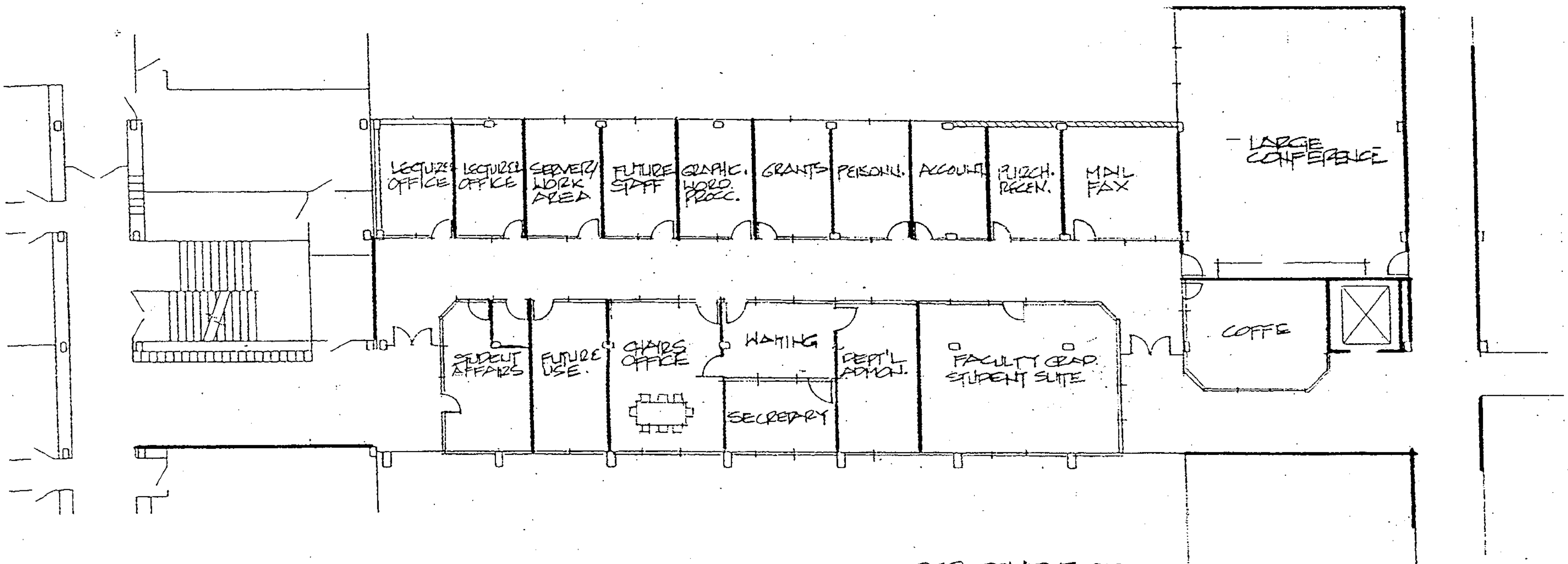

DEPARTMENT OF ENVIRONMENTAL SCIENCES

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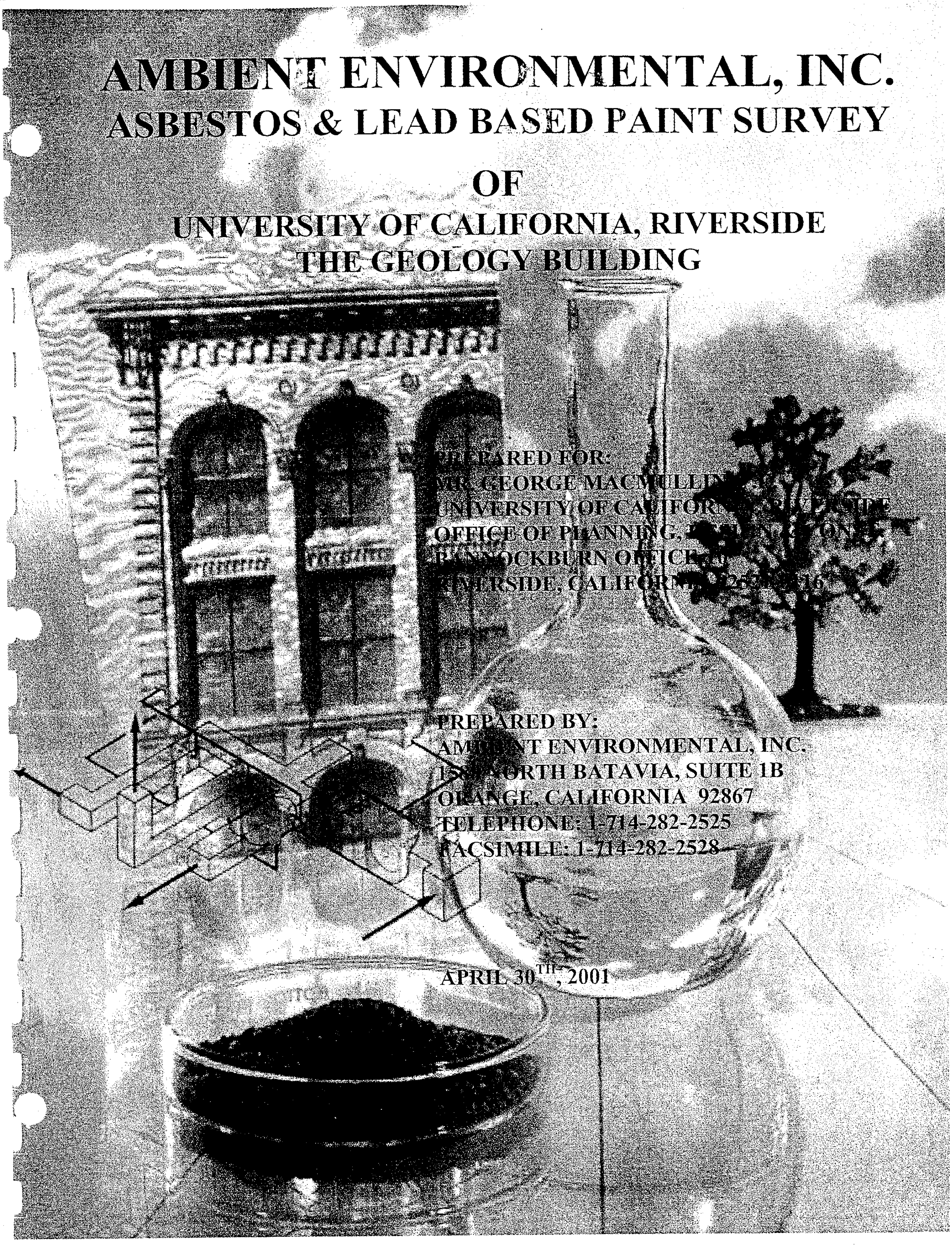

AMBIENT ENVIRONMENTAL, INC.
ASBESTOS & LEAD BASED PAINT SURVEY

OF

UNIVERSITY OF CALIFORNIA, RIVERSIDE
THE GEOLOGY BUILDING

PREPARED FOR:
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OFFICE OF PLANNING, [illegible]
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APRIL 30TH, 2001

CONFIDENTIAL AND PRIVILEGED

ASBESTOS AND LEAD-BASED PAINT SURVEY

FOR

THE GEOLOGY BUILDING
Located at:
The University of California, Riverside

Prepared for:
University of California, Riverside
Office of Planning, Design & Construction
Bannockburn Office-10
Riverside, California 92521-0116
Attn: George MacMullin, P.E.

Prepared by:
Ambient Environmental Inc.
1588 North Batavia, Suite 1B
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April 30th, 2001

Ambient Environmental Inc. Project #01-1070-01

John L. Payne.
California Certified Asbestos
Consultant #93-1226

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

Ambient Environmental Inc. was retained by The University of California, Riverside, Office of Planning, Design & Construction to conduct a comprehensive Asbestos and Lead Based Paint (LBP) survey of the Geology Building located on the University of California, Riverside campus.

The surveys were conducted on March 19th through March 31st, 2001 by Mr. Larry Ponder, a Certified Asbestos Consultant and a United States Environmental Protection Agency (USEPA) certified building inspector for Asbestos-containing Building Materials (ACBM).

The purpose of the Asbestos and LBP survey was to locate and identify accessible friable and non-friable suspect asbestos-containing materials and the presence of LBP. Once a visual inspection was performed, representative Asbestos and LBP bulk samples were obtained from each homogeneous building material and paint color. The sample location, material type, friability, condition of material, and quantity were also documented.

Asbestos bulk sampling were obtained in accordance with the USEPA established guidelines document, "Guidance for Controlling Asbestos-Containing Materials in Buildings" (USEPA 560/5-85-024, 1985) and USEPA 40 CFR Part 763 "Asbestos-Containing Materials in Schools, Final Rule" (AHERA). Each bulk sample was analyzed for asbestos content by Polarized Light Microscopy (PLM). Forensic Analytical is the accredited laboratory that performed the analysis for asbestos. A total of 133 asbestos bulk samples were obtained during the survey.

Also, representative lead samples were collected from the interior paint of the building. Each sample was analyzed for the presence of lead by an independent laboratory. The independent laboratory is accredited by the American Industrial Hygiene Association (AIHA), The National Institute for Standards and Testing (NIST) and the National Voluntary Laboratory Accreditation Program (NVLAP). Ten lead bulk samples was submitted and analyzed by Atomic Absorption Spectrometry (AAS) method. Quality Control (QC) program was strictly enforced to assure accuracy of sample result.

The University of California, Riverside provided keys and access to the property. All areas of the buildings and roof were visually inspected except for the following locations:

1. South Wing Room #2202-B
2. South Wing Room #1206-C
3. North Wing Room #2406-A
4. North Wing Room #2406-B
5. Room #447

Asbestos-containing building materials and LBP, not identified in this report, may be present within hidden or concealed areas of the building. Locations, amounts, and conditions of the materials assessed and sampled can be found in the Material Inventory (Tables).

2.0 SURVEY PROCEDURES

Ambient Environmental Inc. conducted a comprehensive Asbestos and LBP survey for the Geology Building located on the University of California, Riverside campus. All areas of the building were surveyed for Asbestos and LBP. Asbestos-containing building materials or LBP, not identified in this report, may be present within hidden or concealed areas of the building.

Asbestos-containing material identification was performed by entering each functional space and assessing all structural/mechanical components and architectural finishes. The physical conditions, friability, accessibility, activity and damage of suspect ACBM was also assessed and documented.

LBP was identified by entering each functional space and assessing all architectural finishes. The physical conditions, accessibility, activity and damage of suspect LBP was also assessed and documented.

For reporting purposes, space designations were assigned each functional space within the facilities using the pre-existing designation on the door or as indicated on the floor plans. Where neither was available, the space was labeled by the inspector and so indicated in the report. The following procedures were performed:

1. A visual assessment to identify the location, type and quantity of LBP, friable and non-friable asbestos containing building materials.

2. Obtain representative bulk samples from suspect asbestos-containing materials.

3. Obtain representative bulk samples from suspect lead containing paints.

4. Asbestos samples were analyzed by an independent accredited laboratory for the presence of asbestos by PLM.

5. LBP samples were analyzed by an independent accredited laboratory for the presence of lead by AAS.

5. Present all survey results in a written report including recommendation, locations, quantities, and laboratory results.

All findings, recommendations, and analytical data presented in this report are based on the information (assessment and sampling data) obtained by our inspector during the survey.

3.0 BULK SAMPLING PROCEDURES FOR ASBESTOS

Each suspect ACBM identified was sampled in accordance with sampling guidelines established by the USEPA. The following summarizes the sampling procedures utilized.

1. Building materials were categorized into homogeneous materials. A homogeneous material is defined as being uniform in texture, color, and date of application.

2. A sampling scheme was developed based upon the location and quantities of the various homogeneous materials.

3. Bulk samples were collected by extracting a representative section of the selected material, placing it in a sampling container and assigning a unique sample number. The samples were placed into a sealed shipping container for delivery to a accredited laboratory for analysis by PLM.

4. The personnel performed proper decontamination procedures to prevent the spread of secondary contamination.

5. Each bulk sample was recorded on a bulk sample log and possession of the samples was tracked by a chain of custody record.

The reported laboratory results in this report are a visual estimate by area of asbestos concentration. Results for heterogeneous samples examined by component are reported as a composite. The lower limit of reliable detection for this method is 1%. Samples, which contain more than 1% asbestos are reported in 5% ranges. Samples which contain asbestos in a concentration lower than the limit of reliable detection (<1%) are "Trace."

All bulk samples were analyzed by PLM in accordance with the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples EPA - 600/M4-82-020" dated December 1982 and adopted by the National Voluntary Laboratory Accreditation Program (NVLAP) Title 15, part 7 of the Code of Federal Register as affiliated with the National Institute for Standards and Testing (NIST).

One hundred thirty-three bulk samples were obtained at the subject property and analyzed for asbestos content by Forensic Analytical of Rancho Dominguez, California. Forensic Analytical is accredited by the American Industrial Hygiene Association (AIHA), National Voluntary Laboratory Accreditation Program (NVLAP), National Institute of Standards and Testing (NIST), and is a successful participant in the Proficiency Analytical Testing Program (Pat).

4.0 BULK SAMPLING PROCEDURES FOR LEAD

Each suspect paint color was bulk sampled to determine the presence of lead in paint. The following summarizes the sampling procedures utilized.

1. Interior and exterior paint finishes were categorized into homogeneous materials. A homogeneous material is defined as being uniform in texture, color, and date of application.

2. A sampling scheme was developed based upon the location and quantities of the various homogeneous materials.

3. Bulk samples were collected by extracting a representative section of the selected paint, placing it in a sampling container and assigning a unique sample number. The samples were placed into a sealed shipping container for delivery to an accredited laboratory for analysis by AAS.

4. The personnel performed proper decontamination procedures to prevent the spread of secondary contamination.

5. Each bulk sample was recorded on a bulk sample log and possession of the samples was tracked by a chain of custody record.

All bulk samples were analyzed by ASS in accordance with Method EPA SW846-3050-7420. Ten bulk samples were obtained at the subject property and analyzed for lead by LA Testing of Pasadena, California. LA Testing is accredited by the American Industrial Hygiene Association (AIHA), National Voluntary Laboratory Accreditation Program (NVLAP), National Institute of Standards and Testing (NIST), and is a successful participant in the Proficiency Analytical Testing Program (Pat). The Detection Limit Guidelines for the Housing and Urban Development (HUD) is 1.0 or 5,000 part per million (PPM). As per the OSHA Guidelines, paint that contains any amount of lead is considered as lead containing paint.

5.0 BUILDING DESCRIPTION

The Geology Building consists of a two-story structure with a sub-basement located on the University of California, Riverside campus. The building is constructed on a concrete foundation with cinder block and concrete exterior walls with a concrete deck. The construction date was not available at the time of the survey. The building consists of office space, classrooms, laboratories and restrooms.

The interior walls are finished with a toweled plaster. The ceiling consists of toweled plaster, or acoustic ceiling tiles. Vinyl floor tile and mastic or vinyl sheet flooring was observed throughout the building. Where flooring was not observed, carpeting was applied directly over cement or vinyl floor tile. The heating and air conditionings (HVAC) units are located in the basement level. All associated piping, fitting, duct or tanks are wrapped in either asbestos-containing material or fiberglass.

6.0 POSITIVE ASBESTOS CONTAINING MATERIALS AND LOCATIONS

South Wing Room # 2202

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	50 SF	No	No

South Wing Room # 2202A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	70 SF	No	No

South Wing Room # 2206

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No

South Wing Room # 2208 -C

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No

South Wing Room # 2205

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No

South Wing Room # 2229

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Gray 12x12 Vinyl Floor Tile and Mastic	2% Chrysotile	Floor	100 SF	No	No
Transite Counter Tops	Assume	Counter	54 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	75 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	16 each	Yes	No

South Wing Room # 2226-C

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Floor	2% Chrysotile	Floor	100 SF	Yes	No
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	54 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	40 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

South Wing Room # 2226

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Floor	2% Chrysotile	Floor	900 SF	Yes	No
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	140 LF	No	No
Transite Counter Tops	Assume	Counter	54 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	150 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	50 each	Yes	No

South Wing Room # 2233

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	300 SF	No	No
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	80 each	Yes	No

South Wing Room # 2247

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	800 SF	Yes	No
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	150 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	200 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

South Wing Room # 2247-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	200 SF	Yes	No
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Transite Counter Tops	Assume	Counter	20 LF	No	No

South Wing Room # 2247-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	100 SF	Yes	No
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Walls	80 LF	No	No

South Wing Room # 2265

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	1200 SF	Yes	No
Transite Counter Tops	Assume	Counter	70 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	60 each	Yes	No

South Wing Room # 2265-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	200 SF	Yes	No
Transite Counter Tops	Assume	Counter	20 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	60 each	Yes	No

South Wing Room # 2265-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	200 SF	Yes	No
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

South Wing Room # 2268

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	800 SF	Yes	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	60 each	Yes	No

South Wing Room # 2268-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	300 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Counter Tops	Assume	Counter	10 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No

South Wing Room # 2268-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	200 SF	No	No
Brown Vinyl Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

South Wing Room # 2268

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Gray 12x12 Vinyl Floor Tile and Mastic	2% Chrysotile	Floor	300 SF	No	No
Transite Counter Tops	Assume	Counter	20 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	60 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

South Wing Room # 1205

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	100 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

South Wing Room # 1206

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

South Wing Room # 1216

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	250 SF	No	No

South Wing Room # 1216-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	100 SF	No	No

South Wing Room # 1216-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No

South Wing Room # 1216-C

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	120 SF	No	No

South Wing Room # 1220

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	190 SF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	70 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	15 each	Yes	No

South Wing Room # 1207

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	900 SF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	400 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	60 each	Yes	No

South Wing Room # 1231-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	270 SF	No	No
Transite Sink	Assume	Counter	1 each	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

South Wing Room # 1224

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

South Wing Room # 1227

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	60 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

South Wing Room # 1230

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	250 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	60 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

South Wing Room # 1231

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	825 SF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	400 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	80 each	Yes	No

South Wing Room # 1242

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	650 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	80 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	400 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	80 each	Yes	No

South Wing Room # 1251

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	400 SF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	15 each	Yes	No

South Wing Room # 1251-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	50 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

South Wing Room # 1251-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	50 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	40 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

South Wing Room # 1251-D

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	100 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No

South Wing Room # 1260

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Gray 12x12 Vinyl Floor tile and Mastic	2% Chrysotile	Floor	600 SF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

South Wing Room # 1260-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Gray 12x12 Vinyl Floor tile and Mastic	2% Chrysotile	Floor	40 SF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

South Wing Room # 1311-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Gray 12x12 Vinyl Floor tile and Mastic	2% Chrysotile	Floor	150 SF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	70 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	30 each	Yes	No

South Wing Room # 1270-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Gray 12x12 Vinyl Floor tile and Mastic	2% Chrysotile	Floor	400 SF	No	No
Transite Sink	Assume	Counter	1 each	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	200 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

South Wing Room # 1270

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Gray 12x12 Vinyl Floor tile and Mastic	2% Chrysotile	Floor	150 SF	No	No
Transite Sink	Assume	Counter	1 each	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	70 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	15 each	Yes	No

South Wing Room # 1278

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	180 SF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	60 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

South Wing Room # 1278-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	250 SF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	60 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

South Wing Room # 1285

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

South Wing Room # 1284

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	40 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	12 each	Yes	No

South Wing Room # 1265

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	900 SF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	160 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	65 each	Yes	No

South Wing Room # 1263

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	250 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	70 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

South Wing 1st Floor Hallway

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	300 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	150 each	Yes	No

South Wing 2nd Floor Hallway

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Above Ceiling	3000 LF	Yes	No
Pipe Fittings	8% Chrysotile	Above Ceiling	150 each	Yes	No

Center Wing Room 1st Floor Hallway

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	400 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	80 each	Yes	No

Center Wing 2nd Floor Hallway

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	1500 SF	No	No
Pipe Insulation	35% Chrysotile	Above Ceiling	700 LF	Yes	No
Pipe Fittings	8% Chrysotile	Above Ceiling	150 each	Yes	No

North Wing 1st Floor Hallway

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	1700 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	300 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	150 each	Yes	No

North Wing 2nd Floor Hallway

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	1500 SF	No	No
Pipe Insulation	35% Chrysotile	Above Ceiling	700 LF	Yes	No
Pipe Fittings	8% Chrysotile	Above Ceiling	150 each	Yes	No

Center Wing Room # 1345

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	1000 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	75 each	Yes	No

Center Wing Room # 1345

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	4500 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	400 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	800 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	150 each	Yes	No

Center Wing Room # 1324

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	800 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	80 LF	No	No

South Wing Room # 1321

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	250 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

Center Wing Room # 1324-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor tile and Mastic	10% Chrysotile	Floor	50 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

Center Wing Room # 1323

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Transite Walls	Assume	Walls	170 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Transite Counter Tops	Assume	Counter	30 LF	No	No
Transite Sink	Assume	Counter	1 each	No	No

North Wing Room # 1402

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	40 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

North Wing Room # 1407

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	60 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	40 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

North Wing Room # 1421

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	500 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	200 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

North Wing Room # 1421-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	60 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	10 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

North Wing Room # 1408

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	150 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 1424

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 1432

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 1430

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

North Wing Room # 1429

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	900 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	200 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	220 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	50 each	Yes	No

North Wing Room # 1444

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	150 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 1448

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	300 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

North Wing Room # 1454

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

North Wing Room # 1454-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

North Wing Room # 1453

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	200 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

North Wing Room # 1456

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	300 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 1462

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	300 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 1464

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	300 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 1468

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	300 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	60 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

North Wing Room # 1463

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	25 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	200 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	60 each	Yes	No

North Wing Room # 1463-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	150 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

North Wing Room # 1409

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	950 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	70 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	250 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	65 each	Yes	No

North Wing Room # 2207

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	100 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	40 LF	No	No

North Wing Room # 2413-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	300 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	40 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

North Wing Room # 2413

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	1500 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	300 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	4 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	75 each	Yes	No

North Wing Room # 2410

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	200 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	10 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	12 each	Yes	No

North Wing Room # 2416

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	200 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	10 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	11 each	Yes	No

North Wing Room # 2414

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	600 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	300 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

North Wing Room # 2424

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	10 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	12 each	Yes	No

North Wing Room # 2430

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	10 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	12 each	Yes	No

North Wing Room # 2428

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	700 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	70 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

North Wing Room # 2428

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	10 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	12 each	Yes	No

North Wing Room # 2444

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No

North Wing Room # 2442

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	600 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

North Wing Room # 2452

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	50 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

North Wing Room # 2456

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No

North Wing Room # 2454

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	600 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	60 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	70 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	15 each	Yes	No

North Wing Room # 2460

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	600 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	60 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	140 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 2460-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	250 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Counter Tops	Assume	Counter	20 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	70 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

North Wing Room # 2460-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	300 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	40 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	30 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	30 each	Yes	No

North Wing Room # 2460-H

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	300 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	30 each	Yes	No

North Wing Room # 2460-F

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	400 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	5 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	200 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	50 each	Yes	No

North Wing Room # 2460-E

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	100 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

North Wing Room # 2460-C

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	40 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	15 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

North Wing Room # 2460-G

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	500 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Transite Counter Tops	Assume	Counter	20 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	120 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	15 each	Yes	No

North Wing Room # 2433

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	800 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	600 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	35 each	Yes	No

North Wing Room # 2226-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige Vinyl Sheet Flooring	25% Chrysotile	Floor	150 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	35 each	Yes	No

North Wing Room # 2413

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	1500 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	300 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	4 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	75 each	Yes	No

Basement North Wing Hallway

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	1600 SF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	300 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	100 each	Yes	No

Lower Basement North Wing Hallway

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	300 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	700 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	50 each	Yes	No

Lower Basement North Wing Room # B4

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Lower Basement North Wing Room # B-5

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	40 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Lower Basement North Wing Room # B-3

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	35 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Lower Basement North Wing Room # B-2

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Transite Counter Tops	Assume	Counter	10 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	50 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Lower Basement North Wing Room # B-2-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Transite Counter Tops	Assume	Counter	10 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	30 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Lower Basement North Wing Room # B-2-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	30 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Lower Basement North Wing Room # B-1

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	35 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Lower Basement North Wing Room # B-5-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	30 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Lower Basement North Wing Room # B-5-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	30 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Lower Basement North Wing Room # B-5-C

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	30LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Lower Basement North Wing Room # B-6

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Lower Basement North Wing Room # B-6-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	50 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Lower Basement North Wing Room # B-7

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	75 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Lower Basement North Wing Room # B-9

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	400LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

Lower Basement North Wing Room # B-8

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	120 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	25 each	Yes	No

Lower Basement North Wing Room # B-10

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	40 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Basement North Wing Room # 406-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	10 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Basement North Wing Room # 401

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	950 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	300 LF	No	No
Transite Sink	Assume	Counter	3 each	No	No
Transite Piping	Assume	Above Fume Hood	15 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	35 each	Yes	No

Basement North Wing Room # 408

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	400 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Sink	Assume	Counter	1 each	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	60 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

Basement North Wing Room # 414

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	350 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	100 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	70 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

Basement North Wing Room # 415

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No

Basement North Wing Room # 415-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No
Transite Piping	Assume	Ceiling	10 LF	No	No

Basement North Wing Room # 415-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No

Basement North Wing Room # 415-C

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No

Basement North Wing Room # 420

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Ceiling	15 LF	No	No

Basement North Wing Room # 424

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	450 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Basement North Wing Room # 424-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	300 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	4 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	75 each	Yes	No

Basement North Wing Room # 426

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	160 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	40 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	30 each	Yes	No

Basement North Wing Room # 417

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Basement North Wing Room # 417-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	30 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

Basement North Wing Room # 417-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No

Basement North Wing Room # 417-C

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

Basement North Wing Room # 427

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	15 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Basement North Wing Room # 433

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	30 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	15 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

Basement North Wing Room # 433-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	150 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No

Basement North Wing Room # 433-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	700 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No

Basement North Wing Room # 433-C

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	10% Chrysotile	Floor	200 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	50 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No
Transite Pipe	Assume	Ceiling	5LF	No	No

Basement North Wing Room # 434

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

Basement North Wing Room # 440

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	150 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	20 LF	No	No
Transite Piping	Assume	Above Fume Hood	25 LF	No	No

Basement North Wing Room # 438

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor Tile and Mastic	2% Chrysotile	Floor	70 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	10 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	15 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Basement North Wing Room # 438-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor Tile and Mastic	2% Chrysotile	Floor	350 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Transite Counter Tops	Assume	Counter	20 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Basement North Wing Room # 438-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor Tile and Mastic	2% Chrysotile	Floor	350 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Basement North Wing Room # 424

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	10 LF	No	No

Basement North Wing Room # 448

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	170 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No

Basement North Wing Room # 454

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	170 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	20 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

Basement North Wing Room # 450

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor Tile and Mastic	2% Chrysotile	Floor	750 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Transite Counter Tops	Assume	Counter	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	20 LF	No	No
Transite Fume Hood	Assume	Fume Hood	2 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	10 each	Yes	No

Basement North Wing Room # 462

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	170 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Piping	Assume	Above Fume Hood	15 LF	No	No

Basement North Wing Room # 468

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green 9x9 Vinyl Floor Tile and Mastic	10% Chrysotile	Floor	170 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	25 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

Basement North Wing Room # 464

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Beige 12x12 Vinyl Floor Tile and Mastic	2% Chrysotile	Floor	400 SF	No	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	50 LF	No	No
Transite Sink	Assume	Counter	1 each	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	90 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	20 each	Yes	No

Basement North Wing Room # 457-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	250 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	50 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	15 each	Yes	No

Basement North Wing Room # 457-B

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	25% Chrysotile	Floor	100 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	30 LF	No	No
Transite Sink	Assume	Counter	1 each	No	No

Basement North Wing Room # 457

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Green Vinyl Sheet Flooring	10% Chrysotile	Floor	750 SF	Yes	No
Brown Baseboard Mastic	Trace Chrysotile	Base of Wall	70 LF	No	No
Transite Counter Tops	Assume	Counter	50 LF	No	No
Transite Piping	Assume	Above Fume Hood	10 LF	No	No
Transite Fume Hood	Assume	Fume Hood	1 Unit	No	No
Pipe Insulation	35% Chrysotile	Walls and Ceiling	150 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

Basement Center Wing Room # 355

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Pipe Insulation	35% Chrysotile	Walls and Ceiling	35 LF	Yes	No
Pipe Fittings	8% Chrysotile	Walls and Ceiling	5 each	Yes	No

Basement Center Wing Room # 343

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
4" Pipe Insulation	35% Chrysotile	Walls and Ceiling	250 LF	Yes	No
8' Pipe Insulation	35% Chrysotile	Walls and Ceiling	190 LF	Yes	No
12" Pipe Insulation	35% Chrysotile	Walls and Ceiling	270 LF	Yes	No
4" Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No
8" Pipe Fittings	8% Chrysotile	Walls and Ceiling	30 each	Yes	No
12" Pipe Fittings	8% Chrysotile	Walls and Ceilings	90 each	Yes	No
Tank Insulation	35% Chrysotile	Tank	2 each 400 SF	Yes	No

Basement Center Wing Room # 303-A

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Transite Sink	Assume	Wall	1 each	No	No

Basement Center Wing Room # 335

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
8' Pipe Insulation	35% Chrysotile	Walls and Ceiling	120 LF	Yes	No
8" Pipe Fittings	8% Chrysotile	Walls and Ceiling	40 each	Yes	No

Basement Center Wing Room # 343

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
4" Pipe Insulation	35% Chrysotile	Walls and Ceiling	900 LF	Yes	No
8' Pipe Insulation	35% Chrysotile	Walls and Ceiling	1600 LF	Yes	No
12" Pipe Insulation	35% Chrysotile	Walls and Ceiling	1200 LF	Yes	No
4" Pipe Fittings	8% Chrysotile	Walls and Ceiling	80 each	Yes	No
8" Pipe Fittings	8% Chrysotile	Walls and Ceiling	120 each	Yes	No
12" Pipe Fittings	8% Chrysotile	Walls and Ceilings	100 each	Yes	No

Material Storage Building

Material	Asbestos Content	Location of Material	Square Footage	Friable	Damage
Transite Sink	Assume	Wall	2 each	No	No
4' Pipe Insulation	35% Chrysotile	Walls and Ceiling	100 LF	Yes	No
4" Pipe Fittings	8% Chrysotile	Walls and Ceiling	15 each	Yes	No

7.0 POSITIVE LEAD BASED PAINT SAMPLE RESULTS AND LOCATION

Paint Color	Sample Number	Lead Content	Location of Paint	Damage
Beige	01	2644 PPM	Throughout Building	No
Beige	02	2415 PPM	Throughout Building	No
Beige	03	2527 PPM	Throughout Building	No
Beige	04	2733 PPM	Throughout Building	No
Beige	05	2434 PPM	Throughout Building	No
Beige	06	2395 PPM	Throughout Building	No
Beige	07	2442 PPM	Throughout Building	No
Beige	08	2488 PPM	Throughout Building	No
Beige	09	2141 PPM	Throughout Building	No
Beige	10	2424 PPM	Throughout Building	No

Detection Limit Guidelines for the Housing and Urban Development (HUD) is 1.0 or 5,000 part per million (PPM). As per the OSHA Guidelines, any amount of lead is considered as lead containing paint.

8.0 RECOMMENDATIONS

It is Ambient Environmental Inc.'s professional opinion that all ACM can be managed in place, so long as a Asbestos Management Program is implemented for as long as the Asbestos-Containing Building Materials (ACBM) remain at the facility. Notification requirements in accordance with AB3713 and AB1564, and posting requirements in accordance with Proposition 65 should also be implemented and maintained.

Maintenance, construction, and repair personnel should be made aware of the presence of ACBM, and instructed not to disturb or damage the ACBM. Current federal and state regulations require that repair, renovation, or demolition of Asbestos-containing materials be conducted only by workers and contractors who have been properly trained in the correct handling of asbestos. All asbestos work should proceed under the guidance or direction of an independent State Certified Asbestos Consultant with oversight performed by a State Certified Site Surveillance Technician.

The ACBM identified during this survey are in good condition, and are not likely to pose an environmental or public health risk so long as the material is maintained in it present condition.

The LBP identified during this survey are in good condition. Ambient Environmental, Inc. recommends an annual physical walkthrough inspection be performed to confirm that all LBP in the facility is intact and manageable. If any damage is identified during the annual walkthrough, it should be noted so that remedial action can be arranged.

Ambient Environmental Inc. warrants that our services are performed, within the limits prescribed by our client, with the usual thoroughness and competence of the engineering profession.

The recommendations in this report are professional opinions based solely on visual observations and analytical analyses, as described in this report. Because the scope of services was limited to accessible ACBMs and LBP and destructive and intrusive investigative techniques were not contracted for, it is possible that unrecognized ACBMs and LBP may exist in the facility.

Opinions and recommendations presented herein apply to site conditions existing at the time of our investigation and those reasonably foreseeable, they cannot necessarily apply to site changes of which this office is not aware and has not had the opportunity to evaluate.

APPENDIX A

ASBESTOS CHAIN OF CUSTODY AND BULK SAMPLE LOG

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

1588 North Batavia Suite 1B Orange, California 92867
*Tel (714) 282-2525 *Fax (714) 282-2528

BULK SAMPLE LOG

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01
TECHNICIAN: Larry Ponder
DATE COLLECTED: 3-28-01
PRIORITY ASAP 24-HR ~~3-5 DAYS~~

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 1 / Lab #	South Wing 2nd Fl. Room 2202	9x9 Floor Tile & Mastic	Green	
Sample # 2 / Lab #	Room 2206	12x12 Floor Tile & Mastic	White	
Sample # 3 / Lab #	Hallway	↓	↓	
Sample # 4 / Lab #	Room 2229	12x12 Floor Tile & Mastic	Gray	
Sample # 5 / Lab #	Room 2226C	Linolium	Beige	
Sample # 6 / Lab #	Rm 2207	Carpet Mastic	yellow	
Sample # 7 / Lab #	Rm 2208	↓	↓	
Sample # 8 / Lab #	Rm 2268	Linolium	Green	
Sample # 9 / Lab #	Rm 2229	Baseboard	Black	
Sample # 10 / Lab #	Rm 2226C	↓	Brown	

CHAIN OF CUSTODY

ANALYTICAL METHOD PLM TEM OTHER ________

SAMPLED BY	Larry Ponder	DATE 3-28-01	TIME
RELINQUISHED BY		DATE	TIME
RECEIVED BY	Ms. Wells	DATE 03 30 01	TIME 1P
RELINQUISHED BY		DATE	TIME
RECEIVED BY		DATE	TIME

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BULK SAMPLE LOG

PAGE 2 OF 14

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER 01-1070-01
TECHNICIAN Larry Powder
DATE COLLECTED 3-28-01
PRIORITY ASAP 24-HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 11 Lab #	Southwing 2nd Fl. Rm 2204	Plaster	Beige	
Sample # 12 Lab #	Rm. 2229			
Sample # 13 Lab #	Rm 2233			
Sample # 14 Lab #	Rm 2265			
Sample # 15 Lab #	Rm 2229			
Sample # 16 Lab #	Rm 2205	Ceiling Tile	12x12	
Sample # 17 Lab #	Rm 2208		2x4	
Sample # 18 Lab #	Rm 2226	Pipe Insulation	white	
Sample # 19 Lab #	Rm 2265			
Sample # 20 Lab #	Rm 2233			

CHAIN OF CUSTODY ANALYTICAL METHOD PLM TEM OTHER

SAMPLED BY	Larry Powder	DATE 3-28-01	TIME
RELINQUISHED BY		DATE:	TIME
RECEIVED BY	Ms. Wells	DATE: 033001	TIME 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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BULK SAMPLE LOG

PAGE 3 OF 14

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01

TECHNICIAN: Larry Powder

DATE COLLECTED: 3-28-01

PRIORITY: ASAP 24-HR ~~3-5 DAYS~~

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 21 / Lab #	Southwing 2nd Fl Rm 2226	Mudded Elbow	Gray 4"	
Sample # 22 / Lab #	Rm 2247			
Sample # 23 / Lab #	Rm 2265			
Sample # 24 / Lab #	Roof	Vibration Joint	Black	
Sample # 25 / Lab #			White	
Sample # 26 / Lab #			Green	
Sample # 27 / Lab #	South Wing 1st Fl Rm 1205	12x12 Floor Tile & Mastic	Beige	
Sample # 28 / Lab #	Rm 1206B	9x9 Floor Tile + Mastic	Red	
Sample # 29 / Lab #	Rm 1216	9x9 Floor Tile & Mastic	Green	
Sample # 30 / Lab #	Rm 1231			

CHAIN OF CUSTODY

ANALYTICAL METHOD PLM TEM OTHER ______

SAMPLED BY	Larry Powder	DATE 3-28-01	TIME
RELINQUISHED BY		DATE:	TIME
RECEIVED BY:	MS Wells	DATE: 03-30-01	TIME 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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BULK SAMPLE LOG

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01
TECHNICIAN: Larry Pouder
DATE COLLECTED: 3-29-01
PRIORITY ASAP 24-HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 31 Lab #	South Wing 1st Fl. Rm 1224	Carpet Mastic	yellow	
Sample # 32 Lab #	Rm 1231	Baseboard	Black	
Sample # 33 Lab #	Rm 1224	Baseboard	Brown	
Sample # 34 Lab #	Rm 1206	Tarazzo	Beige	
Sample # 35 Lab #	Rm 1280			
Sample # 36 Lab #	Hallway			
Sample # 37 Lab #	Rm 1216	Plaster	Beige	
Sample # 38 Lab #	Rm 1247			
Sample # 39 Lab #	Rm 1284			
Sample # 40 Lab #	Hallway			

CHAIN OF CUSTODY

ANALYTICAL METHOD PLM TEM OTHER

SAMPLED BY	Larry Pouder	DATE 3-29-01	TIME
RELINQUISHED BY:		DATE:	TIME
RECEIVED BY:	Ms. Wells	DATE: 03-30-01	TIME 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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BULK SAMPLE LOG

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01

TECHNICIAN: Larry Powder

DATE COLLECTED: 3-29-01

PRIORITY: ASAP 24-HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 41 / Lab #	South Wing 1st Fl Hallway	Ceiling Tile 1x2	White	
Sample # 42 / Lab #	Rm 1265	1x1		
Sample # 43 / Lab #	Rm 1216	2x4		
Sample # 44 / Lab #	Rm 1207	Pipe Insulation	White	
Sample # 45 / Lab #	Rm 1242			
Sample # 46 / Lab #	Rm 1207	Mudded Elbow	Gray	
Sample # 47 / Lab #	Rm 1242			
Sample # 48 / Lab #	Center Wing 2nd Fl. Rm 1345	9x9 Floor Tile & Mastic	Brown	
Sample # 49 / Lab #		Baseboard		
Sample # 50 / Lab #		Ceiling 2x2 Tile	White	

CHAIN OF CUSTODY

ANALYTICAL METHOD PLM TEM OTHER

SAMPLED BY	Larry Powder	DATE 3-29-01	TIME
RELINQUISHED BY		DATE	TIME
RECEIVED BY	Ms. Wells	DATE 03-30-01	TIME 1P
RELINQUISHED BY		DATE	TIME
RECEIVED BY		DATE	TIME

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BULK SAMPLE LOG

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01
TECHNICIAN: Larry Pouder
DATE COLLECTED: 3-29-01
PRIORITY: ASAP 24-HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 51 / Lab #	Center Wing 2nd Fl. Rm 1345	2x4 Ceiling Tile	white	
Sample # 52 / Lab #	Hallway	Baseboard	Black	
Sample # 53 / Lab #	↓	1x1 Ceiling Tile	white	
Sample # 54 / Lab #	Rm 1345	Pipe Insulation	white	
Sample # 55 / Lab #	Hallway	↓	↓	
Sample # 56 / Lab #	Rm 1345	Mudded Elbows	Gray	
Sample # 57 / Lab #	Hallway	↓	↓	
Sample # 58 / Lab #	Center Wing 1st Fl Hallway	Tarazzo	Beige	
Sample # 59 / Lab #	↓ ↓	9x9 Floor Tile & Mastic	Brown	
Sample # 60 / Lab #	↓ ↓	1x2 Ceiling Tile	white	

CHAIN OF CUSTODY

ANALYTICAL METHOD PLM TEM OTHER

SAMPLED BY	Larry Pouder	DATE 3-29-01	TIME
RELINQUISHED BY		DATE:	TIME
RECEIVED BY:	M.S. Wells	DATE: 03.30.01	TIME: 10
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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BULK SAMPLE LOG

CLIENT ADDRESS: UCR

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PROJECT NUMBER: 01-1070-01
TECHNICIAN: Larry Ponder
DATE COLLECTED: 3-29-01
PRIORITY: ASAP 24 HR ~~3-5 DAYS~~

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 61 / Lab #	Center Wing 1st Fl. Rm 1345	12x12 Floor Tile + Mastic	Beige	
Sample # 62 / Lab #	↓	↓	↓	
Sample # 63 / Lab #	Rm 1345	Drywall + Mud + Tape	white	
Sample # 64 / Lab #	Rm 1324	↓	↓	
Sample # 65 / Lab #	Rm 1324	↓	↓	
Sample # 66 / Lab #	Rm 1345	Base board	Brown	
Sample # 67 / Lab #	↓	2x4 Ceiling Tile	white	
Sample # 68 / Lab #	Rm 1345	Plaster	Beige ~~Gray~~	
Sample # 69 / Lab #	Rm 1324A	↓	↓	
Sample # 70 / Lab #	Hallway	↓	↓	

CHAIN OF CUSTODY

ANALYTICAL METHOD PLM TEM OTHER

SAMPLED BY	Larry Ponder	DATE 3-29-01	TIME
RELINQUISHED BY		DATE	TIME
RECEIVED BY	MS. Wells	DATE: 0330[illegible]	TIME: [illegible]
RELINQUISHED BY		DATE:	TIME:
RECEIVED BY		DATE:	TIME:

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BULK SAMPLE LOG

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070.01
TECHNICIAN: Tony Powder
DATE COLLECTED: 3-30-01
PRIORITY: ASAP 24HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 71 / Lab #	Center Wing 1st Fl. Rm 1345	Pipe Insulation	White	
Sample # 72 / Lab #	1324A			
Sample # 73 / Lab #	Hallway			
Sample # 74 / Lab #	Rm 1345	Mudded Elbow	Gray	
Sample # 75 / Lab #	1324A			
Sample # 76 / Lab #	Hallway			
Sample # 77 / Lab #	Center Wing 2nd Fl Rm 1345	Plaster	Beige	
Sample # 78 / Lab #				
Sample # 79 / Lab #	Hallway			
Sample # 80 / Lab #				

CHAIN OF CUSTODY

ANALYTICAL METHOD: PLM TEM OTHER ______

SAMPLED BY	Tony Powder	DATE 3-30-01	TIME
RELINQUISHED BY		DATE:	TIME
RECEIVED BY:	MS. Wells	DATE: 033001	TIME: 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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BULK SAMPLE LOG

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01

TECHNICIAN: Larry Porder

DATE COLLECTED: 3-30-01

PRIORITY ASAP 24-HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 81 / Lab #	Northwing 2nd Fl Rm 2407	9x9 Tile + Mastic	Brn	
Sample # 82 / Lab #	Rm 2410	9x9 Tile + Mastic	Grn	
Sample # 83 / Lab #	Rm 2414	Linolium	Beige	
Sample # 84 / Lab #	Rm 2428	↓	Green	
Sample # 85 / Lab #	Hallway	9x9 Tile + Mastic	Brn	
Sample # 86 / Lab #	↓	Baseboard	Brown	
Sample # 87 / Lab #	Rm 2440	2x2 Ceiling Tile	White	
Sample # 88 / Lab #	Rm 2416	Plaster	Beige	
Sample # 89 / Lab #	Rm 2428	↓	↓	
Sample # 90 / Lab #	Hallway	↓	↓	

CHAIN OF CUSTODY

ANALYTICAL METHOD PLM TEM OTHER

SAMPLED BY	Larry Porder	DATE 3-30-01	TIME
RELINQUISHED BY		DATE	TIME
RECEIVED BY	MS. Wells	DATE 033001	TIME 1P
RELINQUISHED BY		DATE	TIME
RECEIVED BY		DATE	TIME

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BULK SAMPLE LOG

PAGE 10 OF 14

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01
TECHNICIAN: Larry Powder
DATE COLLECTED: 3-30-01
PRIORITY ASAP 24-HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 91 / Lab #	Northwing 2nd Fl. Rm 2442	Pipe Insulation	White	
Sample # 92 / Lab #	Rm 2433	↓	↓	
Sample # 93 / Lab #	Hallway	Mudded Elbow	Gray	
Sample # 94 / Lab #	Hallway	↓	↓	
Sample # 95 / Lab #	Northwing 1st Fl. Rm 1407	12x12 Tile + Mastic	Beige	
Sample # 96 / Lab #	Rm 1421	9x9 Tile + Mastic	Brown	
Sample # 97 / Lab #	Rm 1454A	9x9 Tile ~~[illegible]~~ Mastic	Grew ~~[illegible]~~	
Sample # 98 / Lab #	Rm 1429	Baseboard	Brown	
Sample # 99 / Lab #	RM 1408	Baseboard	Black	
Sample # 100 / Lab #	Rm 1464	2x2 Ceiling Tile	White	

CHAIN OF CUSTODY   ANALYTICAL METHOD PLM TEM OTHER ______

SAMPLED BY	Larry Powder	DATE 3-30-01	TIME
RELINQUISHED BY		DATE:	TIME
RECEIVED BY:	MS. Wells	DATE: 033001	TIME 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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BULK SAMPLE LOG

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01
TECHNICIAN: Larry Ponder
DATE COLLECTED: 3-3001
PRIORITY: ASAP 24-HR ~~3-5 DAYS~~

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 101 / Lab #	North wing 1st Fl Rm 1407	Plaster	Beige	
Sample # 102 / Lab #	Hallway	↓	↓	
Sample # 103 / Lab #	Rm 1408	Pipe Insulation	white	
Sample # 104 / Lab #	Rm 1463	↓	↓	
Sample # 105 / Lab #	Rm 1408	Mudded Elbow	Gray	
Sample # 106 / Lab #	Rm 1463	↓	↓	
Sample # 107 / Lab #	North wing Lower Basement Rm B-5	12x12 Tile & Mastic	Green	
Sample # 108 / Lab #	Rm B-7	Baseboard	Black	
Sample # 109 / Lab #	Rm B-5A	2x4 Ceiling Tile	white	
Sample # 110 / Lab #	Rm B-2-B	1x1 wall Tile + Mastic	white Brown	

CHAIN OF CUSTODY ANALYTICAL METHOD PLM TEM OTHER

SAMPLED BY	Larry Ponder	DATE 3-3001	TIME
RELINQUISHED BY		DATE:	TIME
RECEIVED BY:	MS. Wells	DATE: 033001	TIME: 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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TECHNICIAN: Larry Powder

DATE COLLECTED: 3-30-01

PRIORITY: ASAP 24-HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 111 / Lab #	Lower Northwing Basement B-6-A	Drywall Mud & Tape	white	
Sample # 112 / Lab #	northwing Basement Rm 414	9x9 Tile & Mastic	Green	
Sample # 113 / Lab #	Rm 417	12x12 Tile & Mastic	Green	
Sample # 114 / Lab #	Rm 433B	Linolium	↓	
Sample # 115 / Lab #	Rm 440	Baseboard	Brown	
Sample # 116 / Lab #	Rm 450	12x12 Tile & Mastic	Beige	
Sample # 117 / Lab #	Rm 457	Pipe Insulation	white	
Sample # 118 / Lab #	Hallway	↓	↓	
Sample # 119 / Lab #	Rm 457	Mudded Elbow	Gray	
Sample # 120 / Lab #	Hallway	↓	↓	

CHAIN OF CUSTODY

ANALYTICAL METHOD: PLM TEM OTHER

SAMPLED BY:	Larry Powder	DATE 3-30-01	TIME
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:	M.S. Wells	DATE: 033001	TIME: 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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DATE COLLECTED: 3-30-01

PRIORITY: ASAP 24-HR ~~3-5 DAYS~~

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 121 / Lab #	northwing Basement Rm 468	Plaster	Beige	
Sample # 122 / Lab #	↓ Hallway	↓	↓	
Sample # 123 / Lab #	Center wing Basement Rm 355	1x1 Ceiling Tile + Mastic	White Brown	
Sample # 124 / Lab #	↓	Plaster	Beige	
Sample # 125 / Lab #	Rm 343	↓	↓	
Sample # 126 / Lab #	Rm 343	Tank Insulation	White	
Sample # 127 / Lab #	Rm 333	Air Duct Insulation	↓	
Sample # 128 / Lab #		4" Pipe Insulation	White	
Sample # 129 / Lab #		8"		
Sample # 130 / Lab #	↓	12" ↓	↓	

CHAIN OF CUSTODY

ANALYTICAL METHOD: PLM TEM OTHER

SAMPLED BY	Larry Pourder	DATE 3-30-01	TIME
RELINQUISHED BY		DATE	TIME
RECEIVED BY	NG Wells	DATE 033001	TIME 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

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PRIORITY ASAP 24-HR ~~3-5 DAYS~~

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	SAMPLE DESCRIPTION	LAB RESULTS
Sample # 131 / Lab#	Center Wing Basement Rm 333	Mudded 4" Elbow	Gray	
Sample # 132 / Lab #	↓	8"	↓	
Sample # 133 / Lab #	↓	12"	↓	
Sample # / Lab #				
Sample # / Lab #				
Sample # / Lab #				
Sample # / Lab #				
Sample # / Lab #				
Sample # / Lab #				
Sample # / Lab #				

CHAIN OF CUSTODY

ANALYTICAL METHOD PLM TEM OTHER

SAMPLED BY	Larry Powder	DATE 3-30-01	TIME
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RECEIVED BY	Ms. Wells	DATE: 033001	TIME 1P
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

APPENDIX B

ASBESTOS LABORATORY CERTIFICATES OF ANALYSIS

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Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Ambient Environmental Inc
J.Payne/J.Lumpkin

1588 N. Batavia, Suite 1B
Orange, CA 92867

Client ID: 5697
Report Number: B028247
Date Received: 03/30/01
Date Analyzed: 04/02/01
Date Printed: 04/03/01
First Reported: 04/03/01

FASI Job ID: 5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
1	50059344						
Layer: Green Tile		Chrysotile	10 %				
Layer: Black Mastic		Chrysotile	2 %				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (Trace%)		Fibrous Glass (ND)	
2	50059345						
Layer: White Tile			ND				
Layer: Tan Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
3	50059346						
Layer: White Tile			ND				
Layer: Tan Mastic			ND				
Layer: Tan Non-Fibrous Material			ND				
Layer: Black Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
4	50059347						
Layer: Grey Tile		Chrysotile	2 %				
Layer: Tan Mastic			ND				
Layer: Black Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(2%)**		Cellulose (Trace%)		Fibrous Glass (ND)	

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Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
5	50059348						
Layer: Tan Sheet Flooring			ND				
Layer: Fibrous Backing		Chrysotile	70 %				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(25%)**		Cellulose (5%)	Fibrous Glass (ND)		
6	50059349						
Layer: Tan Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
7	50059350						
Layer: Tan Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
8	50059351						
Layer: Grey Sheet Flooring			ND				
Layer: Fibrous Backing		Chrysotile	70 %				
Layer: Black Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(25%)**		Cellulose (5%)	Fibrous Glass (ND)		
9	50059352						
Layer: Black Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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FASI Job ID: 5697-713

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
10	50059353						
Layer: Brown Non-Fibrous Material			**ND**				
Layer: Brown Mastic		Anthophyllite	**Trace**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(Trace)**		Cellulose (Trace%)		Fibrous Glass (ND)	
11	50059354						
Layer: Tan Plaster			**ND**				
Layer: Beige Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
12	50059355						
Layer: Tan Plaster			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
13	50059356						
Layer: Tan Plaster			**ND**				
Layer: Beige Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
14	50059357						
Layer: Tan Plaster			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	

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FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
15	50059358						
Layer: Tan Plaster			**ND**				
Layer: Beige Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
16	50059359						
Layer: Tan Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (95%)		Fibrous Glass (ND)	
17	50059360						
Layer: Beige Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (35%)		Fibrous Glass (45%)	
18	50059361						
Layer: White Fibrous Material		Amosite	20 %	Chrysotile	10 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (Trace%)		Fibrous Glass (ND)	
19	50059362						
Layer: White Fibrous Material		Amosite	20 %	Chrysotile	10 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (Trace%)		Fibrous Glass (ND)	

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Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
20	50059363						
Layer: White Fibrous Material		Amosite	20 %	Chrysotile	10 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
21	50059364						
Layer: Tan Fibrous Material		Chrysotile	5 %				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (2%)	Fibrous Glass (50%)		
22	50059365						
Layer: Tan Fibrous Material		Chrysotile	3 %	Amosite	3 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(6%)**		Cellulose (2%)	Fibrous Glass (50%)		
23	50059366						
Layer: Tan Fibrous Material		Chrysotile	5 %	Amosite	2 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(7%)**		Cellulose (2%)	Fibrous Glass (50%)		
24	50059367						
Layer: White Woven Material			**ND**				
Layer: Black Non-Fibrous Material			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (ND)	Fibrous Glass (55%)		

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FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
25	50059368						
Layer: White Woven Material			ND				
Layer: Beige Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (ND)	Fibrous Glass (80%)		
26	50059369						
Layer: Green Non-Fibrous Material			ND				
Layer: White Woven Material			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (55%)		
27	50059370						
Layer: Beige Tile		Chrysotile	2 %				
Layer: Orange Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(2%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
28	50059371						
Layer: Red Tile			ND				
Layer: Brown Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
29	50059372						
Layer: Green Tile		Chrysotile	10 %				
Layer: Black Mastic		Chrysotile	2 %				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
30	50059373						
Layer: Green Tile		Chrysotile	10 %				
Layer: Black Mastic			ND				

Total Composite Values of Fibrous Components: **Asbestos:(10%)** Cellulose (Trace%) Fibrous Glass (ND)
Collected on 03/28/2001

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
31	50059374						
Layer: Tan Mastic			ND				

Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)
Collected on 03/28/2001

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
32	50059375						
Layer: Black Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				

Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)
Collected on 03/28/2001

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
33	50059376						
Layer: Brown Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				

Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)
Collected on 03/28/2001

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
34	50059377						
Layer: Beige Non-Fibrous Material			ND				

Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)
Comment: Additional sampling and/or analyses may be necessary to detect asbestos in this sample matrix. Collected on03/28/2001

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FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
35	50059378						
Layer: Beige Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)							
Comment: Additional sampling and/or analyses may be necessary to detect asbestos in this sample matrix. Collected on03/28/2001							
36	50059379						
Layer: Beige Non-Fibrous Material		Tremolite	Trace				
Total Composite Values of Fibrous Components: **Asbestos:(Trace)** Cellulose (Trace%) Fibrous Glass (ND)							
Collected on 03/28/2001							
37	50059380						
Layer: Beige Plaster			ND				
Layer: Off-White Plaster			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)							
Collected on 03/28/2001							
38	50059381						
Layer: Beige Plaster			ND				
Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)							
Collected on 03/28/2001							
39	50059382						
Layer: Beige Plaster			ND				
Layer: Off-White Plaster			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)							
Collected on 03/28/2001							

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Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
40	50059383						
Layer: Beige Plaster			**ND**				
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
41	50059384						
Layer: Off-White Fibrous Material			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (2%)	Fibrous Glass (85%)		
42	50059385						
Layer: Tan Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (95%)	Fibrous Glass (ND)		
43	50059386						
Layer: Beige Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (35%)	Fibrous Glass (45%)		
44	50059387						
Layer: Off-White Semi-Fibrous Material		Amosite	**20 %**	Chrysotile	**10 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (ND)	Fibrous Glass (ND)		

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Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
45	50059388						
Layer: Off-White Semi-Fibrous Material		Amosite	**20 %**	Chrysotile	**10 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (ND)	Fibrous Glass (ND)		
46	50059389						
Layer: Grey Semi-Fibrous Material		Amosite	**10 %**	Chrysotile	**10 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(20%)**		Cellulose (Trace%)	Fibrous Glass (25%)		
47	50059390						
Layer: Grey Semi-Fibrous Material		Amosite	**10 %**	Chrysotile	**5 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(15%)**		Cellulose (Trace%)	Fibrous Glass (25%)		
48	50059391						
Layer: Tan Tile		Chrysotile	**5 %**				
Layer: Black Mastic		Chrysotile	**5 %**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
49	50059392						
Layer: Brown Non-Fibrous Material			**ND**				
Layer: Brown Mastic			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
50	50059393						
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(ND)		Cellulose (95%)	Fibrous Glass (ND)		
51	50059394						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(ND)		Cellulose (35%)	Fibrous Glass (45%)		
52	50059395						
Layer: Black Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(ND)		Cellulose (Trace%)	Fibrous Glass (ND)		
53	50059396						
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(ND)		Cellulose (95%)	Fibrous Glass (ND)		
54	50059397						
Layer: White Fibrous Material		Amosite	20 %	Chrysotile	10 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(30%)		Cellulose (2%)	Fibrous Glass (ND)		

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Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
55	50059398						
Layer: White Fibrous Material		Amosite	**20 %**	Chrysotile	**10 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (2%)	Fibrous Glass (ND)		
56	50059399						
Layer: Grey Fibrous Material		Chrysotile	**5 %**	Amosite	**5 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (5%)	Fibrous Glass (30%)		
57	50059400						
Layer: Grey Fibrous Material		Chrysotile	**5 %**	Amosite	**5 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (5%)	Fibrous Glass (30%)		
58	50059401						
Layer: Beige Non-Fibrous Material			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
59	50059402						
Layer: Tan Tile		Chrysotile	**5 %**				
Layer: Black Mastic		Chrysotile	**10 %**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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Job ID / Site: 01-1070-01 UCR Geology

FASI Job ID: 5697-713

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
60	50059403						
Layer: Grey Fibrous Tile			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(ND)		Cellulose (3%)	Fibrous Glass (85%)		
61	50059404						
Layer: Green/Grey Tile		Chrysotile	2 %				
Layer: Tan Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(2%)		Cellulose (Trace%)	Fibrous Glass (ND)		
62	50059405						
Layer: Green/Grey Tile		Chrysotile	2 %				
Layer: Tan Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(2%)		Cellulose (Trace%)	Fibrous Glass (ND)		
63	50059406						
Layer: White Drywall			ND				
Layer: Off-White Skimcoat/Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		Asbestos:(ND)		Cellulose (20%)	Fibrous Glass (10%)		

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Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
64	50059407						
Layer: White Drywall			ND				
Layer: Off-White Skimcoat/Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (20%)		Fibrous Glass (10%)	
65	50059408						
Layer: White Drywall			ND				
Layer: Off-White Skimcoat/Joint Compound			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (60%)		Fibrous Glass (2%)	
66	50059409						
Layer: Brown Non-Fibrous Material			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
67	50059410						
Layer: Beige Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (35%)		Fibrous Glass (45%)	
68	50059411						
Layer: White Non-Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	

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Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
69	50059412						
Layer: Tan Plaster			**ND**				
Layer: White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
70	50059413						
Layer: Tan Plaster			**ND**				
Layer: White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
71	50059414						
Layer: White Fibrous Material		Chrysotile	**10 %**	Amosite	**20 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (5%)		Fibrous Glass (ND)	
72	50059415						
Layer: White Fibrous Material		Chrysotile	**10 %**	Amosite	**20 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (5%)		Fibrous Glass (ND)	
73	50059416						
Layer: White Fibrous Material		Chrysotile	**10 %**	Amosite	**20 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (5%)		Fibrous Glass (ND)	

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Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
74	50059417						
Layer: Grey Fibrous Material		Chrysotile	5 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (5%)	Fibrous Glass (30%)		
75	50059418						
Layer: Grey Fibrous Material		Chrysotile	5 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (5%)	Fibrous Glass (30%)		
76	50059419						
Layer: Grey Fibrous Material		Chrysotile	5 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (5%)	Fibrous Glass (30%)		
77	50059420						
Layer: Tan Plaster			**ND**				
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
78	50059421						
Layer: Tan Plaster			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
79	50059422						
Layer: Tan Plaster			ND				
Layer: Off-White Plaster			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
80	50059423						
Layer: White Plaster			ND				
Layer: Tan Plaster			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
81	50059424						
Layer: Tan Tile		Chrysotile	5 %				
Layer: Black Mastic		Chrysotile	10 %				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (Trace%)		Fibrous Glass (ND)	
82	50059425						
Layer: Green Tile		Chrysotile	5 %				
Layer: Black Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (Trace%)		Fibrous Glass (ND)	

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Final Report

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Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
83	50059426						
Layer: Tan Sheet Flooring			ND				
Layer: Fibrous Backing		Chrysotile	70 %				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(25%)**		Cellulose (5%)	Fibrous Glass (ND)		
84	50059427						
Layer: Green Tile		Chrysotile	5 %				
Layer: Beige Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
85	50059428						
Layer: Tan Tile		Chrysotile	5 %				
Layer: Black Mastic		Chrysotile	10 %				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
86	50059429						
Layer: Brown Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
87	50059430						
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (95%)	Fibrous Glass (ND)		

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Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Ambient Environmental Inc
J.Payne/J.Lumpkin

1588 N. Batavia, Suite 1B
Orange, CA 92867

Client ID:	5697
Report Number:	B028247
Date Received:	03/30/01
Date Analyzed:	04/02/01
Date Printed:	04/03/01
First Reported:	04/03/01
FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
88	50059431						
Layer: Tan Plaster			**ND**				
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
89	50059432						
Layer: Tan Plaster			**ND**				
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
90	50059433						
Layer: Tan Plaster			**ND**				
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
91	50059434						
Layer: White Fibrous Material		Chrysotile	**10 %**	Amosite	**20 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (5%)	Fibrous Glass (ND)		
92	50059435						
Layer: White Fibrous Material		Chrysotile	**10 %**	Amosite	**20 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(30%)**		Cellulose (5%)	Fibrous Glass (ND)		

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Client ID:	5697
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First Reported:	04/03/01
FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
93	50059436						
Layer: Grey Fibrous Material		Chrysotile	5 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (5%)	Fibrous Glass (30%)		
94	50059437						
Layer: Grey Fibrous Material		Chrysotile	5 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(10%)**		Cellulose (5%)	Fibrous Glass (30%)		
95	50059438						
Layer: Tan Tile		Chrysotile	2 %				
Layer: Tan Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(2%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
96	50059439						
Layer: Tan Tile		Chrysotile	5 %				
Layer: Black Mastic		Chrysotile	10 %				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
97	50059440						
Layer: Green Tile		Chrysotile	5 %				
Layer: Black Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(5%)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Ambient Environmental Inc
J.Payne/J.Lumpkin

1588 N. Batavia, Suite 1B
Orange, CA 92867

Client ID:	5697
Report Number:	B028247
Date Received:	03/30/01
Date Analyzed:	04/02/01
Date Printed:	04/03/01
First Reported:	04/03/01
FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
98	50059441						
Layer: Brown Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
99	50059442						
Layer: Black Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
100	50059443						
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (95%)		Fibrous Glass (ND)	
101	50059444						
Layer: Off-White Plaster			ND				
Layer: Beige Plaster			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	

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Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Ambient Environmental Inc
J.Payne/J.Lumpkin

1588 N. Batavia, Suite 1B
Orange, CA 92867

Client ID:	5697
Report Number:	B028247
Date Received:	03/30/01
Date Analyzed:	04/02/01
Date Printed:	04/03/01
First Reported:	04/03/01
FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
102	50059445						
Layer: White Plaster			ND				
Layer: Off-White Plaster			ND				
Layer: Paint			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
103	50059446						
Layer: White Semi-Fibrous Material		Chrysotile	10 %	Amosite	25 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(35%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
104	50059447						
Layer: White Semi-Fibrous Material		Chrysotile	10 %	Amosite	25 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(35%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
105	50059448						
Layer: Grey Semi-Fibrous Material		Chrysotile	3 %	Amosite	2 %		
Layer: Yellow Fibrous Material			ND				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(3%)**		Cellulose (Trace%)	Fibrous Glass (60%)		
106	50059449						
Layer: Grey Semi-Fibrous Material		Chrysotile	3 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(8%)**		Cellulose (Trace%)	Fibrous Glass (35%)		

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Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Ambient Environmental Inc
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Orange, CA 92867

Client ID:	5697
Report Number:	B028247
Date Received:	03/30/01
Date Analyzed:	04/02/01
Date Printed:	04/03/01
First Reported:	04/03/01
FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
107	50059450						
Layer: Green Tile		Chrysotile	5 %				
Layer: Black Mastic			ND				

Total Composite Values of Fibrous Components: **Asbestos:(5%)** Cellulose (Trace%) Fibrous Glass (ND)
Collected on 03/28/2001

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
108	50059451						
Layer: Black Non-Fibrous Material			ND				
Layer: Brown Mastic			ND				

Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (Trace%) Fibrous Glass (ND)
Collected on 03/28/2001

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
110	50059453						
Layer: Tan Fibrous Material			ND				
Layer: Paint			ND				
Layer: Brown Mastic			ND				

Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (65%) Fibrous Glass (ND)
Collected on 03/28/2001

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
111	50059454						
Layer: White Drywall			ND				
Layer: Off-White Skimcoat/Joint Compound			ND				
Layer: Paint			ND				

Total Composite Values of Fibrous Components: **Asbestos:(ND)** Cellulose (20%) Fibrous Glass (10%)
Collected on 03/28/2001

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Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Ambient Environmental Inc
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1588 N. Batavia, Suite 1B
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Client ID:	5697
Report Number:	B028247
Date Received:	03/30/01
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Date Printed:	04/03/01
First Reported:	04/03/01
FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
112	50059455						
Layer: Green Tile		Chrysotile	**5 %**				
Layer: Black Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos:(5%)**		Cellulose (Trace%)		Fibrous Glass (ND)	
Collected on 03/28/2001							
113	50059456						
Layer: Green Tile		Chrysotile	**5 %**				
Layer: Black Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos:(5%)**		Cellulose (Trace%)		Fibrous Glass (ND)	
Collected on 03/28/2001							
114	50059457						
Layer: Green Tile		Chrysotile	**2 %**				
Layer: Beige Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos:(2%)**		Cellulose (Trace%)		Fibrous Glass (ND)	
Collected on 03/28/2001							
115	50059458						
Layer: Brown Non-Fibrous Material			**ND**				
Layer: Brown Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos:(ND)**		Cellulose (Trace%)		Fibrous Glass (ND)	
Collected on 03/28/2001							
116	50059459						
Layer: Beige Tile		Chrysotile	**3 %**				
Layer: Yellow Mastic			**ND**				
Layer: Black Mastic		Chrysotile	**Trace**				
Total Composite Values of Fibrous Components:		**Asbestos:(3%)**		Cellulose (Trace%)		Fibrous Glass (ND)	
Comment: The following comment refers to black mastic only: Due to small sample size, this result may not be repeatable.							
Collected on03/28/2001							

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Client ID:	5697
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First Reported:	04/03/01
FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
117	50059460						
Layer: White Semi-Fibrous Material		Chrysotile	**10 %**	Amosite	**25 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(35%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
118	50059461						
Layer: White Semi-Fibrous Material		Chrysotile	**10 %**	Amosite	**25 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(35%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
119	50059462						
Layer: Grey Semi-Fibrous Material		Chrysotile	**3 %**	Amosite	**5 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(8%)**		Cellulose (Trace%)	Fibrous Glass (35%)		
120	50059463						
Layer: Grey Semi-Fibrous Material		Chrysotile	**3 %**	Amosite	**5 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(8%)**		Cellulose (Trace%)	Fibrous Glass (35%)		
121	50059464						
Layer: Beige Plaster			**ND**				
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

Ambient Environmental Inc
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Client ID:	5697
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FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
122	50059465						
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
123	50059466						
Layer: Tan Fibrous Material			**ND**				
Layer: Paint			**ND**				
Layer: Brown Mastic			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (65%)	Fibrous Glass (ND)		
124	50059467						
Layer: Beige Plaster			**ND**				
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		
125	50059468						
Layer: Beige Plaster			**ND**				
Layer: Off-White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
126	50059469						
Layer: White Semi-Fibrous Material		Chrysotile	**10 %**	Amosite	**25 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(35%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
127	50059470						
Layer: Beige Woven Material with Coating			**ND**				
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(ND)**		Cellulose (85%)	Fibrous Glass (ND)		
128	50059471						
Layer: White Semi-Fibrous Material		Chrysotile	**10 %**	Amosite	**25 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(35%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
129	50059472						
Layer: White Semi-Fibrous Material		Chrysotile	**10 %**	Amosite	**25 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(35%)**		Cellulose (Trace%)	Fibrous Glass (ND)		
130	50059473						
Layer: White Semi-Fibrous Material		Chrysotile	**10 %**	Amosite	**25 %**		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(35%)**		Cellulose (Trace%)	Fibrous Glass (ND)		

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1588 N. Batavia, Suite 1B
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Client ID:	5697
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FASI Job ID:	5697-713

Job ID / Site: 01-1070-01 UCR Geology

Sample Number	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
131 Layer: Grey Semi-Fibrous Material	50059474	Chrysotile	3 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(8%)**		Cellulose (Trace%)	Fibrous Glass (35%)		
132 Layer: Grey Semi-Fibrous Material	50059475	Chrysotile	3 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(8%)**		Cellulose (Trace%)	Fibrous Glass (35%)		
133 Layer: Grey Semi-Fibrous Material	50059476	Chrysotile	3 %	Amosite	5 %		
Total Composite Values of Fibrous Components: Collected on 03/28/2001		**Asbestos:(8%)**		Cellulose (Trace%)	Fibrous Glass (35%)		

Matilde Antillon

Matilde Antillon, Laboratory Supervisor, Rancho Dominguez Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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APPENDIX C

LEAD-BASED PAINT CHAIN OF CUSTODY AND BULK SAMPLE LOG

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

1588 North Batavia Suite 1B Orange, California 92867
*Tel (714) 282-2525 *Fax (714) 282-2528

LEAD BULK SAMPLE LOG

CLIENT ADDRESS: UCR

BUILDING ADDRESS: Geology

PROJECT NUMBER: 01-1070-01
TECHNICIAN: Lowy Powder
DATE COLLECTED: 3-30-01
PRIORITY: ASAP 24-HR 3-5 DAYS

SAMPLE # / LAB #	SAMPLE LOCATION	SAMPLE DESCRIPTION	DETECTION LIMIT (ug/m3) per sq/ft	LAB RESULTS CONCENTRATION (ug/m3)
Sample # 1 Lab#	South wing 2nd Fl Rm 2226	Paint	Beige	
Sample # 2 Lab #	Center wing ~~2nd~~ 1st Fl. Rm 1345			
Sample # 3 Lab #	Center wing ~~1st Fl.~~ 2nd Floor Rm 1324			
Sample # 4 Lab #	South wing 1st Fl. Rm 2233			
Sample # 5 Lab #	North wing 2nd Fl Rm 2413			
Sample # 6 Lab #	North wing 1st Fl Rm 1408			
Sample # 7 Lab #	North wing Basement Rm 408			
Sample # 8 Lab #	North wing Lower Basement B-5			
Sample # 9 Lab #	Center wing Basement Rm. 355			
Sample # 10 Lab #	South wing Basement Tunnel			

CHAIN OF CUSTODY ANALYTICAL METHOD: AA SPECTROMETRY OTHER:

SAMPLED BY:	Lowy Powder	DATE: 3-30-01	TIME:
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:
RELINQUISHED BY:		DATE:	TIME:
RECEIVED BY:		DATE:	TIME:

APPENDIX D

LEAD-BASED PAINT LABORATORY CERTIFICATES OF ANALYSIS

159 Pasadena Avenue
South Pasadena, CA 91030
Phone: (800) 303-0047 Fax: (323) 254-9982

LA TESTING

Ambient
1588 N. Batavia
Orange, Ca. 92867

Date Analyzed: 3-Apr-01

Reference Number: PS011388
Attention: Larry Ponder

Atomic Absorption Spectrometry (AAS)
Lead (Pb) in Paint Samples
Method EPA SW846-3050-7420

Project: UCR

Sample ID	Sample Weight g	Volume ml	Dilution Factor	Concentration mg/l	Results	
					mg/kg (ppm)	% weight
1	0.1025	50	1	5.42	2644	0.264
2	0.1145	50	1	5.53	2415	0.241
3	0.1021	50	1	5.16	2527	0.253
4	0.1178	50	1	6.44	2733	0.273
5	0.1128	50	1	5.49	2434	0.243
6	0.1050	50	1	5.03	2395	0.240
7	0.1085	50	1	5.30	2442	0.244
8	0.1009	50	1	5.02	2488	0.249
9	0.1135	50	1	4.86	2141	0.214
10	0.1079	50	1	5.23	2424	0.242

mg/kg-milligrams per kilogram
ppm-parts per million
limit of detection (LD) =200ppm with sample size of .1g
MDL for LA Testing=0.0065% with sample size of .1g

Approved Signature

Report generated 4/4/2001

CA ELAP #2283

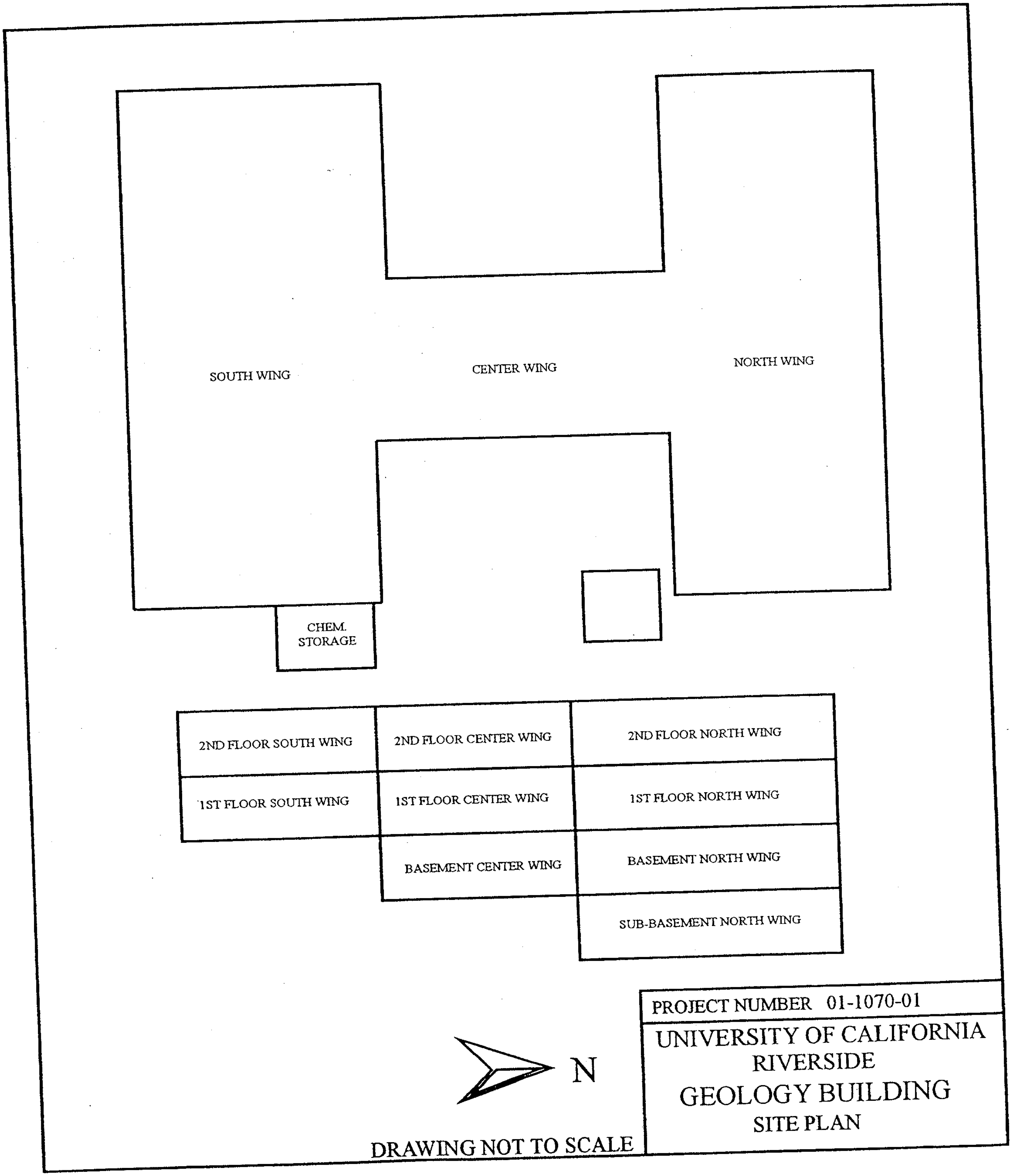
APPENDIX E

SITE DRAWINGS WITH SAMPLE LOCATION

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

1588 North Batavia Suite 1B Orange, California 92867
*Tel (714) 282-2525 *Fax (714) 282-2528

SITE DRAWING



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1588 North Batavia Suite 1B Orange, California 92867
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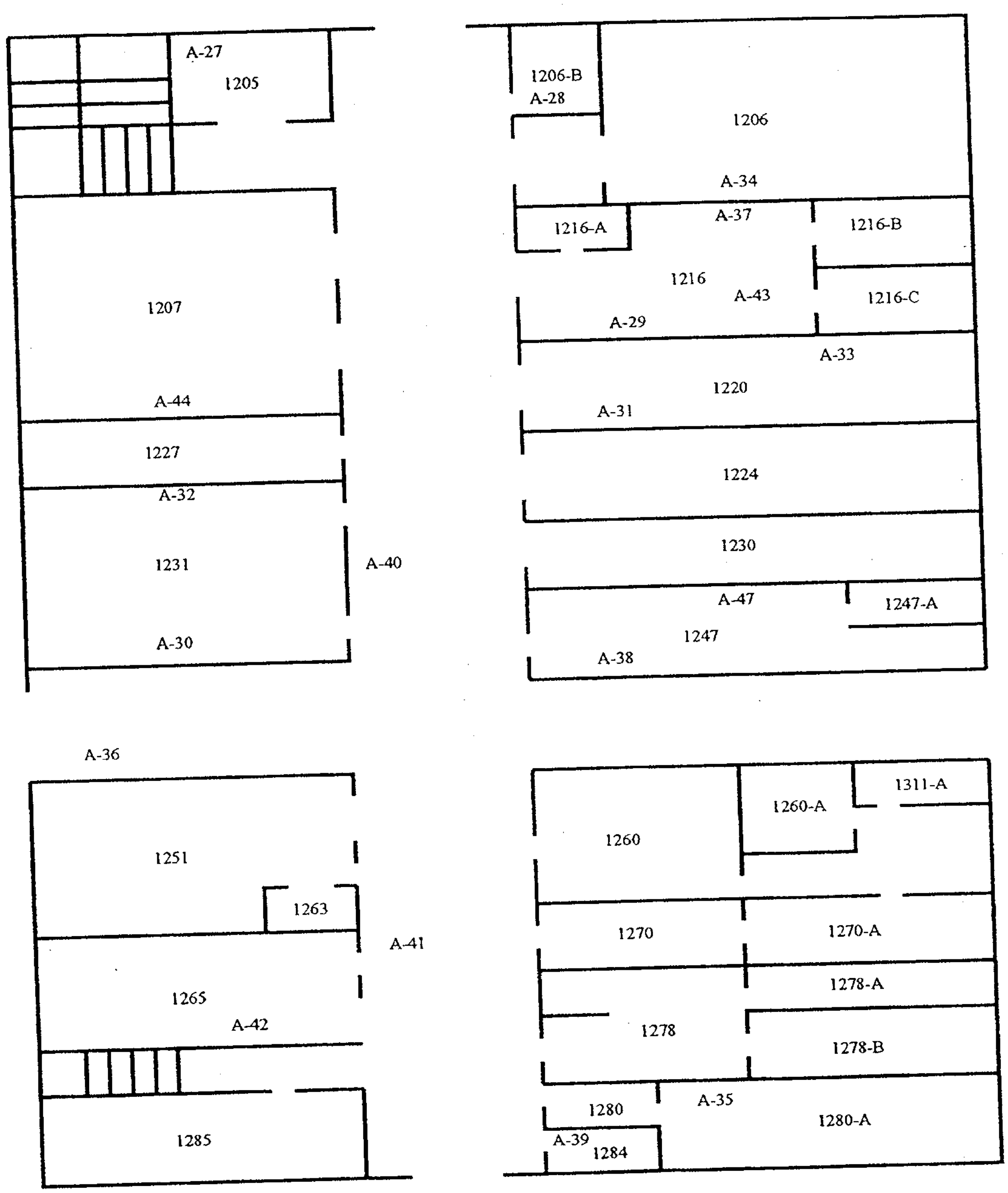
SITE DRAWING



A- ASBESTOS SAMPLE LOCATION
L- LEAD SAMPLE LOCATION

N

DRAWING NOT TO SCALE

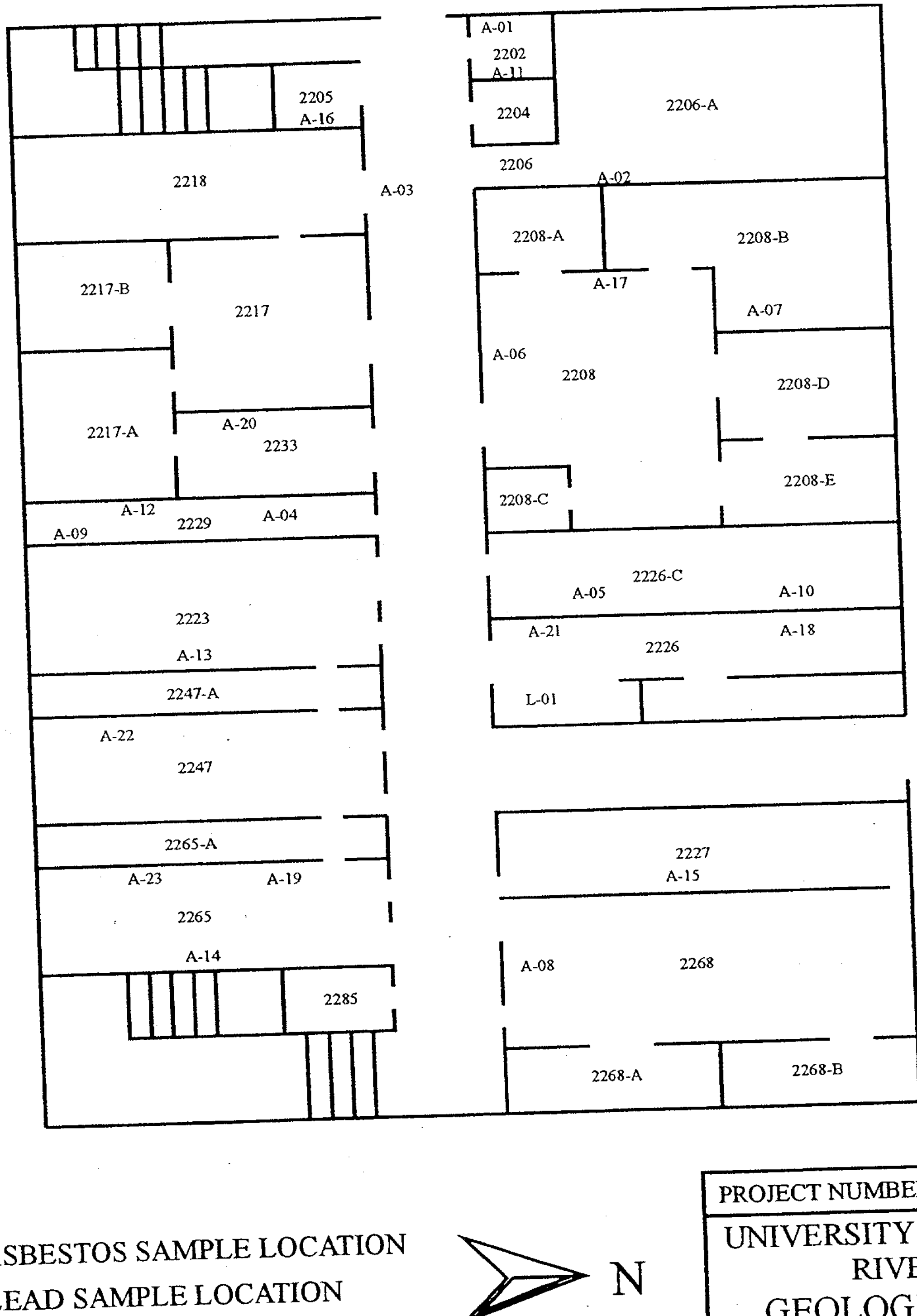
PROJECT NUMBER 01-1070-01

UNIVERSITY OF CALIFORNIA
RIVERSIDE
GEOLOGY BUILDING
1ST FLOOR SOUTH WING

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

1588 North Batavia Suite 1B Orange, California 92867
*Tel (714) 282-2525 *Fax (714) 282-2528

SITE DRAWING



A- ASBESTOS SAMPLE LOCATION
L- LEAD SAMPLE LOCATION

DRAWING NOT TO SCALE

PROJECT NUMBER 01-1070-01
UNIVERSITY OF CALIFORNIA RIVERSIDE GEOLOGY BUILDING 2ND FLOOR SOUTH WING

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

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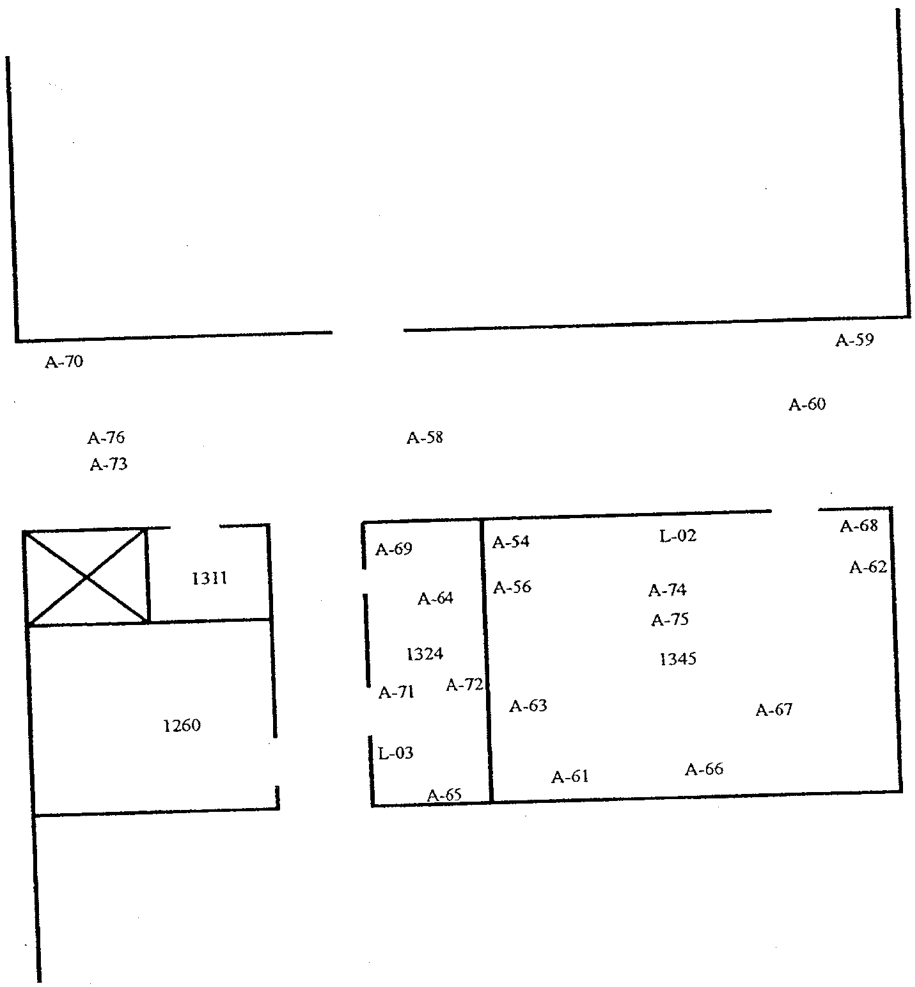

A- ASBESTOS SAMPLE LOCATION
L- LEAD SAMPLE LOCATION

N

DRAWING NOT TO SCALE

PROJECT NUMBER 01-1070-01

UNIVERSITY OF CALIFORNIA
RIVERSIDE
GEOLOGY BUILDING
1ST FLOOR CENTER WING

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

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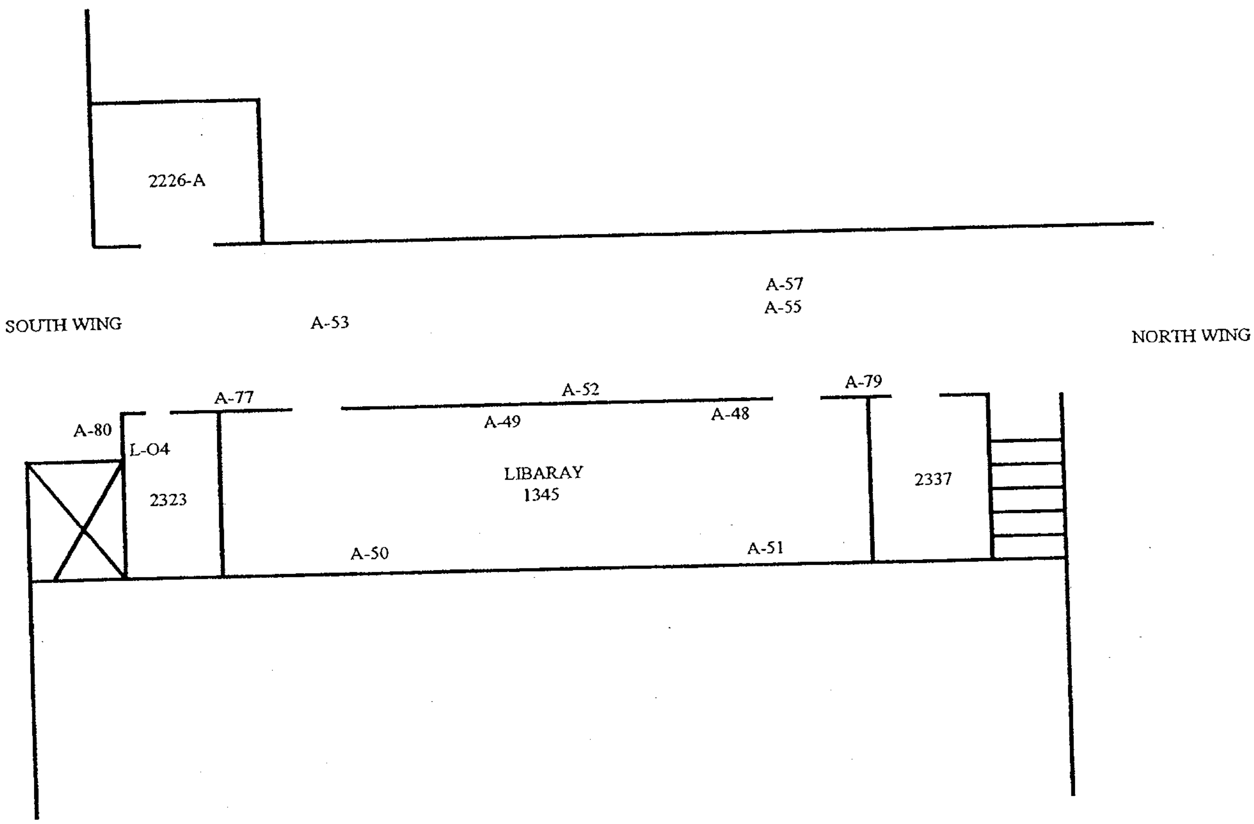

A- ASBESTOS SAMPLE LOCATION
L- LEAD SAMPLE LOCATION

N

DRAWING NOT TO SCALE

PROJECT NUMBER 01-1070-01

UNIVERSITY OF CALIFORNIA
RIVERSIDE
GEOLOGY BUILDING
2ND FLOOR CENTER WING

Ambient Environmental Inc.
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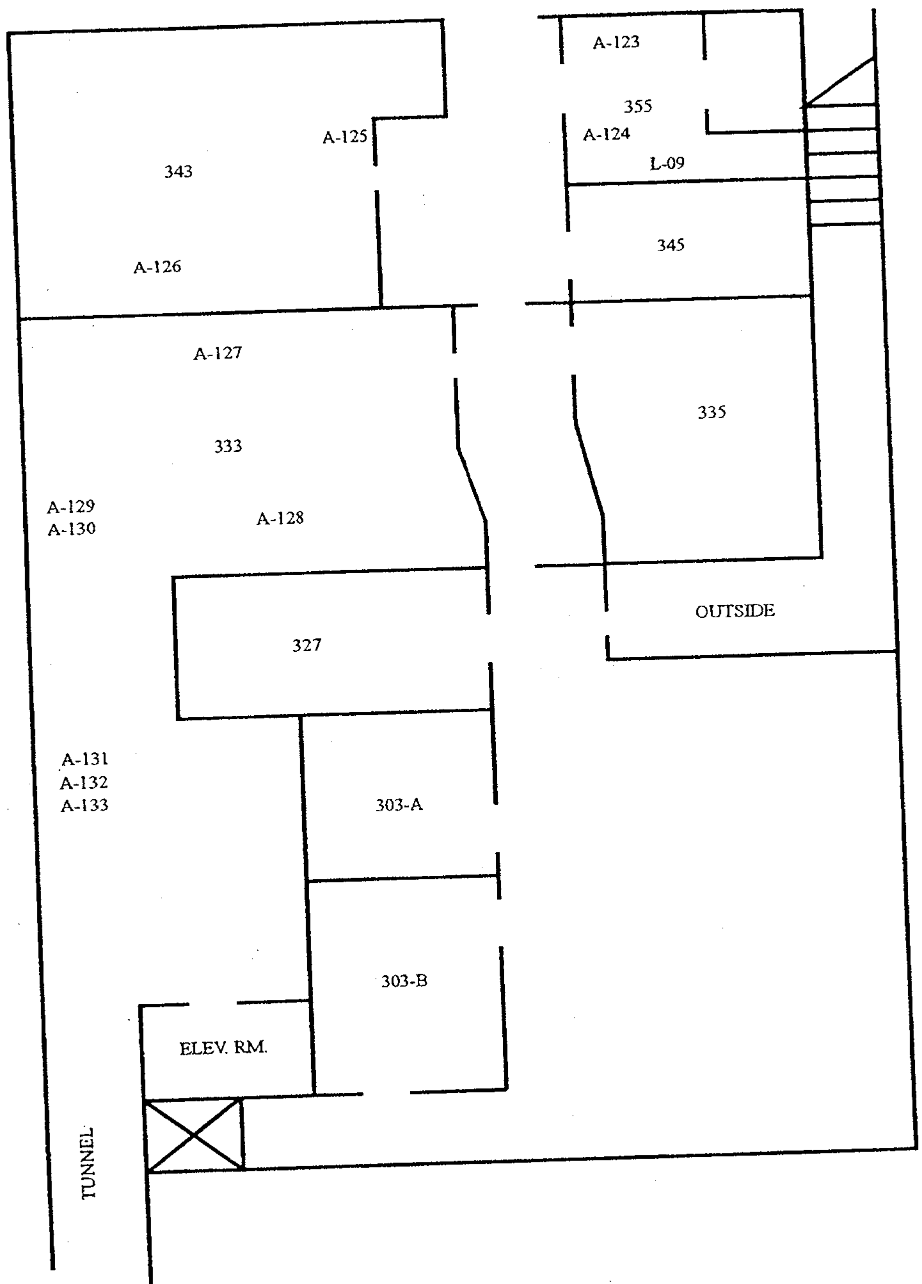

A- ASBESTOS SAMPLE LOCATION

L- LEAD SAMPLE LOCATION

DRAWING NOT TO SCALE

PROJECT NUMBER 01-1070-01

UNIVERSITY OF CALIFORNIA
RIVERSIDE
GEOLOGY BUILDING
CENTER WING BASEMENT

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

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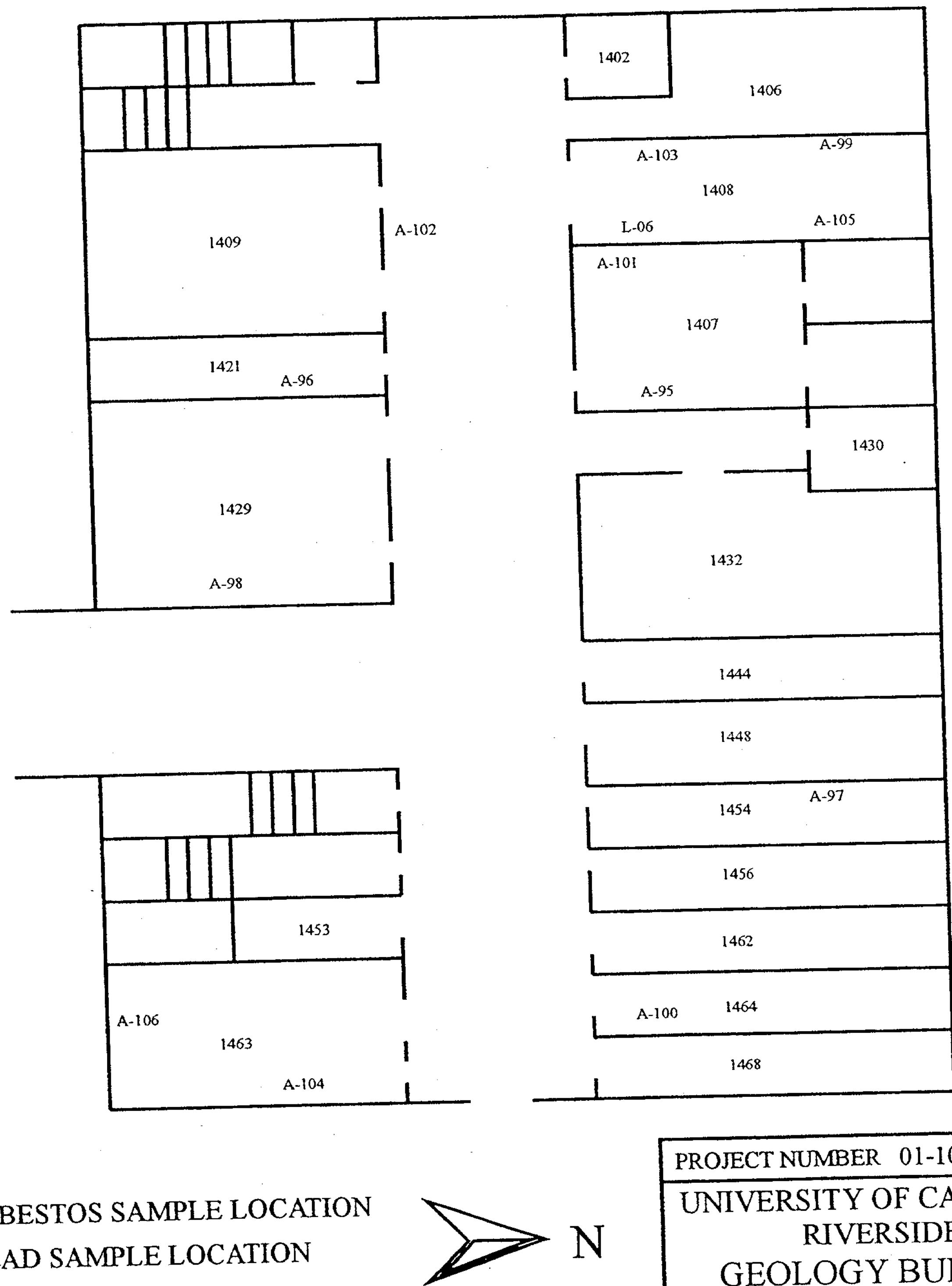

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L- LEAD SAMPLE LOCATION

DRAWING NOT TO SCALE

PROJECT NUMBER 01-1070-01

UNIVERSITY OF CALIFORNIA
RIVERSIDE
GEOLOGY BUILDING
1ST FLOOR NORTH WING

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

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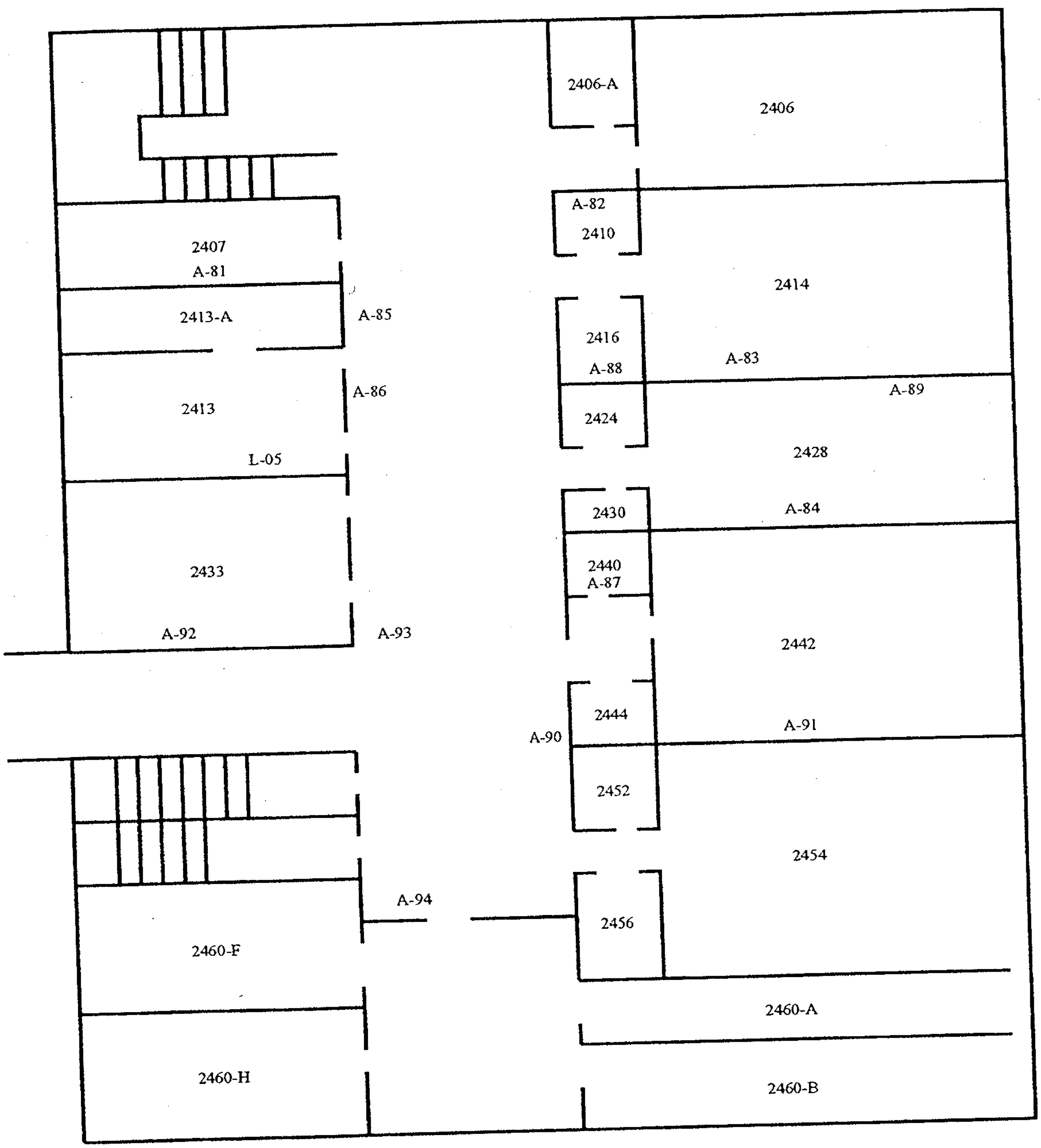

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L- LEAD SAMPLE LOCATION

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DRAWING NOT TO SCALE

PROJECT NUMBER 01-1070-01

UNIVERSITY OF CALIFORNIA
RIVERSIDE
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2ND FLOOR NORTH WING

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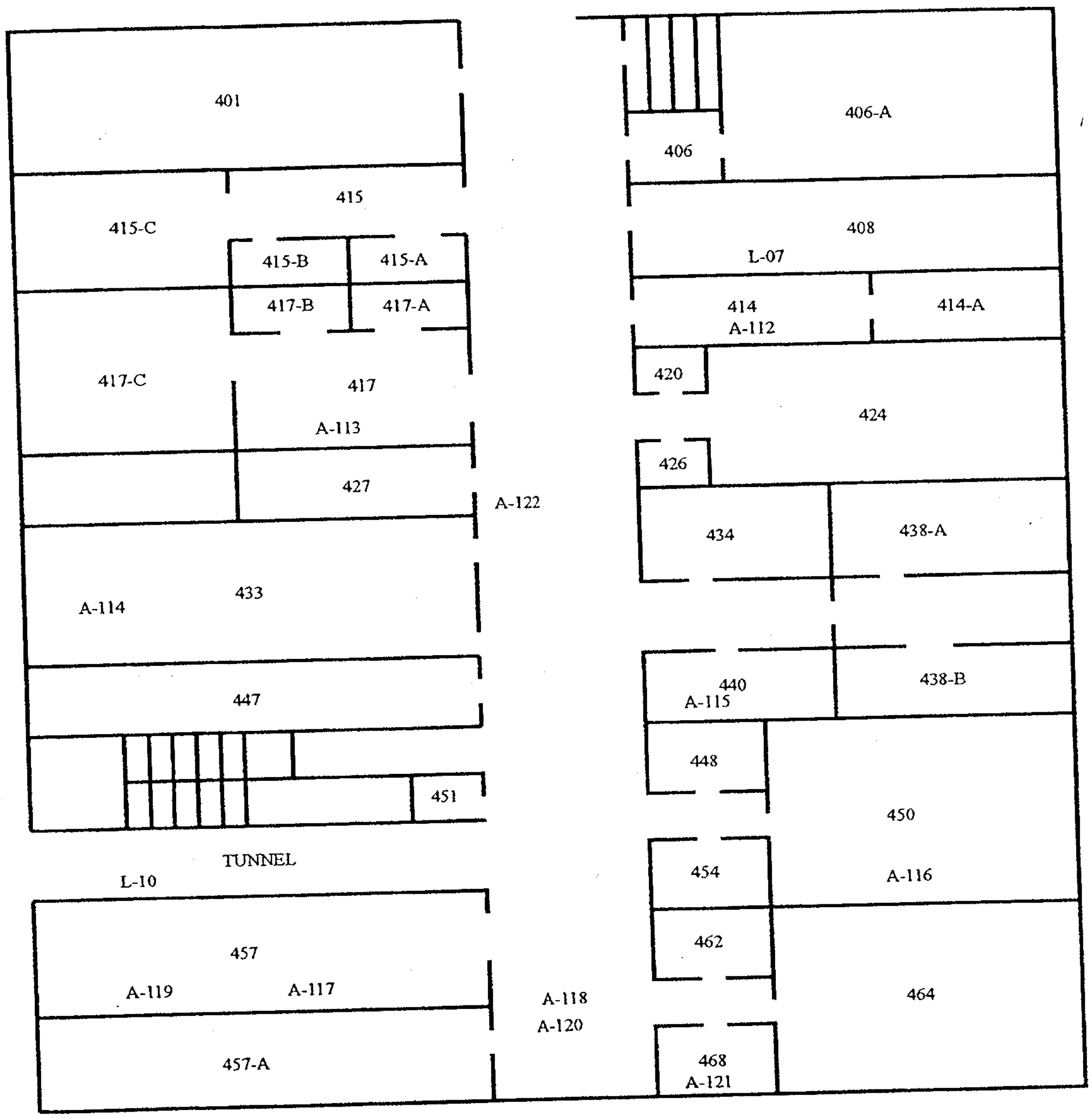

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PROJECT NUMBER 01-1070-01
UNIVERSITY OF CALIFORNIA RIVERSIDE GEOLOGY BUILDING NORTH WING BASEMENT

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
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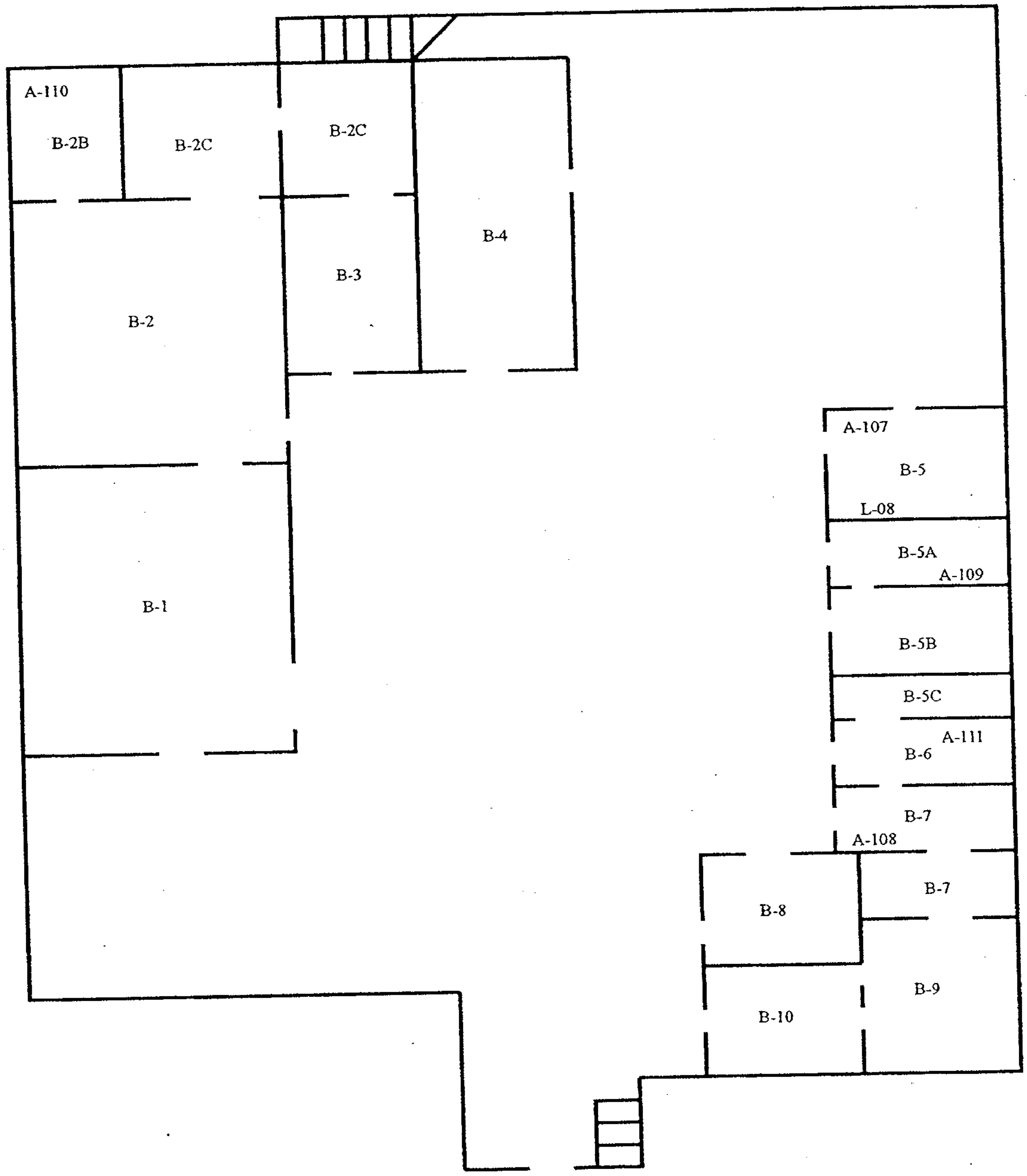

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L- LEAD SAMPLE LOCATION

DRAWING NOT TO SCALE

PROJECT NUMBER 01-1070-01

UNIVERSITY OF CALIFORNIA
RIVERSIDE
GEOLOGY BUILDING
NORTH WING SUB-BASEMENT

Ambient Environmental Inc.
Asbestos and Lead/ Field Services
Indoor Air/ Water Quality Surveys
Phase I Site Assessments
Lab Services

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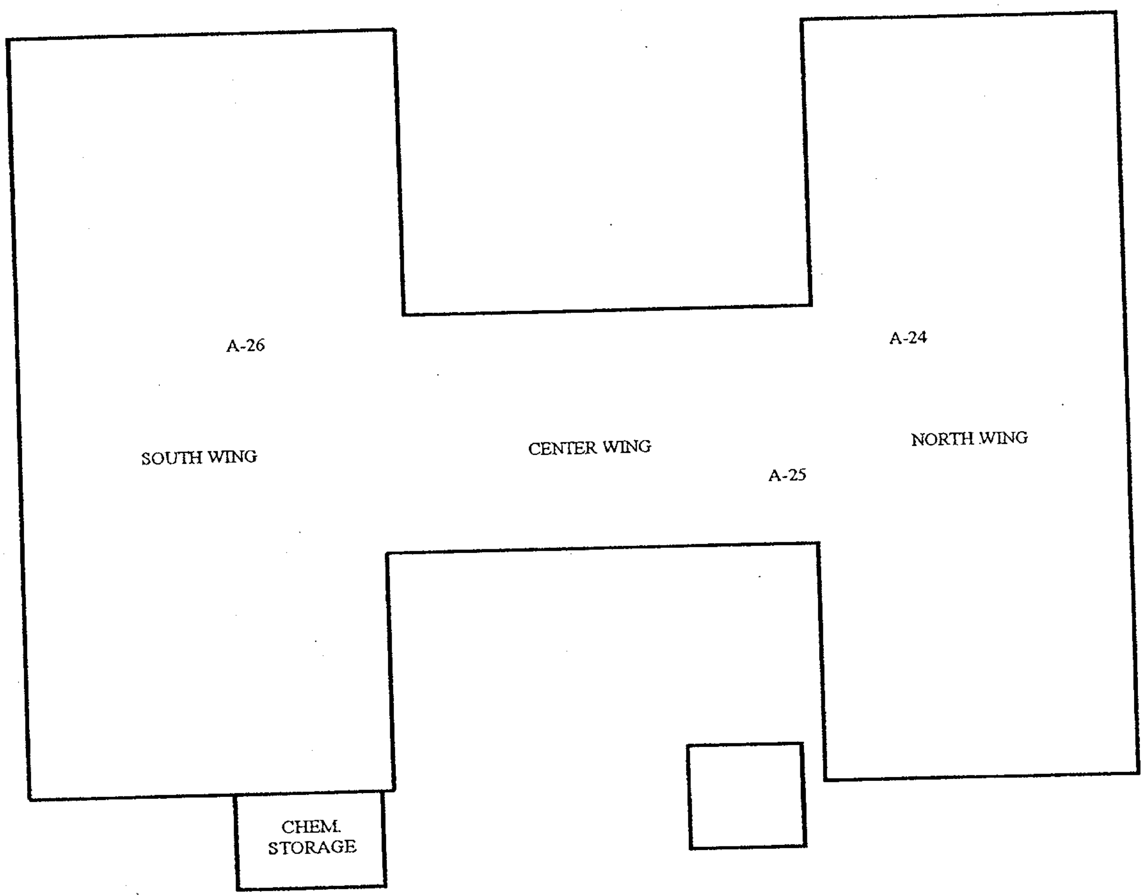
SITE DRAWING



A- ASBESTOS SAMPLE LOCATION

L- LEAD SAMPLE LOCATION

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DRAWING NOT TO SCALE

PROJECT NUMBER 01-1070-01

UNIVERSITY OF CALIFORNIA
RIVERSIDE

GEOLOGY BUILDING
ROOF

APPENDIX F

COST ESTIMATES FOR ASBESTOS REMOVAL

COST ESTIMATES

Total Cost of Asbestos Removal and Over-site

TOTAL COST OF REMOVAL	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 1,100,090.00	60 Days @ 500.00 per Day $30,000.00	5 Days @ 550.00 per Day $2,750.00	$1,132,840.00

Cost of Asbestos Removal and Over-site Per Wing

TOTAL COST OF REMOVAL SOUTH WING	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 305,505.00	30 Days @ 500.00 per Day $15,000.00	5 Days @ 550.00 per Day $2,750.00	$323,255.00
TOTAL COST OF REMOVAL NORTH WING	**DAILY AIR MONITORING**	**LEAD AIR MONITORING**	**TOTAL COST**
$ 581,119.00	30 Days @ 500.00 per Day $15,000.00	5 Days @ 550.00 per Day $2,750.00	$598,869.00
TOTAL COST OF REMOVAL CENTER WING	**DAILY AIR MONITORING**	**LEAD AIR MONITORING**	**TOTAL COST**
$ 262,745.00	30 Days @ 500.00 per Day $15,000.00	5 Days @ 550.00 per Day $2,750.00	$280,495.00

Cost of Asbestos Removal and Over-site per Floor

TOTAL COST OF REMOVAL SOUTH WING 1ST FLOOR	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 206,580	20 Days @ 500.00 per Day $10,000.00	3 Days @ 550.00 per Day $1,650.00	$218,230.00

TOTAL COST OF REMOVAL SOTH WING 2ND FLOOR	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 98,925.00	20 Days @ 500.00 per Day $10,000.00	3 Days @ 550.00 per Day $1,650.00	$110,575

TOTAL COST OF REMOVAL CENTER WING 1ST FLOOR	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 73,370.00	20 Days @ 500.00 per Day $10,000.00	3 Days @ 550.00 per Day $1,650.00	$85,020.00

TOTAL COST OF REMOVAL CENTER WING 2ND FLOOR	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 29,500.00	10 Days @ 500.00 per Day $5,000.00	2 Days @ 550.00 per Day $1,100.00	$36,700.00

TOTAL COST OF REMOVAL CENTER WING BASEMENT	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 159,875.00	20 Days @ 500.00 per Day $10,000.00	53Days @ 550.00 per Day $1,650.00	$171,525.00

TOTAL COST OF REMOVAL NORTH WING 1ST FLOOR	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 151,610.00	20 Days @ 500.00 per Day $10,000.00	3 Days @ 550.00 per Day $1,650.00	$163,260.00

TOTAL COST OF REMOVAL NORTH WING 2ND FLOOR	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 160,715.00	20 Days @ 500.00 per Day $10,000.00	3 Days @ 550.00 per Day $1,650.00	$172,365.00

TOTAL COST OF REMOVAL NORTH WING BASEMENT	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 156,212.00	20 Days @ 500.00 per Day $10,000.00	3 Days @ 550.00 per Day $1,650.00	$167,869.00

TOTAL COST OF REMOVAL NORTH WING SUB-BASEMENT	DAILY AIR MONITORING	LEAD AIR MONITORING	TOTAL COST
$ 112,575.00	20 Days @ 500.00 per Day $10,000.00	3 Days @ 550.00 per Day $1,650.00	$124,225.00

TOTAL COSTS BY ROOM NUMBER

Room #	Wing	Floor	Total Cost $	ASF
B1	North	SB	$1,625	464
B1A	North	SB	$1,400	265
B2	North	SB	$4,150	645
B2A	North	SB	$1,750	152
B2B	North	SB	$3,400	130
B3	North	SB	$1,625	116
B4	North	SB	$1,250	262
B5	North	SB	$1,750	341
B5A	North	SB	$1,750	135
B5B	North	SB	$1,750	135
B5C	North	SB	$1,750	135
B6	North	SB	$1,250	210
B6A	North	SB	$2,000	210
B7	North	SB	$2,875	336
B8	North	SB	$5,250	403
B9	North	SB	$14,500	61
B9A	North	SB	$4,200	132
B10	North	SB	$2,000	609
Hallway	North	SB	$23,100	N/A
303	Center	B	$4,200	680
303A	Center	B	$1,400	294
303B	Center	B	$1,400	243
333	Center	B	$112,500	700
335	Center	B	$5,500	300
343	Center	B	$30,450	300
345	Center	B	$1,400	332
355	Center	B	$1,625	322
355A	Center	B	$1,400	69
401	North	B	$11,150	894
406A	North	B	$1,000	30
408	North	B	$6,500	186
408A	North	B	$2,700	131
414	North	B	$5,650	131
414A	North	B	$1,570	115
415	North	B	$1,400	72
415A	North	B	$1,900	110
415B	North	B	$1,400	110
415C	North	B	$1,400	130
417	North	B	$2,400	72
417A	North	B	$2,290	110
417B	North	B	$1,400	110
417C	North	B	$1,400	130
420	North	B	$1,960	131
424	North	B	$4,775	292
424A	North	B	$1,400	124
424B	North	B	$12,950	131
426	North	B	$5,425	139
427	North	B	$2,275	50
433	North	B	$2,275	18
433A	North	B	$1,460	62

TOTAL COSTS BY ROOM NUMBER

433B	North	B	$2,000	328
433C	North	B	$2,960	146
434	North	B	$2,860	72
438	North	B	$2,045	36
0438A	North	B	$4,575	302
0438B	North	B	$4,575	292
440	North	B	$1,960	131
447	North	B	No Access	308
448	North	B	$1,960	68
450	North	B	$7,025	201
451	North	B	$1,400	99
454	North	B	$3,175	136
457	North	B	$12,750	710
457A	North	B	$3,060	180
457B	North	B	$1,960	70
462	North	B	$1,960	135
464	North	B	$7,050	607
468	North	B	$2,525	141
Hallway	North	B	$17,700	N/A
1205	South	1	$1,460	84
1206	South	1	$1,400	117
1207	South	1	$17,700	924
1207A	South	1	$2,000	225
1216	South	1	$1,400	290
1216A	South	1	$1,400	78
1216B	South	1	$1,400	154
1216C	South	1	$1,400	99
1220	South	1	$3,900	256
1224	South	1	$5,060	406
1227	South	1	$3,060	281
1230	South	1	$3,560	250
1231	South	1	$18,550	462
1231A	South	1	$5,900	462
1242	South	1	$16,460	689
1242A	South	1	$2,000	81
1251	South	1	$5,050	300
1251A	South	1	$2,610	117
1251B	South	1	$1,910	117
1251C	South	1	$1,400	18
1251D	South	1	$1,960	36
1260	South	1	$13,100	308
1260A	South	1	$2,400	27
1263	South	1	$4,060	252
1265	South	1	$12,850	910
1270	South	1	$3,800	85
1270A	South	1	$8,050	176
1278	South	1	$3,360	154
1278B	South	1	$3,500	329
1284	South	1	$2,100	90
1285	South	1	$1,460	84
1311	South	1	$4,650	58

TOTAL COSTS BY ROOM NUMBER

1321	South	1	$1,460	250
Hallway	South	1	$16,600	N/A
1323	Center	1	$3,400	144
1324	Center	1	$2,260	549
1324A	Center	1	$4,160	151
1324B	Center	1	$1,400	87
1324C	Center	1	$1,400	87
1324D	Center	1	$1,400	107
1324E	Center	1	$1,400	43
1324F	Center	1	$1,400	35
1324G	Center	1	$1,400	43
1345	Center	1 and 2	$53,750	1,116
Hallway	Center	1	$1,400	N/A
Hallway	Center	2	$29,500	N/A
1402	North	1	$1,750	200
1407	North	1	$2,160	84
1408	North	1	$5,500	1,076
1409	North	1	$13,040	908
1421	North	1	$8,200	400
1421A	North	1	$2,295	48
1424	North	1	$4,250	550
1429	North	1	$17,100	916
1430	North	1	$2,275	61
1432	North	1	$5,150	19
1432A	North	1	$6,280	315
1444	North	1	$5,500	398
1448	North	1	$6,200	253
1453	North	1	$5,460	196
1454	North	1	$5,860	135
1454A	North	1	$2,210	109
1456	North	1	$5,450	248
1462	North	1	$5,410	248
1463	North	1	$10,460	717
1463A	North	1	$6,290	306
1464	North	1	$5,410	248
1468	North	1	$5,360	248
Hallway	North	1	$20,000	N/A
2202	South	2	$1,400	80
2202A	South	2	$1,400	80
2202B	South	2	No Access	80
2204	South	2	$0	30
2205	South	2	$1,400	67
2206	South	2	$1,400	180
2207	North	2	$1,480	200
2207A	North	2	$0	160
2208	South	2	$0	348
2208A	South	2	$0	72
2208B	South	2	$0	174
2208C	South	2	$1,400	175
2208E	South	2	$0	272
2217	South	2	$0	323

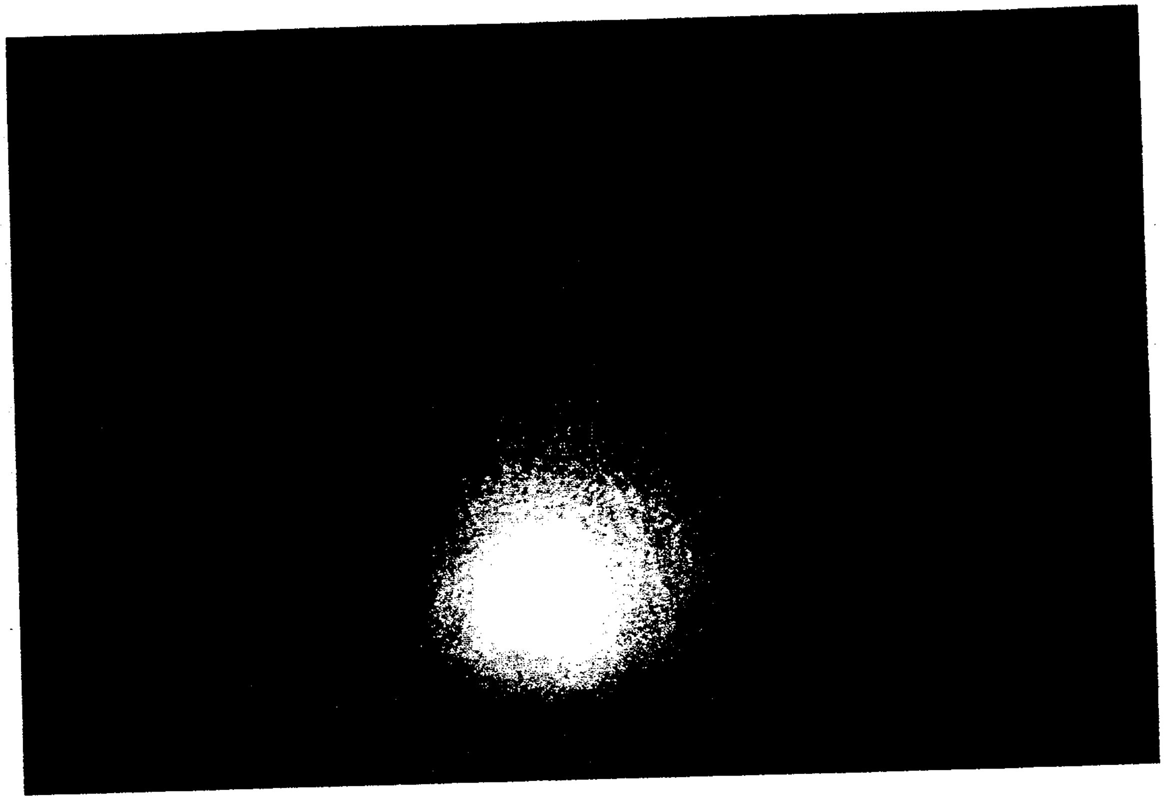
TOTAL COSTS BY ROOM NUMBER

2217A	South	2	$0	165
2217B	South	2	$0	140
2223	South	2	$2,000	183
2226	South	2	$11,230	830
2226A	South	2	$5,610	137
2226B	South	2	$5,610	137
2226C	South	2	$3,400	189
2229	South	2	$6,475	316
2233	South	2	$15,800	737
2247	South	2	$11,230	812
2247A	South	2	$2,100	137
2247B	South	2	$1,560	104
2265	South	2	$16,700	1,076
2265A	South	2	$14,700	137
2265B	South	2	$2,420	104
2268	South	2	$15,000	789
2268A	South	2	$4,260	277
2268B	South	2	$1,460	131
2285	South	2	$1,400	67
Hallway	South	2	$16,000	N/A
2407	North	2	$2,000	67
2410	North	2	$3,450	150
2413	North	2	$16,450	1,343
2413A	North	2	$3,680	238
2414	North	2	$6,450	593
2416	North	2	$2,760	135
2424	North	2	$2,210	138
2428	North	2	$6,590	593
2430	North	2	$2,210	139
2433	North	2	$9,475	775
2440	North	2	$4,680	133
2442	North	2	$11,160	593
2444	North	2	$1,960	143
2452	North	2	$5,910	142
2454	North	2	$7,620	593
2456	North	2	$1,960	137
2460	North	2	$7,070	575
2460A	North	2	$5,060	210
2460B	North	2	$3,430	210
2460C	North	2	$2,255	117
2460E	North	2	$1,460	56
2460F	North	2	$12,260	373
2460G	North	2	$6,350	389
2460H	North	2	$3,285	242
Hallway	North	2	$29,500	N/A
Material	Storage	1	$4,250	800

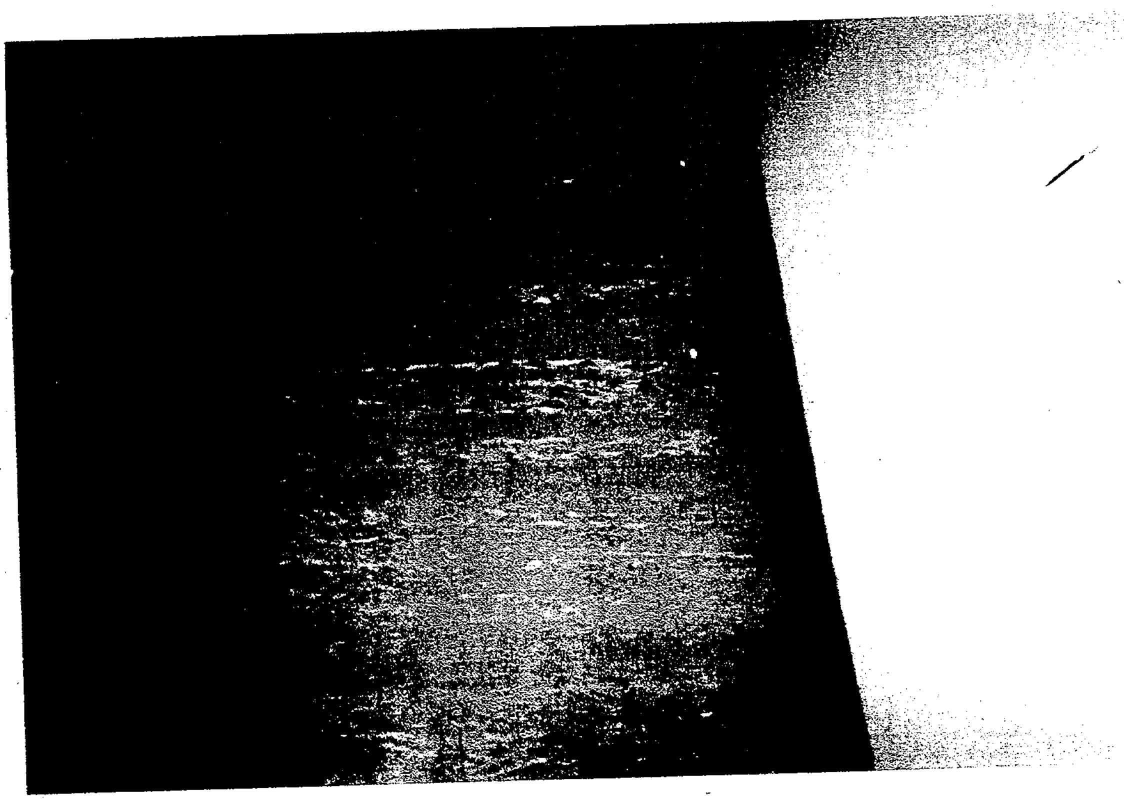
GRAND TOTAL BUILDING COST $: $1,100,090

APPENDIX G

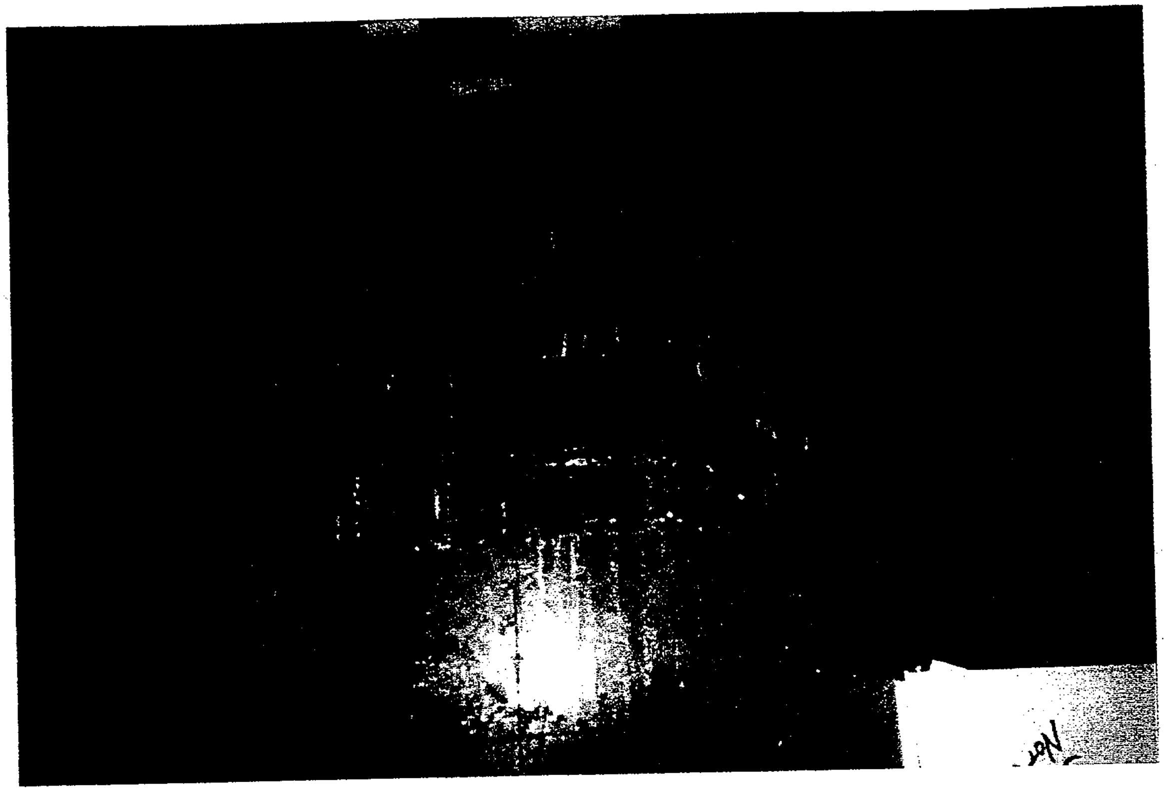
PHOTOGRAPHS OF ASBESTOS CONTAINING MATERIALS



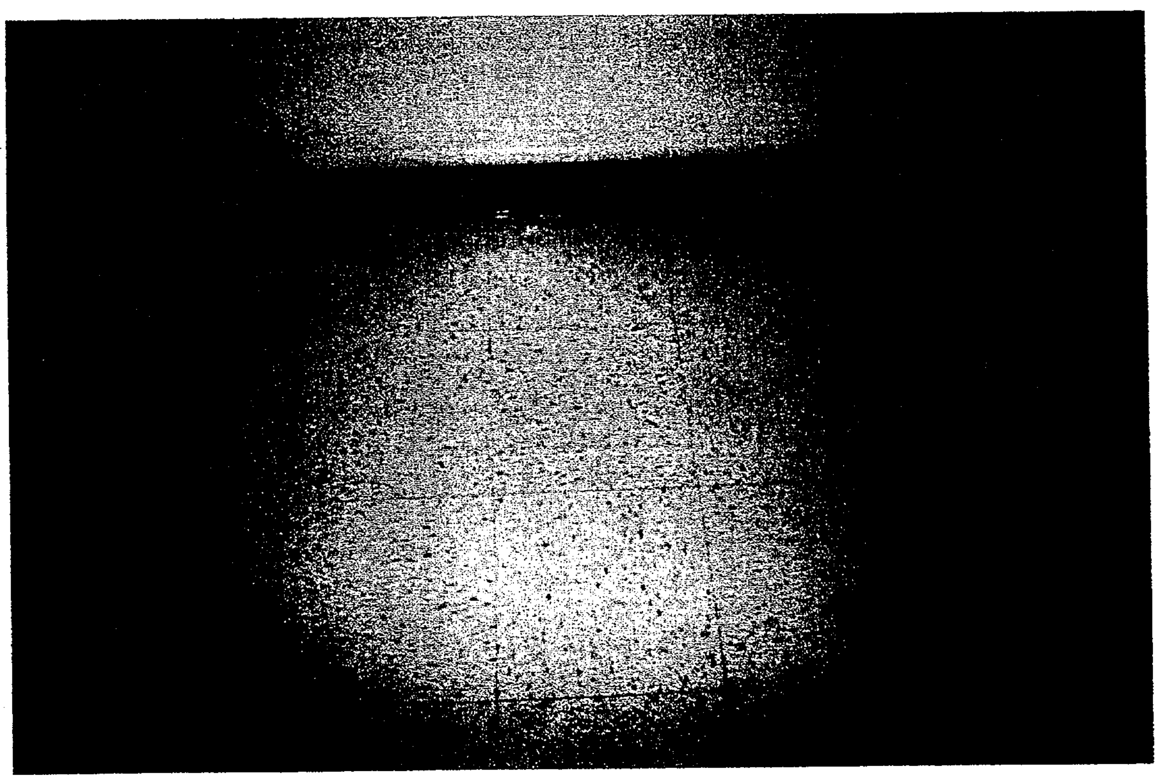
BEIGE VINYL SHEET FLOORING



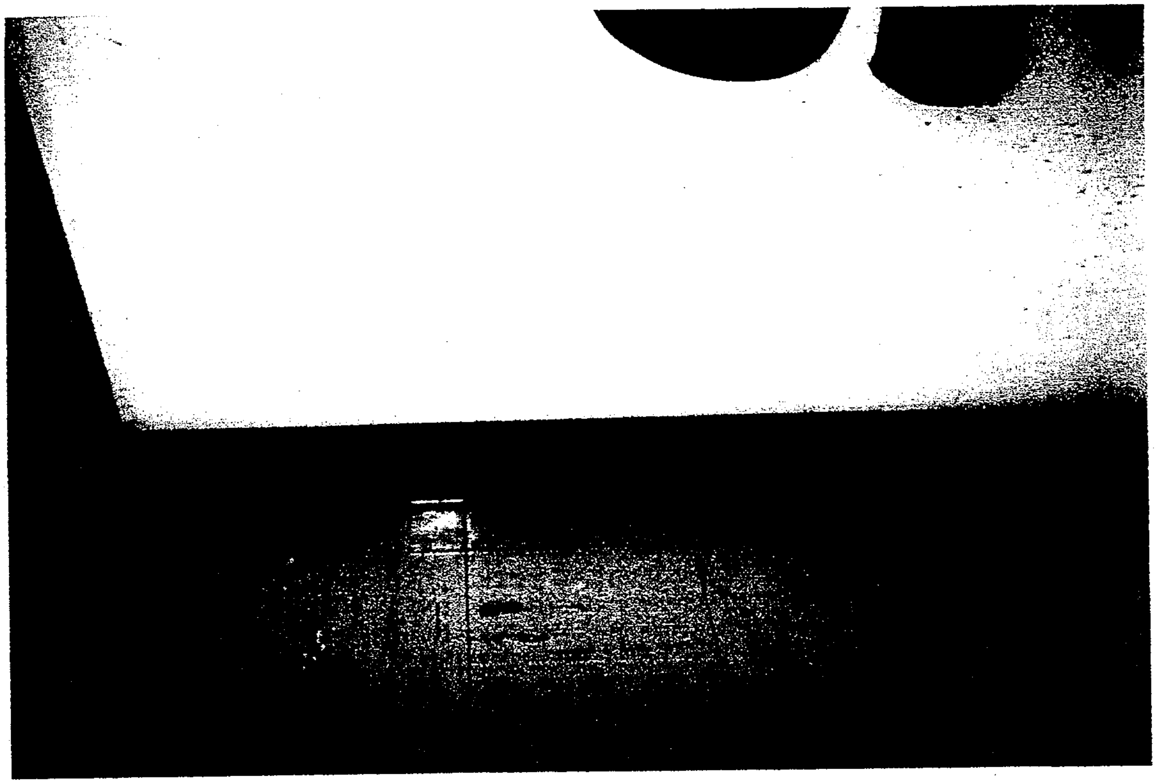
GREEN VINYL SHEET FLOORING



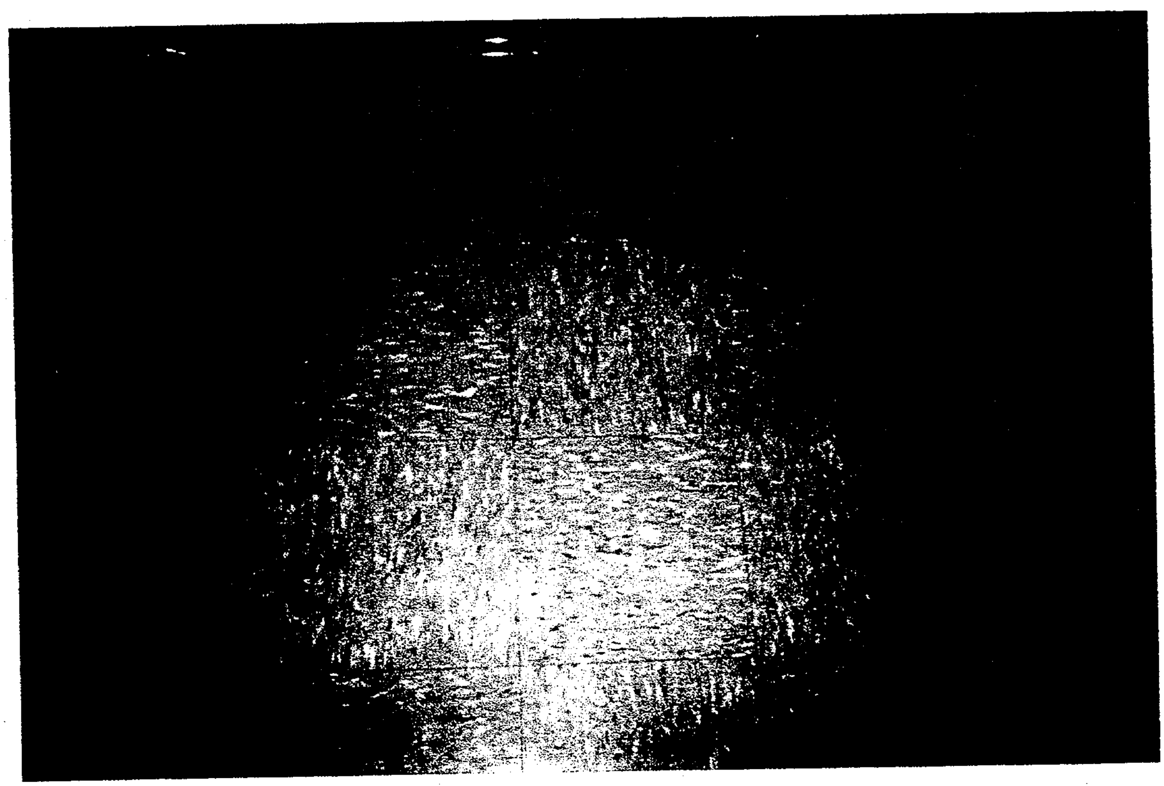
GREEN 9X9 VINYL FLOOR TILE AND MASTIC



GRAY 12X12 VINYL FLOOR TILE AND MASTIC

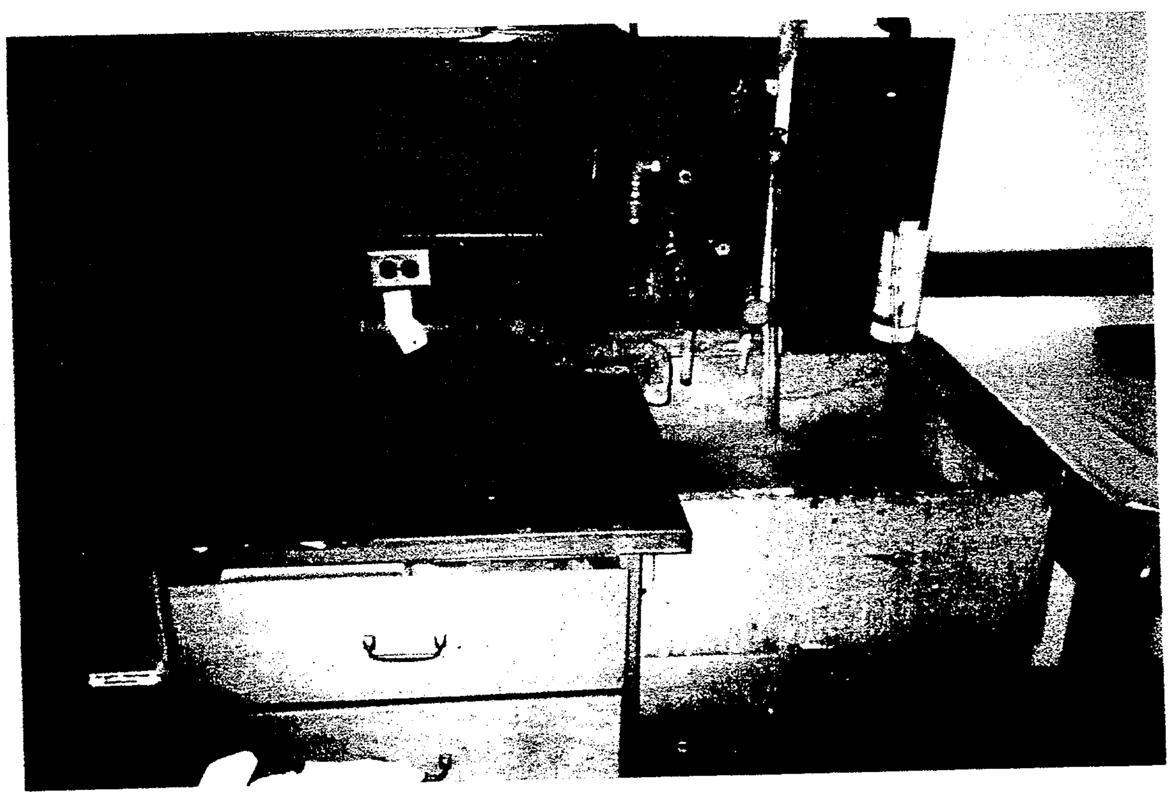


BROWN VINYL BASEBOARD MASTIC

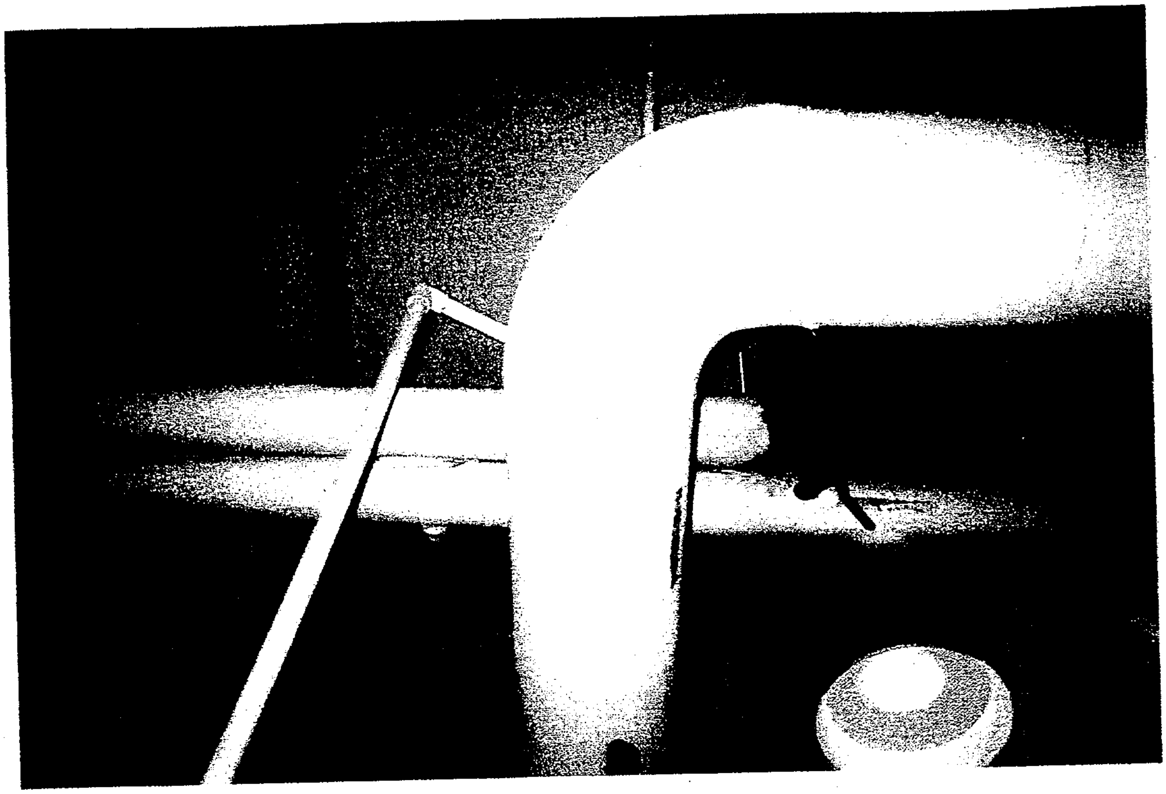


BEIGE 12X12 VINYL FLOOR TILE AND MASTIC

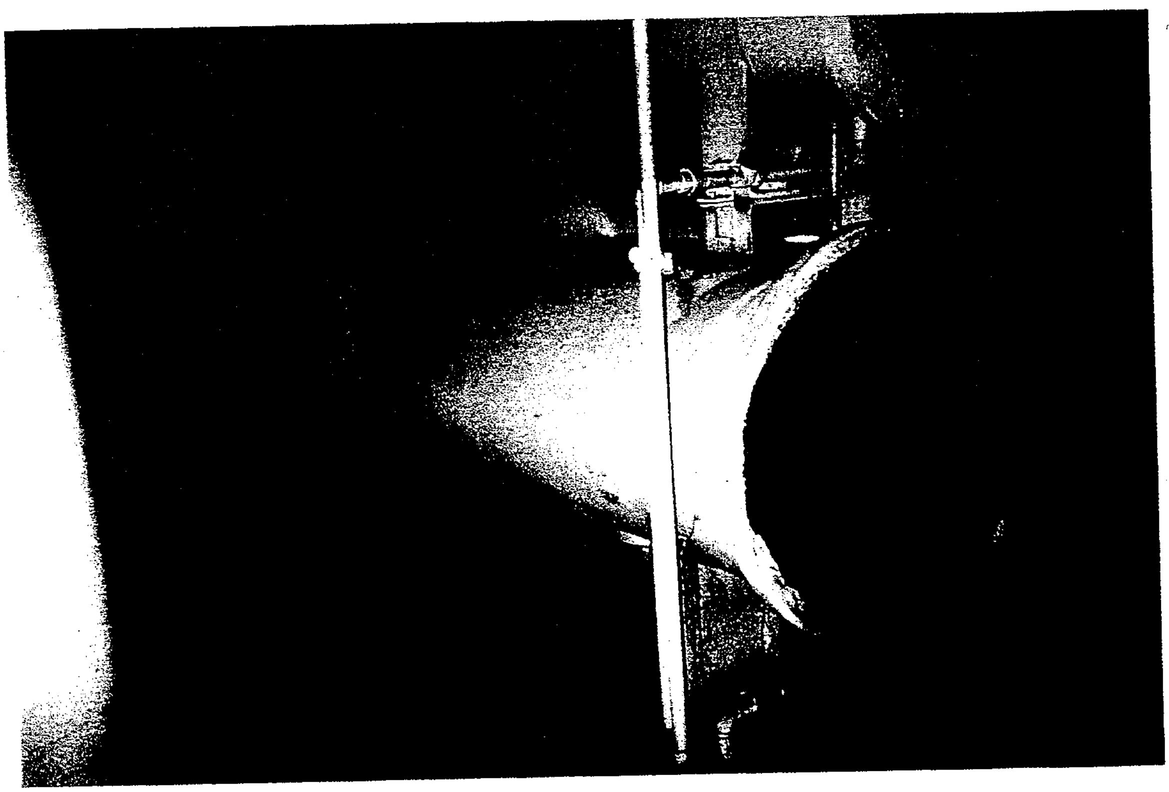
BROWN 9X9 VINYL FLOOR TILE AND MASTIC



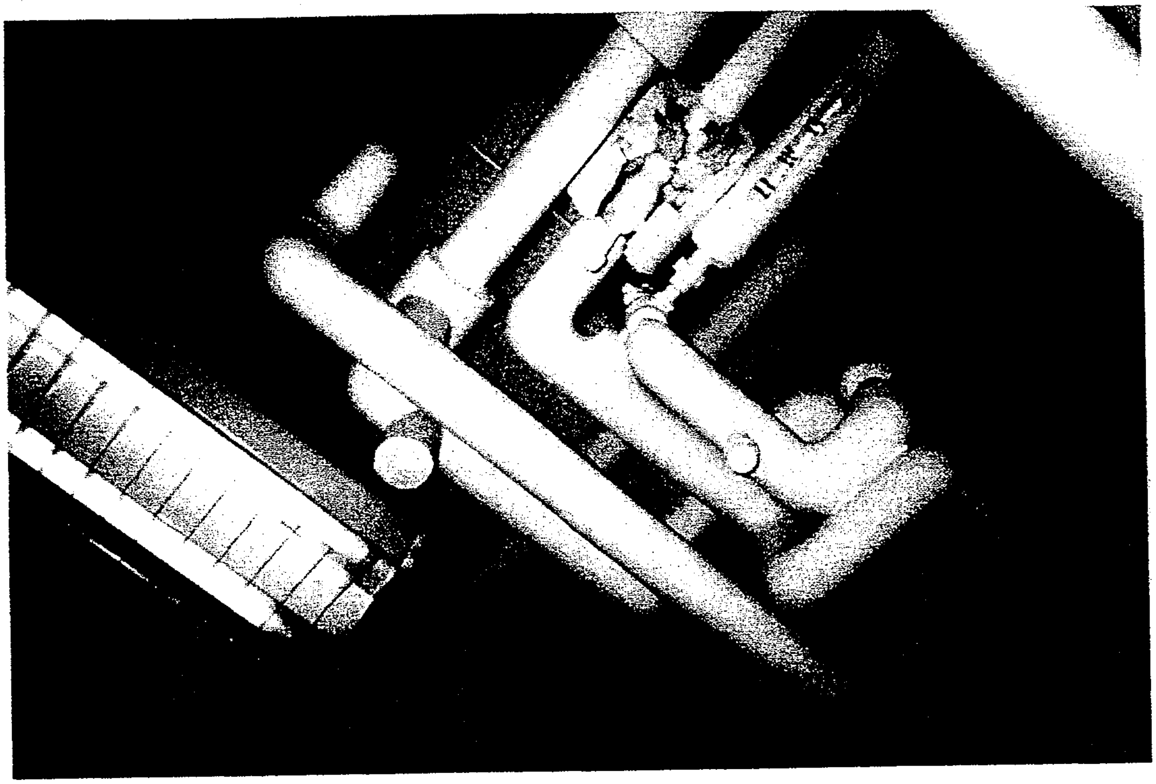
TRANSITE SINK



BASEMENT PIPE FITTINGS

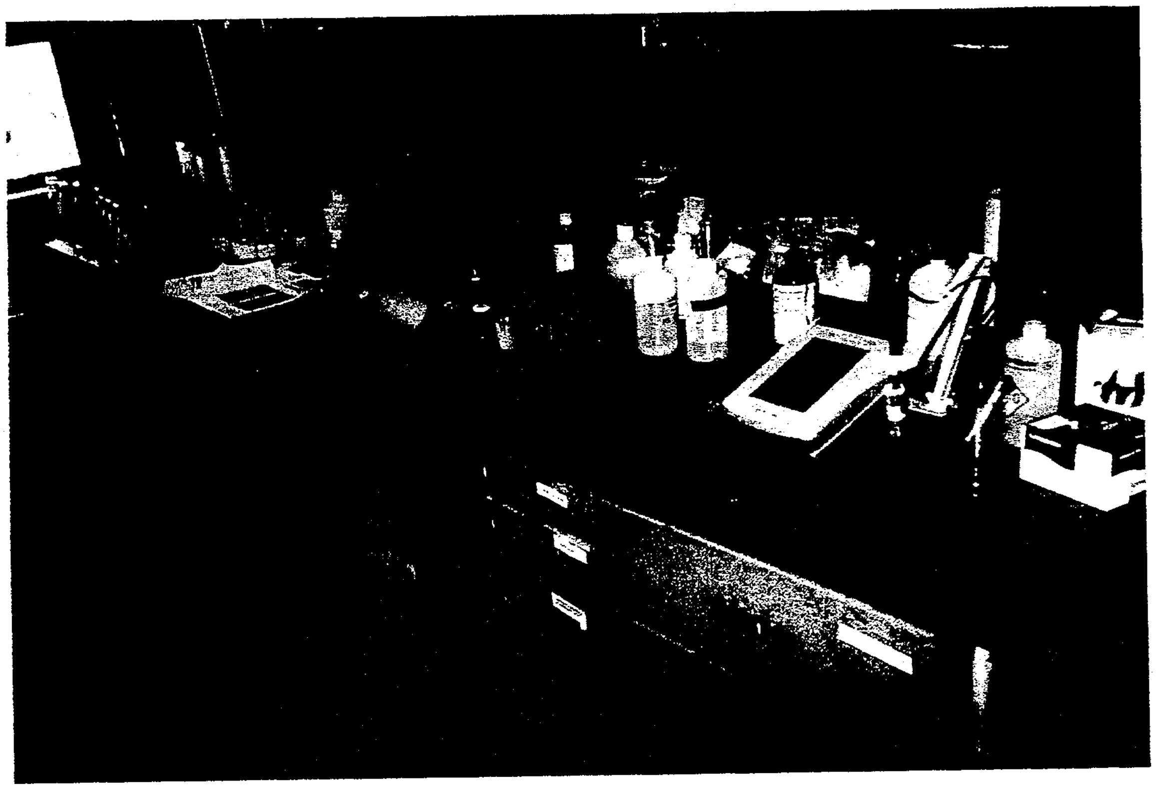


BASEMENT TANK INSULATION

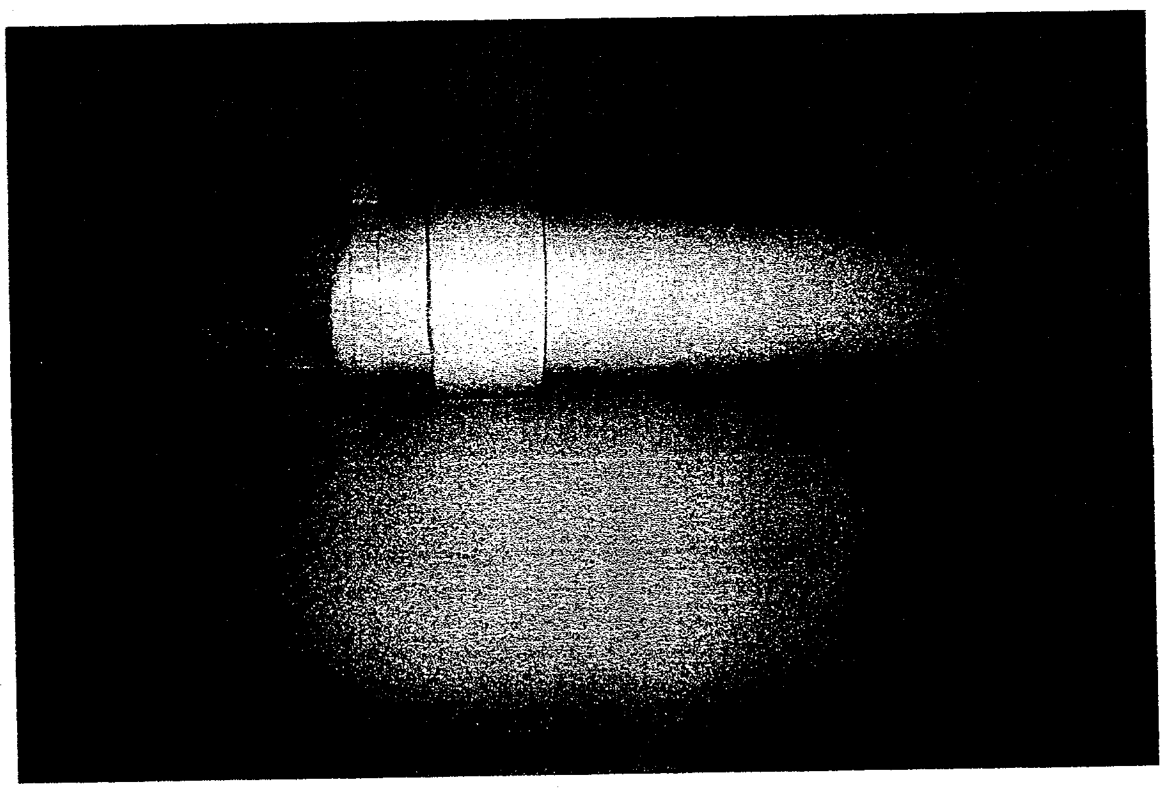


CLASSROOM PIPE FITTINGS

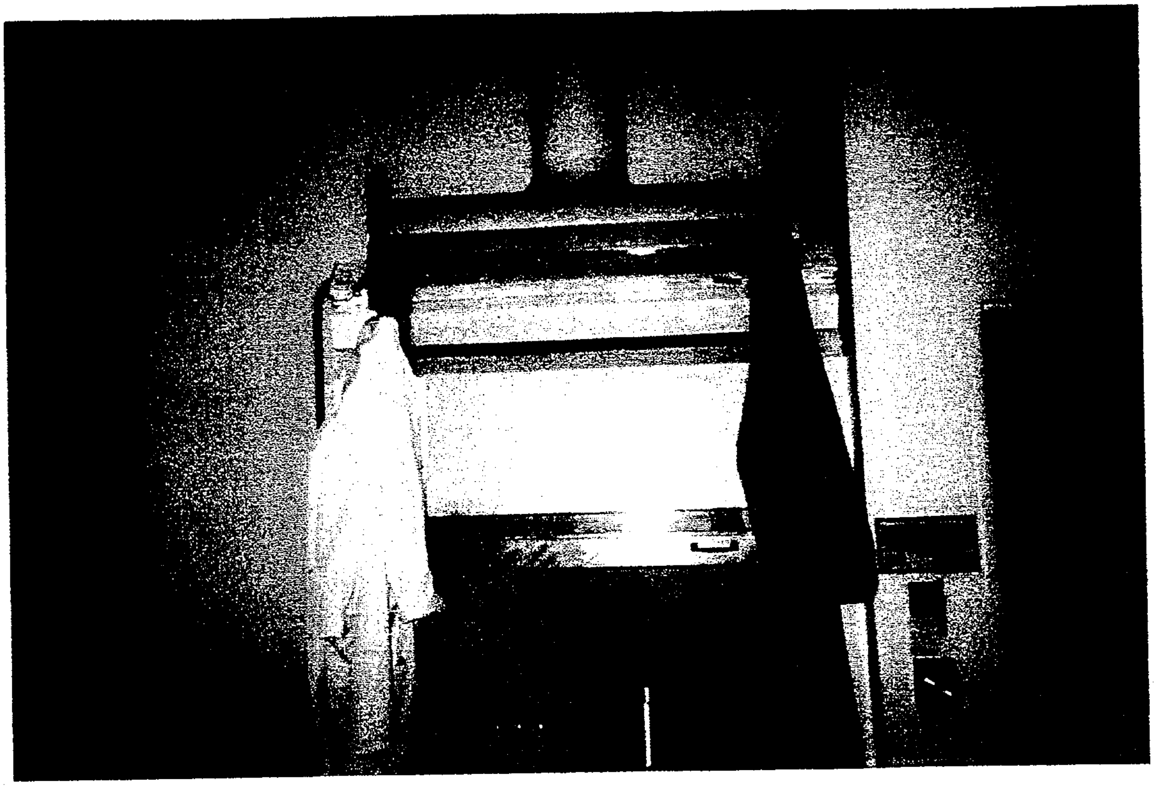
BASEMENT PIPE INSULATION



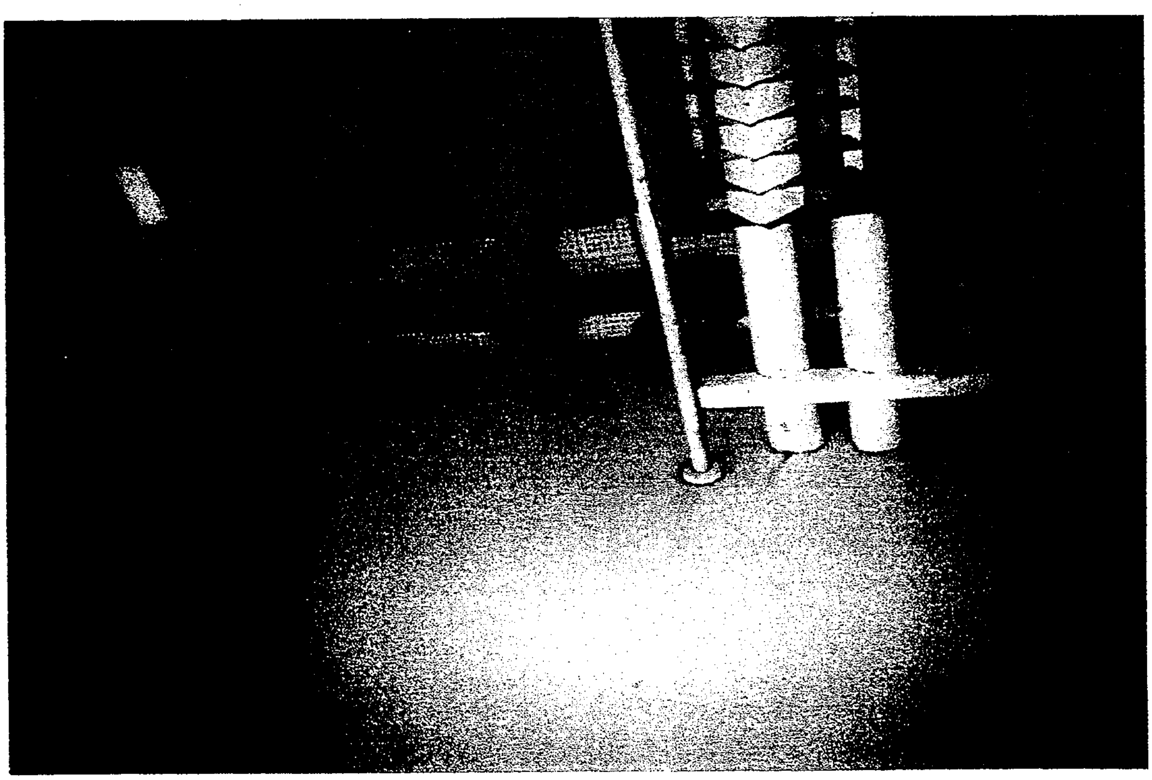
TRANSITE COUNTER TOP



TRANSITE PIPE



TRANSITE FUME HOOD



CLASSROOM PIPE INSULATION

Of limited use, appears to cover about two-thirds of the lab areas

Room	Chemical	CAS#	# of	Size	Units
1231	ACETIC ACID	64197	1	2.5	L
1231	AMMONIUM HYDROXIDE	1336216	6	2.5	L
1231	BARIUM SULFATE	7727437	1	1	LB
1231	BROMINE PENTAFLUORIDE	7789302	1	1	LB
1231	CADMIUM SULFATE	10124364	1	1	LB
1231	CARBON DIOXIDE	124389	1	40	LB
1231	CARBON TETRACHLORIDE	56235	1	1	GAL
1231	CHROMIUM TRIOXIDE	1333820	1	1	LB
1231	COPPER	7440508	1	2	LB
1231	COPPER SULFATE PENTAHYDRATE	7758998	1	0.25	LB
1231	CUPRIC OXIDE	1317380	1	0.25	LB
1231	FLUOROBORIC ACID	16872110	1	1	LB
1231	HELIUM	7440597	1	291	FT3
1231	HYDROFLUOROSILICIC ACID	16961834	1	1	LB
1231	HYDROGEN	1333740	1	2	FT3
1231	HYDROGEN PEROXIDE	7722841	1	500	ML
1231	MERCURY	7439976	1	5	LB
1231	NITRIC ACID	7697372	3	2.5	L
1231	NITROGEN	7727379	2	255	FT3
1231	OXYGEN	7782447	1	281	FT3
1231	PERFLUORINATED POLYETHER PUMP OIL	69991679	1	0.5	KG
1231	PERFLUORINATED POLYETHER PUMP OIL	69991679	1	8	KG
1231	PHOSPHORIC ACID	7664382	7	500	ML
1231	PHOSPHORUS PENTOXIDE	1314563	2	500	GM
1231	POTASSIUM CARBONATE	584087	3	1	LB
1231	POTASSIUM IODATE	7758056	1	1	LB
1231	ROTARY VACUUM PUMP OIL DUO SEAL		1	5	GAL
1231	SILICONE DIFFUSION PUMP OIL	63148629	1	500	ML
1231	SODIUM BICARBONATE	144558	2	1	LB
1231	SODIUM HYDROXIDE	1310732	3	500	GM
1231	SULFUR DIOXIDE	7446095	1	1	LB
1231	SULFUR HEXAFLUORIDE	2551624	1	0.5	LB
1231	SULFURIC ACID	7664939	2	2.5	L
1231	ZINC	7440666	1	200	GM
1251D	FIXER, POWDER		1	12	OZ
1251D	KODAK RAPID FIXER SOLUTION A		1	1	QT
433	COPPER SULFATE PENTAHYDRATE	7758998	4	3	KG

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Room	Chemical	CAS#	# of	Size	Units
303A	HILQUIST COOLANT		2	1	QT
303A	LIQUINOX		1	1	GAL
303A	ROCK SAW OIL PELLA~A	6472467	1	5	GAL
327	INERTEEN	1336363	1	380	GAL
401	ACETIC ACID, GLACIAL	64197	1	5	LB
401	ACETONE	67641	1	500	ML
401	AG SOW-X8 RESIN (BIO-RAD)	69011207	1	500	G
401	AG 1-X8 RESIN (BIO RAD)	60177391	1	500	G
401	AMMONIUM CHLORIDE	12125029	1	500	GM
401	AMMONIUM NITRATE	6484522	1	1	LB
401	CALCIUM CARBONATE	471341	1	5	LB
401	CELLULOSE POWDER	9004346	1	500	GM
401	COPPER (II) SULFATE, ANHYDROUS	7758987	1	1	LBS
401	DICHLOROMETHANE	75092	2	4	L
401	FLUORESCEIN SODIUM SALT	518478	1	100	G
401	FORMALDEHYDE	50000	1	500	ML
401	HYDROCHLORIC ACID	7647010	1	2.5	L
401	LIQUISCINT SCINTILLATION COCKTAIL		1	1	GAL
401	MERCURY	7439976	1	80	GM
401	NITRAPYRIN(21.9% 2-CHLORO-&(TRICHLOROMETHYLO)PYRIDINE	1929824	2	2.5	GAL
401	NITRIC ACID	7697372	1	7	LB
401	POTASSIUM CHLORIDE	7447407	1	0.25	LB
401	POTASSIUM CHLORIDE	7447407	1	3	KG
401	POTASSIUM CHLORIDE, (SATURATED SOLUTION)		1	150	ML
401	POTASSIUM NITRATE	7757791	1	100	GM
401	POTASSIUM PHOSPHATE, MONOBASIC	7778770	1	500	GM
401	SODIUM BICARBONATE	144558	1	100	GM
401	SODIUM CHLORIDE	7647145	2	1	LB
401	SULFURIC ACID	7664939	3	2.5	L
401	SULFURIC ACID, 72%	7664939	1	2.5	L
415	ETHANOL 95%	64175	1	3	GAL
433	ACETONE	67641	1	250	ML
433	BATTERY - LFAD ACID		16	50	LB
433	BLAIR NO ODOR SPRAY FIX		1	13	OZ
2460	COBALT SOLUTION (1OOOMG/L)	7440484	1	100	ML
2460	ETHYLENE GLYCOL	107211	2	4	L
2460	HELIUM	7440597	2	255	FT3

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Room	Chemical	CAS#	# of	Size	Units
2442	SODIUM TARTRATE	868188	1	473	GM
2442	STANNOUS CHLORIDE	7772998	1	453	GM
2442	STARCH	9005258	2	453	GM
2442	STRONTIUM CHLORIDE	10025704	1	453	GM
2442	STRONTIUM NITRATE	10042769	1	453	GM
2442	SULFUR	7704349	1	600	GM
2442	SULFURIC ACID	7664939	1	1	PT
2442	SULFURIC ACID	7664939	2	2.5	L
2442	SULFURIC ACID + CATALYST		1	8	OZ
2442	SURFSIDE WETTING AGENTS		4	1	GAL
2442	TARTARIC ACID	87694	1	473	GM
2442	THYMOL BLUE, .4		1	1	LBS
2442	TIN METAL	7440315	1	453	GM
2442	TOLUENE	108883	1	8	PT
2442	VACUUM PUMP OIL	64742547	1	3.78	L
2442	WOODSS ALLOY	8049227	1	113	GM
2442	ZINC METAL	7440666	1	453	GM
2442	ZINC METAL	7440666	1	453	GM
2454	HYDROCHLORIC ACID	7647010	2	2.5	L
2454	POTASSIUM CHLORIDE	7447407	1	10	KG
2454	POTASSIUM CHLORIDE	7447407	1	8	KG
2454	SULFURIC ACID	7664939	2	2.5	L
2460	ACETONE	67641	1	4	L
2460	ACETYLENE	74862	3	330	FT3
2460	ARGON	7440370	2	255	IT3
2460	ARGON, LIQUID	7440370	2	4320	FT3
2460	APSENIC SOLUTION (1000 MG/L)	7440382	1	100	ML
2460	ARSENOUS OXIDE SOLUTION (1,000 MG/L)	1327533	1	100	ML
2460	BERYLIUM NITRATE SOLUTION (1,000 MG/L)	7787555	1	100	ML
2460	BERYLIUM SOLUTION (1000 MG/L)	7440417	1	100	ML
2460	CADMIUM NITRATE SOLUTION (1,000 MGIL)	10022681	1	100	ML
2460	CADMIUM SOLUTION (1000 MG/L)	7440439	1	100	ML
2442	PHENOLPHTHALEIN, 2-PROPANOL, WATER		1	1	L
2442	PHOSPHORIC ACID	7664382	2	500	ML
2442	POLYETHYLENE GLYCOL	25322683	5	1	KG
2442	POTASSIUM ACID PHTHALATE	877247	1	250	GM
2442	POTASSIUM CHLORIDE	7447407	1	453	GM

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Room	Chemical	CAS#	# of	Size	Units
2442	MAGNESIUM OXIDE	1309484	1	150	GM
2442	MAGNESIUM PERCHLORATE, ANHYDROUS	10034818	1	473	GM
2442	MAGNESIUM SULFATE	7487889	1	500	GM
2442	MALONIC ACID	141822	1	100	GM
2442	MERCURIC CHLORIDE	7487947	2	453	GM
2442	MERCURIC DINITRATE	7783348	1	10	GM
2442	MERCURIC SULFATE	7783359	1	453	GM
2442	MERCURY	7439976	1	453	GM
2442	METHYL ALCOHOL, ANHYDROUS	67561	1	8	PT
2442	METHYL ETHYL KETONE	78933	1	473	ML
2442	METHYL ETHYL KETONE	78933	1	3.78	L
2442	METHYL ETHYL KETONE-BENZENE SOLN	71432	1	3.78	L
2442	METHYL ORANGE	547580	1	10	GM
2442	METHYL RED	493527	1	28	GM
2442	METHYL SALICYLATE	119368	1	473	ML
2442	MOLECULAR SIEVE		5	2.2	KG
2442	MOLECULAR SIEVE		1	454	GM
2442	NAPETHALENE	91203	2	1.13	KG
2442	NAPHTHYL ETHYLENEDIAMINE,DIHYDROCHLORIDE	1465254	1	25	GM
2442	NICKELOUS NITRATE	13478007	1	453	GM
2442	NITRIC ACID	7697372	1	2.5	L
2442	OCTADECANOL, 1-	112925	1	500	GM
2442	OIL OF CEDARWOOD	8000279	1	112	GM
2442	OLEIC ACID	112801	1	473	ML
2442	OXALIC ACID	144627	2	250	GM
2442	OXALIC ACID	144627	2	473	GM
2442	PALMITIC ACID	57103	1	25	GM
2442	PETROLEUM ETHER	8032324	1	473	ML
2442	PHENANTHROLINE, 1,10-	5144898	1	5	GM
2442	PHENOLPHTHALEIN	77098	1	110	GM
2442	CALCIUM SULFATE- ANHYDROUS (DRIERITE)	7778189	2	5	LB
2442	CARBON TETRACHLORIDE	56235	1	0.7	LB
2442	CERIC AMMONIUM NITRATE	16774213	1	113	GM
2442	CHLOROFORM	67663	1	1	GAL
2442	COBALTI NITRATE		1	453	GM
2442	COBALT NITRATE	10141056	5	100	GM
2442	COBALT NITRATE	10141056	2	453	GM

Room	Chemical	CAS#	# of	Size	Units
2442	ALUMINUM SULPATE	7784318	1	453	GM
2442	ALUMINUM WIRE	7429905	1	453	GM
2442	AMMONIUM ACETATE	631618	1	500	GM
2442	AMMONIUM CHLORIDE	12125029	1	500	GM
2442	AMMONIUM MOLYBDATE	12027677	1	453	GM
2442	AMMONIUM OXALATE	6009707	2	500	GM
2442	AMMONIUM SULFATE	7783202	1	2.26	KG
2442	AMMONIUM THIOCYANATE	1762954	1	2.26	KG
2442	AMMONIUM THIOCYANATE	1762954	1	2.26	KG
2442	AMMONIUM THIOCYANATE	1762954	1	3	KG
2442	AMMONIUM VANADATE	7803536	1	112	GM
2442	AMYL ALCOHOL	75854	2	1	PT
2442	ANHYDRONE	10034818	1	1	LB
2442	ASCARITE	81133202	4	473	GM
2442	BARIUM CHLORIDE, DIHYDRATE	10326279	2	2.26	KG
2442	BARIUM HYDROXIDE	17194002	1	1	LB
2442	BENTONITE	1302789	1	100	GM
2442	BENZENE	71432	1	8	PT
2442	BLEACH	7681529	1	3.78	L
2442	BORIC ACID	10043353	2	1	LB
2442	BROMO-PHENOL BLUE	115399	1	1	LBS
2442	BUDGET SOLVE		1	3.78	L
2442	CALCIUM CHLORIDE	10043524	1	12	KG
2442	CALCIUM CHLORIDE, ANHYDROUS	10043524	3	1	LB
2442	CALCIUM CHLORIDE, DIHYDRATE	10035048	3	500	GM
2442	CALCIUM NITRATE	13477344	1	1	LB
2442	CALCIUM SULFATE	7778189	1	1	LB
2442	CALCIUM SULFATE, ANHYDROUS, 99%	7778189	2	100	GM
2414	SODIUM ARSENITE	7784465	1	100	GM
2414	SODIUM AZIDE	26628228	1	100	GM
2414	SODIUM SELENATE	13410010	1	100	GM
2414	SODIUM SELENATE	13410010	2	50	GM
2414	SODIUM SELENITE	10102188	2	100	GM
2414	SULFURIC ACID	7664939	1	2.5	L
2414	TOLUENE	108883	1	100	ML
2414	VANADIUM (V) OXIDE	1314621	1	5	GM
2428	2,4-D	94757	1	5	GM

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Room	Chemical	CAS#	# of	Size	Units
2413	ZINC ACETATE	5970456	1	1	LB
2413	ZINC CARBONATE	3486359	1	1	LB
2413	ZINC CARBONATE	3486359	1	1	LB
2413	ZINC CARBONATE	3486359	1	1	LB
2413	ZINC CHLORIDE	7646857	4	10	ML
2413	ZINC CHLORIDE	7646857	1	500	GM
2413	ZINCON	135524	2	10	GM
2413	ZINCOXIDE	1314132	1	1	LB
2413	ZINC SULFATE	7446200	1	1	LB
2413	ZINC SULFIDE	1314983	1	1	LB
2414	ACETIC ACID, GLACIAL	64197	1	2.5	L
2414	ACETONE	67641	1	4	L
2414	ALUMINUM, 1000 PPM	7647010	1	500	ML
2414	ALUMINUM, 1000 PPM	7647010	1	100	ML
2414	AMMONIUM NITRATE	6484522	3	3	KG
2414	ARSENIC ACID SODIUM SALT HEPTAHYDIIATE	10048950	1	100	GM
2414	ARSENIC 1000 PPM	1327533	1	500	ML
2414	ARSENIC TRIOXIDE (ARSENOUS ACID)	1327533	4	25	GM
2414	BORIC ACID	10043353	1	10	KG
2414	BUTYL ACETATE	123864	1	4	L
2414	CACODYLIC ACID	75605	1	25	GM
2414	CADMIUM 1000 PPM		1	500	ML
2414	HYDROCHLORIC ACID	7647010	5	2.5	L
2414	HYDROGEN FLUORIDE	7664393	1	500	ML
2414	NITRIC ACID	7697372	2	2.5	L
2414	POTASSIUM DICHROMATE	7778509	1	500	GM
2413	SODIUM PHOSPHATE	7558807	1	1	LB
2413	SODIUM PHOSPHATE, DIBASIC, ANHYDROUS	7558794	1	0.25	LB
2413	SODIUM SULFATE, ANHYDROUS	7757826	4	1	LB
2413	SODIUM SULFIDE	1313844	1	0.25	LB
2413	SODIUM TETRABORATE	1330434	1	1	LB
2413	SODIUM THIOSULFATE	7772987	3	1	LB
2413	SODIUM THIOSULFATE	7772987	1	1	LB
2413	SODIUM TUNGSTATE	10213102	1	25	LB
2413	SODIUM TUNOSTATE	10213102	1	0.25	LB
2413	STARCH	9005258	1	0.25	LB
2413	STEARIC ACID	57114	1	1	LB

Room	Chemical	CAS#	# of	Size	Units
2413	SODIUM CHLORIDE	7647145	1	1	LB
2413	SODIUM COBALTINITRITE	13600981	1	4	OZ
2413	SODIUM COBALTINITRITE	13600981	1	0.25	LB
2413	SODIUM COBALTINITRITE	13600981	1	4	OZ
2413	SODIUM COBALTINITRITE	13600981	1	125	GM
2413	SODIUM CYANIDE	143339	1	1	LB
2413	SODIUM DICHROMATE	7789120	1	1	LB
2413	SODIUM FLUORIDE	7681494	3	0.25	LB
2413	SODIUM HEXANITROCABALTATE	13600981	1	125	GM
2413	SODIUM HYDROGEN CARBONATE	144558	1	5	LB
2413	SODIUM HYDROSULEITE	7775146	1	100	GM
2413	SODIUM HYDROSULPITE	7775146	1	1	LB
2413	SODIUM HYDROXIDE	1310732	1	1	LB
2413	SODIUM HYDROXIDE	1310732	1	1	LB
2413	SODIUM HYDROXIDE	1310732	6	1	LB
2413	SODIUM IODIDE	7681825	4	0.25	LB
2413	SODIUM META-SILICATE	6834920	2	1	LB
2413	SODIUM MOLYBDATE	7631950	1	0.25	LB
2413	SODIUM MOLYBDATE	7631950	1	0.25	LB
2413	SODIUM NITRATE	7631994	1	1	LB
2413	SODIUM NITRATE	7631994	1	1	LB
2413	SODIUM OXALATE	62760	1	1	LB
2413	SODIUM OXALATE	62760	1	4	OZ
2413	SODIUM PEROXIDE	1313606	1	0.25	LB
2413	POTASSIUM NITRATE	7757791	1	5	LB
2413	POTASSIUM NITRATE	7757791	1	0.25	LB
2413	POTASSIUM PERCHLORATE	7778747	1	1	LB
2413	POTASSIUM PEIIMANGANATE	7722647	2	0.25	LB
2413	POTASSIUM PEIIMANGANATE	7722647	1	4	OZ
2413	POTASSIUM PEIIMANGANATE	7722647	2	1	LB
2413	POTASSIUM PERSULFATE	7727211	1	5	LB
2413	POTASSIUM PYROSULFATE	7646937	1	1	LB
2413	POTASSIUM SODIUM TARTRATE	6381595	1	1	LB
2413	POTASSIUM SULFATE	7778805	4	1	LB
2413	POTASSIUM SULFITE	10117381	2	10	GM
2413	POTASSIUM SULFITE	10117381	1	1	LB
2413	POTASSIUM TETPAOXALATE		1	100	GM

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Room	Chemical	CAS#	# of	Size	Units
2413	POTASSIUM ACETATE	127082	1	1	LB
2413	POTASSIUM ACID PHTHALATE	877247	1	1	LB
2413	POTASSIUM ACID PHTHALATE	877247	1	0.25	LB
2413	POTASSIUM ACID PIITEALATE	877247	1	1	LB
2413	POTASSIUM BIELUORIDE, POTASSIUM ACID FLUORIDE	7789299	1	1	LB
2413	POTASSIUM BROMATE	7758012	1	0.5	LB
2413	POTASSIUM BROMATE	7758012	1	1	LB
2413	POTASSIUM CHLORIDE	7447407	1	500	GM
2413	POTASSIUM CHLORIDE	7447407	1	1	LB
2413	POTASSIUM CHLORIDE	7447407	4	1	LB
2413	POTASSIUM CITRATE	6100056	1	5	LB
2413	POTASSIUM CYANIDE	151508	1	3	L
2413	POTASSIUM CYANIDE	151508	2	1	LB
2413	POTASSIUM DICEROMATE	7778509	1	500	GM
2413	POTASSIUM DICHROMATE	7778509	3	1	LB
2413	POTASSIUM FLUORIDE	7789233	2	4	OZ
2413	POTASSIUM HYDROGEN CARBONATE	298146	1	1	LB
2413	POTASSIUM HYDROXIDE	1310583	1	500	GM
2413	POTASSIUM IODATE	7758056	1	0.25	LB
2413	POTASSIUM IODIDE	7681110	2	0.25	LB
2413	POTASSIUM IODIDE	7681110	1	4	OZ
2413	POTASSIUM IODIDE	7681110	1	1	LB
2413	LITHIUM TETRABORATE	12007602	1	1	LB
2413	LITHIUM TETRABOIIATE	12007602	1	5	LB
2413	LITHIUM TETRABORATE	12007602	1	1	LB
2413	MAGNESIUM	7439954	1	0.25	LB
2413	MAGNESIUM	7439954	1	1	OZ
2413	MAGNESIUM ACETATE	142723	1	4	OZ
2413	MAGNESIUM CHLORIDE	7786303	1	1	GAL
2413	MAGNESIUM CHLORIDE	7786303	2	1	LB
2413	MAGNESIUM FLUORIDE	7783406	1	1	LB
2413	MAGNESIUM NITRATE, 6-HYDRATE	13446189	1	1	LB
2413	MAGNESIUM OXIDE	1309484	1	0.25	LB
2413	MAGNESIUM OXIDE	1309484	1	1	LB
2413	MAGNESIUM PERCHLORATE	10034818	1	1	LB
2413	MAGNESIUM SULFATE, ANHYDROUS	7487889	4	1	LB
2413	MANGANESE CARBONATE	598629	1	1	LB

Room	Chemical	CAS#	# of	Size	Units
2413	LEAD CARBONATE	598630	1	1	LB
2413	LEAD CHLORIDE	7758954	1	1	LB
2413	LEAD DIOXIDE	1309600	1	1	LB
2413	LEAD NITRATE	10099748	1	0.25	LB
2413	LEAD NITRATE	10099748	1	1	LB
2413	LEAD OXIDE, RED	1314416	1	1	LB
2413	LEAD OXIDE, YELLOW	1317368	1	1	LB
2413	LEAD OXIDE, YELLOW	1317368	1	1	LB
2413	LEAD SULFIDE	1314870	1	1	LB
2413	LEAD SULFIDE	1314870	1	100	GM
2413	LIQUINOX		1	1	GAL
2413	LITHIUM ACETATE	6108174	1	100	GM
2413	LITHIUM CARBONATE	554132	1	4	OZ
2413	LITHIUM CARBONATE	554132	1	0.25	LB
2413	LITHIUM CHLORIDE	7447418	2	0.25	LB
2413	LITHIUM FLUORIDE	7789244	1	0.25	LB
2413	LITHIUM METABORATE	13453695	1	5	LB
2413	LITHIUM NITRATE	7790694	4	0.25	LB
2413	LITHIUM SULFATE	10377487	1	1	LB
2413	LITHIUM SULFATE	10377487	1	0.25	LB
2413	FORMALDEHYDE	50000	1	1	PT
2413	FORMIC ACID, POTASSIUM SALT	590294	1	100	ML
2413	FULLERS EARTH	8031183	2	2	LB
2413	GERMANIUM DIOXIDE	1310538	1	25	GM
2413	GLYCEROL, GLYCERIN	56815	1	1	PT
2413	GLYCEROL, GLYCERIN	56815	1	1	PT
2413	GLYCEROL, GLYCERIN	56815	1	8	OZ
2413	GRAPHITE	7782425	1	25	GM
2413	HYDRAZINE DIHYDROCHLORIDE	5341617	1	100	GM
2413	HYDRAZINE HYDRATE	10217524	1	100	ML
2413	HYDRAZINE SULFATE	10034932	1	1	LB
2413	HYDRAZINE SULFATE	10034932	1	100	GM
2413	HYDRAZINE SULFATE	10034932	1	1	LB
2413	HYDROCHLORIC ACID	7647010	1	2.5	L
2413	HYDROCHLORIC ACID	7647010	1	5	GAL
2413	HYDROFLUORIC ACID	7664393	1	0.47	L
2413	HYDROFLUORIC ACID	7664393	10	0.5	L

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Room	Chemical	CAS#	# of	Size	Units
2413	CUPRIC SULFATE	7758987	1	5	LB
2413	DARVAN NO.4		2	1	LB
2413	DESICANT	7778189	1	500	GM
2413	DIFFUSION PUMP OIL (DOW-CORNING 704)	3390612	1	50	ML
2413	DIIODOMETHANE	75116	1	10	ML
2413	DIMETHYLGLYOXIME	95454	1	1	OZ
2413	DIPHENYLAMINEA-SULFONIC ACID, BARIUM SALT	6211241	1	5	GM
2413	DRIERITE	7778189	2	5	LB
2413	EBT	97950	1	1	GM
2413	ERIOCHROME BLACK T	1787617	1	10	GM
2413	ETHYL ACETATE	141786	1	1	PT
2413	ETHYLENE DIAMINE TETRAACETIC ACID	60004	1	1	LB
2413	ETHYLENE DIAMINE TETRAACETIC ACID	60004	1	0.25	LB
2413	ETHYLENE DIAMINE TETRAACETIC ACID, DISODIUM SALT	6381926	1	25	GM
2413	ETHYLENE DIAMINE TETRAACETIC ACID, DISODIUM SALT	6381926	1	1	LB
2413	ETHYLENE GLYCOL	107211	1	1	PT
2413	ETHYLENE GLYCOL	107211	1	1	PT
2413	FLUORESCEIN	2321075	1	25	GM
2413	BROMOPHENOL BLUE	115399	1	1	GM
2413	BROMOTHYMOL BLUE	76595	1	1	GM
2413	CADMIUM ACETATE	543908	1	4	OZ
2413	CADMIUM CHLORIDE	10108642	1	500	GM
2413	CADMIUM CHLORIDE	10108642	1	1	LB
2413	CADMIUM CHLORIDE	10108642	1	4	OZ
2413	CADMIUM HYDROXIDE	21041952	1	10	GM
2413	CADMIUM NITRATE	10022681	1	0.25	LB
2413	CADMIUM OXIDE	1306190	1	0.25	LB
2413	CADMIUM SULFATE	10124364	1	4	OZ
2413	CALCIUM ACETATE	62544	2	1	LB
2413	CALCIUM CARBONATE	471341	3	1	LB
2413	CALCIUM CHLORIDE, ANHYDROUS	10043524	2	1	LB
2413	CALCIUM CHLORIDE, DIBYDRATE	10035048	1	1	LB
2413	CALCIUM FLUORIDE	7789755	2	1	LB
2413	CALCIUM HYDROXIDE	1305620	2	1	LB
2413	CALCIUM NITRATE	13477344	1	0.25	LB
2413	CALCIUM NITRATE	13477344	1	1	LB
2413	CALCIUM OXIDE	1305788	1	1	LB

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Room	Chemical	CAS#	# of	Size	Units
2413	BARIUM CHLORIDE	10361372	4	1	LB
2413	BARIUM NITRATE	10022318	1	500	GM
2413	BASIC EUCHSIN	632995	1	50	GM
2413	BENZALKONIUM CHLORIDE	8001545	1	50	ML
2413	BENZOIC ACID	65850	1	100	GM
2413	BENZOIC ACID, SODIUM SALT	532321	1	1	LB
2413	BISMUTH	7440699	1	1	LB
2413	BISMUTH	7440699	3	0.25	LB
2413	BISMUTH(III) CHLORIDE, BISMUTH TRICHLORIDE	7787602	1	1	LB
2413	BLEACH	7681529	1	0.5	PT
2413	BLEACH	7681529	1	32	OZ
2413	BORAX GLASS	1330434	1	1	LB
2413	BORIC ACID	10043353	1	500	GM
2413	BORIC ACID	10043353	1	1	LB
2413	BORON CARBIDE	12069328	1	0.5	LB
2413	BROMOCRESOL GREEN	76608	1	1	GM
2268A	DIHYDROXYBIPHENYL, 3,4-		1	25	GM
2268A	DIPHENYLETHANOL, 2,2-	1883325	1	2	GM
2268A	GLYCEROL	56815	1	4	L
2268A	HYDROXYBENZOPHENONE, 2-	117997	1	5	GM
2268A	HYDROXYBENZOPHENONE, 3-	13020570	1	10	GM
2268A	PHENOXYETHANOL, 2-	122996	1	10	GM
2268A	XYLENES	1330207	1	4	L
2413	ACETIC ACID	64197	1	500	ML
2413	ACETIC ACID	64197	1	1	PT
2413	ACETIC ACID	64197	1	500	ML
2413	ACETIC ACID	64197	1	2.5	L
2413	ACETIC ANHYDRIDE	108247	1	0.5	PT
2413	ACETIC ANHYDRIDE	108247	1	1	L
2413	ACID TUNGATIN		1	100	GM
2413	ALCONOX DETERGENT		1	0.5	GAL
2413	ALIZARIN RED S	130223	1	25	GM
2413	ALUMINUM	7429905	2	0.25	LB
2413	ALUMINUM	7429905	1	1	LB
2413	ALUMINUM	7429905	1	1	LB
2413	ALUMINUM AMMONIUM SULFATE	7784261	1	1	LB
2413	ALUMINUM HYDROXIDE	21645512	1	1	LB

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Room	Chemical	CAS#	# of	Size	Units
2268	VERMICULITE	1318009	1	1	LB
2268	VITAMINE B12	68199	2	2	GM
2268	XYLENE,P-, HPLC GRADE	106423	1	500	ML
2268	XYLENE, M	108383	1	1	L
2268	XYLENE,O	95476	1	500	ML
2268	XYLOSE,D(+)-	58866	1	100	GM
2268	YEAST EXTRACT	8013012	2	1	LB
2268	ZINC ACETATE	5970456	1	4	OZ
2268	ZINC CHLORIDE	7646857	1	1	LB
2268	ZINC METAL, DUST	7440666	1	1	LB
2268	ZINC METAL, GRANULAR	7440666	3	1	LB
2268	ZINCON	135524	1	5	GM
2268	ZINC SULFATE	7446200	1	1	LB
2268A	AMINOBIPHENYL,2-	90415	1	25	GM
2268	THIAMINE (VIT. Bi)		3	5	GM
2268	THIMERSOL	54648	1	25	GM
2268	THIOCTIC ACID,DL-6,8-	1077287	1	5	GM
2268	THYROGLOBULIN BOVINE		1	1	VIA
2268	TIN, 325 MESH	7440315	1	100	GM
2268	TITANIUM (IV) CHLORIDE	7705679	1	10	GM
2268	TITAN YELLOW	1829001	1	25	GM
2268	TOLUALDEHYDE~4-	104870	1	100	GM
2268	TOLUENE, HPLC GRADE	108883	1	2	L
2268	TOLUENESULFONIC ACID,P-	6192525	1	100	GM
2268	P-TOLUIDINE	1064490	1	250	GM
2268	TRIAZINE,1,3,5-	290879	1	1	GM
2268	TRIBROMOBIPHENYL,2,2 5-	96117	1	10	MG
2268	TIIIBROMOBIPHENYL,2.4,6-	96117	1	25	MG
2268	TRICHLOROACETIC ACID	76039	3	500	GM
2268	TRICHLOROACETOPHENONE,2,3,4-	13608872	1	25	GM
2268	TIIICHLOROBENZENE, 1,2,3-	87616	1	100	GM
2268	TRICHLOROBENZBNB, 1,2,4-	120821	1	100	ML
2268	TIIICHLOROBENZENE, 1,2,4-	120821	1	100	ML
2268	TIIICHLOROBENZENE, 1,3,5-	108703	1	100	ML
2268	TIIICHLOROBENZOIC ACID 2,3,6-	50317	1	50	GM
2268	TIIICHLOROBENZOIC ACID,2,4,6-	50431	1	10	GM
2268	TRICHLOROBIPHENYL,2,2 5-	37680652	1	25	MG

Room	Chemical	CAS#	# of	Size Units
2268	TETRACHLORO4,4BIPHENYLDIOL,3,3 , 4,5		1	50 MG
2268	TETRACHLORO3-BIPHENYLOL,2 ,3• 4,5,-		1	10 MG
2268	TETRACHLORO4-BIPHENYLOL,2 3,4 ,5,-		1	5 MG
2268	TETRACYCLINE, FREE BASE	50548	1	5 GM
2268	TETRACYCLINE HYDROCHLORIDE	64755	1	25 GM
2268	2,2,2,4-TETRAFLUOROACETOPHENONE	655323	1	1 GM
2268	TETRAHYDROXYBIPHENYL,3~3 , ,4~4-		1	1 GM
2268	TETRAMETHYLETHYLENEDIAMINE,N,N,N-	110189	1	25 ML
2268	TETRAMET11YL-P-PHENYLENEDIAMINE--	637014	1	5 GM
2268	TETRAMETIIYLTIHURAM DISULPIDE	137268	1	500 GM
2268	TETRAZOLIUM RED		2	10 GM
2268	THAM	77861	1	500 GM
2268	SODIUM IODIDE	7681825	1	5 LB
2268	SODIUM MOLYBDATE	7631950	1	500 GM
2268	SODIUM NITRATE	7631994	2	1.25 LB
2268	SODIUM NITRITE	7632000	1	500 GM
2268	SODIUM NITRITE	7632000	1	25 GM
2268	SODIUM NITROPRUSSIDE	13755389	1	100 GM
2268	SODIUM OXALATE	62760	2	1 LB
2268	SODIUM PHOSPHATE,DIBASIC HEPTAHYDRATE	7782856	1	1 LB
2268	SODIUM PHOSPHATE, MONOBASIC	7558807	2	1 LB
2268	SODIUM PHOSPHATE, MONOBASIC DIHYDRATE	10028247	1	3 KG
2268	SODIUM PHOSPHATE, TRIBASIC	7601549	1	1 LB
2268	SODIUM SILICATE, META	6834920	1	4 OZ
2268	SODIUM SULFATE, ANHYDROUS	7757826	2	3 KG
2268	SODIUM SULFITE, NONAHYDRATE	1313844	2	500 GM
2268	SODIUM TETRATHIONATE, DIHYDRATE	1372294	1	25 GM
2268	SODIUM THIOGLYCOLLATE	367511	1	25 GM
2268	SODIUM THIOSULFATE	10102177	1	5 LB
2268	SODIUM THIOSULEATE, ANHYDROUS	7772987	1	5 LB
2268	SPADNS	23647145	1	10 GM
2268	SPECTINOMYCIN DIHYDROCHLORIDE	21736834	1	1 KG
2268	STANNIC CHLORIDE (LUMPS)	7646788	1	0.25 LB
2268	STANNOUS CHLORIDE	7772998	1	1 LB
2268	STARCH, POTATO	9005258	1	0.25 LB
2268	STARCH, SOLUBLE	9005849	1	1 LB
2268	STILBENE, CIS	645498	1	10 GM

Room	Chemical	CAS#	# of	Size	Units
2268	SODIUM CARBONATE, ANHYDROUS	497198	2	500	GM
2268	SODIUM CASEINATE	9005463	1	100	GM
2268	SODIUM CHLORIDE	7647145	1	2.5	KG
2268	SODIUM CITRATE	6132043	1	500	GM
2268	SODIUM DESOXYCHOLATE	302954	1	100	GM
2268	SODIUM DICHROMATE, TECHNICAL	7789120	2	1	LB
2268	SODIUM DITHIONITE	7775146	1	1	LB
2268	SODIUM DODECYL SULFATE (SDS)	151213	1	500	GM
2268	SODIUM HYDROXIDE	1310732	1	2.5	KG
2268	SODIUM HYDROXIDE	1310732	1	5	LB
2268	PROTAMINE SULFATE, GRADE X	9009658	1	10	GM
2268	PROTEINASE K	39450016	2	100	MG
2268	PYRAZINAMIDE	98964	1	10	GM
2268	PYRENE	129000	1	1	GM
2268	PYRIDYLHYDROXYMETHANE SULFONIC ACID, 2-	3343417	1	10	GM
2268	PYROGALLIC ACID	87661	1	100	GM
2268	PYROGALLOL	87661	1	5	LB
2268	PYRUVAT-KINASE		1	2	MG
2268	PYRUVIC ACID	127173	1	1	OZ
2268	RAFFINOSE	17629300	2	100	GM
2268	RESAZURIN	62758138	2	5	GM
2268	RESTRICTION ENDONUCLEASE, BSTE II		1	500	UNI
2268	RESTRICTION ENDONUCLEASE, NOT I		1	200	UNI
2268	RESTRICTION ENDONUCLEASE, PVU I	81295343	1	50	UNI
2268	RESTRICTION ENDONUCLEASE, SMA I	82391422	1	500	UNI
2268	RESTRICTION ENDONUCLEASE, XBA I	81295423	1	2000	UNI
2268	RESTRICTION ENZYME WITH BUFFER, RAM Hi		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, BGI II		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, ECO RI		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, HIND III		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, HPA1		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, KPN I		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, NOT I		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, PST 1		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, PVU 1		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, PVU II		1	1	UNI
2268	RESTRICTION ENZYME WITH BUFFER, SAL I		1	1	UNI

Room	Chemical	CAS#	# of	Size	Units
2268	POTASSIUM SODIUM TARTRATE	6381595	1	5	LB
2268	POTASSIUM SULFATE	7778805	3	1	LB
2268	POTASSIUM THIOCYANATE	333200	1	0.25	LB
2268	PRONASE E	9036060	2	10	GM
2268	PROPANOL,2-, HPLC GRADE	67630	1	4	L
2268	PROPIONIC ACID	79094	1	1	PT
2268	PROPIOPHENONE	93550	1	100	GM
2268	PROPYLPHENOL,2-	644359	1	25	GM
2268	PHENOL IIED SOLUTION	143748	1	100	ML
2268	PHENOSAPRANIN	81936	1	10	GM
2268	PHENOXYACETIC ACID	122598	1	100	GM
2268	PHENYL ACETATE	122792	1	100	GM
2268	PHENYLACETIC ACID	103822	1	500	GM
2268	2-PHENYLACETIC ACID	6781824	1	100	GM
2268	PHENYLBUTYRIC ACID,2-	90277	2	100	GM
2268	PHENYLBUTYRIC ACID,3-	4593902	2	10	GM
2268	PHENYLBUTYRIC ACID,4-	1821121	2	50	GM
2268	PHENYLDODECANE, 1-	123013	1	25	GM
2268	PHENYLHYDIIAZINE HYDROCHLORIDE	59881	1	10	GM
2268	PHENYLHYDROQUINONE	1079216	1	25	GM
2268	PHENYLMALONIC ACID	2613890	1	25	GM
2268	PHENYLPHENOL,2-	90437	2	500	GM
2268	PHENYLPHENOL,3-	580518	1	25	GM
2268	PHENYLPHENOL,4-	92693	1	100	GM
2268	4-PHENYLPYROCATECHOL		1	100	GM
2268	PHENYLPYRUVIC ACID,SODIUM SALT; A GRD.	114761	1	5	GM
2268	PHENYLSEPHAROSE CL4B	69106598	1	50	ML
2268	PHENYLSUCCINIC ACID	635518	5	100	GM
2268	PHENYLTOLUENE,2-	643583	1	1	GM
2268	PHENYLTOLUENE,3-	643936	1	1	GM
2268	PHENYLTOLUENE,4-	644086	1	1	GM
2268	PHENYLVALERIC ACID,5-	2270204	1	1	BOT
2268	~PHOPHOGLUCONIC ACID, TRISODIUM	53411704	1	100	MG
2268	PHOSPHATASE, ALKALINE (20 UIUL)	9001789	1	1000	UNI
2268	PHOSPHOENOLPYRUVATE		1	100	MG
2268	PHOSPHOGLUCONATE DH,6-	1336363	1	2	MG
2268	PHOSPHOGLUCONIC ACID, TRISODIUM,6-	53411704	1	100	MG

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Room	Chemical	CAS#	# of	Size	Units
2268	PHENETHYLALCOBOL, SEC	98851	1	500	GM
2268	PHENOL	108952	1	3	KG
2268	PHENOL, ACS GRADE	108952	1	500	GM
2268	PHENOLPETBALEIN	77098	2	1	LB
2268	PHENOLPHTHALEIN	77098	2	1	LB
2268	PHENOL RED	143748	1	5	GM
2268	METHYLSULPOXIDE	67685	1	1	PT
2268	MINERAL OIL	8012951	1	1	L
2268	MITOMYCIN-C	50077	1	2	MG
2268	MORPHOLINEETHANE SULPONIC ACID,4- (MES)	4432319	2	100	GM
2268	MORPHOLINEPROPANE SULEONIC ACID,4- (MOPS	133612	2	250	GM
2268	MUCOCHLORIC ACID	87569	1	100	GM
2268	MUCONIC ACID,(2) TRANS-	3588178	1	1	GM
2268	MYOKINASE	9013029	1	2	MG
2268	NADPH-PMN OXIDOREDUCTASE	9001687	1	195	MG
2268	NALIDIXIC ACID	389082	2	30	GM
2268	NAPHTHALENE	91203	1	1	LB
2268	NAPHTHOLQUINONEI SULFONIC ACID,1,2-	521244	1	25	GM
2268	NAPHTHYL, 1-ETHYLENEDIAMINE DIHYDROCHLOR	1465254	2	250	GM
2268	NAPHTHYL, 1-ETHYLENEDIAMINE DIHYDROCHLOR	1465254	2	250	GM
2268	NAPTHOL GREEN B	19381501	1	10	GM
2268	NAPTHORESORCINOL	132865	2	10	GM
2268	NEOMYCIN SULFATE	1404042	1	5	GM
2268	NEOPEPTONE		1	1	LB
2268	NIACIN	59676	1	1	LB
2268	NICKEL CHLORIDE	7718549	1	0.25	LB
2268	NICKEL SULFATE	10101970	1	4	OZ
2268	NICK TRANSLATION SYSTEM		1	50	ASS
2268	NICOTINAMIDE ADENINE DINUCLEOTIDE,P- (NA	53598	1	1	GM
2268	NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPH	53598	1	500	MG
2268	NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPH	53598	1	100	MG
2268	NICOTINAMIDEADENINEDINUCLEOTIDE PHOSPHAT	53598	1	100	MG
2268	NICOTINAMIDE ADENINE DINUCLEOTIDE REDUCE	53849	1	1	GM
2268	NICOTINAMIDE ADENINE DINUCLEOTIDE REDUCE	53849	2	1.5	GM
2268	NIGROSINE	8005036	3	25	GM
2268	NINHYDRIN	485472	1	50	GM
2268	NITRIC ACID	7697372	4	2.5	L

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Room	Chemical	CAS#	# of	Size	Units
2268	METHYL-2-OXOPENTANOIC ACID,SODIUM,3-	66872	1	5	GM
2268	METHYL-2-OXOPENTANOIC ACID,SODIUM,4-	4502005	1	5	GM
2268	METHYL RED	493527	2	0.25	LB
2268	METHYLSILYL-3-ELUOROACETAMIDE,3-		1	25	GM
2268	KARAYA GUM	9000366	1	25	GM
2268	KETOBUTYRIC ACID,2-	600180	2	35	GM
2268	KETOGLUTARIC ACID,MONOPOTASSIUM SALT,2-	997433	1	5	GM
2268	KRILLIUM SALT		1	25	GM
2268	LACTATEDEHYDROGENASE		1	10	GM
2268	LACTIC ACID,L(+)	79334	1	100	ML
2268	LACTIC ACID, LITHIUM SALT	27848802	1	25	GM
2268	LACTOSE, BACTO	5965662	1	1	LB
2268	LACTOSE,D(+)-	6044515	1	500	GM
2268	LANTHANUM OXIDE	1312818	1	250	GM
2268	LAUROYLSARCOSINE, N-	97789	2	100	GM
2268	LEAD ACETATE, BASIC C.P.	301042	1	1.5	LB
2268	LEAD ARSENATE	7784409	1	280	GM
2268	LEAD DIOXIDE	1309600	1	1	KG
2268	LEAD NITRATE	10099748	1	5	LB
2268	LEAD SULFATE	7446142	1	1	LB
2268	LEVULOSE	57487	1	1	EA
2268	LIMONENE	5989275	1	25	ML
2268	LINDANE (B H C -GAMMA ISOMER)	58899	1	1	GM
2268	LITHIUM ALUMINIUM HYDRIDE	16853853	1	100	ML
2268	LITHIUM CHLRORIDE	7447418	1	500	GM
2268	LITMUS, BACTO	1393926	1	1	LB
2268	LITMUS MILK, DEHYDRATED		1	1	LB
2268	LYSINE, MONOHYDROCHLORIDE,L-	657272	1	25	GM
2268	LYSOZYME, GRADE I	9001632	2	10	GM
2268	LYSOZYME, GRADE VI	9001632	5	5	GM
2268	LYSOZYME, GRADE VI	9001632	5	5	GM
2268	MAGNESIUM CARBONATE	546930	1	1	LB
2268	MAGNESIUM CHLORIDE	7791186	1	500	GM
2268	MAGNESIUM OXIDE, U.S.P. HEAVY	1309484	1	1	LB
2268	MAGNESIUM SULFATE	7487889	1	500	GM
2268	MALEIC ACID	110167	1	250	GM
2268	MALONIC ACID	141822	1	250	GM

Room	Chemical	CAS#	# of	Size	Units
2268	ISOPROPYL THIOGALACTO PYRANOSIDE DIOXANE	367931	3	5	GM
2268	KANAMYCIN MONOSULFATE	25389940	1	5	GM
2268	GLYCYLGLYCINE, PREE BASE	556503	1	25	GM
2268	GREISS LOSSVAY REAGENT		1	100	GM
2268	GUINEA GREEN INDICATOR	4680788	1	10	GM
2268	GUM GHAITI	9000286	1	25	GM
2268	HEXABROMOBIPHENYL (FIREMASTER BP-6)	59536651	1	10	MG
2268	HEXACHLOROBENZENE	118741	2	500	GM
2268	HEXACHLOROBIPHENYL,2,2 3,3 4,4-	38380073	1	20	MG
2268	IIEXACHLOROBIPIIENYL,2,2 4,4 5,5,-	35065271	1	20	MG
2268	HEXACHLOROCYCLOHEXANE, GAMA	58899	1	100	GM
2268	HEXACHLOROCYCLOPENTADIENE	77474	1	100	GM
2268	HEXADECYL TRIMETHYL AMMONIUM BROMIDE	57090	1	500	GM
2268	HEXADECYL TRIMETHYL AMMONIUM BROMIDE	57090	1	100	GM
2268	HEXANE, OPTIMA GRD.	110543	1	4	L
2268	HEXANES	73513425	1	4	L
2268	HEXANOPHENONE	942927	4	25	GM
2268	HYDRATROPIC ACID	492375	1	25	GM
2268	HYDRAZINE	302012	1	100	GM
2268	HYDRAZINE SULEATE	10034932	1	100	GM
2268	HYDROCHLORIC ACID	7647010	1	1	L
2268	HYDROCINNAMIC ACID	501520	2	100	GM
2268	HYDROQUINONE	123319 I		1	LB
2268	HYDROQUINONE	123319	1	5	LB
2268	HYDROXYACETOPHENONE,2-	118934	1	100	GM
2268	IIYDROXYACETOPHENONE,3 ,-	121711	1	5	GM
2268	HYDROXYACETOPHENONE,4-	99934	1	100	GM
2268	HYDROXYACYLcoA DEHYDROGENASE, BETA		1	50	MG
2268	HYDROXYBENZALDEHYDE,4-	123080	1	100	GM
2268	2-HYDROXYBENZOIC ACID	69727	1	100	GM
2268	3-HYDROXYBENZOIC ACID	99069	1	100	GM
2268	HYDROXYBENZOIC ACID,4-	99967	1	100	GM
2268	2-HYDROXYBENZOPHENONE	117997	1	5	GM
2268	HYOROXYBENZOPHENONE,3-	13020570	1	1	GM
2268	HYDROXYBENZOYL FORMIC ACID,4-		1	100	GM
2268	HYDROXYBIPHENYL,3-	580518	1	100	MG
2268	HYDROXYBIPHENYL,4-	92693	1	100	MG

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Room	Chemical	CAS#	# of	Size	Units
2268	DRIERITE, INDICATING.10-20 MESH	7778189	1	1	LB
2268	ELUTIP-D STARTER KIT (DNA)		1	15	UNI
2268	EMODIN	518821	3	100	MG
2268	EOSIN Y,BACTO-	548265	1	25	GM
2268	ERYTHROMYCIN	114078	1	5	GM
2268	ESCULIN	531759	1	25	GM
2268	ETHANESULFONIC ACID	594456	1	25	GM
2268	ETHIDIUM BROMIDE	1239458	1	5	GM
2268	ETHYL ACETATE, HPLC GRD.	141786	1	4	L
2268	ETHYLALCOHOL	64175	3	4	L
2268	ETHYLBENZILATE		1	100	GM
2268	ETHYLENE DIAMINE TETRAACETIC ACID (EDTA)	60004	2	500	GM
2268	ETHYLENE GLYCOL	107211	1	1	L
2268	ETHYLMETHANE SULFONATE	62500	1	25	GM
2268	N-ETHYL-N-NITRO-N-NITROSOGUANIDINE	4245776	1	10	GM
2268	ETHYLPHENOL,2-	90006	1	25	GM
2268	ETHYLPHENOL,3-	620177	1	25	GM
2268	ETHYLPHENOL,4-	123079	1	100	GM
2268	FERRIC AMMONIUM CITRATE	1185575	1	50	GM
2268	FERRIC AMMONIUM SULFATE	7783837	1	1	LB
2268	FERRIC CHLORIDE, LUMPS	10025771	1	1	LB
2268	FERRIC CITRATE	35222507	2	250	GM
2268	FERRIC NITRATE	10421484	2	1	LB
2268	FERRIC SULFATE	10028225	1	1	LB
2268	FERROUS AMMONIUM SULFATE	7783859	1	5	LB
2268	FERROUS CHLORIDE	7758943	1	4	OZ
2268	FERROUS SULFATE	7782630	1	1	LB
2268	FERRO ZINE, REAGENT POWDER	69898459	1	5	GM
2268	FICOLL, TYPE 400	26873858	1	25	GM
2268	FICOLL, TYPE 400	26873858	1	100	GM
2268	FLAVIN ADENINE DINUCLEOTIDE	146145	1	100	MG
2268	ELAVIN MONONUCLEOTIDE	130405	1	5	GM
2268	FLORISIL	1343880	1	1	KG
2268	FLUOROACETOPHENONE,2-	445272	1	5	GM
2268	FLUOROACETOPHENONE,3	455367	1	2	GM
2268	FLUOROACETOPHENONE,4-	403429	1	25	GM
2268	DIMETHYLAMINOBENZALDEHYDE,P-	110107	1	100	GM

Room	Chemical	CAS#	# of	Size	Units
2268	DICHLOROPHENOL,2,5-	583788	1	250	GM
2268	DICHLOROPHENOL,2,6-	87650	1	25	GM
2268	DICHLOROPHENOL,3 4-	95772	1	25	GM
2268	DICHLOROPHENOL,3 5-	591355	1	10	GM
2268	DICHLOROPHBNOXYACETIC ACID,2,4- (2.4-D)	94757	1	250	GM
2268	DICHLOROPROPIONIC ACID, SODIUM SALT,2,3-	127208	1	100	GM
2268	DICHLOROQUINONE CHLOIIIMIDB,2,6-	101382	1	10	GM
2268	DICHLOROSALICYLALDEHYDE,3,5-	90608	1	25	GM
2268	DICHLOROTOLUENE,2,4-	95738	1	100	GM
2268	DICHLOROTOLUENE,2,6-	118694	1	100	GM
2268	DICHLOROTOLUENE,3,4-	95750	1	100	GM
2268	DIIITHYLDITHIOCARBAMIC, SODIUM SALT	20624253	1	100	GM
2268	DIFLUOROBENZOIC ACID,2,3-	4519395	1	1	GM
2268	DIFLUOROBENZOIC ACID,2,5-	2991288	1	1	GM
2268	DIFLUOROBIPIIFNYL,2,2-	388829	1	2.5	GM
2268	DIFLUOROBIPHENYL,4,4-	398232	1	5	GM
2268	DIHYDROXYBENZOIC ACID,2,3-	303388	1	5	GM
2268	DIHYDROXYBENZOIC ACID,2,4-	89861	1	100	GM
2268	DIHYDROXYBENZOIC ACID,2,5-	490799	1	100	GM
2268	DIHYDROXYBENZOIC ACID,2,6-	303071	1	25	GM
2268	DIHYDROXYBENZOIC ACID,3,4-	99503	1	100	GM
2268	DIHYDROXYBENZOIC ACID,3,5-	99105	1	25	GM
2268	DIHYDROXYBENZOPHENONE,4,4-	611994	1	10	GM
2268	DIHYDROXYBIPHENYL,2,3-		1	I~00	GM
2268	DIHYDROXYBIPHENYL,2,5-		2	125	GM
2268	DIHYDROXYBIPHENYL,3 3,-		1	100	MG
2268	DIHYDROXYBIPHENYL,3 4-		1	100	MG
2268	DIHYDROXYBIPHENYLACETIC ACID,2,5-		1	1	BOT
2268	2,7-DIHYDROXYNAPHTHALENE	582172	1	5	GM
2268	DIIODOBENZENE, 1,4-	624384	2	100	GM
2268	DIIODOBENZOIC ACID,2,5-		1	10	GM
2268	DIMETHOXYBIPHENYL,3 3,-	6161508	1	20	GM
2268	DIMETHOXYBIPHENYL,4,4-	2132801	1	1	GM
2268	DIMETHOXYPROPANE,2,2-	77769	1	500	GM
2268	D1CHLOROACETOPHENONE,3 , 4-	2642639	1	25	GM
2268	DICHLOROBENZENB, 1,2-	95501	1	100	GM
2268	DICHLOROBENZENE, 1,3-	541731	1	100	GM

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Room	Chemical	CAS#	# of	Size	Units
2268	CUPRIC CHLORIDE, DIHYDRATE	10125130	1	0.25	LB
2268	CUPRIC SULFATE, ANHYDROUS	7758987	2	1	LB
2268	CYCLOHEXANE	110827	1	1	L
2268	CYCLOHEXIMIDE	66819	1	5	GM
2268	CYCLOSERINE,D-	68419	1	1	GM
2268	CYCLOSERINE, R-+-	68417	1	5	GM
2268	CYMENE	99876	1	500	ML
2268	CYSTEINE HCL, ANHYDROUS	3374229	1	5	GM
2268	CYSTINE, L~	56893	1	100	GM
2268	DECACHLOROBIPHENYL,2,2 3,3,4,4 5,5.6	2051243	1	90	MG
2268	DEOXYRIBONUCLEASE 1	9003989	1	100	MG
2268	DEOXYRIBONUCLEIC ACID, TYPE III	9003989	2	1	GM
2268	DEUTERIUM OXIDE	7789200	10	50	ML.
2268	DEVARDAS ALLOY	8049114	1	1	LB
2268	DEXTROSE	50997	3	1	LB
2268	DEXTROSE	50997	1	5	LB
2268	DIAMINOPLUORENE,2,7-	525644	1	1	GM
2268	DIANILINOETHANE, 1,2-	150618	1	25	GM
2268	DIANISIDINE,A-, ZINC CHLORIDE COMPLEX	40615392	1	100	GM
2268	DIAPHORASE, CLOSTRIDIUM RLUYVERI		1	100	UNI
2268	DIAZALD	80115	2	100	GM
2268	DIBENZO-P-DIOXIN	262124	30	300	MG
2268	DIBROMOBENZENE, 1,4-	106376	1	100	GM
2268	DIBROMOBENZOIC ACID,2,5-	610719	2	5	GM
2268	DIBROMOBENZOIC ACID,3,5-	618586	2	1	GM
2268	DIBROMOHIPHENYL,2,2 -	96128	2	20	GM
2268	DrnROMOBIPIIENYL,2,5-	96128	1	25	MG
2268	DIBROMOBIPHENYL,4,4-	82864	1	25	GM
2268	DIBROMOTOLUENE,2,6-	69321	1	5	GM
2268	DICHLOROACETOPHENONE,2 .4-	2234164	1	25	GM
2268	DICHLOROACETOPHENONE,2,5-	2476371	1	10	GM
2268	DICHLOROACETOPHENONE,2,6-	2040053	1	1	GM
2268	CHLOROPROPRIONIC ACID,2-	598787	2	100	GM
2268	CHLORORESORCINOL,4-	95885	1	100	GM
2268	CHLOROSALICYLALDEHYDE,5-	635938	1	25	
2268	CHLOROSALICYLIC ACID,3-	1829329	1	5	
2268	CIILOROSALICYLIC ACID,4-	5106989	1	100	

Room	Chemical	CAS#	# of	Size	Units
2268	CHLOROCATECHOL,4-	2138229	1	1	GM
2268	CHLOROCROTONIC ACID,CIS-3-		1	1	GM
2268	CHLORODECANE, 1-	1002693	1	100	GM
2268	CHLOROPORM	67663	1	1	L
2268	CHLOROHYDROQUINONE	615678	1	100	GM
2268	CIILOROA-HYDROXYBENZOIC ACID,3-	3964587	1	5	GM
2268	CHLOROMANDELIC ACID,4-	63917055	1	10	GM
2268	CIILORO-2-METHYLANILINE, 3-	87605	1	5	GM
2268	CHLORO-2-METHYLBENZOIC ACID,3-		1	500	GM
2268	CHLORO-2-METHYLBENZOIC ACID,4-	1642815	1	250	GM
2268	CIILORO-2-METHYLIIENZOIC ACID, 6-		1	100	GM
2268	CHLORO-5-METHYLBENZOIC ACID,2-		1	5	GM
2268	CHLOROOCTANE, 1-	111853	1	100	GM
2268	CIILOROPHENACYL BROMIDE,4-	536389	1	25	GM
2268	CHLOROPHENOL, 0-	95578	1	25	GM
2268	CHLOROPHENOL, M-	108430	1	3	KG
2268	CHLOROPHENOL, P-	4525751	1	100	GM
2268	CHLOROPHENOXY ACETIC ACID,P-	122883	2	100	GM
2268	2-CHLOROPHENYL ACETIC ACID	4525751	1	100	GM
2268	CHLOROPHENYIACETIC ACID,4-	1878666	1	100	GM
2268	4-CHLOROPHENYLETHANOL	3391104	1	25	GM
2268	CHLOROPHENYLMETHYLCA1133INOL,2-	19819955	1	10	GM
2268	CHLOROPHENYLMETHYLCAIIIIINOL,3-	5182445	1	5	GM
2268	CHLOROPHENYLMETHYLCA1111INOL,4-	1875883	1	10	GM
2268	CHLOROPHTHALIC ANHYDRIDE,3-		1	5	GM
2268	CIILORO- 1 ,2-PROPANDIOL,3-	96242	1	500	ML
2268	CHLOROPROPANE, 1-	540545	1	100	GM
2268	CIILORO-I-PROPANOL,3-	627305	1	500	ML
2268	CHLOROPROPIONIC ACID,3-	107948	1	25	GM
2268	CHLOROPROPIOPHENONE,4-	6285058	1	25	GM
2268	CALCIUM NITRATE	13477344	2	5	LB
2268	CALCIUM SULFATE	7778189	1	1	LB
2268	CARBENICILLIN	4697363	1	1	GM
2268	CARBOL FUCHSIN SOLUTION	4197244	1	250	ML
2268	CARBON, ACTIVATED	7440440	1	3	KG
2268	CARBON, ACTIVATED	7440440	1	250	GM
2268	CARBON DISULHDE	75150	2	2.5	L

Room	Chemical	CAS#	# of	Size	Units
2268	BROMOPHENOL RED, FREE ACID		1	5	GM
2268	BROMOPYRUVIC ACID HYDRATE,3-	1113593	1	5	GM
2268	BROMOSALICYLIC ACID,5-	89554	1	25	GM
2268	BROMOTHYMOL BLUE, NA SALT	34722902	1	10	GM
2268	BROTH, MALT EXTRACT	9002480	2	1	LB
2268	BROTH, NITRATE		1	1	LB
2268	BROTH, SABOURAND MALTOSE	69794	1	1	LB
2268	BROTH, TRIPLE SOY		2	1	LB
2268	BROTH, UREA	57136	1	1	LB
2268	BUTANONE,2-	78933	2	100	GM
2268	T-BUTYLAMINE	75649	1	1	L
2268	BUTYLCATECHOL,4-TERT-	98293	1	100	GM
2268	BUTYLPEENOL, 2-SEC	89725	1	100	GM
2268	BUTYLPEENOL, 2-TERT	88186	2	500	GM
2268	BUTYLPEENOL, 3-TERT	585342	1	25	GM
2268	BUTYRIC ACID,N-	107928	1	1	PT
2268	BUTYROPHENONE	495409	1	125	GM
2268	BUTYROPHENONE,2-	495409	1	100	GM
2268	CADMIUM	7440439	2	1	LB
2268	CADMIUM	7440439	1	4	OZ
2268	CADMIUM CHLORIDE, ANHYDROUS	10108642	1	1	LB
2268	CADMIUM CHLORIDE, DIHYDRATE	7760785	1	0.25	LB
2268	CALCIUM CARBONATE	471341	2	3	KG
2268	CALCIUM CHLORIDE	10035048	1	5	LB
2268	CALCIUM CHLORIDE	10035048	1	1	LB
2268	CALCIUM CHLORIDE, ANHYDROUS	10043524	1	1	LB
2268	CALCIUM CHLORIDE, DIHYDRATE	10035048	2	500	GM
2268	CALCIUM HYDROXIDE	1305620	1	1	LB
2268	RENZYL ALCOHOL	100516	1	500	ML.
2268	BENZYLCATECHOL,4-		1	0.15	GM
2268	BENZYL CHLORIDE	100447	1	1	GM
2268	BENZYL3 4-DIHYDROXYCROTONIC ACID,2-		1	5	GM
2268	BENZYLMALONIC ACID	616751	1	5	GM
2268	BIOTIN II-UTP	58855	1	25	GM
2268	BIOTIN (VIT. H)	58855	2	1	RX.
2268	BiPHENOL,2,2~-	1806297	1	25	GM
2268	BIPHENOL,4,4 -	92886	1	10	GM

Room	Chemical	CAS#	# of	Size	Units
2268	AROCLOR 1016 (STANDARD)	12674112	2	100	MG
2268	AROCLOR 1221 (STANDARD)		2	100	MG
2268	AROCLOR 1232 (STANDARD)	1114165	3	10	MG
2268	AROCLOR1232 (STANDARD)	1114165	1	10	MG
2268	AROCLOR 1242 (STANDARD)	53469219	4	100	MG
2268	AROCLOR 1248 (STANDARD)	12672296	8	10	MG
2268	AROCLOR 1254 (STANDARD)	11097691	5	100	GM
2268	AROCLOR 1260 (STANDARD)	11096825	1	100	MG
2268	ASCARITE	81133202	1	500	GM
2268	ASCORBIC ACID, 1-	50817	1	25	GM
2268	ASCORBIC ACID,L+	50817	1	100	GM
2268	BACITRACIN	1405874	1	2	GM
2268	BARIUM CARBONATE	513779	1	500	GM
2268	BARIUM CHLORIDE	10361372	2	500	GM
2268	BARIUM HYDROXIDE	17194002	2	500	GM
2268	BARIUM SULFATE	7727437	2	1	LB
2268	BASIC FUCHSIN,BACTO-	632995	1	25	GM
2268	BCIP		2	2	ML..
2268	BENZALDEHYDE	100527	1	1	KG
2268	BENZOIC ACID	65850	2	500	GM
2268	BENZOIC ACID	65850	1	1	KG
2268	BENZO(O)PYRENE		1	100	MG
2268	BENZOPHENONE	119619	1	500	GM
2268	BENZOYLBUTYRIC ACID,4-	1501059	1	10	GM
2268	BENZOYLFORMIC ACID	611734	1	10	GM
2268	BENZOYLVALERIC ACID,5-		1	10	GM
2268	AGAROSE, DNA GRADE	9012366	1	100	GM
2268	AGAROSE, "SEAPLAQUE"	9012366	1	100	GM
2268	AGAR, PEPTONE IRON	9002180	1	1	LB
2268	AGAR, POTATO DEXTROSE	9002180	2	1	LB
2268	AGAR, PSEUDOMONAS P	9002180	1	0.25	LB
2268	AGAR, PURIfIED	9002180	1	0.25	LB
2268	AGAR, SABOURAND DEXTROSE	9002180	2	1	LB
2268	AGAR, SNYDER TEST	9002180	1	1	LB
2268	AGAR, TRIPLE SUGAR IRON	9002180	1	1	LB
2268	AG (DOWEX)50w-X8;200-4OOMESH	81405858	1	1	LB
2268	ALBUMIN, BOVINE	9048468	1	50	GM

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Room	Chemical	CAS#	# of	Size	Units
2265	SODIUM HYDROXIDE PELLETS	1310732	1	1	KG
2265	SULEURIC ACID	7664939	1	2.5	L
2265	TETRABROMOETHANE	79276	1	500	ML
2265	TOLUENE	108883	1	500	ML
2265	TRITON X-100	9002931	2	100	ML
2268	ABIETIC ACID	514103	2	25	GM
2268	ACETALDEHYDE	75070	1	1	PT
2268	ACETIC ACID, GLACIAL	64197	2	2.5	L
2268	ACETIC ACID, NA SALT	127093	1	1	KG
2268	ACETIC ACID, NA SALT	127093	1	500	GM
2268	ACETONE, HPLC GRD	67641	1	4	L
2268	ACETOPHENONE	98862	1	1	PT
2268	ACETYL ACETONE	123546	1	500	ML
2268	ACRYLAMIDE	79061	3	100	GM
2268	ACRYLAMIDE ORANGE		1	5	GM
2268	ADENOSINE-5-TRIPHOSPHATE	51963612	1	1	GM
2268	AGAR, RACTO	9002180	1	1	LB
2268	AGAR, BACTO SS	9002180	1	1	LB
2268	AGAR, BUGM		1	1	LB
2268	AGAR, DESOXYCHOLATE		1	1	LB
2268	AGAR, DESOXYCHOLATE CITRATE		1	1	LB
2268	AGAR, MACCONKEY #3		1	1	LB
2268	AGAR, MICRO ASSAY CULTURE		1	1	LB
2268	AGAR, NOBLE	9002180	3	1	LB
2247	XYLENE CYANOLE FF	2650171	1	10	GM
2247	YEAST EXTRACT	8013012	1	1	LB
2247	YEAST EXTRACT	8013012	1	250	GM
2247	ZINC, A.A. STANDARD		1	100	ML
2247	ZINC ACETATE	5970456	1	1	LB
2247	ZINC DUST	7440666	1	2	GM
2247	ZINC MOSSY	7440666	1	1	GM
2247	ZINC SULFATE	7446200	1	500	GM
2247	ZINC SULFATE	7446200	1	1	LB
2265	ACETONE	67641	1	1	L
2265	ACETONITRILE	75058	1	1	L
2265	ACETYL ACETONE	123546	1	500	ML
2265	BENZENE	71432	1	500	ML

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Room	Chemical	CAS#	# of	Size	Units
2247	TETRAMETHYLENEDIAMINE, N,N,N N-	110189	1	10	ML
2247	THIAMINE	67038	1	100	GM
2247	THIOSEMICARBAZIDE	79196	1	100	GM
2247	THYMOL	89838	1	25	GM
2247	THYMOL	89838	1	5	GM
2247	THYMOL BLUE	76619	1	5	GM
2247	TIN (GRANULAR)	7440315	1	0.25	LB
2247	TIN, MOSSY	7440315	1	1	LB
2247	TOLUENE	108883	1	4	L
2247	TRICHLOROACETIC ACID	76039	1	100	GM
2247	TRICHLOROACETIC ACID	76039	2	50	UL
2247	1 2,3-TRIKETOHYDRINDENE	485472	2	25	GM
2247	TRIS(CARBOXYMETHYL)-ETHYLENEDIAMINE-AGAROSE		1	1	GM
2247	TRIS CRYSTALLIZED FREE BASE	77861	2	500	GM
2247	TRIS (HYDROXYMETHYL)-AMINOMETHANE HYDROCHLORIDE	1185531	1	100	GM
2247	TRITON X-100 (REDUCED)	9002931	1	5	GM
2247	TRYPAN BLUE	72571	1	25	GM
2247	TRYPTONE		2	1	LB
2247	TWEEN-20	9005645	1	100	ML
2247	TWEEN-IO	9005656	1	500	ML
2247	UREA	57136	1	500	GM
2247	UREASE	9002135	1	5	GM
2247	SILVER STAIN DEVELOPER	30525894	4	115	GM
2247	SILVER SULFATE	10294265	1	4	OZ
2247	SODIUM ACETATE	127093	5	500	GM
2247	SODIUM AZIDE	26628228	1	100	GM
2247	SODIUM AZIDE	26628228	1	25	GM
2247	SODIUM BICARBONATE	144558	2	5	LB
2247	SODIUM BISULFITE	7631905	1	5	LB
2247	SODIUM BISULFITE	7631905	1	1	LB
2247	SODIUM BORATE	1303964	1	5	LB
2247	SODIUM CARBONATE, ANHYDROUS	497198	1	1	LB
2247	SODIUM CARBONATE, MONOHYDRATE	5968116	3	1	LB
2247	SODIUM CHLORIDE	7647145	1	5	LB
2247	SODIUM CHLORIDE	7647145	1	1	KG
2247	SODIUM CHLORIDE	7647145	2	500	GM
2247	SODIUM CITRATE (CRYSTALS)	6132043	2	500	GM

Room	Chemical	CAS#	# of	Size	Units
2247	PYRIDOXINE	65236	1	50	GM
2247	3-(2-PYRIDYL-5,6-BIS (4-PHENYLSULFONIC ACID)-1,2,4-TRIAZINE (FERROUS)		1	25	GM
2247	8-QUINOLINOL	148234	1	5	GM
2247	RIBONUCLEASE A	9001994	1	10	MG
2247	RIBONUCLEASE A	9001994	1	50	MG
2247	RIFAMPICIN	13292461	1	100	MG
2247	RIFAMPICIN	13292461	1	1	GM
2247	RUBIDIUM CHLORIDE	7791119	2	100	GM
2247	SALICYLIC ACID, CRYSTAL	69727	1	1	LB
2247	SCINTIGEST		1	100	ML
2247	SCINTIVERSE II	95636	2	4	L
2247	SCINTIVERSE IV		1	4	L
2247	SELENIUM (CHIPS)	7782492	1	0.25	LB
2247	SEPHADEX G-10	9050684	2	10	GM
2247	SEQUETSENE ZN 45 (CHELATE)		1	50	GM
2247	SILICA GEL DRY	63231674	1	5	LB
2247	SILICA GEL DRY	63231674	1	500	GM
2247	SILICA GELINDICATING	63231674	1	1	LB
2247	SILICICACID	7699414	1	1	LB
2247	SILVER NITRATE, CRYSTAL	7761888	1	16	OZ
2247	OCTADECANE	593453	1	500	GM
2247	OCTYL B-D-GLUCOPYRANOSIDE, N-	29836268	1	5	GM
2247	OSMIC ACID	20816120	1	0.25	GM
2247	PARAFFIN OIL	8012951	1	1	QT
2247	2,2,4,5,5-PENTACHLOROBIPHENYL	37680732	1	10	MG
2247	PENTACHLOROPHENOL	87865	1	100	GM
2247	PHENANTHRENE	85018	1	100	GM
2247	PHENANTHROLINE FERROUS SULFATE, 1,10-	14634914	1	118	ML
2247	PHENANTHROLINE MONOHYDRATE, 1,10-	5144898	1	5	GM
2247	PHENANTHROLINE, 0-	66717	1	5	GM
2247	PHENOL, CRYSTALS	108952	2	500	GM
2247	PHENOL LIQUEFIED	108952	1	1	L
2247	PHENOLPHTHALEIN	77098	1	10	GM
2247	PHENOL RED	143748	1	5	GM
2247	PHENYLMETHYL SULFONYL FLUORIDE	329986	1	5	GM
2247	2-PHENYLPHENOL	90437	1	200	MG
2247	PHOSPHORIC ACID, 85%	7664382	1	5	PT

Room	Chemical	CAS#	# of	Size	Units
2247	NADPH, B- TETRA SODIUM SALT	121051	1	25	MG
2247	NALIDIXIC ACID	389082	1	25	GM
2247	NEOMYCIN SULEATE	1404042	1	5	GM
2247	NIACINAMIDE	98920	1	100	GM
2247	NICKEL CHLORIDE	7718549	1	250	GM
2247	NICOTINAMIDE ADENINE DINUCLEOTIDE, B- (REDUCED)	53849	1	1	GM
2247	NICOTINIC ACID	59676	1	100	GM
2247	NITRIC ACID	7697372	1	2.5	L
2247	NITRIC ACID, TRACE METAL GRADE	7697372	1	2.5	L
2247	NITRIC ACID, TRACE METAL GRADE	7697372	1	500	ML
2247	NITRILOTRIACETIC ACID	139139	1	100	GM
2247	NITRILOTRIACETIC ACID	139139	1	100	GM
2247	NITRILOTRIETHANOL, 2,2,2- (95+%)	120716	1	1	KG
2247	4-NITRO BLUE TETRAZOLIUM CHLORIDE	298839	1	1	GM
2247	NITROGEN	7727379	1	255	ET3
2247	P-NITROPHENOL	100027	1	100	GM
2247	4-NITROPHENYL PHOSPHATE DISODIUM SALT, HEXAHYDRATE	4264839	1	10	GM
2247	NONIDET P40	9036195	1	50	ML
2247	HYDROXYLAMINE HYDROCHLORIDE	5470111	1	100	GM
2247	1(2-HYDROXY -1 NAPHTHYLAZO) 5-NITRO-2-NAPHTHOL-4-SULFONIC ACID SODIUM		1	100	GM
2247	8-HYDROXYQUINOLINE	148243	1	100	GM
2247	HYPOPHOSPHORUS ACID	6303215	1	1	LB
2247	INDOLEACETIC ACID, 3-	87514	1	5	GM
2247	INOSINE 5 DIPHOSPHATE (IDP)	81012886	1	100	MG
2247	P-IODONITROTETRAZOLIUM VIOLET	146689	2	5	GM
2247	P-IODONITROTETRAZOLIUM, VIOLET	146689	2	5	GM
2247	IRON, A.A. STANDARD		1	100	ML
2247	IRON METAL PILINGS	7439896	1	5	LB
2247	ISOBUTYL ALCOHOL	78831	1	1	PT
2247	ISOPRENE	78795	2	100	ML
2247	ISOPRENE	78795	2	5	ML
2247	ISOPROPYL THIO B D-GALACTOSIDE	367931	2	1	GM
2247	JACK BEAN MEAL		2	454	GM
2247	KANAMYCIN MONOSULFATE	25389940	2	5	GM
2247	LACTIC ACID	50215	1	500	ML
2247	N-LAUROYLSARCOSINE	97789	1	100	GM
2247	LEAD NITRATE	10099748	1	1	LB

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Room	Chemical	CAS#	# of	Size	Units
2247	GLYCEROL	56815	1	1	L
2247	GLYCEROL	56815	1	4	L
2247	GLYCINE	56406	1	500	GM
2247	GRAMICIDIN	1393880	1	500	MG
2247	GUM ARABIC	9000015	1	1	LB
2247	HDTMA		1	100	GM
2247	HEEDTA	13899	2	500	GM
2247	HELIUM	7440597	2	291	ET3
2247	HEPTACHLOR	76448	4	5	GM
2247	HEXANE	110543	3	4	L
2247	HISTIDINE MONOHYDROCHLORIDE, L(+)-	7048024	1	100	GM
2247	HISTOWAX GRANULAR	143271	1	1	LB
2247	HYDROCHLORIC ACID	7647010	2	2.5	L
2247	HYDROCHLORIC ACID	7647010	1	32	OZ
2247	HYDROFLUORIC ACID	7664393	1	1	LII
2247	HYDROGEN	1333740	1	193	FT3
2247	DICHLOROPHENOXYACETIC ACID, 2,4-	94757	1	100	GM
2247	2,4-DICHLOROPHENOXYACETIC ACID, METHYL ESTER	1928387	1	1	GM
2247	DIELDRIN	60571	5	5	GM
2247	DIMETHYLEORMAMIDE, N,N-	68122	2	500	ML
2247	N,N-DIMETHYL EORMAMIDE	68122	1	500	ML
2247	DIMETHYL SULEOXIDE	67685	1	500	ML
2247	DINITROPHENOL, 2,4-	51285	1	100	GM
2247	2,2-DIPYRIDYL	366187	1	10	GM
2247	DISODIUM ETHYLENEDIAMINE TETRAACETATE	6381926	1	500	GM
2247	DITHIOTEREITOL	27565419	1	5	GM
2247	DOWEX 50WX4-100	11113614	1	100	GM
2247	DOWEX SOWX4-400	11113614	1	500	GM
2247	DOWEX SOW-X8	11119678	4	1	LB
2247	DRIERITE	7778189	2	1	LB
2247	DTPA	67436	1	250	GM
2247	DUOLITE ES 346		1	1	KG
2247	EDDHA	1170021	1	5	GM
2247	EDTA TETRASODIUM SALT	64028	1	500	GM
2247	ELECTRODE EILING SOLUTION		1	500	ML
2247	ENDRIN	72208	5	5	GM
2247	ETHANOL, 95%	64175	1	4	L

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Room	Chemical	CAS#	# of	Size	Units
2247	DEAE SEPHAROSE CL-6B	7635032	1	100	ML
2247	DEOXYCHOLIC ACID SODIUM SALT	302954	1	25	GM
2247	DEVARDAS ALLOY, GRANULAR	8049114	3	1	LB
2247	DEXTRAN T-500		1	500	GM
2247	DEXTROSE	50997	1	1	LB
2247	DICAMBA	141387	1	100	GM
2247	DICAMBA	141387	2	5	GM
2247	2,2-DICHLOROBIPHENYL	13029088	1	0.5	ML
2247	2,2-DICHLOROBIPHENYL	13029088	1	1	ML
2247	4,4-DICHLOROBIPHENYL	2050682	1	30	MG
2247	4,4 -DICELOROBIPHENYL	2050682	1	200	MG
2247	4,4-DICHLOROBIPHENYL	2050682	1	60	MG
2247	DICHLORODIMETHYL SILANE, 99%	75785	1	100	GM
2247	1 ,2-DICHLOROETHANE	107062	1	500	ML
2247	BUGM CULTURE MEDIUM		1	1	LB
2247	CAEEEIC ACID	331395	1	5	GM
2247	CALCEIN INDICATOR		2	5	GM
2247	CALCIUM ACETATE	62544	1	1	LB
2247	CALCIUM CAREONATE (2)	471341	1	3	KG
2247	CALCIUM CHLORIDE, ANHYDROUS	10043524	1	500	GM
2247	CALCIUM HYDROXIDE	1305620	1	1	LB
2247	CALCIUM NITRATE	13477344	9	500	GM
2247	CALCIUM NITRATE	13477344	1	5	LB
2247	CALCIUM OXIDE	1305788	1	1	LB
2247	CALCIUM PHOSPHATE, MONOBASIC, MONOHYDRATE	7758238	1	1	LB
2247	CALCIUM SULPATE, DIHYDRATE	10101414	1	500	GM
2247	CALCON	2538854	2	10	GM
2247	((CARBOXYMETHYL)IMINO)BIS~(ETHYLENINITRILE)) TETRAACETIC ACID		1	500	GM
2247	CABMINIC ACID (DYE)	1260179	1	10	GM
2247	CARVACROL	499752	1	10	GM
2247	CARVONE, L~ AND R-	6485401	1	10	GM
2247	CARVONE, L- AND R-	6485401	1	90	GM
2247	CARVONE, 5-	6485401	1	10	GM
2247	CARVONE, 5-	6485401	1	50	GM
2247	CASAMINO ACIDS		1	0.25	LB
2247	CELITE	61790532	1	1	LB
2247	CELLULOSE POWDER	9004346	1	1	LB

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Room	Chemical	CAS#	# of	Size	Units
2247	2,2-BIPHENOL	1806297	1	500	MG
2247	BIPHENYL	92524	1	1	KG
2247	BIS(TRIMETHYLSILYL) TRIPLUOROACETAMIDE	255561302	8	1	ML
2247	BIURET	108190	1	5	GM
2247	BLUE DEXTRAN	9049325	1	1	GM
2247	BORIC ACID	10043353	2	500	GM
2247	BRILLIANT BLUE G	6104581	1	25	GM
2247	BRILLIANT BLUER	6104592	1	5	GM
2247	5-BROMO4-CHLORO-34NDOLYL B D-GALACTOPYRANOSIDE	7240906	1	100	MG
2247	BROMOCIIESOL GREEN	76608	2	5	GM
2247	BROMOPHENOL BLUE	115399	1	5	GM
2247	BROMOTHYMOL BLUE	76595	1	5	GM
2247	ACETONITRILE	75058	1	4	L
2247	ACRYLAMIDE SOLUTION	79061	1	1	L
2247	ADENOSINE~5-TRIPHOSPHATE	51963612	3	1	GM
2247	ADENOSINE~5-TIIIPHOSPHATE, MAGNESIUM SALT	74804129	2	1	GM
2247	AGAR (NOBLE)	9002180	1	1	LB
2247	AGAR, PURIEIED GRADE	9002180	1	500	GM
2247	AIR, COMPRESSED	26635885	2	260	FT3
2247	ALDRIN	309002	4	5	GM
2247	ALUMINUM POTASSIUM SULFATE	7784249	1	1	LB
2247	ALUMINUM SULFATE	7784318	1	5	LB
2247	AMBERLITE ARC 718	79620283	1	500	GM
2247	AMBERLITE IR12O-C.P., MEDIUM POROSITY	78922040	1	1	LB
2247	AMBERLITE IR-120+, SODIUM FORM	78922040	1	500	GM
2247	AMINO ACID COLLECTION	70473	22	1	GM
2247	1-AMINO-2-NAPHTIIOLA-SULFONIC ACID	116632	1	25	GM
2247	AMITROLE	61825	1	10	GM
2247	AMMONIUM ACETATE	631618	3	500	GM
2247	AMMONIUM BICARBONATE	1066337	1	500	GM
2247	AMMONIUM CARBONATE	506876	1	500	GM
2247	AMMONIUM CHLORIDE	12125029	1	500	GM
2247	AMMONIUM FORMATE	540692	1	500	GM
2247	AMMONIUM HYDROXIDE	1336216	2	2.5	L
2247	AMMONIUM NITRATE	6484522	7	500	GM
2247	AMMONIUM PERSULFATE	7727540	1	25	GM
2247	AMMONIUM PHOSPHATE, DIBASIC	7783280	1	1	LB

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Room	Chemical	CAS#	# of	Size	Units
2233	HYDROGEN PEROXIDE, 30%	7722841	6	500	ML
2233	NEOCUPROINE		1	25	GM
2233	POTASSIUM PHOSPHATE	7778770	3	500	GM
2233	PUMP OIL	64742547	1	1	L
2233	PUMP OIL	64742547	1	4	L
2233	SODIUM SULFATE, ANHYDROUS	7757826	1	3	KG
2247	ABIETIC ACID	514103	1	2	GM
2247	ACETIC ACID	64197	1	2.5	L
2247	ACETIC ANHYDRIDE	108247	1	1	L
2247	ACETONE	67641	1	4	L
1510	PETROLEUM ETHER, HIGH BOILING	8032324	1	20	L
1510	PETROLEUM ETHER, LOW BOILING	8032324	2	20	L
1510	TOLUENE	108883	2	20	L
1510	VACUUM PUMP OIL	64742547	1	5	GAL
2226	ALUMINUM CHLORIDE, ANHYDROUS	7446700	1	500	GM
2226	CADMIUM OXIDE	1306190	1	100	GM
2226	CADMIUM SULFIDE	1306236	1	500	GM
2226	CHLOROACETIC ACID	79118	1	500	GM
2226	FORMALDEHYDE	50000	1	500	ML
2226	HYDROFLUORIC ACID	7664393	1	4	L
2226	HYDROFLUORIC ACID	7664393	1	500	ML
2226	HYDROQUINONE	123319	1	500	GM
2226	LANTHANUM CHLORIDE POWDER	1312818	2	100	GM
2226	LEAD ACETATE, TRIHYDRATE	6080564	1	500	GM
2226	LEAD OXIDE	1317368	1	500	GM
2226	MERCURIC CHLORIDE	7487947	1	100	GM
2226	MERCURIC OXIDE RED	21908532	1	500	GM
2226	MERCURIC THIOCYANATE	592858	1	100	GM
2226	MERCUROUS SULFATE	7783359	1	100	GM
2226	METHANOL	67561	1	4	L
2226	METHYLTHYMOL BLUE	1945773	4	10	GM
2226	NAPHTHYL ETHYLENEDIAMINE,DIHYDROCHLORIDE	1465254	3	25	GM
2226	NICKELOUS CARBONATE X H20	3333673	1	100	GM
2226	NICKELOUS CHLORIDE	7718549	1	100	GM
2226	NICKELOUS NITRATE	13478007	1	500	GM
2226	NICKEL OXIDE	1313991	1	500	GM
2226	NITRIC ACID	7697372	6	2	L

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Room	Chemical	CAS#	# of	Size	Units
1510	ACETONE	67641	1	200	L
1510	BAYOL-35 (HYDIIAULIC FLUID)	35335605	1	55	GAL
1510	DICHLOROMETHANE	75092	3	20	L
1510	ETHYLENE GLYCOL	107211	2	20	L
1510	ETHYL ETHER	60297	2	20	L
1510	ISOPROPYL ALCOHOL	67630	3	20	L
1510	METHANOL	67561	4	20	L
1510	PENTANE	109660	2	20	L
1464	BARIUM CHLORIDE	10361372	1	1	LB
1464	HYDROFLUORIC ACID 52%	7664393	1	1	LB
1501	ACETONE	67641	14	4	L
1501	ACETONE	67641	2	1	GAL
1501	ACETONE	67641	4	4	L
1501	ACETONITRILE	75058	6	4	L
1501	ACETONITRILE	75058	2	4	L
1501	ALCOHOL, REAGENT	64175	1	2	L
1501	AMYL ALCOHOL	71410	3	4	L
1501	AQUASOL-2		2	4	L
1501	BENZENE	71432	3	1	GAL
1501	BENZENE	71432	1	8	PT
1501	BENZENE	71432	4	4	L
1501	BENZENE	71432	3	4	L
1501	BIOCOUNT	112492	11	1	GAL
1501	BUTYL ALCOHOL	71363	3	4	L
1501	CARBON DISULFIDE	75150	6	2.5	L
1501	CARBON TETRACHLORIDE	56235	1	2	L
1501	CAEBON TETRACHLORIDE	56235	1	4	L
1501	CHLOROFORM	67663	1	1	GAL
1501	CHLOROFORM	67663	1	1	GAL
1501	CYCLOHEXANE	11082	3	1	GAL
1501	1 ,4-DICHLOROBUTANE	110576	1	4	L
1501	DIMETHYLAMINE	124403	1	4	L
1501	ETIIOXYETHANOL, 2-	110805	2	3	KG
1501	ETHOXYETHANOL, 2-	11080	1	1	KG
1501	ETHYL ACETATE	141786	1	1	L
1501	GLYCERINE	56815	1	4	L
1501	HEXANE	110543	15	1	GAL

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Room	Chemical	CAS#	# of	Size	Units
1463A	TRISODIUM PHOSPHATE	7601549	1	5	LB
1463A	VINYL LEATHER AND PLASTIC CLEANER SPRAY		1	20	OZ
1463A	WD-40	8052413	1	9	OZ
1463A	WELD STEEL		1	1	OZ
1463A	WELD STEEL HARDENER		1	1	OZ
1463A	WELDWOOD CONTACT CEMENT		1	3	OZ
1463A	ELECTRICAL CEMENT		1	3	LB
1463A	ELECTRIC HEATER CEMENT		1	5	LB
1463A	ELECTRO WASH		1	24	OZ
1463A	EPOXIDE HARDENER (BUEHLER)	96093	1	4	OZ
1463A	EPOXIDE HARDENER (BUEHLER)	96093	1	1	QT
1463A	EPOXIDE RESIN (BUEHLER)	96093	1	1	QT
1463A	EPOXIDE IEESIN (BUEHLER)	96093	1	1	GAL
1463A	EPOXY (DEVCON)	25068386	2	1	OZ
1463A	EPOXY HARDENER (DEVCON)		2	1	OZ
1463A	ETHANOL	64175	1	1	GAL
1463A	ETHANOL	64175	1	1	GAL
1463A	ETHYLENE GLYCOL	107211	1	1	PT
1463A	ETHYLENE GLYCOL	107211	1	1	GAL
1463A	FABRIC COLOR SPRAY		1	12.5	OZ
1463A	FILLER		1	8	OZ
1463A	FURNITURE WAX SPRAY		1	14	OZ
1463A	GLASS WAX		1	16	OZ
1463A	HYDROCHLORIC ACID	7647010	8	1	OZ
1463A	IMMERSION OIL		1	0.5	OZ
1463A	IMMERSION OIL		1	1	OZ
1463A	INSA-LUTE ADHESIVE CEMENT		1	1	QT
1463A	INSA-LUTE HI-TEMP CEMENT		1	1	QT
1463A	ISOPROPYL ALCOHOL	67630	1	5	OZ
1463A	LAQUER SANDING SEALER		2	1	GAL
1463A	LAQUER THINNER		1	1	GAL
1463A	LARD OIL	8016282	1	1	QT
1463A	LATEX GLOSS ENAMEL		1	8	OZ
1463A	LENS CLEANER		2	1.25	OZ
1463A	LINSEED OIL	8001261	1	1	GAL
1463A	LOW EXPANSION CEMENT		1	5	LB
1463A	LUBE GREASE		2	14	OZ

Room	Chemical	CAS#	# of	Size	Units
1463A	CHARCOAL LIGHTER		1	1	QT
1463A	CUTTING FLUID		2	1	QT
1463A	DUCO CEMENT		2	1.75	OZ
1463	EPOXY HARDENER		1	32	OZ
1270	POTASSIUM CHLORIDE	7447407	4	500	GM
1270	POTASSIUM CHLORIDE	7447407	1	2.5	KG
1270	2-PROPANOL (ISOPROPYL ALCOHOL)	67630	2	4	L
1270	SILVER OXYLATE		1	1	OZ
1270	SODIUM CHLORIDE	7647145	2	3	KG
1270	SODIUM HYDROXIDE PELLETS	1310732	1	5	LB
1270	WAY OIL TONNA V #68		1	5	GAL
1323	ACETIC ACID	64197	2	2.5	L
1323	ACETONE	67641	1	1	L
1323	BLEACH	7681529	1	64	OZ
1323	KEROSENE	8008206	1	1	L
1421	GLYPTAL		1	500	ML
1421	ODDS N ENDS SPRAY ENAMEL		1	3	OZ
1421	PHOTO MOUNT 3M		1	10	OZ
1421	RUST REMOVER (ROVER)		1	2	OZ
1421	SPRAY PAINT		1	12	OZ
1463	ABRASIVE POWDER		2	10	LB
1463	ABRASIVE POWDER		3	4	LB
1463	ACETONE	67641	1	1	PT
1463	ACETONE	67641	1	1	GAL
1463	ALIZARIN RED 5	130223	1	1	OZ
1463	AMMONIUM ACETATE	631618	1	500	GM
1463	AMMONIUM CHLORIDE	12125029	1	1	LB
1463	AMMONIUM HYDROXIDE	1336216	5	2	L
1463	BAKING SODA	144558	1	5	LB
1463	BUTVAR ACRYLIC	63148652	1	1	LB
1463	CALCIUM CARBONATE	471341	1	5	LB
1463	CANADA BALSAM	8007474	1	1	LB
1463	CANADA BALSAM	8007474	1	1	LB
1463	CATALYST HARDENER		1	2	OZ
1463	CLOROX BLEACH	7681529	1	0.5	GAL
1463	COMET/AJAX CLEANSER	7722885	2	14	OZ
1463	ELETROWASH		1	24	OZ

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Room	Chemical	CAS#	# of	Size	Units
1270	MAGNESIUM OXIDE	1309484	1	1	LB
1270	PAINT THINNER (KLEAN-STRIP)		1	1	GAL
464	SPRAY MOUNT		3	13	OZ
464	STANDARD SOLUTIONS 10 uGM/ML; 1% HNO3 (Mg, Ca, Al, Fe, Mn, Z, Pb, REE		11	250	ML
464	SULFURIC ACID	7664939	1	500	L
ACAGE	ARGON	7440370	2	120	FT3
ACAGE	CARBON DIOXIDE	124389	1	120	FT3
ACAGE	NITROGEN	7727379	1	120	FT3
B-1	ACETONE	67641	1	4	L
B-2	ACETONE	67641	2	1	PT
B-2	ACETONE	67641	1	2	L
B-2	BARIUM HYDROXIDE	17194002	1	1	LB
B-2	HYDROCHLORIC ACID	7647010	2	6	LB
B-2	LANTHANUM NITRATE	10277437	1	6	OZ
B-2	LEAD DIOXIDE	1309600	1	1	LB
B-2	MANGANESE DIOXIDE	1313139	2	1	LB
B-2	POTASSIUM CHLORATE	3811049	5	500	GM
B-2	POTASSIUM DICHROMATE	7778509	1	1	LB
B-2	POTASSIUM FERROCYANIDE	14459951	1	250	GM
B-2	POTASSIUM HYDROXIDE	1310583	2	1	LB
B-2	SILVER OXIDE	20667123	1	1	OZ
B-2	SILVER SULFATE	10294265	1	25	GM
B-2	SODIUM DITHIONITE	7775146	2	1	LB
B-2	SODIUM HYDROXIDE	1310732	2	1	LB
B-2	SODIUM NITRATE	7631994	1	0.25	LB
B-2	TRICHLOROCARBANILIDE, 3,3,4-	101202	1	500	GM
B-213	ACETONE	67641	10	4	L
B-213	BRIGHT GOLD		1	2	GM
B-213	LITHIUM CARBONATE	554132	1	50	GM
B-213	RUBIDIUM SULFATE	7488542	1	10	GM
B-213	SCANDIUM OXIDE	12060081	1	1	GM
B-213	SPECTROFLUX		4	1	KG
DOWN	SHELL PELLA OIL A (ROCK SAW OIL)	6472467	1	55	GAL

APPENDIX

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10. College of Natural & Agricultural Sciences, Environmental Health & Safety Laboratory Safety Design Guide, Draft Version, March 11, 1999.

11. University of California Riverside, College of Natural & Agricultural Sciences, Detailed Project Program: Laboratory Center, by SRG Partnership, Inc.

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14. University of California Riverside, Preliminary Geotechnical Investigation Report Proposed Laboratory Center, by Converse Consultants.

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16. University of California Riverside, Record Drawings of Physical Science Addition, (Project #89550), April 1959, by Bennett & Bennett Architects.

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APPENDIX

11.1 Executive Summary

The Detailed Project Program for the *Geology Building Renovation* project was completed in August of 2001. At that time, the direct construction cost of the project was estimated to be $21.3 million excluding soft costs and escalation beyond September 2004. Only $5.0 million of state funding had been earmarked for the project in the 2004-2005 budget year. As a consequence, an alternative plan for the phased implementation of the project was developed. Four (4) separate construction phases were identified with completion of the final phase in December of 2009.

In the fall of 2002, $11,560,000.00 in state funding was earmarked for the project in the 2005-06 budget year. Consequently, the project scope has been revised. Construction is expected to proceed in 2005-06 and be completed within eighteen (18) months.

11.2 Revised Project Scope

The project will include the following specific scope:

- **Completion of HVAC Upgrades** (Unfinished deferred maintenance work)
  - Demolition of ductwork, fan coil units, and vertical fumehood exhausts.
  - Installation of branch ducting, diffusers and controls.
  - Installation of new fumehood exhaust ducts from labs to the roof.
  - Hazardous materials abatement.

- **Completion of Building System Upgrades**
  - Upgrade of 12KV electrical service
  - Replacement of windows and sunshades
  - Replacement of HVAC systems to the labs
  - Replacement of electrical services to the labs
  - Replacement of plumbing services to the labs and restrooms
  - Fire protection: installation of an automatic fire protection system, fire riser, FDC alarm, and backflow preventor
  - Seismic enhancement
  - Replacement of interior partitions, doors, and finishes as required by the systems upgrade work
  - Replacement of functional equipment (restrooms)
  - ADA upgrades
  - Hazardous materials abatement

- **Geology Building Renovations**
  - Renovation of the second floor to accommodate the *Department of Environmental Sciences*
  - Renovation of the first floor/center wing to accommodate departmental offices for the *Department of Earth Sciences* and *Institute of GeoPhysics* and *Planetary Physics (IGPP)*
  - Renovation of area of the first floor/south wing vacated by the departmental offices for research labs

11 ADDENDUM

11.3 Project Scope Eliminated

The following scope items previously included in the *Geology Building Renovation* project have been eliminated:

- Construction of a new stair, elevator, and shaft adjacent to the north wing.
- Renovation of the remaining area of the first floor (future project).
- Renovation of the basement (future project).
- Renovation of the subbasement.
- ADA upgrades to the existing elevator (to the completed as a separate project).

11.4 Project Phasing

PHASE 1 - SECOND FLOOR	ASF	GSF
• Renovate Center Wing	2,800	
• Renovate North Wing	8,120	
• Renovate South Wing	9,068	
SUBTOTAL	*19,988*	*33,313*
PHASE II - FIRST FLOOR	**ASF**	**GSF**
• Renovate Center Wing	2,400	
• Renovate North Wing (partial)	2,624	
SUBTOTAL	*5,024*	*8,373*
TOTAL RENOVATED SPACE	*25,012*	*41,686*

* Building systems upgrade work 56,043 GSF to proceed independently

11.5 Project Budget

The construction cost for the in March 2003 dollars is estimated to be as follows:

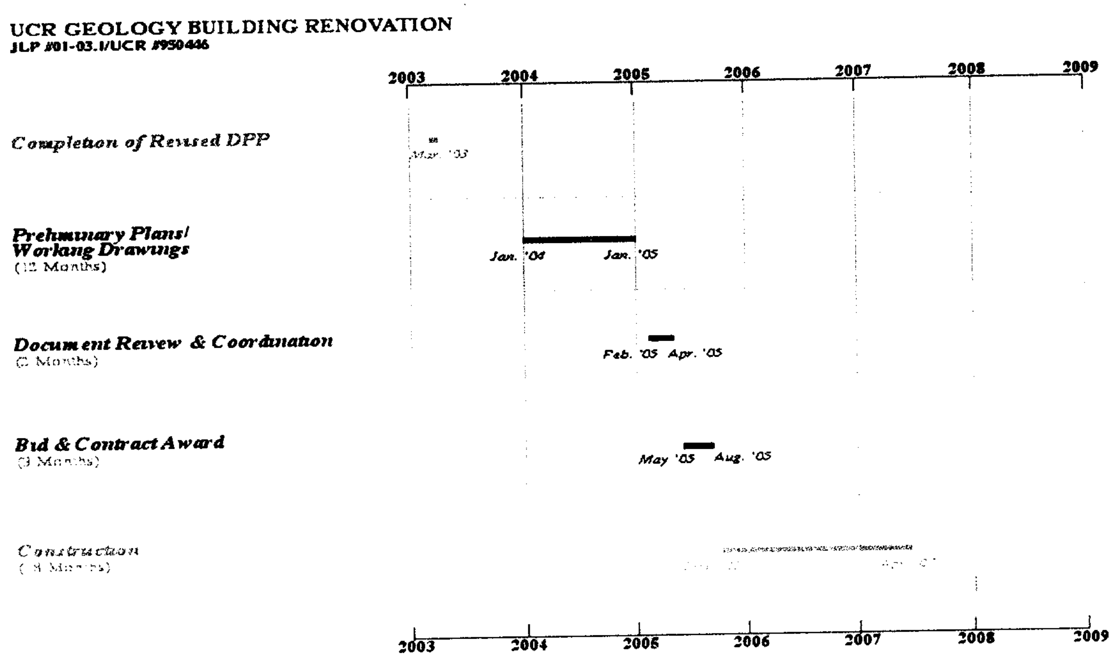
• Completion of HVAC Upgrades	$1,085,000.00
• Completion of Building System Upgrades	$550,000.00
- Center Wing	$489,000.00
- South Wing	$1,266,000.00
- North Wing	$4,043,000.00
• Geology Building Renovations	$4,127,000.00
• ***Project Total***	***$11,560,000.00***

11

ADDENDUM

11.6 Project Schedule

The following is the anticipated schedule for the *Geology Building Renovation* project is as follows:



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CONSTRUCTION BUDGET COST ESTIMATE

for

RENOVATIONS TO GEOLOGY BUILDING

at

UNIVERSITY of CALIFORNIA at RIVERSIDE

11-Mar-03

NJF Associates Inc.

NJFA 30109

RENOVATIONS TO GEOLOGY BUILDING
UNIVERSITY of CALIFORNIA at RIVERSIDE

NJFA 30109
11-Mar-03

CONSTRUCTION BUDGET COST ESTIMATE
PROJECT HARD COSTS SUMMARY

				2003 costs	2006/2007 costs
1 Geology Building Renovations			$/SF	$,000	$,000
1.1 Deferred maintenance completion (per UCR memo 01/27/03)				1,085	1,085
1.2 Budget allowances for system upgrades: Electrical (per consultant's estimate)				550	616
Building and systems					
Center Wing	16,300	OGSF	30.00	489	548
South Wing	21,100	OGSF	60.00	1,266	1,418
North Wing	53,900	OGSF	75.00	4,043	4,528
1.3 Completion of Geology Renovations				4,127	4,752
Total for Geology Renovations:	91,300	SF	127.00	**$11,560**	**$12,947**

Note: Escalation allowance of 12% included to anticipated mid-point of construction at say Jan-2007

NJF Associates Inc.