

LD
6501
L27
S55

1973

LD
6501
L27
S55

27498

Date Due			
MAR 10 '67			
MAR 5 '68			
MAR 31 '69			
MAY 2 '69			
OCT 10 '69			
APR 17 '70			
OCT 30 '71			

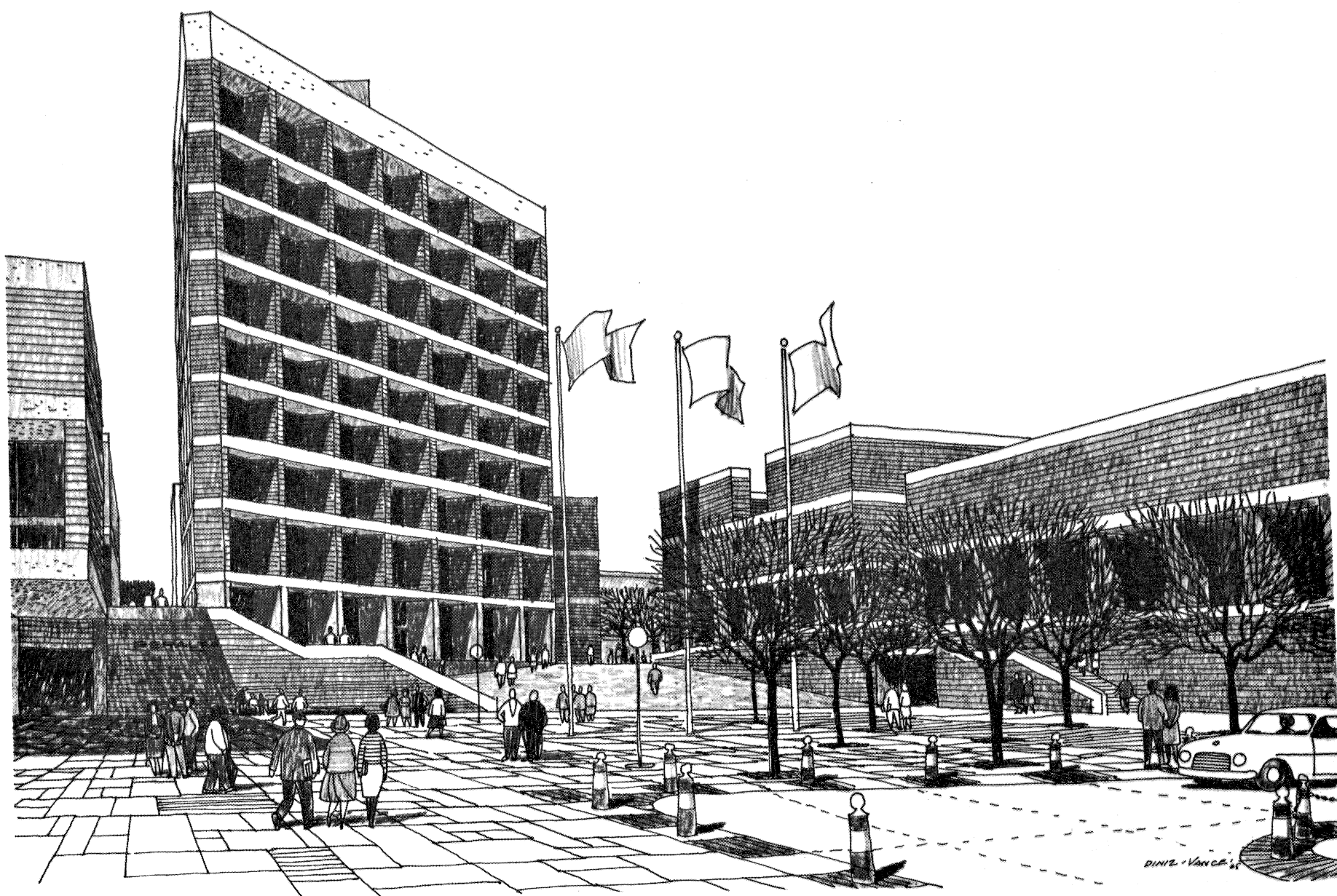
Peralta Colleges Civic Center Campus Master Plan & Schematic Design

May 16, 1966

Skidmore, Owings & Merrill, Architects.

Contents

	Page
Preface	5
Introduction	9
General Description	13
Master Plan Studies	14
Site and Building Program	23
Schematic Design	25
Materials Description	39
Schematic Cost Estimate	40
Critical Path	41
Site Survey	44
Soil Investigation	45



Preface

tion that is suitable for all portions of the site. The types of foundations that could be used to support the buildings at this site are spread footings, driven piles, and pier and beam foundations. The proposed location of this tunnel is shown on the site survey. It is proposed to construct the tunnel as a pile supported structure 30 feet below the ground surface. A dewatering system is to be installed during construction, but the finished tunnel will probably be designed to be water tight and to resist the hydrostatic pressures due to the ground water. The dewatering during construction and even any leakage into the tunnel after construction can cause settlement of the adjacent ground. Even a very small amount of seepage is enough to appreciably lower the water pressure and increase the effective stress in clayey soils such as are at the site. In addition to the settlement due to lowering the ground water, there could be random settlements of several inches due to ground disturbance during construction. This disturbance could be due to pile driving or yielding of the sides of the tunnel excavation. The area affected by the disturbance would extend some 50 to 100 feet on either side of the tunnel. It is apparent from the above discussion that the Rapid Transit Tunnel will affect the design of the foundations of the adjacent buildings, but no definite conclusions can be reached until the construction schedule and the design of the tunnel are available.

SETTLEMENT

Fill - It is proposed to place 10 feet of new fill in the open center area of the site. The thickness of fill will decrease to zero at the perimeter classroom buildings. The first floor of the interior buildings will be at about the existing grade so that the new fill will just be placed around the outside of these structures. About 5 to 15 feet of compressible soil underlie the area of the proposed fill. The maximum settlement is expected to be about 9 inches. This primary settlement should occur within about 2 years after the new fill has been placed. After this time, there will be a continuing secondary settlement occurring at an initial rate of 1/4 to 1/2 inch per year. The rate of secondary settlement will decrease with the passage of time to a rate of less than 1/10 inch per year after 5 years.

Buildings that are constructed on pile foundations before a large portion of the settlement has occurred will appear to rise out of the ground. Also, large settlements of the fill around piles will result in a large increase in pile load through negative skin friction. Therefore, it would be desirable to place the new fill as far in advance of the building construction as possible in order to allow a portion of the settlement to occur before the buildings are constructed.

Continuing Settlement - Computation of the past consolidation pressure from the results of the consolidation tests shows that for sample 12-5-2, the past consolidation pressure is less than the overburden pressure 1000 ksf vs. 1800 ksf. The soil is underconsolidated and settlement resulting from virgin consolidation may be now occurring. Calculation shows that this additional settlement can be as much as 10 inches in the vicinity of Hole 12 - the Forum and building B. However, the time necessary for all this settlement is so great that only a small amount will probably be noticed during the life

MAJOR ENTRY AND ADMINISTRATION TOWER

FOUNDATIONS

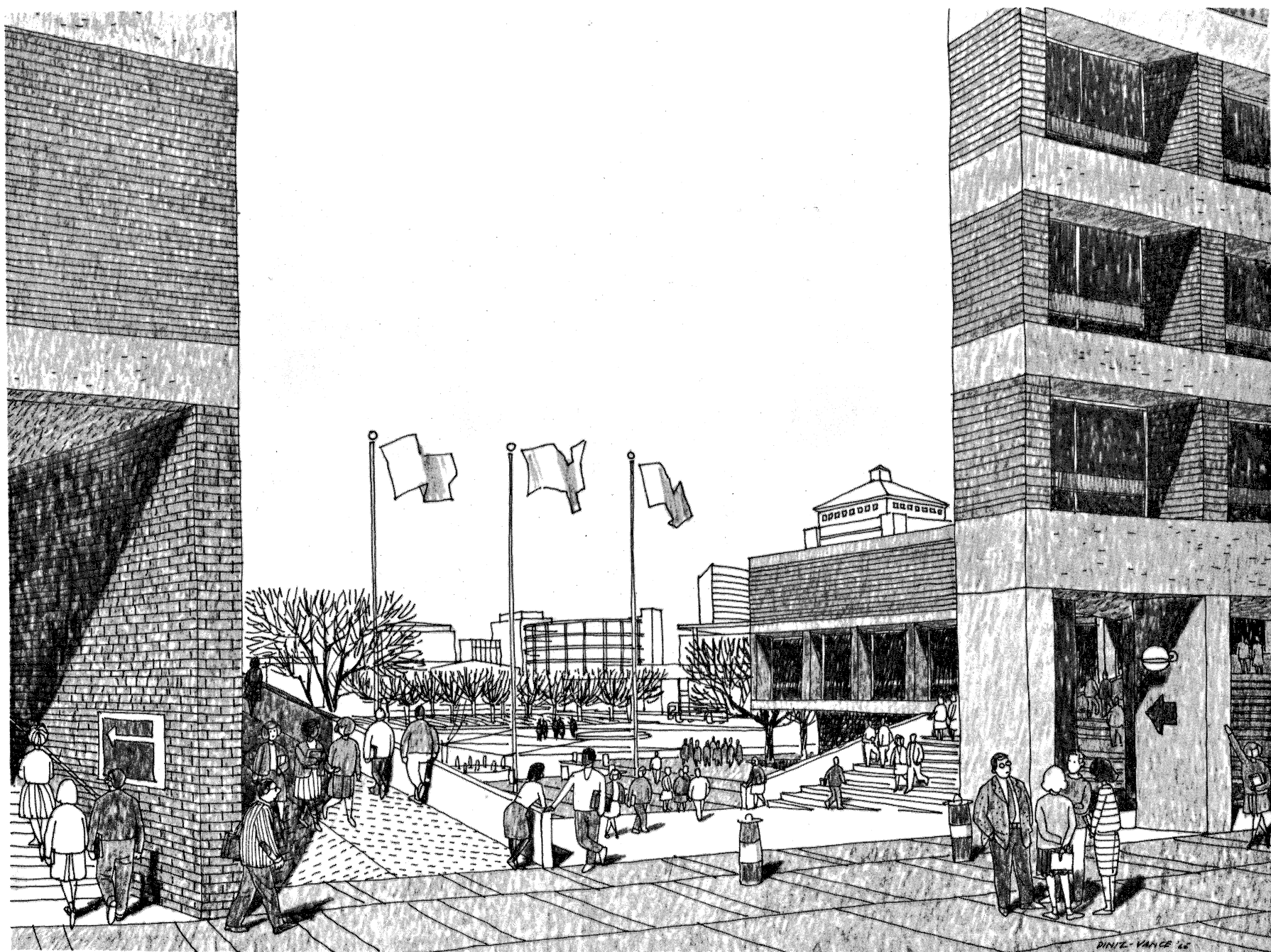
Introduction - Each building will have different foundation requirements. Some of the buildings are underlain by a large depth of soft Bay Mud while others appear to be underlain by firm bearing material. The former condition seems to dictate the use of deep piles and, the latter, spread footings. Also, there are intermediate subsurface conditions between the two extremes where the best type of foundation is not so well defined. The basic types of foundations are first discussed and then specific foundation discussions for each building follow. Several alternate foundation types are discussed for some of the buildings so that due consideration can be given to each type. However, since some pile foundations are going to be required at this site, it may

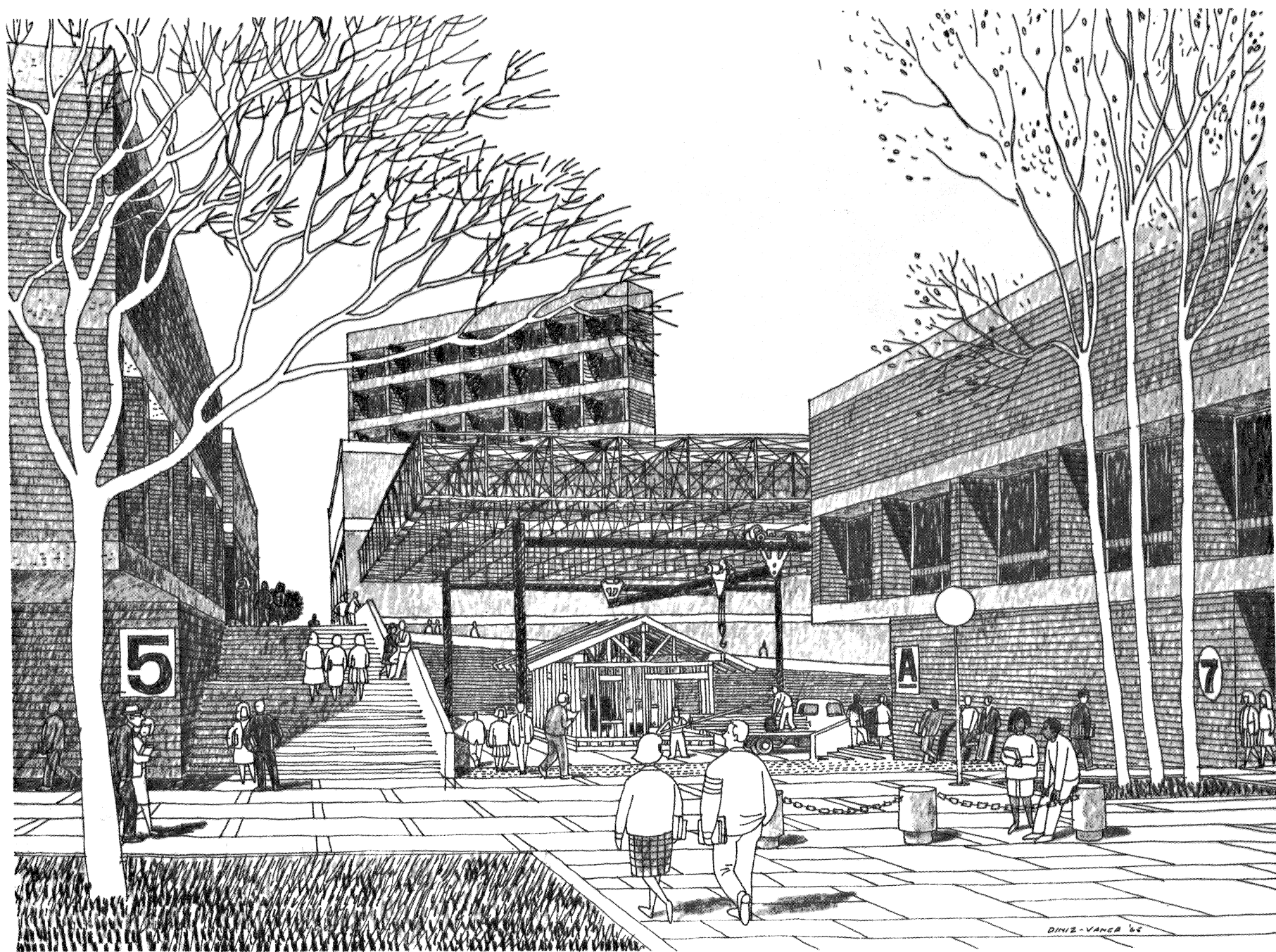
The report, therefore, consists of two parts; Master Planning work and the Schematic Design work. The next phase of the project will be Definitive Design which is expected to be completed by August 15, 1966. Upon approval of the Definitive Design, the working drawings or contract drawing work will commence and will be completed in accordance with the enclosed critical path schedule.

At this point in time there have been great strides made in coordination of the various activities of the agencies which have an affect on the site. These include Bay Area Rapid Transit with its transit tube under the site, the Flood Control District which has proposed a new pumping station to be located at a realigned 8th Street intersection of the Lake Merritt Channel, the City of Oakland insofar as acquisition of the City properties is concerned particularly the Exposition Building, the City Engineering Department regarding the realignment of 8th Street, and the Redevelopment Agency concerning the acquisition of the remaining property not owned by the City of Oakland. It is a question, however, whether or not the additional properties to be obtained through the Redevelopment process will be acquired before construction is scheduled to commence due to the delays in the URA.

The Architects wish to express their appreciation for the cooperation and efforts of the Administration and Faculty of the Laney College in the development of the program requirements and to express a special appreciation for the efforts of Mr. John Finn who has coordinated the work with the Architects and Faculty. ■

LOOKING OUT FROM MAJOR ENTRY ◊





Introduction

EDUCATIONAL PHILOSOPHY AND OBJECTIVES OF THE PERALTA DISTRICT

We believe that a democratic, constitutional society which values freedom demands an informed, participating citizenry. We accept the heavy responsibility that this places upon the two year college.

We believe in the dignity and worth of each individual, and, cognizant of differences in abilities, skills, experiences, and purposes, we believe in equal and diversified opportunity for all who need and can profit by the type and level of instruction which the college is empowered to provide. We accept the responsibility to provide a broad educational program which recognizes the needs of all students. We support the idea that a broad education should precede or accompany the training of the specialist to the end that such specially trained citizens will have breadth of view and flexibility of mind along with specific competences.

We believe that the college is dedicated to serving the community by exerting leadership in identifying the educational needs of the community, providing programs to fill these needs, and evaluating the effectiveness of these programs.

We believe that the heart of any college is the students and faculty, without whose energetic support and cooperation the institution cannot exist. And we further believe that a commitment to academic freedom is basic to the existence of an intellectually sound college environment for both faculty and students.

In order to realize our stated philosophy, we acknowledge the obligation of providing complementary facilities and services in adult education, guidance and counseling, and student activities, including competitive and intramural athletics.

OBJECTIVES

We subscribe to the democratic ideals of a free society. As such, we recognize that we have a responsibility toward the individual, toward the community of which we are a part, and toward society as a whole. As a comprehensive institution of higher education, we seek to meet these needs through:

General Education - Emphasis upon learning experience which help students attain that knowledge, achieve those skills, and develop those appreciations, attitudes, and values which all individuals need for an effective and well-balanced life in a democratic society. All classes and college activities have responsibilities toward the realization of this objective.

Lower Division Education - Courses which will enable students, including those who matriculate with scholastic deficiencies, to complete the first two years of four-year college and university programs. These courses satisfy the lower division requirements in liberal arts, in engineering, and in most scientific and professional fields.

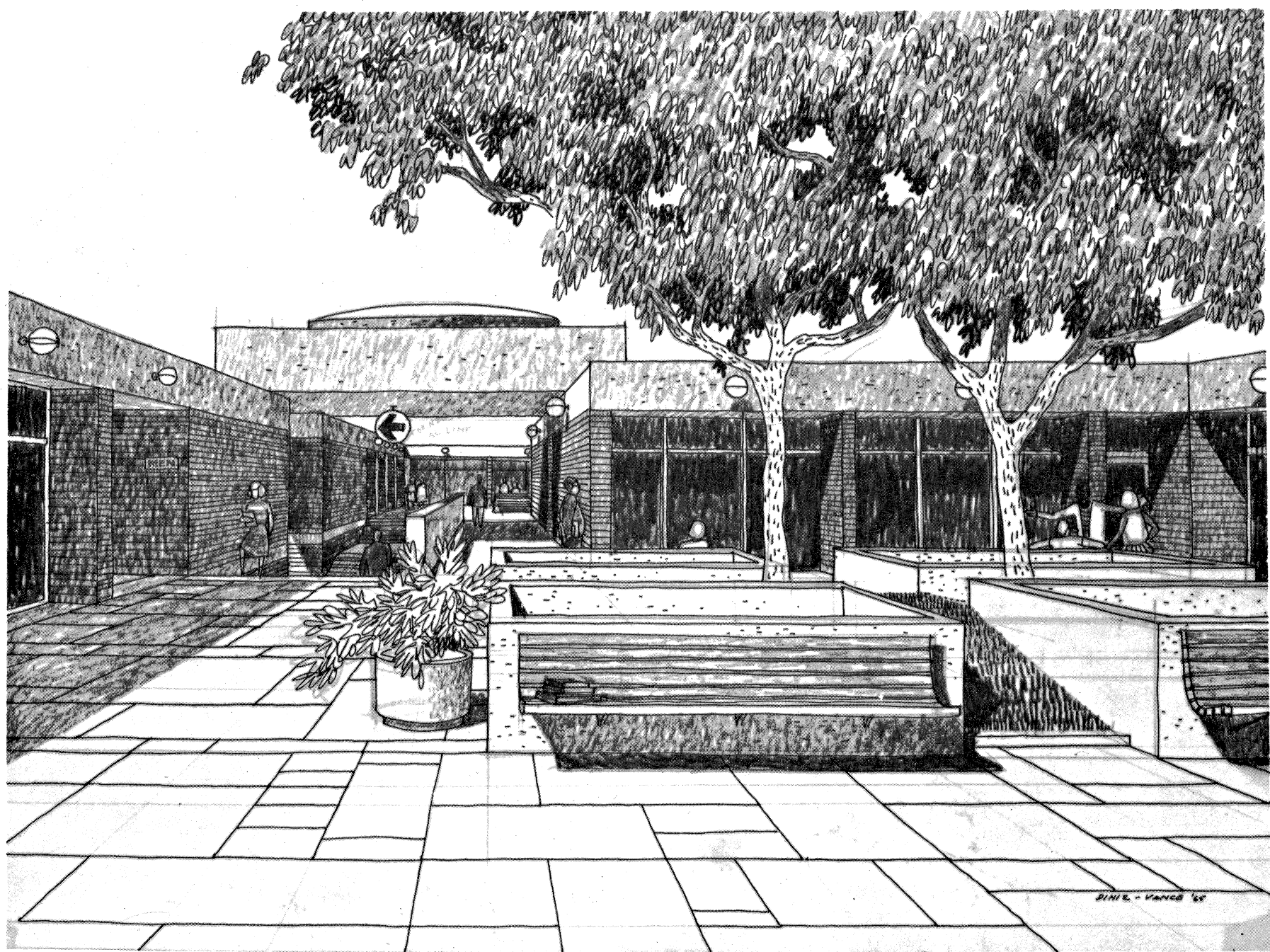
Vocational Education - Courses designed to provide intensive and thorough training leading to employment or upgrading of persons employed in skilled, technical, business, and service occupations, and in other fields

in which occupational competence can be achieved in two years or less of college work.

Adult Education - Extensive opportunities for adults to enroll in college classes on all campuses of the Peralta Junior College District. The colleges also serve the community through a varied program of special events, such as lecture series, concerts, and fine arts activities.

Guidance Services - A program of personal, educational, and vocational guidance and counseling. These services are performed by means of personal interviews, group and individual psychological and vocational tests, courses in career planning, placement services, and community contacts. All services are designed to assist each student with self-appraisal, with planning an educational program suited to his needs, and in securing employment. Guidance through student-faculty contacts also is a valuable part of the program.

Student Activities - A program designed to provide students with experiences that have educational value for them as individuals in their social relationships and in the exercise of their responsibilities as citizens. Contributing to this program are such activities as student government, club work, college publications, recreational activities, discussion groups, social events, competitive athletics, intramural sports, and stage and musical productions. ■





General Description

Conceptually, the design of the new campus for the Palomar College is intended to recognize its urban environment and to achieve an integration of the vocational and liberal arts curricula in a physical environment which will reflect the educational philosophy of the district.

The campus plan is based on five basic laboratory and classroom buildings arranged in a row, with the academic complex, which is divided into two wings, located to the south and the administrative building located to the north. The four residence halls are located to the east of the main campus.

The campus is located on the corner of 9th Street and 10th Street. The dominant building of the campus is the Administrative and Faculty Office Building, which is located at the 9th Street entrance and designed to be a terminus of 9th Street and to turn the direction for travel into the main court.

The campus is in a highly urbanized area has been designed as an "urban campus". The classroom-

laboratory buildings are designed so that entrances to the laboratories are located at street level while the inward oriented second level classrooms are entered through small academic courtyards, thus cutting down on the noise from the Nimitz Freeway to the south and the heavily trafficked 10th Street to the north. The academic complex covers only approximately 10 acres of land while the entire campus consists of approximately 80 acres including the park extension through the campus as well as the parking facilities. The athletic fields are located to the east of the Lake Merritt Channel and the parking is located to the south of the realigned 8th Street.

The schematic plan drawings reflect the final program requirements and the approved arrangement of the programmed spaces. Preceding these plans are early studies made during the Master Plan development. The perspective sketches are those which were used along with the model and the photographs of the model during the bond election campaign. Other material included in this report are a summary of the soils report prepared by Woodward-Clyde-Sherard & Associates, a brief description of materials for the project, a schematic cost estimate, an aerial photograph of the site and a reduced topographic survey prepared by the Tronoff Company. The critical path schedule which is also included delineates the time for starting and completion of the various phases of the work including the start and completion of the construction of the campus. ■

Materials

VIEW TOWARDS GYMNASIUM

Master Plan Studies

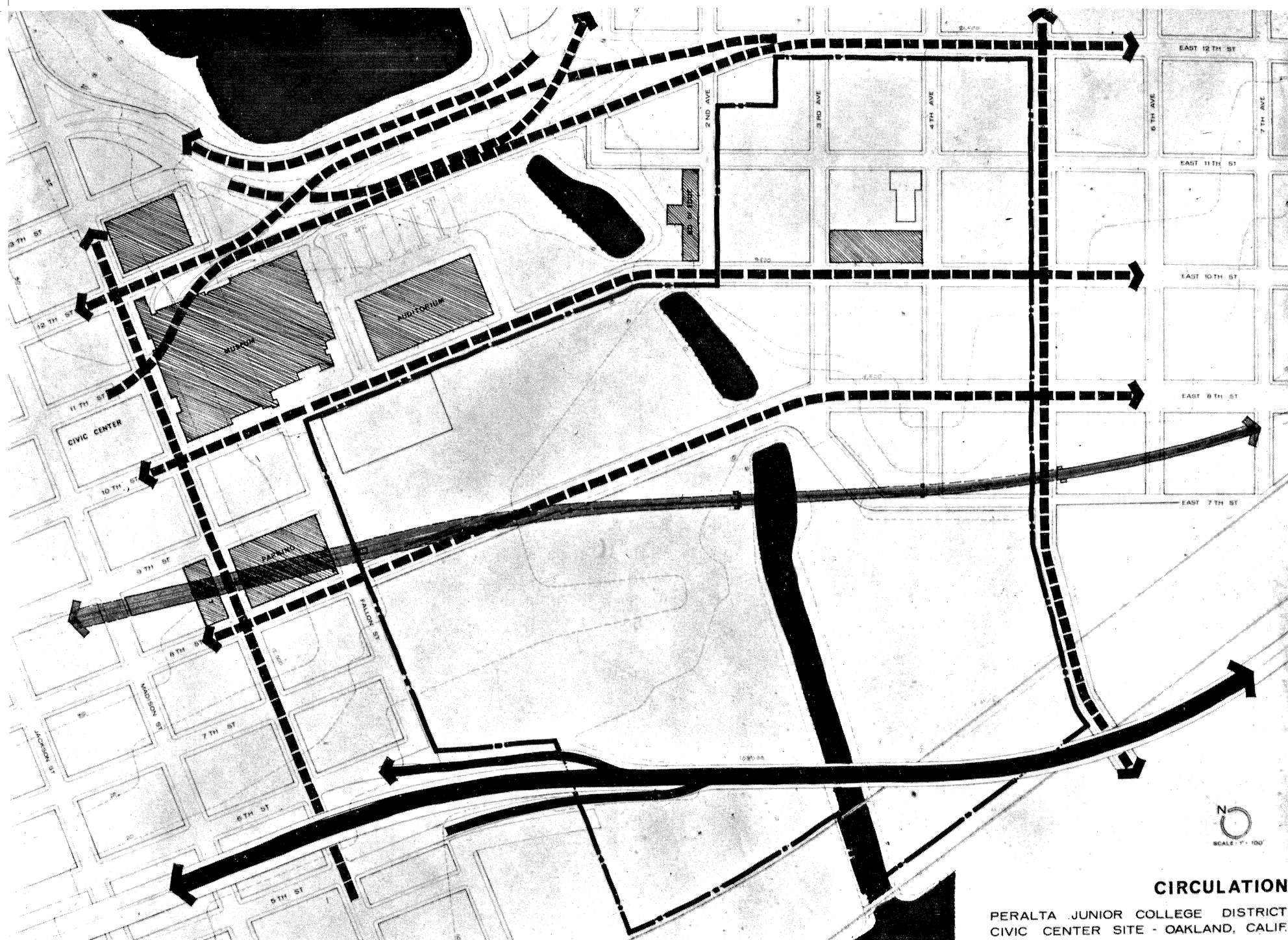
During the development of the Architectural Program, various Master Plan relationships were investigated. The site itself and its location posed the greatest implications on the Master Plan.

The site, pierced in the east-west direction by two main streets, an elevated freeway, two surface railroad lines and a sub-surface Rapid Transit tunnel, is bisected in the north-south direction by the Lake Merritt Channel.

Schematic site plans A, B, C and D show the development from a low density random campus plan through

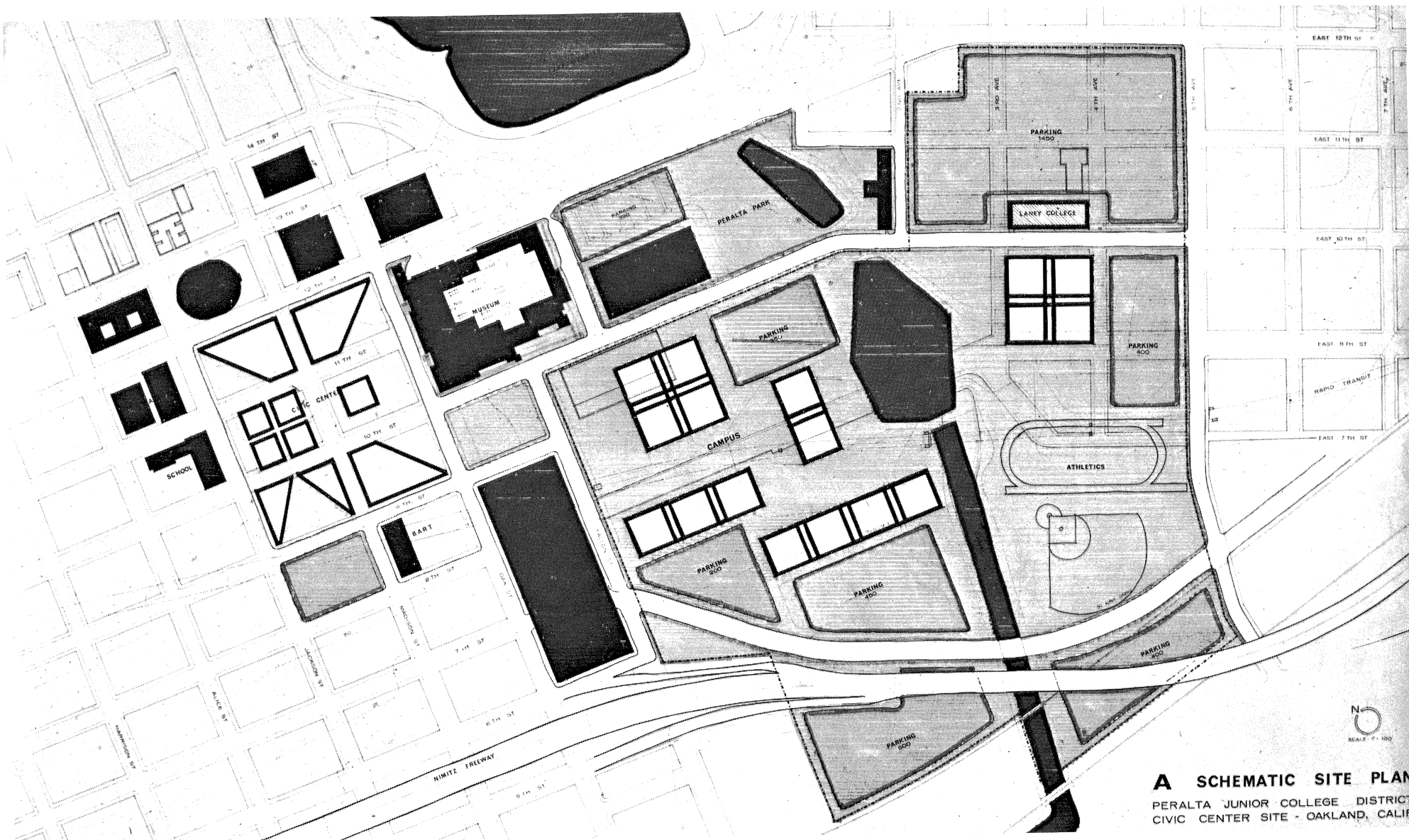
more organized linear groupings to a compact building arrangement covering less than ten acres of ground. This high density concentration will reduce to a minimum walking time between classes, will integrate the vocational and liberal arts instruction, and will provide an educational environment appropriate to a downtown campus.

The building complex, by its proximity, relates to the new Oakland Museum, the new Rapid Transit Station, the Oakland Auditorium and future Civic Center Complex. It participates with its neighbors to strengthen the entire Civic Center core. ■

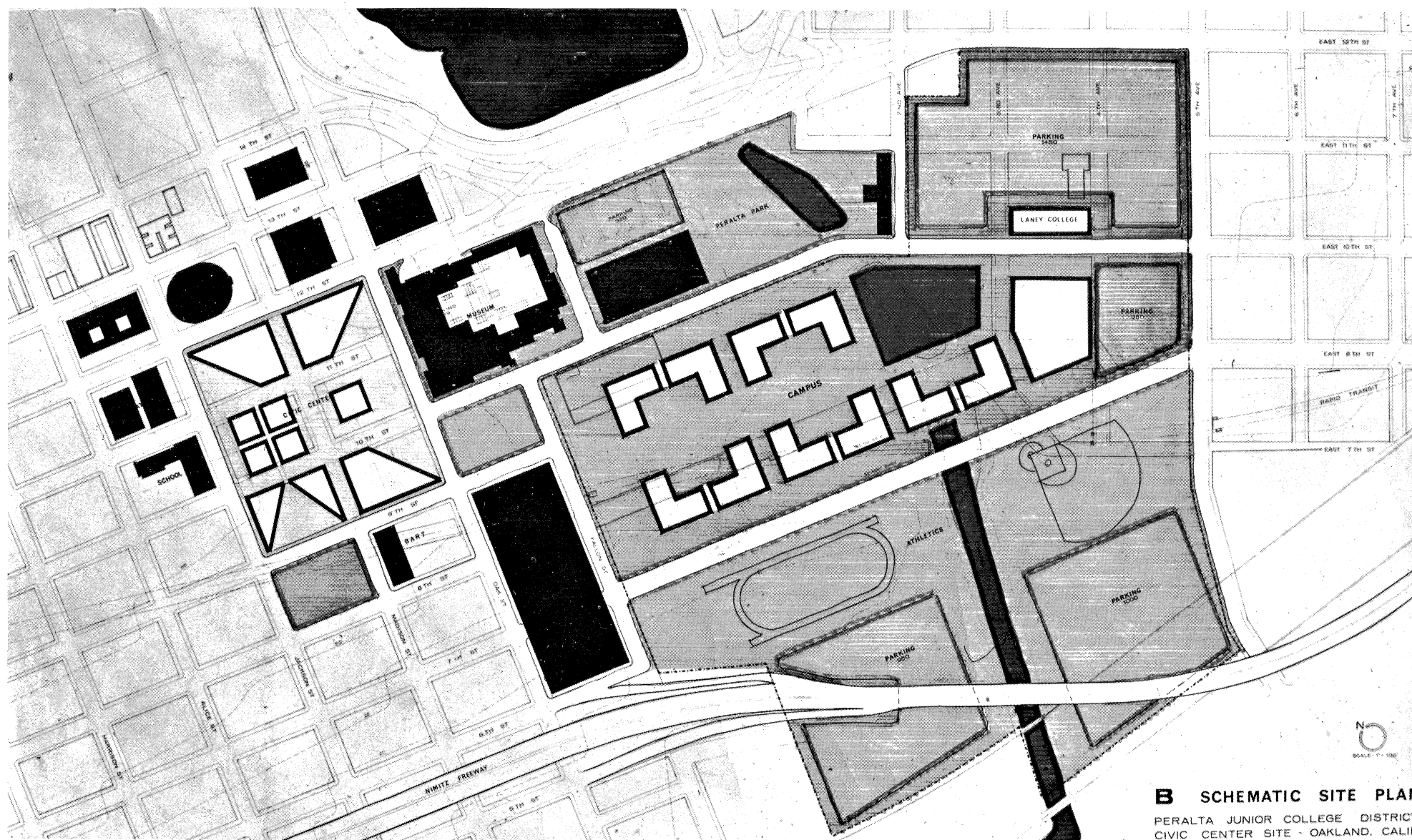


CIRCULATION

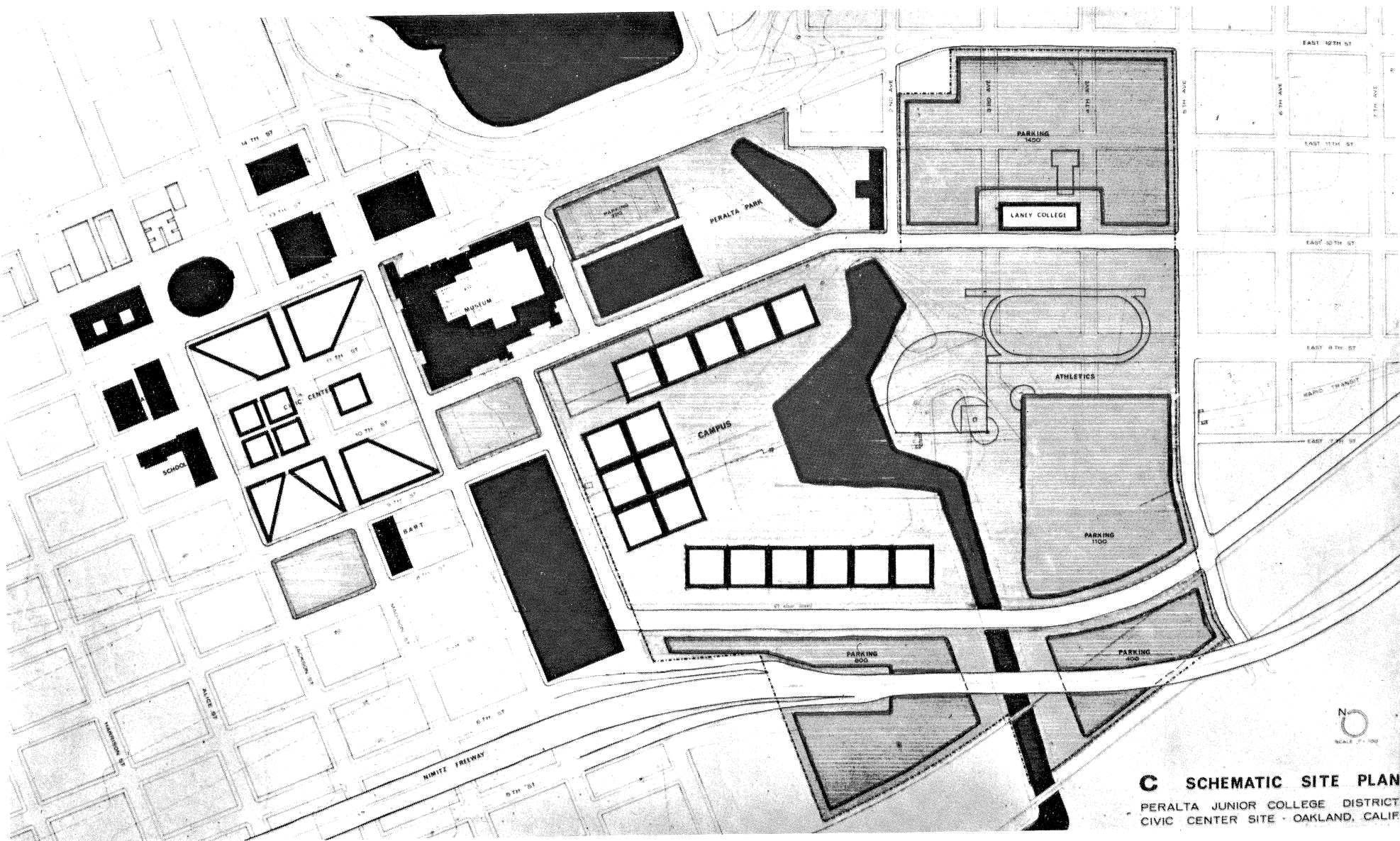
PERALTA JUNIOR COLLEGE DISTRICT
CIVIC CENTER SITE - OAKLAND, CALIF.



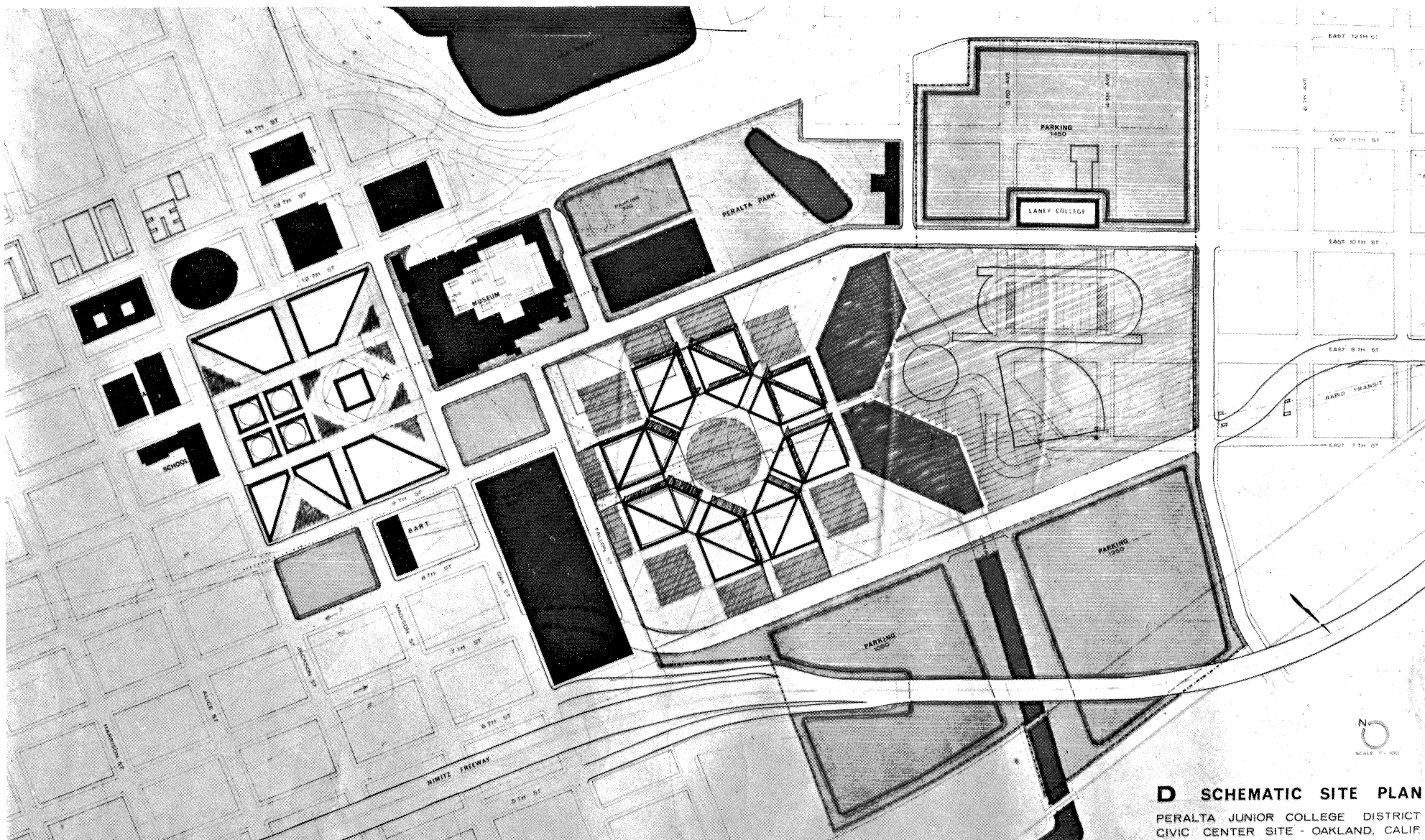
A SCHEMATIC SITE PLAN
 PERALTA JUNIOR COLLEGE DISTRICT
 CIVIC CENTER SITE - OAKLAND, CALIF.



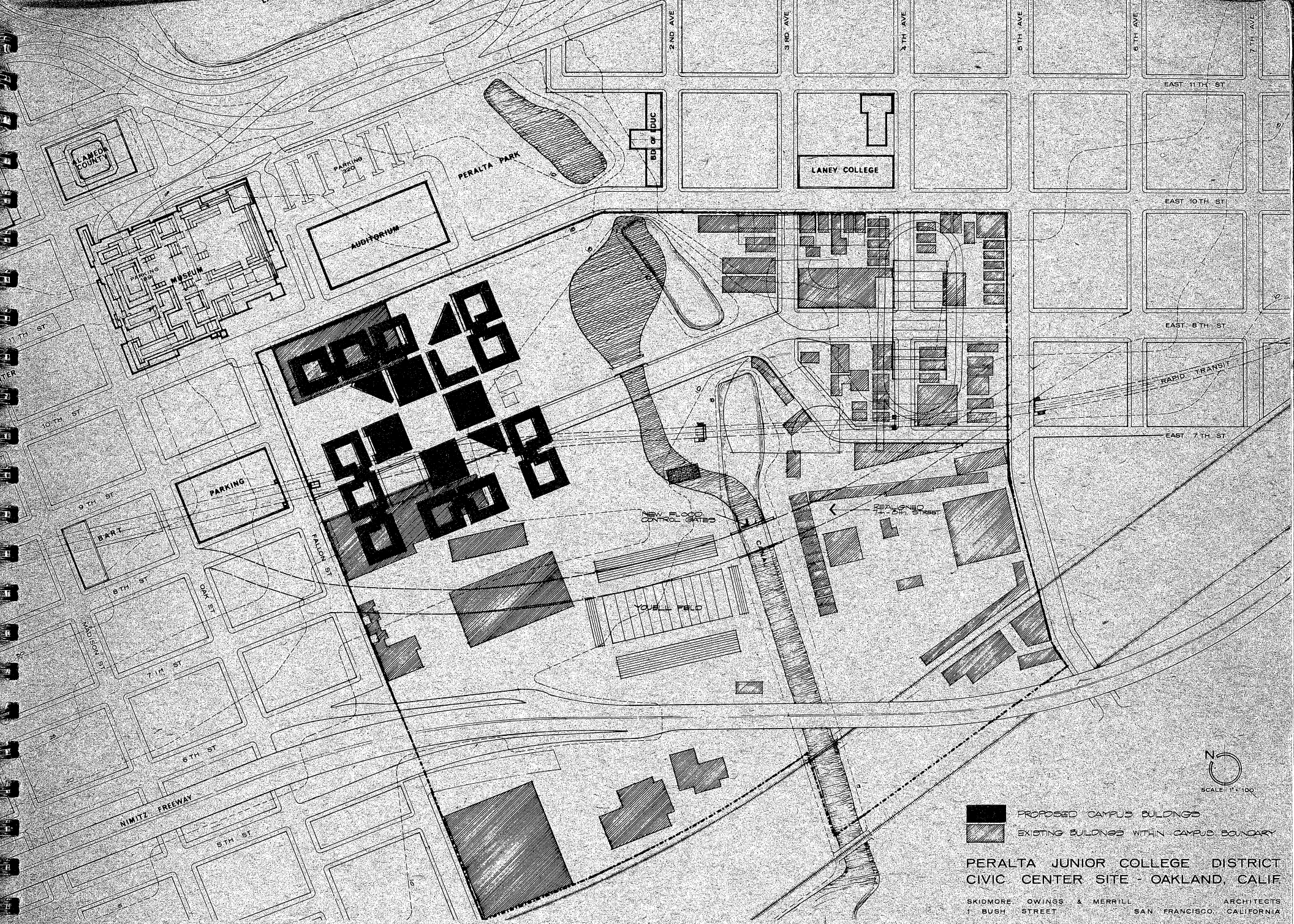
B SCHEMATIC SITE PLAN
 PERALTA JUNIOR COLLEGE DISTRICT
 CIVIC CENTER SITE - OAKLAND, CALIF.

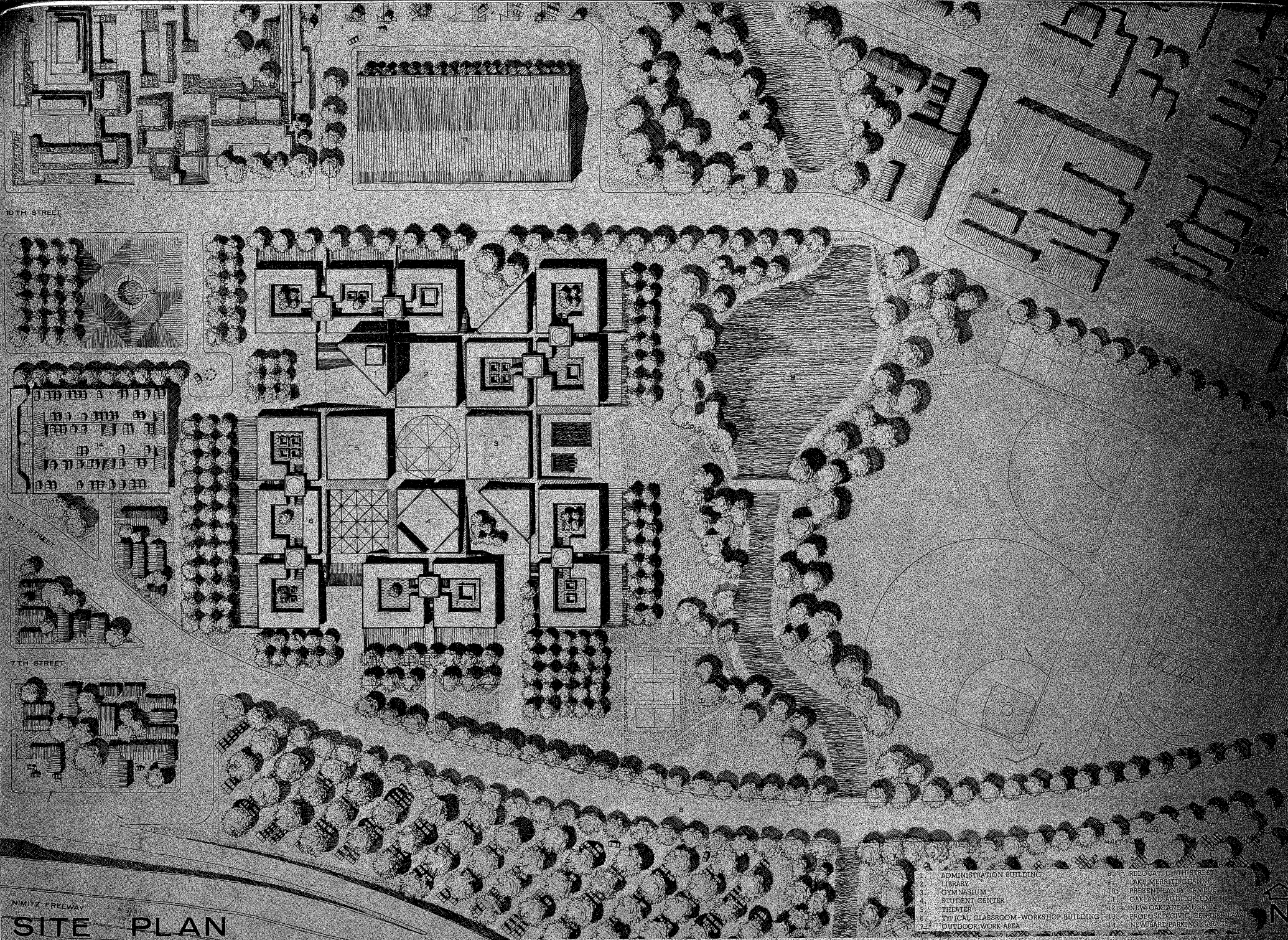


C SCHEMATIC SITE PLAN
 PERALTA JUNIOR COLLEGE DISTRICT
 CIVIC CENTER SITE - OAKLAND, CALIF.



D SCHEMATIC SITE PLAN
 PERALTA JUNIOR COLLEGE DISTRICT
 CIVIC CENTER SITE - OAKLAND, CALIF.





Site and Building Program

SITE ALLOCATION

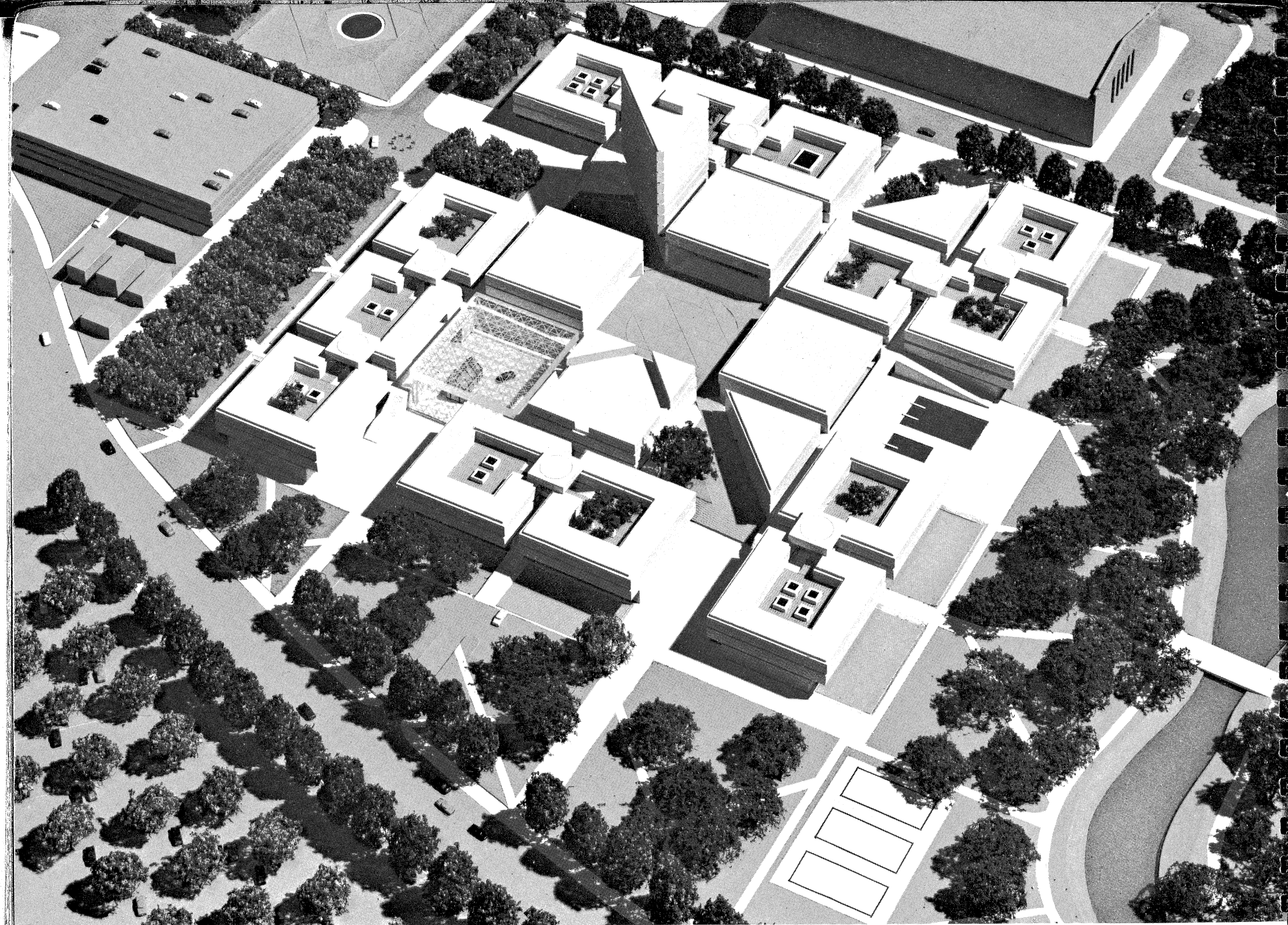
ACADEMIC AREA	19.5 acres
Buildings	10 acres
Surrounding Green	9.5
PARK AND MERRITT CHANNEL	13.0
ATHLETIC FIELDS	16.5
8TH STREET THROUGH CAMPUS	5.0
PARKING (2900 cars)	26.0
APPROXIMATE TOTAL ACREAGE	80.0 acres

BUILDING SPACE ALLOCATION

<u>FACILITY</u>	<u>NET AREA</u>
ADMINISTRATIVE	
Administration	6,900 s.f.
Admissions and Guidance	6,600
Division Chairmen	2,000
Campus Maintenance	1,000
LIBRARY	30,500
STUDENT CENTER	
Cafeteria	16,500
Student Activities	6,300
Bookstore	5,000

BUILDING SPACE ALLOCATION continued

<u>FACILITY</u>	<u>NET AREA</u>
FORUM	5,000 s.f.
GRAPHIC AND FINE ARTS	
Art	9,600
Graphic Arts	9,200
Music	8,100
Photography	4,100
Cinematography	800
Little Theater	13,200
MACHINE AND MATHEMATICAL SCIENCES	
Mathematics	5,900
Welding	12,400
Machine Metals	9,400
Refrigeration and Air Conditioning	7,200
PHYSICAL SCIENCE, TECHNOLOGY AND BUILDING TRADES	
Carpentry	4,300
Mill and Cabinet	4,600
Sheet Metal	4,400
Drafting Technology	7,100
Electricity	5,300
Electronics	8,800
Physical Science	14,600
Plastics	3,700
Covered Work Area	12,500
LIFE SCIENCE, HEALTH AND PHYSICAL EDUCATION	
Vocational Nursing	3,700
Life Science	7,600
Physical Education	38,500
PERSONAL SERVICES	
Cosmetology	5,100
Culinary Arts	12,200
Housekeeping	1,900
Dry Cleaning	4,300
Shoe Rebuilding	1,500
BUSINESS EDUCATION, SOCIAL SCIENCE AND LANGUAGE ARTS	
Business Education	12,100
Social Science	9,500
English	8,400
Foreign Language	3,000
Journalism	1,200
Humanities and Philosophy	1,200
TOTAL NET ASSIGNABLE AREA	335,200 s.f.



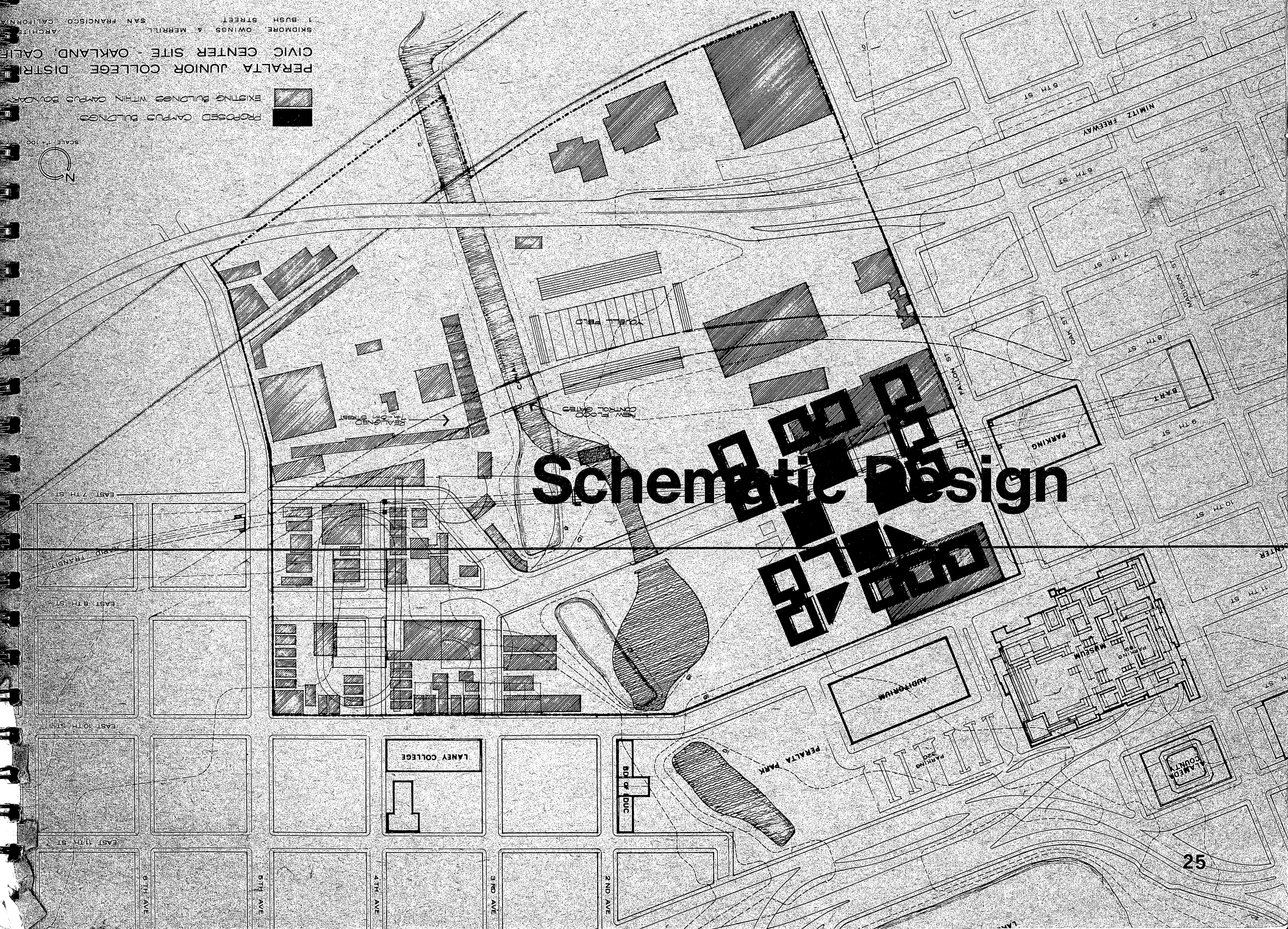
PERALTA JUNIOR COLLEGE DISTRICT
CIVIC CENTER SITE - OAKLAND, CALIF.
ARCHITECTS: SHIDMORE, OWINGS & MERRILL
SAN FRANCISCO, CALIFORNIA
J. BUSH STREET

PROPOSED CAMPUS BUILDINGS
EXISTING BUILDINGS WITHIN CAMPUS BOUNDARY

SCALE: 1" = 100'



Schematic Design



KEY PLAN AND REFERENCE TO DRAWINGS

ADMINISTRATION: Admissions and Guidance
Administration
Health Services
Facility Offices
See page 28

FORUM: Auditorium
See page 29

LIBRARY: Library
Audio-Visual Center
See page 30

THEATER: Little Theater

See page 31

STUDENT CENTER: Cafeteria
Book Store
See page 32

GYMNASIUM: Basket Ball Court
Faculty Offices
See page 33

BUILDING A: Art
Chemistry
Physics
Electronics
Graphic Arts
Photography
Dry Cleaning
See page 34

BUILDING B: Life Science
English
Cosmetology
Air Conditioning
Refrigeration
Electricity
See page 35

BUILDING C:

BUILDING D:

BUILDING E:

BUILDING F:

BUILDING G:

Physical Education
See page 33

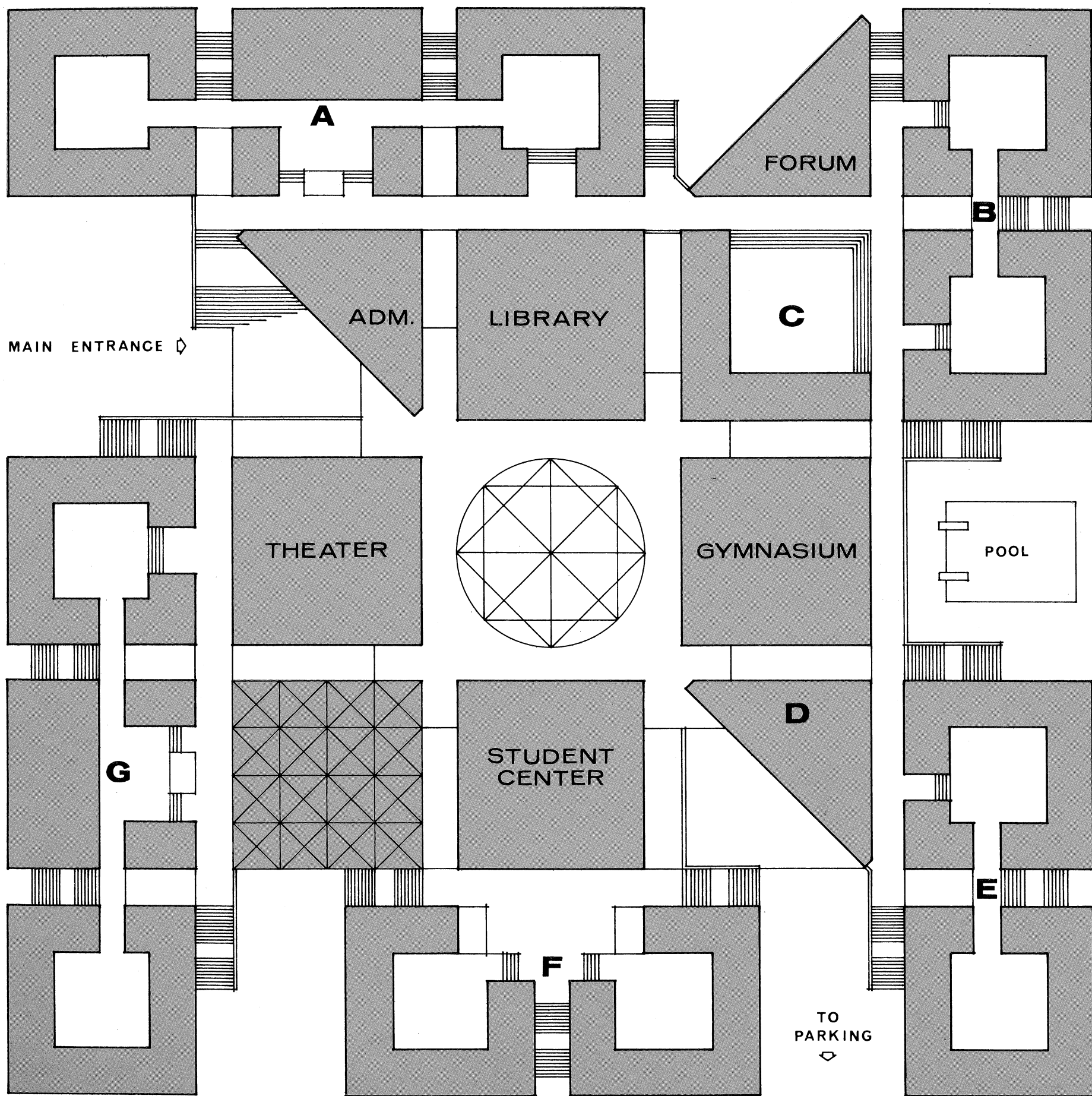
Social Science
Physical Education
See page 33

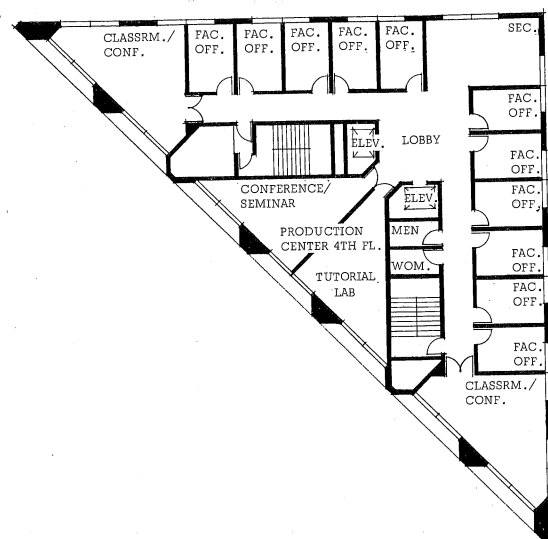
Foreign Language
Social Science
Vocational Nursing
Housekeeping
Culinary Arts
Central Boiler Plant
See page 36

Business Education
Shoe Rebuilding
Sheet Metal
Welding
See page 37

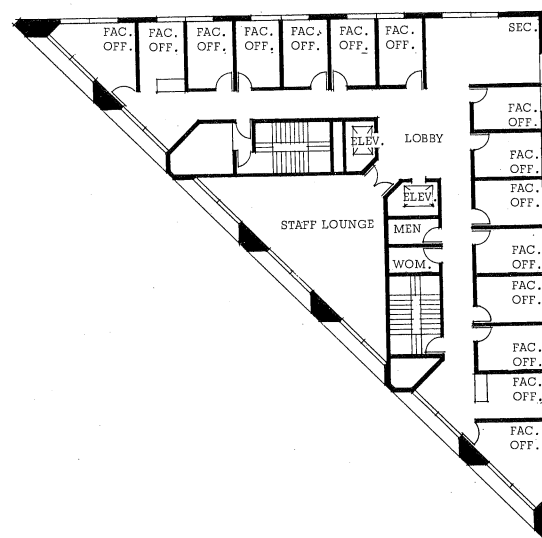
Mathematics
Drafting
Art
Music
Journalism
Machine - Metals
Carpentry
Mill and Cabinet
Plastics
See page 38



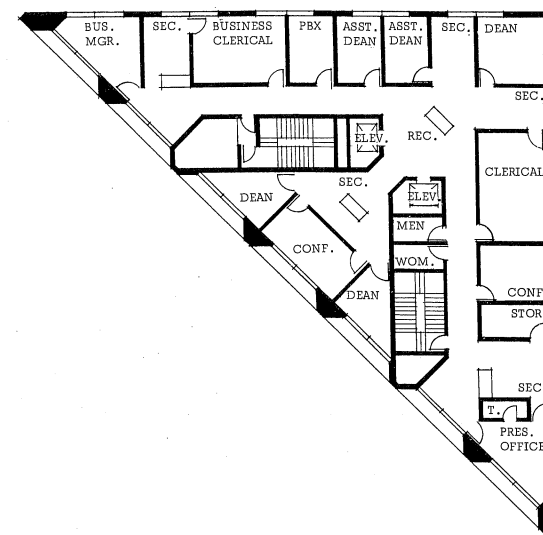




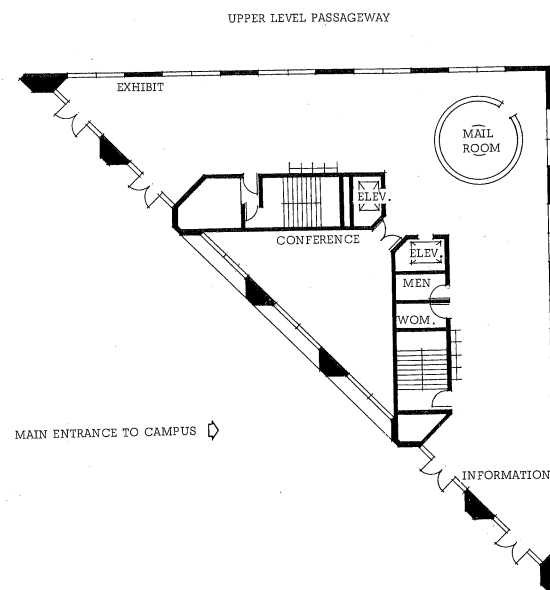
FACULTY OFFICES
FOURTH, FIFTH, SIXTH FLOOR PLANS



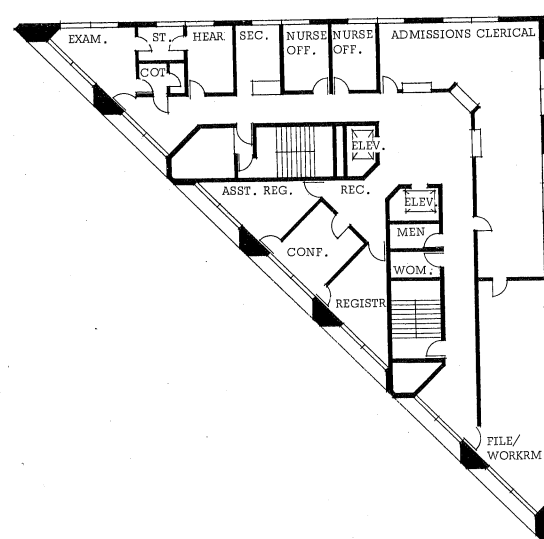
FACULTY OFFICES
SEVENTH FLOOR PLAN



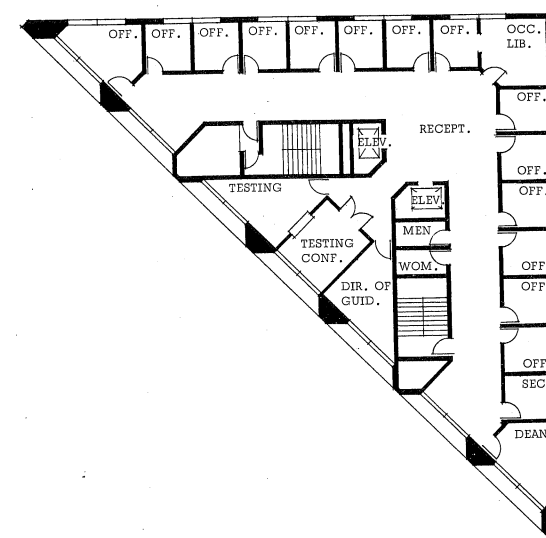
ADMINISTRATION
EIGHTH FLOOR PLAN



CAMPUS INFORMATION CENTER
FIRST FLOOR PLAN

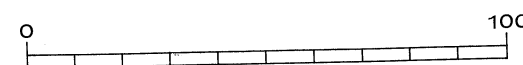


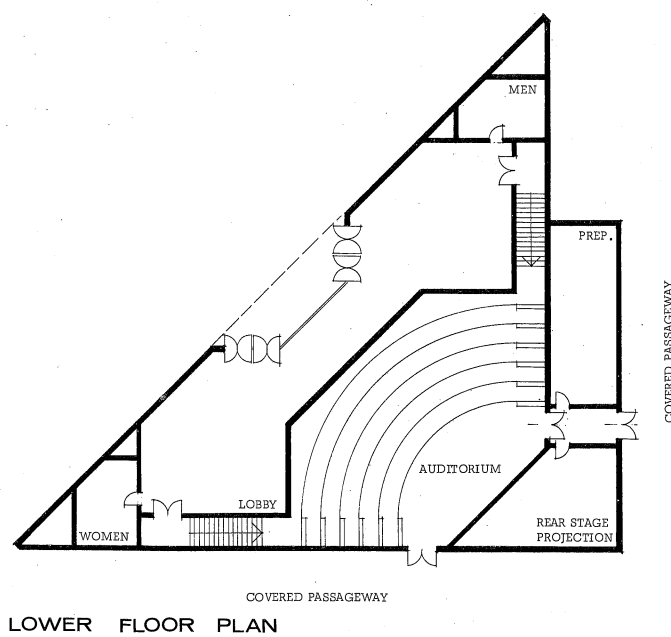
ADMISSIONS - NURSE
SECOND FLOOR PLAN



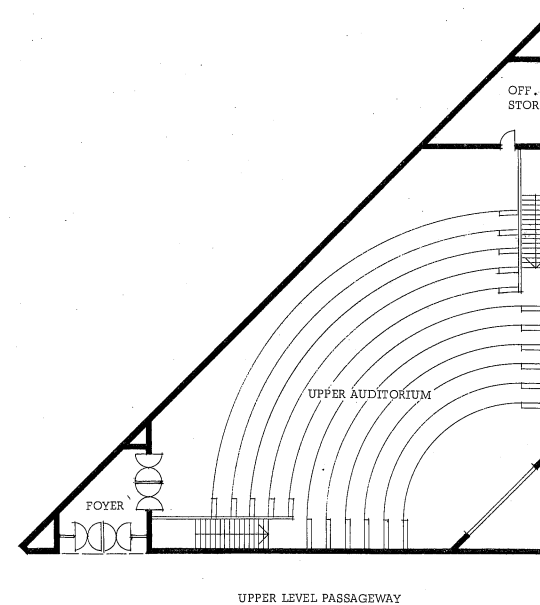
GUIDANCE
THIRD FLOOR PLAN

ADMINISTRATION BUILDING



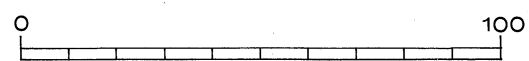


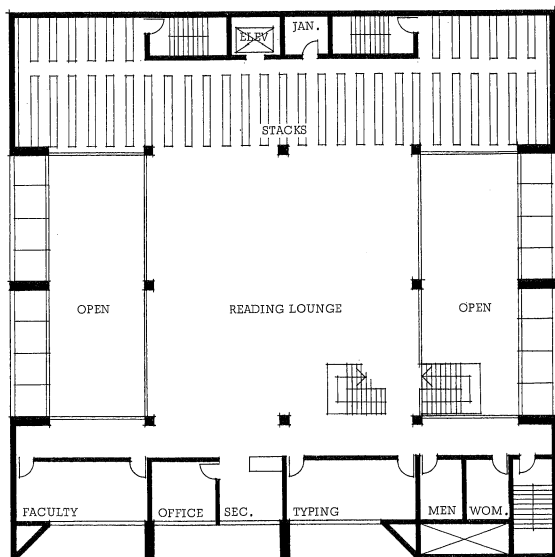
LOWER FLOOR PLAN



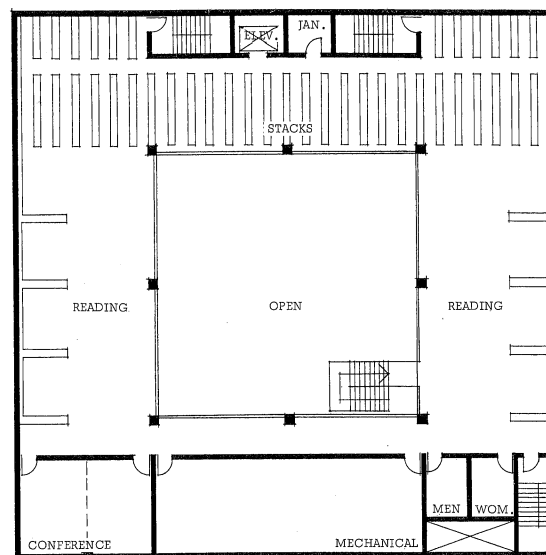
UPPER FLOOR PLAN

FORUM

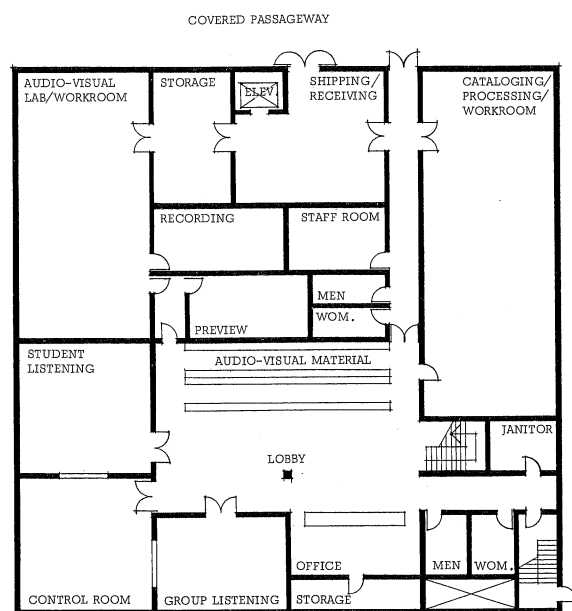




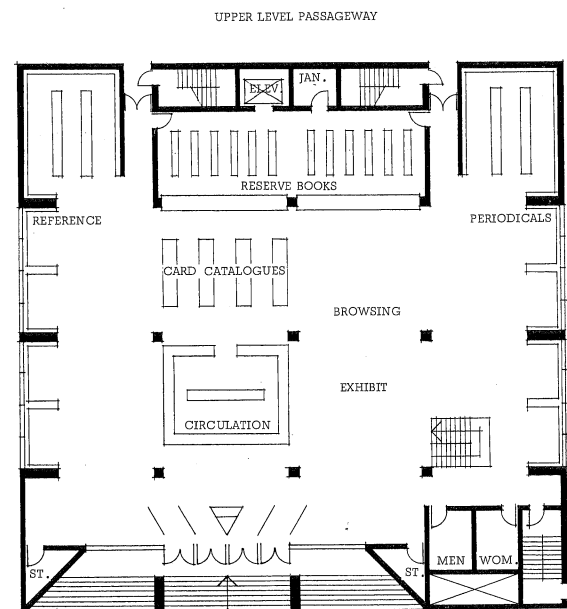
THIRD FLOOR PLAN



FOURTH FLOOR PLAN

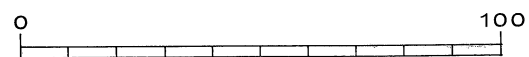


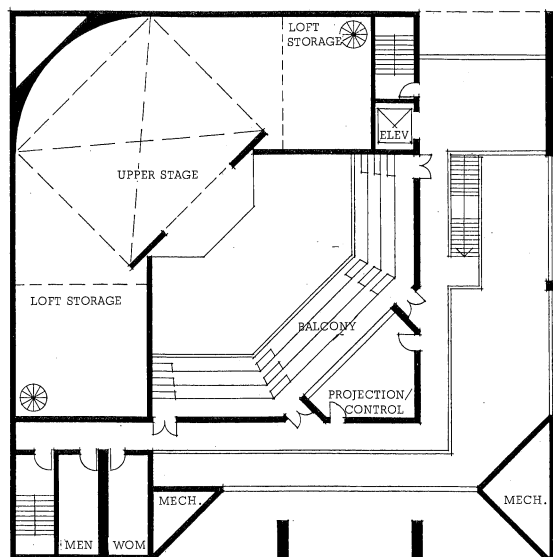
AUDIO - VISUAL CENTER
FIRST FLOOR PLAN



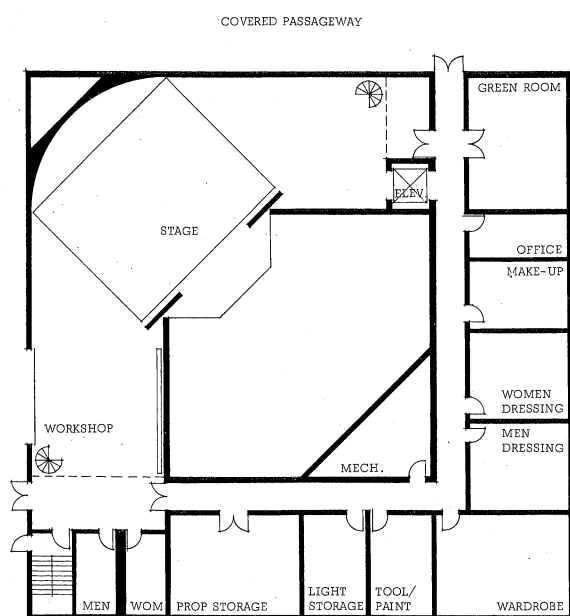
LIBRARY
MAIN COURT
SECOND FLOOR PLAN

LIBRARY

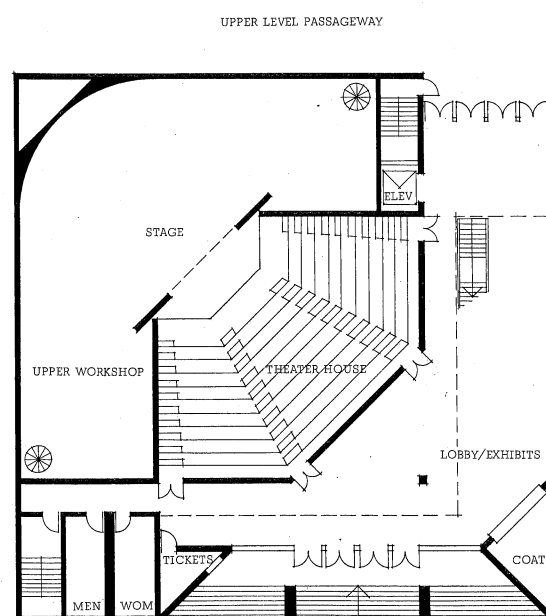




THIRD FLOOR PLAN

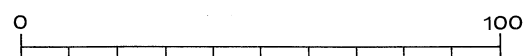


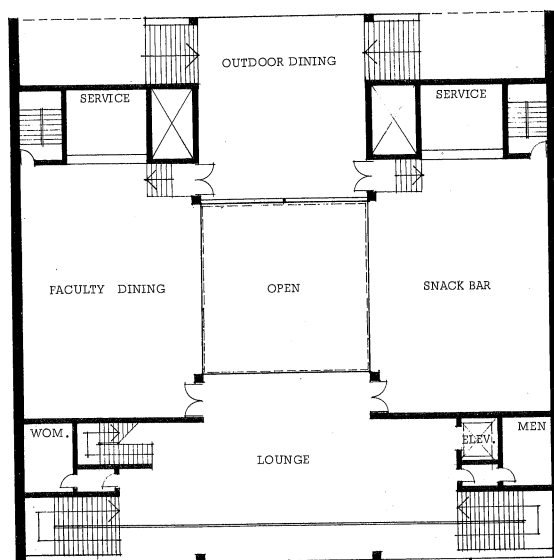
FIRST FLOOR PLAN



SECOND FLOOR PLAN

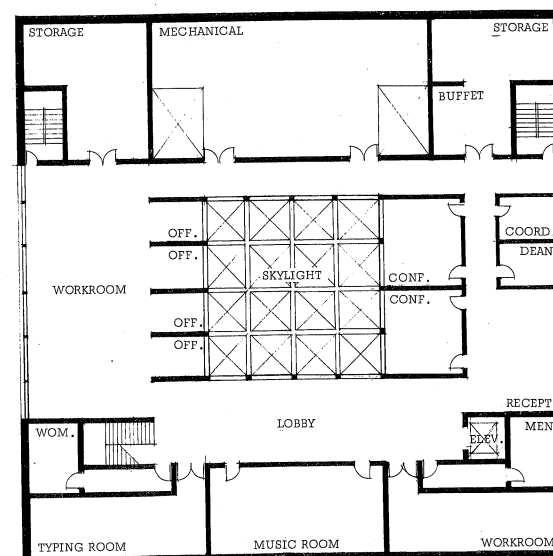
THEATER





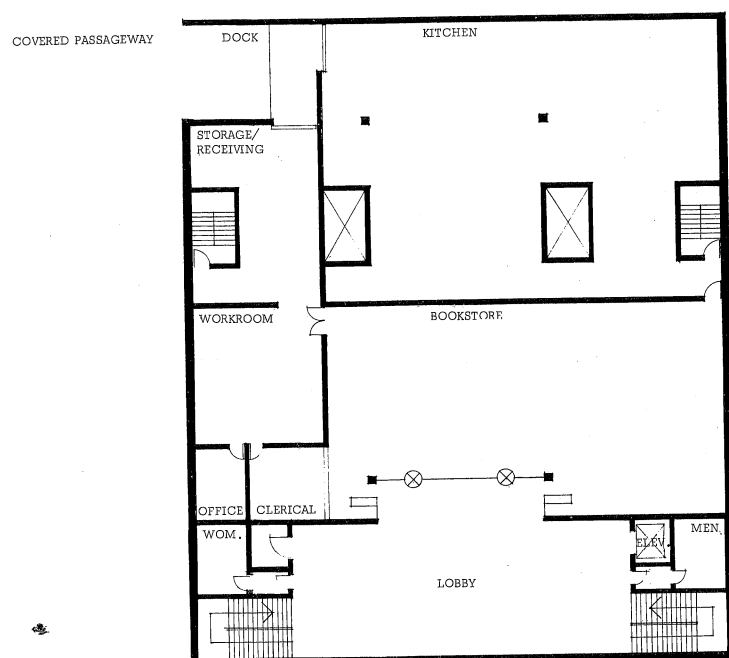
SNACK BAR

THIRD FLOOR PLAN



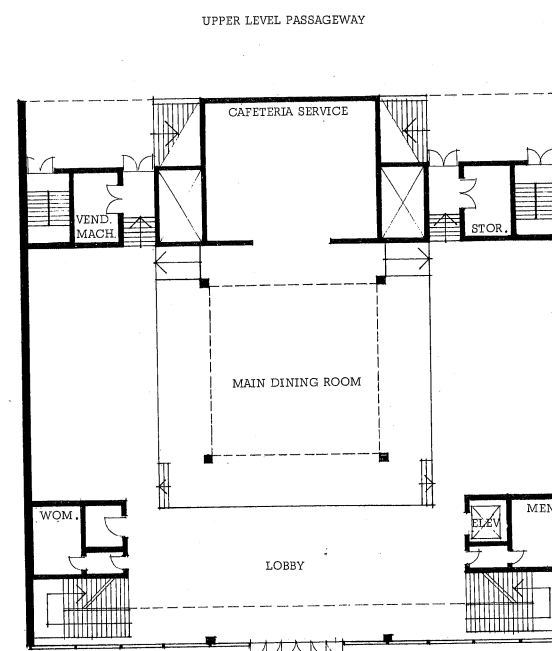
STUDENT ACTIVITIES

FOURTH FLOOR PLAN



BOOKSTORE

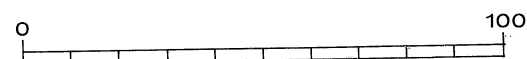
FIRST FLOOR PLAN

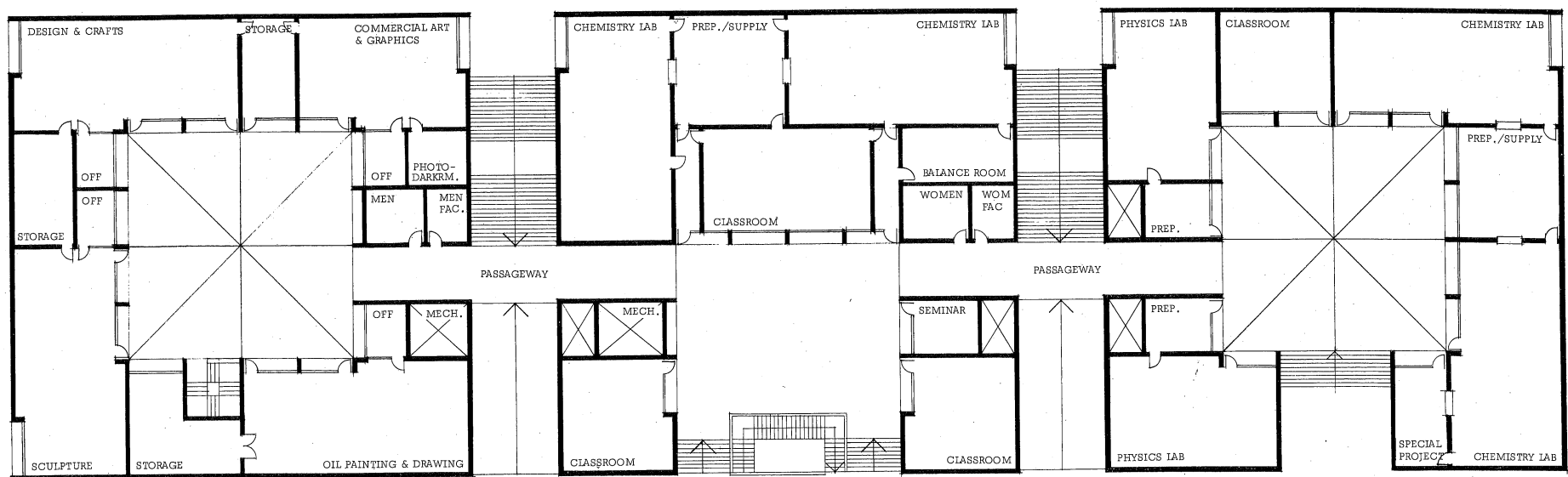


CAFETERIA

MAIN COURT
SECOND FLOOR PLAN

STUDENT CENTER

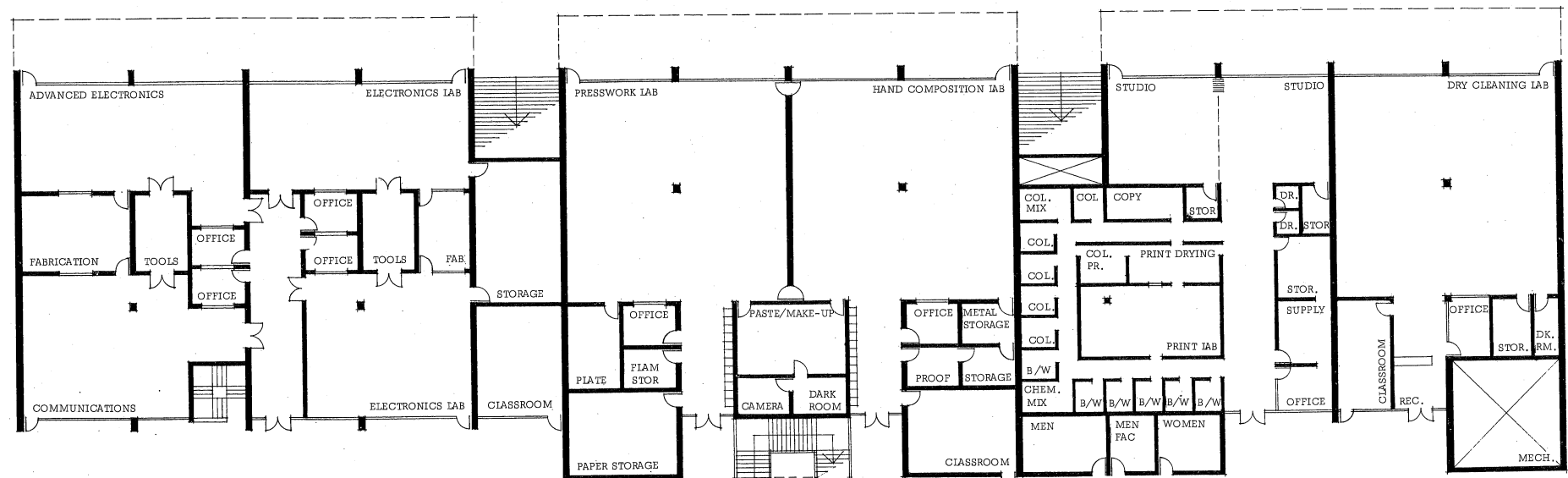




ART
UPPER FLOOR PLAN

CHEMISTRY
UPPER LEVEL PASSAGEWAY

PHYSICS



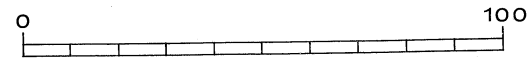
ELECTRONICS
LOWER FLOOR PLAN

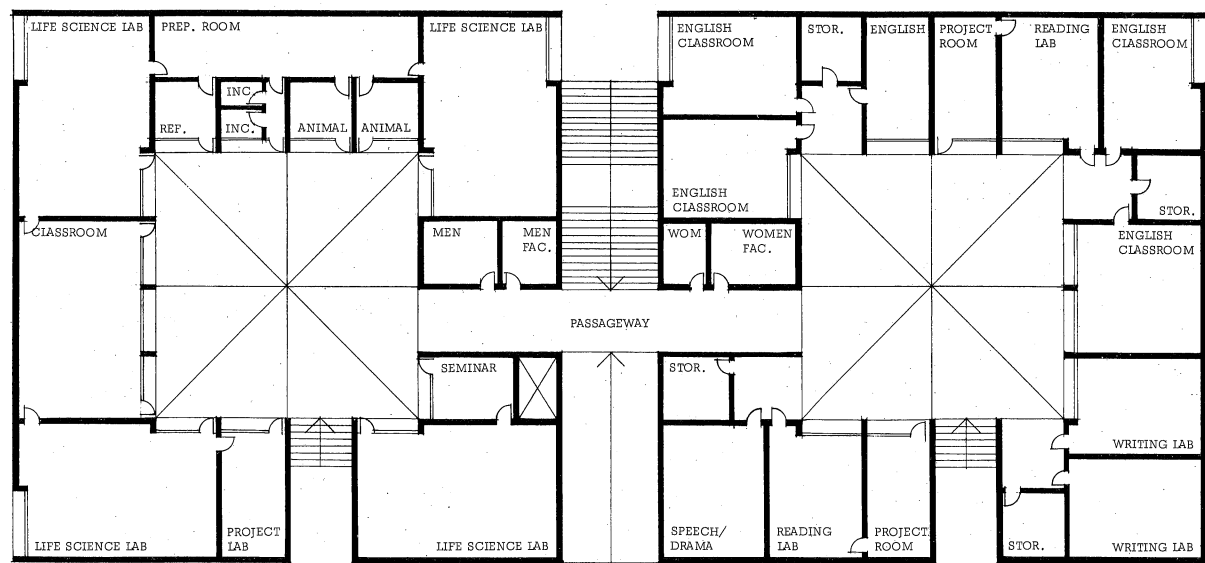
GRAPHIC ART

COVERED PASSAGEWAY

PHOTOGRAPHY

DRY CLEANING

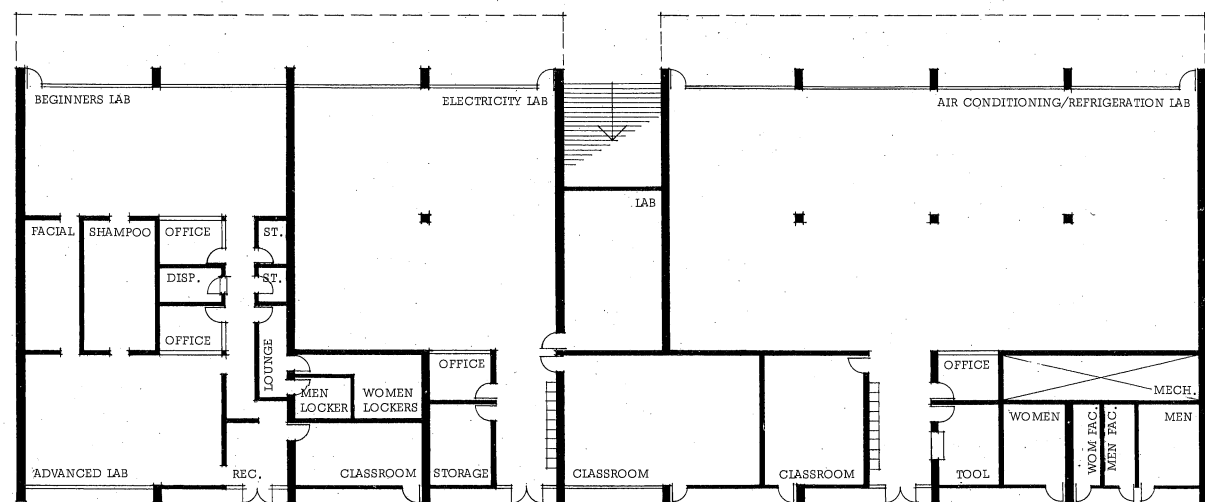




LIFE SCIENCE
UPPER FLOOR PLAN

UPPER LEVEL PASSAGEWAY

ENGLISH



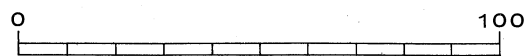
COSMETOLOGY
LOWER FLOOR PLAN

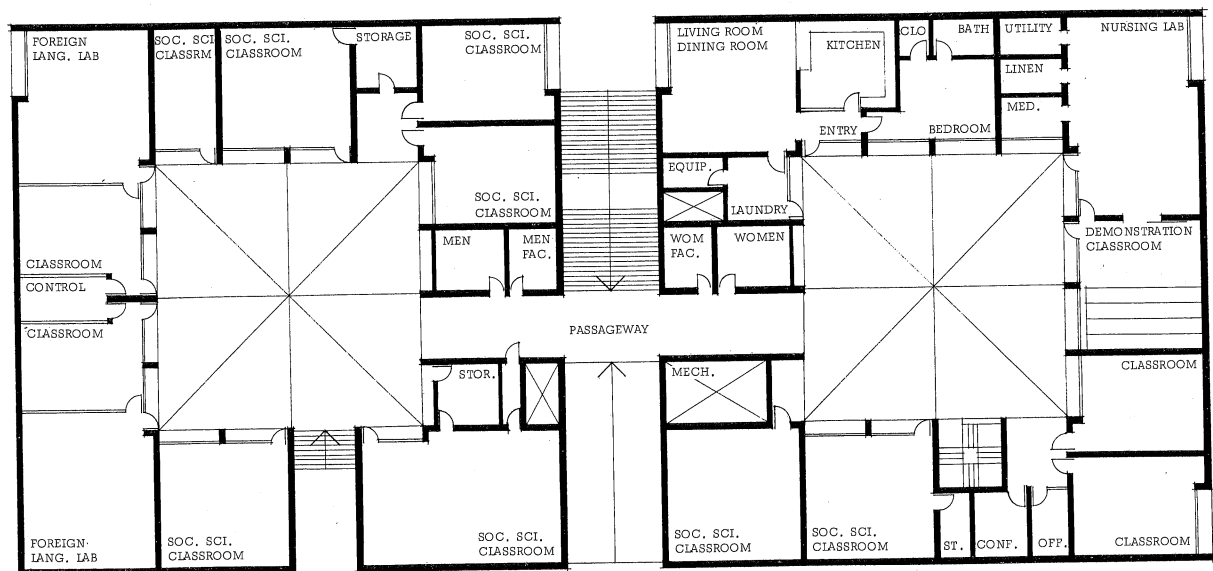
ELECTRICITY

COVERED PASSAGEWAY

AIR CONDITIONING & REFRIGERATION

BUILDING B

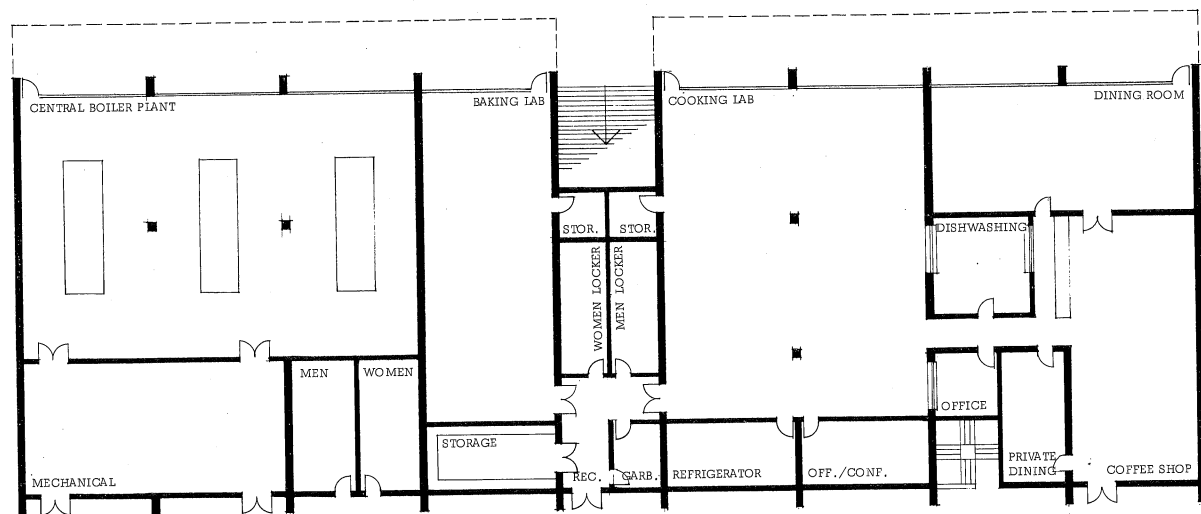




FOREIGN LANGUAGE - SOCIAL SCIENCE
UPPER FLOOR PLAN

UPPER LEVEL PASSAGEWAY

HOUSEKEEPING - VOCATIONAL NURSING

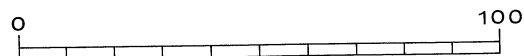


CENTRAL BOILER PLANT
LOWER FLOOR PLAN

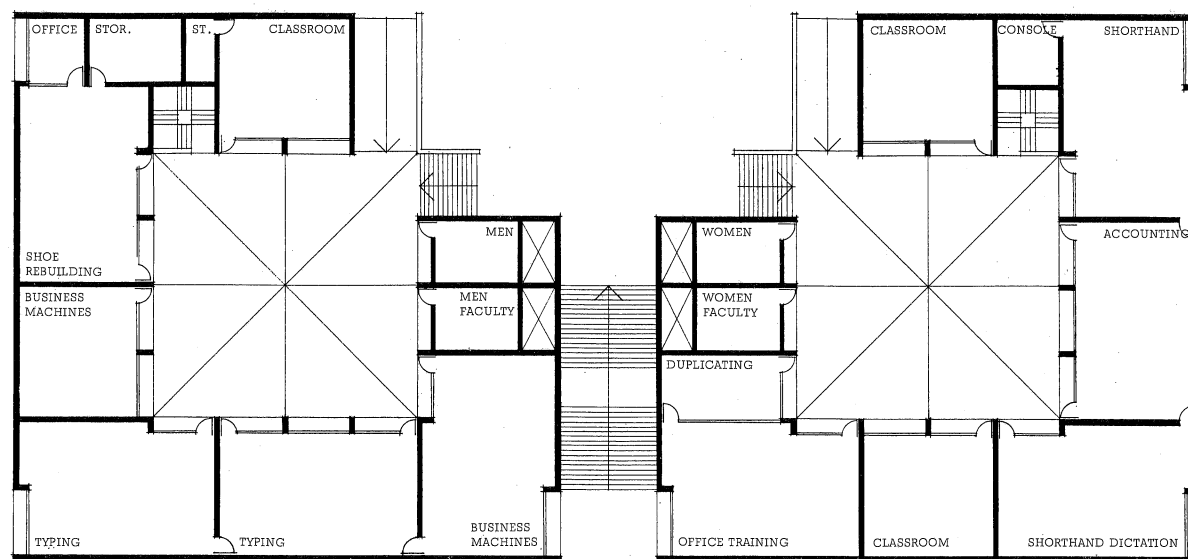
COVERED PASSAGEWAY

CULINARY ARTS

BUILDING E



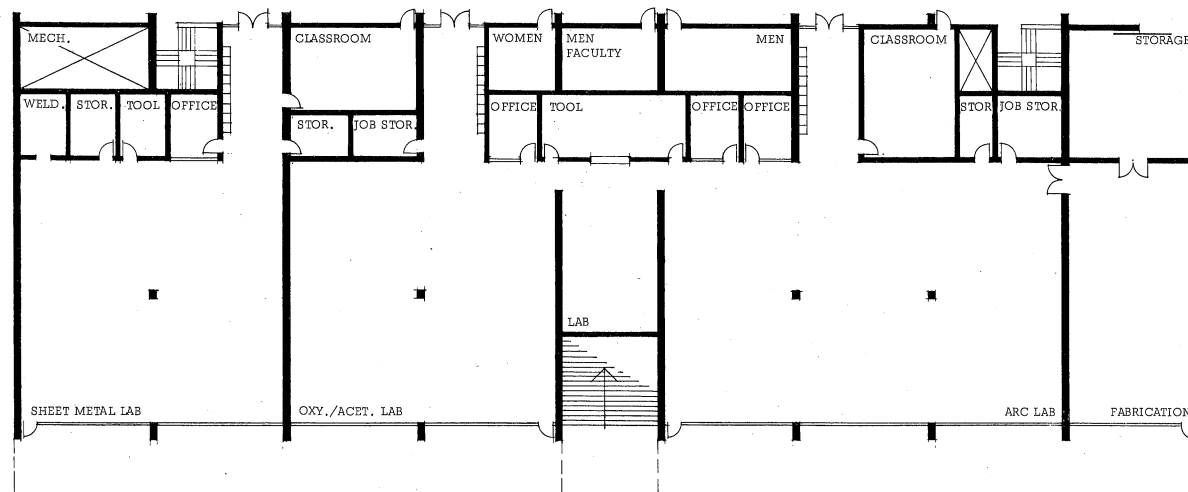
UPPER LEVEL PASSAGEWAY



SHOE REBUILDING - BUSINESS EDUCATION

UPPER FLOOR PLAN

COVERED PASSAGEWAY

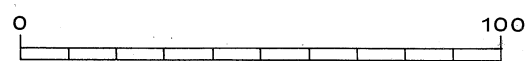


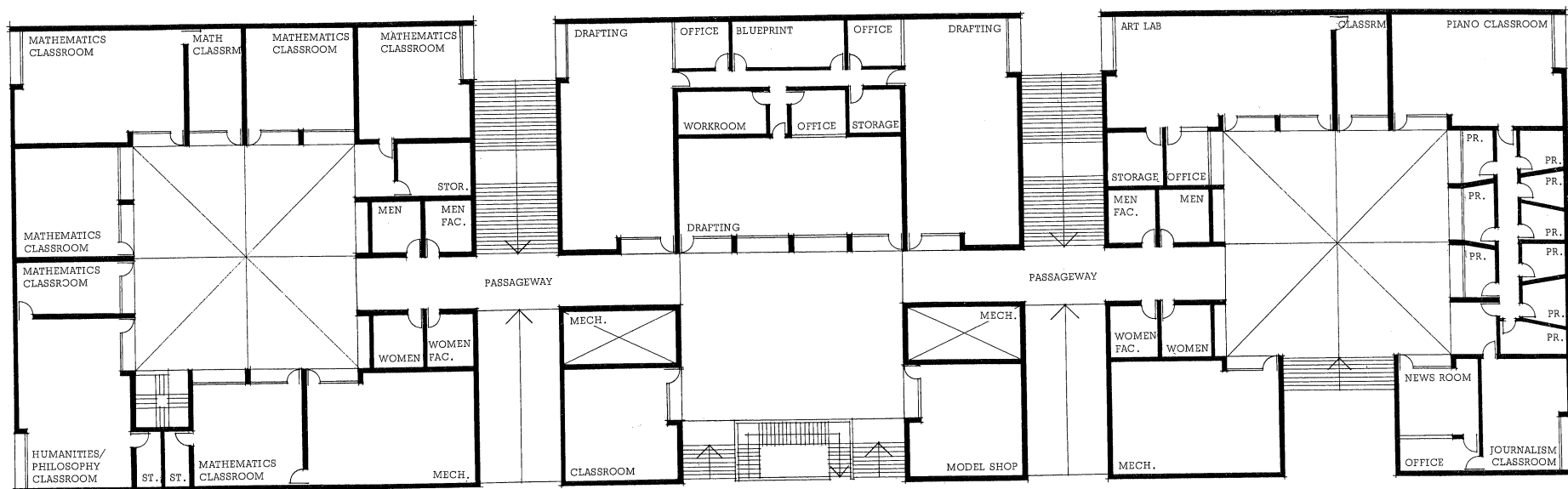
SHEET METAL

LOWER FLOOR PLAN

WELDING

BUILDING F



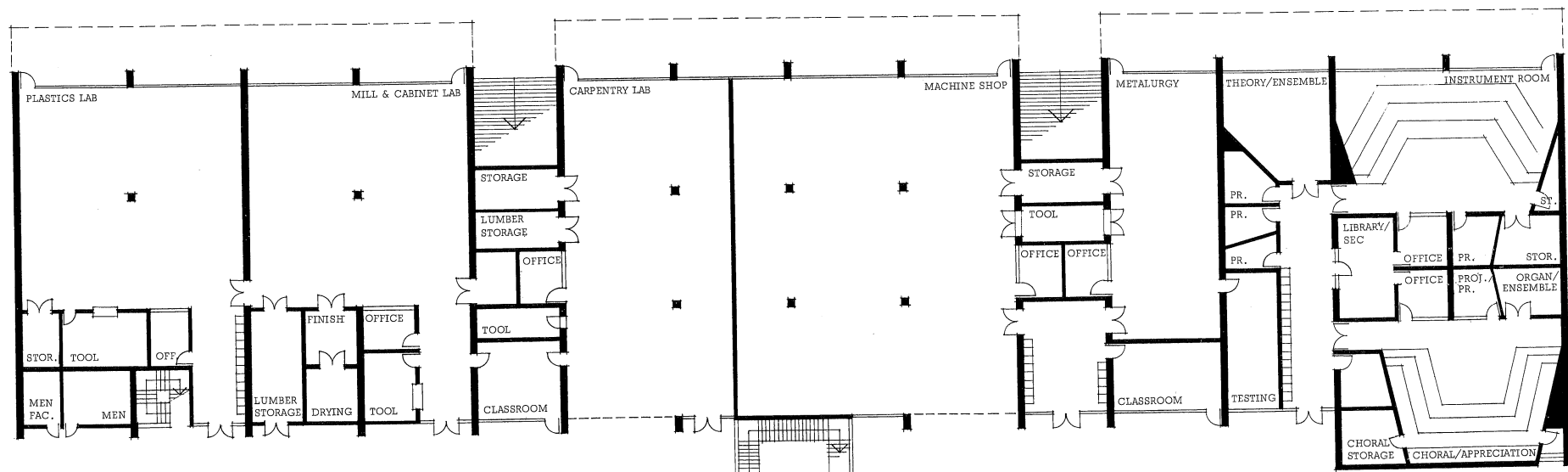


MATHEMATICS - HUMANITIES/PHILOSOPHY
UPPER FLOOR PLAN

DRAFTING

UPPER LEVEL PASSAGEWAY

ART - MUSIC - JOURNALISM



PLASTICS
MILL & CABINET
LOWER FLOOR PLAN

CARPENTRY

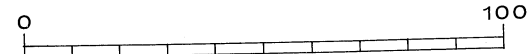
MACHINE - METALS

COVERED PASSAGEWAY

MUSIC

OUTDOOR WORK AREA

BUILDING G



Materials Description

1. Structure: Foundations; piles. Structure; reinforced concrete, special finish at exterior exposed. Roof structure; steel frame and gypsum deck.
2. Exterior Finishes: Paving; special finish concrete. Walls; masonry. Fenestration; glass in steel or aluminum sash.
3. Interior Partitions and Finishes: Floors: resilient tile; carpet at student center, library, theater, etc; hardwood at physical education areas; ceramic or quarry tile at toilet and kitchen areas; exposed concrete at laboratory and shop areas. Partitions: metal stud typical; masonry at shops areas. Wall finishes: plaster; ceramic tile at wet walls; exposed at shop areas. Ceilings: Acoustical tile; Acoustical plaster at student center, library, theater, etc.; exposed at storage rooms, etc.
4. Equipment and Furniture: Built-in equipment as required. Laboratory benches and built-in furniture as required.
5. Mechanical: Central distribution of hot water, cold water, chilled water, compressed air, vacuum, natural gas, wet and dry standpipes and fire sprinklers; steam as required; sanitary storm and acid wastes and vent. Air handling separate for each building to provide 15° F maximum rise above outdoor temperature. Air conditioning at library, student center, theater, administration building, gymnasium, forum and lecture hall to provide maximum indoor temperature of 80° F \pm 5° . Heating: 70° F minimum.
6. Electrical: Central distribution 265/460 volts from transformer vault. Power, 120/208 volt or 460 volt. Lighting, 265 volt fluorescent to Illuminating Engineers Society's standards; special lighting as required. Communications empty conduit or raceways for telephones, intercom, T.V., projector, student response; audio systems for theater, gymnasium, forum and lecture hall. Clock outlets (decentralized) and fire alarm provided. ■

Schematic Design Cost Estimate

SUMMARY

BUILDING COMPLEX	\$ 15,800,000 *
PARK	400,000
TENNIS & VOLLEY BALL COURT	200,000
PARKING	300,000
LAKE MERRITT PUMP STATION	200,000

SUB TOTAL	\$ 16,900,000
-----------	---------------

ARCHITECT-ENGINEER FEES	\$ 1,000,000
CONTINGENCY AND ESCALATION	1,300,000

SUB TOTAL	\$ 19,200,000
-----------	---------------

LAND ACQUISITION	\$ 4,275,000
------------------	--------------

TOTAL	\$ 23,475,000
-------	---------------

FUNDS AVAILABLE

ORIGINAL BUDGET	\$ 20,775,000
MATCHING FUND FOR PARK	400,000
HHFA FOR STUDENT CENTER	500,000
HIGHER EDUCATION ACT 1963	500,000
HIGHER EDUCATION ACT 1965	
PLUS ADDITIONAL STATE FUNDS	300,000

TOTAL	\$ 22,475,000
-------	---------------

* Does not include added costs for phased construction.



SITE PHOTOGRAPH

Soil Investigation Phase One Summary

SCOPE

This report describes an investigation of the soil conditions at the site of the proposed Peralta Junior College Civic Center Site in Oakland, California. The site is located between 10th Street and 7th Street from Fallon Street to 5th Avenue in Oakland. The purpose of this investigation is to determine the soil and ground water conditions at the site and to discuss the influence of these conditions on the development of the site. Specific consideration is given to anticipated settlements and the discussion of the suitable types of foundations. Preliminary values are given for preliminary design of the foundations and recommendations are given for grading the site.

DESCRIPTION OF SITE AND PROJECT

The site, located in the center of the City of Oakland, is flat and currently being used for urban purposes. North of the Lake Merritt Channel, which approximately bisects the site, and extending to Fallon Street, there is a paved parking lot and the Oakland Exposition Building. On the southwest side of 8th Street, across from the parking area, there is some industrial development. On the southeast side of Lake Merritt Channel, the site is principally occupied by residential structures and light industry.

The northwestern end of the site, near Fallon Street, is to be occupied by a building complex of classrooms and administrative offices. The southeastern end of the site is to be occupied by a stadium and playing fields. A by-pass for 7th and 8th streets will be constructed around the southwest side of the site. The Lake Merritt Channel will be realigned to the northwest and new flood control gates will be constructed. A tunnel for the Rapid Transit system is to be constructed approximately parallel to 8th Street by the Rapid Transit District. This tunnel will pass beneath the proposed school buildings.

FIELD INVESTIGATION

Sixteen exploratory holes were drilled to determine the subsoil conditions at the site. Nine unsampled holes were drilled to determine qualitatively the nature and continuity of the subsoils. Undisturbed samples of the soils were taken from the other seven holes. The drilling was done between November 8 and December 29, 1965, under the supervision of an Engineering Geologist who visually classified the borings and samples in the field. Boring logs were prepared from the field data. Included are Holes 1 and 2 which were drilled in conjunction with a very preliminary investigation of this site.

LABORATORY TESTS

The water content, dry density, and unconfined compression strength were determined for the undisturbed samples in order to evaluate the strength and denseness of the underlying soils.

The liquid and plastic limits were determined for representative samples of the soils in order to classify them with respect to plasticity.

Consolidation tests were performed on selected undisturbed samples of the subsoils in order to evaluate the compression characteristics of the soils.

GEOLOGY AND SOIL CONDITIONS

The building area of the site to the north of the Lake Merritt Channel is typically underlain with 5 to 20 feet of loosely to moderately compacted sandy and clayey fill. Below this fill, in the western corner of the area, there is 15 to 20 feet of brownish medium dense clayey sand to stiff silty clay. Below this there is a very stiff light blue-gray to green gray silty clay with varying amounts of sand. This deeper soil is referred to as Old Bay Mud.

Moving toward the southeast, the strata of brownish soils disappear and are replaced by a soft blue-gray silty clay with sand and peat lenses. This soft soil, the more recent Bay Mud, increases in thickness toward the east and toward the channel. The older mud underlies the more recent mud. At the eastern corner of the building site, the soft Bay Mud is about 50 feet thick.

The area investigated southeast of the channel is typically underlain by 20 to 40 feet of dense brownish clayey sands to very stiff silty clays. These deposits

are underlain by very stiff to hard light blue-gray to green-gray silty clays with sand.

Free ground water was noted within 5 feet of the ground surface in some of the holes. In other holes, the ground water level was measured at greater depths. Because of the slow rate of water flow in clayey soils, several days are required for the water level in the holes to rise to the true ground water level.

After the older Bay Mud was deposited as a soft, compressible sediment, there were several changes in the sea level which influenced the subsoil conditions at the site. The older Bay Mud deposits first became stiffer through dessication and chemical alterations. As time passed, water from the hills draining through an ancient lake eroded a channel through the stiffened sedimentary deposits. Then the sea level rose, stagnating the water in Lake Merritt, and the more recent Bay Mud was deposited.

The bottom of the Bay Mud in the northern portion of the site is the eroded channel and the bottom of an ancient Lake Merritt. These sediments filled in the channel and shoreline and reduced the lake to its present size. These recent sediments have neither dried nor undergone the chemical changes of the older mud, hence they are soft and compressible.

The active Hayward Fault is located about 2 miles east of the site and the area is considered to be one of high potential for seismic activity. Shocks from earthquakes are likely to be relatively severe due to the soft soil conditions. However, the area is considered to be developable and properly designed structures should withstand normal earthquakes without damage.

GENERAL DISCUSSION

The soils at the proposed building portion of the site range from adequate bearing material to the soft and compressible recent Bay Mud. The compressibility of this soil and its variability in thickness and location on the site make settlement an important consideration in determining the most suitable type of foundation. There are three potential causes or sources of settlement at this site: the weight of the proposed fill in the center of the site, a continuing settlement which is presently occurring, and the possible disturbance of the soil due to the construction of the Rapid Transit Tunnel.

Because of the varying thickness of compressible Bay Mud over the site, there is no single type of founda-

tion that is suitable for all portions of the site. The types of foundations that could be used to support the buildings at this site are spread footings, driven piles, drilled piers, and structural mats.

After discussing the magnitude of expected settlement at the site, the applicability of different types of foundations will be discussed so that the most suitable type of foundation can be selected for each building.

SETTLEMENT

Fill - It is proposed to place 10 feet of new fill in the open center area of the site. The thickness of fill will decrease to zero at the perimeter classroom buildings. The first floor of the interior buildings will be at about the existing grade so that the new fill will just be placed around the outside of these structures. About 5 to 15 feet of compressible soil underlie the area of the proposed fill. The maximum settlement is expected to be about 9 inches.

This primary settlement should occur within about 2 years after the new fill has been placed. After this time, there will be a continuing secondary settlement occurring at an initial rate of $1/4$ to $1/2$ inch per year. The rate of secondary settlement will decrease with the passage of time to a rate of less than $1/10$ inch per year after 5 years.

Buildings that are constructed on pile foundations before a large portion of the settlement has occurred will appear to rise out of the ground. Also, large settlements of the fill around piles will result in a large increase in pile load through negative skin friction. Therefore, it would be desirable to place the new fill as far in advance of the building construction as possible in order to allow a portion of the settlement to occur before the buildings are constructed.

Continuing Settlement - Computation of the past consolidation pressure from the results of the consolidation tests shows that for sample 12-5-2, the past consolidation pressure is less than the overburden pressure 1000 ksf vs. 1800 ksf. The soil is underconsolidated and settlement resulting from virgin consolidation may be now occurring.

Calculation show that this additional settlement can be as much as 10 inches in the vicinity of Hole 12 - the Forum and building B. However, the time necessary for all this settlement is so great that only a small amount will probably be noticed during the life

of the structures.

Rapid Transit Tunnel - The Bay Area Rapid Transit Authority has proposed to construct a subway tunnel underneath the site. The proposed location of this tunnel is shown on the site survey.

It is proposed to construct the tunnel as a pile supported structure 30 feet below the ground surface. A dewatering system is to be installed during construction, but the finished tunnel will probably be designed to be water tight and to resist the hydrostatic pressures due to the ground water.

The dewatering during construction and even any leakage into the tunnel after construction can cause settlement of the adjacent ground.

Even a very small amount of seepage is enough to appreciably lower the water pressure and increase the effective stress in clayey soils such as are at the site.

In addition to the settlement due to lowering the ground water, there could be random settlements of several inches due to ground disturbance during construction. This disturbance could be due to pile driving or yielding of the sides of the tunnel excavation. The area affected by the disturbance would extend some 50 to 100 feet on either side of the tunnel.

It is apparent from the above discussion that the Rapid Transit Tunnel will affect the design of the foundations of the adjacent buildings, but no definite conclusions can be reached until the construction schedule and the design of the tunnel are available.

FOUNDATIONS

Introduction - Each building will have different foundation requirements. Some of the buildings are underlain by a large depth of soft Bay Mud while others appear to be underlain by firm bearing material. The former condition seems to dictate the use of deep piles and, the latter, spread footings. Also, there are intermediate subsurface conditions between the two extremes where the best type of foundation is not so well defined. The basic types of foundations are first discussed and then specific foundation discussions for each building follow. Several alternate foundation types are discussed for some of the buildings so that due consideration can be given to each type. However, since some pile foundations are going to be required at this site, it may

be that pile foundation will be used throughout the project except where spread footings are possible.

Spread Footings - In general, spread footings would be designed for allowable bearing pressures of 2000 psf due to dead load, 3000 psf due to combined dead and live loads, and 4000 psf due to all loads including wind and seismic. These footings would extend to a depth of at least 2 feet below the lowest adjacent finished grade.

It is expected that spread footings will experience about 1/2 inch of settlement with the maximum differential settlement between adjacent footings being about 1/4 inch. This settlement should occur during construction or shortly thereafter.

Piles - Because of the sharp variations in Bay Mud thickness under some of the building and the excessive settlements anticipated, pile foundations are recommended. Any type of displacement pile could be used. Piles should be driven into the strong bearing material underneath the Bay Mud.

Treated wood piles, cast-in-place shell or pipe piles, and precast concrete piles are all usable at this site. It is expected that there will be moderate resistance while driving piles through the overlying fill, but the piles will "run" through the Bay Mud. Although occasional sand lenses in the soft Bay Mud may also produce some driving resistance before the bearing stratum is reached. The supporting soils will be marked by a sharp increase in driving resistance; however, the amount of resistance will vary widely with the type of pile and the type of driving hammer. More specific information at each building location is needed before detailed recommendations for the design of pile foundations can be made. Ultimately a pile load test program will provide the most reliable additional information and will result in the most economical pile design.

Piers - Drilled cast-in-place concrete piers would be used to support the buildings in lieu of piles under certain conditions. Conditions which may make piers more economical than piles are those where the compressible layers are quite shallow and the bearing material is at a reasonable distance below the ground surface. The piers would develop their capacity through end bearing and the allowable bearing pressure for combined dead

and live load will be about 6000 psf. The bottoms of the piers could be belled out at the bottom to develop greater bearing area and hence greater capacity.

Mats - Some of the buildings may be supported on stress compensated mat foundations. This type of foundation has been successfully used to support many significant buildings where there were potential settlement problems. By establishing the mat foundations at a sufficient depth so that the weight of soil excavated is equal to the weight of the building, there is no net stress change in the underlying soil to cause settlement. For example, the uniformly distributed dead and live loads for a 2-story building may be about 500 psf. If the soil has a total unit weight of 120 psf, an excavation slightly deeper than 4 feet is necessary so that when the total building load is in place, there is no net stress change in the soil. The selection of a stress compensated mat foundation for the buildings in this complex depends on consideration of the anticipated settlement from causes other than building loads.

Settlement - An important factor affecting the choice of foundation type is the expected settlement. The settlements to be expected of the spread footings have already been discussed. Buildings founded on piles or piers bearing in the firm soils underneath the soft Bay Mud will not settle. Buildings with stress compensated mat foundations will not settle because of the building weight. However, settlements resulting from the new fill, the Rapid Transit tunnel, and the underconsolidated soil will affect buildings founded on piles, piers, and mats. Because the ground is settling, buildings on piles or piers will appear to rise out of the ground; buildings on mats will settle with the ground.

Specific preliminary recommendations for each building follow. The buildings are designated by letter as shown on the key plan.

Building A - This building is underlain by a large variation in thickness of soft Bay Mud which would require piles. Because of the light column loads which are anticipated, treated timber piles will probably be the most economical type of pile. However, if the building could be designed with structural separations between the three units, stress compensated mat foundations could also be considered. Differential settle-

ment between the units would not be noticed if the floors of the units were connected by simply supported ramps at the structural separation. There could be a maximum of 2 inches of differential settlement between the ends of the building.

The Forum, Building C, Gymnasium - There is a fairly sharp variation in the thickness of the Bay Mud underneath these buildings. Pile foundations are recommended to prevent unequal settlements from damaging the buildings. These buildings are fairly light and have a bearing stratum at a fairly great depth below the building. Treated Timber piles would seem to be most appropriate for these buildings. However, because of the depth of piling, it might be more economical to utilize piles of a higher load capacity than the timber piles. Therefore, pipe, mandrel driven shell, or precast concrete piles should also be considered.

Building B - This building, especially the southwest end, is also underlain by a sharp variation in Bay Mud thickness and would best be supported on piles. As an alternate, it might be possible to support the northern end of the building on a mat foundation, with a structural separation between it and the southern end similar to that described for building A above. However, any pile driving adjacent to any side of Building B could cause differential settlements of the order of 2 or 3 inches if Building B were supported on a mat foundation.

The same considerations discussed under The Forum Building C and Gymnasium regarding the best type of pile to use would apply to this building.

Administration Building - This building is a nine-story structure and will have relatively heavy column loads which must be supported on strong soils. This building will have to be supported on a pile foundation.

Library - This building is a four-story structure that is to be constructed adjacent to the proposed 10 foot fill. The potential differential settlements in this area require that pile foundations be used.

Theater and Student Center - These buildings appear to extend into the compressible area but part of the buildings are on firm soil. Also the proposed Rapid Transit tunnel will pass very close to or beneath these structures. Because they are four-story structures and because of the potential differential settlements due to

the above causes, these buildings should probably be supported on pile foundations. It is possible that drilled cast-in-place piers could be considered as an alternate.

Portions of some of these buildings are over the tunnel. Depending on the design of the tunnel, these buildings may have to be cantilevered or bridged over the tunnel, or it may be possible to support the buildings on the tunnel structure. Final decisions in this regard will have to be made in conjunction with the Rapid Transit District.

Building G - Spread footings could normally be used to support this building. However, the presence of the Rapid Transit Tunnel may make it necessary to support this building on driven piles.

Buildings D and E - These buildings are underlain by compressible soil of varying thickness and they are located across the course of the Rapid Transit tunnel. The potential differential settlements require that these structures be supported on piles.

Building F - This building extends from an area underlain by firm material into an area underlain by some compressible material. The northwest end of the building could possibly be supported on spread footings while the southeast end would have to be supported on a mat foundation or a pile on pier foundation.

Swimming Pools - These pools may be designed as structurally independent units with integral stiffening beams. Pools are generally not as heavy as the materials excavated so settlements should not be excessive. Specific recommendations should not be made until the size and depth of the pools are known, but they can generally be supported in the surface fill.

LAKE MERRITT CHANNEL

It is proposed to realign the Lake Merritt Channel and construct new flood control facilities. The new alignment passes through the section of the site which is underlain by the soft Bay Mud. Considerations of stability must enter into the design of the banks of the new channel. Although the existing slopes appear to be steeper, it is anticipated that slopes of 3 horizontal to 1 vertical below the water level and 6 to 1 above

the water level may be necessary to prevent stability failures in the new slopes. Further investigation and study is needed to make final design recommendations for the slopes.

GRADING

Engineered Fill - It is recommended that all fill at the site be placed under the observation of the Soil Engineer and in accordance with the "Guide Specifications for Engineered Fill".

All asphaltic paving should be removed where the new fill will be 2 feet or less in height. It is not necessary to remove the asphalt paving where the fill will be thicker than 2 feet. After removing the paving, the underlying soil should be scarified to a minimum depth of 6 inches and recompactd as engineered fill.

The stripped asphalt paving may be mixed with the fill material if it is broken into pieces less than 6 inches in greatest dimension. Material which is removed from excavations elsewhere on the site may be used in the engineered fill except that the soft Bay Mud should not be used. All import material shall conform to the requirements for select fill material given in the guide specifications.

Settlement Markers - If the new fill is to be placed in advance of the building construction, settlement markers should be established in the fill after it has been placed. These markers should be firmly imbedded in the fill and surveyed regularly using precise leveling techniques. In this way, the time rate and magnitude

of settlement that will occur after the buildings are constructed can be predicted with greater certainty.

ADDITIONAL INVESTIGATION

Additional test borings have already been planned as part of the second phase of this study. In addition to these borings a few additional borings may be required in the east corner of the site to delineate the thickness of the Bay Mud, which is quite variable in this area. Also additional borings may be required to more closely determine the soil conditions underlying the Theater, Student Center and Building F that appear to be partially on firm soils and partially on compressible soils. More borings and samples are needed in the area of the proposed Lake Merritt Channel so that the stability of the channel banks and the behavior of the backfill that will be placed in the existing channel can be evaluated.

It is anticipated that several meetings between the Architects and the Soil Engineer will be required to discuss the alternatives in this report. The final planning of the second phase of this investigation can be made after these meetings.

LIMITATIONS

This report is preliminary in nature and is only the first phase in a two-phase study of this site. Additional field exploration and laboratory testing is necessary before final recommendations for this project can be made.

BOARD OF TRUSTEES
PERALTA JUNIOR COLLEGE DISTRICT

Stanley E. McCaffrey, President
Mrs. Margaret Fair Hayes, Vice President
Carl Dechow, Jr.
Reverend Richard A. G. Foster
Mrs. Cheryl Kleinhammer
William H. McFarland
R. Bryce Young

ADMINISTRATION - PERALTA COLLEGES

Dr. John W. Dunn, District Superintendent
Dr. Clement A. Long, Assistant Superintendent
Dr. Richard V. Matteson, Dean of Instruction,
Laney College
John Finn, Jr., Administrative Assistant- Facilities
Planning

SKIDMORE, OWINGS & MERRILL
ARCHITECTS AND ENGINEERS

John O. Merrill, Jr. - Partner-in-Charge of Project
Edward Charles Bassett - Partner-in-Charge of Design
Walter H. Costa - Project Manager
Allerton F. Blake - Job Captain
James L. Alcorn - Project Designer
Carl Gaede - Project Designer

SOIL ENGINEERS

Woodward-Clyde-Sherard & Associates,
Consulting Engineers & Geologists

SITE SURVEYOR

Theodore V. Tronoff - Civil Engineer & Surveyor

CREDITS

Sketches:	Carlos Diniz & Associates
Model:	Architectural Models, Inc.
Model Photograph:	Dwain Faubian
Site Photograph:	Clyde Sunderland
Report Design:	Gert Jensen