

A LAKE UNION AND UNIVERSITY PARK DESIGN
FOR KANSAS STATE UNIVERSITY
MANHATTAN, KANSAS

by

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INTRODUCTION

The Endowment and Development Association of Kansas State University is developing a tract of land in Riley County, Kansas adjacent to Tuttle Creek reservoir area.

The purpose of this development is for recreation and enjoyment of the University faculty, employees, students, alumni, conventioners, University guests and visitors.

This thesis is the study of a building complex and park to provide the above. It is called "The K.S.U. Lake Union and University Park".

HISTORY AND BACKGROUND

The History of Tuttle Creek Reservoir

When the Tuttle Creek Reservoir is filled, this reservoir will have a capacity of 2,280,000 tons of water, which, besides providing Kansas with a beautiful lake, will be an important flood control factor on the Kansas river.

This project is expected to do for Kansas what the Lake of the Ozarks has done for Missouri. A large national park is being considered in an area east of the reservoir and this is expected to become a large midwest recreation area. It will be known as the Grassland National Park.

The Evolution of Lake Union and University Park

In early 1957, it became apparent that Congress would act to make Tuttle Creek a "wet" dam. The Endowment Association became interested in the possibility of establishing a university recreation area somewhere along the shore line of the proposed Tuttle Creek Lake. Such a facility, it was felt, would be unique and a decided asset to Kansas State in many ways.

After maps were obtained from the Corps of Army Engineers showing the exact high and low water levels, the Endowment Association selected three sites to investigate. There was no question about the first choice. It was easily the most scenic spot in the valley--365 acres of spectacular beauty remarkably preserved in its natural state and abundant in cedar and oak trees, native grasses, and wild flowers. It had rugged hills and plateaus just where they should be for the purpose. Its high level areas, just inside the hilly woodland of its borders, afforded breath-taking views of the valley.

Two K-Staters, one a 1902 graduate and the other an 1890 graduate, owned the land. They liked the idea and were willing to cooperate by making it available at a reasonable cost. Kansas State University Park therefore became a reality.

The plan to finance the new University Park and Lake Union as set forth and carried through by the Endowment Association involved the platting of approximately 100 acres (along the northern boundary of the park) into private housing lots and streets. Faculty response was polled and found to be favorable.

Engineers were commissioned to survey the land, and 285 lots were ready for sale in December of 1958. The Endowment Association decided that only faculty, staff, alumni, and students of Kansas State University would be eligible to purchase the lots, and 165 of the available lots were initially sold. This enabled the Association to set up financing for the total 365 acres and it is anticipated that the remaining lots will be sold as soon as development begins.

GENERAL PLANNING CONSIDERATION

The Site

The area studied is located on the west bluffs of the Big Blue River approximately 15 miles north of Manhattan, Kansas, adjacent to the present junction of Kansas Highways 13 and 213.

The tract containing a total of about 365 acres will be bounded on the east by the main body of the Tuttle Creek Reservoir and on the north by Baldwin Creek (pages 24 and 25).

The legal description of the proposed site is as follows:

S $\frac{1}{2}$ of SW $\frac{1}{4}$, SW $\frac{1}{4}$ of NW $\frac{1}{4}$, NW $\frac{1}{4}$ of NE $\frac{1}{4}$, SE $\frac{1}{4}$ of NW $\frac{1}{4}$, NE $\frac{1}{4}$ of SW $\frac{1}{4}$, and the S $\frac{1}{2}$ of NE $\frac{1}{4}$ of Section 12, Township 8, Range 6, Riley County, Kansas.

At the present time, the K-State University Endowment Association holds an option on approximately 160 acres adjoining University Park. Negotiations are being made for the purchase of

this tract. It will be assured that the Endowment Association will have to purchase this acreage before any development takes place. These 160 acres under option have never been surveyed. Approximate contours have been plotted by the use of aerial photo and visits to the site.

The Climate

Data taken at Manhattan, Kansas:

Temperature:

Average normal temperature in degrees Fahrenheit:

Jan.	29.6;	Feb.	33.8;	Mar.	43.6;	Apr.	55.6;
May	54.9;	June	74.3;	July	79.7;	Aug.	79.5;
Sept.	70.5;	Oct.	57.0;	Nov.	44.0;	Dec.	33.7.

Mean maximum temperature:

Jan.	39.6;	Feb.	44.3;	Mar.	56.5;	Apr.	67.9;
May	76.6;	June	86.7;	July	93.0;	Aug.	91.5;
Sept.	83.6;	Oct.	71.2;	Nov.	56.0;	Dec.	42.9.

Mean minimum temperature:

Jan.	18.5;	Feb.	21.1;	Mar.	31.4;	Apr.	42.5;
May	52.8;	June	62.6;	July	67.3;	Aug.	65.8;
Sept.	57.8;	Oct.	45.2;	Nov.	31.8;	Dec.	22.8.

Highest temperature of this area on record is 116°. Lowest temperature of this area on record is -32°.

The sun:

The average number of clear days is 145, and the number of cloudy days is 94.

The wind:

Average hourly wind velocity in miles per hour:

Jan. 9.1; Feb. 9.6; Mar. 10.8; Apr. 10.8;

May 9.3; June 9.0; July 8.3; Aug. 8.3;

Sept. 8.6; Oct. 8.6; Nov. 9.5; Dec. 8.8.

Annual hourly wind velocity is 9.2.

The windiest months of the year are March and April as a rule. Slightly higher movement in April usually recorded the least wind movement. There is a marked variation in wind through the hours of the day. The movement increases during the hottest period of the day and falls off during the night. The highest velocities occur around 3 o'clock in the afternoon, and the lowest at 6 o'clock in the morning. The prevailing direction of the wind in the summer time is southwest. Winter wind is northwest.

Precipitation:

From 70 to 77 per cent of the annual total falls during the six warmer months of the year from April to September. This area's average is 24.64 inches for those months, and average annual precipitation in inches is 35.27.

Snowfall:

Average annual snowfall in this area is 18 inches; average 25 to 30 days when ground is snow-covered.

Relative humidity:

The lowest relative humidity occurs from 11:00 a.m. to 6:30 p.m. Average midday and early evening relative humidities over the state in July range from 45 to 50 per cent. Winter

season is near 70 per cent.

Description of the Natural Landscape

The uplands of the University Park are rolling prairie grasslands that are broken by limestone ledges where the land drops abruptly into densely wooded ravines below.

The native grasses and upland shrubs such as the smooth and fragrant sumac coralberry, jerseytea and roughleaf dogwood create a picture at all seasons of the year. Spring and early summer in the park are the most beautiful times of the year for it is then that the grasses are greenest and the wild flowers are most colorful.

The upland in the fall takes on a different type of beauty when mother nature paints the foliage and fruits with brilliant autumn colors. Associated with the rock ledges are the red cedars that add variation in texture and color of foliage during the fall and winter months. Below the rock ledges and deep in the ravines are found many species of trees. The American elm, hackberry, burr oak, and yellow chestnut oak dominate the area. A small number of sycamore, honey locust, green ash, and red bud contribute their share to the natural display. The beautiful wooded ravines will, when the Lake is filled, take on more beauty as the lower parts of them will be transformed into wooded bays and coves. (Page 25.)

The Need for this Type of Development

Kansas State University enrollment has been increasing through the years. By 1980 it is estimated that the enrollment will approximately be around 20,000.

The Kansas State Union and the City of Manhattan do not provide enough facilities for large conventions and good outdoor recreation to fulfill the needs of the present university enrollment.

This development should provide enough facilities for both of these things.

A study was made of the many kinds of activities that would be desirable for Lake Union and University Park, after consulting with the director of the Endowment and Development Association, the director of Kansas State Union, and the planning committee of the student governing board. The following list of proposed facilities was made.

Service.

1. Water supply, sewage disposal, electricity, telephone, intercom system between all activities.
2. Roads, paths, and trails between activities and buildings and parkings.
3. Roads to and throughout the park.
4. Police, fire protection, and storm warning program must be investigated and accommodated accordingly.

Main Building.

1. Recreation center which should serve as a recreation nerve center for the Lake Union.

- (a) Parking and driveways: There will be a parking lot for at least 1000 cars, and a driveway off the main road.
- (b) Main entrance lobby: It must have an information desk, coat room, and general office and public toilet.
- (c) Main lounge for men and women to meet and talk and relax.
- (d) Main ballroom to accommodate approximately 1000 couples. It must also provide stage and dressing room, and make the room so flexible that it can become a meeting room or banquet hall.
- (e) Main dining room should have a good view and a convenient connection with the main kitchen.
- (f) Conference rooms: Two for about 20 to 30 persons and the other for at least 75 to 100 persons should be easily accessible from the kitchen for service of food and drinks.
- (g) Main kitchen: For preparation of food which will be served in the dining room, ballroom, and conference rooms. The requirements for this area are as follows:
 - (1) Receiving, storage of food (dry and cold).
 - (2) Food preparation and cooking.
 - (3) Dishwashing and disposal system.
 - (4) Employee locker space.
 - (5) Bakery.

- (6) Serving pantry.
 - (7) Circulation area.
 - (8) Food supervision office, and storage.
 - (h) Administration office: A director's office which will control the area with space for private secretary.
 - (i) Public toilets for men and women.
 - (j) Storage room and janitor closet for tables and chairs which will be used in the building area, and janitor closet for storage of the equipment used by janitors.
 - (k) Reading lounge with provision for a number of books for people to read and relax.
 - (l) Music lounge should have a stereo set for people to hear classical music and musical hits of modern times.
 - (m) Television lounge: A place for relaxation and enjoyment for men and women.
 - (n) Game area: Game area for billiards, table tennis, etc., to be controlled by a person from the Union staff--should have men's and women's toilets.
 - (o) Adequate terraces.
2. Guest Center.
- (a) Main entrance lobby which can be reached from the parking area, must have an information desk, a general office, and public toilet.

- (b) Lounge for men and women to meet and talk, read, and relax.
- (c) It needs 250 - 280 guest rooms for conventioners, university guests or visitors, as well as university faculty, employees, students, alumni, etc.
- (d) Roof garden and observation lounge should be provided for the guests to look out, meet, talk, and relax.

3. Athletic Center.

- (a) Main entrance lobby which can be reached from the parking area.
- (b) Check room and storage. The clothes check room should be in the center of the building.
- (c) Men's and women's locker rooms should be in the wings at either end of the building. The desirable route from the dressing rooms to pool or outdoor playground should pass by the toilets and shower facilities.
- (d) Storage space.

4. Secondary Building.

- (a) Caretaker quarters--year-round occupancy.
- (b) Director's quarters--year-round occupancy.
- (c) Service station should cater both to the public and private housing area traffic.
- (d) Maintenance supplies and garage to be easily accessible to all maintenance areas and

caretaker's quarters.

- (e) Bath house.
- (f) Sport rental and repair shop.
- (g) Shelter houses--some enclosed with sleeping accommodations, and others open shelters.
- (h) First aid station and life guard station.
- (i) Comfort station for men and women.

5. Other Facilities.

- (a) Beach area for swimming.
- (b) Boat docks at the proper location.
- (c) Boat storage area.
- (d) Power lift.

6. Parking Area and Helicopter Port.

7. General Activities.

- (a) Rental service.
 - (1) Bicycles.
 - (2) Boats.
 - (3) Marine supplies.
 - (4) Sporting goods.
- (b) Water sports.
 - (1) Swimming.
 - (2) Boating.
 - (3) Slide for water sleds.
 - (4) Sun bathing.
 - (5) Sailing.
 - (6) Fishing.

- (c) Camping space.
 - (1) Permanent enclosed shelters.
 - (2) Open shelters from rain.
 - (3) Campfire meeting area.
 - (4) Shelter for bar-b-que fireplace.
 - (5) Picnic area and facilities.
- (d) Outdoor sport.
 - (1) Basketball court.
 - (2) Baseball diamond.
 - (3) Softball and tennis court.
 - (4) Badminton, paddle tennis, and handball.
 - (5) Horseshoes.
 - (6) Archery.
 - (7) Golf driving range.
 - (8) Passive playground.
 - (9) Horseback riding.
- (e) Winter sports.
 - (1) Skating.
 - (2) Ski run.
- (f) Others.
 - (1) Outdoor theater.
 - (2) Nine-hole golf course.

Water Supply and Distribution

The sources of water supply were considered to serve the recreational development and residential area. One source is

ground water, utilizing wells, and the other source is Tuttle Creek reservoir. There are several springs within the boundaries of the property. These springs are made by water percolating through the soil mantle into the crevices and cracks of the limestone strata which underly most of the area. Below the limestone lie more or less impervious shales which the water cannot penetrate, and this water seeks an outlet on the hillside where the outcroppings of the limestone and shale are exposed. Because of the quantity of water required to provide domestic and fire demands, ground water from springs on the property is not considered adequate. In order to locate sufficient ground water at depth, test drilling will be required. Since the valley of Baldwin Creek will be inundated by reservoir waters, it will not be possible to locate wells in that area. For the purpose of planning and estimating, the use of water directly from the reservoir is considered the more feasible with present available data. However, the possibility of ground water use should not be overlooked as the development program progresses. A drilling investigation should be made to search out ground water sources at depth. The use of ground water supplies generally requires treatment for hardness and chlorination. The construction of wells and maintenance of the system result in a much less expensive program than for the construction, maintenance, and operation of treatment facilities required by the use of surface waters.

Sewage Collection and Treatment

A system of gravity sewers and lift stations has been planned to provide waste disposal to serve the recreational and residential area.

A conference was held with representatives of the State Board of Health and it is generally agreed that the treatment works can be a series of stabilization ponds, often referred to as lagoons. These ponds fill all the requirements for a satisfactory disposal treatment system. The effluent can be discharged into a stream or water course because it has been satisfactorily stabilized and the pollution load has been greatly reduced, many ponds have been constructed to provide sufficient capacity to retain the entire sewage flow, thus providing for no discharge--the discharge being taken care of by normal evaporation rates. The stabilization ponds provide primary and secondary treatment similar to that of a secondary treatment plant. Although some maintenance is required to eliminate weeds and undergrowth from the embankment areas, very little additional attention is required. The series of ponds can be constructed by stages as the treatment demand increases from time to time.

THE GENERAL CONCEPT OF DESIGN

The designer has several primary ideas in mind as a general planning concept for the design of Lake Union and University

Park as follows.

The Lake Union

First of all, the designer thinks about the "view". The Lake Union should be on a much higher elevation than the housing development and would permit the occupants to enjoy unobstructed views of the beautiful surroundings.

The design objectives are to create a spacious and serene atmosphere to which people might retreat from the clamor and hustle of the city life.

Since the Lake Union is the recreation nerve center for the whole University Park, the circulation from entrance way to Lake Union and to different recreation facilities is a most important point for consideration.

We have two possible theories determining the character of the building itself. These are as follows:

- (a) to have it blend in with the natural surroundings, or
- (b) to have it contrast dramatically with the natural surroundings.

The designer feels naturalistic building and nature may produce a thing of great unity. But a surplus of unity also creates monotony. He believes the best features of an object can often be emphasized through contrast. Therefore from the design of Lake Union's recreation center, guest center, and athletic center, we will find the precision and whiteness of the concrete

forms contrast boldly with the natural forms, colors, and textures of the site. The sharp contrast between the elegant dynamic structure and the beautiful natural surroundings has dramatized the strongest qualities of each. The virginal nature seems more wild, and the building more precise, more eloquent. (Pages 26 and 27.)

The Recreation Center. The recreation center is the nerve center of the whole complex. The designer used a simple structure system to create an elliptic shape of long span "tent". The nucleus of the "tent" is the utility core, which includes larger central kitchen and many small areas for service facilities. With otherwise open floor areas, subdivision will be made in accordance with the requirements of individual leasees to provide for the various functions required for flexibility and accessibility. These are the main determining factors of the design.

The roof of this building uses folded-plate units. The wye-shaped columns carry the loads to the foundation. The first floor uses concrete space frame construction. Exterior walls all are made by sliding aluminum glass doors or fixed glass panels.

The floor covering may be rubber tile, carpet, or terrazzo tile. The building is completely air conditioned. The central utility ring, five feet wide, is used as a duct space for the different ducts of vertical distribution and the space within the concrete space frame is used for horizontal distribution. The screen wall in front of the building and the hung screen at

the rear of the building are used for sun control which also developed as an architectural feature. (Pages 27, 34, 35, 36, 37, 38, and 39.)

Guest Center. The high-rise building is the Guest Center, which consists of sixteen floors and each floor has sixteen units. It has a total of 256 guest rooms.

The first floor of the Guest Center is an entrance lobby with office and lounge area. The function of the entrance garden court is to separate the Guest Center from the noisy traffic circle and the main parking area. Sculpture and landscaping are used to enhance the space and to create more intimate close-up views of plantings and surrounding areas to contrast with the open vistas.

The typical guest room is a combination studio-bedroom during the day. The tastefully decorated studio room functions as an attractive living room. At night it converts quickly to a comfortable bedroom. Every room has a balcony and a view. Each pair of rooms can be thrown together to form a suite. Intercommunicating doors offer a parlor and a bedroom suite combination. The top floor of the Guest Center is an observation lounge with an outdoor terrace giving fascinating panoramic views of the reservoir and the University Park.

The Guest Center is a system of structure in which the floors are concrete or steel space frame, and are cantilevered from a concrete core. A year-round air-conditioning system is used. The space frame floor construction gives enough space for mechanical and electrical ducts, air conditioning, and plumbing

for horizontal distribution, and the central core provides for the vertical distribution. (Pages 27, 28, 29, 30, 31, 32, and 33.)

Athletic Locker Center. The Athletic Locker Center is an elliptical-shaped building. The clothes checking and equipment rental room is in the center of the building. The wings, at either end of the building, are for men's and women's locker rooms, dressing rooms, toilets and showers. All facilities are arranged so that patrons can pass through quickly without confusion.

The roof used is folded-plate concrete slab. Construction of the exterior wall should be of concrete brick or structural glazed tile for durability and easy maintenance. (Pages 26, 27, and 40.)

The University Park

The University Park site is an example of Kansas virgin land at its best. Nature's processes have been at work here for many years. It brings about the balance and harmony of living things, the rock ledges, the deeply wooded ravine, the upland meadows of native grasses, and the wild flowers that possess rare beauty and charm. The ability to appreciate this type of beauty has as much cultural value as the ability to appreciate the fine arts.

The primary purpose of University Park is the preservation of the beauty of nature. Therefore it should be a place to

display nature's forces, forms, and features.

Since human beings are a part of nature, we should adapt ourselves to nature and nature to ourselves.

Nature reveals herself to each man according to his interests and anything planned on the land affects the landscape. The designer feels the space relationship of different features in University Park should not only relate to each other about the immediate site but upon its extensional environment as well.

The designer also thought it should be the policy of the management of University Park not to destroy any more of the natural vegetation than is necessary. The moment this beauty is destroyed and replaced by exotic plants, much of the charm and character of the area will be lost forever. The nearer natural this park is kept, the less erosion will take place and less maintenance will be required to keep it beautiful.

(Pages 25, 26, and 27.)

Entrance Ways, Signs and Markers, Roads. The permanent access road will enter University Park from the southwest from the proposed new Kansas highway 213.

The entrance way of the University Park is approximately two miles from the highway.

The road locations are planned to fit the general contour of the terrain. A maximum grade of 14 per cent has been maintained. All roads are planned for a 60-foot right-of-way with a roadway 22 feet wide. Black top or a crushed rock or gravel surfacing is planned. (Page 26.)

Shelters. Some of the most useful buildings in the University Park are the shelters. The shelters are made of concrete with a central column with a roof of thin shell construction. These are usually open but sometimes enclosed or enclosable.

To fit different functions and purposes, the open and enclosed shelters may become comfort stations, bar-b-que shelters, etc., and group shelters work together serving different functions as required. (Pages 26, 41-44.)

Nine-hole Golf Course. The designer has carefully studied the existing topographic and climatic conditions in laying out the nine-hole golf course for the University Park. The par of the course is thirty-five. The par order is 4 - 3 - 4 - 3 - 4 - 5 - 3 - 5 - 4. (Pages 26 and 45.)

Amphitheater. The amphitheater designed for University Park is used in the summer time for plays, concerts, or a gathering place for music camp, science camp, etc.

The designer has carefully studied the existing topographical terrain and has located the amphitheater in a natural bowl. The seating capacity of this amphitheater is about 1200 persons. The stage is oriented to the northeast so that the audience will not face the afternoon sun. For acoustical reasons the theater is kept a good distance away from roads and drives. Sound amplification will be included where dramatic entertainment is to be offered. Provision was made for dressing room space in this design. The dressing room and storage space is under the stage. (Pages 26 and 46.)

Campfire Circles. From the park area the designer chose

five spots as campfire circles. This campfire circle is merely the provision of seating around the community campfire where the evening hours may be passed with song and story in the warmth of good comradeship and the friendly fire. Sometimes it may be used as an open gathering place or lecture circle for different student organizations, such as fraternities, sororities, music camp, science camp, etc. (Pages 26 and 47.)

CONCLUSION

This thesis is the study of a lake union and landscaping of the University Park. Recreation and enjoyment for the university faculty, employees, students, alumni, conventioners, university guests, as well as visitors to Kansas State University, are the goal of the project. The designer has used his ability to understand the natural advantages of the site, the character of the people and their needs, plus his own ideas and imagination in seeking a solution that will provide a pleasing architectural and natural environment.

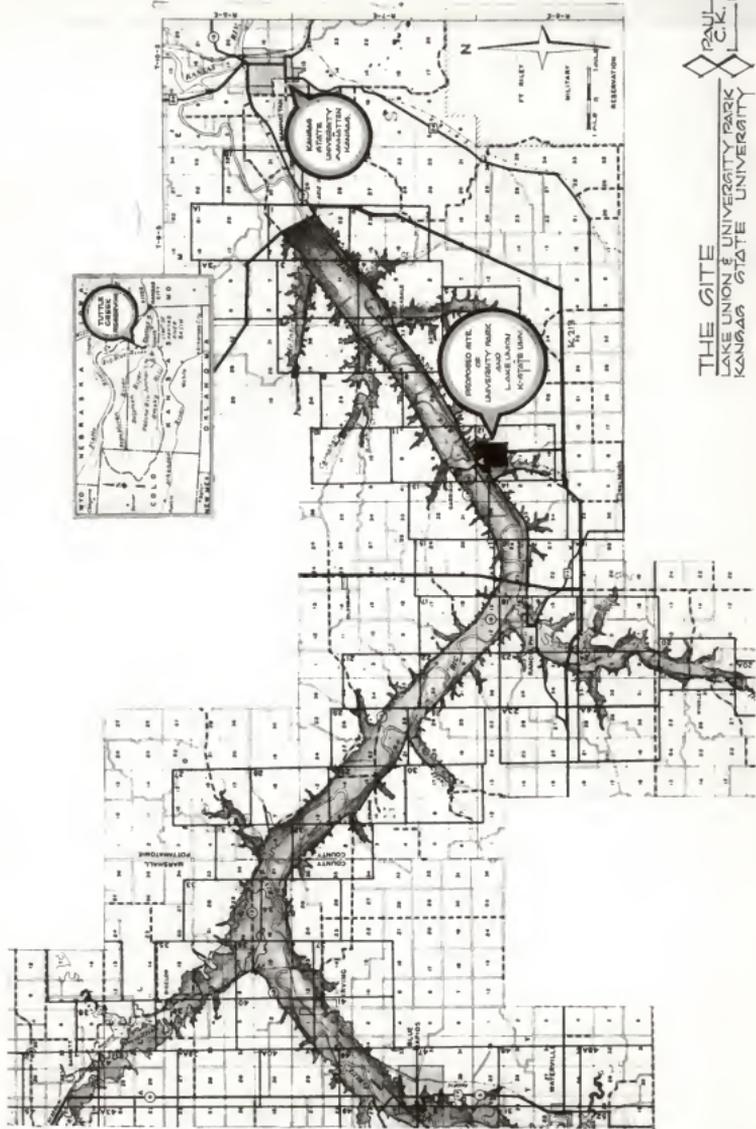
PRESENTATION

A LAKE UNION
& UNIVERSITY PARK DESIGN
KANSAS STATE UNIV., MANHATTAN, KANSAS

PAUL CHIH-KANG LU DESIGNER

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENT FOR THE DEGREE
MASTER OF ARCHITECTURE
KANSAS STATE UNIVERSITY.






 THE SITE
 LAKE UNION & UNIVERSITY PARK
 KANSAS STATE UNIVERSITY

ENTER
WINDS

L I E S
O F
L A K E

● FOR CLIMATE DATA OF THIS AREA
SEE THEIRS WRITTEN PART.
EQUN, WIND, PRECIPITATION,
SNOW, AND RELATIVE HUMIDITY,
TEMPERATURE, ETC.

● FOR DESCRIPTION OF THE NAT-
URAL LANDSCAPE OF THIS
AREA, SEE THEIRS WRITTEN
PART.

● THE GENERAL CONTOUR
REVEALS THE SOFT TO FLUDD
ALL LAND BELOW ELEV. 1140.00.



SUN SETS



SUN RISES

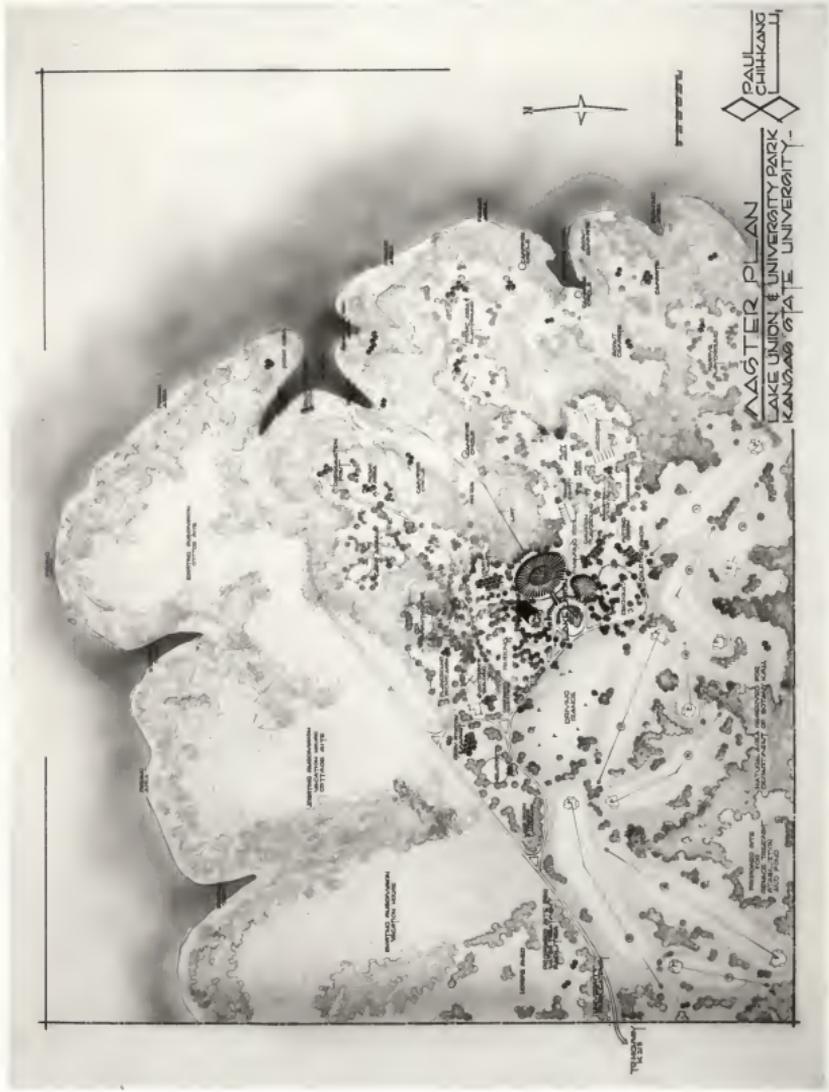


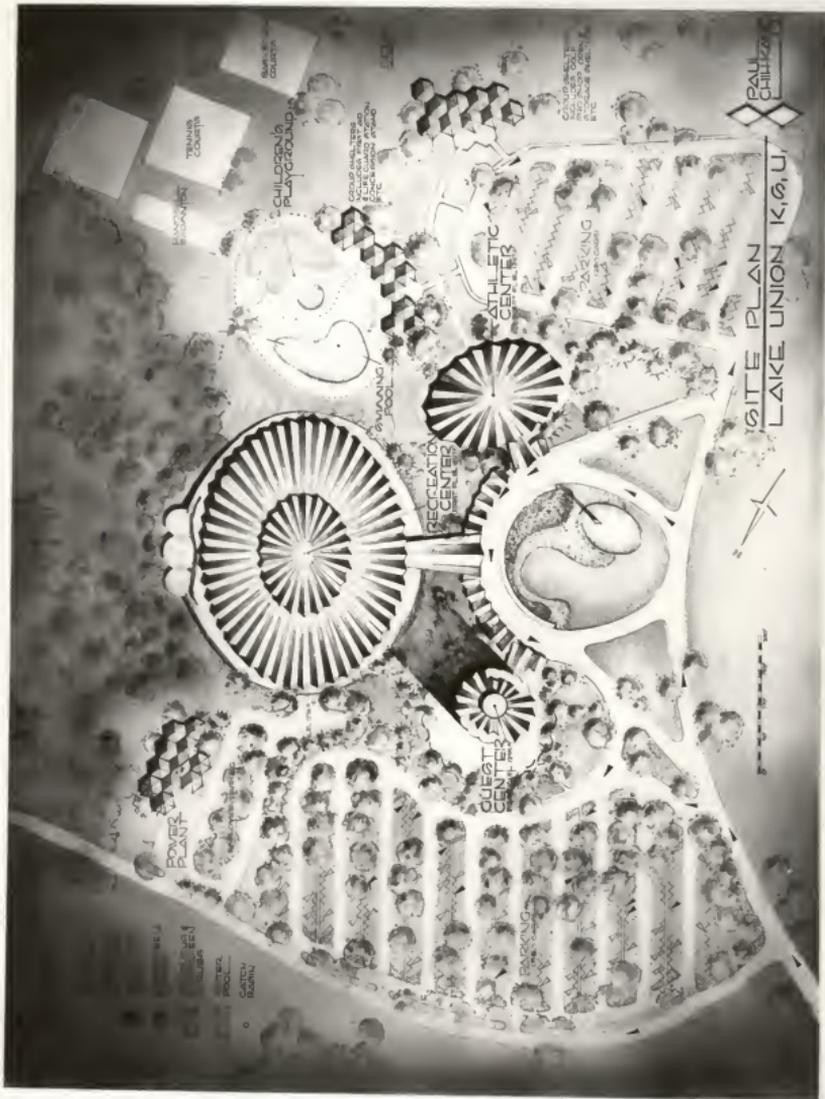
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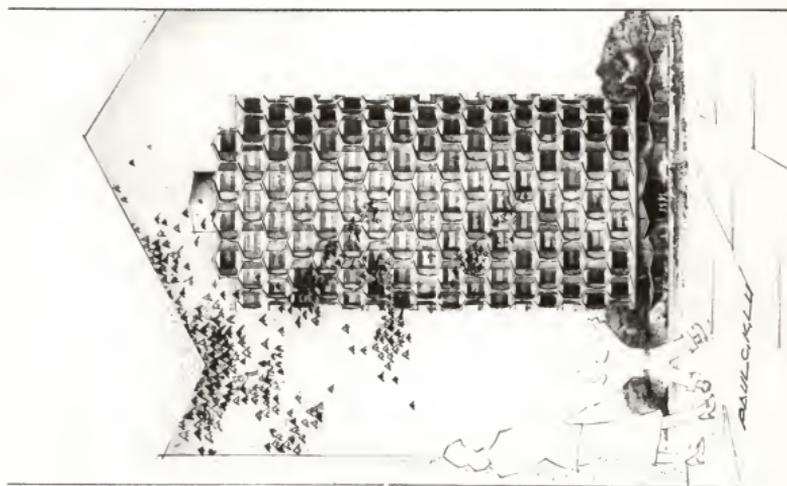
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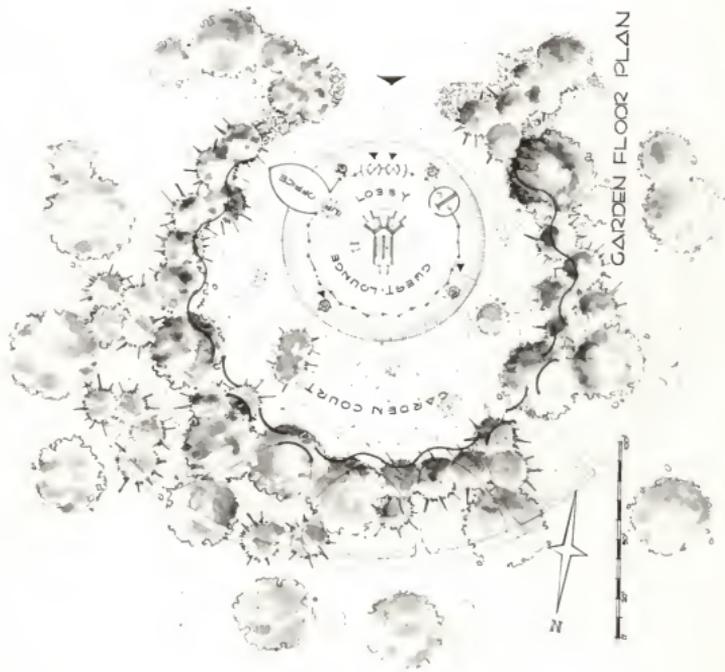
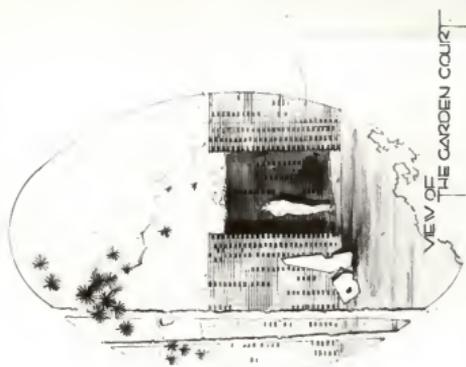






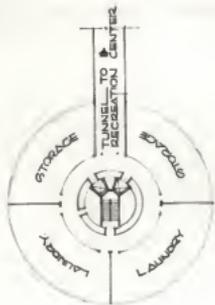
QUEST CENTER
LAKE UNION K&L
PAUL
L



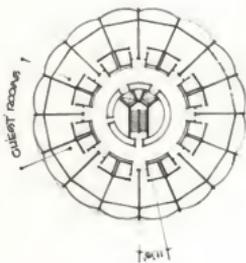


QUEST CENTER
LAKE UNION K&L

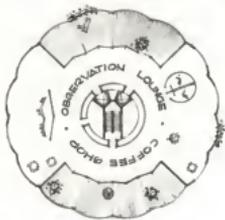
PAUL



BASEMENT FLOOR PLAN



TYPICAL FLOOR PLAN
FLOOR 2, 4, 14, 16.



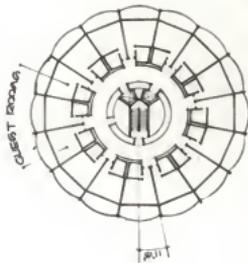
ROOF GARDEN
OBSERVATION LOUNGE



GROUND FLOOR PLAN.

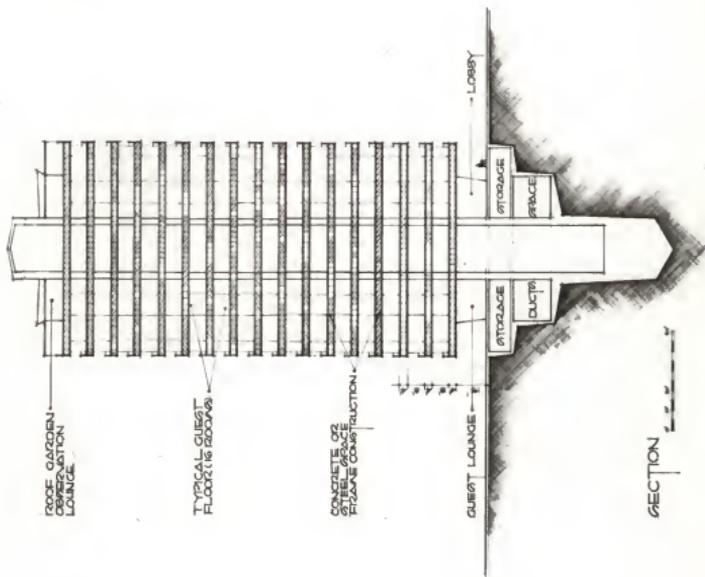


FIRST FLOOR PLAN



TYPICAL FLOOR PLAN
FLOOR 3, 5, 15, 17.

GUEST CENTER
LAKE UNION K, G, U,
PALU
CHITKANG



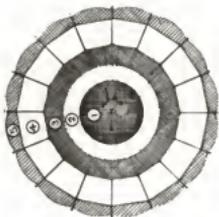
FIRST (AND VERTICAL) CIRCULATION
ELEVATORS, STAIRS, DUCTS (SPACE FOR HOUSEKEEPING FACILITIES)

SECOND (AND HORIZONTAL) CIRCULATION
(CORRIDORS)

THIRD (AND UTILITY CORE
(V.C. BATH FACILITIES, LAUNDRY,
DRESSING TABLE, CLOSET, ETC.)

FOURTH (AND GUEST ROOMS)

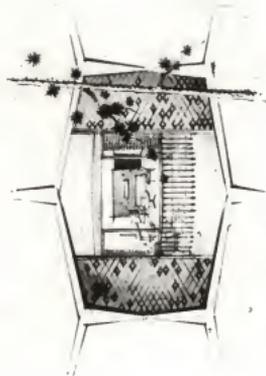
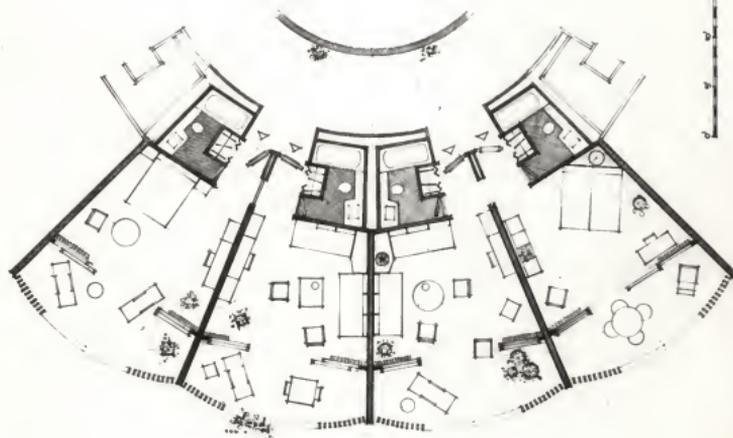
FIFTH (AND BALCONY)



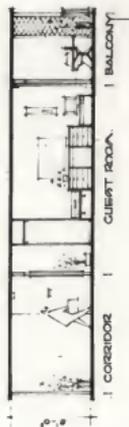
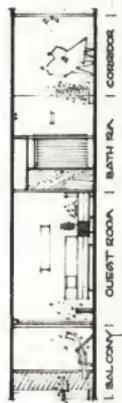
TYPICAL ZONING FLOOR PLAN

SECTION

GUEST CENTER
LAKE UNION K.O.U.
P.1



TYPICAL GUEST ROOM



PAUL
CHIZANEK
X
GUEST CENTER
LAKE UNION K (SAL)





INTERIOR DESIGN GUEST ROOM



FURNITURE, FABRICS,
BY
KNOLL ASSOCIATES INC.



GUEST CENTER
LAKE UNION K&L
C.K.L.U.

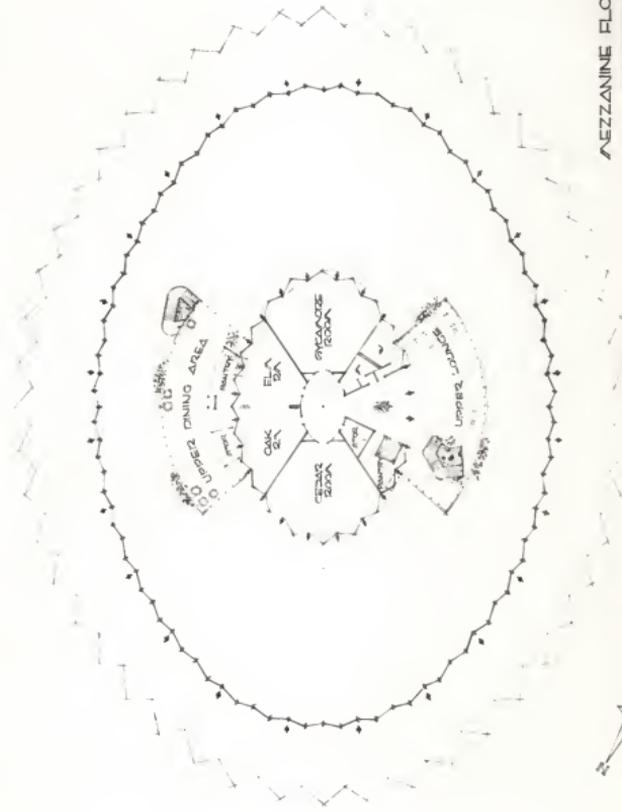


RECREATION CENTER
LAKE UNION K. S. U.
PAUL

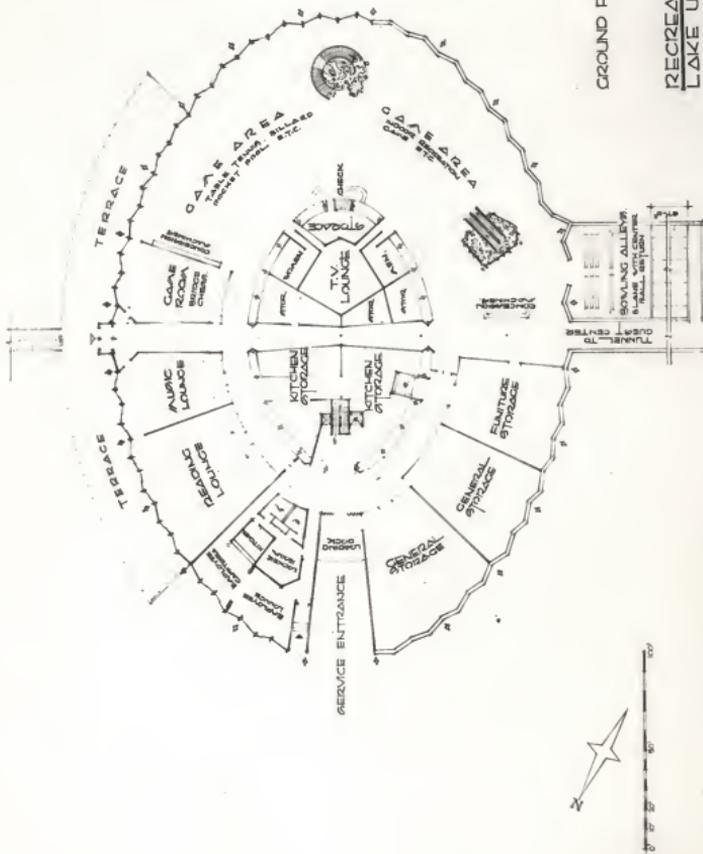
MEZZANINE FLOOR PLAN

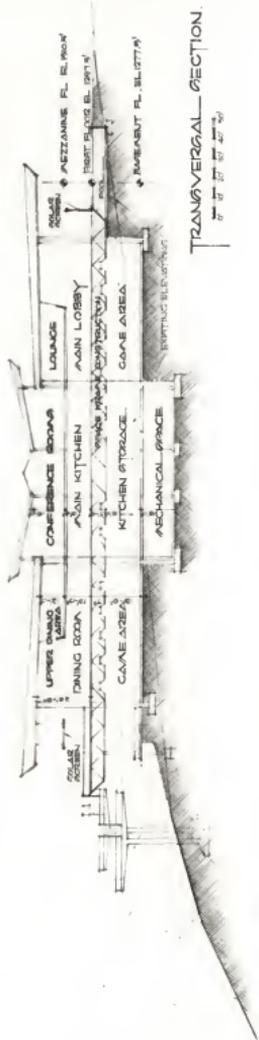


RECREATION CENTER
LAKE UNION K, S, U



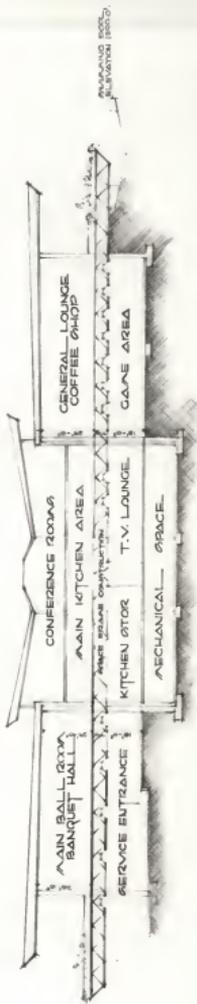
GROUND FLOOR PLAN



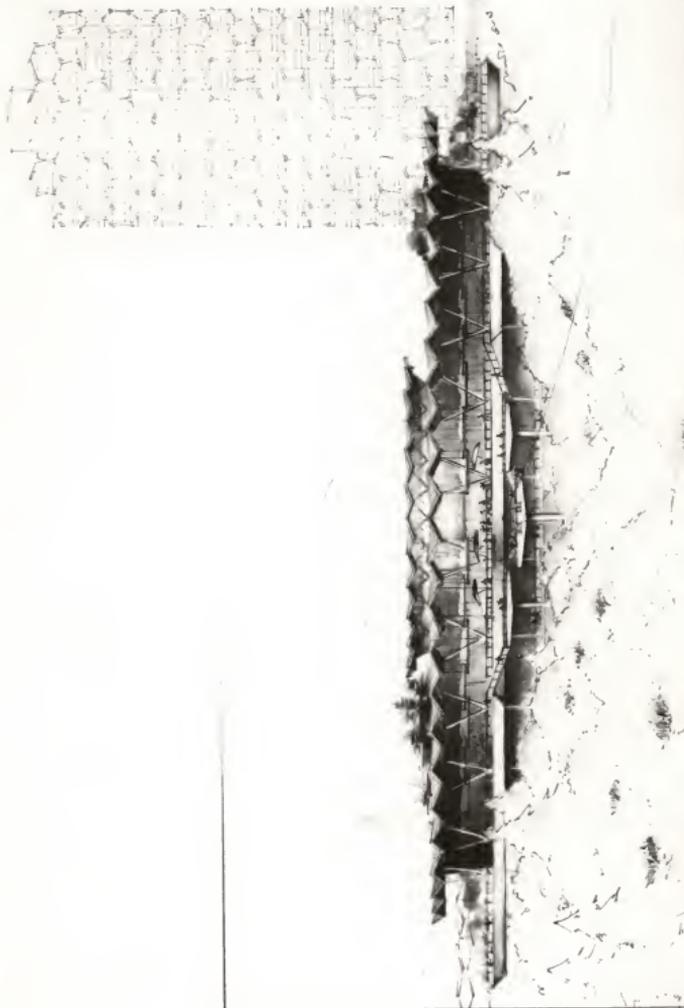


TRANSVERSAL SECTION.

10' 4" 10' 4" 10' 4" 10' 4"

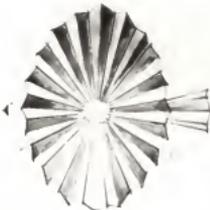
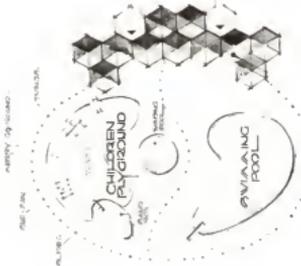
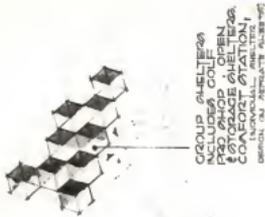


LONGITUDINAL SECTION

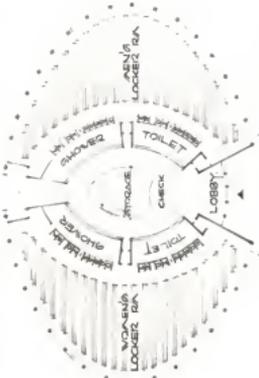


REAR ELEVATION
RECREATION CENTER

RECREATION CENTER
LAKE UNION K, S, U



PLOT PLAN



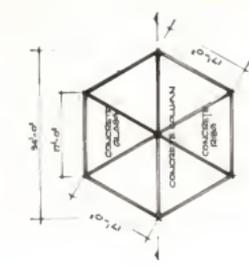
PLAN



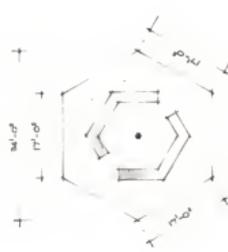
ATHLETIC CENTER
 LAKE UNION K.S.U.
 PAUL
 CHICK
 U

SHELTER DESIGN
UNIVERSITY PARK K&U
PAUL CHAI LAM





PLAN



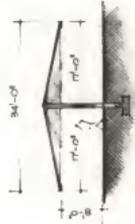
PLAN



GROUP SHELTERS WORK TOGETHER
SERVING THE DIFFERENT FUNCTION
AS REQUIRED.

ELEV.

OPEN SHELTER



SECTION

TYPICAL SHELTER
STRUCTURE DIAGRAM.



SHELTER DESIGN
UNIVERSITY PARK, K.G.U.,
P.L.U.



ELEV.

ELEV.

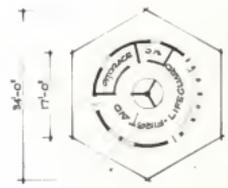
ELEV.

ELEV.



PLAN

STORAGE SHELTER



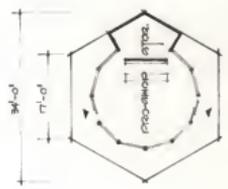
PLAN

FIRST AID AND LIFEGUARD STATION



PLAN

BAR-B-QUE SHELTER

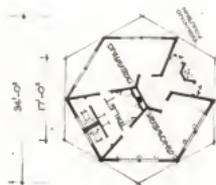


PLAN

PRO-SHOP



SHELTER DESIGN
UNIVERSITY PARK KAU, KAU, CHIKANG



PLAN



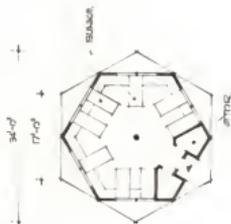
ELEV.
BATH HOUSE



PLAN



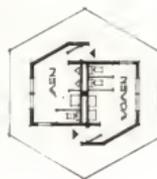
ELEV.
CONCESSION STAND



PLAN



ELEV.
CAMPING SHELTER

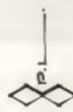


PLAN



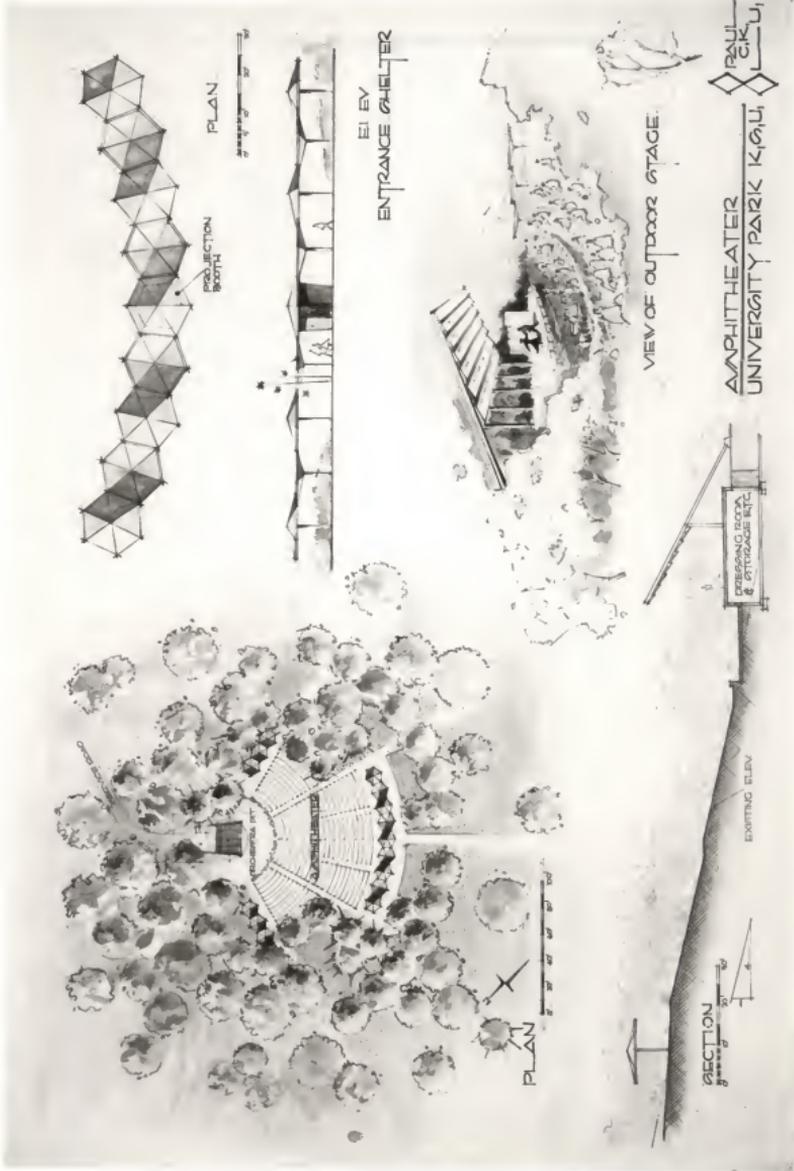
ELEV.
COMFORT STATION

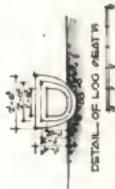
SHELTER DESIGN
UNIVERSITY PARK K&SU





CARD OF COURSE	
TEE BOX	LENGTH
1	180 YARDS
2	150 YARDS
3	170 YARDS
4	170 YARDS
5	425 YARDS
6	415 YARDS
7	300 YARDS
8	275 YARDS
9	400 YARDS
TOTAL	3142 YARDS





DETAIL OF LOG PALATIA



ELEVATION

CAMPEIRE CIRCLE
UNIVERSITY PARK KUALA

PL

ACKNOWLEDGMENT

The author wishes to take this chance to express his deepest appreciation and acknowledgment to Professor Theodore A. Chadwick of the Department of Architecture, Professor L. R. Quinlan of the Department of Horticulture and Landscape Architecture, and Mr. Kenneth M. Heywood, director of the Endowment Association at Kansas State University, for their cooperation and encouragement in the supervision of this work.

REFERENCES

1. Aly, Ahmed Raafat.
Reinforced concrete in architecture. New York: Reinhold Publishing Corporation, 1958.
2. Aronin, Jeffery Ellis.
Climate and architecture. New York: Reinhold Publishing Corporation, 1953.
3. Church, Thomas D.
Gardens are for people. New York: Reinhold Publishing Corporation,
4. Eckbo, Garret.
Landscape for living. New York: F. W. Dodge Corporation, 1950.
5. Editor of Architectural Record.
Motels, hotels, restaurants and bars. New York: F. W. Dodge Corporation, 1960.
6. Elements of design.
New York: Museum of Modern Art, 1952.
7. Gabrielsen, M. Alexander and Gaswell M. Miles.
Sports and recreation facilities for school and community. Englewood Cliffs: Prentice-Hall, Inc., 1958.
8. Giedion, Siegfried.
Space, time and architecture. Cambridge: Harvard University Press, 1952.
9. Giedion, Siegfried.
A decade of new architecture. Zurich, Switzerland: C.I.A.M. Group, 1951.
10. Gropius, Walter.
Scope of total architecture. New York: Harper, 1955.
11. Neutra, Richard.
Architecture of social concern. Sao Paulo, Brazil: Todtman Andeia, 1948.
12. Papadaki, Stamo.
Le Corbusier - Architect, painter, writer. New York: Reinhold Publishing Corporation, 1950.
13. Papadaki, Stamo.
Oscar Niemeyer works in progress. New York: Reinhold Publishing Corporation, 1956.

14. Simonds, John Ormsbee.
Landscape architecture. New York: F. W. Dodge Corporation, 1961.
15. U. S. National Park Service.
Park structure and facilities.
Washington, D.C.: U. S. Department of Interior, 1935.
16. Williams, R. Wayne.
Recreation places. New York: Reinhold Publishing Corporation, 1957.
17. Wright, Frank Lloyd.
An American architecture. New York: Horizon Press, 1953.
18. Yoshida, Tetsuro.
The Japanese house and garden. Translated by
Marcus G. Sims. New York: Frederick A. Praeger, 1956.
19. Zevi, Bruno.
Architecture as space. New York: Horizon Press, 1957.

A LAKE UNION AND UNIVERSITY PARK DESIGN
FOR KANSAS STATE UNIVERSITY
MANHATTAN, KANSAS

by

PAUL CHIH-KANG LU

B. S. in Arch. Engg., Taiwan College
of Engineering, Taiwan, China, 1955

B. Arch., Kansas State University, 1958

AN ABSTRACT OF A THESIS

submitted in partial fulfillment of the
requirements for the degree

MASTER OF ARCHITECTURE

Department of Architecture

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1962

This thesis is the study of a Lake Union and landscaping of the University Park. Recreation and enjoyment for the University faculty, employees, students, alumni, conventioners, University guests, as well as visitors to Kansas State University, is the goal of the project.

The University Park is a tract of land in Riley County, Kansas adjacent to Tuttle Creek reservoir area, and developed by the Endowment and Development Association for recreation and enjoyment of the University faculty, employees, students, alumni, conventioners, University guests and visitors.

The two divisions of the problem are: the University Park and the Lake Union. Study leads us to recommend a trilateral type plot plan for the design. The high rise unit is a guest center, 18 stories high, the first floor includes an entrance lobby with office and lounge area. The floors from two to 17 are typical guest floors. The top floor has an observation lounge and roof garden.

The recreation center building is the nerve center for the whole complex. The main floor has an entrance lobby, a general lounge, a coffee shop, dining space, and ballroom. The main kitchen and service facilities are at the center of the building. The mezzanine floor contains four conference rooms and game area, TV, and music lounge. Storage space is in the basement.

The athletic center has a central check room. The wing at either end of the building contains men's and women's locker rooms.

View and circulation of the whole park are the major considerations for site selection, and the character of the building is to contrast dramatically with the natural surroundings. Landscaping is an important amenity, deserving careful study as an integral part of the scheme and decisive in establishing a desired character.

The designer not only treated the outward as a mirror of the inner purpose, but also from the very start structural, mechanical, and even electrical and plumbing requirements played an essential part in the architectural conception.

The primary purpose of University Park is the preservation of the beauty of nature, and since the site of this park is an example of a Kansas virgin land at its best, the designer feels that we should not destroy any more of the natural vegetation than is necessary.

The park contains a 9-hole golf course, total distance 3142 yards; a driving range for practice and physical education; an amphitheater for plays and concerts in the summer time; three campfire circles at different spots; passive and active playgrounds; basketball and volleyball courts; baseball diamond; softball field; tennis court; badminton and paddle tennis court; archery; horseshoes area, horseback riding, hiking place; swimming facilities and beach swimming area, water sports and camping areas, etc.

In summary, the designer has used his ability to understand nature, the character of people and their needs, plus his own

ideas and imagination when preparing studies for this project. He feels the resultant design presents a satisfactory and a pleasing solution to the problem.