

LANDFORM AND ARCHITECTURE

an architectural thesis by candace tillotson

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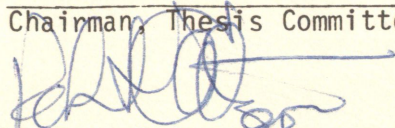
LANDFORM AND ARCHITECTURE

by
Candace Tillotson

A professional paper submitted in partial fulfillment of the requirements
for the degree of BACHELOR OF ARCHITECTURE.

Advisor

Chairman, Thesis Committee



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Candace Tillotson
Candace Tillotson

6/13/85
Date

My thesis is dedicated to my family for their unrequited devotion in my personal efforts. A special dedication goes to my Grandmother Rose, who now has an architect in the family.

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INTRODUCTION

This last summer while walking towards snowfields in Alpine Meadows at 11,000 feet, I attempted to sort random thoughts, concretize goals and determine my personal aspirations. Ultimately, this process was to lead to the discovery of what I would like to do as a thesis project the coming winter and spring.

That afternoon, having been joined by a friend, I confided the uncertainty I was experiencing in choosing a subject. She suggested a veterinary clinic.

"How wifely!", was my immediate response because my husband was completing his studies in veterinary medicine. Another of my reactions to her suggestion of such a technical facility created physical manifestations which produced a distinctly dry, gluey feel in my mouth. I couldn't imagine where, in such a building, I would find the opportunity for artistic expression to surface.

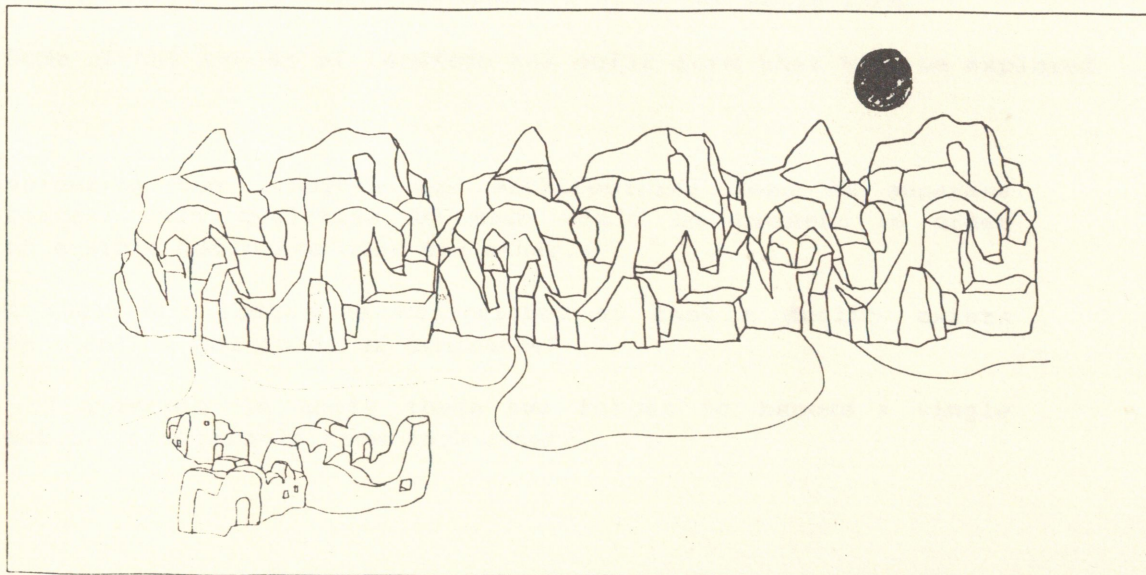
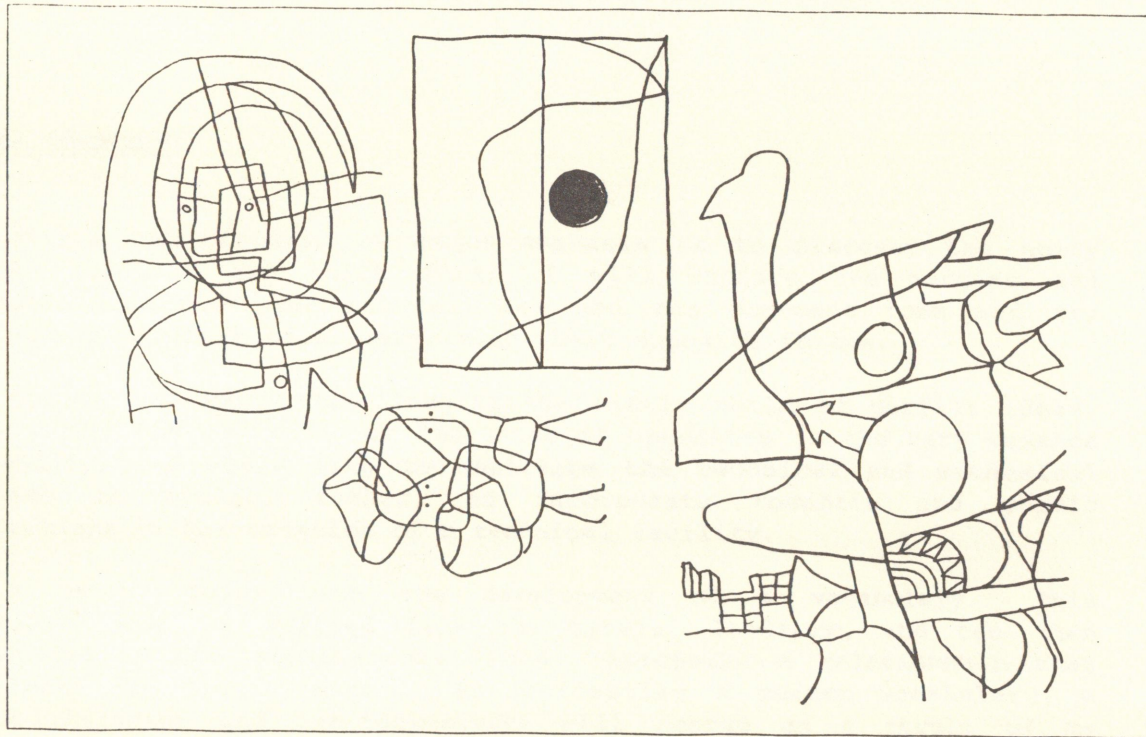
I tried my best to go on to new themes, but my thoughts kept returning to a third year project in which I was to design housing facilities for a veterinary clinic. The clinic was located on a wonderful New England farm outside of Boston which allowed me to reach a solution beyond what I had imagined because of the influence of the site and landscape. Drawing from that experience, I allowed myself to meditate on the potential richness of a veterinary clinic 'community' in an equally ideal setting.

Rather than approaching a veterinary clinic as a technical problem alone, I now felt I could incorporate an aspect of architecture that I had briefly touched in past projects. That aspect, "How the natural landform and architectural environment relate to one another as an inhabited landscape," would hopefully lead to a new visual understanding of what has traditionally been a purely technical and functional solution.

What I first reacted to as distasteful in designing a veterinary clinic I now perceive as a challenge. As an architectural student, I am always exercising my sensitivity to human environmental and spacial qualities. In designing the clinic, I would not only consider the human environment, but also that of the animals. Specifically, I would focus on a nurturing environment that centers around the care of sick and disabled animals. This challenge will extend to defining an image for a veterinary clinic, its meaning within our culture and in the landscape. The practice of large animal care has moved from the scenerio of farmyards and ranches to more sophisticated facilities where image has conceded to satisfying the functional aspects of the building. The built form must also strive for the qualities of architecture which can affect not only the intellectual perception but also the spirit and soul of all who use or pass through it.

"Romantic architecture is the architecture of rebellious individuals created outside the walls of academia, requiring professional skills and architectural talent that cannot be formed by simply studying classical principles."

Lesnikowski



Intuitive interpretation of nature as the major contributor to architecture of sculptural expression.

THESIS STATEMENT

Within this thesis, my major emphasis is to discover the unity between landform and built form. I will explore the merging and integration between the natural form and the man-made form and try to create a matching of elements with their opposite forces.

Heraculitus wrote "challenging the static world of perfect ideas, arguing that contradiction or the union of opposites is the very essence of reality." I would like to challenge the technical and mathematical approach in design, rather, to incorporate romantic and poetic inspirations in the creation of a technical facility.

A unity begins with the development of a vocabulary. This vocabulary will be derived from the natural landform, and can then be applied to the architectural form, expressing a relationship that interlocks the two elements. By manifesting a common vocabulary, a unique character and interdependence will emerge as a result of my exploration of the specific site. This technique of inspiration to direct a building design is a contextual approach, organic in nature, and is a technique which marries landform with the build form.

Some of the issues of landform and built form that will be explored are:

- Considering the landform and architectural form as separate forces, what qualities by each would be present in order to exhibit dominance over the other.
- Can these two forces be manipulated so that a duality exists by changing the roles of dominance?
- Is it possible to unify these two forces to become a single entity, inseparable from each other?

- How do the forces compliment or contradict each other?
- Does the built form transform the landform to construct a second nature with its own sense of balance and imbalance?
- Where does the transition from landform to built form become evident, and can this be de-emphasized or emphasized by technique?
- What are the contradicting factors of internal and external forms?
- Can the inside of a building reflect and merge with the character of the surrounding landform?
- What are organic characteristics and how can they translate into architectural terms?

As I begin this search, I see the answers behind veiled layers, emerging and receding, vivid one moment and elusive the next. As Heidegger aptly composed it "Everything that already is, though still hidden from itself."

In addition to the veterinary clinic as a major architectural component, a research facility has been introduced as a primary element. In addition to these two technical facilities, residences will be provided for the doctors and their families to lend a sense of a community.

VETERINARY CLINIC

The primary function is a veterinary clinic that serves the surrounding community of Livingston, Montana, for the care of large animals. These large animals will typically be horses and cattle. Considering the sophisticated facilities and specialized knowledge of the doctors, it is likely that patients will be drawn from beyond the immediate borders of Park County.

VETERINARY RESEARCH CLINIC

The second function the veterinary clinic is an "applied" research facility. The facility, such as the one I am proposing, is privately funded by a pharmaceutical company that will perform observational and comparative studies of the effects from experimental drugs on large animals. The "applied" research will administer programmed levels

of drugs to a group of animals. Data will then be recorded relating to the effects of the drugs on the animals by observing physical behavioral responses. Comparative analysis and testing will require stringent controls and procedures.

This type of facility should not be confused with the type of research clinic at Montana State University in Bozeman, Montana. The M.S.U. facility performs "basic" research through the use of highly sophisticated equipment. Through the use of this equipment it can be observed how the cell membrane (versus the animal itself) reacts in the presence of a certain drug.

The functions of the University Research Clinic, however, is actually a supportive facility to the research program which is proposed. For example, if an animal should die due to the toxicity level of an experimental drug, tissue samples would be sent to the university labs for analysis. The analysis would determine in what organ tissue the toxicity levels were highest and how it was affected.

Another supporting feature of the university for the "applied" research facility, is the number of technical resources available. These include, but are not limited to, the technical library, facilities, research staff, computer facilities, guest lectures, etc.

PROGRAMMING STATEMENT

On the following pages are listed some of the goals, facts, concepts and needs that have been designated through the programming process as primary considerations. No attempt on my part has been made to become an expert of the technical operations systems, but rather, to acquire a general overview of the needs.

In designing such a facility one must draw upon the available information of a technical facility as a guideline for establishing the overall parameters of the project.

VETERINAY CLINIC

GOALS

To develop an architectural image that is contextual and contemporary.

The building form should respond to the site, thereby complimenting and integrating the physical relationship between architecture and nature.

To avoid contact between animals and vehicles, the traffic flow on the site should be kept to a minimum.

Organization of the building must be efficient in such a way as to allow maximum performance levels by the staff in serving the health needs of animals.

Maximum number of animals:

Food animal	34
Equine	34
Isolation	<u>3</u>
Total:	71

FACTS

In order to produce a comfortable environment for an animal, these basic factors must be met:

Keep animals clean and dry.

Bedding must be kept dry and clean and change as often as necessary to eliminate odors and contamination.

Comfortable air temperature must be maintained.

Sufficient space to permit freedom of movement and normal postural adjustments must be made available.

Avoid unnecessary physical restraint.

Convenient access to clean food and water must be made available.

Grouping in stalls--prevent overcrowding

Avoid sharp edges that could cause injuries

Isolation wards are used in the separation of animals that are known to be or suspected of being diseased, or known to be or suspected of carrying diseases, from animals whose ailments are controlled.

The physical separation of animals by species is necessary to protect against interspecies transmission of infectious diseases and to prevent anxiety due to interspecies conflict.

Observation of an animal should continue after post surgery until the animal has recovered from anesthesia to ensure the animal's physical comfort and optimal recovery.

Environmental factors known to modify an animals biological responses, with possible but unproven psychological effects are exposure to methods of handling, population density, type of containment, noise, photo period, temperature, humidity, and ventilation.

The physical condition and design of animal facilities, to a great extent, determine the efficiency of their operation.

Good animal husbandry and human comfort require separation of animal facilities and personnel areas such as offices, conference rooms, and laboratories, separated by entry locks or corridors

Corridors should be a minimum of 7 feet wide.

Building materials should be selected to facilitate efficient and hygenic operation of animal quarters: durable, waterproof, fire resistant, seamless materials are desirable for interior surfaces.

Effective ventilation is necessary to regulate room temperature and to promote comfort. Important factors for proper ventilation are temperature, humidity, air movement, and air pressure.

Ventilation system should provide 10 - 15 air exchanges per hour without creating drafts.

There should be no recirculation of room air, unless it has been treated to remove particulate contaminants.

Odor control in animal facilities depends on the number of animals housed, sanitation practices as well as on a ventilation system

Human occupancy and animal facilities should be separated from refuse areas

An area for sanitizing equipment and supplies is essential, to keep equipment physically clean, reduce obnoxious odors and minimize the spread of infectious diseases.

There should be a separate holding area for soiled and clean equipment to minimize contamination

Large domestic animals are usually housed in pens and barns in rural areas

Recommended fence height for horses and cattle = 52 inches.

Space recommendation for animals

Horses:	Tie Stall	44 square feet
	Pen	144 square feet
Cattle:	Stanchion	24 square feet
	Pen	140 square feet

Overhead doors to allow trucks to drive into or through a treatment area

Door dimensions: 10' X 10'

Truck/trailer = 55' long
turning radius = 50' (maximum)

Users of Clinic

- Sick and disabled animals
- clients (owners of animals)
- professional staff

Users--Professional Staff

- 2 Doctors of veterinary medicine
- 1 internship
- 1 technician
- 1 office clerk
- 5 Total

Activities of each staff member:

D.V.M.--Diagnosis of animal illnesses

- administer treatments
- ambulator care
- client consultations
- surgery
- cleaning of facility

Intern--(An intern is a D.V.M. seeking experience in a specialization of medicine)

- Require input and guidance from D.V.M.
- Diagnosis of animal illnesses
- Administer treatments
- Ambulatory care
- Surgery assistance
- Cleaning of facility

Technician--Prepare equipment and animals for treatment and surgery

- Monitor recuperating animal
- Report to D.V.M.s and intern D.V.M.s on conditions of animals
- Cleaning of facility
- Sterilization of equipment
- Cleaning of linen

Office Clerk--Maintain health records of animals

- Maintain financial records of clinic
- Meeting clients and scheduling appointments
- Taking calls

Relationship among staff:

The professional staff are dependent upon each other's performances to effectively care for the patient's needs, although in many instances the activity is performed independently.

CONCEPTS

Development of an architectural language to an architectural character inspired and derived from the existing landscape using its own unique rhythms, proportions, balances, textures, colors, and continuity of space.

Allow the influences of nature as a cyclic or seasonal force and as a weathering element in directing the development of character in form and spaces.

Juxtaposing or de-emphasizing the concept of transition from inside to outside, that is from enclosure to openness, from light to dark, to ultimately create a series of experiences between the two.

Use of extended views outdoors as visual movement from within a contained environment.

Hill as central core with supporting and extended landscape as the basis for existence.

Architecture and landform conceived as two forces that can dominate or concede to one another or integrate.

NEEDS

Veterinary Clinic

Total square feet = 17,142

ADMINISTRATIVE AREA

	Number	Square Feet	Total Square Feet
Main Entrance	1	100	100
Waiting Room	1	100	100
Clerical Office	1	200	200
Restrooms: Men	1	36	36
Women	1	36	36
General Storage	1	300	300
Library/Conference	1	250	250
Private Office	2	120	240
Lounge/Kitchen	1	170	170
			Subtotal: 1,432

Main Entrance

100 square feet

- Goal:** Gateway to clinic as an architectural statement.
- Function:** Identifies entrance to building
- Users:** Staff and clients
- Concepts:** Point of transition from outside to inside
Visually allow view to extend outward
- Needs:** Double entry due to severe winds and winter conditions

Waiting Room

100 square feet

- Goal:** To provide a comfortable environment
- Function:** Announcement of client arrival
Designated waiting area for client
- Users:** Clients
- Concepts:** Humanistic surroundings
Visually active
- Needs:** Comfortable seating
Place to hang coats and hats

Clerical Office

200 square feet

- Goal:** Operational efficiency
Welcoming atmosphere
- Function:** Announcing clients arrival to D.V.M.
Maintaining records
Scheduling appointments
- Users:** Office clerk
Staff obtaining information
- Concepts:** Central core of human activity
- Needs:** Space definition to separate office activities from waiting area.

General Storage

300 square feet

- Goal:** Ease in obtaining stored supplies
- Function:** Bulk Storage
- Users:** Entire staff
- Concepts:** Direct circulation
Accommodating aisles
- Needs:** Shelving
Adequate lighting

Library/Conference

250 square feet

- Goal:** Area of retreat allowing quiet and an atmosphere that promotes comfortable interaction
- Function:** Research area
Clinical business discussion area
- Users:** Staff
- Concepts:** Visually subdued
Introspective surroundings
- Needs:** Conference table, book storage, adequate lighting for reading activity

Private Offices

120 square feet each

- Goal:** Area of complete privacy
- Function:** Doctor and client consultation of patient status
Personal office
- User:** D.V.M.
Clients
- Concepts:** Natural element as a contemplative visual focus
Subdued atmosphere
- Needs:** Seating for two clients, desk and chair, shelf and drawer storage

Lounge/Kitchen

170 square feet

- Goal:** Celebration of the worker
Segregated area with relaxed atmosphere
- Function:** Communal eating area
Area of relaxation and social interaction
- Users:** Staff
- Concepts:** Homelike atmosphere
Movement to outside
- Needs:** Access to outside, kitchen facilities, dining table
and chairs, couch and chairs.

Food Animal Ward

	Number	Square Feet	Total Square Feet
Stalls	4	144	576
Special Care Stalls	1	225	225
Stalls (Semi-sheltered)	6	600	3,600
Supply Room	1	250	250
Tackroom	1	100	100
Hay/Grain Storage	1	225	225
Trash and Waste	1	100	100
			Subtotal: 5,076

Equine Ward

	Number	Square Feet	Total Square Feet
Stalls	4	144	576
Special Care Stalls	1	225	225
Stalls (Semi-sheltered)	6	600	3,600
3 - 4 a stall			
Supply Room (Equipment/Drugs)	1	250	250
Tackroom	1	100	100
Hay/Grain Storage	1	225	225
Trash and Waste	1	100	<u>100</u>
			Subtotal: 5,076

Isolation Wards

	Number	Square Feet	Total Square Feet
Stalls	3	144	432
Hay/Grain Storage	1	50	50
Tackroom	1	50	50
Supply Room	1	20	20
Trash and Waste	1	100	<u>100</u>
			Subtotal: 652

Wards:

Equine 5,076 square feet
Food animal 5,076 square feet
Isolation 652 square feet

Goal: To achieve an atmosphere that promotes efficiency, cleanliness and that maintains an element of harmony with the surrounding pasture.

Function: To house sick and disabled animals
 To provide easy observation of the animals

Users: Patients
 Staff

Concept: To provide an environment conducive to the physical healing process without causing undue anxiety.

Needs: Direct and uninterrupted circulation
 Stall heights that allow visual contact with other animals
 Stalls that promote a safe environment
 Natural lighting with blind controls
 Easy access to food and water
 Overhead doors for drive in convenience

Sterile Supply

	Number	Square Feet	Total Square Feet
Decontamination (autoclave)	1	50	50
Clean assembly	1	25	25
Storage	1	60	60
Laundry	1	30	30

Subtotal: 165

Sterile Supply

165 square feet

Goal: To effectively and efficiently perform the function of sterilization

Function: To sterilize equipment and linen and to launder linen

Users: Staff

Concepts: To prepare a functional room that can possess interest through views, materials and form

Needs: Shelves, sink, storage for supplies, folding table, natural lighting.

Treatment and Examination

	Number	Square Feet	Total Square Feet
Scales	1	180	180
Stations: 1 stall	1	380	380
1 stanchion	1	380	380
Holding Pen	2	100	200
Sorting Area & Working Chutes	1	1,000	<u>1,000</u>
			Subtotal: 2,060

Treatment/Exam

2,060 square feet

Goal: To effectively and efficiently diagnose and treat a patient without causing undue anxiety to the patient.

Function: To examine and diagnose the sickness or disabling effects of a patient. To administer treatment and decide the status of the animal as an inpatient or outpatient.

Users: Staff
Client
Patient

Concepts: First introduction to clinic interior for the patient.
Provide a subdued, safe, and non-alienating environment

Needs: Overhead doors
Natural daylighting with blind control
Sinks and work counters
Open floor plan centered around stations

Radiology

	Number	Square Feet	Total Square Feet
Radiology Room	1	325	325
Holding stall	1	144	144
Darkroom	1	60	60
Tank Storage	1	12	12
Isotope Room	1	150	<u>150</u>
			Subtotal: 691

Radiology

691 square feet

Goal: To effectively and efficiently take X-rays of patients without undue anxiety to the patient.

Function: X-ray as a means of diagnosis and treatment for patients

Users: Staff
Patients

Concepts: Controlled and safe environment

Needs: Controlled lighting
Open floor plan centered around holding stall
Sinks and countertops in both radiology room and darkroom

Surgery--Equine

	Number	Square Feet	Total Square Feet
Operating Room	1	325	325
Induction Room	1	160	160
Scrub Areas	1	50	50
Locker Rooms: Men	1	100	100
Women	1	100	100
Sterile Supply	1	100	100
Monitoring Room	1	150	150
			Subtotal: 985

Surgery--Food Animal

	Number	Square Feet	Total Square Feet
Operating Room	1	325	325
			Subtotal: 325

Surgery:

1,310 square feet

Equine

985 square feet

Food animal

325 square feet

Goal: To perform the surgical operation as efficiently and effectively without undue anxiety to the patient.

Function: A room equipped for the performance of surgery and recovery in a controlled environment.

Users: Staff
Patients

Concepts: Controlled and safe environment

Needs: Hydraulic Operating tables
Sinks and work counters
Portable equipment and tables
Padded induction and recovery room for horses
Controlled lighting
Open floor plan centered around operating tables

Parking

approximately $\frac{1}{2}$ acre (21,780 square feet)

accommodation: 6-7 Truck/Trailer units 55' long

Mechanical Room

Five percent (5%) of total building square footage (26,000 square feet)
= 36 square feet.

PROBLEM STATEMENT

The function of the clinic is to nurture sick and disabled animals so that they can return to their natural pasture habitat, therefore the design should reflect elements that are indigenous and contextual that merges with the surrounding landform.

Because of the ailing condition of the clinical patients, the design should respond to the need of a quieting environment.

Since the site has a singular beauty, the design should embrace and emphasize those natural elements.

Since there is a need to capture an image of a veterinary clinic in an existing contextual surrounding, the design should respond to this significant need.

Since the clinic and houses are to be set into a pastoral and romantic surrounding, the design should respond by de-emphasizing boundaries of inside and outside.

Even though the landform does undulate with soft peaks and ridges, the predominant quality of the site has a 'blanketing' effect without any domineering vertical elements, therefore, the design should be responsive in proportion.

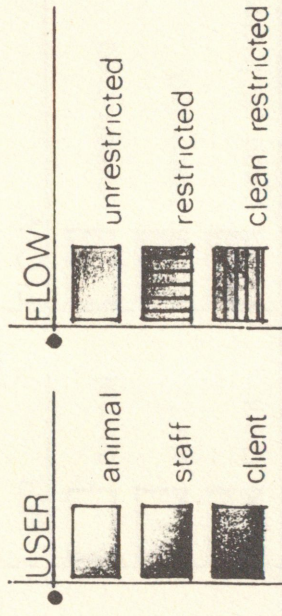
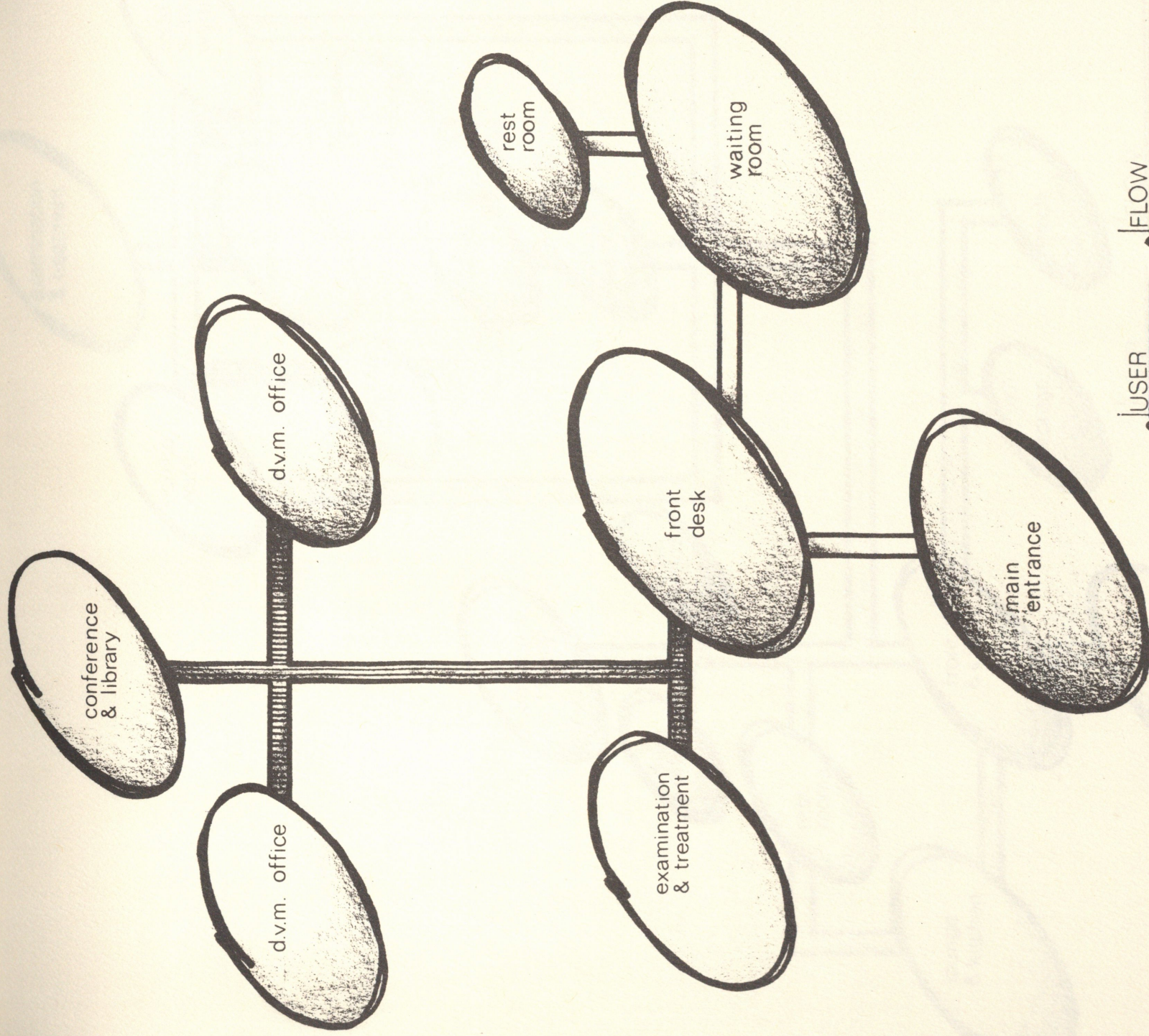
Since the clinic is for large animals that respond to herd instinct, the design should acknowledge this group dependency.

Since emphasis must be placed on efficiency of materials, circulation and environmental air quality control, the design must provide a solution that will encourage the interdisciplinary mix between these basic principles.

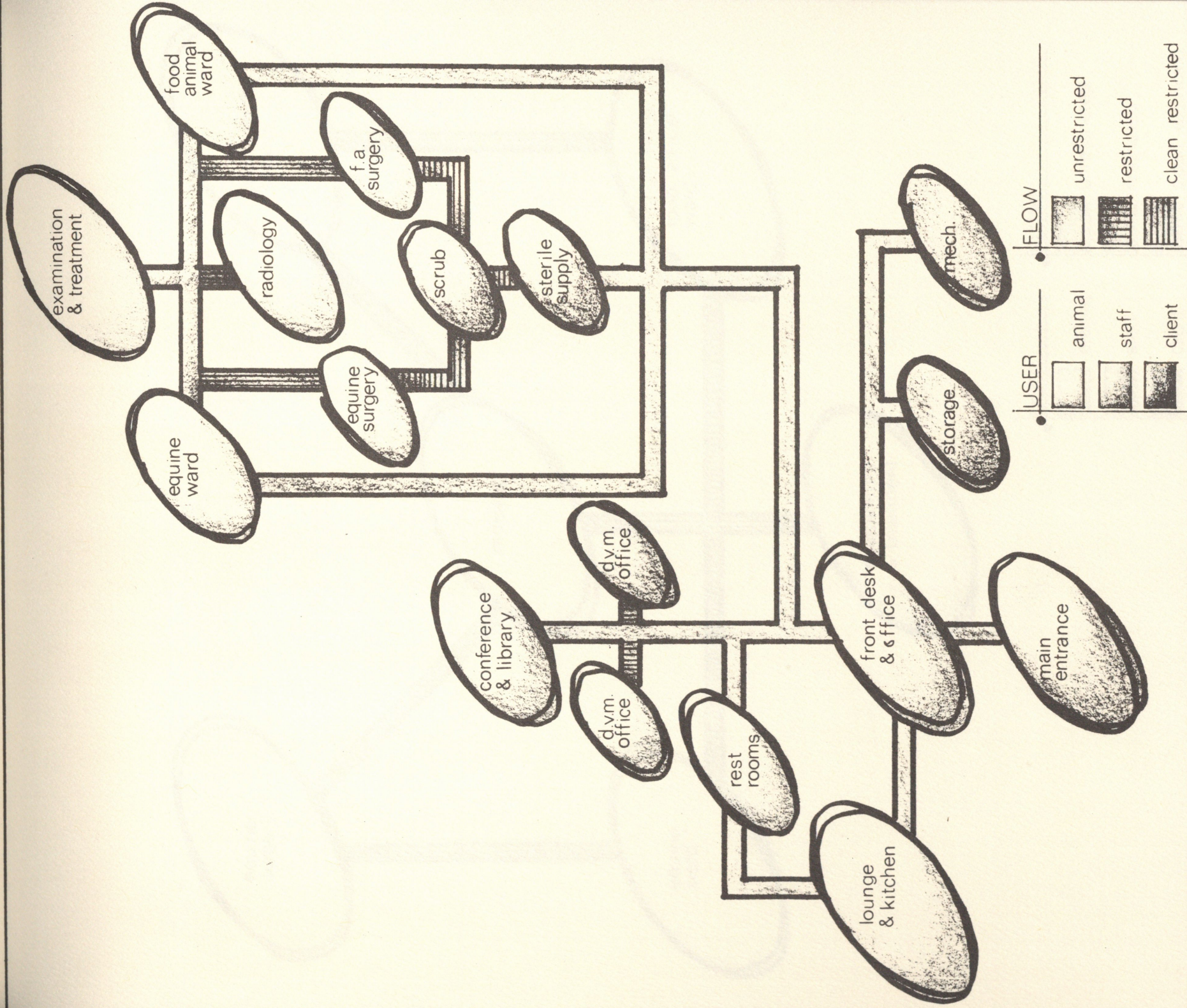
Since the veterinary clinic must accomodate large truck and trailer access to and from the site, vehicular flow should be addressed with minimal conflict to patient or pedestrian flow.

Since the surrounding rural environment of the chosen site has strong contextual qualities the design should acknowledge what the 'timeless' features are and how they relate to one another and how they relate to that particular site.

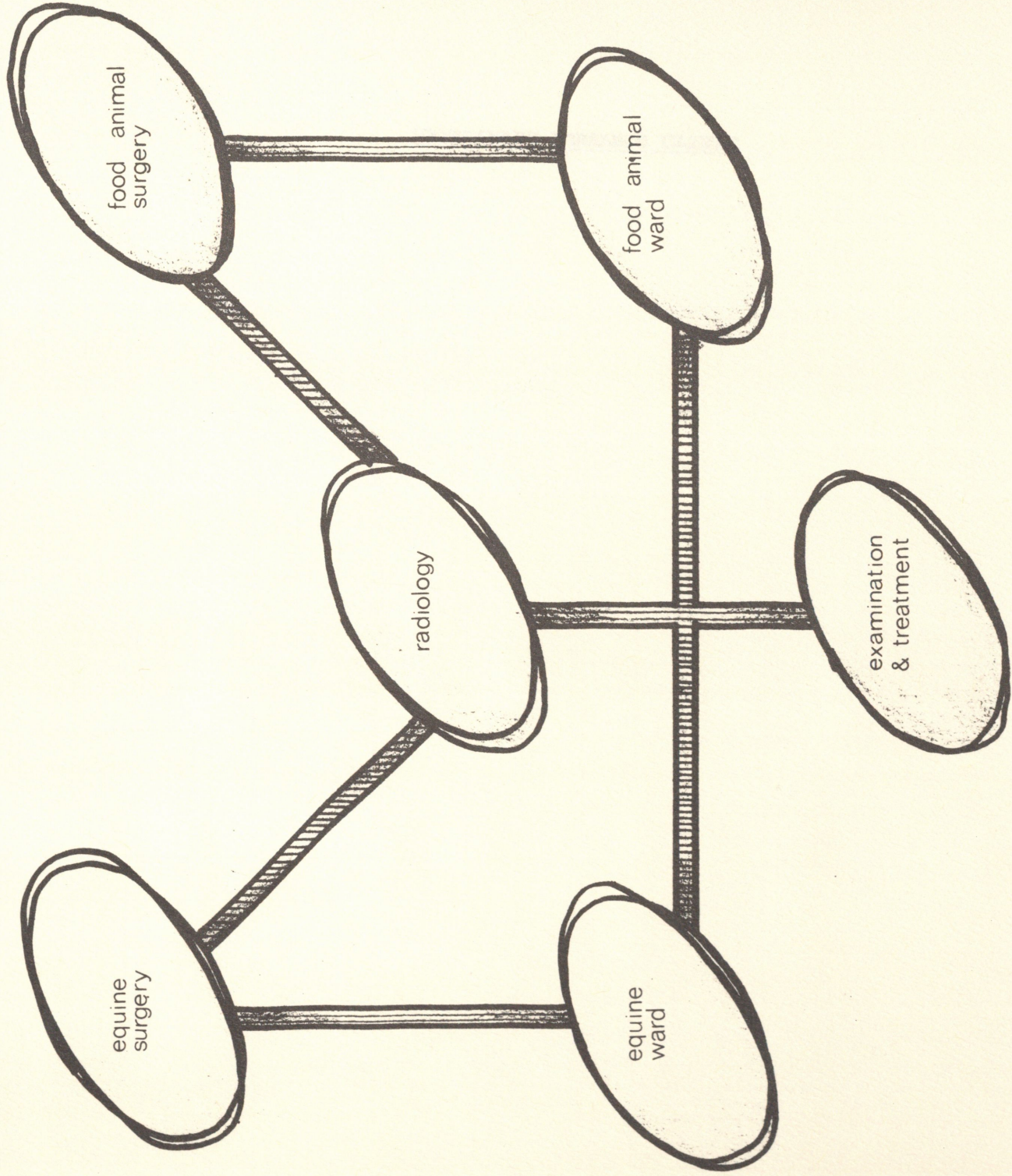
Since the organizational structure is dictated by strong functional departments, the design must provide for individual functional departments that relate back to a central core.



CLIENT FLOW DIAGRAM



STAFF FLOW DIAGRAM



USER	FLOW
animal	unrestricted
staff	restricted
client	clean restricted

ANIMAL FLOW DIAGRAM

VETERINARY RESEARCH CLINIC

GOAL

To attain qualified information from drug research data.

Refer to veterinary clinic goals

Maximum number of research animals housed within clinic = 8

Outside corrals (3) = 60

Pasture (3 - 3 acre areas) = 60

Total = 128 animals

FACT

Prior to experimentation animals are held in isolation for two to four weeks to assure general health.

After administering a drug program, it is general practice to euthenatize the animal(s) for tissue analysis in collecting data.

Expired animals are taken by a rendering plant in Billings, Montana.

Animals must be monitored a minimum of 1 - 2 times a day to observe health status and drug effects.

Separate rooms, wing or building is required of this facility to ensure project data control between control group animals and community owned animals.

Provision should be made for emergency power for ventilation and lighting in the event of a power failure.

Research animals are chosen for the purpose of the particular research project. The variables are: age, weight, breed, genetic group.

A variety of containments (stalls, corrals, pasture) are required for different drug programs.

Because infectious diseases are not part of the experiemental program, cattle and horses do not have to be separated.

CONCEPTS

Refer to Veterinary Clinic Concept

NEEDS

	Number	Square feet	Total Square Feet
Laboratory and Instrument Room	1	250	250
Drug Storage	1	150	150
Examination and Treatment	1	860	860
Wards:			
Tack & Equipment	1	80	80
Hay & Grain	1	160	160
Stalls	4	144	576
Special Care Stalls	2	225	450
Corrals (Semi-sheltered)	3	4,800	14,400
			Subtotal: 16,926
Pasture	2-3	3 acres	9 acres

LABORATORY AND INSTRUMENT ROOM

250 square feet

GOAL: To effectively and efficiently assimilate data from experiments.

FUNCTION: To house laboratory equipment that is needed for experimentation analysis

USERS: Staff

CONCEPTS: To provide a functional environment that can possess interest through views, material and form

NEEDS: Shelves, cabinets, sinks, counter space, effective natural and artificial lighting.

DRUG STORAGE

150 square feet

- GOAL:** To safely and efficiently store and dispense drugs
- FUNCTION:** To refrigerate perishable drugs and store non-perishable drugs and related equipment.
- USERS:** Staff
- CONCEPTS:** To provide a safe and functional environment to storing and dispensing drugs.
- NEEDS:** Shelves, cabinets, sinks, counter space, effective natural and artificial lighting and refrigerators.

EXAMINATION & TREATMENT

	Number	Square Feet	Total Square Feet
Stations:			
1 stock	1	380	380
1 chute	1	380	380
Holding Pen	1	100	100
			Subtotal: 860

EXAMINATION AND TREATMENT

860 square feet

GOAL: To effectively and efficiently examine and administer drugs without causing undue anxiety to the animal.

FUNCTION: To examine animals and administer drugs.

USERS: Staff
Project animals

CONCEPTS: To provide an efficient environment

NEEDS: Natural and artificial lighting, sinks, and work counters.

INDOOR WARD STALLS

1,026 square feet

GOAL: To achieve an atmosphere that promotes efficiency, cleanliness and that maintains an element of harmony with the surrounding pasture.

FUNCTION: To house experimental program animals.

USERS: Staff
Experimental animals

CONCEPTS: To provide a comfortable environment without causing undue anxiety.

NEEDS:

- Direct and uninterrupted circulation
- Stalls that provide visual contact with other animals
- Stalls that promote a safe environment
- Natural lighting
- Easy access to food and water

STORAGE ROOM

160 square feet

TACK/EQUIPMENT ROOM

80 square feet

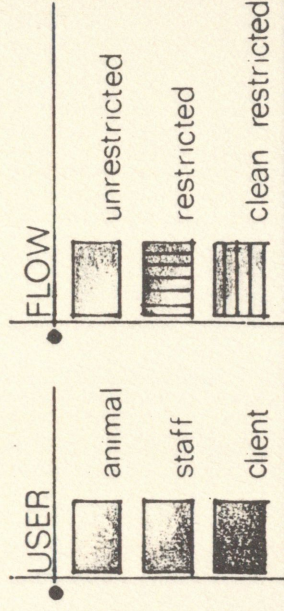
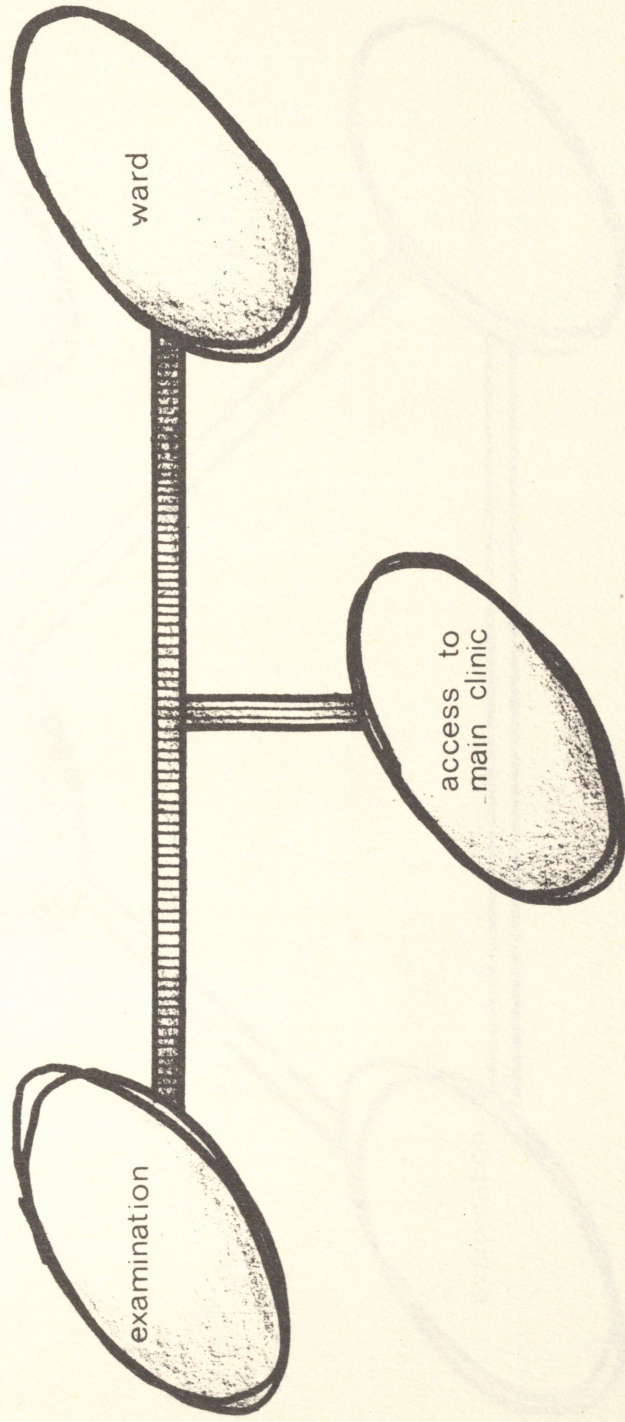
GOAL: To efficiently and effectively store all equipment and food supplies in a dry environment and to allow easy access to stored items.

FUNCTION: To store and keep dry restraining equipment and food

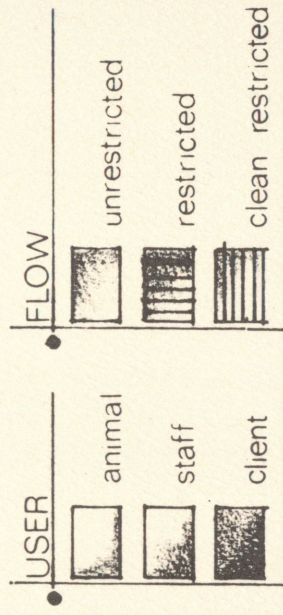
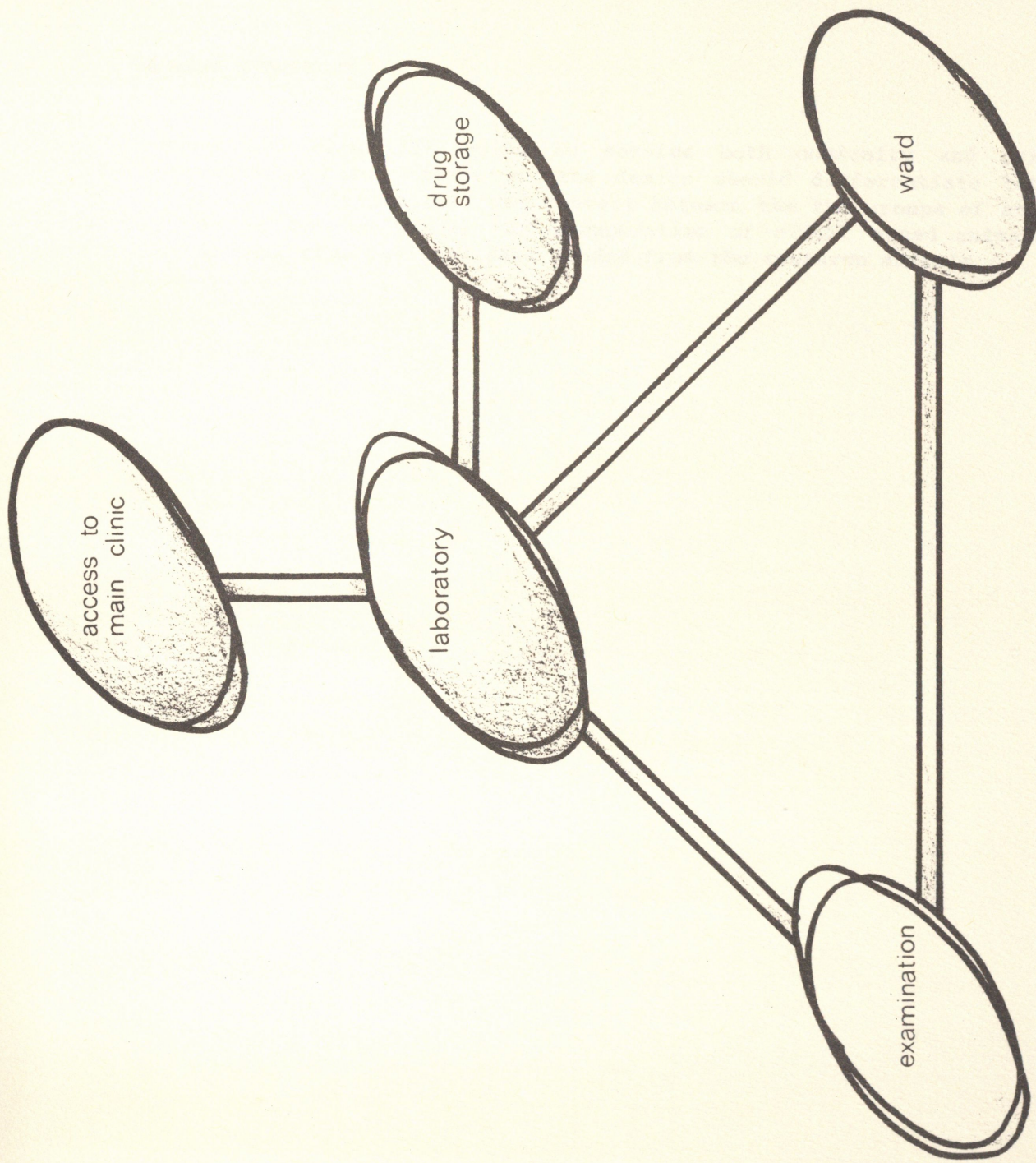
USERS: Staff

CONCEPT: To provide a dry and organized environment for storage of equipment

NEEDS: Wall hangers, ventilated storage bins



ANIMAL FLOW DIAGRAM



STAFF FLOW DIAGRAM

PROBLEM STATEMENT

Since the clinic is going to service both community and private research based operations the design should differentiate between these facilities to limit contact between the two groups of animals so as not to hamper the recuperation of client owned animals or distort observational data needed from the research animals.

RESIDENCE

GOAL

- To develop a community environment as an extension of the clinical facilities.
- To use the concept of 'community' as a means of becoming more aware and a part of the surrounding environment.
- To give a sense of the part to the whole, where the community is a place to work, play and reside within.
- To create a feeling of belonging, of being 'home', by creating an interacting relationship with the landscape.
- To produce within the large scale of the site and the overall interest of the community, a place of privacy, to designate as home.
- To produce a community with a common interest where the practice of caring for animals is a part of the daily ritual of living.
- To give a sensual variety in passing from one space to another within the home, from outside to inside and through the landscape as a means of relating to one's surroundings.
- To architecturally open the home to the outside environment, to the degree that climatic conditions will allow, in an attempt to de-emphasize inside and outside.
- To incorporate the natural landforms with architectural forms as a method of defining 'places' within the community.
- To give each residence an individual identity within the same design theme used for the clinic as well.

FACTS

Users: 3 doctors of veterinary medicine and their families

Typical of one family:

- D.V.M.
- Spouse
- 2 children
- 4 users/residence

Total users in community = 12

USER CHARACTERISTICS

- D.V.M.'s work within the focus of the clinic
- Lives within the focus of the clinic community
- Clinical & private interests within Livingston and surrounding communities.

SPOUSES

- Work in surrounding communities
- Lives in clinic community
- Outside community interest

CHILDREN

- Attends school in Livingston
- Lives in clinic community
- Peer groups associated with Livingston

CONCEPT

User activities oriented towards community during the day and towards the home in the evenings.

To create an image of landscape through architectural form by merging into, emerging from, receding and wrapping around.

Manipulation of changing effects in light and shadow, texture, smells, views, to enhance movement from one area to another area.

The transition one makes in progressing from a residence will always involve an interaction with the surrounding environment by the act of passing through the landscape.

Architecture for a residence that responds to the landscape and existing weather conditions.

Paths that lead to group activities; paths that accomodate the individual. Paths responding to social and contemplative behavior.

A close proximity of the D.V.M.'s residence has many convenience considerations.

NEEDS

Typical Residence

	Number	Sqaure Feet	Total Square Feet
Entry Hall	1	40	40
Living Room	1	400	400
Dining Room	1	225	225
Kitchen	1	225	225
Study	1	64	64
Playroom	1	200	200
Bedrooms--master	1	180	180
Children	2	150	150
Baths	2	80	160
Laundry	1	60	60
Storage	1	150	150
Workroom	1	150	150

Total: 2,004

Walking distance to clinic should be no more than 10 minutes ($\frac{1}{2}$ mile)
to periodically check on animals.

PROBLEM STATEMENT

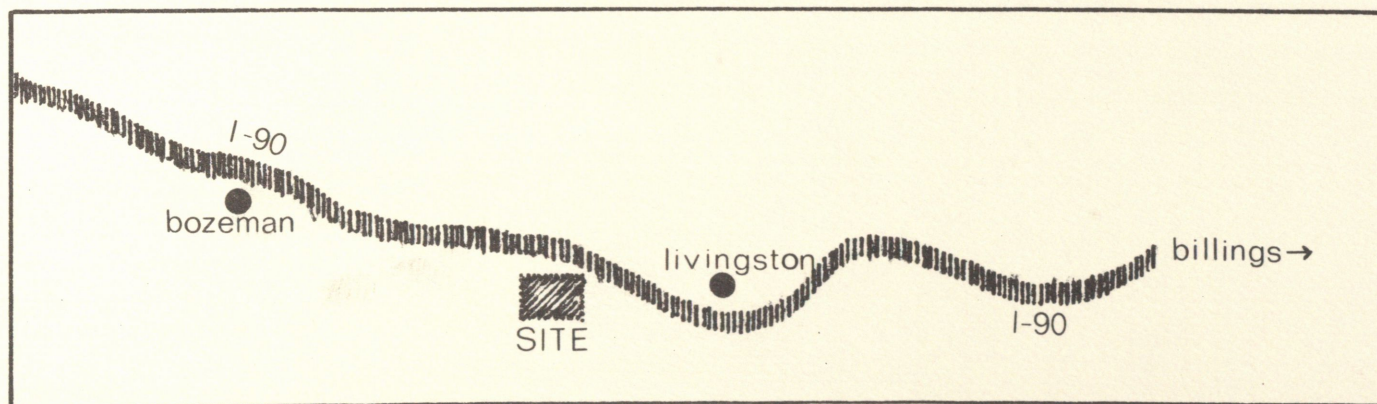
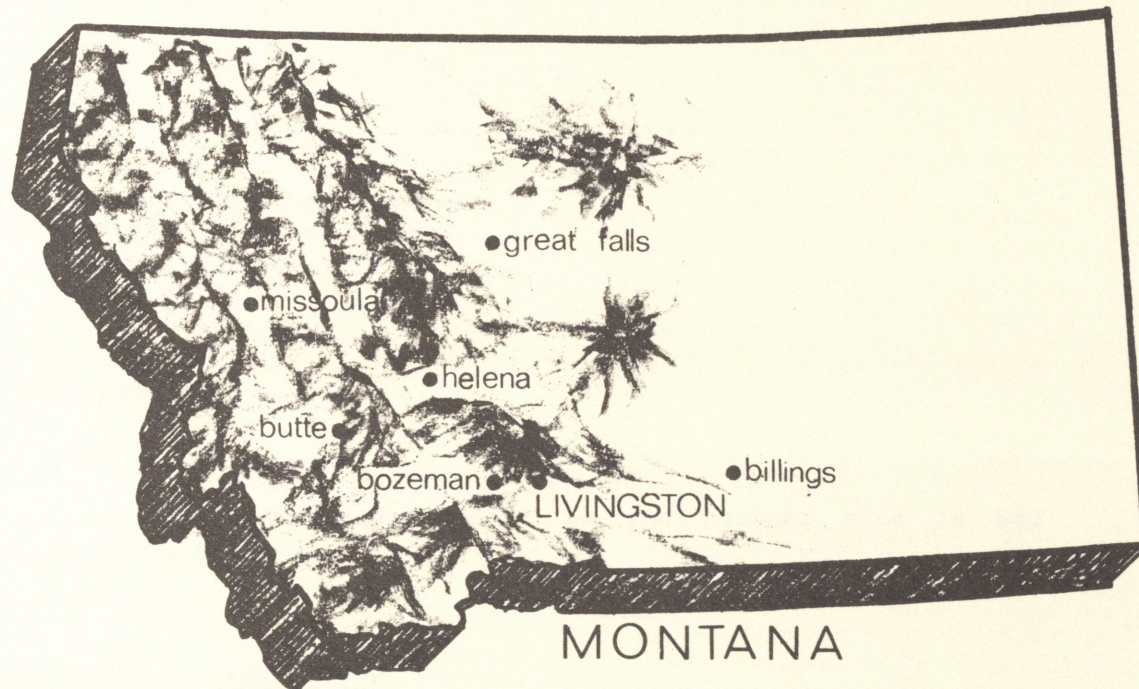
Since the residences will be the individual identity of the D.V.M.s and their families in the clinic community, the design should respond to a concept sensitive to the individual family unit as a part of the whole.

Since the climatic conditions are severe during the winter months, location of residences should respond with a maximum 10 minute walking distance from home to clinic.

Since an inherent part of the veterinary clinic will be animal odors the master plan should locate the houses upwind and away from the areas of odor concentration.

Since the clinic community will be a low density development with the veterinary clinic and three homes as primary structures on the site the master plan must identify 'places' and 'methods' for creating a sense of community.

Since undulating skylines, sweeping landforms and expansive open spaces are strong primary forces of the site, the design should utilize these concepts as elements to enhance the relationship of site to built form.



SITE LOCATION



SITE

LOCATION

8 miles west of Livingston, Montana
Hopper's Quadrangle section 23/24
Which is located south of I-90

SIZE AND CONFIGURATION

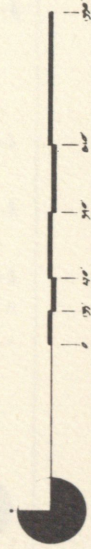
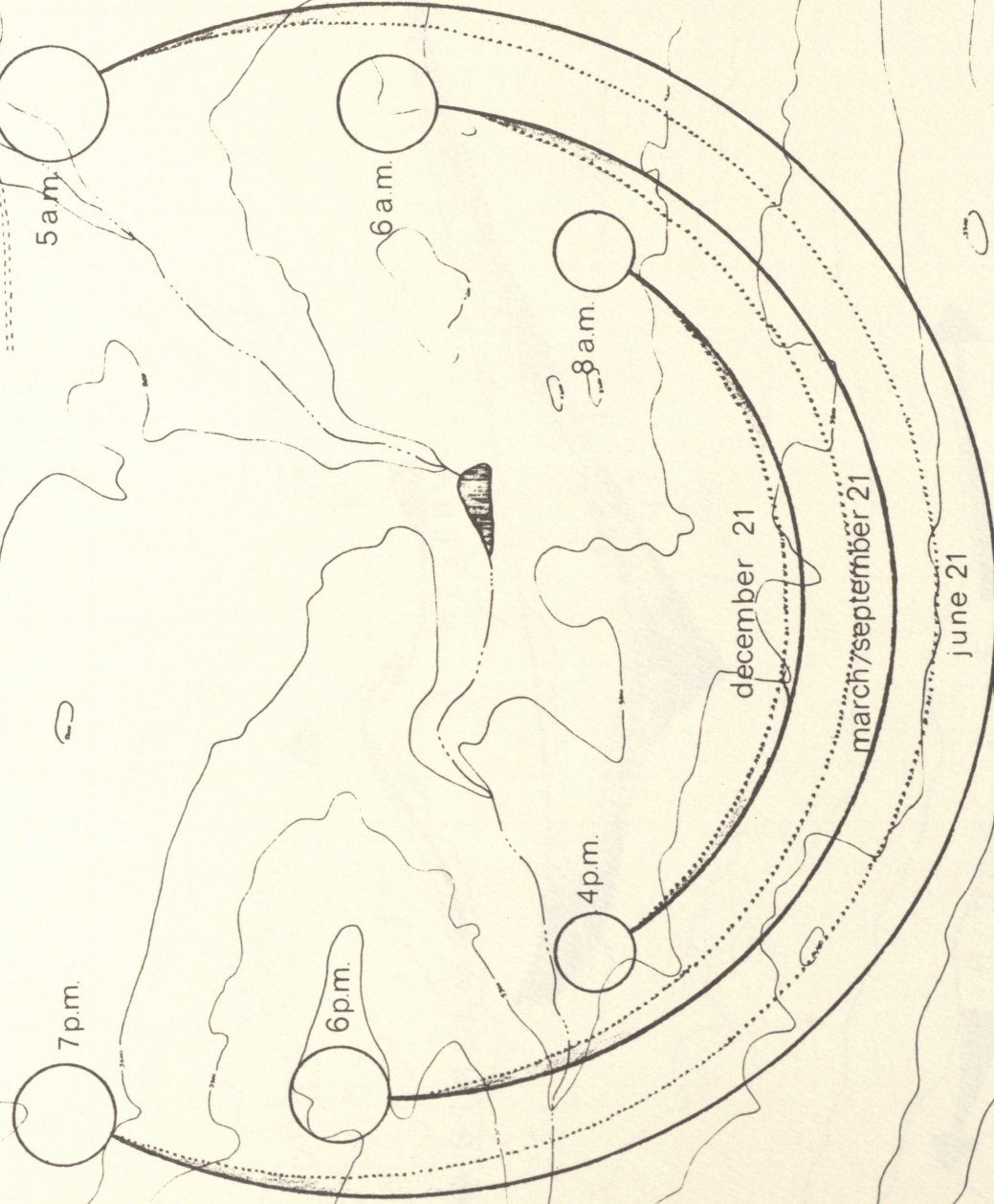
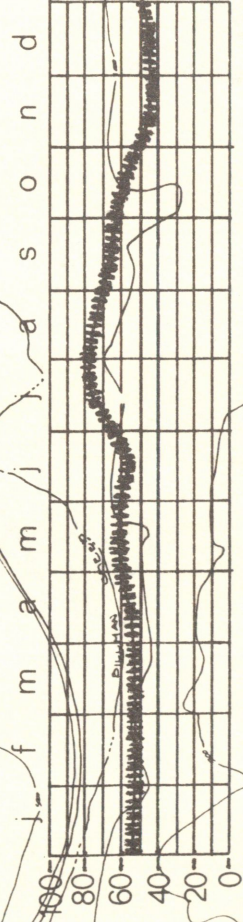
25 acres (+,-)
Configuration open for interpretation as the present site is 640
acres of pasture land.

EXISTING LAND USE AND LAND COVER

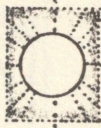
Landuse: Rangeland

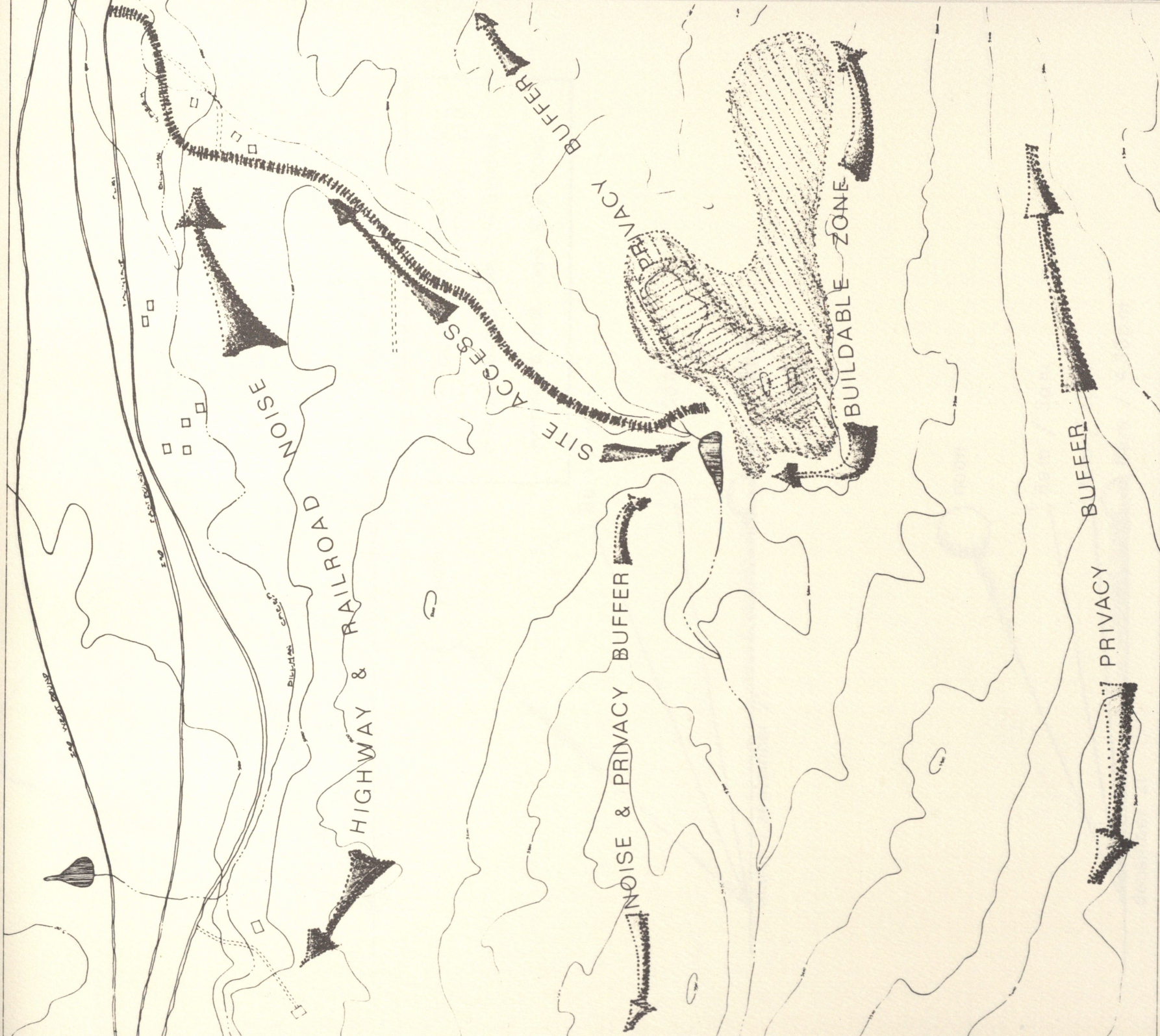
Landcover: Herbaceous

MEAN % OF POSSIBLE SUNSHINE

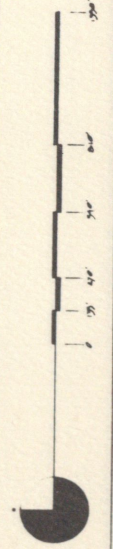


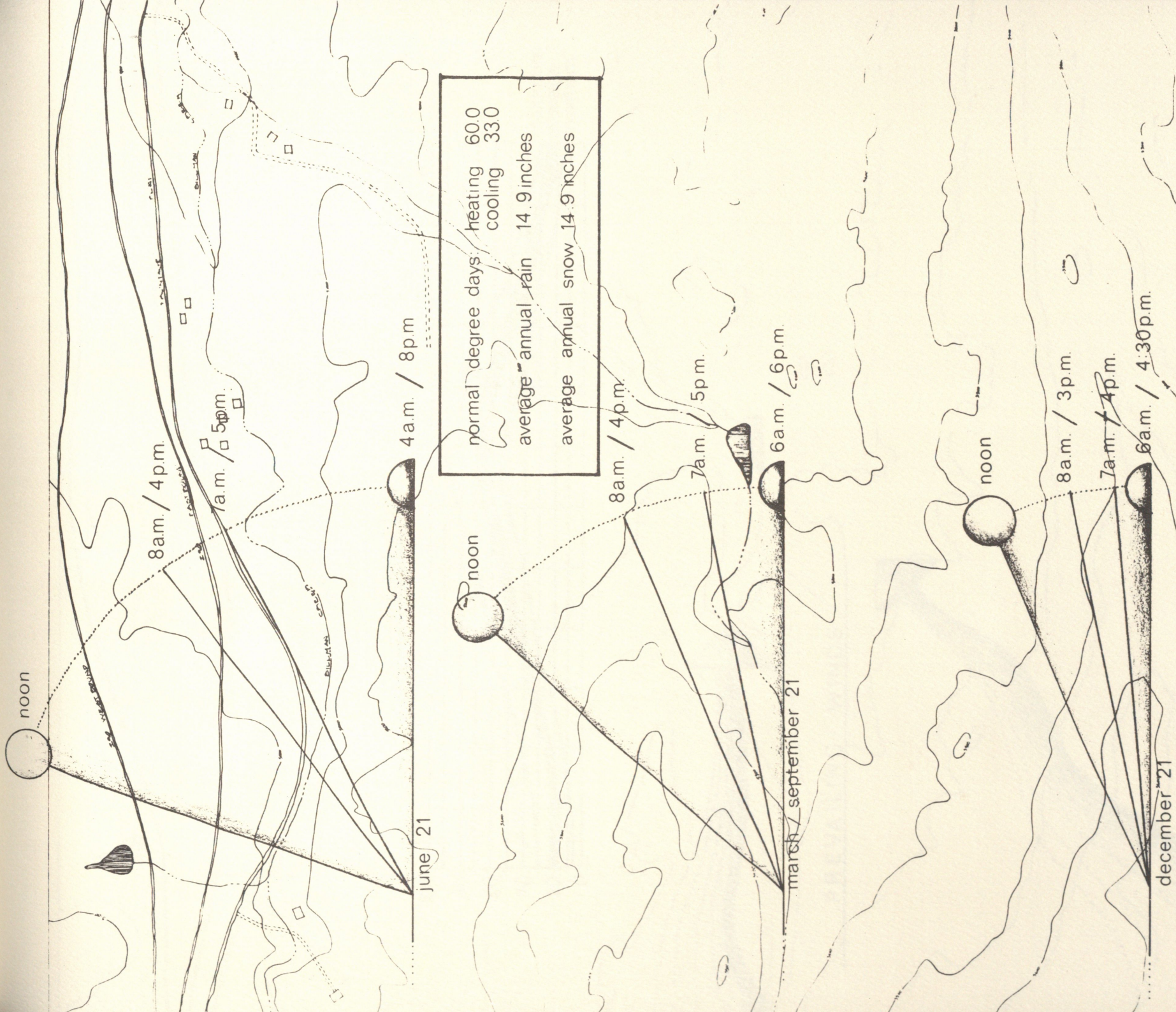
SUN PATHS



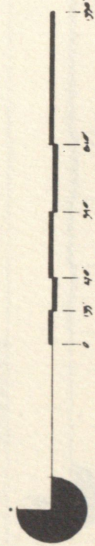


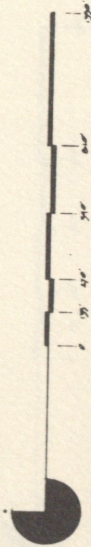
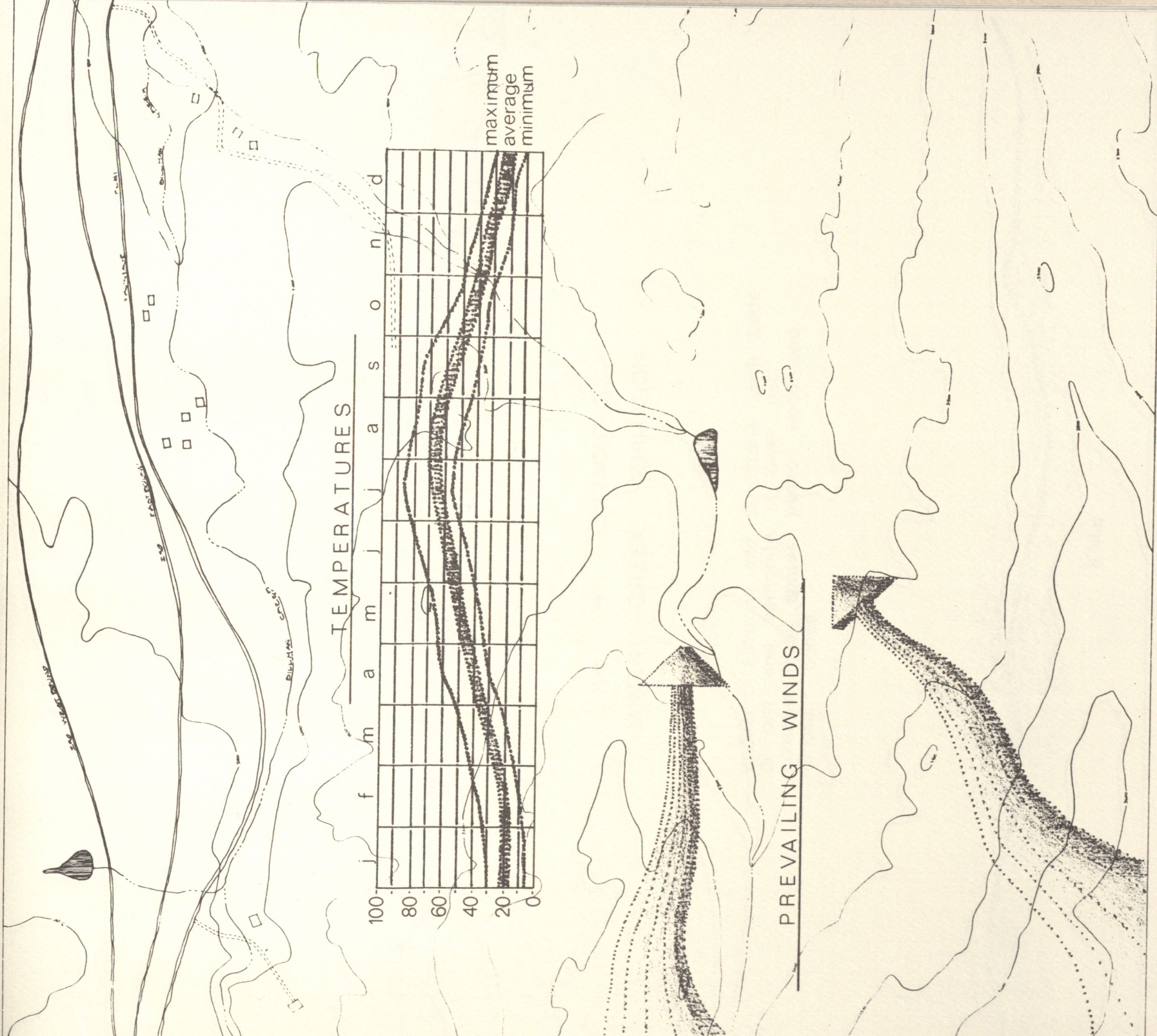
SITE ZONES & ACCESS



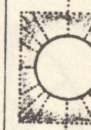


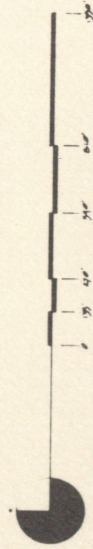
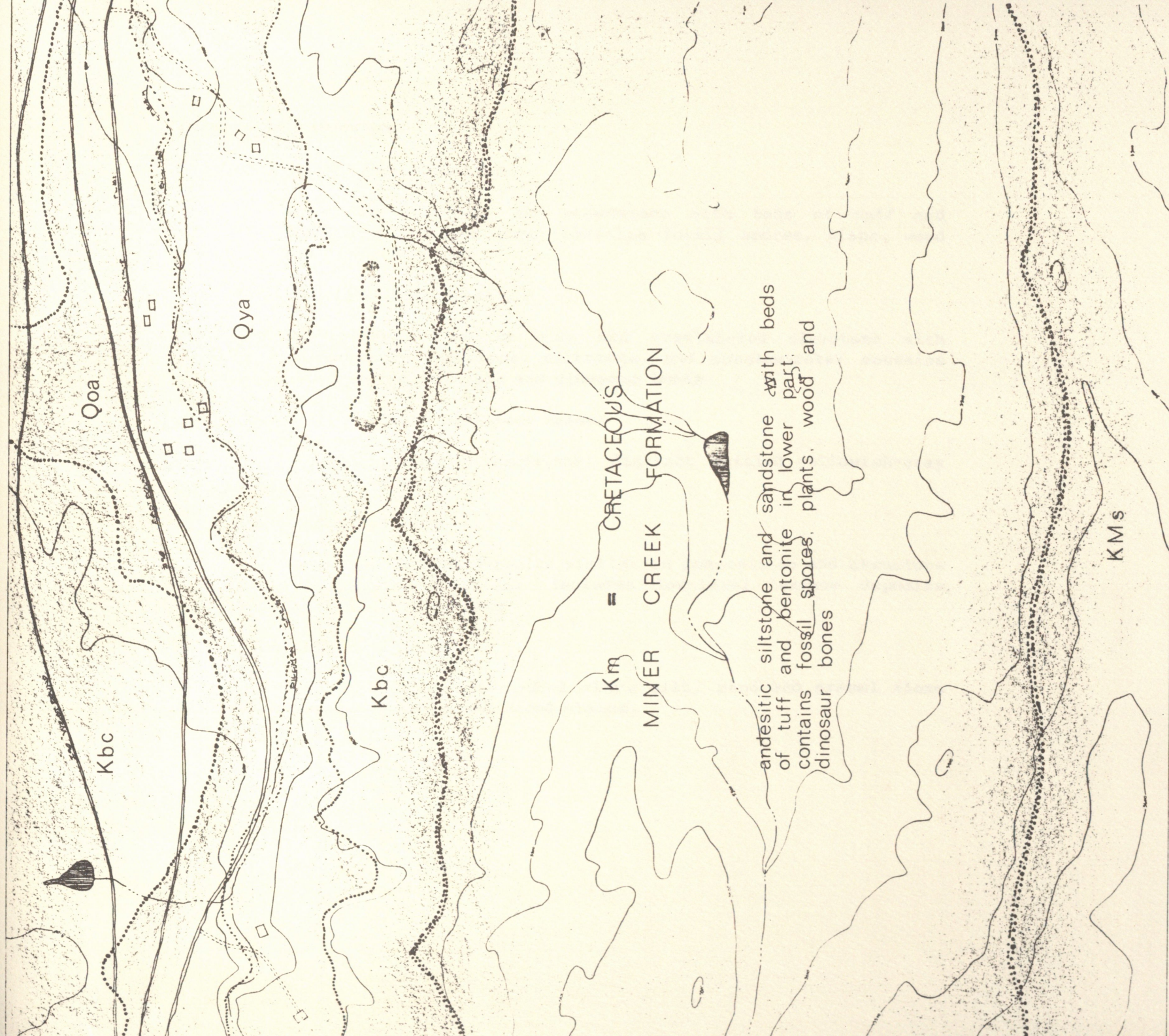
normal degree days	heating	60.0
	cooling	33.0
average annual rain		14.9 inches
average annual snow		14.9 inches





WINDS & TEMPERATURES





SITE GEOLOGY.....

GEOLOGICAL FORMATIONS

KM = Miner Creek Formation

Andesitic siltstone and sandstone with beds of tuff and bentonite in lower part; contains fossil spores, plants, wood and dinosaur bones

Kbc = Billman Creek Formation

Olive-gray, brownish gray and grayish-red claystone with interbedded sandstone, siltstone, and conglomerate; contains fresh water mollusks and dinosaur bones

KMs = Sulpher Flats Sandstone Member

Prominent massive sandstone; distinct mottled yellowish-gray sandstone at base.

Qoa = Older Alluvium

Semiconsolidated deposits similar in composition and structure to younger alluvium. Includes low-level terrace deposits of tributary streams

Qya = Younger Alluvium

Unconsolidated interbedded clay, silt, sand and gravel along stream channels and flood plains.

BUDGET ANALYSIS

Since the clinic and houses are of a hypothetical nature, budget considerations will not be a factor in this project, therefore the design will demonstrate a high level in quality.

Nothing is quite beautiful alone,
nothing is but beautiful in the whole.

The fast of two poles, of two forces,
centripetal and centrifugal is universal.

An inevitable dualism bisects
nature.

Each force by its own actiity develops
the other.

Emerson

DESIGN METHOD AND DEVELOPMENT

"Intuition itself becomes thinking, and thinking an intuition."

F. L. Wright, on reflection of nature.

To begin my design process I extracted from my particular site four dominant landscape themes and abstracted them into two-dimensional form. The four themes were:

1. a knoll
2. two intersecting skylines
3. furrows
4. rock outcroppings

Having already programmed the necessary spatial relationships of a veterinary clinic I felt that a linear circulation was a viable approach. From this knowledge, I choose the knoll as the dominant organizational scheme and the rock outcroppings as the secondary theme.

When I sketched the concept of the knoll, it was the spatial movement which presented the most dynamic force. The fluid movement swept in a line from its height down and around the breadth of its base. In the drawing, the verticality of the hill is represented by the straight line, and the sweeping motion is represented by the curving thread that thickens as it terminates. This thickening demonstrates the stability of the base.

The rock outcroppings emerge as jagged forms which penetrates the otherwise even and smooth texture of the ground plane. The outcroppings rise along ridgelines as the hills become eroded by wind and rain. In the conceptual sketch, the emergence of this rock form is exhibited as its angular and fragmented mass rises from the center, then tapers towards the ends where regularity of the ground plane takes control.

The two-dimensional conceptual sketches were transformed into two-dimensional relief and then into three-dimensional relief studies. From these transformations a spatial quality began to be defined, taking on an architectural image.

At this point of my study I returned to the programmatic requirements utilizing the two and three-dimensional studies as form inspiration. Manipulation of landform, program, functions and culture began to influence the metamorphosis of the final form.

The floor plan obviously comes from my studies that were derived from the vocabulary of the existing landscape, organic and contextual in its origin.

The contextual qualities began to extend and diversify within the lexicon of the devised vocabulary. A few of these qualities include:

The blanketing effect of the roofs in direct relationship to the dominant, soft, undulating ground plane

The merging of form into landscape as hills dissipate into valleys

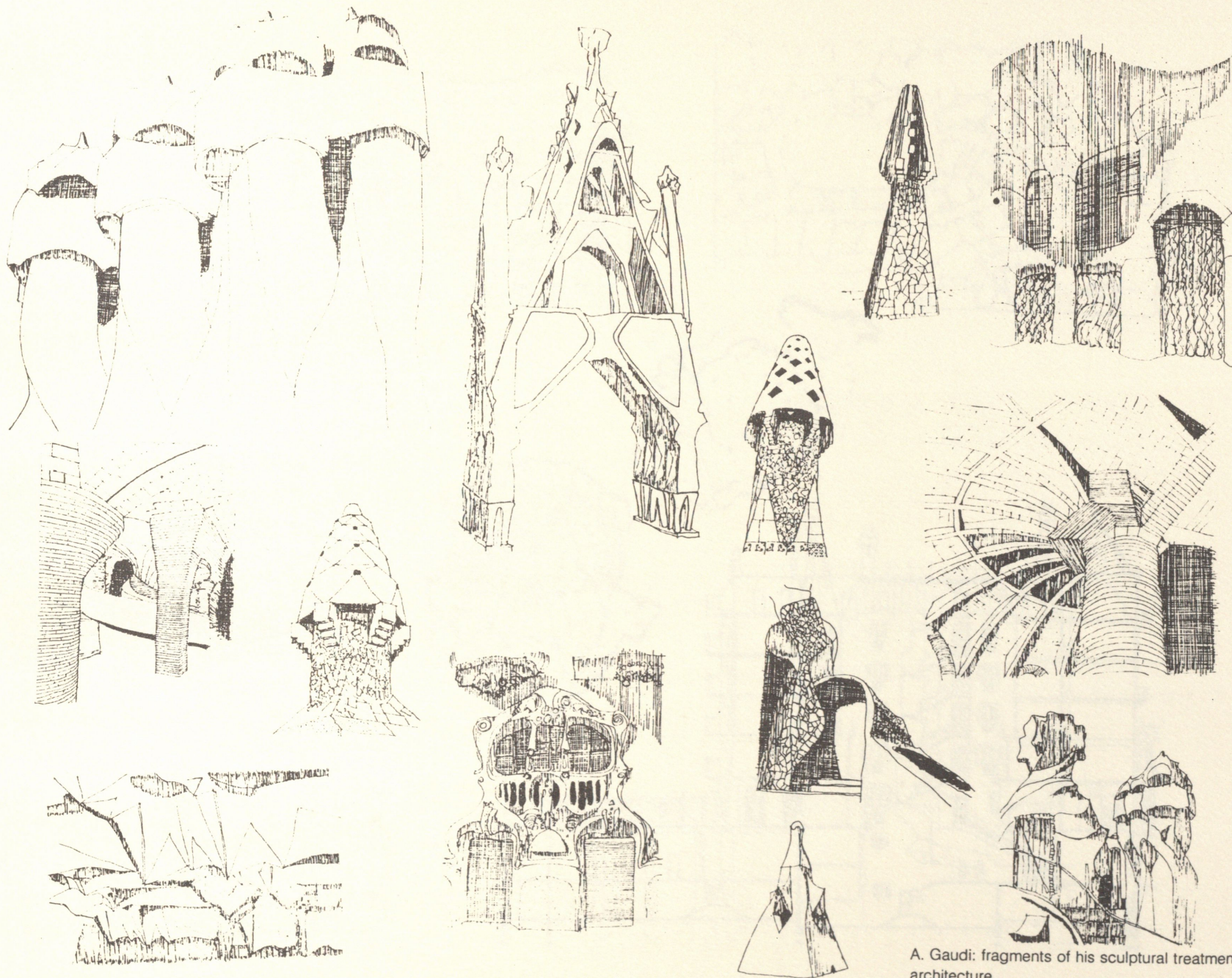
The emergence of transparent spines as the rock outcroppings become a crystalline composition

The wrapping of form as hills and valleys sweep in motion

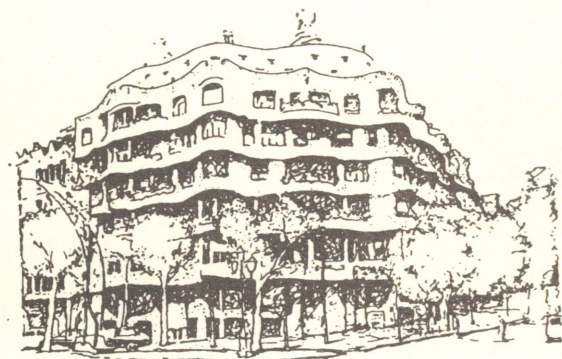
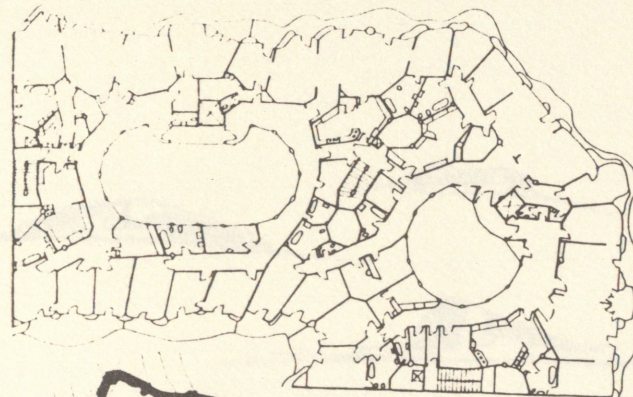
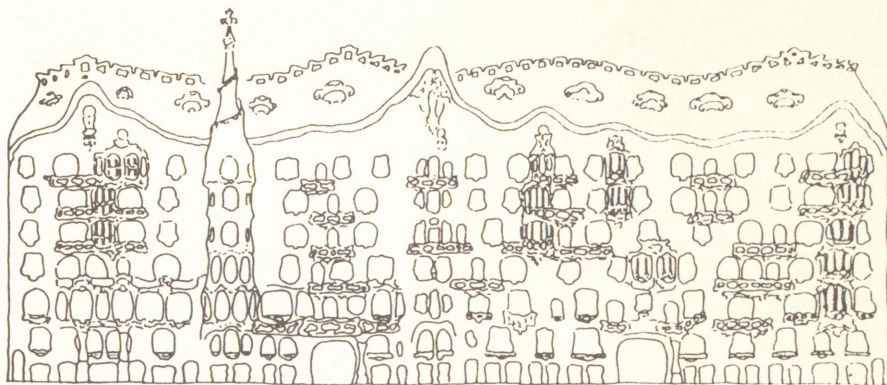
Through these landform elements, I devised a variety of expressions in built form, and created a unity between the two entities of landscape and architecture.

Lesnikowski states, "Romantic architecture can be judged only in a poetic or intuitive way because of the individualistic forms, fluidity, dynamism, irregularity and motion, far removed from the concept of permanence definable in an orderly, mathematical or geometrical way."

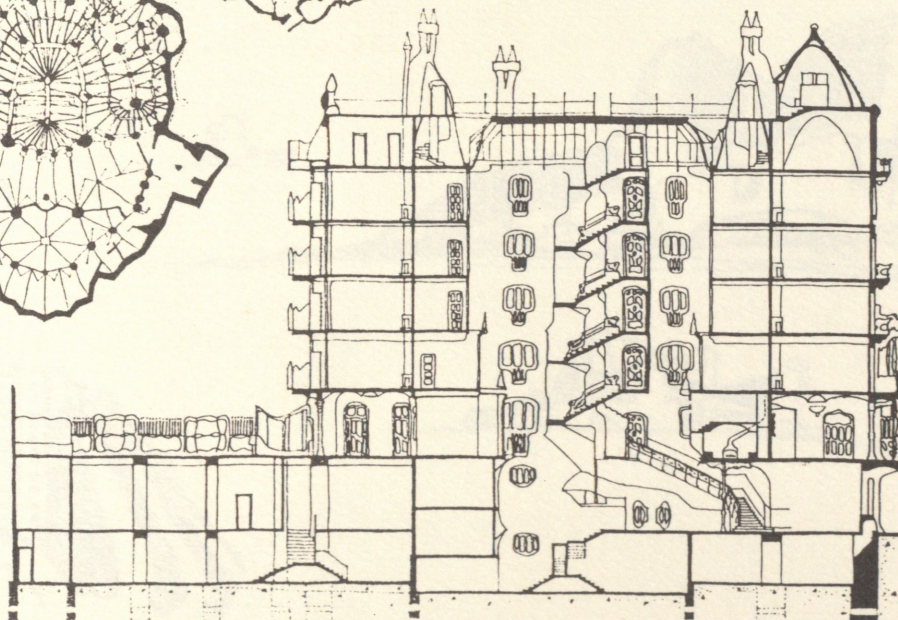
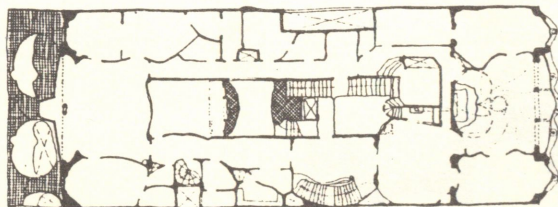
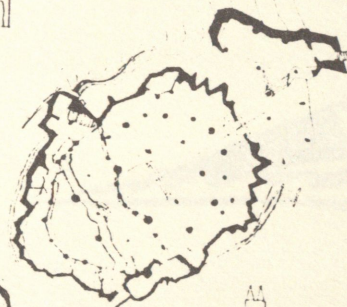
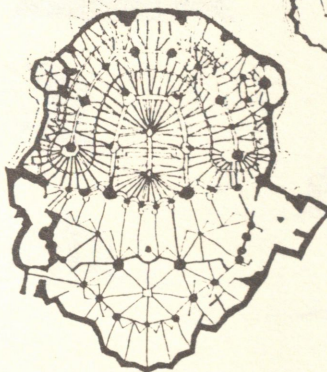
My process has been a study of an organic and romantic method in generating design; a method of abstracting existing elements and transforming them into a unique form contextual to the site.

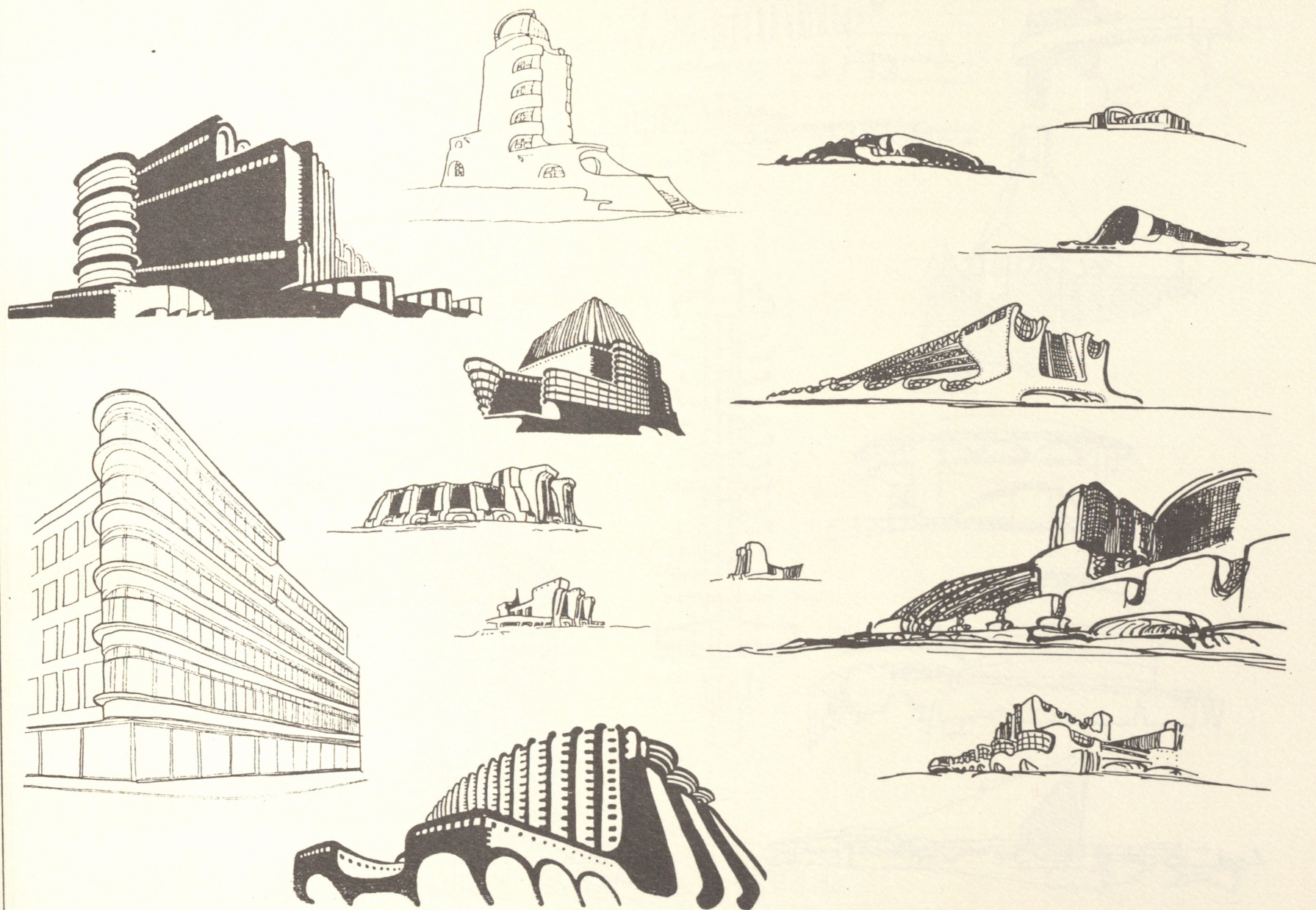


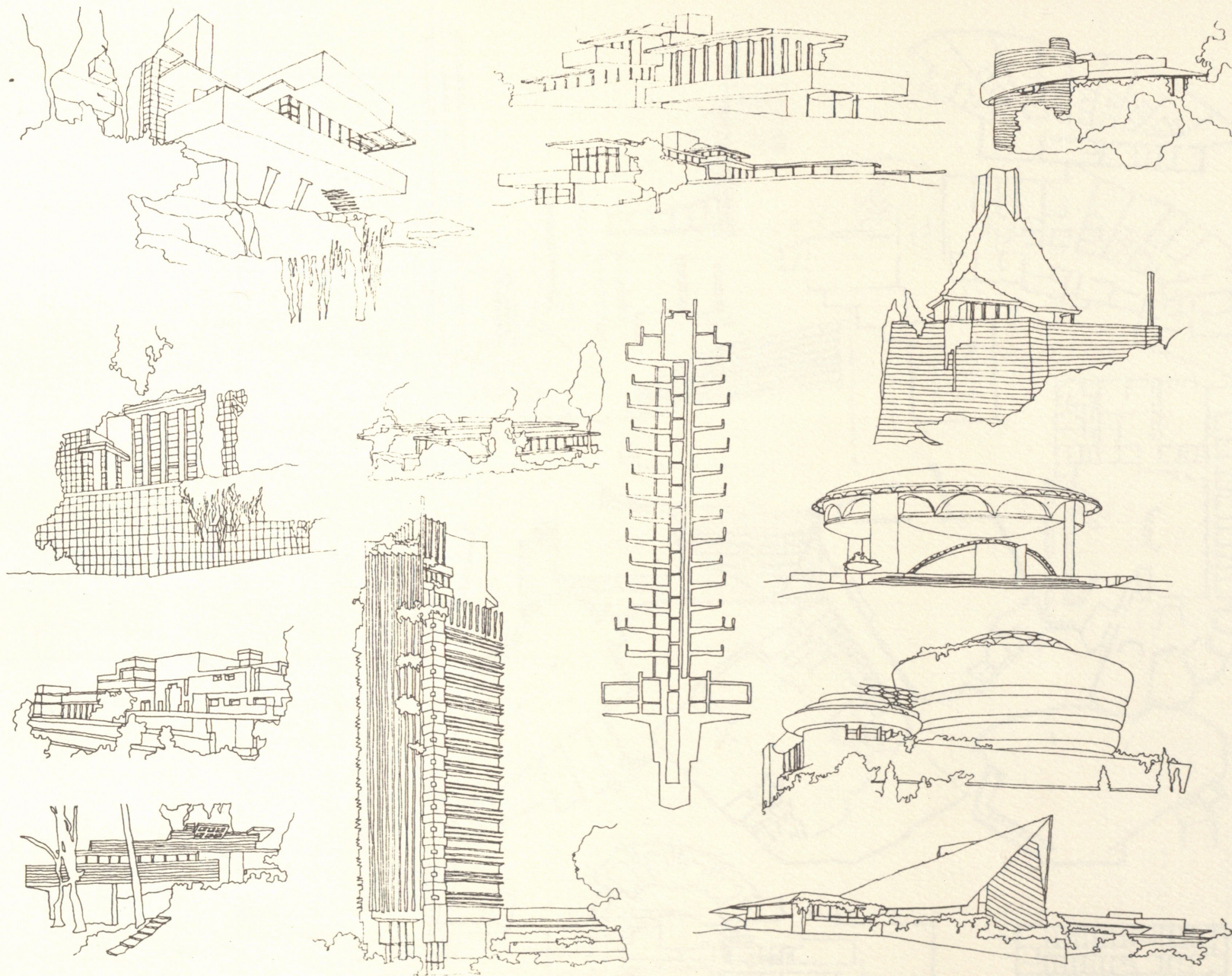
A. Gaudí: fragments of his sculptural treatment of architecture.



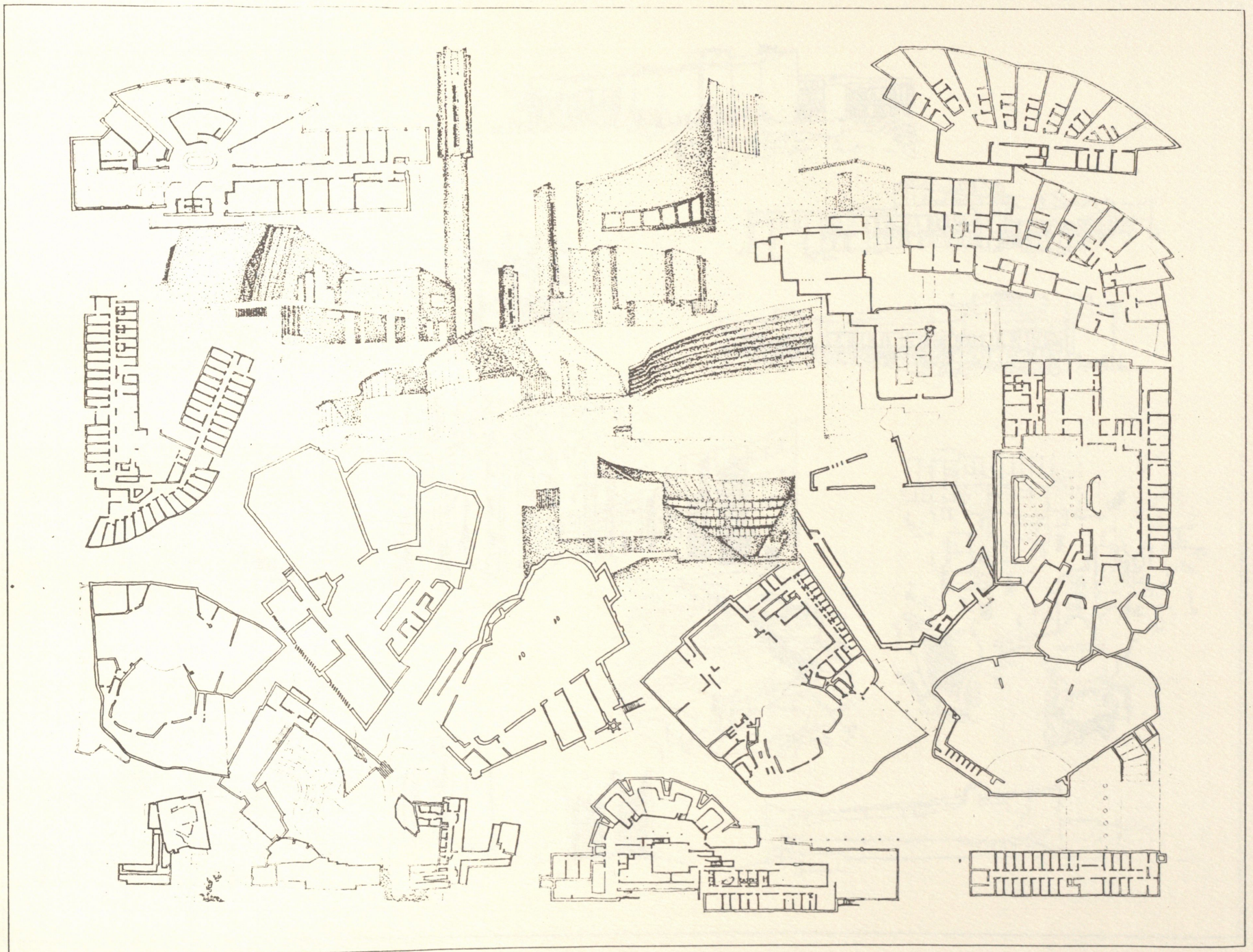
Elaboration

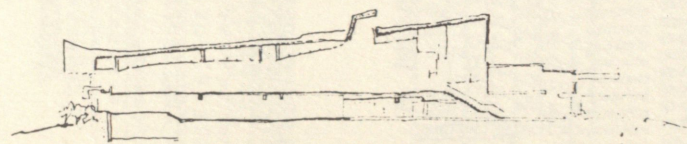
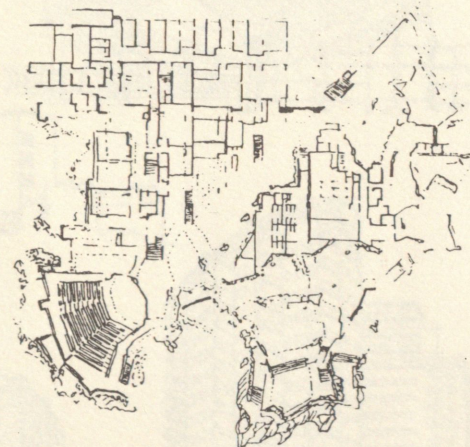
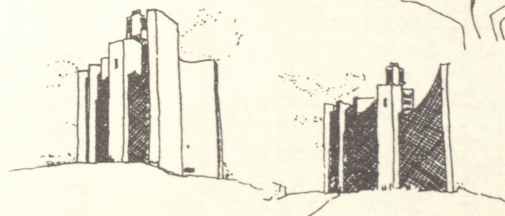
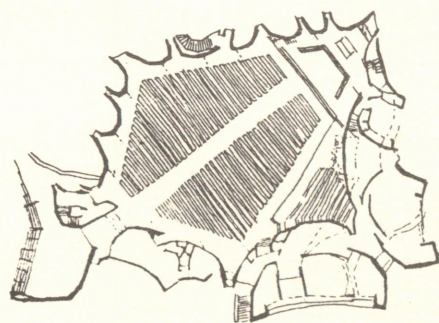
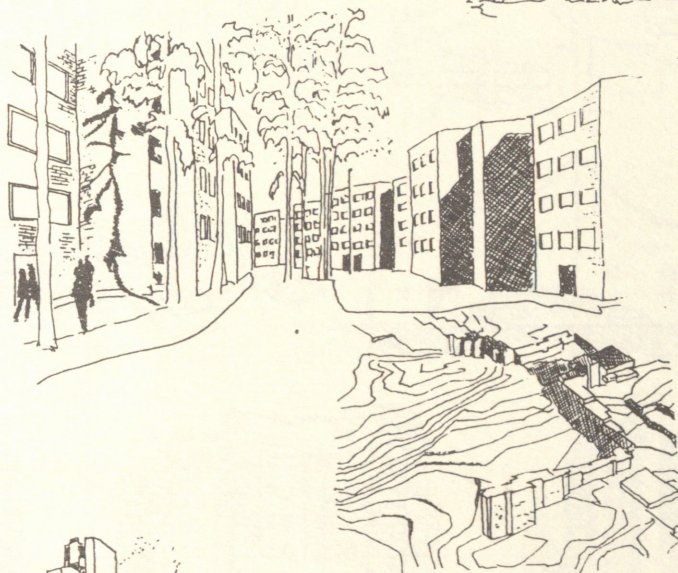
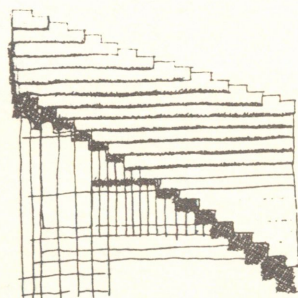
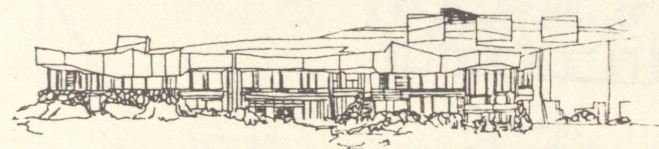
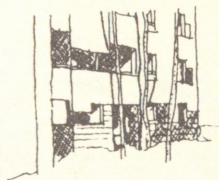
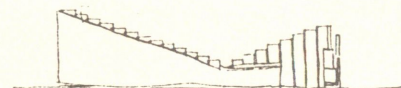
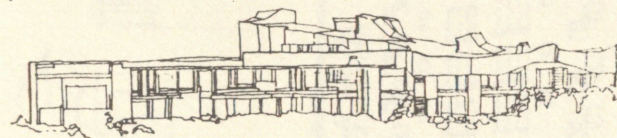
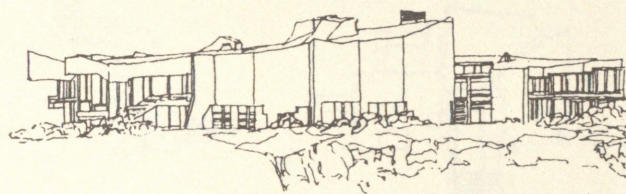
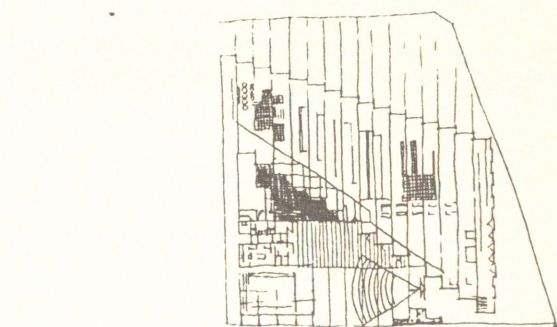


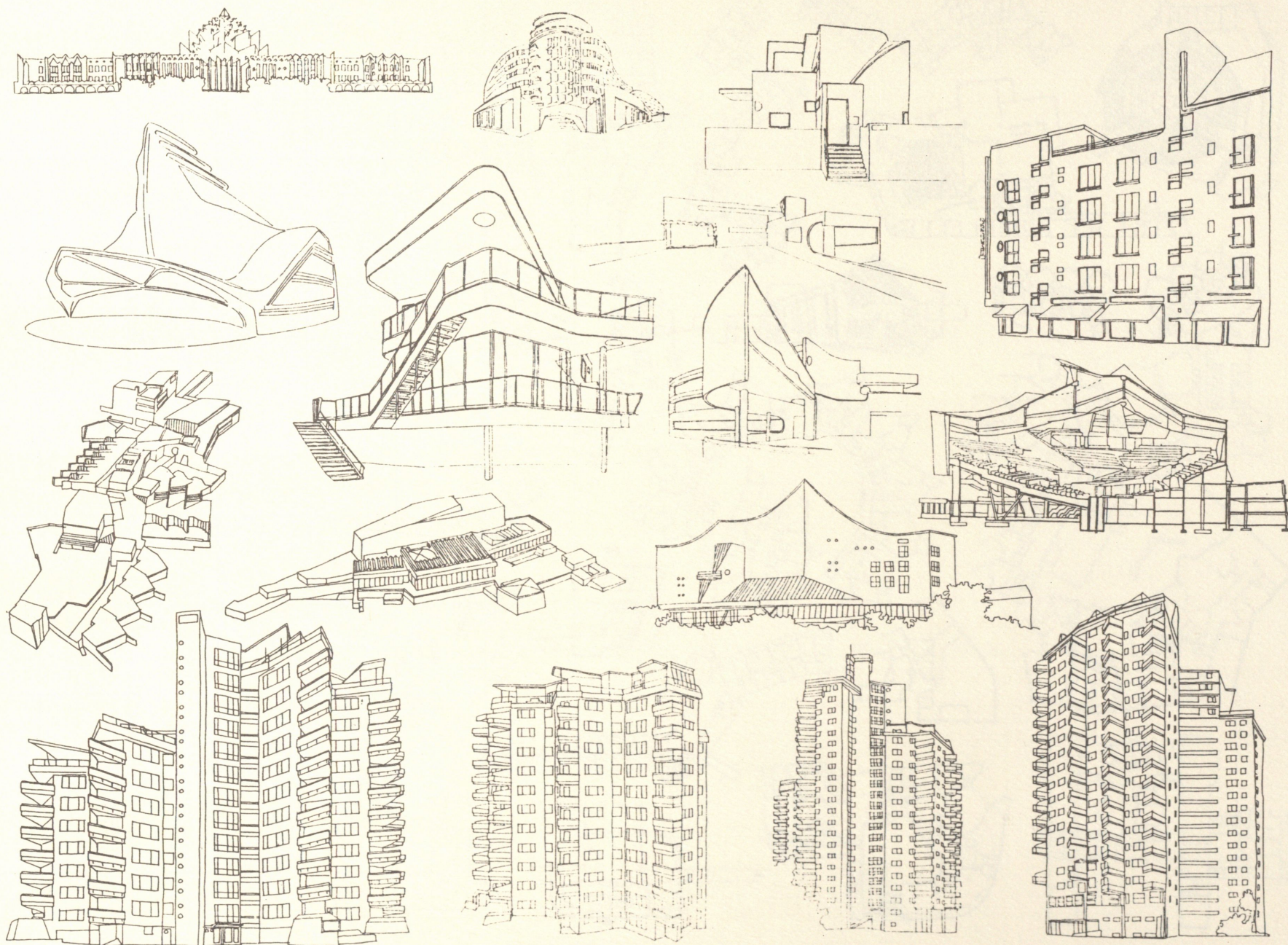


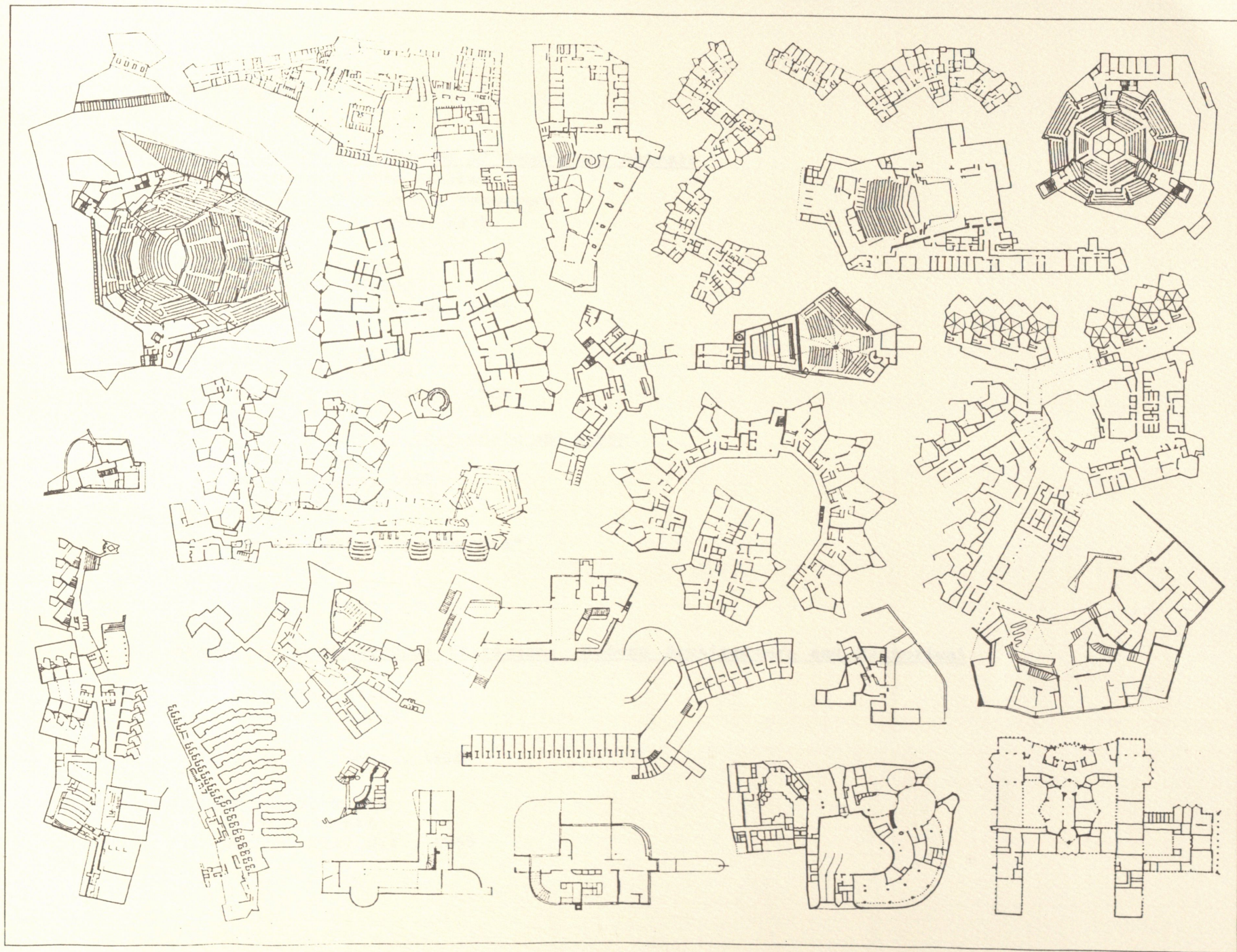


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