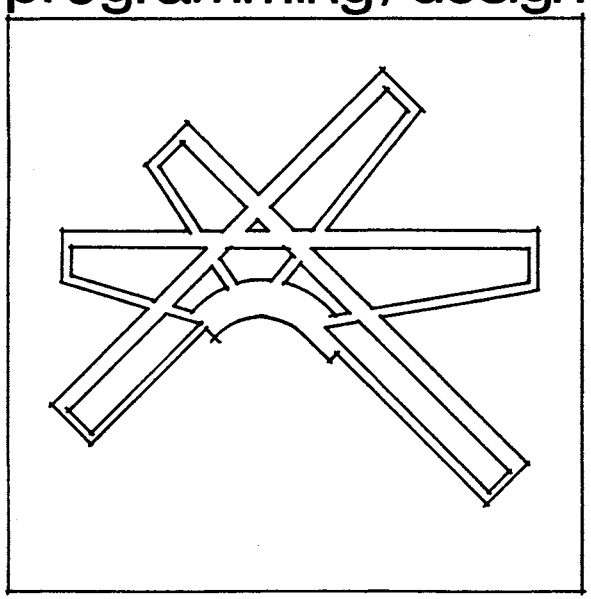
programming/design



A Flight School for Oklahoma State University
Aviation Education • Stillwater Municipal Airport

A Flight School
Aviation Education
Stillwater Municipal Airport

design program
design development

Kevin G. Wingate
spring 1981

School of Architecture
Oklahoma State University

• This report is submitted in partial fulfillment of the requirements for the Master's Degree in Architecture at Oklahoma State University.

CONTENT ORGANIZATION

BOOK ONE: programming

PART ONE: facts and data

PART TWO: needs

PART THREE: goals

PART FOUR: concepts

PART FIVE: problem statement

BOOK TWO: design

PART ONE: concept search

PART TWO: schematic design

PART THREE: design development

BOOK ONE : programming

PART ONE: facts and data

RESOURCE PEOPLE

client: Bruce Hoover ; Department Head, Aviation Education

advisors: Jim Knight ; Professor, School of Architecture, Architect

George Chamberlain ; Professor, School of Architecture, Architect, Pilot

THE CLIENT

student pilots:

The airports flight training program is one of the most outstanding in the nation with most of the activity coming from students attending Oklahoma State University. 500 students are enrolled per academic year, although 500 are enrolled only 200 students are in flight training. The remaining students are on campus at Oklahoma State University. These students range from freshman to graduate students handling approximately 6000 hours flight time per year. By the year 2000 the projected growth of flight students will be 400 per academic year.

staff:

There are currently 14 staff members working at the present training facility located in the terminal building at Stillwater Municipal Airport. Bruce Hoover is the present department head of Aviation Education at Oklahoma State University and will represent the department.

STILLWATER MUNICIPAL AIRPORT

Stillwater's airport became a reality in December, 1929, when the city of Stillwater aquired 240 acres of land, a portion of the present airport. In the early 1930's George E. Searcy agreed to manage the turf landing strips. He died in an accident near the Lake of the Ozarks while returning to Stillwater with a new plane. His father over the airport management to carry out Georges plans. Later the airport was named Searcy Field in honor of George E. Searcy. However, because of confusion between the name of Searcy Field and Searcy Municipal Airport in Arkansas, the city commission changed the airports name to Stillwater Municipal Airport on September 19, 1977.

Arthur Kingman, Jack Huff, Al Guthrie, Glenn Rucker, and in 1952 Hoyt Walkup followed Searcy as airport managers. but it was Hoyt Walkup who is credited for most of the airports growth and stature in today's aviation community.

Early in 1943, the airport was turned over to the war assets administration and, under the development of landing areas for national defense program. the U.S. department of navy began the

construction of three runways, taxiways and apron in the basic configuration that exists today. 175 acres of land were aquired in 1941 and 900 acres were added in 1943 bringing the total airport size to 1,315 acres. All three runways were equipped with low intensity lighting.

Following this initial development program the City constructed an aircraft storage hanger, and Oklahoma A & M College built an airpraft storage hanger. The City and the College constructed the Administration Building in 1951 and various FAA participating projects such as fencing, aircraft parking aprons, access road, medium intensity runway lights, strengthening of runways, fire rescue equipment and building, additional land, centerline taxiway lighting, visual approach slope indicators and runway end identifier systems. A ten unit T-hanger was constructed by the city in 1969.

SITE DATA

size: 290' x 550' • 159,500 ☐

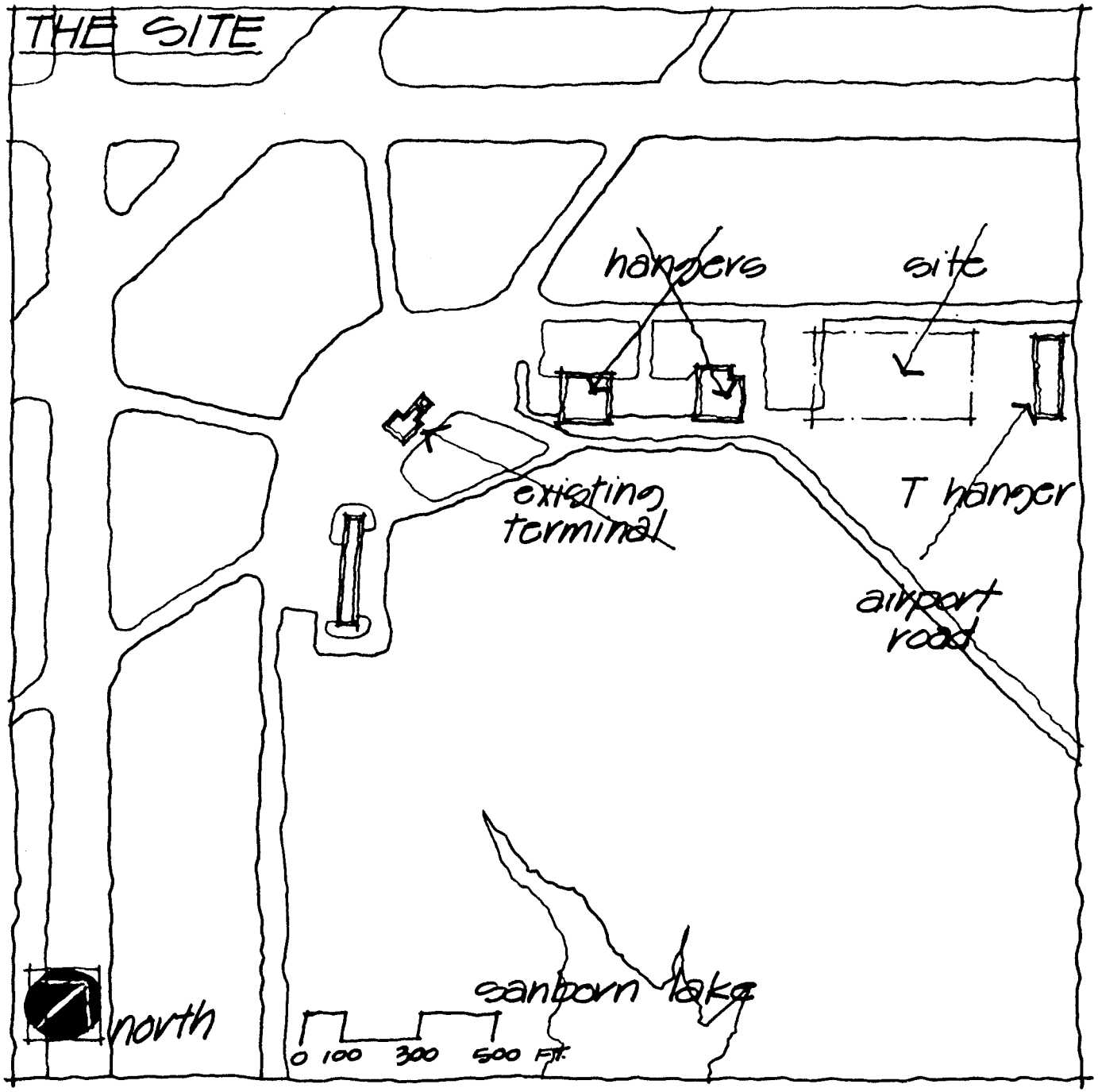
restrictions: 75' building restriction line from taxiway
• 15' setback line from airport road
• existing tie-down area

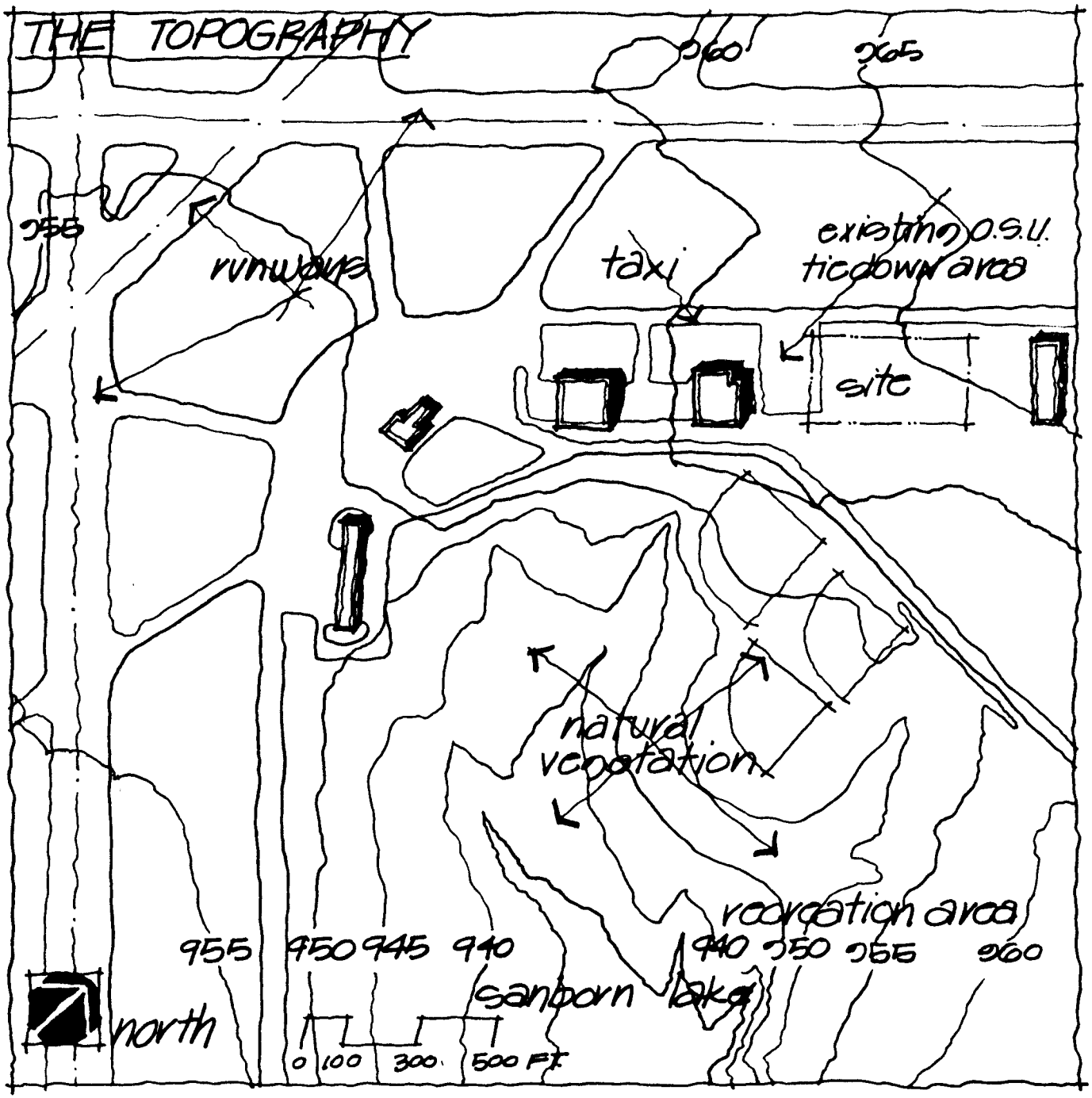
buildable area: 200' x 545' • 109,000 ☐

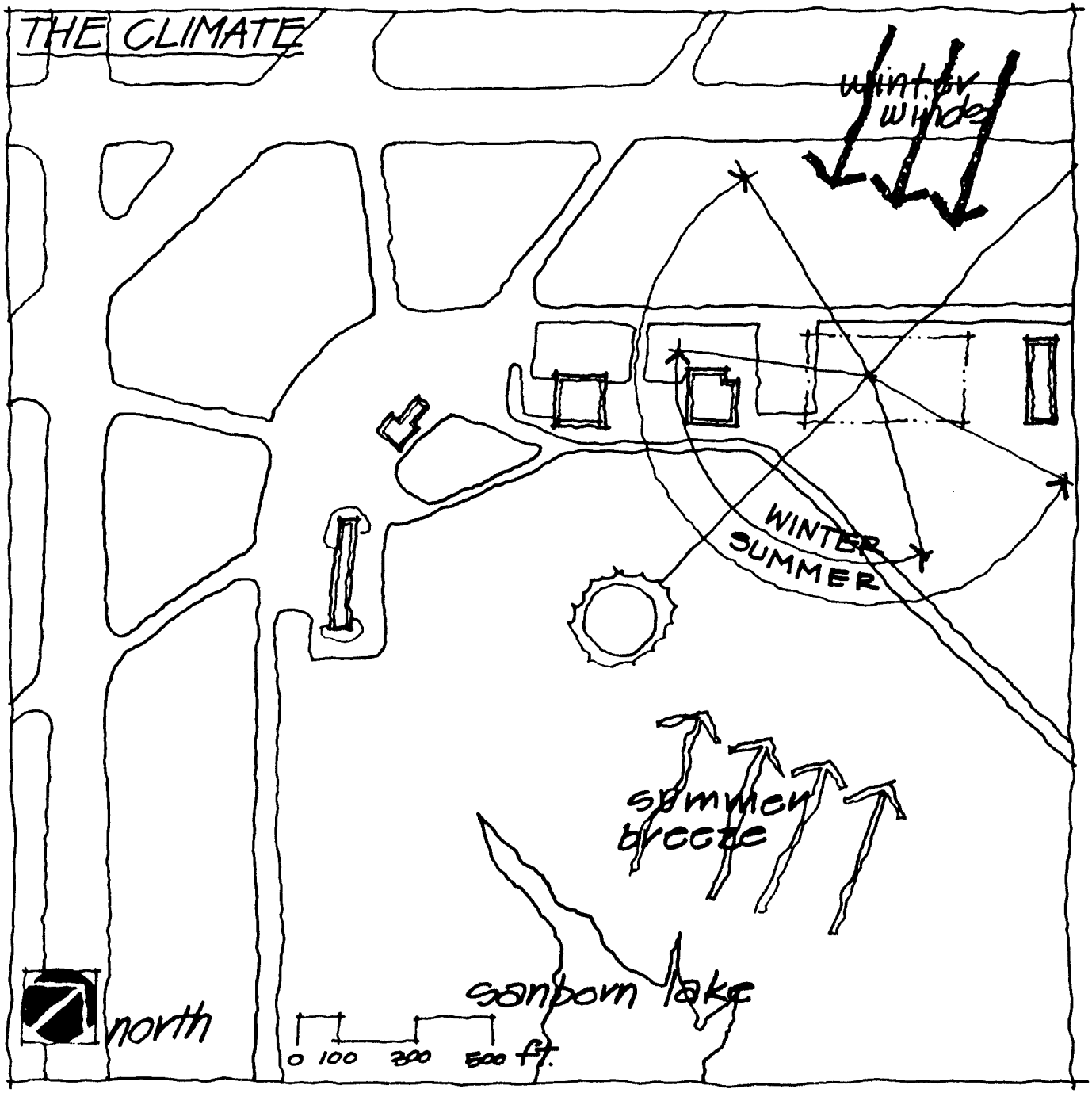
tree cover: none

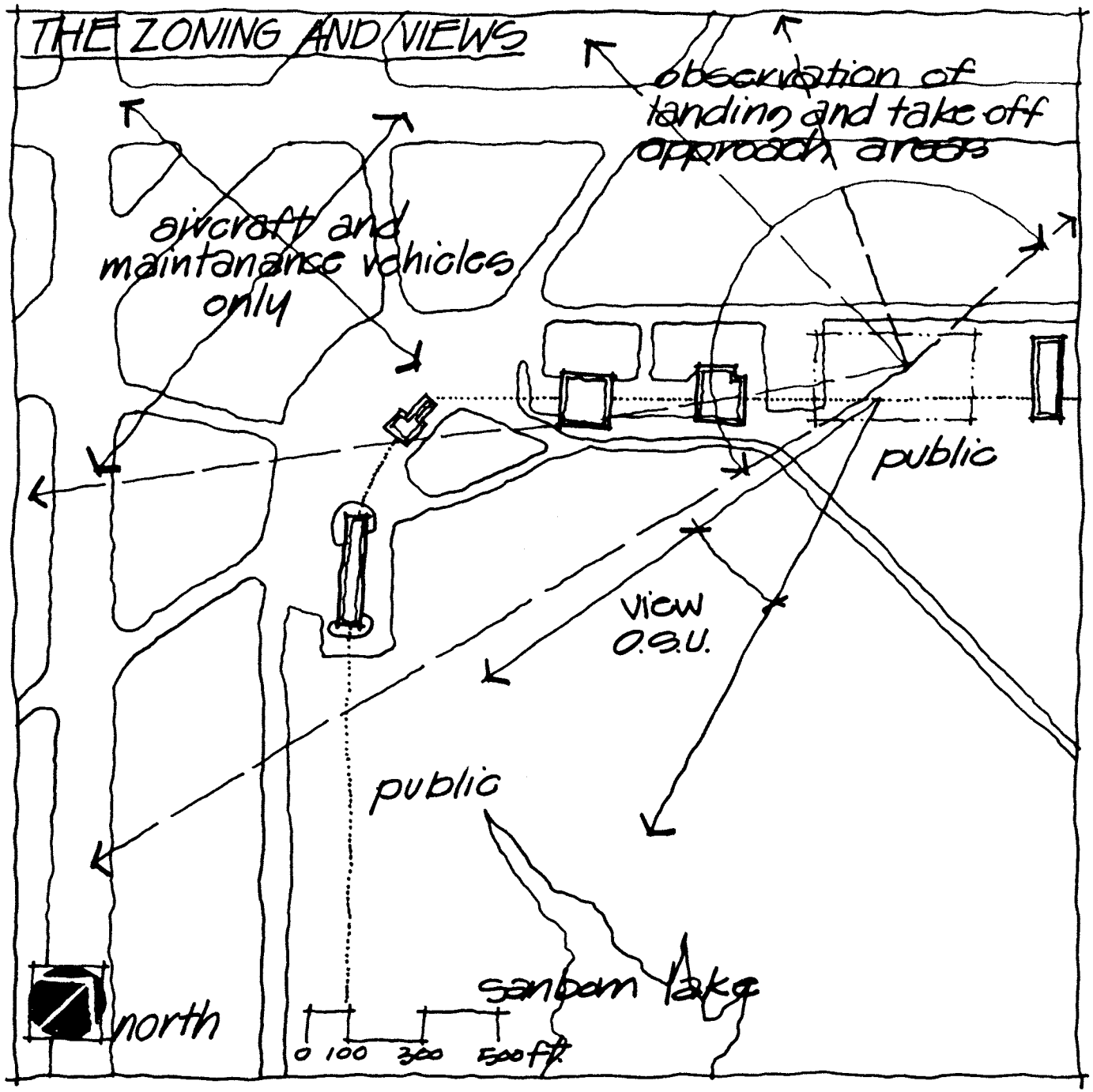
accessibility: auto: from airport road on southeast side of site
aircraft: from taxiway on northwest side and from the existing tie-down area on southwest side of the site
walking: to and from the existing terminal to the southwest - 1200'

traffic volume: there are presently 125 parking positions at the terminal


THE SITE
hangers
site
existing terminal
T hanger
airport road
sanborn lake
north
0 100 300 500 FT.


THE TOPOGRAPHY
960
965
955
runways
taxi
existing O.S.U. tiedown area
site
natural vegetation
recreation area
955
950
945
940
940
950
955
960
sanborn lake
north
0
100
300
500 FT


THE CLIMATE
winter winds
WINTER
SUMMER
summer breeze
sanborn lake
north
0 100 200 500 ft.

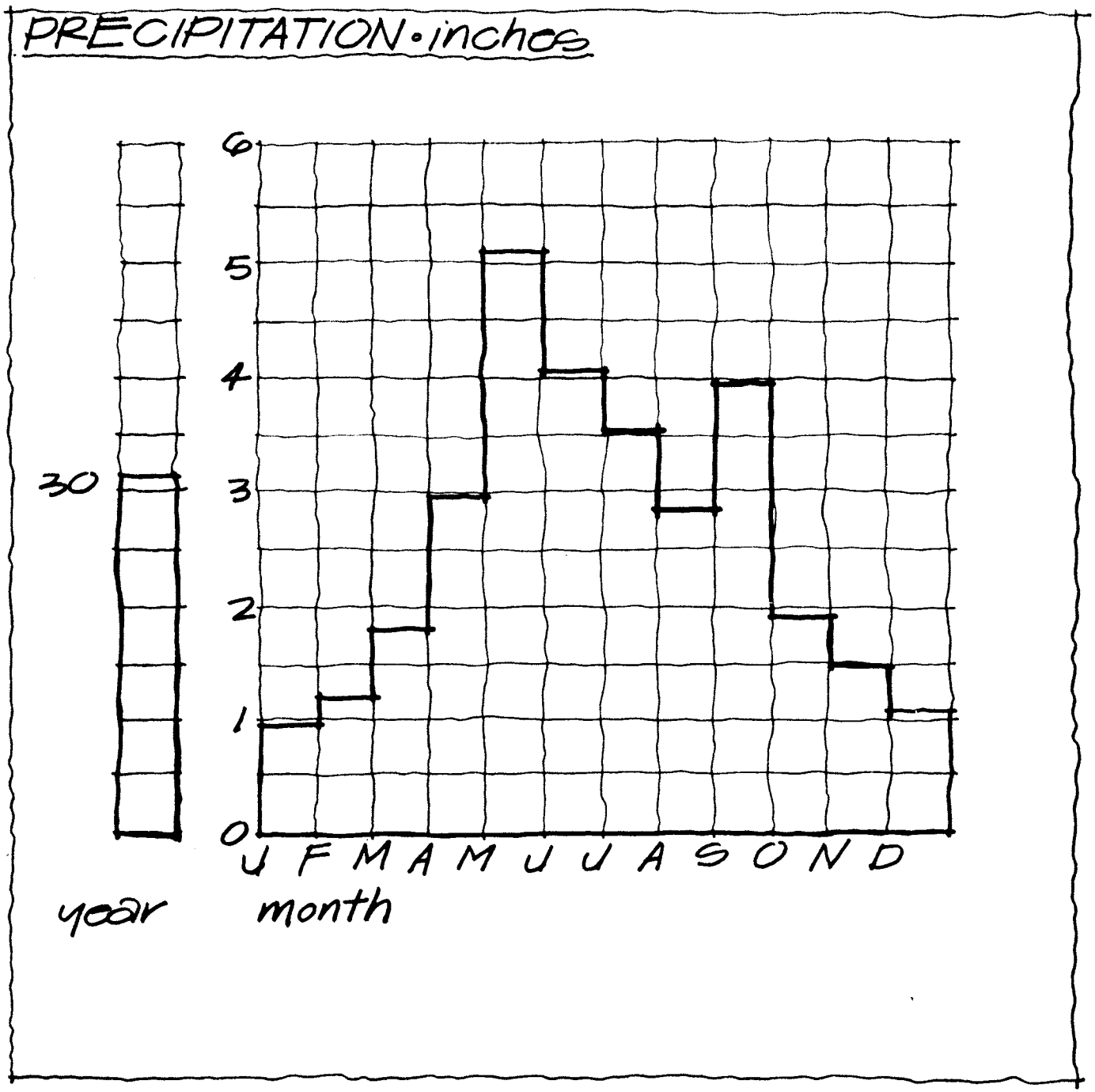

THE ZONING AND VIEWS
observation of landing and take off approach areas
aircraft and maintanance vehicles only
public
view O.S.U.
public
sanbam lake
north
0 100 300 500 ft

CODE SURVEY

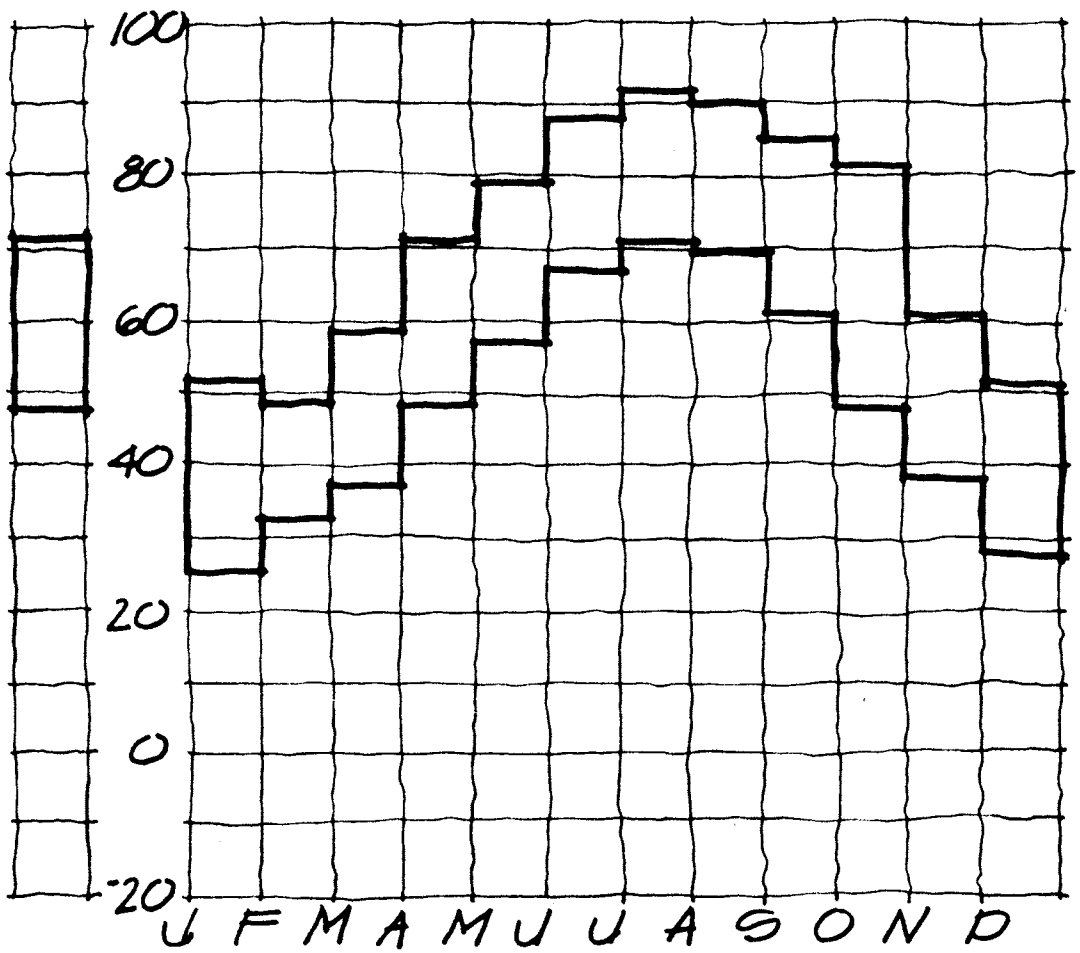
classification:

- flight training areas · educational occupancy
- classroom >50 people · place of assembly
- hanger area · storage occupancy
- parts storage area · storage occupancy

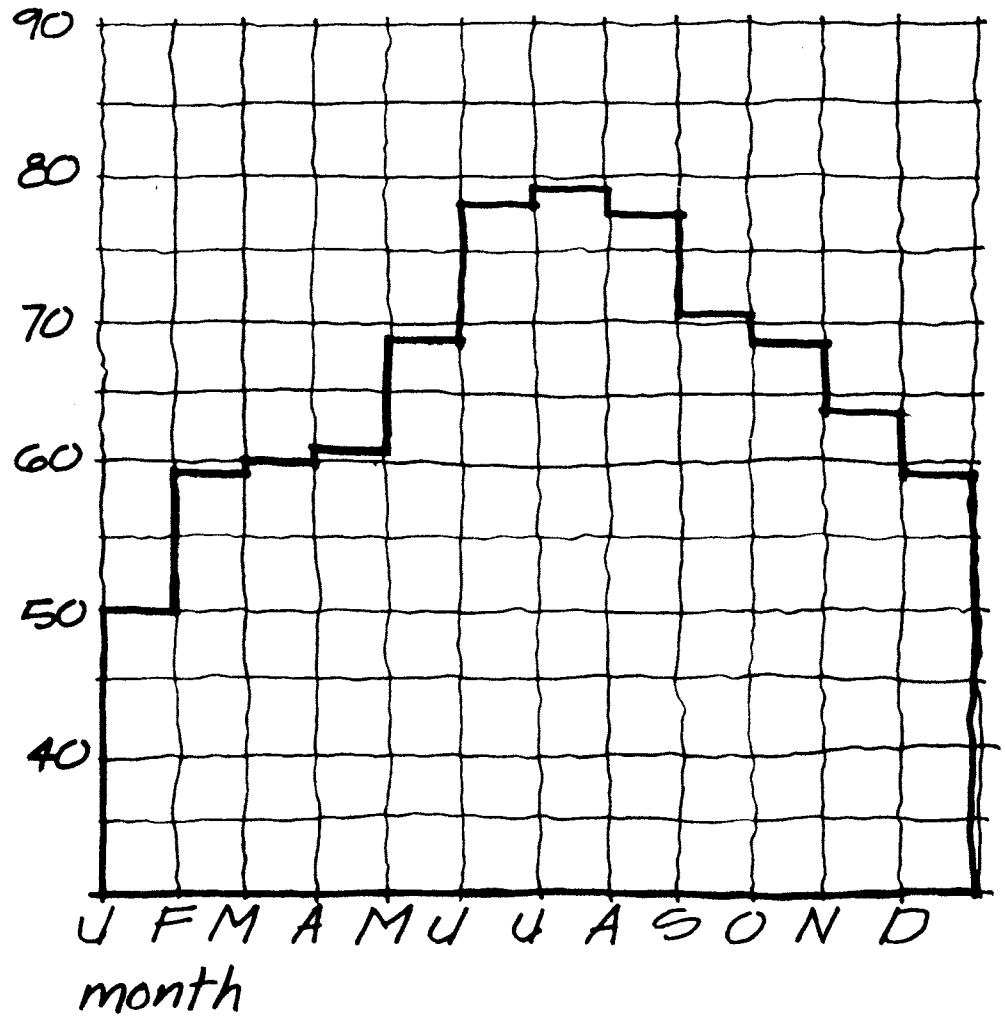
note: The City of Stillwater has in effect the height restriction zoning ordinance for Stillwater Municipal Airport, this ordinance will be used in refrence to this project. The City of Stillwater endorses "Life Safety Code", the life safety code handbook will also be used in refrence to the code applications.


PRECIPITATION • inches
30
6
5
4
3
2
1
0
J F M A M J J A S O N D
year
month

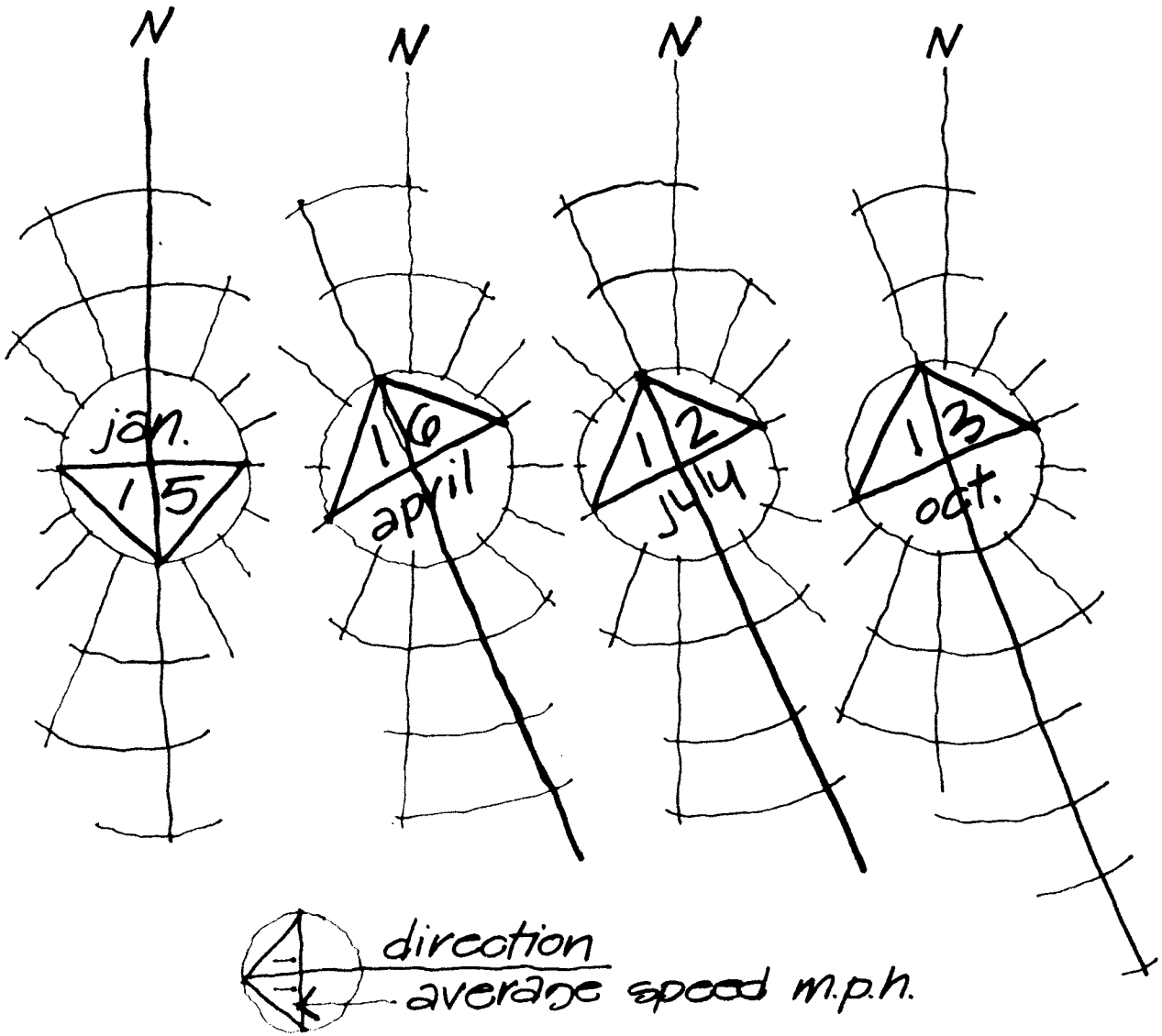
MEAN TEMPERATURES °F



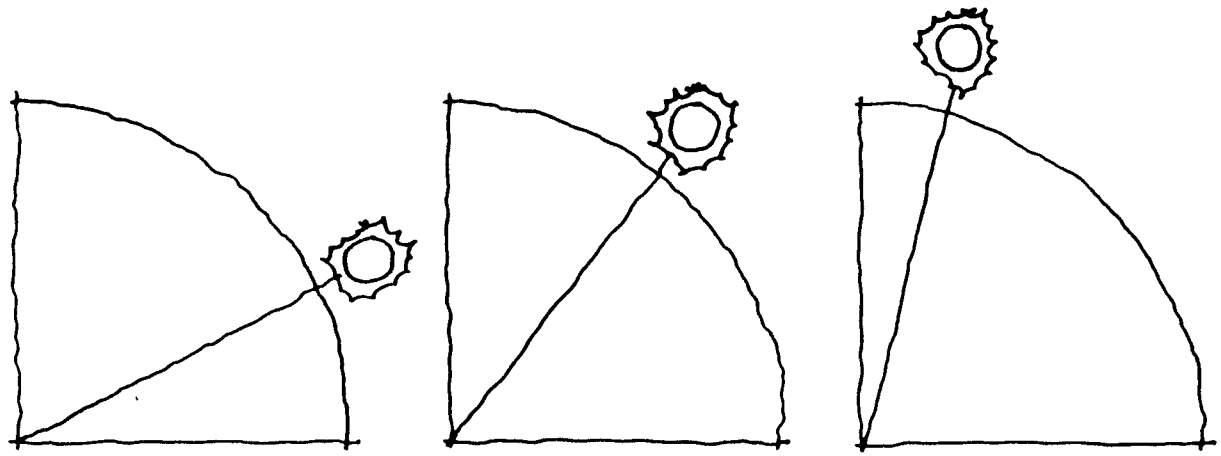
POSSIBILITY OF SUNSHINE · %



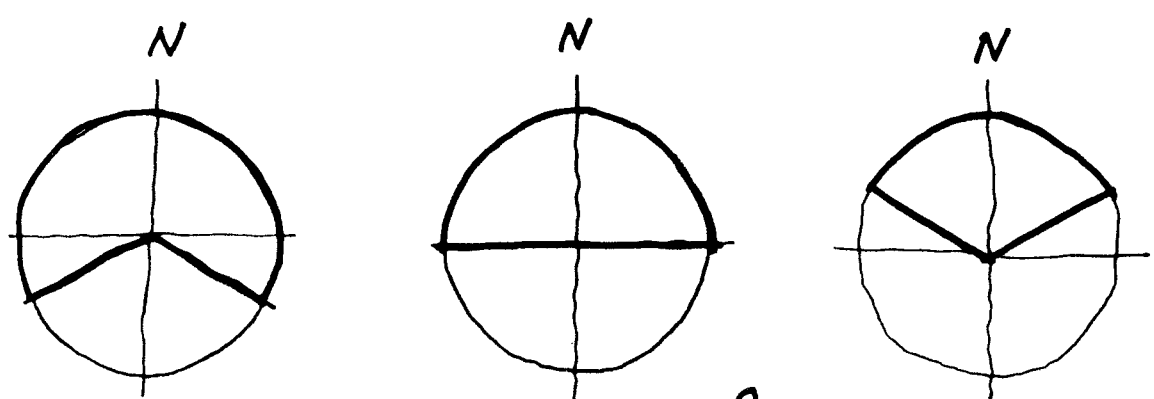
PREVAILING WINDS



SUN ANGLES



DEC. 31 30° MAR. 21 54° JUNE 21 77°
SEPT. 21



winter 30°

spring 0°
fall

summer 23°

PART TWO: needs

SECRETARIAL AREA

activities: secretary to dept. head & instructors

users: secretary

relationships:
- positive: department head · faculty offices
- negative: hanger area

equipment:
- built-in: counter space · filing
- moveable: chairs · desk

specialties: work area · counter space

area:

work area	200 ☐
secretary	200
total	400 ☐

RECEPTIONIST / LOBBY

activities: waiting area · display · recieving

users: students · staff · faculty · public

relationships:
- positive: administration and offices
- negative: study zones · classroom

equipment:
- built-in: counter space · displays
- moveable: seating

specialties: image of lobby · views

area: waiting for 5-10 people 200 ♯
reception 150 ♯
display 300 ♯
total 650 ♯

DEPARTMENT HEAD · OFFICE

activities: administration · instruction · discussion

user: department head

relationship:
- positive: secretary · receptionist · instructor · offices · lobby
- negative: hangers

equipment:
- built-in: bookshelves · bulleton board
- moveable: desk · filing ·

area: 200 ☐

INSTRUCTOR · OFFICE

activities: office space for instructor

user: flight instructor

relationships:
- positive: dept. head · sec. ·
- negative: hangers

equipment:
- built-in: desk · filing · locker
- moveable: chairs

specialties: this office space will serve as the faculty members permanant space

area: 3 @ 150 ☐ ea. 450 total

CHIEF INSTRUCTOR-OFFICE

activities: office space for flight instructors · pre-flight prep

users: flight instructor

relationships:
- positive: flight operations · pilot briefing ·
- negative: hangars

equipment:
- built-in: t.v. monitor ·
- moveable: desk · files · reference material

specialties: safety · administration · visual observation of student operations

area: 150 ☐

CONFERENCE ROOM

activities: faculty meetings

users: staff and faculty

relationships:
- positive: instructor offices · administrative areas · lobby
- negative: hangers

equipment:
- built-in: projection screen · graphic wall
- moveable: conference table and chairs

specialties: control natural light

area: 400-500 ☐ min. seating 14

STUDENT / INSTRUCTOR STATION

activities: pre-flight testing

users: aviation students & flight instructors

relationships:
positive: flight operations · instructor offices
negative: hangers (noise)

equipment: bulletin board · desk

specialties: instructor observation of students handling planes

area: 80 - 100 ☐ ea. · 14 required
total: 1120 - 1400 ☐

FLIGHT OPERATIONS

activities: pilots and pilot trainees check weather, time, in & out flights · pre flight planning & navigation

users: flight instructors, students, flight services pilots

relationships:
- positive: chief instructor · instructors · pilot briefing modules
- negative: hangers

equipment:
- built-in: T.V. monitor · 2 "APPLE" computer terminals · clocks · telephones · wall space for maps · linear counter space for charting

specialties: visual contact with runway & taxi areas

area: 500 - 600 ☐

CLASSROOM

activities: lectures · small classes · flying · group meetings · movies · safety presentations

users: faculty and students

relationships:
- positive: faculty offices · public
- negative: hangers · noise control

equipment:
- built-in: movie screen · blackboard
- moveable: desks · chairs · lecturn

specialties: block natural light for visual aids ·

area: 600 - 1000 ϕ 6-8 ϕ per person

seating capacity · 20-40 people

FLIGHT SIMULATION

activities: observation of students simulating flight

users: students and faculty

relationships:
- positive: administration control · chief instructor · instructor offices
- negative: noise control · public areas

equipment:
- built-in: adequate power
- movable: flight simulators · instructor station

specialties: dark area for observation of digital computers · accessibility of large simulator machines

area: 90 ☐ per simulator · 6 required
space for instructor · 100 ☐
660 ☐ total

LIBRARY / REFERENCE

activities: research · study · reading

users: students · staff · faculty

relationships:
- positive: administration · flight operations
- negative: hangers

equipment:
- built-in: bookshelves · map storage
- moveable: tables · chairs · lounge furniture

specialties: quiet space required

area: 500 - 700 ϕ

STUDENT / STAFF LOUNGE

activities: breaks · informal meetings

users: students & staff

relationships:
- positive: training & administration areas
- negative: library · offices

equipment:
- built-in:
- moveable: lounge furniture & table

specialties: access to toilets & vending area
· kitchen

area: 300 - 500 ft

FLIGHT SERVICES

activities: planing and deplaning of guests and oklahoma state university employees

users: pilots · secretary · guests

relationships:
- positive: public entry · flight operations · taxi·way
- negative: active student training areas

equipment:
- built·in:
- moveable: desks · chairs · furniture

specialties: access to and from plane

area:
- secretary · 150 ♯
- waiting area · 200 ♯
- 2 pilot stations · 400 ♯

750 ♯ total

HANGER AREA

activities: plane storage · maintanance · safety checks · parts storage · offices · avionics

users: maintanance crews · students · instructors

relationships:
positive: taxiway · administration
negative: noise controled areas

equipment:
built-in: work stations · tool and parts storage lockers
moveable: portable tool carts

specialties: compressed air · high security area · hanger area must be accessible from 2 sides for easy mobility of planes

area: plane size ~ 25'×40' = 1000 ☐ per plane

14 planes required = 14,000 ☐ total

MAINTANENCE OFFICES

activities: security control of hanger & parts area · mechanics office · safety observation

users: mechanics & staff

relationships:
positive: hanger · parts storage · administration
negative: public

equipment:
movable: desk · file space

specialties: visual control with hanger & tie down areas

area: 2 offices @ 200 ☐ each

PARTS STORAGE

activities: storage of tools · parts & equipment

users: mechanics · staff · students

relationships:
- positive: hangers · maintenance office
- negative: public ·

equipment:
- built-in: shelves
- movable: tool carts

specialties: service access · chemical storage

area: 1000 ☐

AVIONICS

activities: study and repair of airplane instrumentation

users: staff · faculty · students · technicians

relationships:
- positive: hanger area · parts storage maintanance
- negative: hanger floor

equipment:
- built-in: storage space for parts · work stations
- moveable: seating

specialties: block natural light for viewing of oscilloscopes · dust free enviornment

area: 400 - 500 ♯

TIEDOWN AND RAMP AREA

activities: plane storage · preflight safety checks · pilot familiarization · display plane

users: pilots · trainees · instructors · maintanance · planing and deplaning passengers

relationships:
- positive: hanger · maintanance · visual security
- negative: classroom and training areas

equipment:
- built-in: tiedown hardware · lighting
- movable: gas & maintanance vehicles

specialties: visual security control · observation of handling of planes

area: 1000 □ per plane

TOILETS

activities:

users:

relationships:

positive: public areas · janitor closet · vending · kitchenette

negative:

equipment:

built-in:

specialties:

area: average capacity - 60 people

- water closets · 1 per 25 people
- lavatories · 1 per 25 people
- urinals · 1 per 12 males

AUXILLARY AREAS

• telephone equipment room	50 ft
• toilet in hanger	100 ft
• elevator	100 ft
• janitor closet	100 ft
• storage areas	300 ft
• workroom	100 ft
• lockers	
total area	750 ft

TOTAL AREA

total space requirement:

hanger area	15,500 ♯
training area	8,320 ♯
total	23,820 ♯
10% mechanical equipment allowance	2,382 ♯
15% circulation allowance	3,573 ♯
total area in square ft.	29,775 ♯

- the total building area on the buildable area of the site is 28%

SITE REQUIREMENTS

parking: minimum of 30 stalls required

tiedown: 20 aircraft tiedown areas

service: access to hanger for delivery of large parts and planes
- service entry for garbage and small deliveries

specialties: auto drop off area for flight services
- departures and arrivals
- aircraft drop off area for flight services
- landscaping
- outdoor space for plane exhibits

parking area: 30 stalls @ 200 # each

6000 # total

- parking area for cars is 16% of total buildable area of site

PART THREE: goals

GOALS

function:

- to be the flight traing facility for aviation education, and the educational center of the airport community.

- to provide for dual use of the facility by students for education and the flight services department of oklahoma state universaity.

- to lend interest and excitement in flight and flight procedures to the approach, arrival, and movement through the facility.

form:

- the aesthetic orientation should leave the user with a feeling of flight with academic overtones.

- the image projected to the community should reflect the intent of the user. that of safety, professionallity, and technology in flight.

GOALs (cont.)

economy:

- with todays energy costs energy conservation should be reflected in the design to save operational costs.
- the budget should be adequate for good quality construction; however it is not without design implications.

time:

- the facilities are to be flexible to accommodate the high rate of growth in the technology in aviation education and in aviation in general.

PART FOUR: concepts

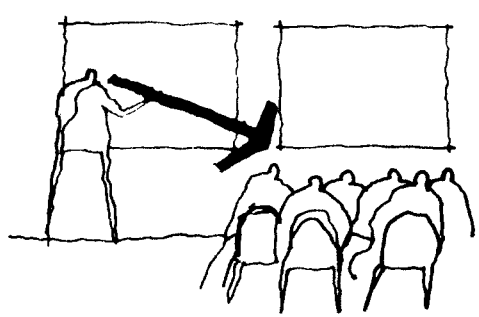
PEOPLE GROUPING

- educational ——→ students
- administrational ——→ staff and faculty
- observational ——→ faculty

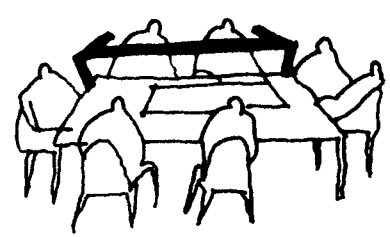
group functions: flight operations · faculty meetings · classes · club meetings

individual functions: charting · study · office · weather · maintanance

communication:



one-way

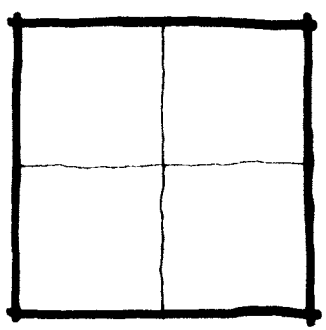


two-way

SERVICE GROUPING

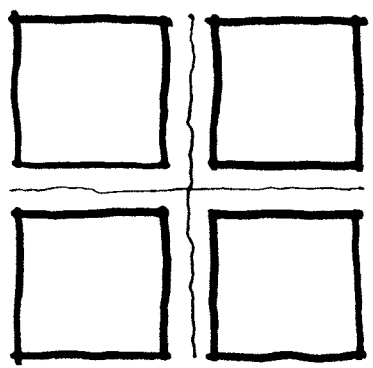
centralized

- flight training areas
  safety administration
- mechanical equipment
  energy conservation
- administration areas
  observation and control
- flight operations
  safety observation



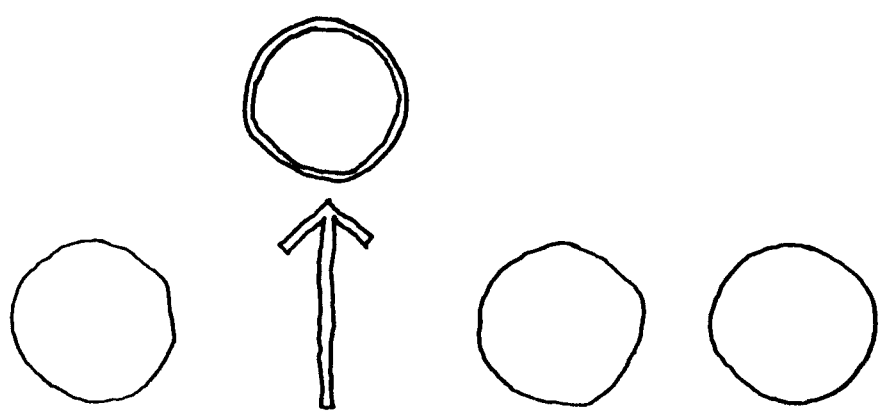
decentralized

- office spaces
  privacy
- hanger area
  storage
- individual training areas
  privacy and concentration
- service entries and areas
- flight services



PRIORITY

- position → observation
  safety
- social value → education
  flight
- size → office
  rank



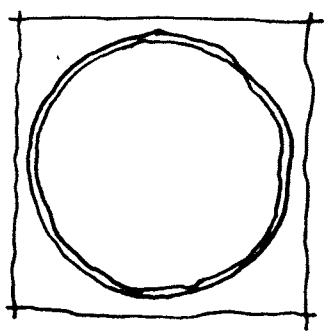
ACTIVITY GROUPING

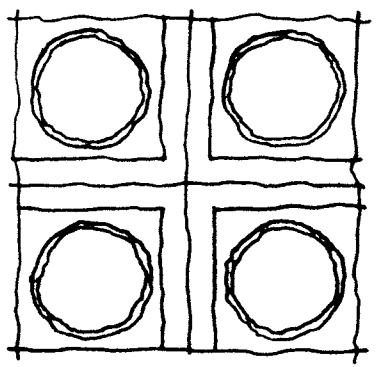
integrated

- flight operations
  observation / safety
  and interaction
- flight simulation
  observation
- public spaces
  interaction

compartmentalized

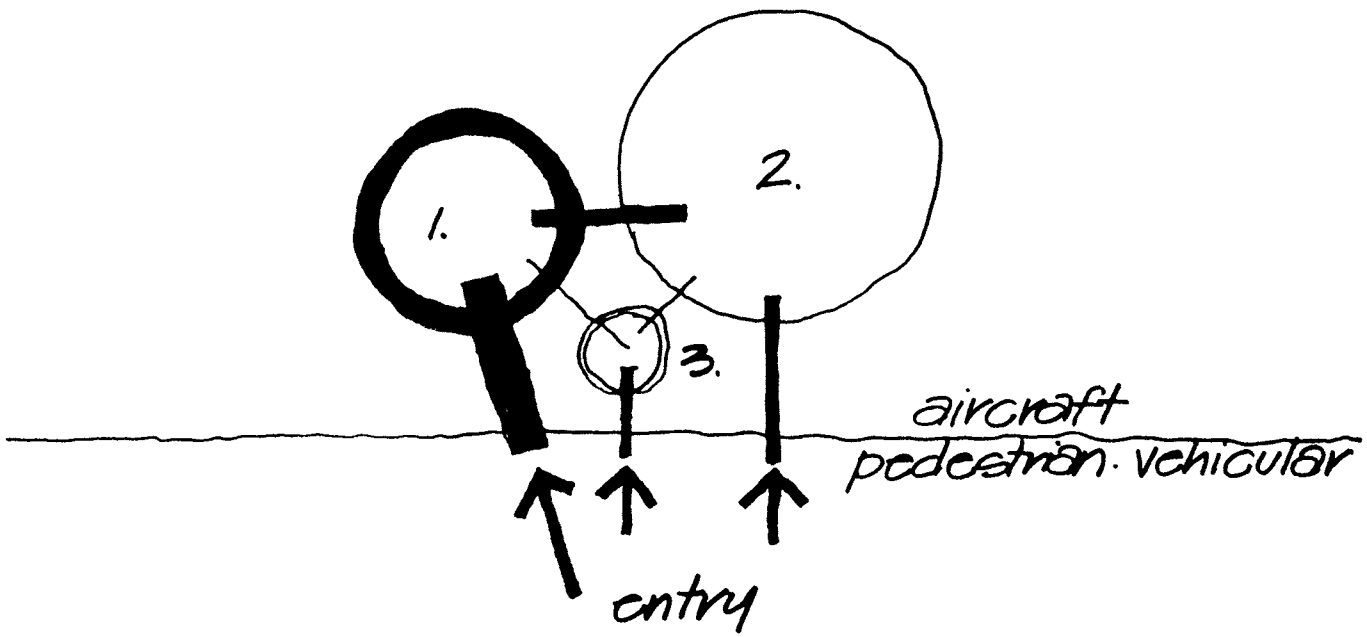
- flight services
  seperate service
- office areas
  privacy
- hanger area
  security
- student / instructor pre-
  flight instruction





RELATIONSHIPS

1. flight training areas and administration
2. hanger area, maintanence, and parts
3. flight services

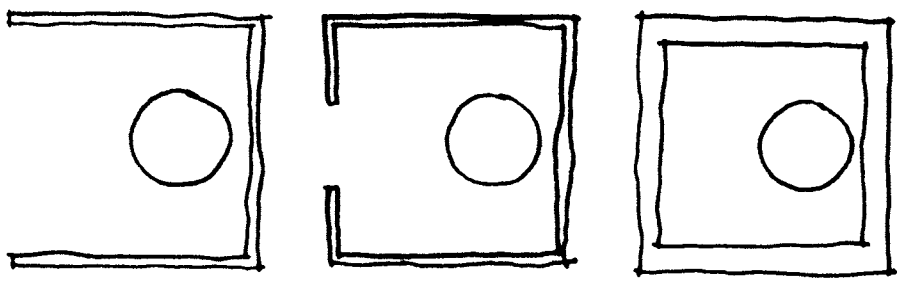


SECURITY CONTROLS

- minimum: public areas • flight services • administration
- medium: flight simulation · taxiway
- maximum: flight operations · hanger area · parts storage

types: observation: control personnel movement

enclosure

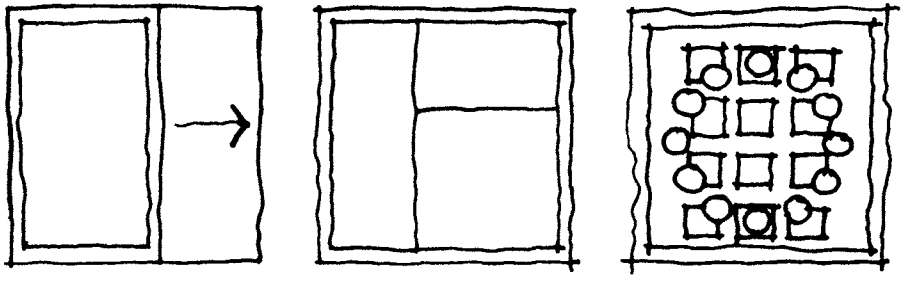


FLEXIBILITY

expansion: the project growth for the year 2000 is 400 students per academic year. This growth would include flight training facilities and administration areas. i.e. flight simulation and office space.

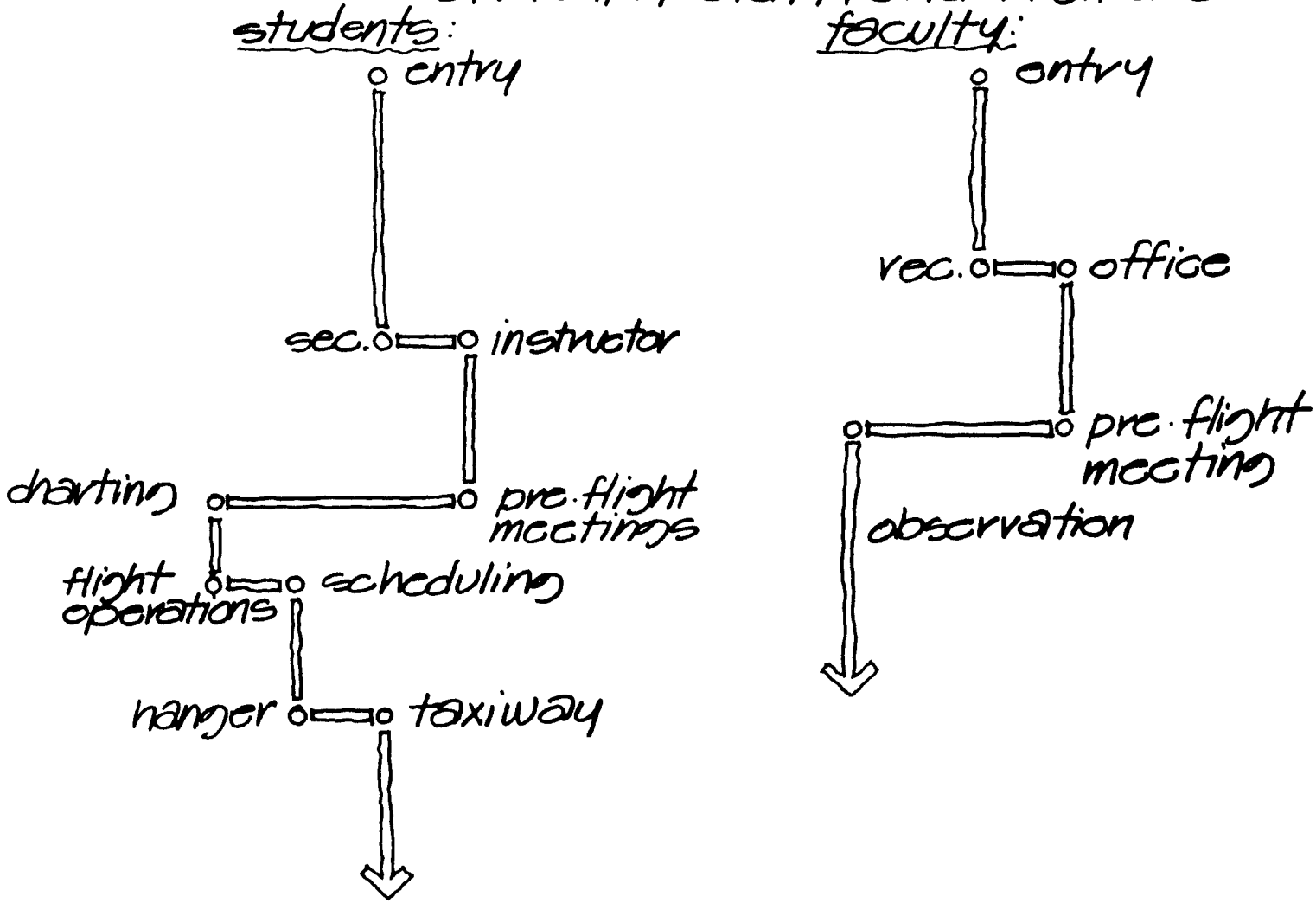
conversion: due to the high technology of aviation education, i.e. flight simulation, the convertibility would be one of equipment rather than space

versatility: the flight operations area will be used by the flight services department in conjunction with student trainees. the classroom will be used also by the flying agpics.



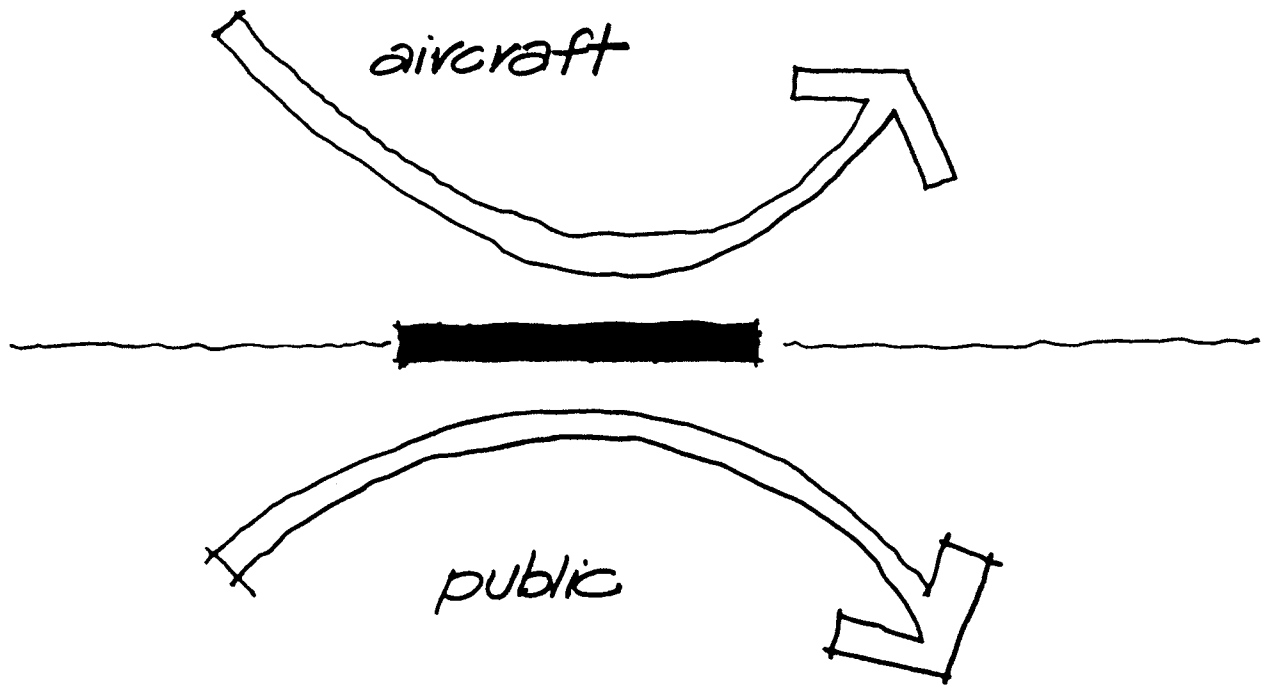
SEQUENTIAL FLOW

progression of people:
students, staff, and visitors



SEPARATED FLOW

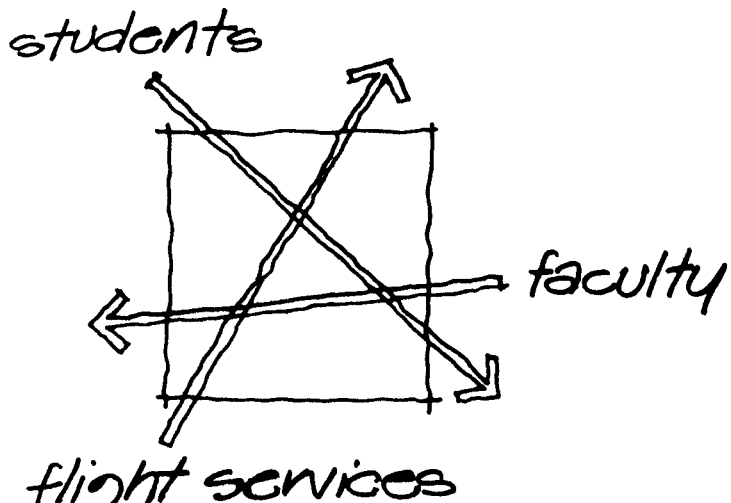
types: aircraft • vehicular • pedestrian



MIXED FLOW

- aviation education is safety oriented, therefore the interaction of faculty and students is important

- flight services will share the facility with the aviation education department. this service is an active part of flight operations · due to safety all parts of flight should be aware of each other

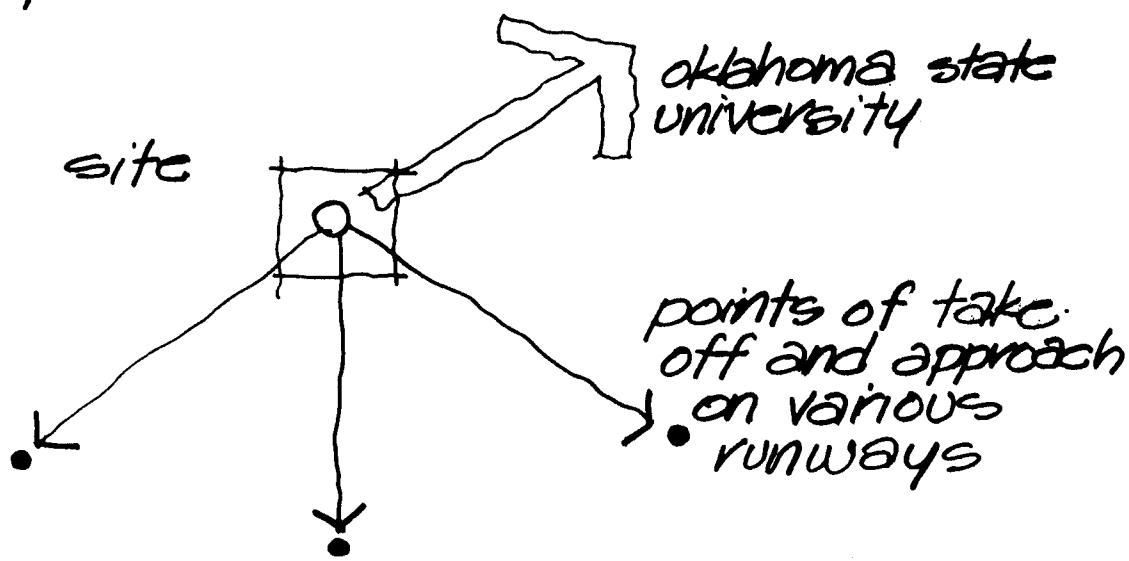


ORIENTATION

points of reference.

safety: an important part of aviation education is observation of flight and plane handling. approach and take off areas are critical points of reference

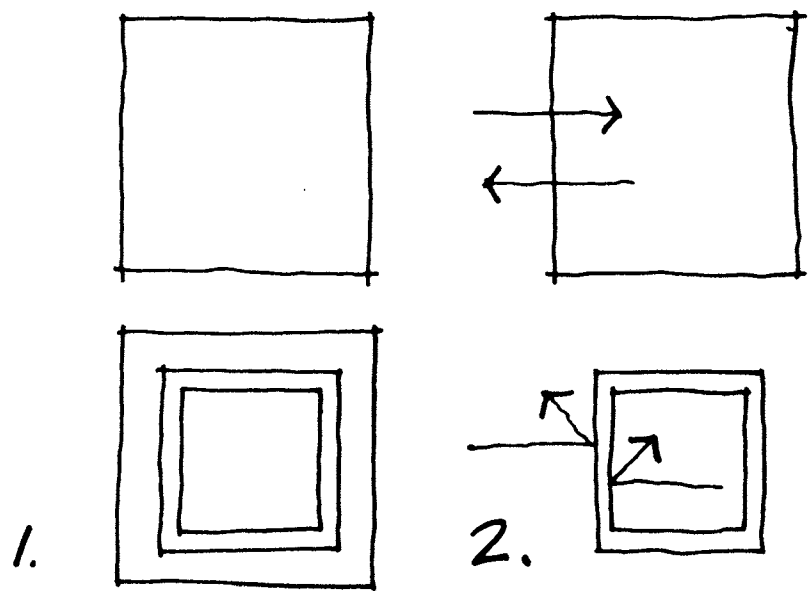
educational: oklahoma state university can be seen from the site. this is an "educational" link with the main campus



ENERGY CONSERVATION

conservation of energy is of prime importance. there are two basic way that lead to energy efficient buildings.

1. keep heated area to a minimum by efficient planning
2. keep heat flow to a minimum with insulation, correct orientation to sun and wind, sun controls and reflective surfaces.



PART FIVE : problem statement

PROBLEM STATEMENT

function:

- the new facility must accommodate a variety of functions and traffic. a key problem is to accommodate this mix, taking care to minimize the conflicts while accentuating the positive interactions necessary to flight safety.

- the essence of the training school is the circulation of students, staff, and aircraft.

- since emphasis must be placed on flight safety the design must provide for seperation of the pedestrian movement, vehicular traffic and aircraft traffic.

form:

- the large flat site will influence the form of the building towards a more horizontal development.

PROBLEM STATEMENT cont.

form:

- because of the remoteness of the site from the main campus the design must provide a link back to campus using views, building materials and elements from campus.

- since the security of certian areas and the public image are both important, the design should provide the required security controls without developing a fortress like atmosphere.

- since the school provides the needs of the trainee, the design should facilitate the unscheduled social interactions of the participants as well as scheduled educational activities.

- since the area is barren and austere, the design should create green planted areas between the approach to the building and the runways.

PROBLEM STATEMENT cont.

economy:
- since the budget is adequate, but not lavish, the design must respond with simplicity and directness.

time:
- since the design must be flexible to respond to change, the planning framework must be established to structured development.

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William Peña. *Problem Seeking, An Architectural Programming Primer*. Boston: Cahners Books International Inc., 1977

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BOOK TWO: design

DESIGN OBJECTIVES

overall: to work with an actual client toward a realistic solution.

concept search: to test client attitudes towards general approaches to the problem

- to be as simple as possible offering only an approach to the problem not a solid design statement

schematic: to test client attitudes toward spacial relationships and concepts.

design development: to refine and develop the predetermined ideas of a three dimensional design

PART ONE : concept search

SCHEME A

concepts: to relate the hanger to the existing tie-down area

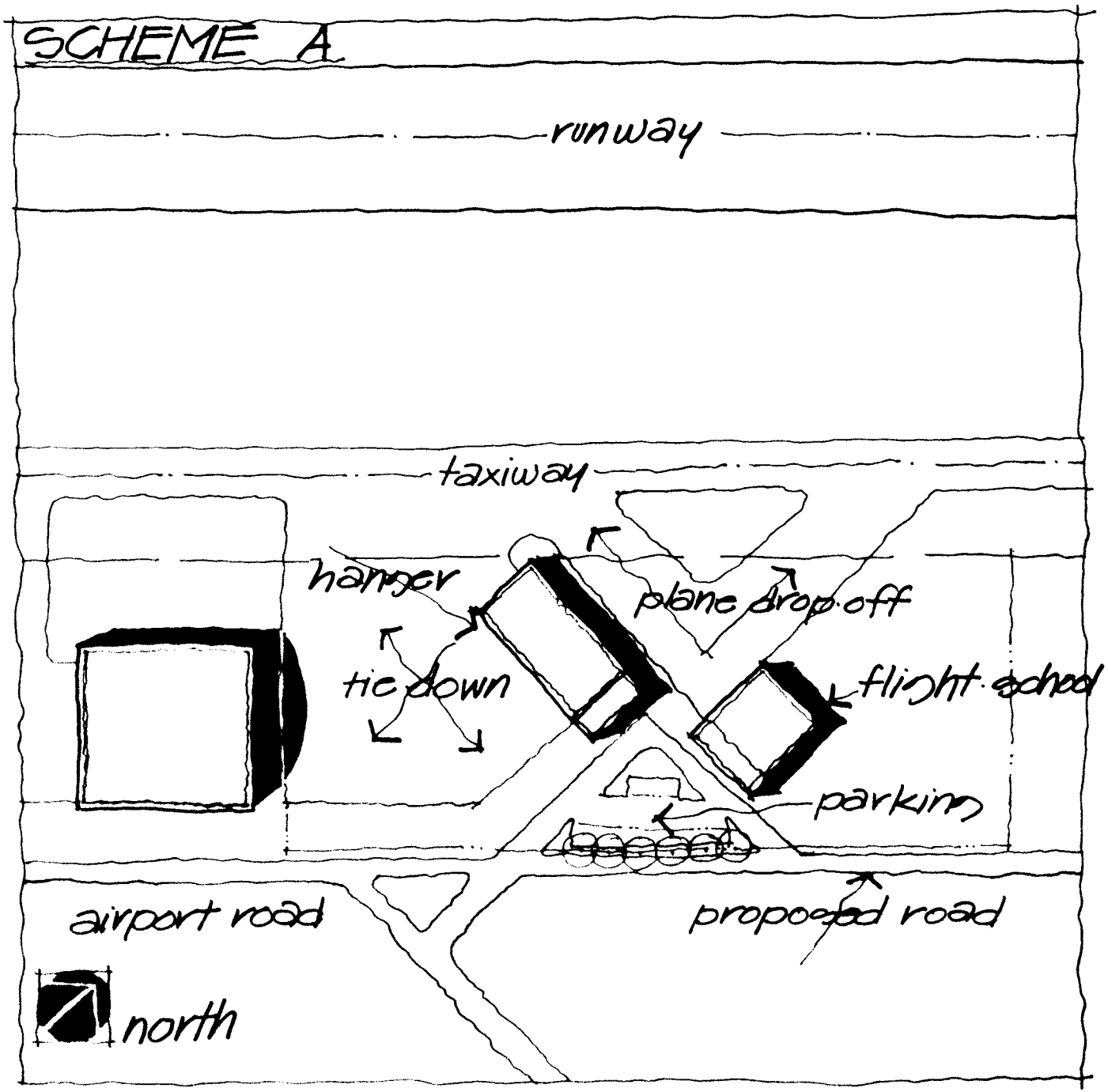
- to separate the hanger structure from the school
- to provide a view of O.S.U. from the flight school.

advantages: minimizes northern exposure of open hanger area.

- convenient plane drop-off for flight services
- addresses approach from airport road - image.

disadvantages: not a very strong barrier between flight and public areas.

- weak connection between buildings


SCHEME A
runway
taxiway
hanger
plane drop-off
tie down
flight school
parking
airport road
proposed road
north

SCHEME B

concepts: to expose the school to views of active flight areas.

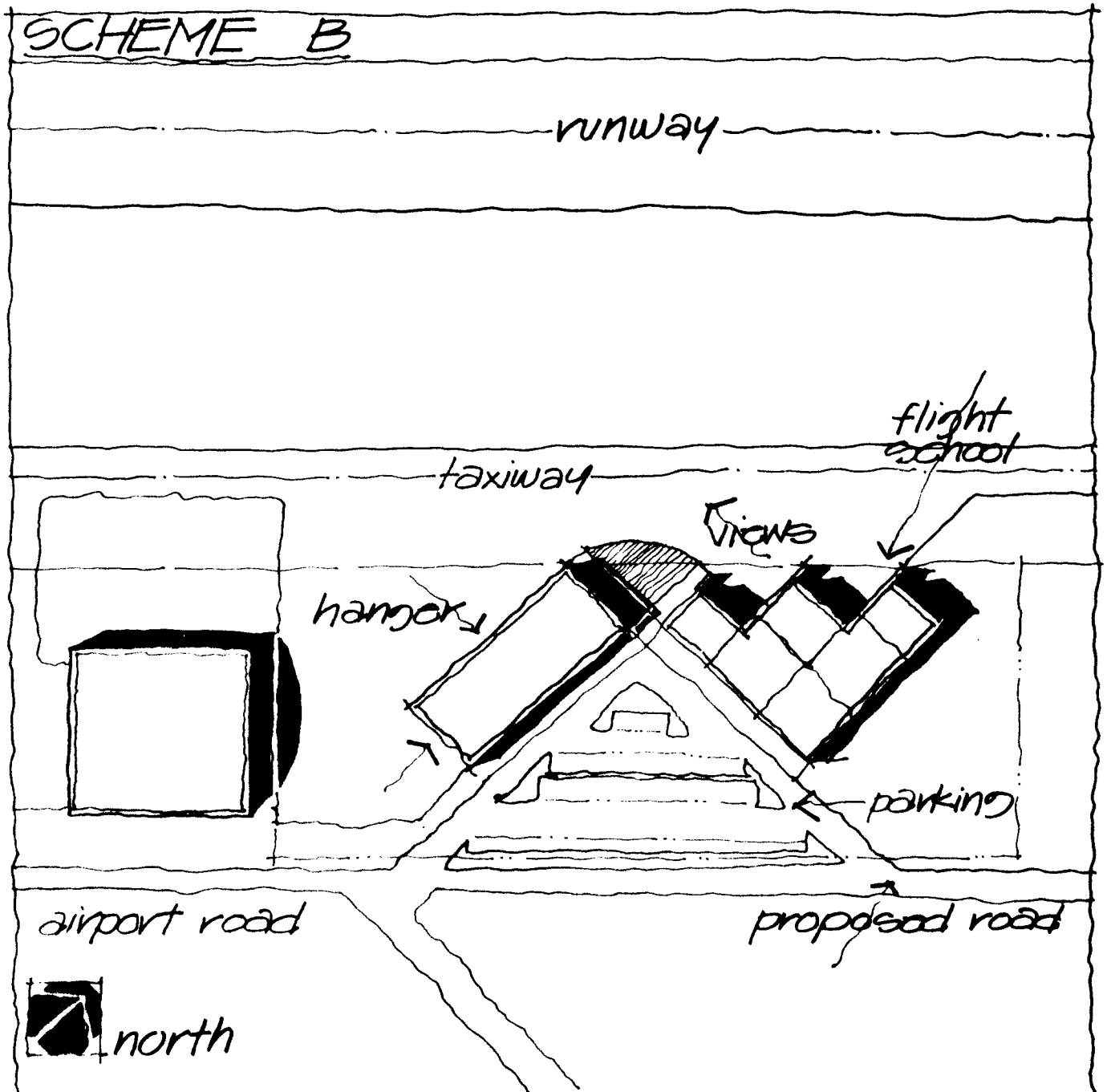
- to relate the two structures with a common plaza area.

advantages: visual control of immediate flight areas from school & hangers.

- hanger relates to existing tie-down area.
- clear definition between public and flight areas.

disadvantages: not enough tie down and aircraft space.

- poor relationship to existing structures.


SCHEME B
runway
taxiway
flight school
views
hangar
parking
airport road
proposed road
north

SCHEME C

concepts: to extend the facilities for maximum ajacency to aircraft areas.

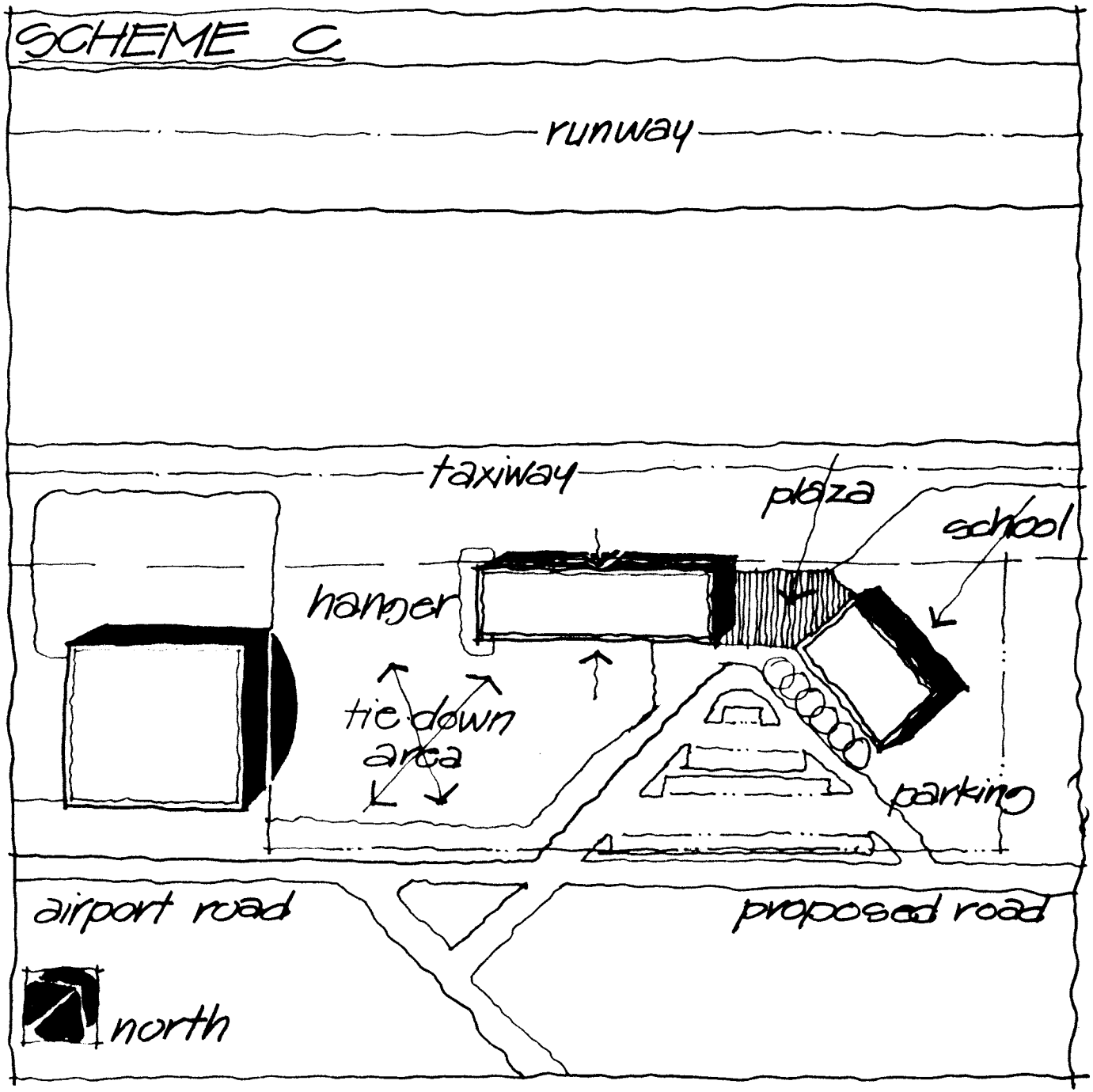
- to set the hanger away from public areas, accentuating the flight school.

advantages: easy accessibility to and from hanger area.

- large area for aircraft tie down and mobility.

disadvantages: weak relationship between flight school and runways and taxiway

- weak barrier between public and flight areas.


SCHEME C
runway
taxiway
plaza
school
hanger
tie-down
area
parking
airport road
proposed road
north

SCHEME D

concepts: to maximize the area between the the building and runway for aircraft mobility

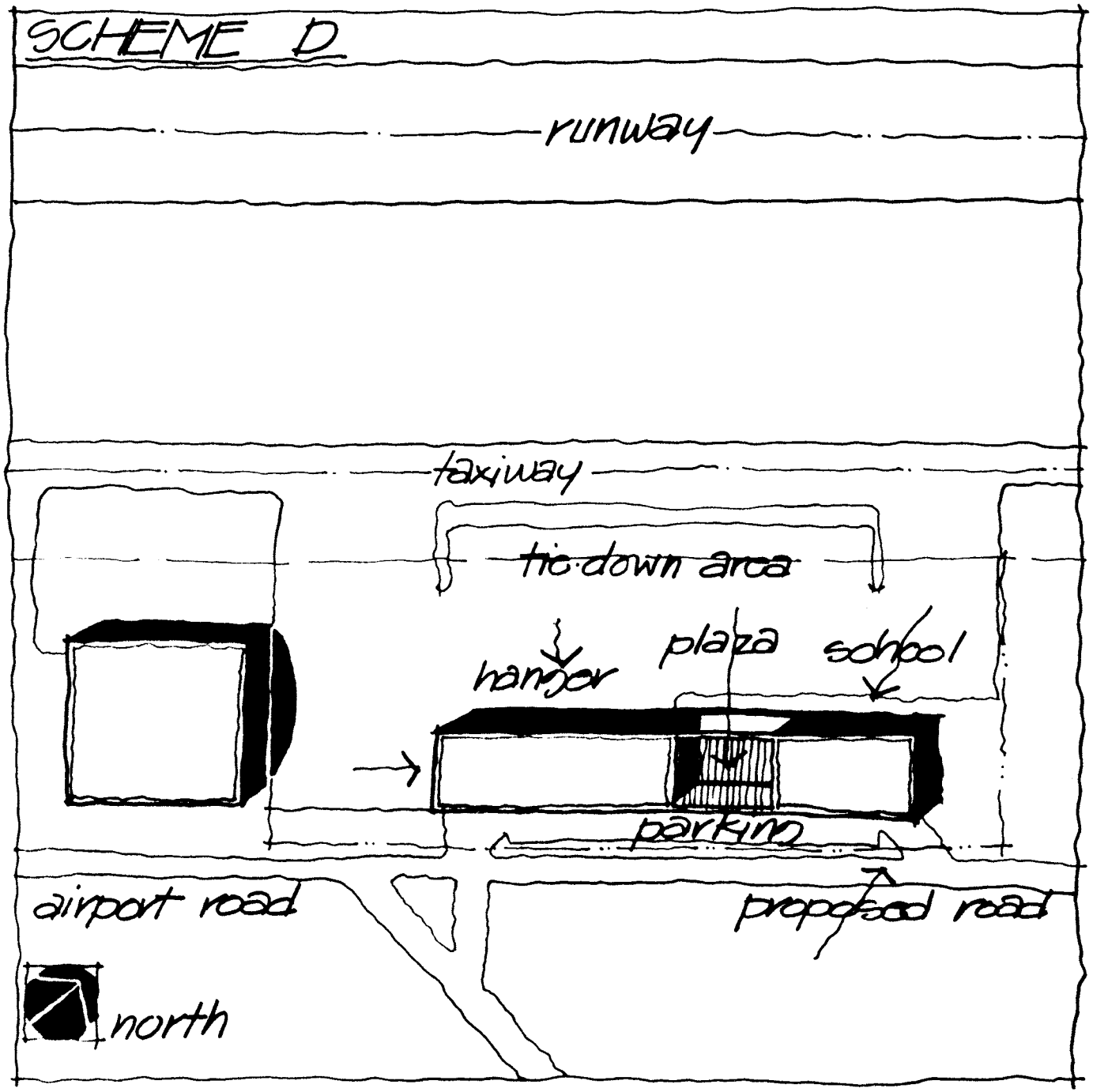
- to provide a strong barrier between public and flight areas.

advantages: maximum visual control of high activity flight areas

- public and plane areas are clearly defined by the placement of the hanger and flight school.

disadvantages: public areas are minimal

- extensive paved area


SCHEME D
runway
taxiway
tie-down area
hangar
plaza
school
parking
airport road
proposed road
north

CONCEPT SEARCH • CONCLUSION

- The four approaches A, B, C, and D and the advantages and disadvantages of each were discussed informally with Aviation Education Department Head Bruce Hoover, and designer Kevin Wingate.

- At this time the client showed the most interest in scheme "D" because the design allowed the most area for aircraft mobility and tiedown space, while adequatly providing a definite barrier between active flight areas and public areas.

- It was decided that scheme "D" would be pursued with the same basic site approach with more attention to public areas and approach (form).

PART TWO: schematic design

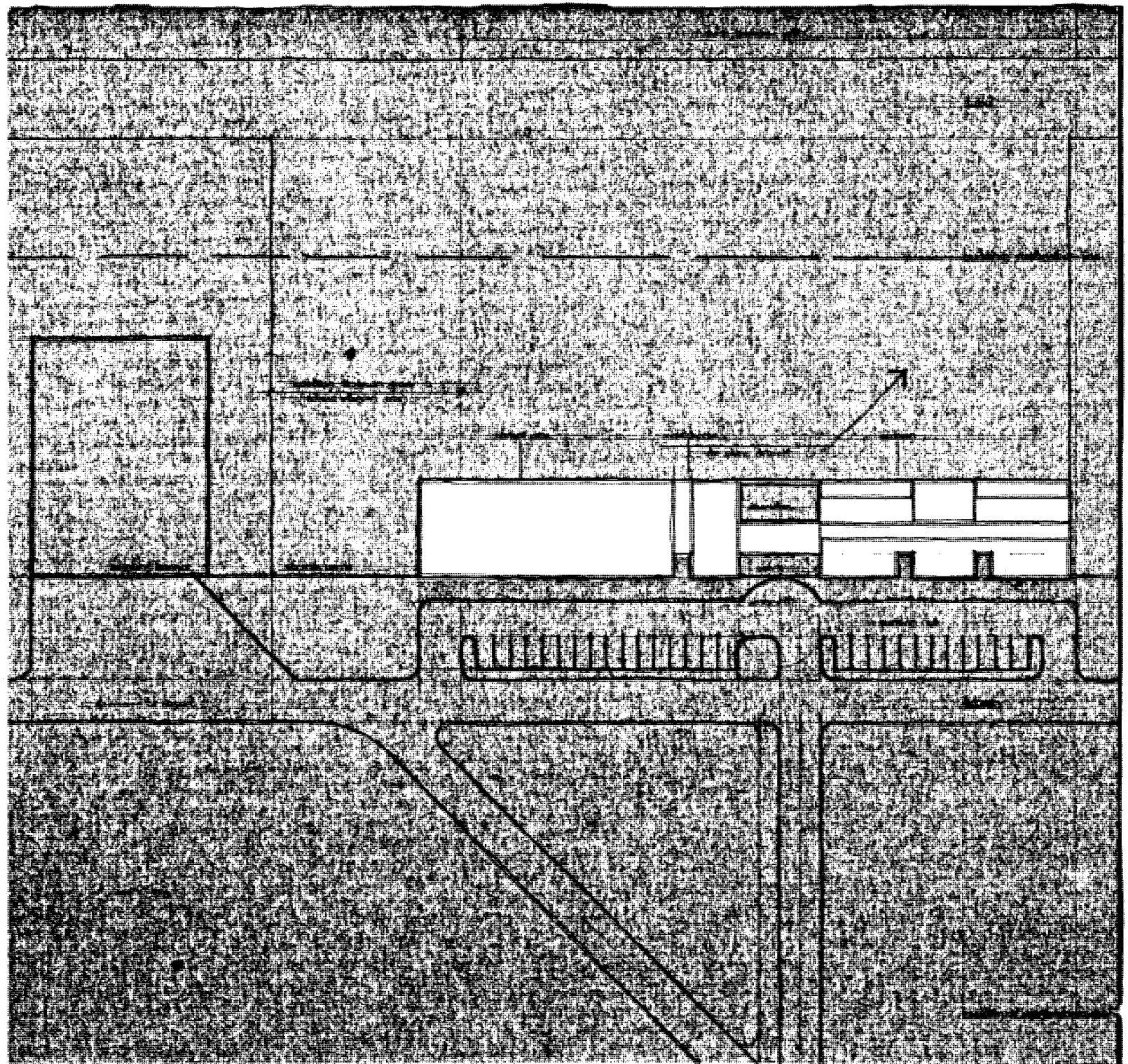
SCHEME 1

concepts: to establish a physical connection between the flight school and the hanger area by using a common entry space.

- organization of space off of a central circulation system.
- to use the mechanical aspects of the building as an expression of technology, reflecting aircraft and the industry.
- utilize a module system to accommodate the flexibility of aviation education.

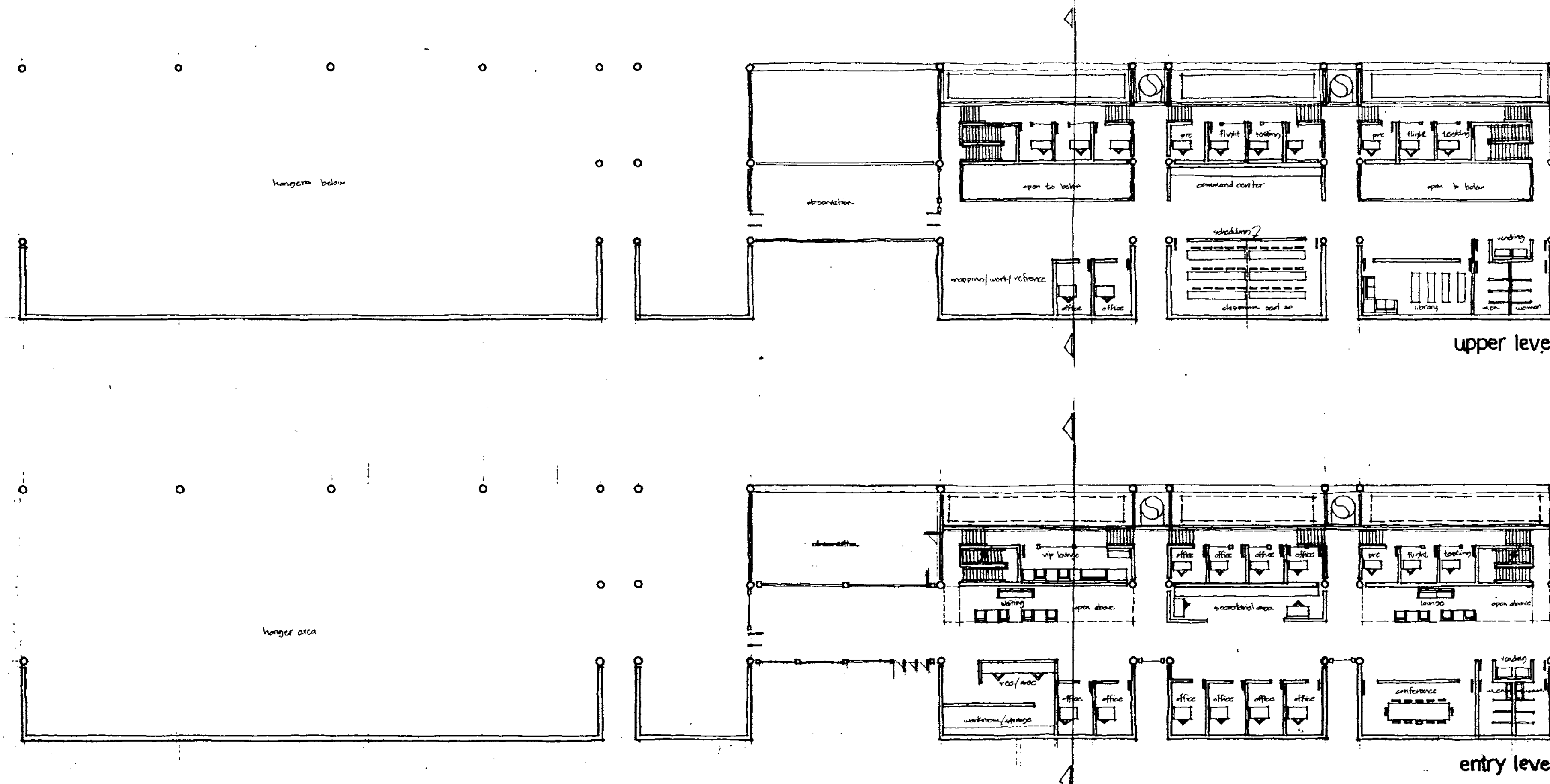
advantages: the use of a central circulation corridor would encourage the interaction of all participants.

- in the building section views are maintained throughout the structure of immediate flight areas.



site plan

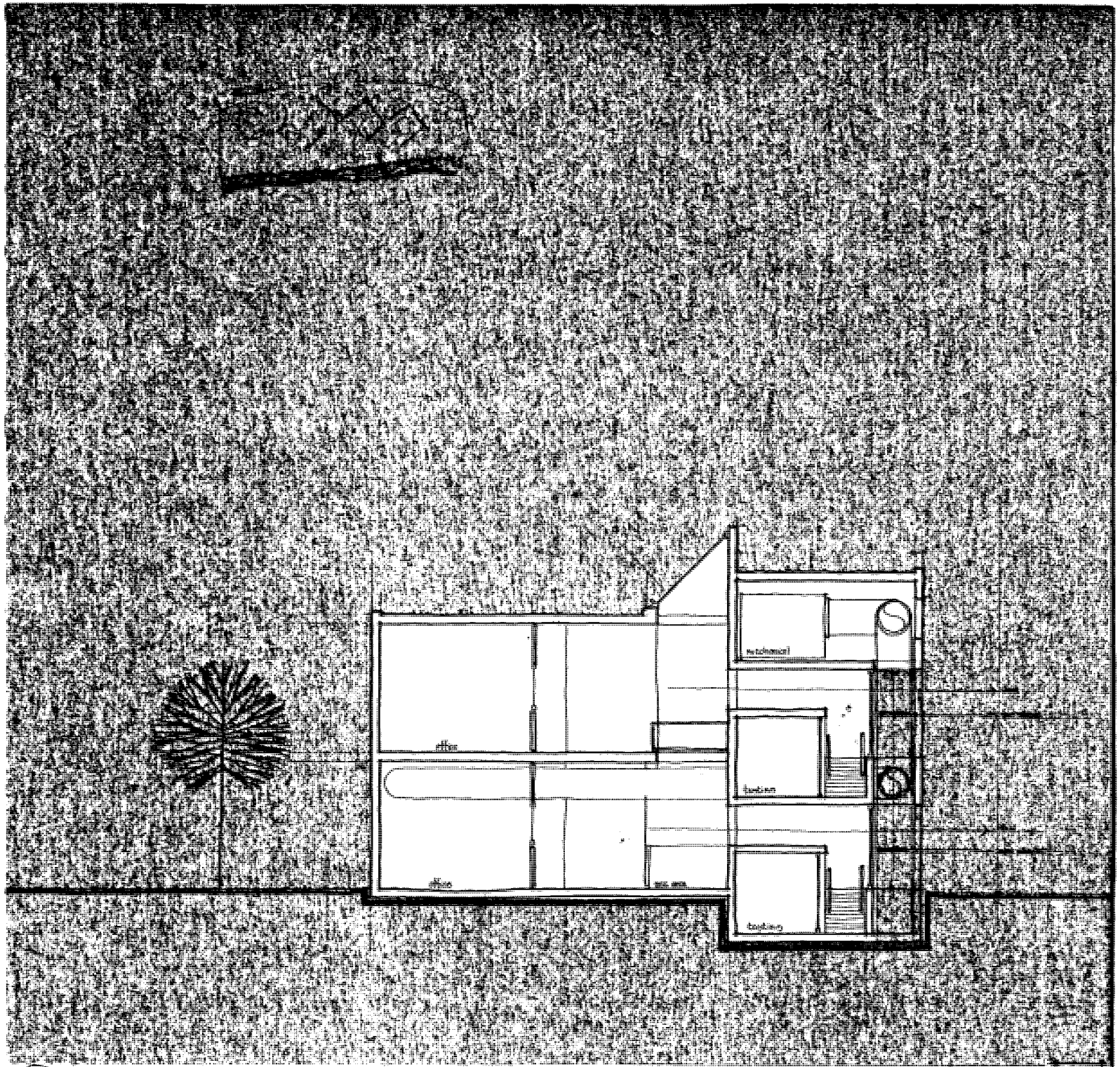
scheme 1



plan

a flight school for aviation education O.S.U.

scheme 1



section

scheme 1

SCHEME 2

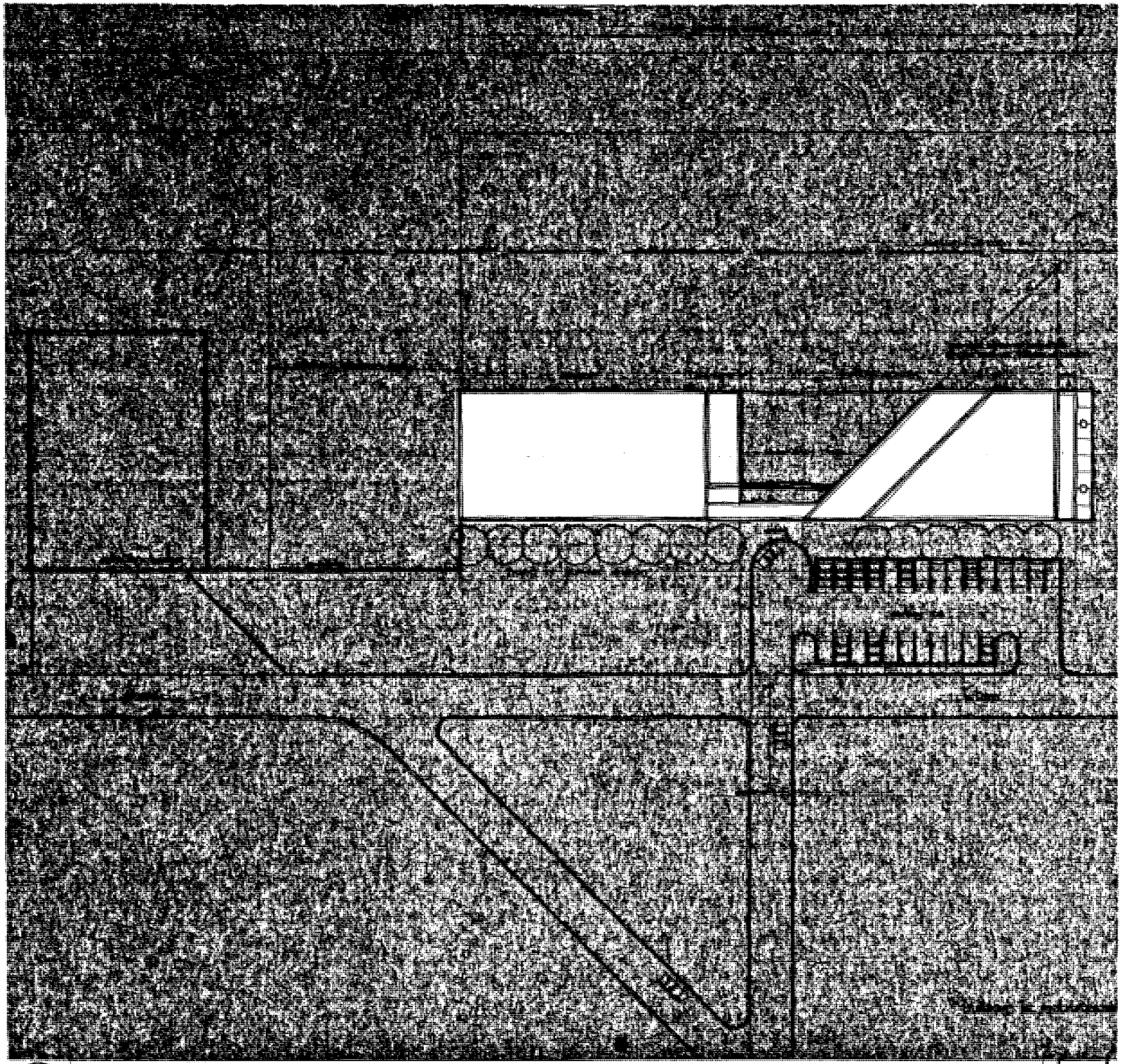
concepts: to create a "gateway" to flight by seperating the hanger from the flight school accentuating the active flight area on the taxiways and runways.

- to organize the functions around a central activity area

- to use the common space between the structures for observation and exibit area.

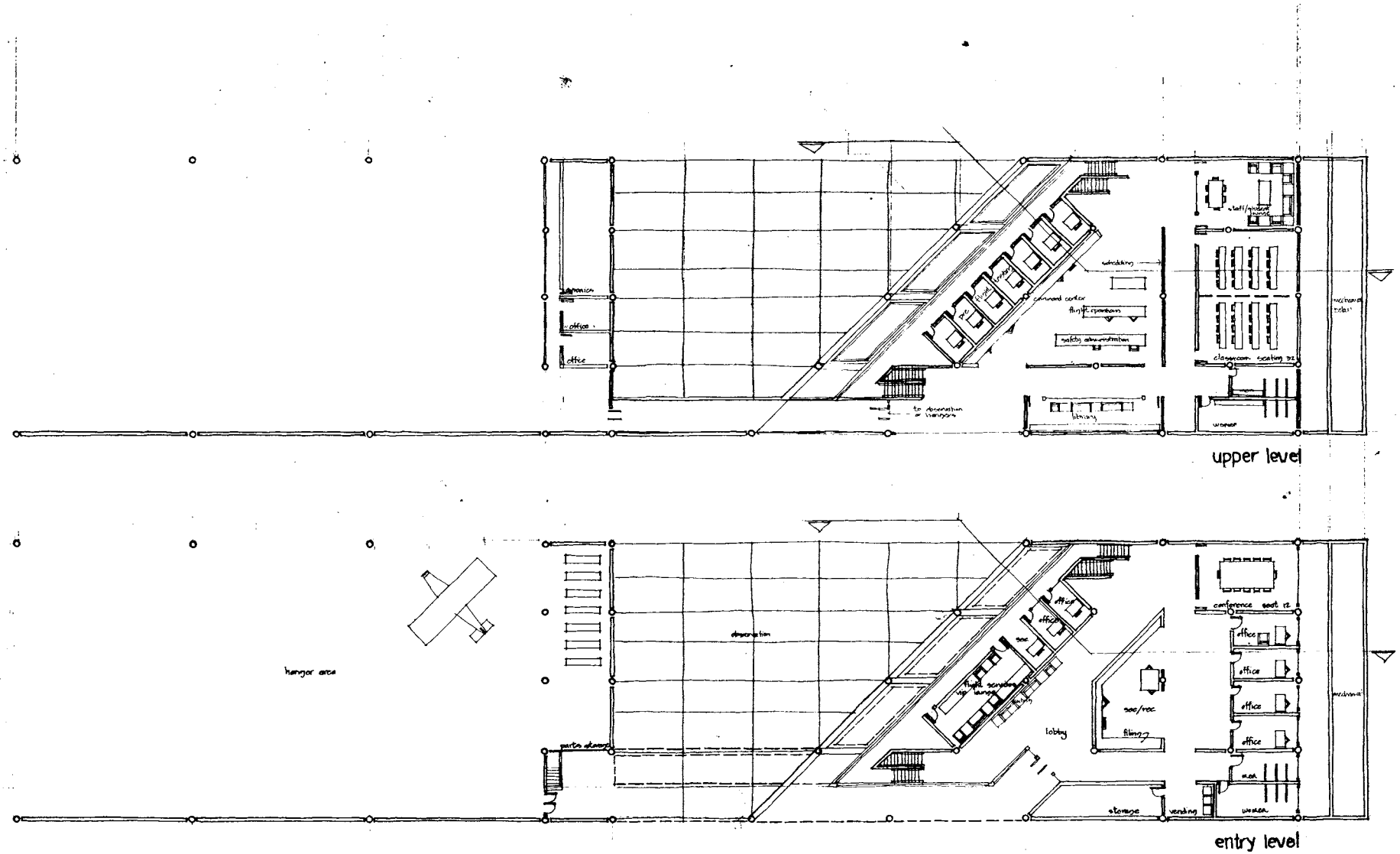
advantages: by centralizing activities, the safety required in flight education can be achieved.

- the building has a strong image from airport road and the proposed approach road.



site plan

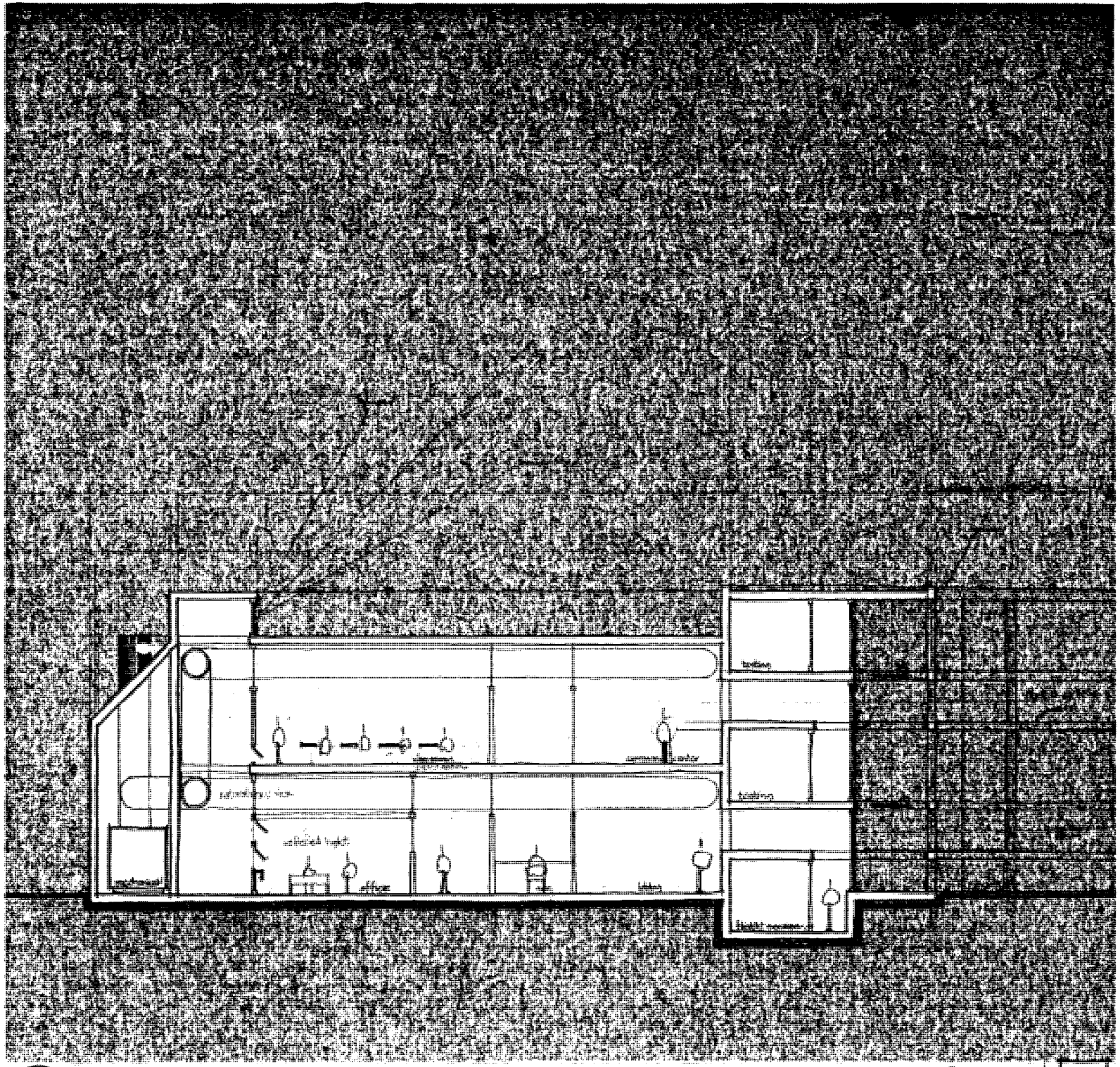
scheme 2



plan

a flight school for aviation education O.S.U.

scheme 2



Section

scheme 2

SCHEMATIC DESIGN CONCLUSION

- The two schematic designs were discussed in a formal presentation to Aviation Education Department Head Bruce Hoover, advisors Jim Knight and George Chamberlain.

responses:

client: did not think the exposed mechanical systems in the building would reflect flight.

- more seperation of flight services and flight areas

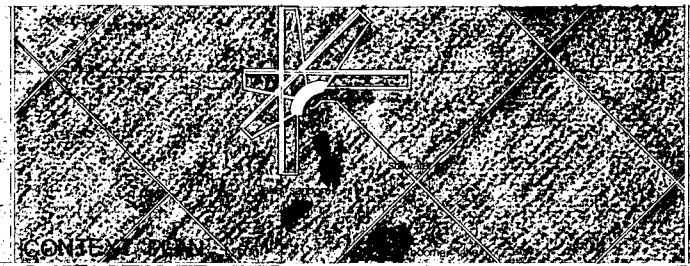
- encouragement of an active flight operations area centrally located.

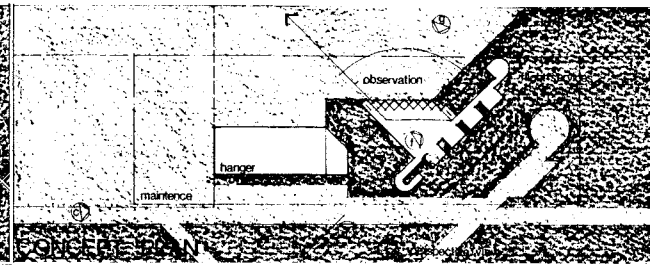
advisors: more attention needed in response to sight lines.

- concerned with amount of glass in scheme #1

PART THREE: design development

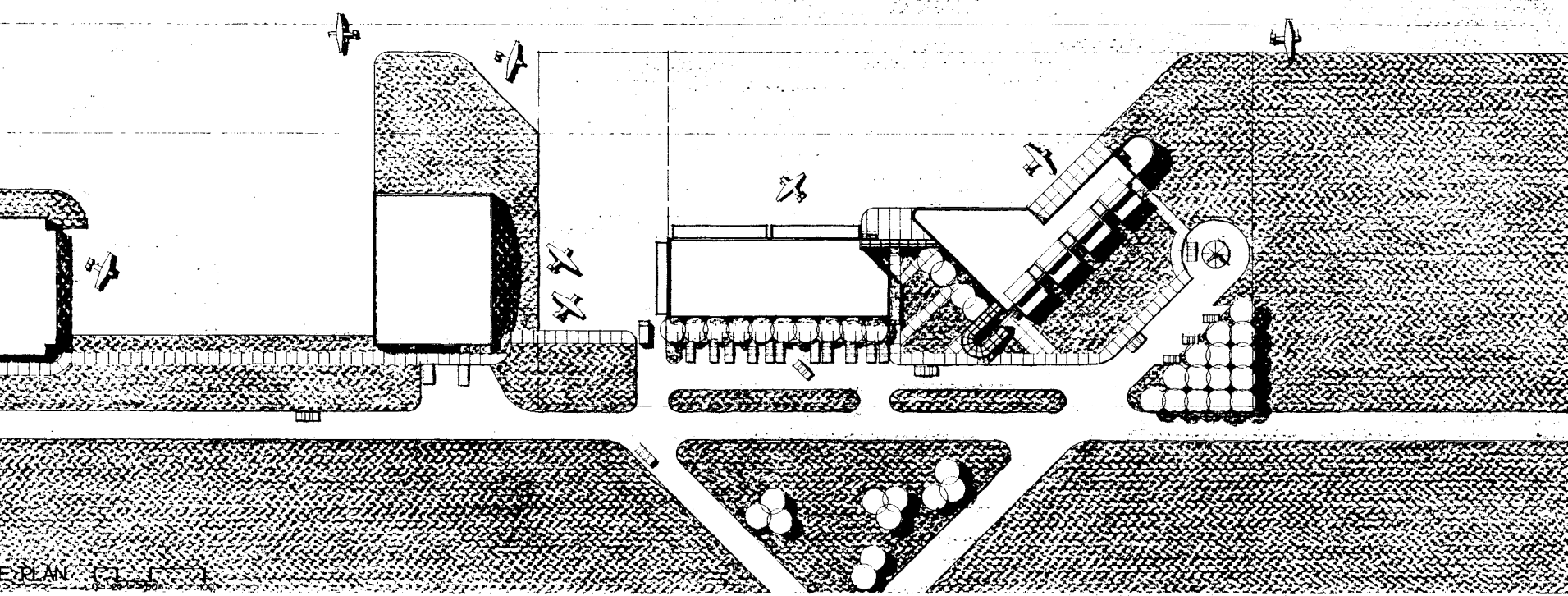
FLIGHT SCHOOL FOR
LAHOMA STATE UNIVERSITY
ATION EDUCATION DEPARTMENT
LWATER, OKLAHOMA



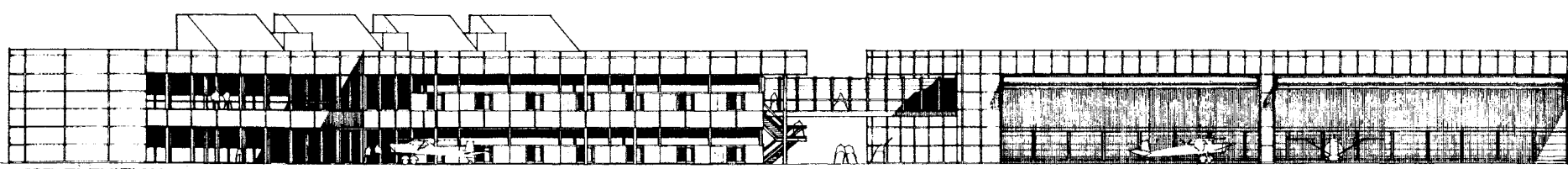


CONTEXT PLAN

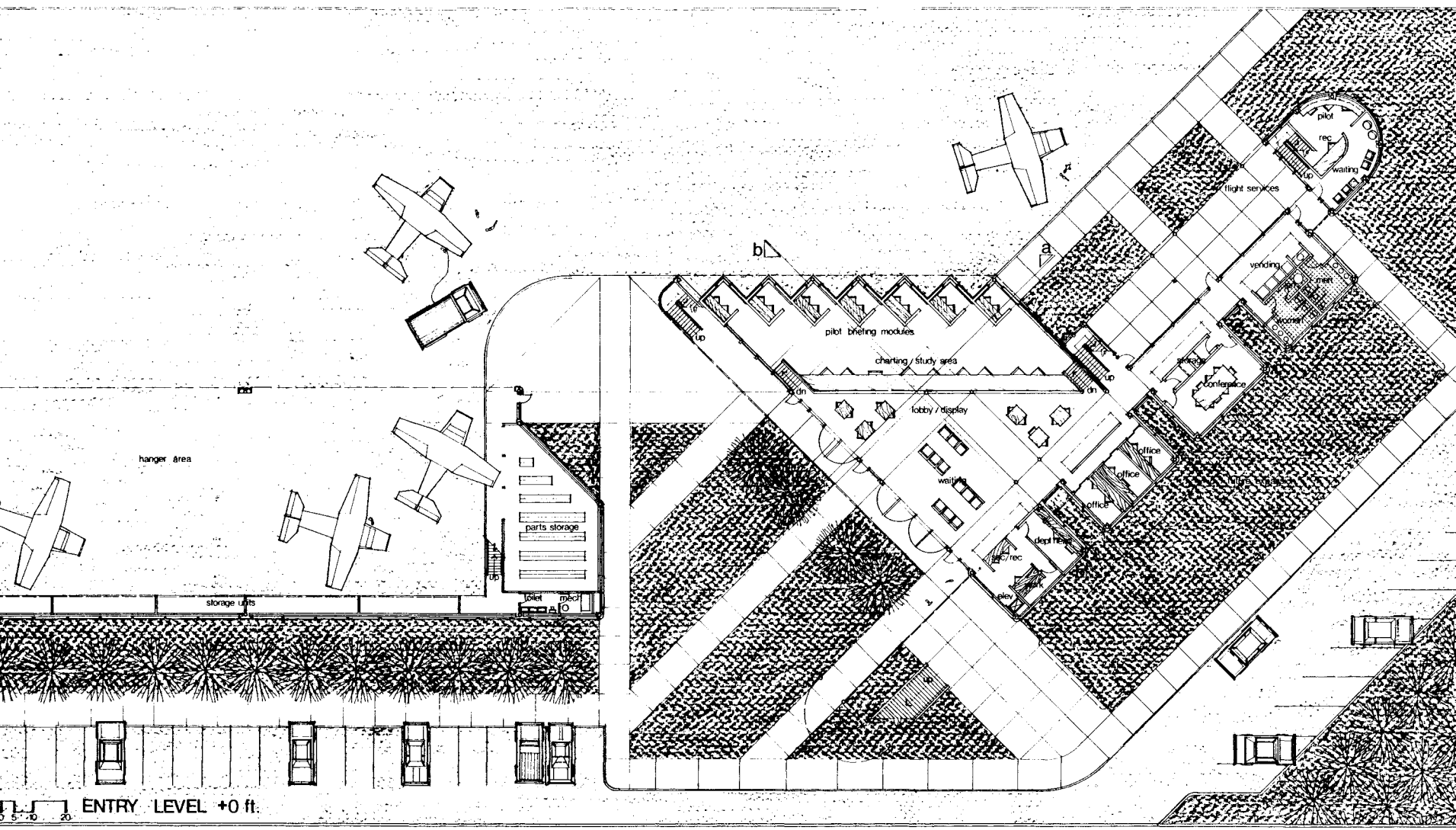
CONCEPT PLAN



E PLAN

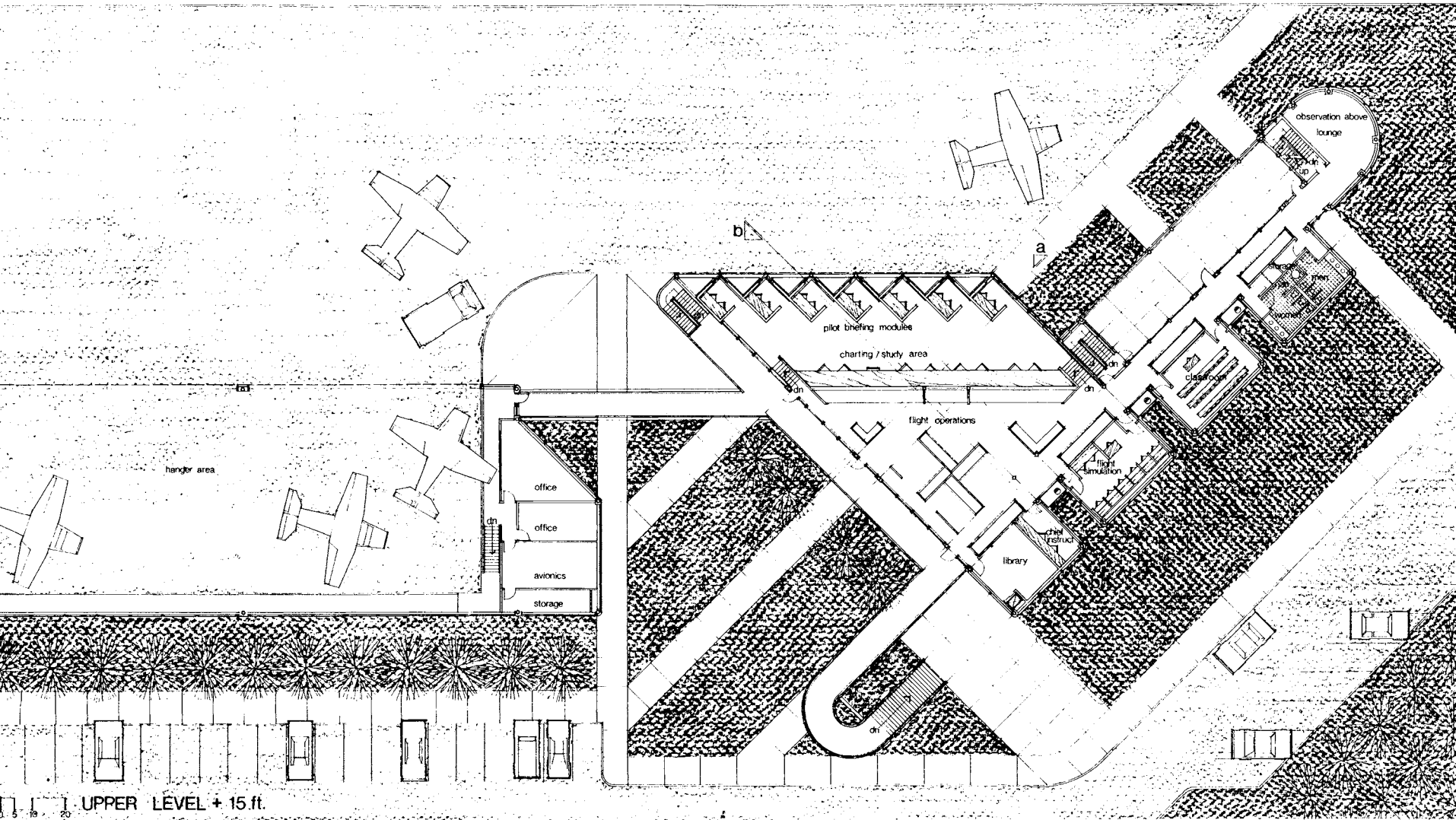


RTHWEST ELEVATION 1:16

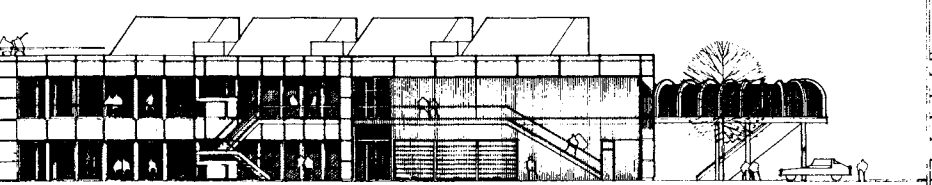


ENTRY LEVEL +0 ft.

UTHEAST ELEVATION 1:16



UPPER LEVEL + 15 ft.



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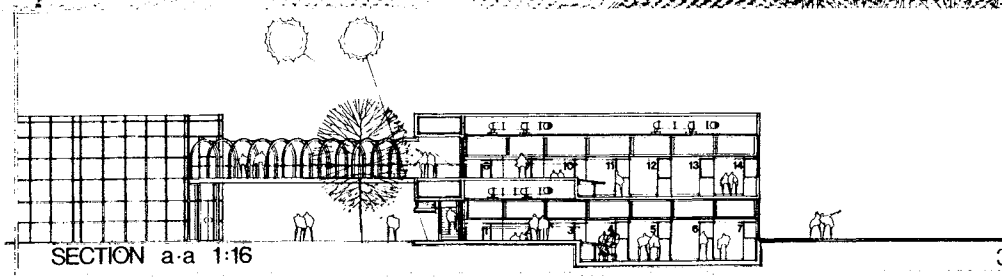
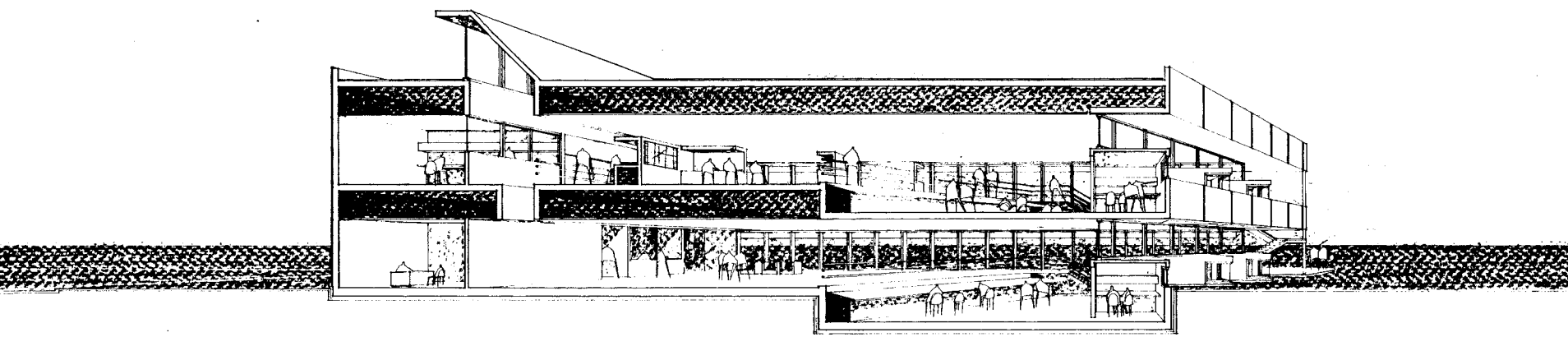
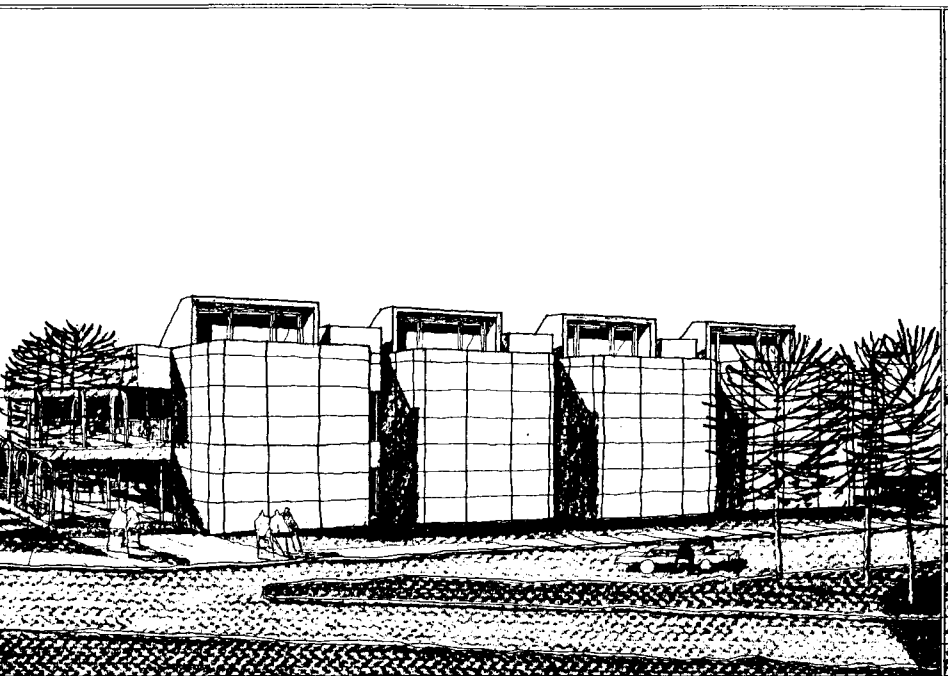


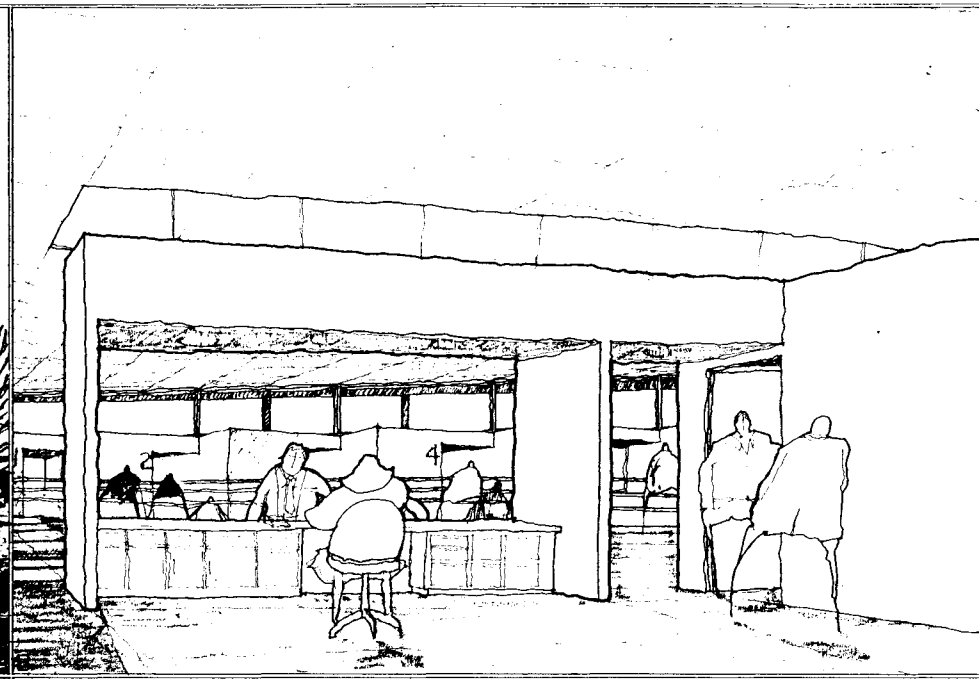
SECTION a-a 1:16

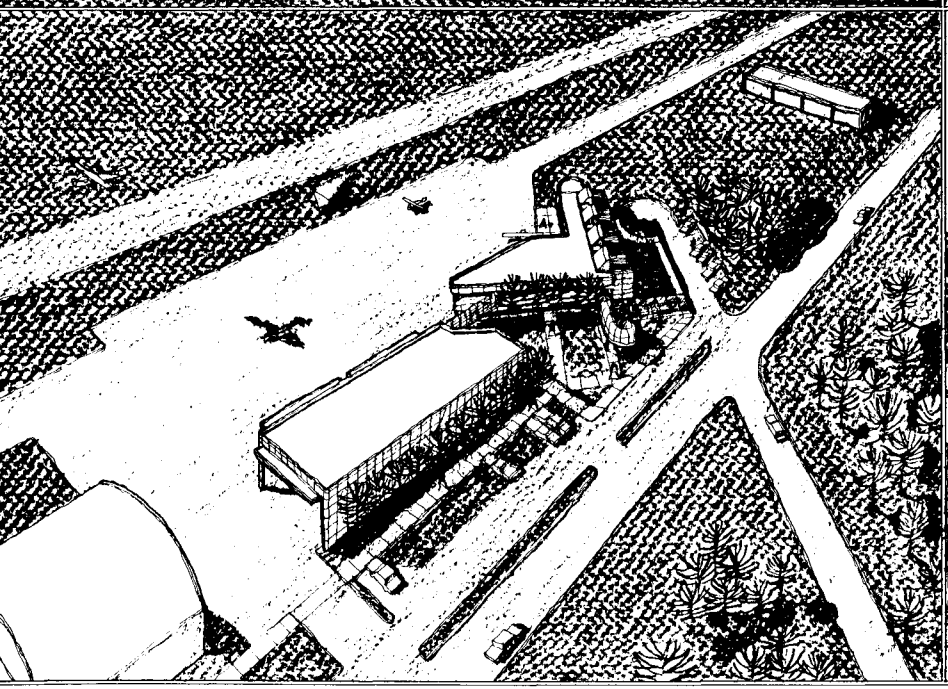


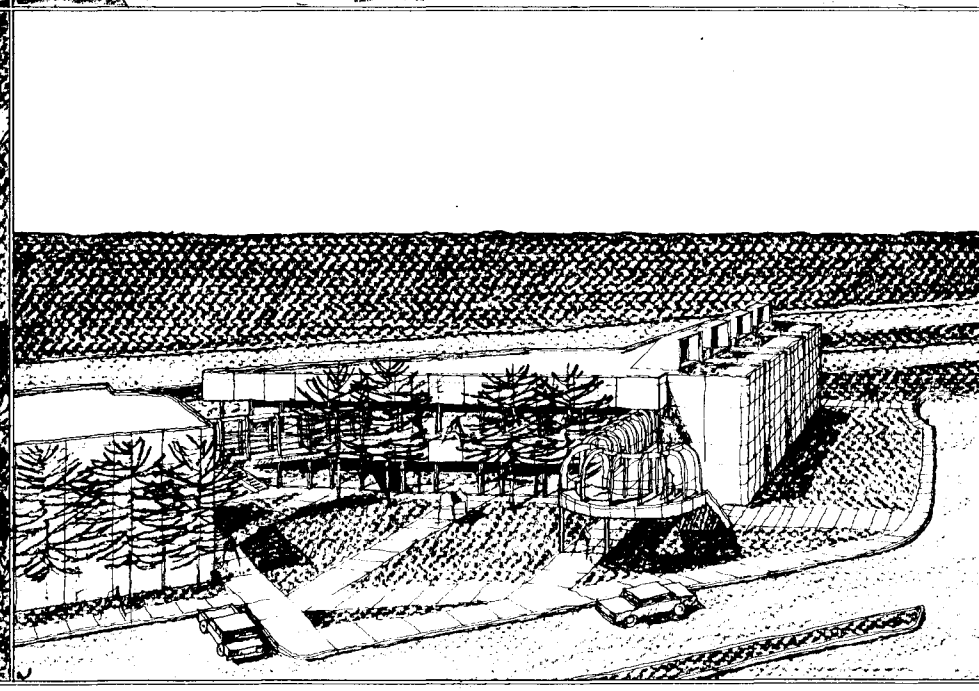
CTION PERSPECTIVE b·b 1:8

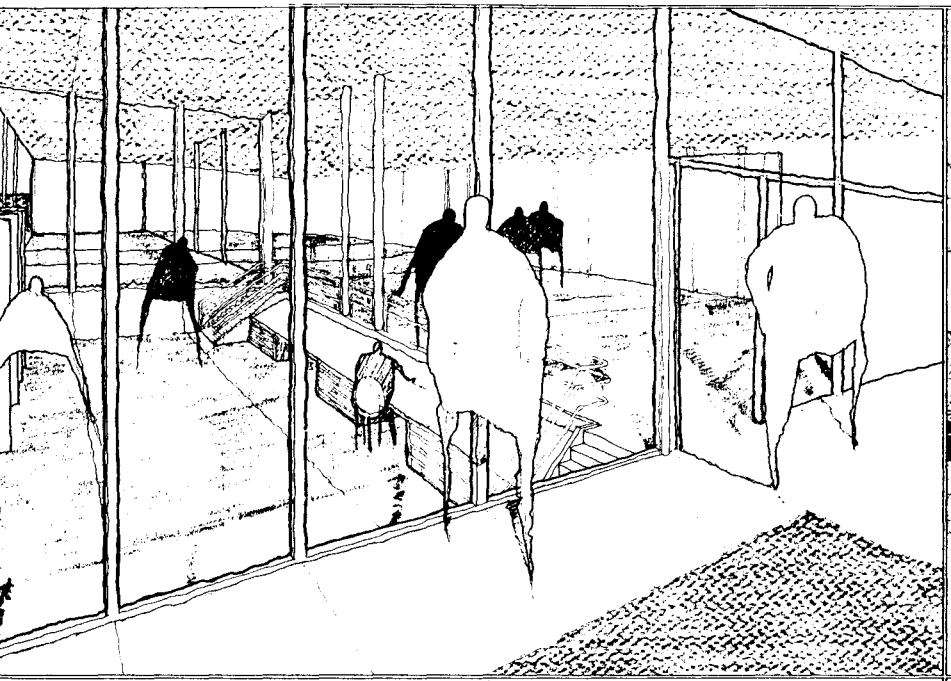
ST ELEVATION 1·16

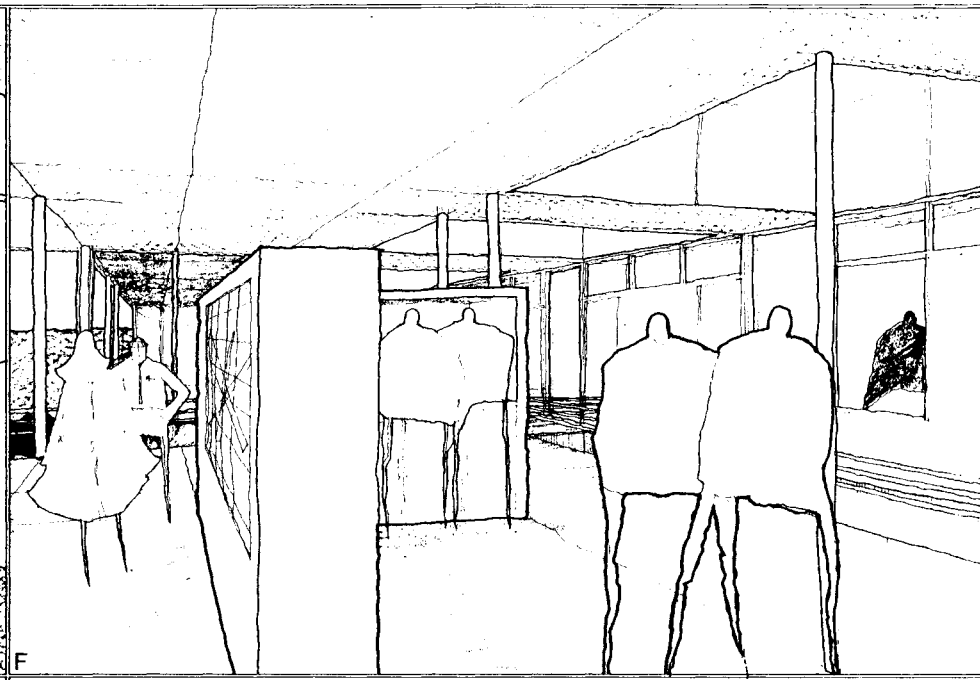








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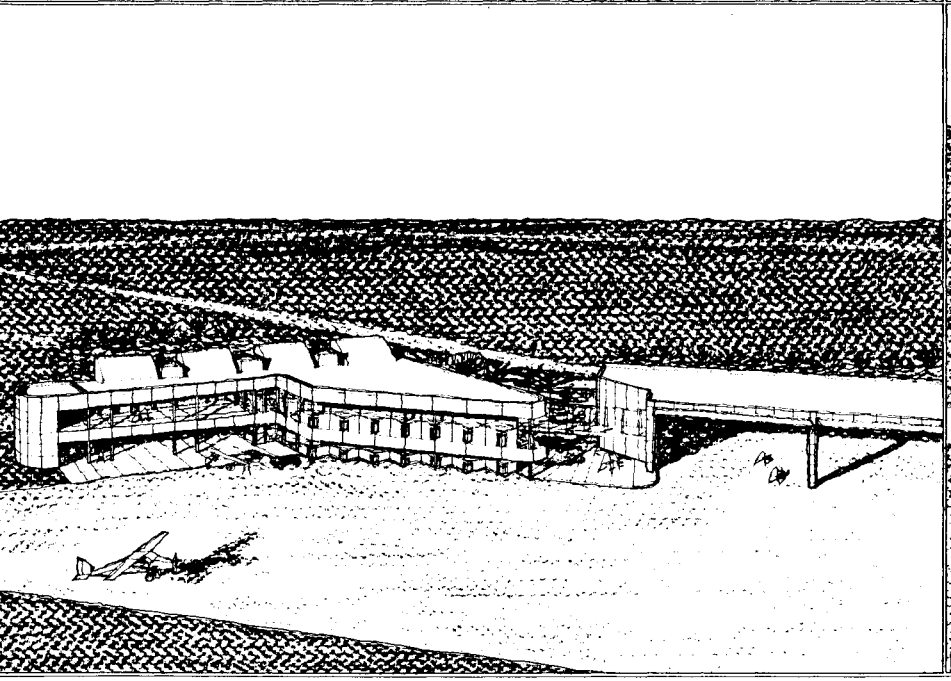

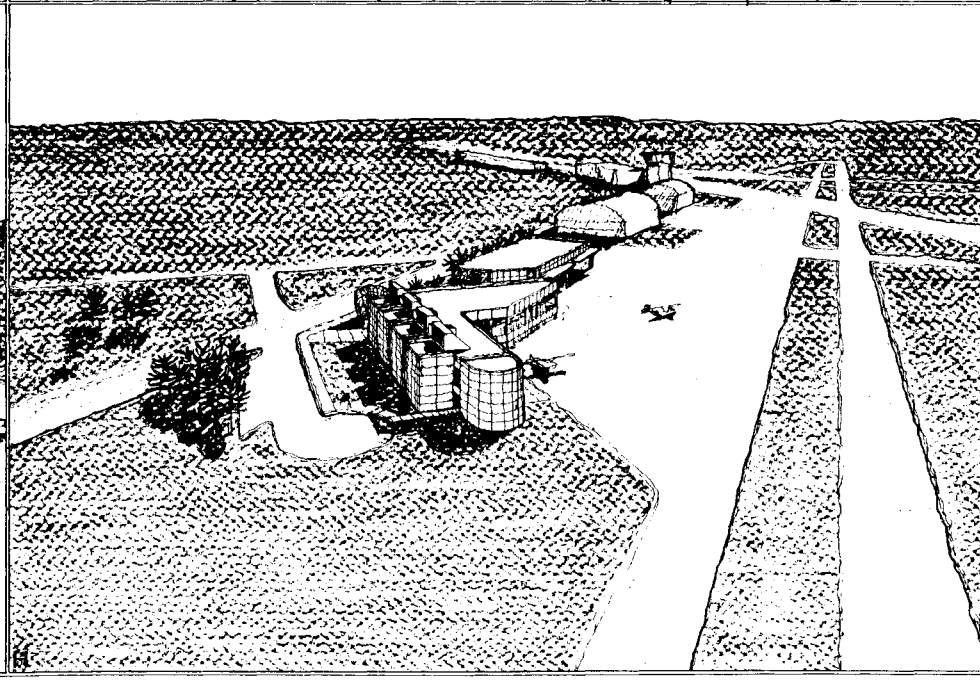
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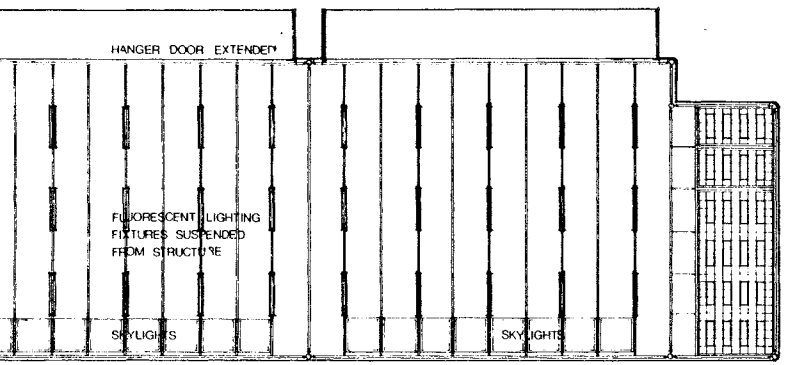
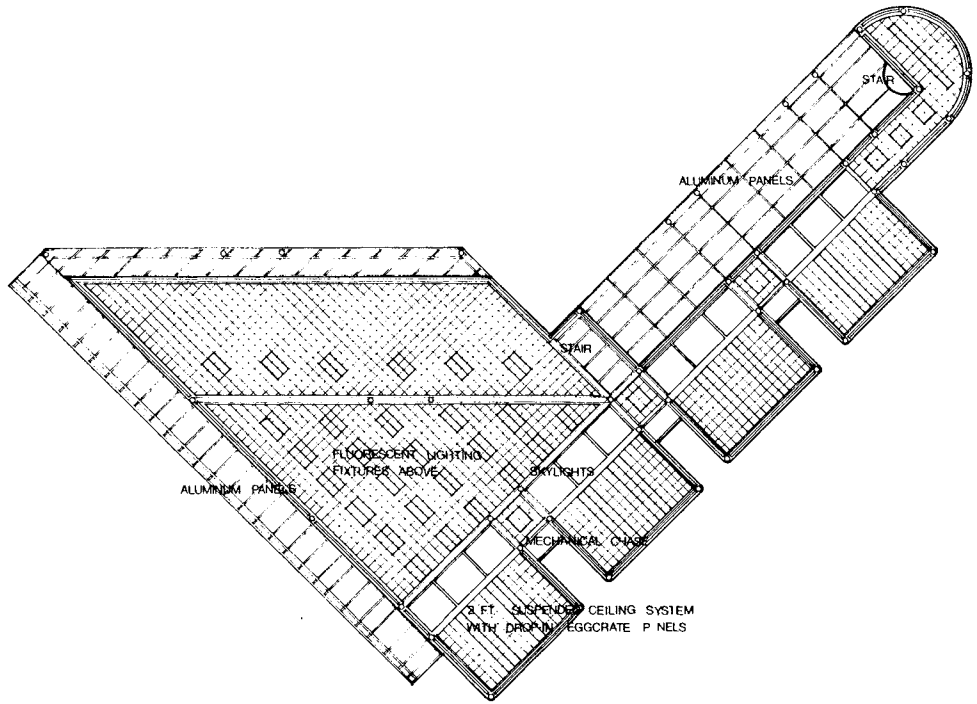
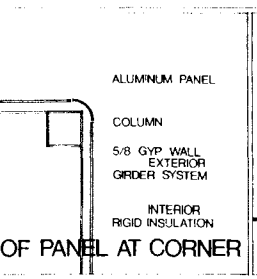


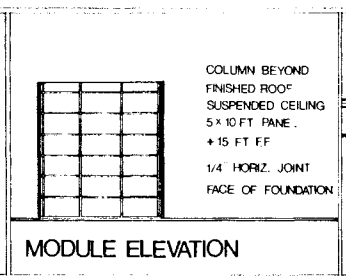
CONCEPT
F SUSPENDED EGGCRATE PANELS ALLOWS FOR
LIGHTING AND MECHANICAL SYSTEMS FOR
TION OF VARIOUS USES



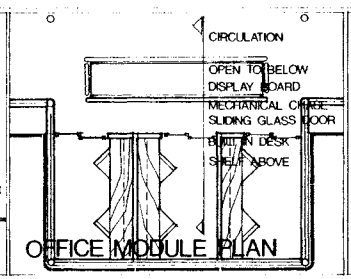
CTED CEILING PLAN + 15 FT.



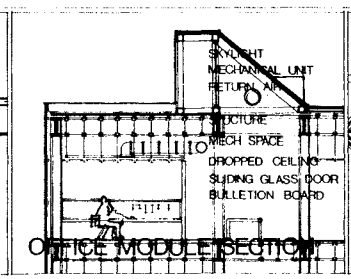
OF PANEL AT CORNER



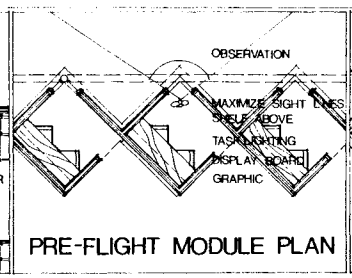
MODULE ELEVATION



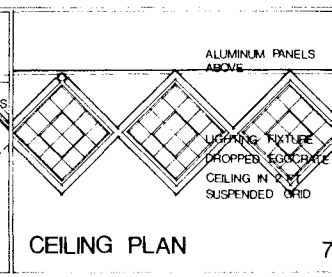
OFFICE MODULE PLAN



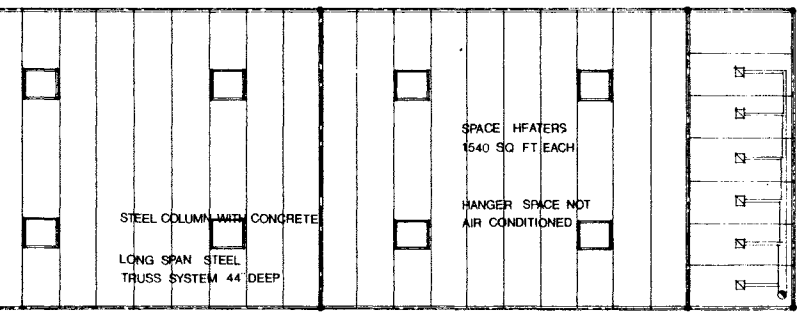
OFFICE MODULE SECTION



PRE-FLIGHT MODULE PLAN

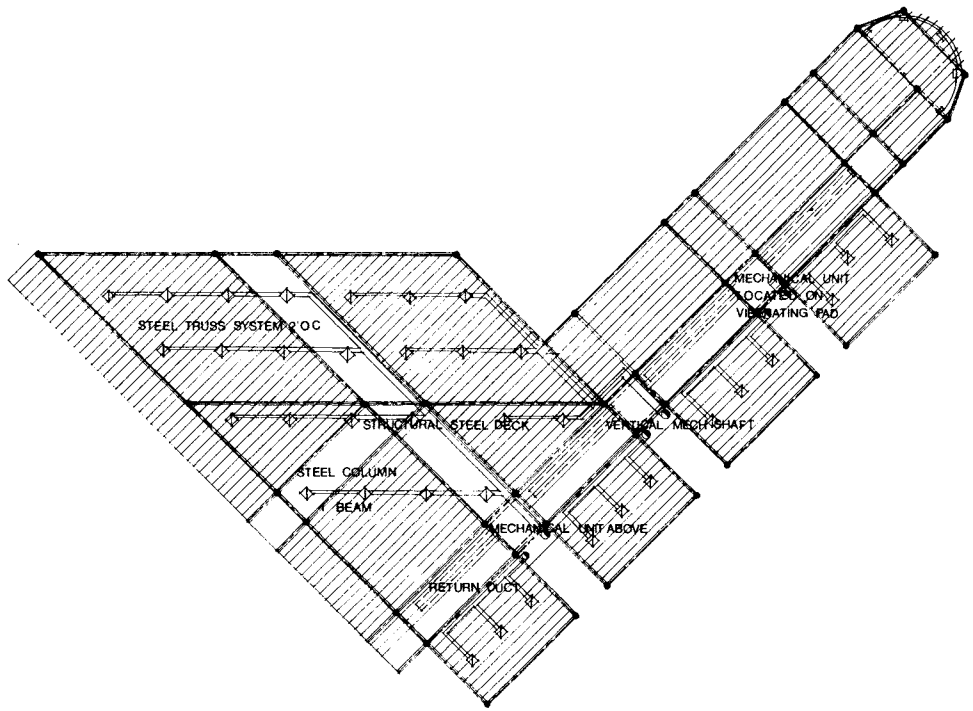


CEILING PLAN

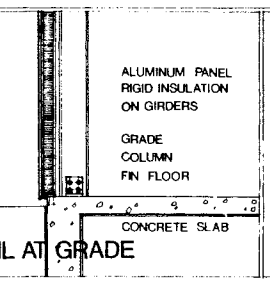


URAL CONCEPT
AUGE STEEL
D STEEL (SPRINKLED AT SCHOOL)

ICAL CONCEPT
L HEAT PUMP SYSTEM LOCATED ON ROOF
Y OF SPACE CONDITING TO ACCOMMODATE
ER FACILITIES



CTURAL HVAC PLAN + 15 FT



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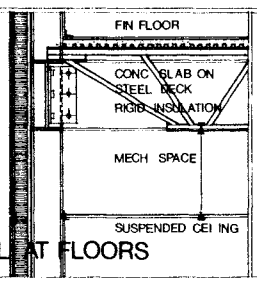
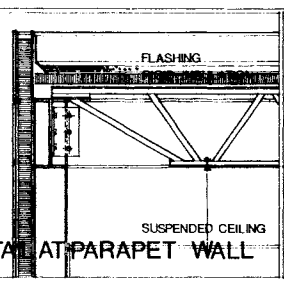
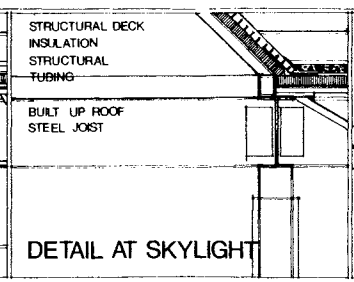


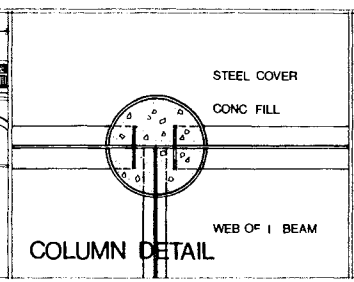
DETAIL AT FLOORS



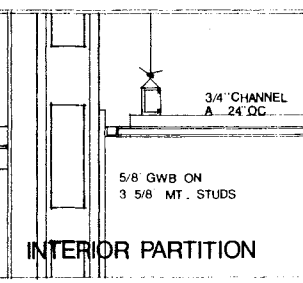
DETAIL AT PARAPET WALL



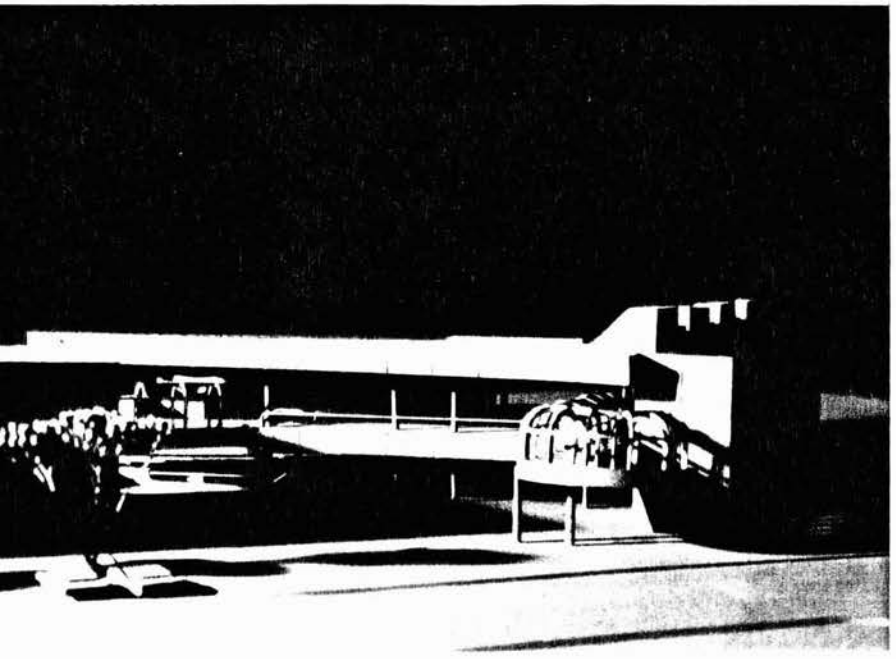
DETAIL AT SKYLIGHT

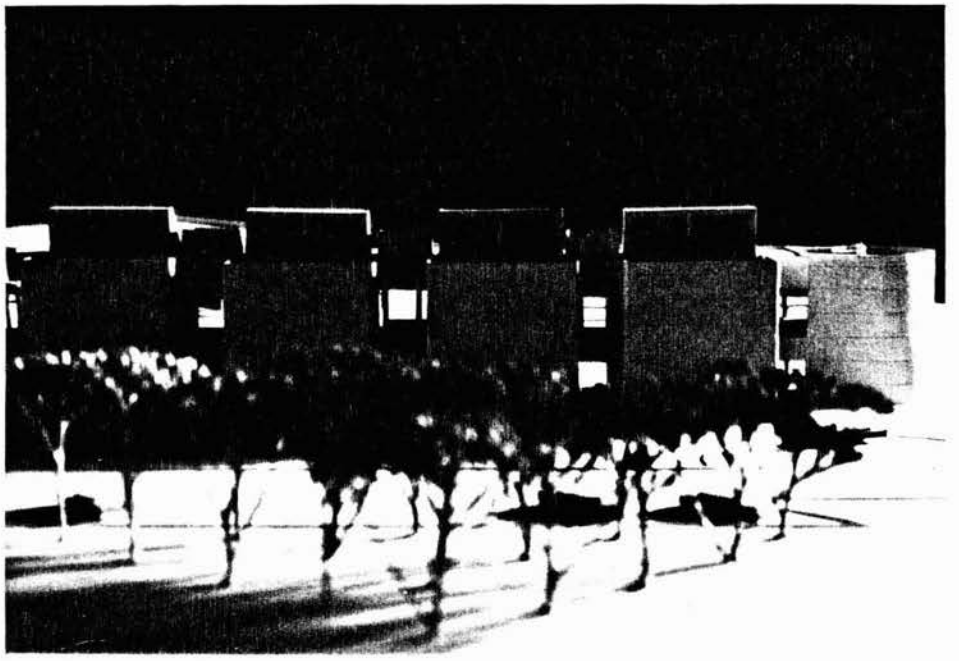


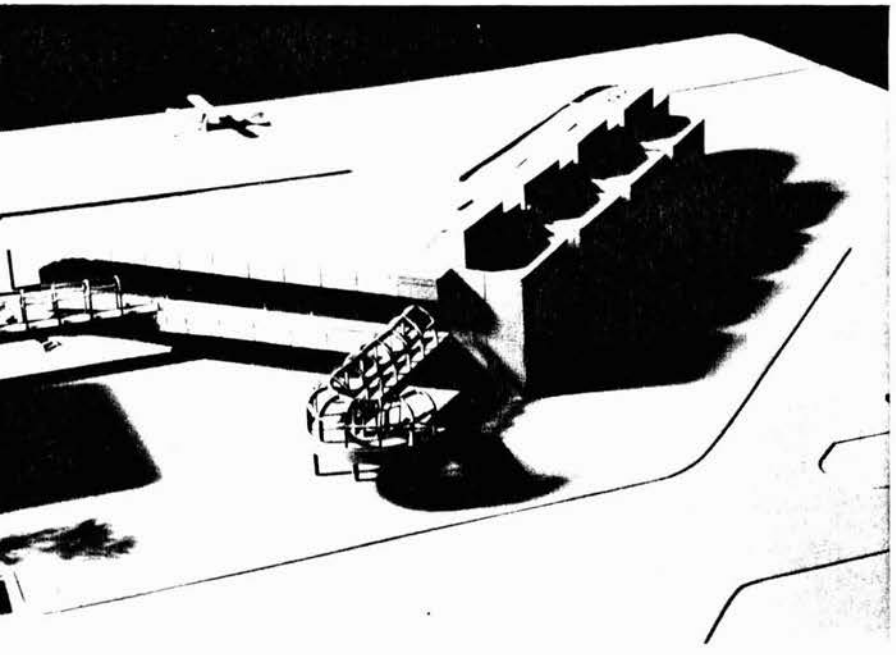
COLUMN DETAIL

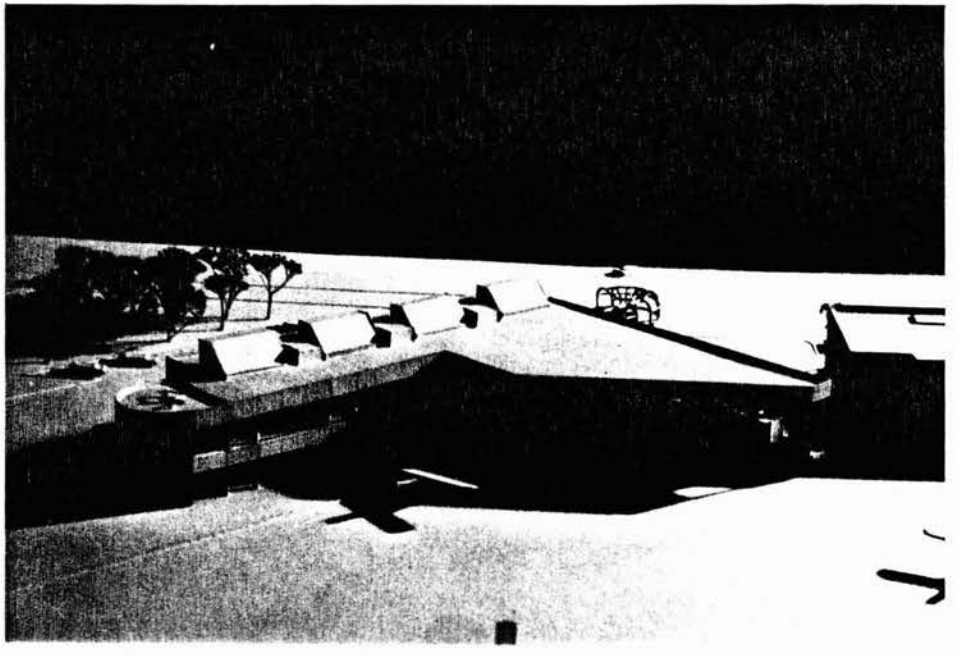


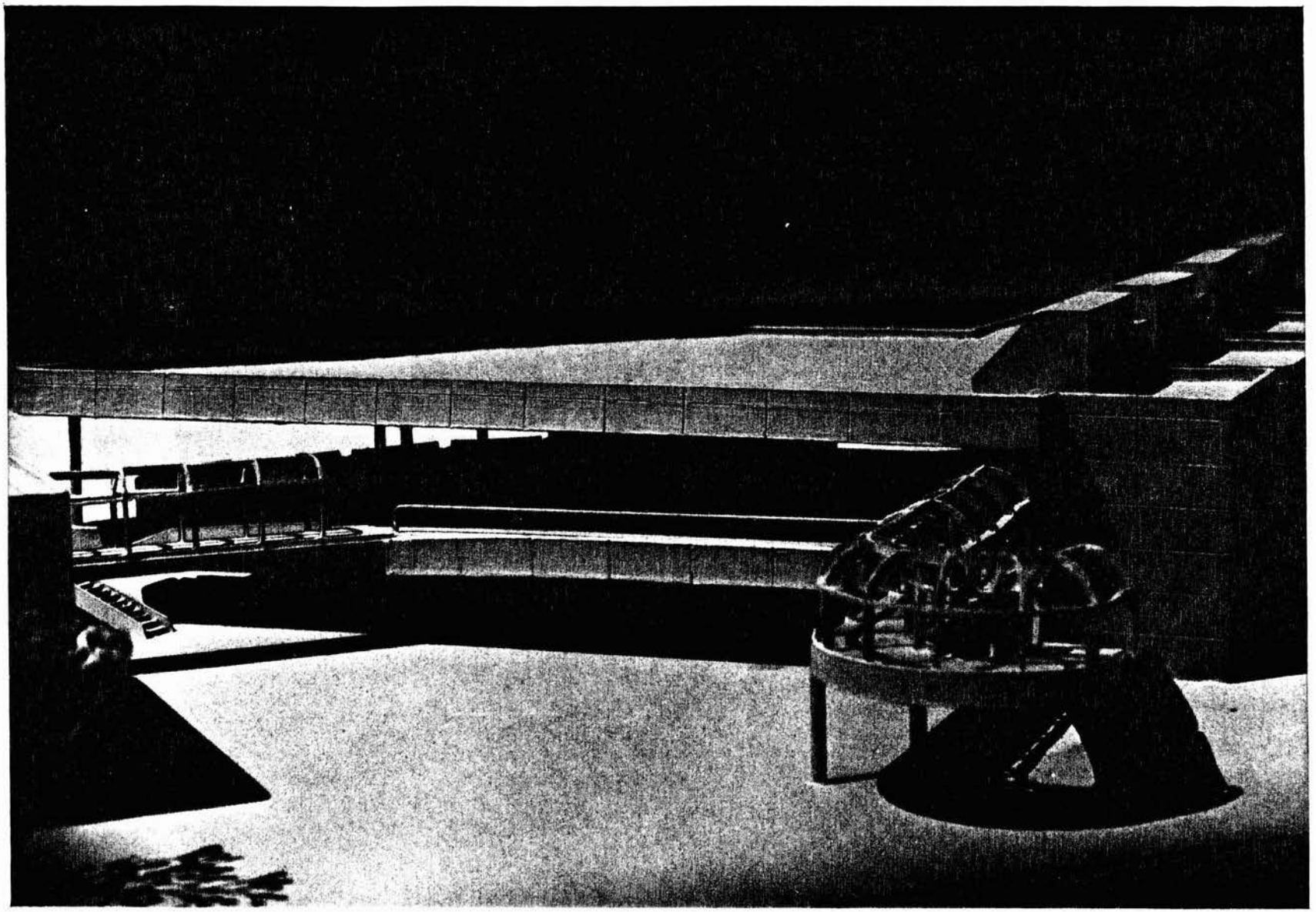
INTERIOR PARTITION

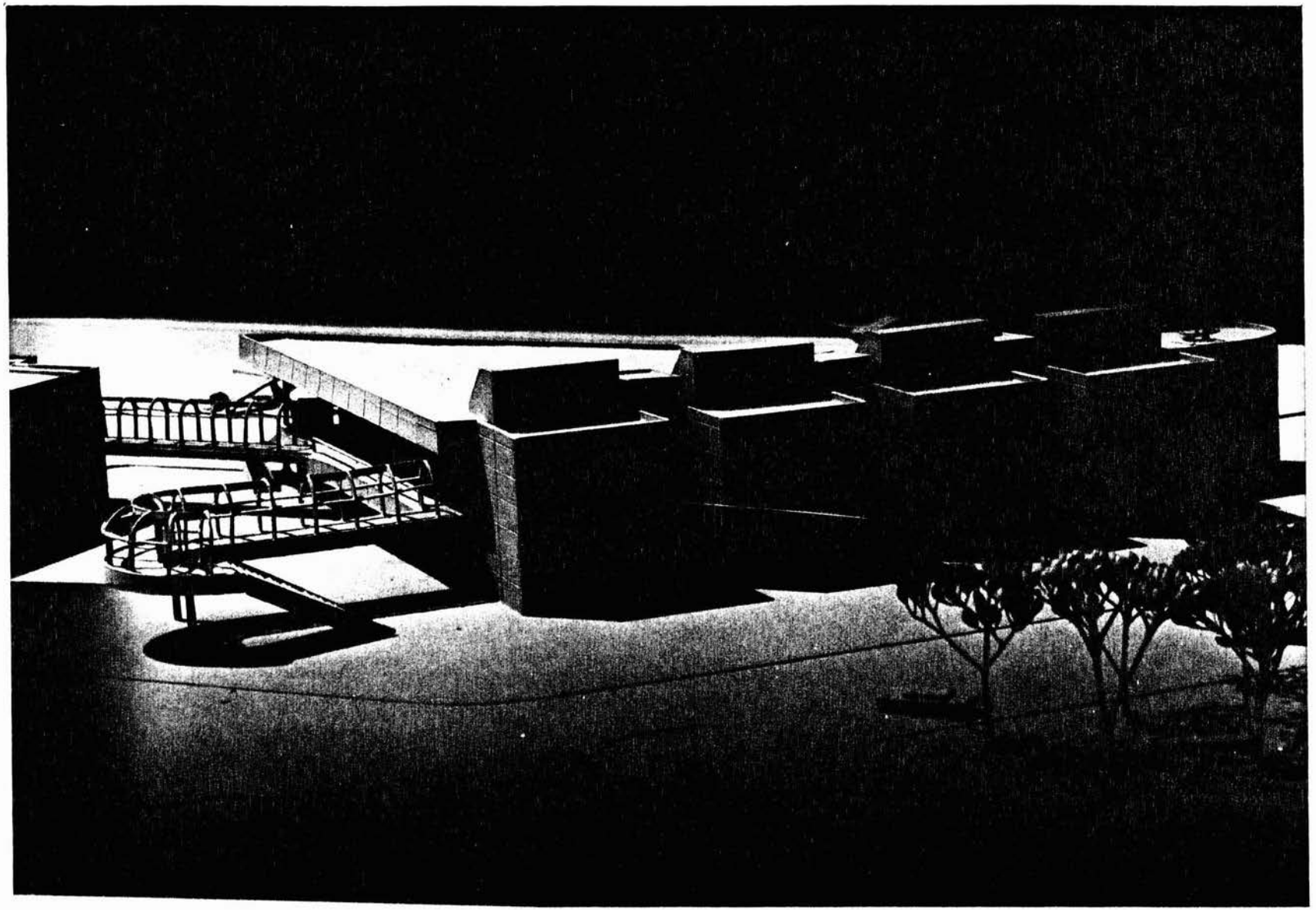


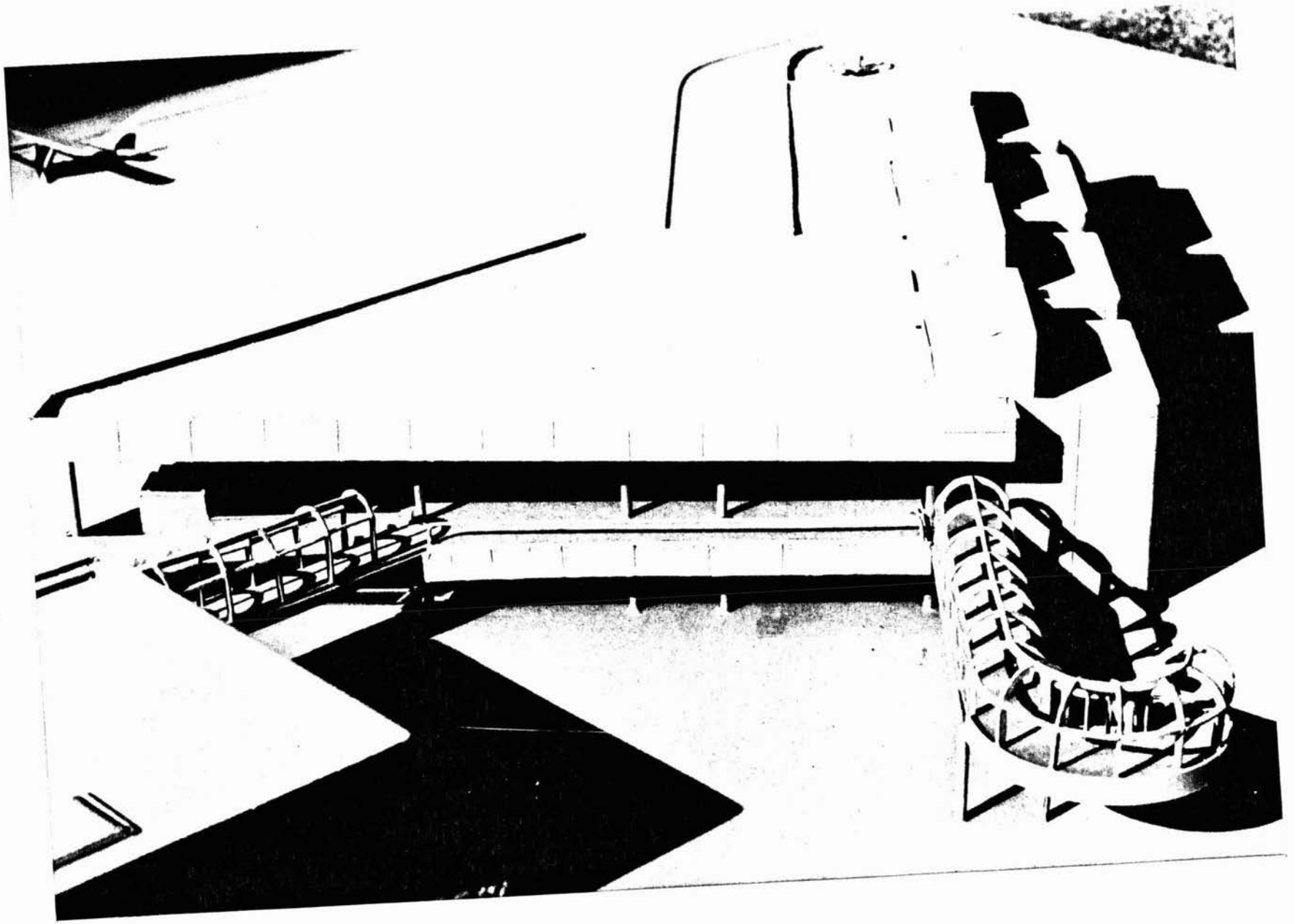


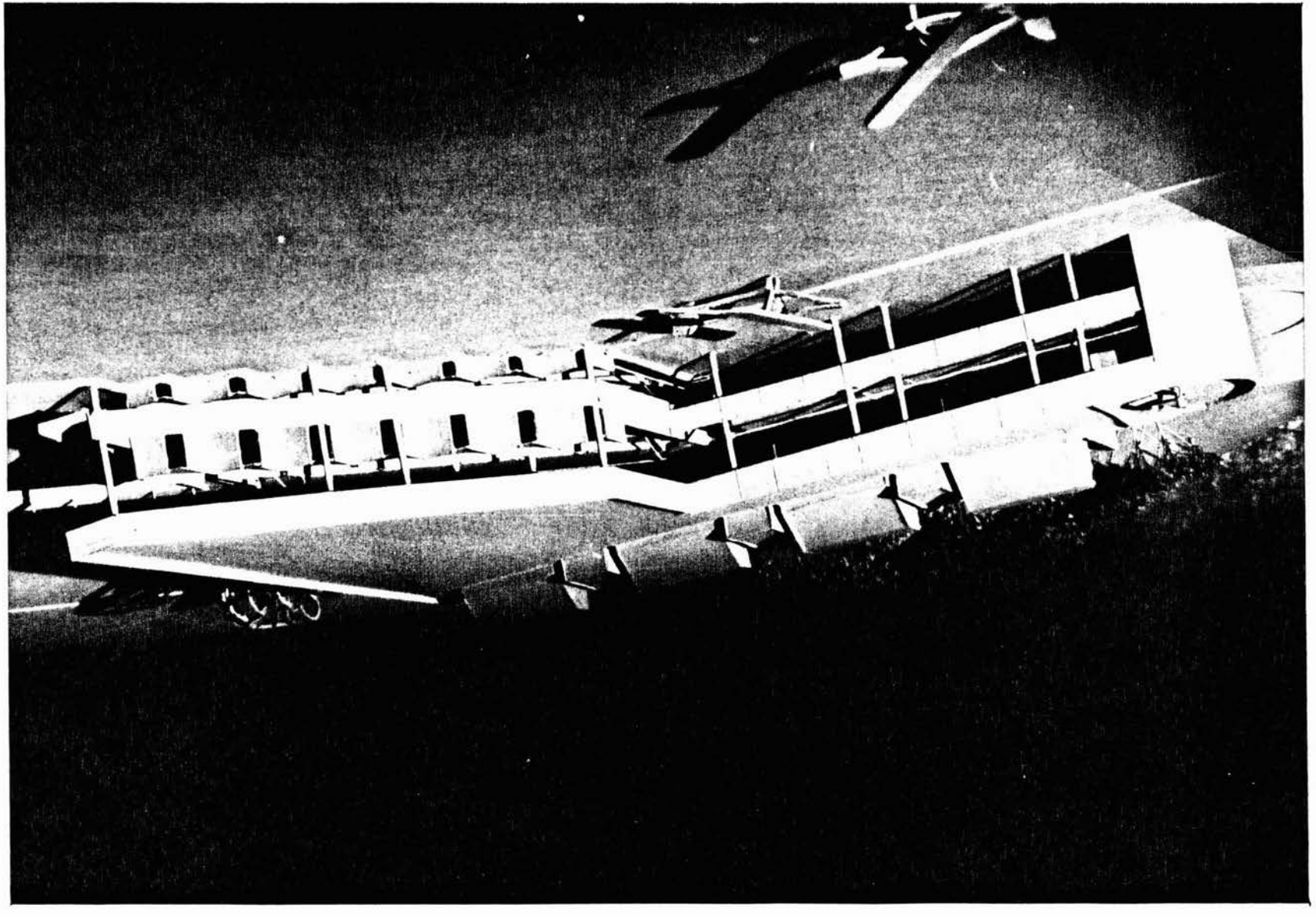












DESIGN DEVELOPMENT CONCLUSION

This final solution was formally presented to the client; Bruce Hoover, advisors Jim Knight and George Chamberlain, and guests John Bryant; Head of School of Architecture and David Jones; Professor. School of Architecture.

function: Currently the school of Aviation is located in the Airport terminal building at Stillwater Municipal Airport. Both the quality and amount of space are inadequate. The aviation program is split, lecture classes are on the main campus while the laboratory or flight training classes are located at the airport. Therefore it is essential that the new facilities provide a "sense of place" for students and faculty as well as a strong image to the public. This concept was applied to the design in opening a gateway through the two structures enclosing a open court area which will be used for exhibits, and common entry space to the public. This

allows the building to act as a security barrier between the public and flight areas.

Due to the safety enforcement of Aviation Education it is clear that the active flight areas required informal and external observation to achieve this. Therefore active flight training areas require ajacency to the runways. This was done by centralizing flight operations on the second floor and the lobby on the first floor, while keeping the pilot briefing modules ajacent to flight areas for views. Since the empashis is on education, those areas have been centrally located, while the support areas grouped around a circulation spine. These support areas; administration, classroom, library, toilets, and flight simulation, are expressed in module form, insuring identy for the user and the grouping of common activities. Since the separation of activities is important it was decided that the public and administration areas would be kept on the ground floor, reflecting the idea of a solid education, the student flight areas would be located on the second floor, reflecting

flight and insuring better observation of tie down areas, trainees, and the weather.

form: In order to maintain better observation the pilot briefing modules were set back from one another allowing for a window at the corner for a greater view of the runways. This area is five foot below grade allowing for a glass area above the module insuring better views from the lobby and flight operations on both levels and the support areas also. Due to the desirable views to the west, there is also a problem of the low western sun, this is handled by keeping glass areas to a minimum and using a overhang above the glass to help the problem of glare in the afternoons.

The small groupings of support activities are expressed in a modular form on the public site of the site. This is further expressed with a skylight above to enhance the quality of the circulation space and provide additional daylighting to the activites in each module.

Flight Services has been provided

with a separate entry, insuring privacy, and a circular form expressing a different function in the facility and providing an identity for the user.

The courtyard exhibit area is opened to the public side of the site forming a gateway between the buildings. The use of a second level covered walkway provides a visual link to the hanger while providing a feeling of excitement associated with flight. The stair is a link for students and flight operations located on the second floor, insuring privacy for administrational areas on the first floor.

The material used on the skin of the building is made of aluminum panels. Using a slick metal skin on the building is a response to the skin of an airplane, signifing a machine.

<u>economy</u>: Due to the high cost of construction efficient space planning and technology have been adhered to in the design.

Active solar energy sources were not pursued, rather passive energy techniques have been pursued. The southern exposure

is gained in the winter and rejected in the summer by a calculated overhang and deciduous trees to the south to provide shade. Minimizing glass while accentuating views is comprimised to the required observation.

The use of skylight will help minimize the operational electricity cost.

time: Flexibity has been provided for in the modules allowing common activies to change and adapt as required.

If expansion is required in the future the building would grow through the module to another set of modules parallel to the developed modules.