

The University Arboretum

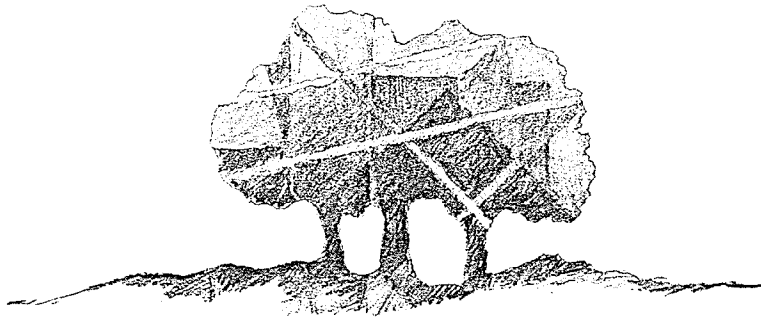
UNIVERSITY OF CALIFORNIA

DAVIS
CALIFORNIA

an international design competition

FRAMES OF REFERENCE

practicum report submission



Donald G. Crockett

April, 1990

Department of Landscape Architecture

FACULTY OF ARCHITECTURE

UNIVERSITY OF MANITOBA



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FRAMES OF REFERENCE:

The University Arboretum,
University of California
Davis, California

BY

DONALD G. CROCKETT

A practicum submitted to the Faculty of Graduate Studies
of the University of Manitoba in partial fulfillment of the
requirements of the degree of

MASTER OF LANDSCAPE ARCHITECTURE

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Abstract

This report was written to complete practicum requirements for a Masters degree in Landscape Architecture. The report outlines program requirements, provides a brief site evaluation, and discusses the design solution in terms of its conceptual basis and detailed results. The practicum design solution was entered into the masterplan category of an international design competition at the University of California at Davis in the spring of 1988 where it received an "Award of Recognition".

The University of California at Davis' competition lands are part of a long-range plan commitment for the University Arboretum at Davis to develop a campus entry which has earth arts and landscape sculpture as the primary determinants of form. Because the University Arboretum has horticultural research and education as its main function, the program proposed that hardscape should give way to solutions which utilize plants and earth as the fundamental space defining elements. While hardscape and architectural elements could be used to bridge concepts, it was important that access to the soil was not limited. The competition hopes were for inspiring solutions with a strong sense of excitement, unity, place, and in which human scale activities are encouraged.

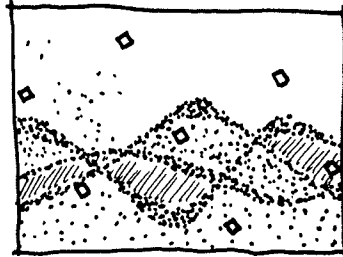
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Forming a network over the land, grid and garden together express accommodation between man and nature, rationality and spirit, societal constraints and individual expression.¹

¹ Krieger, Alex, "The Gridiron and the Garden", *Assemblage 3*, Cambridge, Mass.: The MIT Press, July 1987, p. 50

I. Introduction

UC Davis and
competition
background

*see Appendix B
p.B25*

Location
see Figure 1

In the fall of 1987 the University of California and the National Endowment for the Arts announced an International Design Arts Competition focussed on the entrance grounds to the University of California at Davis. The University of California (UC) system includes nine campuses with the Davis campus being the third oldest, founded in 1906. The campus supports approximately 20,000 students and 1,500 staff offering a variety of graduate, undergraduate and professional programs and is considered a major research university in the United States. The total campus area comprises approximately 3,800 acres (compared to approximately 580 acres at the University of Manitoba) including a University airport. The campus includes the College of Agricultural and Environmental Sciences, College of Letters and Sciences, College of Engineering, School of Law, School of Medicine, University of California's only School of Veterinary Medicine, Graduate Division, and the Graduate School of Administration. UC Davis has very well respected Departments of Environmental Design and Art and programs in these departments have been ranked nationally among the top five. With over seventy graduate programs, Davis is considered the most diversified UC campus.

The city of Davis is a progressive college town with a population of 40,000. It is located in the fertile Sacramento Valley, 72 miles northeast of San Francisco and 15 miles west of Sacramento. Within an hours drive is the Napa Valley to the west and the historic Mother Lode country to the east. The coastal areas are within 120 miles as is Lake Tahoe and Sierra Nevada mountain range. Davis is internationally known as the first U.S. city to enact energy conservation ordinances, the first to establish cooperative

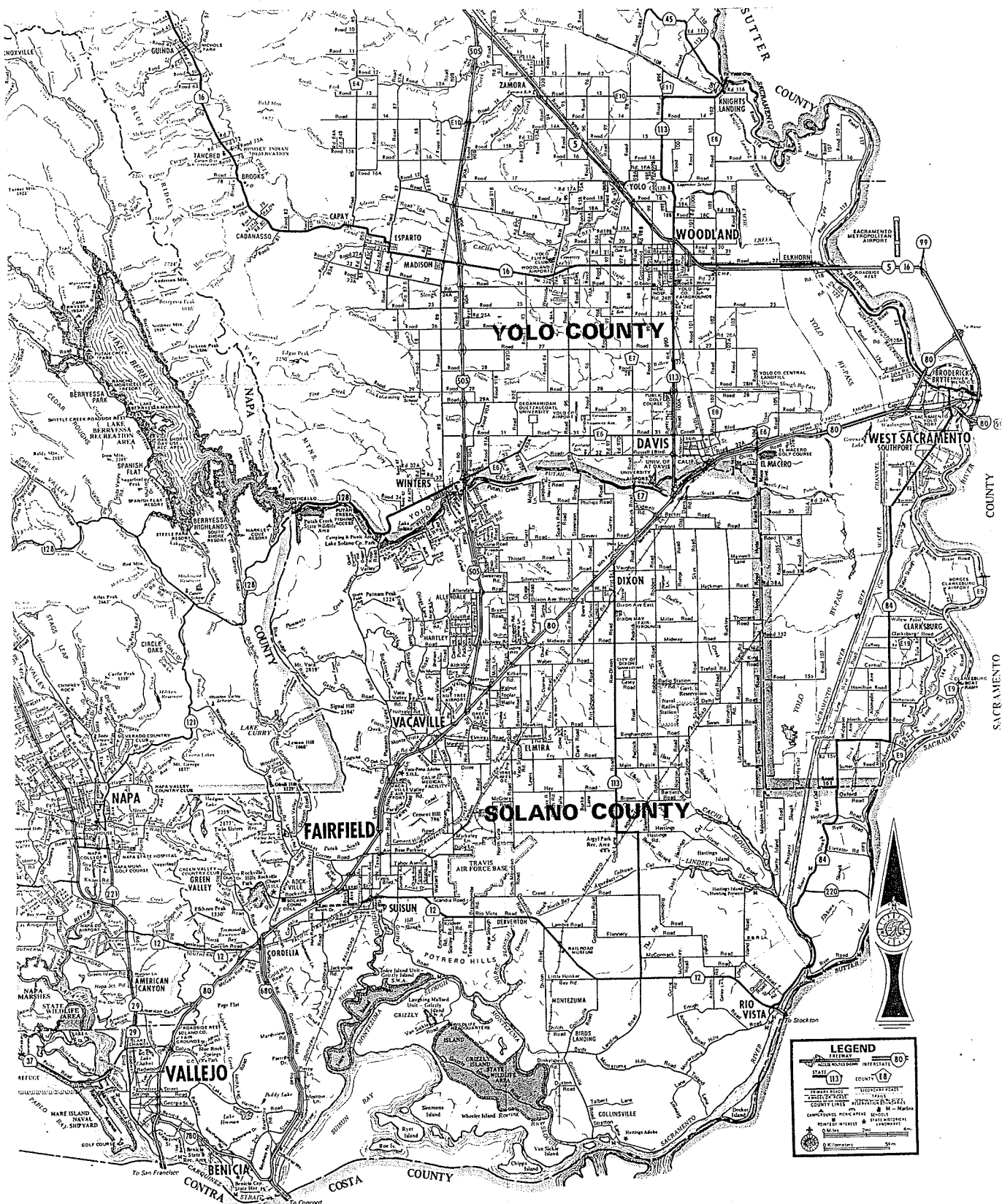


FIGURE 1
DAVIS LOCATION MAP

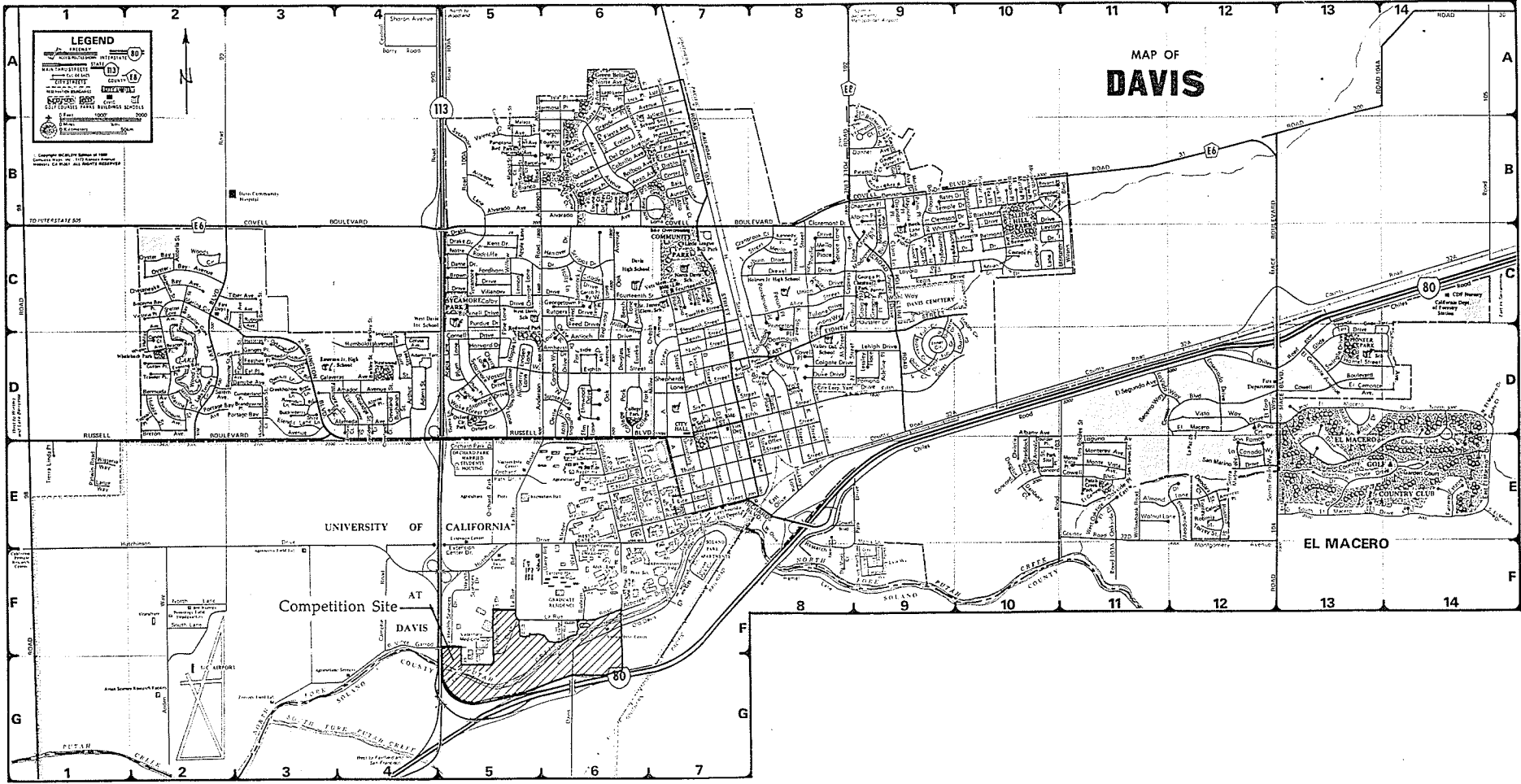


FIGURE 2

cable systems, and is recognized as a leader in such areas as growth management, land trust preservation, and cooperative insurance.

Program

Site Evaluation

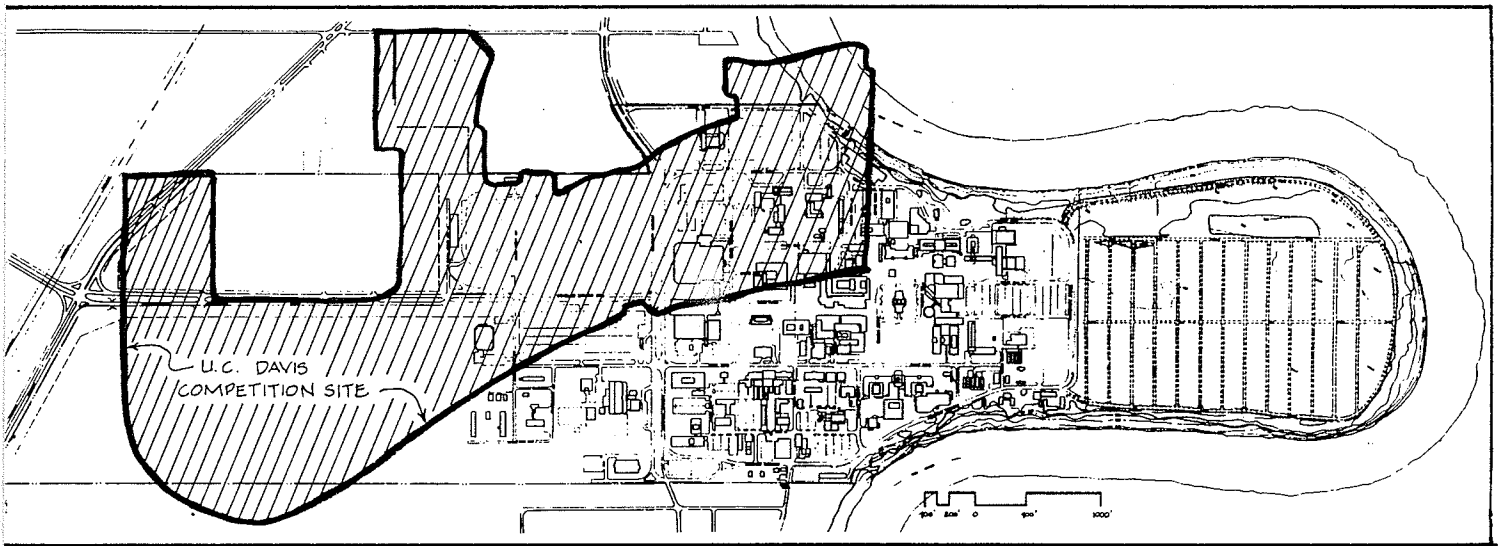


FIGURE 3

Comparison of University of Manitoba with competition site at UC Davis, California

Existing conditions
see Figure 4, p. 10

The competition lands encompass approximately 235 acres. The site is characteristically featureless and flat in elevation except in the vicinity of Putah Creek where there is up to twenty feet of elevation change from the top of bank to water elevation. Much of the site is presently used for agricultural purposes and as such is virtually absent of trees except in the vicinity of Putah Creek where the majority of arboretum collections presently stand.

Current state of the arboretum

see Appendix B, pp. B1-B11

The University Arboretum was established in 1936 along the banks of the old north fork of Putah Creek. Existing collections cover approximately 50 acres along a two-mile length. As such, approximately two-thirds of the arboretum collections are located within the competition grounds. The competition specifies that design solutions should have a minimal impact upon existing collections.

The elevated Interstate 80 is a powerful visual element which forms the southern edge of the competition grounds. As the competition grounds are very visible from the Interstate highway, the University is looking for solutions which are unique and make a creative statement of entryway. The primary entrance to the campus is to remain in its present location off the southern boundary.

see Figure 4, p. 10

The university subdivided the grounds into two zones: areas A through G and Possible Additions 1 through 6 (see page A9 of Appendix A for a description of these areas). A summary of the program requirements and site analysis is diagrammed in Figure 4.

Climate

see Appendix B pp. B16-B18

The climate of Davis is similar to the Mediterranean region characterized by cool, wet winters and hot, dry summers. Winters in Davis are mild, with temperatures rarely below freezing. The coldest temperature on record is -11°C in December 1932. The average winter temperature is 8°C with an average daily minimum temperature of 3.1°C . The sun shines about 45% of the time possible in the winter months. In summer, the average temperature is 22.8°C with an average daily maximum of 33.5°C . The sun shines about 95% of the time possible during the summer months.

The mean annual precipitation is 418 mm of which 57 mm (14%) falls during the growing season between April and September.

Physiography
see Appendix B
pp. B19-B20

The physiography of the campus and environs can be described as nearly level to gently sloping recent alluvial plains and a few remnants of older alluvial plains. The soils of the area have formed in alluvium derived mainly from sedimentary rock sources deposited by Putah Creek and its distributaries. Soil texture patterns on the Putah Creek alluvial fan indicate that the principal channel of Putah Creek has wandered in an episodic manner during the development of this fan. Also, variable patterns of coarse and fine surface soil and substrata textures on the recent fan surface reflect the past variability in flooding and deposition of materials from a series of former smaller distributaries of Putah Creek. See Figure 9 for an interpretation of this information for design purposes.



1



2

**refer to Figure 4,
p.10 for photo key*

6



photos

**refer to Figure 4, p.10 for photo key*

Program Objectives

Intent and scope of the competition

There were several objectives of the competition but the primary challenge was to provide an improved entryway to the campus at Interstate 80. The grounds are part of a long range plan commitment of the University Arboretum at Davis to develop a campus entry which has earth arts and landscape sculpture as the primary determinants of form. The University Arboretum was seen to be in great need of expanded botanical collections to serve the research and educational needs of the campus community. At the same time, the Davis community was in need of expanded access to recreational and contemplative gardens. The policy commitment of the University of California to art on campus encouraged diverse design arts projects in the campus landscape. The National Endowment for the Arts recognized these needs by cosponsoring an international competition requesting design solutions.

Masterplan requirements

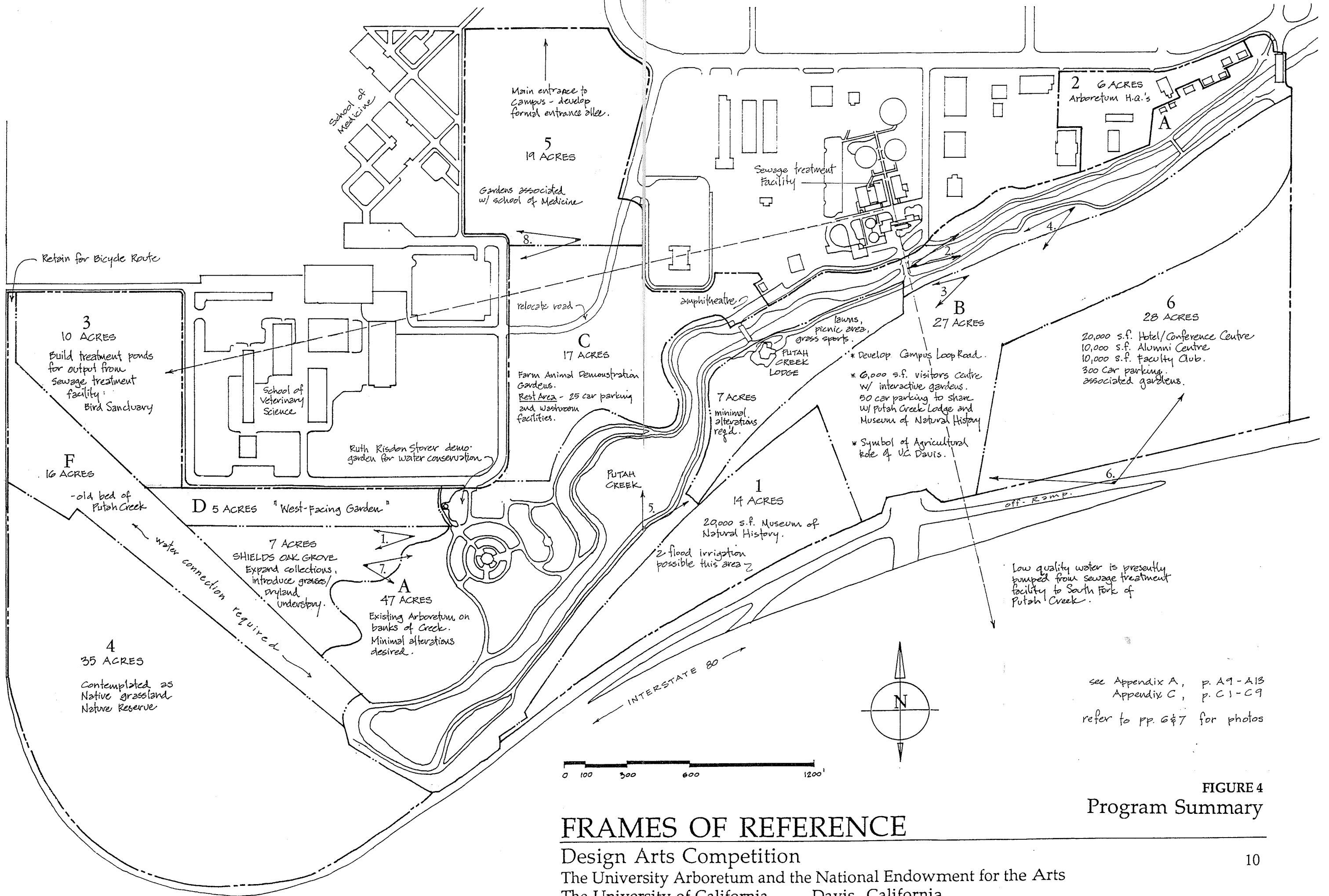
The competition was divided into two categories for entry. The first was the masterplan category for the competition grounds which requested a number of functional requirements to be fulfilled. Some of these requirements included the location of a campus loop road, a campus and arboretum visitors' centre, a museum of natural history, and circulation for new gardens. Also requested was provision for the location of a hotel/conference centre as well as an Alumni Centre and Faculty Club.

see Appendix A, pp. A9-A13

see Appendix A, p. A3 for list of garden themes

The second category requested the conceptual development of individual gardens to be located within the grounds. It was intended that successful theme gardens for the competition could be incorporated into an overall masterplan.

This practicum was entered into category one as a strategy for structuring the competition grounds in order to incorporate theme gardens and programmatic requirements into a coherent, unified whole. Although not formally entered into category two, several areas were developed as individual gardens as a test for the structuring system. These are described in the Detailed Results section later in the text.



see Appendix A, p. A9-A13
 Appendix C, p. C1-C9
 refer to pp. 6&7 for photos

FIGURE 4
Program Summary

FRAMES OF REFERENCE

Design Arts Competition
 The University Arboretum and the National Endowment for the Arts
 The University of California Davis, California

Design Process

The design process began with a careful examination of the program and materials supplied in the competition package to become familiar with the site and some of its history, and to fully understand and evaluate the program requirements. As well, a number of literature sources were reviewed in depth which provided useful input in the development of the design concepts and compositional techniques. Sources are listed in the bibliography.

see Appendix D

During the sixth week into the study, a two-day field trip to Davis was undertaken. At that point in the design process, a number of preliminary design studies were attempted. The site visit was found to be useful in terms of comprehension of the scale of the site and testing of design ideas (ground truthing). Also, the site visit proved invaluable in gaining a 'sense of place' through observation of many details that were not apparent from the competition information materials.

Objectives

Fulfilling the Program

Based on the Program Summary, the fundamental requirements to be satisfied in the design include:

- a creative entryway to the campus visible from Interstate 80
- a mechanism for the expansion of existing arboretum collections
- the capacity for insertion of various theme gardens
- satisfactory creek crossing and location of the west campus loop road requirements
- incorporation of a hotel/conference centre, faculty club, and alumni centre building complex, with parking for 300 cars

- a water purification system resulting in a flow-through water system to the north arm of Putah Creek
- incorporation of a campus information building
- incorporation of a museum of natural history

During the program analysis, a search was undertaken for a rationale to assist in the organization and appropriate physical expression of the above requirements. Ideas from readings were recorded in the form of sketches, notes and early attempts to resolve the composition. In addition, a number of possible garden themes were explored. Some of these early studies are shown in Appendix D.

Conceptual Background

The following is a synopsis of readings and exploration into what became the conceptual basis for the design solution. The overriding idea of overlaying a geometric ordering system generated from contextual elements with another more 'natural' ordering system came relatively early in the design process as evidenced from earlier sketches. Refinements of the design continued through to its completion and words to describe the design were to come much later.

Forming a network over the land, grid and garden together express accommodation between man and nature, rationality and spirit, societal constraints and individual expression.²

The above quotation expresses the fundamental theme of the project. The passage pinpoints the inherent dualism of two opposing forces. It is the intention of the design solution to demonstrate the interplay of two systems: one representing nature, spirit, and individual expression and the other

*see Appendix D,
p. D2*

² Krieger, Alex, p. 50.

representing man, rationality and societal constraints. The key word is *accommodation*, suggesting that the two systems are not mutually exclusive. The means of expressing the above dualism was to create a geometric ordering system overlain with an extension of a 'natural' ordering system. This will be discussed in greater detail later in the text.

Frames of Reference

Rather than use the ubiquitous gridiron as a geometric ordering system, other ordering systems more responsive to the particular place were explored. In creating a geometric ordering system that expresses the individuality of the site, elements of the site in context were examined. To understand and bring order to our world we look for patterns and regularities through observation of natural phenomena.³ Relationships between phenomena are identified and bodies of knowledge and theory gradually accumulate. The process of discovering knowledge often occurs in an incremental, fragmentary, and contingent nature.⁴ Universities are places where knowledge is structured into formal disciplines, each attempting to explain a particular aspect of reality. Collectively, the disciplines represent a tapestry of understanding and hence the title of the practicum submission: "Frames of Reference". It was intended that the structure of the campus entry be a physical expression of the above process.

con•text (kon´tekst) "something that surrounds and influences..."⁵

Contextualism:
arguments for validity
in landscape design.

The notion of contextualism is a pervasive current of thought in many disciplines in today's world. The essence of contextualism is that an idea, object, event etc. is defined by the conditions

³ Capra, F. J., *The Tao of Physics: An Exploration of the parallels between modern physics and Eastern mysticism*, London: Fontana Paperbacks, 1986.

⁴ Ellis, W., "Type and Context in Urbanism: Colin Rowe's Contextualism", *Oppositions*, New York: p.4.

⁵ Funk and Wagnalls Standard College Dictionary, Canada: Funk and Wagnalls Publishing Company, 1976.

surrounding its creation. In other words, a thing has meaning only through its relationship to other things -- its context.

During the study of the object in its context we search for patterns of differences and formal relationships. It is what the biologist Gregory Bateson calls the search for the *pattern which connects*.⁶ Context, he defines, is *pattern through time*. He feels that the general concepts of "context" and "meaning" are closely linked and that without context there can be no meaning in words or actions, or any form of communication. The urban theorist Colin Rowe draws patterns from the existing urban fabric to define his urban works. In his arguments for "ideal types" and "imperfect contexts" he equivocates the notion of "context" to "continuity"⁷ (again, Bateson's *pattern through time*). The following quotations are from sources of varied disciplines which address the concepts of context and interrelationships of phenomena.

Quantum theory thus reveals a basic oneness of the universe. It shows that we cannot decompose the world into independently existing smallest units. As we penetrate into matter, nature does not show us any isolated 'basic building blocks' but rather appears as a complicated web of relations between the various parts of the whole.⁸

...no pattern is an isolated entity. Each pattern can exist in the world only to the extent that it is supported by other patterns: the larger patterns in which it is embedded, the patterns of the same size that surround it, and the smaller patterns which are embedded in it. This is a fundamental view of the world. It says that when you build a thing you cannot merely build the thing in isolation, but must also repair the world

⁶ Bateson, G., *Mind and Nature: A Necessary Unity*, New York: Bantam Books, p. 12

⁷ Ellis, W., p.4

⁸ Capra, F.J., p.78.

around it, and within it, so that the larger world at that one place becomes more coherent, and more whole; and the thing which you make takes its place in the web of nature, as you make it.⁹

To believe that our abstract concepts of separate 'things' and 'events' are realities of nature is an illusion.¹⁰

The prevalence of concepts of contextualism in our society is possibly a reaction to the modernist rejection of history. We are now probing for meaning and continuity in social activity. As landscape architects, we aspire for our works to convey meaning and be appropriate in terms of type, time, and place. Throughout history, landscape architectural works have transmitted to people a cultural memory: an associative recollection of a prior event, artifact, or intention.¹¹

Contextualism must go beyond the physical attributes of a site to assess the forces that shape our landscapes. By understanding that form in the landscape is manifest through processes, meaning can be transmitted through an understanding and commentary on the relationship of the site to its physical, social and historical context.

The landscape should transcend the fulfillment of the program to stimulate the participant on many different sensory and cognitive levels. In this design submission, it is intended that rather than reveal the overall structure of the site as a complete geometric

⁹ Alexander, C., *A Pattern Language*, New York: Oxford Univ. Press, 1977, p. xiii.

¹⁰ Capra, F. J., p.142.

¹¹ Morris, Ellen K., *The Discourse of Type*, source unknown, Cornell University, p. 39.

system, the visitor to the site will receive an impression of a larger extending order. Although the new visitor to the proposed UC Davis site will not gain immediately a full comprehension of the landscape, Hubbard explains that people have varying degrees of appreciation for what they experience depending on their level of knowledge of a particular subject.¹² Hubbard makes the distinction between 'visual appearance' and 'intrinsic meaning' and cites several examples to illustrate the point; the simplest being the typographer's appreciation of an artfully composed page (with proper leading, kerning etc.) versus the informed reader's appreciation not only of the visual appearance of the page but also of the meaning of the text. The more knowledgeable the observer, the greater is the potential for appreciation.

At the proposed UC Davis site, the newcomer may, upon first visits, appreciate some elements in the landscape and find enjoyment in the variety of spaces, light and shade, textures, etc. However, it is intended that the landscape offer more than a scenographic or tactile solution. As the person learns more about the site (for example the origins of the various grids, the relationship of the theme gardens to the site organization, the relationship of Putah Creek to the arboretum extensions) his/her appreciation of the landscape will grow (or at least he/she will have a greater capacity to judge its attributes).

¹² Hubbard, *Complicity and Conviction: Steps Toward an Architecture of Convention*, Cambridge, Mass.: The MIT Press, 1986, pp. 68-85.

The Arboretum

What an arboretum should be

By definition an arboretum is " a botanical garden exhibiting trees for their scientific interest and educational value."¹³ It follows, then, that an arboretum should display trees in a fashion which arouses scientific curiosity and maximizes educational utility. In this sense the arboretum can be thought of as an outdoor laboratory or classroom.

The utility of the arboretum

What qualities of scientific interest do trees have that can be better demonstrated in the field than in another educational forum? What does the arboretum have to offer the student that cannot be captured by photography, video, microscopes and other educational media? Clearly, some concepts of plant science (principles of cellular growth, mechanisms of nutrient transfer, the phenomenon of photosynthesis, etc.) are more effectively demonstrated in the laboratory using multi-media instructional techniques. While principles demonstrated in the classroom can be reinforced in the field, the arboretum is more suited to demonstrate the qualitative properties of a tree than is the conventional laboratory. The sheer scale of the Giant Sequoia (Sequoiadendron giganteum), the way sunlight penetrates the lacey canopy of the Silver Wattle (Acacia decurrens), the fragrance of the Basswood (Tilia americana) in blossom, the sound of Aspen (Populus tremuloides) leaves rustling in the wind; these are some of the qualitative properties of a tree that must be experienced in the field. Another important role of the arboretum is to allow comparison between tree species. However, to constrain the arboretum experience to the above lessons is to limit severely the field experience. We must look to what more the field experience can offer the student.

¹³ Funk and Wagnall



The arboretum as a collection of plant communities

The root of the problem of the UC Davis Arboretum as it exists presently is the disassociation of the individual tree with its natural environment. The consequence of gathering very different types of trees plucked from their natural context and grouping them in ecologically unlikely conditions has a disturbing effect on the informed observer and gives a false impression to the less informed. There is something sterile about the arboretum due to the lack of richness in associated plant communities.

Again the issue of context is relevant. A tree is a component of an ecosystem. As it stands, the arboretum at UC Davis is a collection of tree species without reference to native environments; they are trees out of *context*. As an educational tool, an arboretum should be more than simply a museum of trees. To educate people about what Bateson calls the *connectedness* of ecology,¹⁴ a much more powerful tactic would be to demonstrate trees in conditions similar to their natural environments. Therefore, where ecologically correct, a 'forest' of species should be planted with associated species of understory and ground cover plant communities. Of course, there are many ecological factors involved in the evolution of a forest and the accurate reconstruction of complex ecosystems would likely require unrealistic monetary resources, time, and skilled management. Realistic management would require that the design be based on some minimum simplification of a climax ecosystem proper to the area.¹⁵ A delicate balance between design and management is required to produce something between an arboretum and botanical garden.

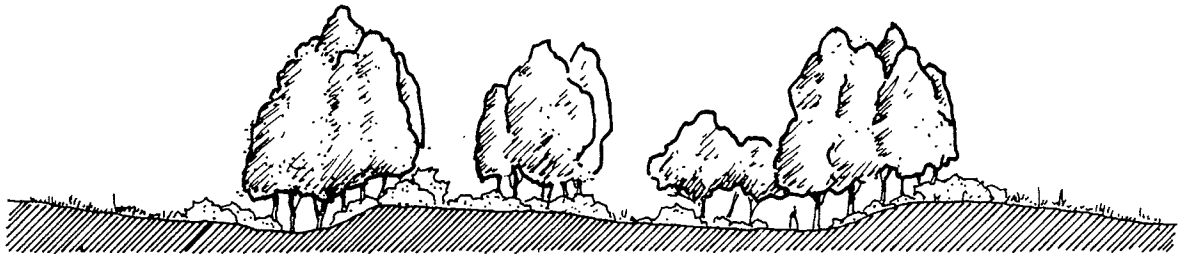
¹⁴ Bateson, pp. 3-23.

¹⁵ Lynch, K. and Hack, G., *Site Planning*, Third Edition, Cambridge, Mass.: The MIT Press, 1984, p.183.

In order for the arboretum to produce accurately species of trees found in their ecozones it may be necessary to modify parts of the arboretum to simulate particular ecosystems. Things to consider would be:

- modification of soils
- location of vegetation in terms of aspect and slope
- careful control of water and nutrients
- the inclusion of appropriate plant communities which modify the soils and microclimate

The arboretum must be maintained as a living museum of a highly structured association of diverse plant material supporting a host of fauna in order for the student to perceive the individual tree as part of an ecosystem.



Compositional technique

The solution presented is an attempt to satisfy design objectives using a compositional system of:

- regulating geometry to generate structure (collision),
- selection and emphasis of parts (resolution),
- and overlay of mythical natural patterns.

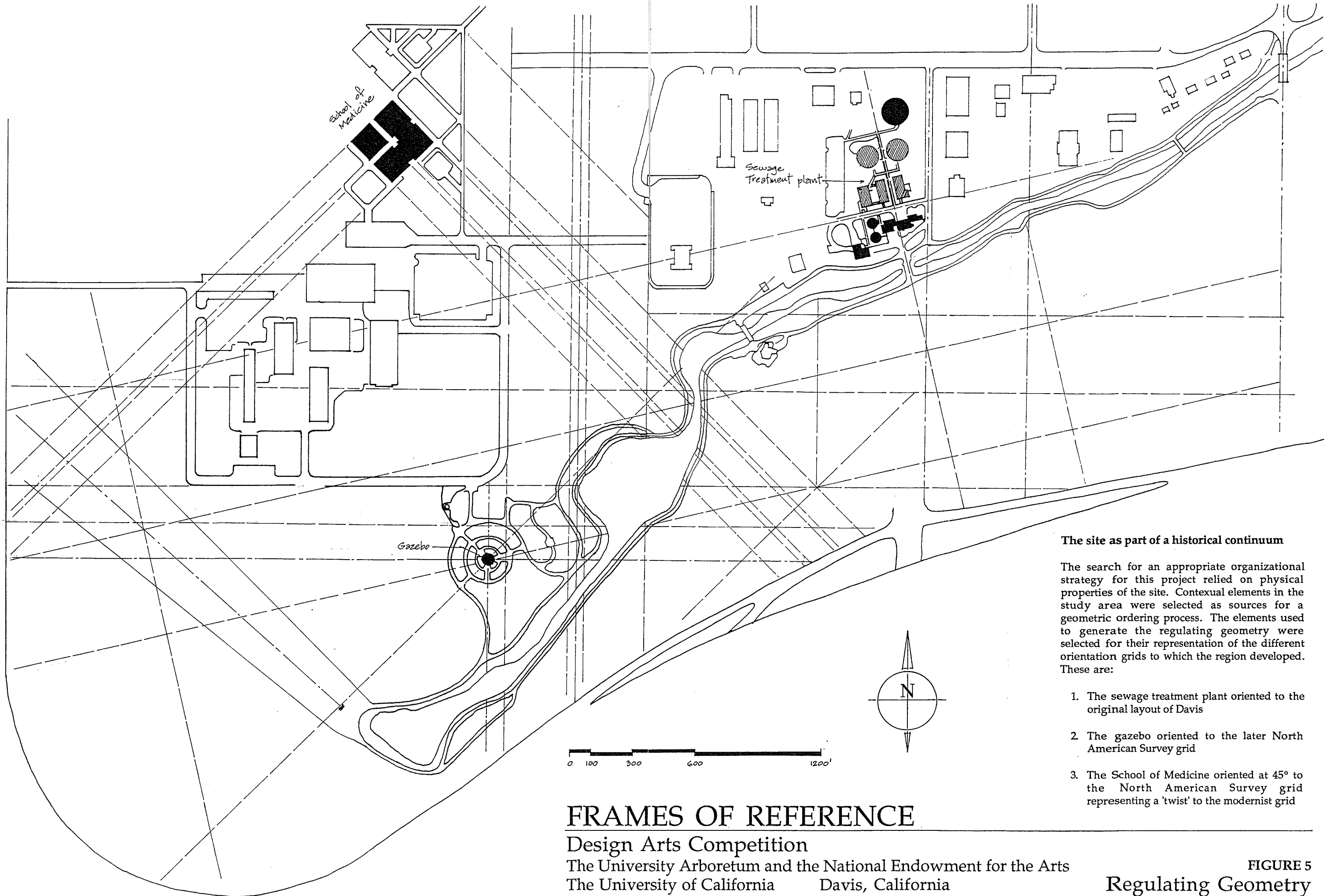
The compositional strategy is strongly influenced by two of the techniques utilized by Colin Rowe¹⁶; namely *collision of grids* and *resolution of parts*. However, there are differences in strategies that should be pointed out. Where Rowe extends and collides existing circulation patterns from the urban context, this design allows axial orientations of existing forms to suggest collisions that suit the program or the site. While Rowe uses the two dimensional *figure-ground* drawing as a compositional tool to distinguish mass from void, this design uses a *tonal* drawing to resolve surface patterns and create a hierarchy of parts.

Regulating geometry

*The site as part of a
historical continuum*

The organizational strategy for this project relies on the physical properties of the site. 'Observed phenomena' in the study area were selected as sources for a geometric ordering process. (see Figure 5) The 'observed phenomena' used to generate the regulating geometry were selected because a) they were perceived as anomalies within the site that seemed strangely dislocated from their surroundings and, b) they represent different survey grids to which the region was developed.

¹⁶ Rowe, C. and Koetter, *Collage City*, Cambridge, Mass.: The MIT Press, 1978.



The site as part of a historical continuum

The search for an appropriate organizational strategy for this project relied on physical properties of the site. Contextual elements in the study area were selected as sources for a geometric ordering process. The elements used to generate the regulating geometry were selected for their representation of the different orientation grids to which the region developed. These are:

1. The sewage treatment plant oriented to the original layout of Davis
2. The gazebo oriented to the later North American Survey grid
3. The School of Medicine oriented at 45° to the North American Survey grid representing a 'twist' to the modernist grid

FRAMES OF REFERENCE

Design Arts Competition

The University Arboretum and the National Endowment for the Arts
 The University of California Davis, California

FIGURE 5
 Regulating Geometry

The selected generating elements are:

1. The water treatment plant oriented to the original town of Davis grid
2. The gazebo oriented to the later North American Survey grid
3. The School of Medicine oriented at 45° to the North American Survey representing a progression from the earlier grid

The regulating geometry serves the dual purpose of generating pattern on the site (expressing that context influences form) as well as serving to geometrically secure the anomalies to the site (expressing that the form, in turn, influences its context).

Surface Delineation

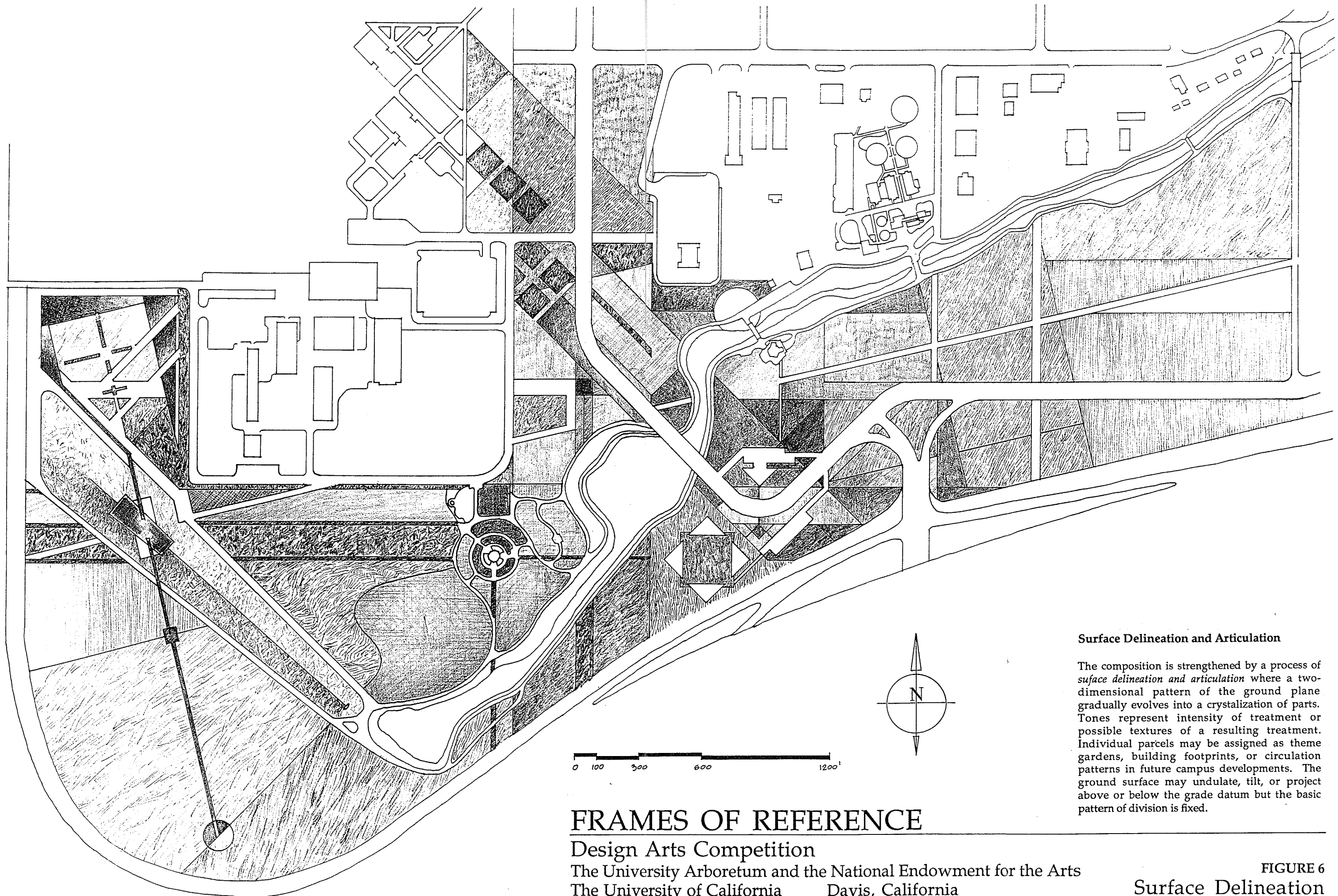
see Figure 6

The composition is then strengthened by a process of *surface delineation* during which the program is evaluated and areas assigned. What evolves is a two-dimensional pattern of the ground plane - a crystallization. Tones represent intensity of treatment or possible textures of a resulting treatment. Individual parcels may be assigned as theme gardens, building footprints, or circulation patterns in future campus developments. Edges of parcels may be expressed by circulation pathways, fences (eg. hedges, rows of trees), drainage devices, changes of surface materials, etc. The ground surface may undulate, tilt, or project above or below the grade datum but the basic pattern of division is fixed. It is intended that individual theme gardens be sited within these parcels of land.

Natural overlay

see Figure 8

The ground plane is then overlain with the tree layer which is comprised of two components. One component is trees organized to express natural processes and reveal possible past courses of Putah Creek in the alluvial fan. The other is the set of trees used architectonically to reveal/reinforce selected portions of the surface geometry.



Surface Delineation and Articulation

The composition is strengthened by a process of *surface delineation and articulation* where a two-dimensional pattern of the ground plane gradually evolves into a crystallization of parts. Tones represent intensity of treatment or possible textures of a resulting treatment. Individual parcels may be assigned as theme gardens, building footprints, or circulation patterns in future campus developments. The ground surface may undulate, tilt, or project above or below the grade datum but the basic pattern of division is fixed.

FRAMES OF REFERENCE

Design Arts Competition
 The University Arboretum and the National Endowment for the Arts
 The University of California Davis, California

FIGURE 6
 Surface Delineation

Mythical courses of
Putah Creek

see Appendix B
p. B19

see Figure 7

Over long periods of time a river or creek will change its course many times. Remnants of an older fan system of Putah Creek is evident from the soil mapping of the area but is not surficially apparent to the eye. In keeping with the idea of the campus as a part of a historic continuum, the arboretum collections are expanded by tree planting over the site in patterns representing mythical but possible past courses of Putah Creek. Thus the tree collection is expanded in a manner that comments on time in the geological scale. Appropriately, vestiges of the creek reverberate throughout an otherwise man-constructed site. The fact that the vestiges are fictitious representations of past courses of Putah Creek is commentary on the manner in which the presentation of all history is, to some degree, fictitious due to the necessity of the act of interpretation.

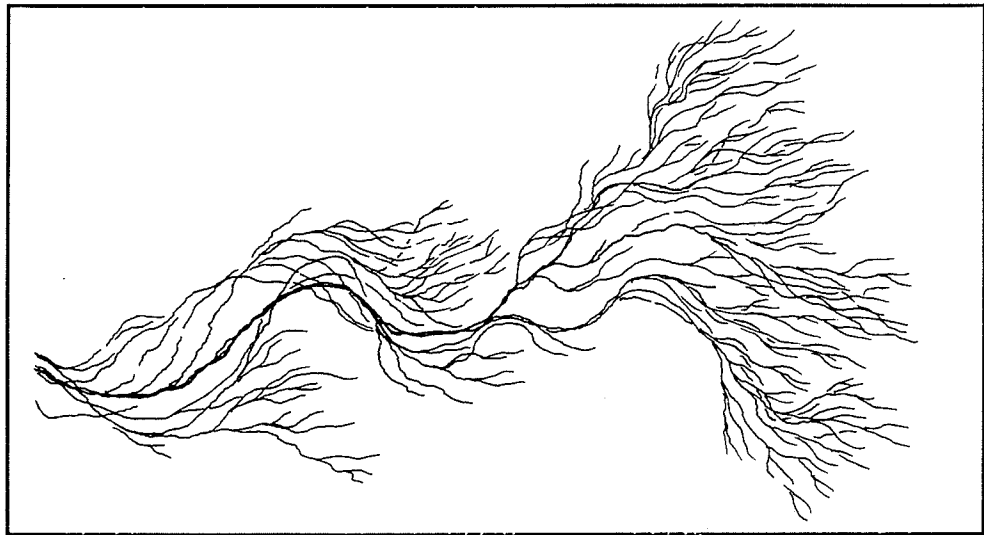
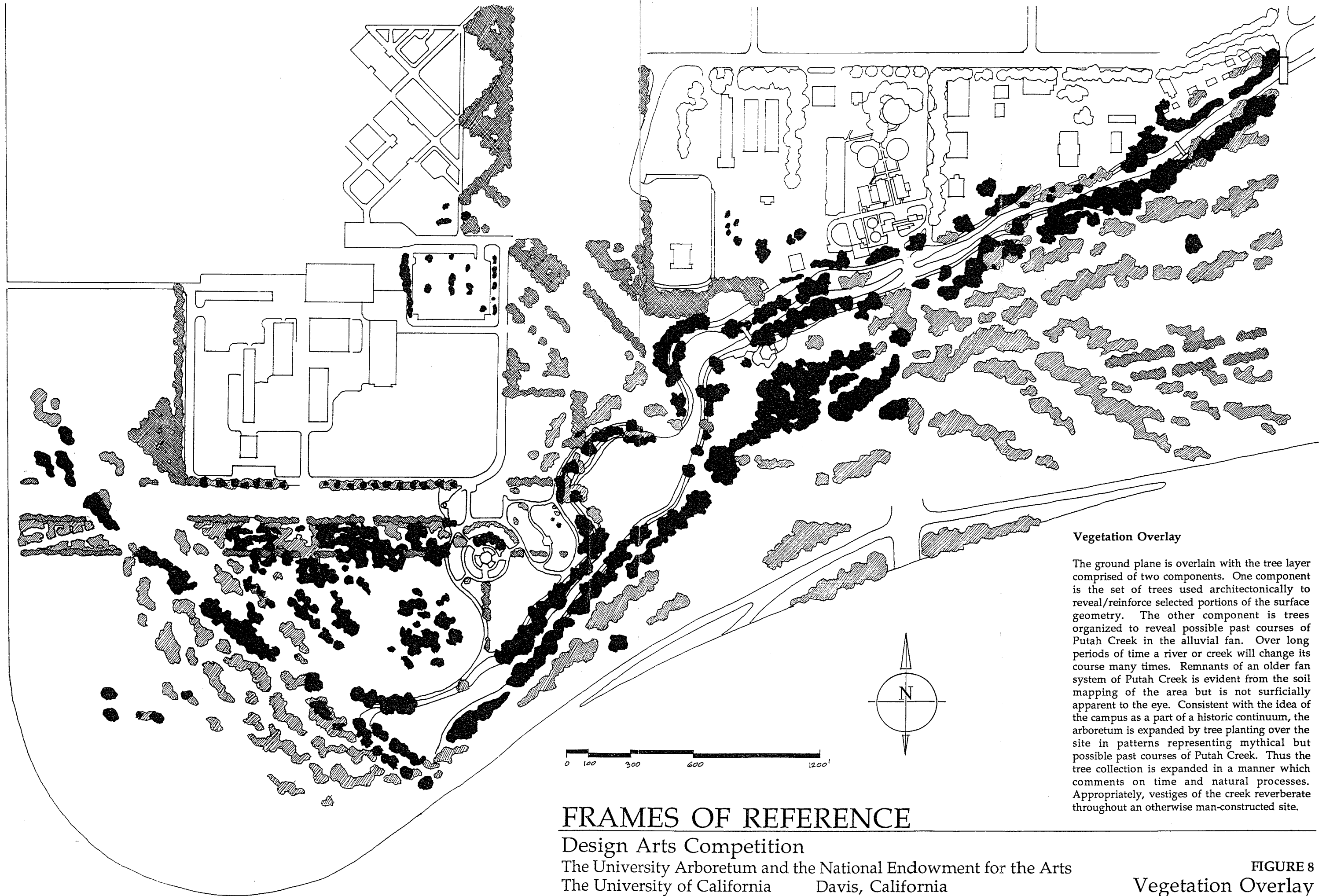


FIGURE 7 *Hypothetical dendritic patterns of the courses of Putah Creek dispersing in an alluvial fan*



Vegetation Overlay

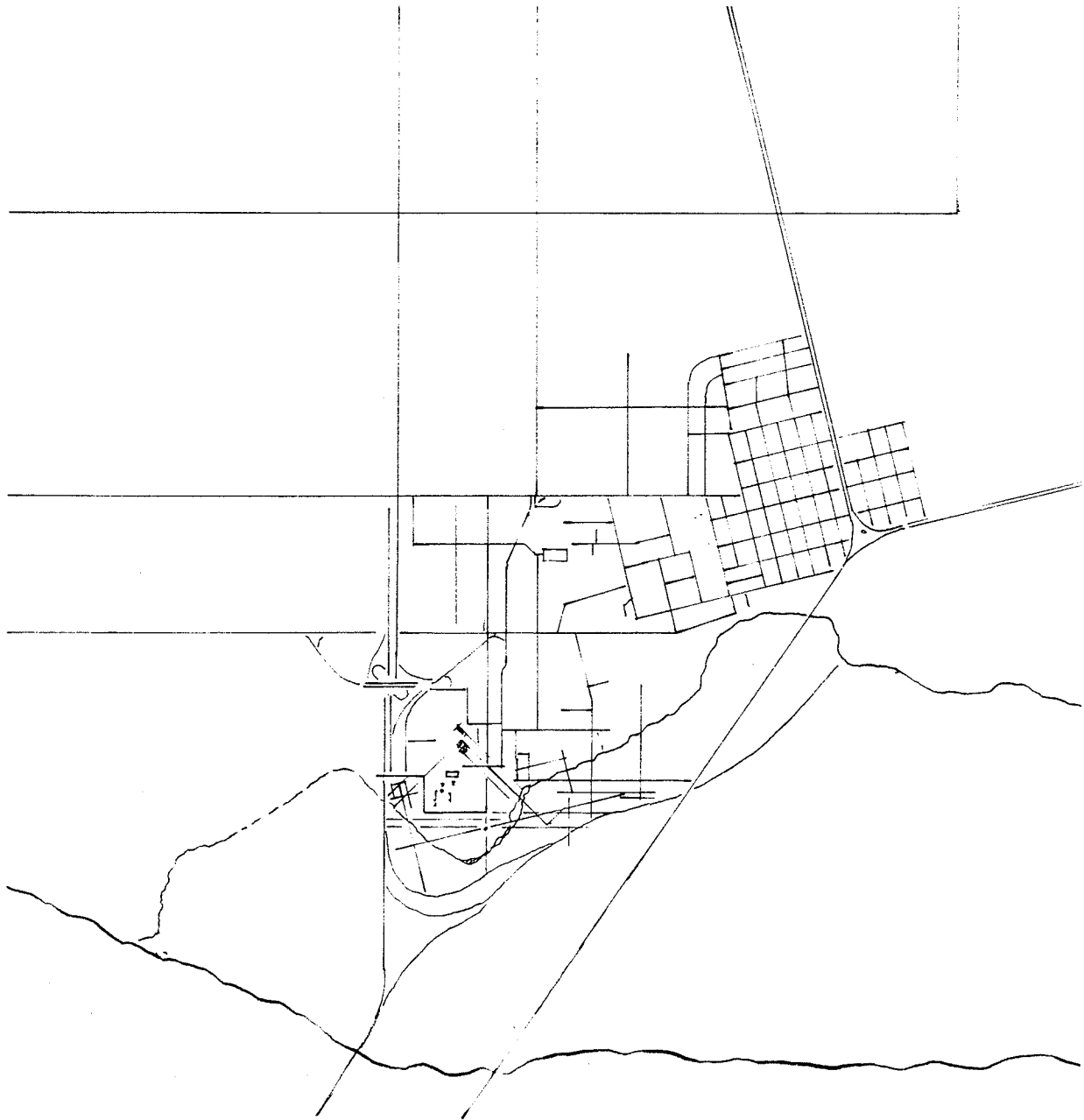
The ground plane is overlain with the tree layer comprised of two components. One component is the set of trees used architecturally to reveal/reinforce selected portions of the surface geometry. The other component is trees organized to reveal possible past courses of Putah Creek in the alluvial fan. Over long periods of time a river or creek will change its course many times. Remnants of an older fan system of Putah Creek is evident from the soil mapping of the area but is not superficially apparent to the eye. Consistent with the idea of the campus as a part of a historic continuum, the arboretum is expanded by tree planting over the site in patterns representing mythical but possible past courses of Putah Creek. Thus the tree collection is expanded in a manner which comments on time and natural processes. Appropriately, vestiges of the creek reverberate throughout an otherwise man-constructed site.

FRAMES OF REFERENCE

Design Arts Competition
 The University Arboretum and the National Endowment for the Arts
 The University of California Davis, California

FIGURE 8
 Vegetation Overlay

Description of Results



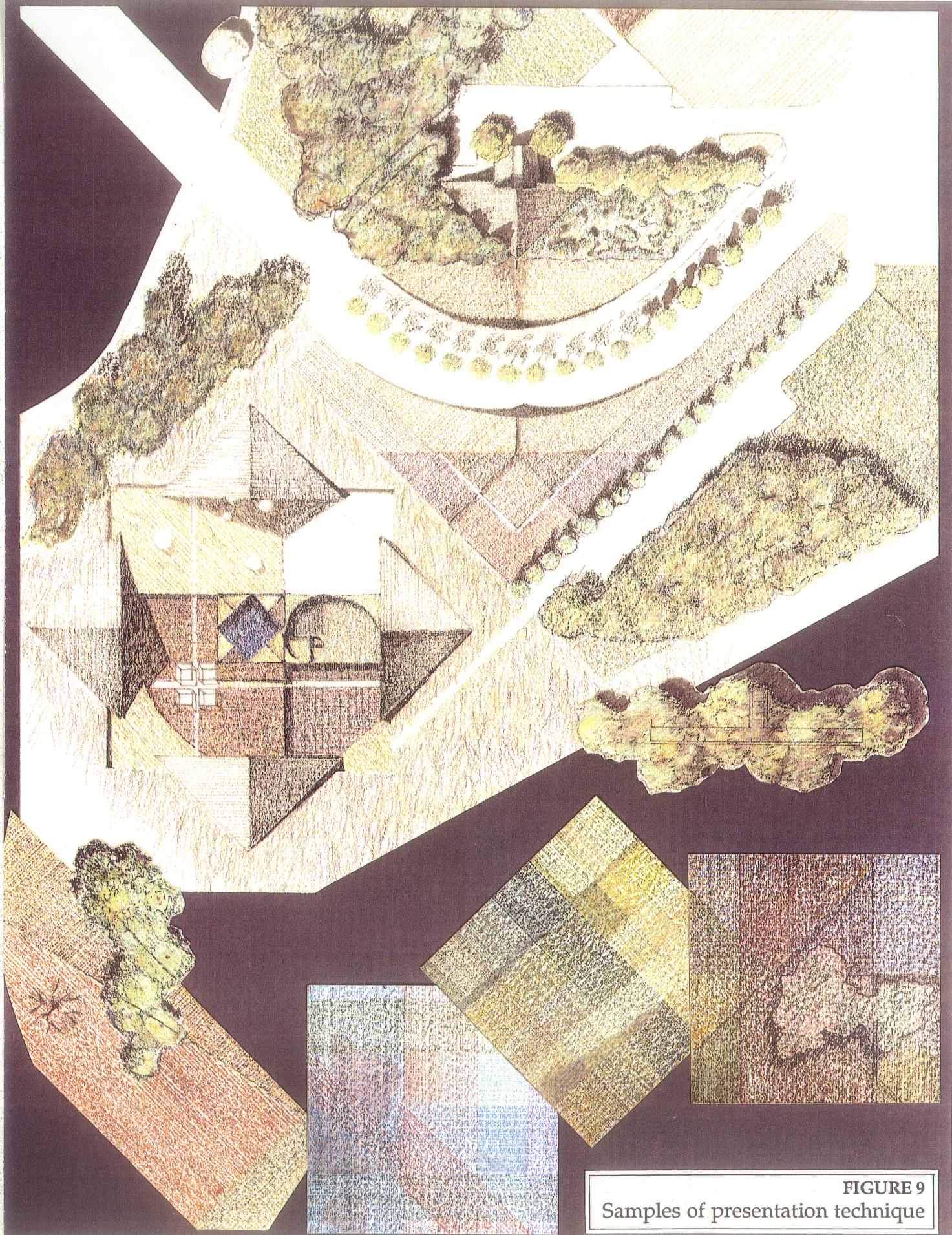


FIGURE 9
Samples of presentation technique

Description of Results

Presentation Technique

The technique used for the final presentation was a combination of ruled and unruled pencil crayon, graphite, and watercolour on Arches 150 lb. rough cold press watercolour paper mounted on illustration boards. Finished size was 64 inches wide by 40 inches high (1626 mm x 1016 mm) at a scale of one inch equals 100 feet (1:2400) as required by the competition format. Due to the scale requirements, the presentation would be read as a two-dimensional ground pattern overlain with vegetation patterns. Contrasting the rendering of each ordering system in terms of colour, texture and intensity visually separated and thus reinforced the interplay of the two systems.

Detail Areas

Restoration of
Putah Creek,
water treatment
plant connection

In order to assist in the explanation of the water treatment area it is necessary to provide some background on Putah Creek. In the early 1800's the north fork of Putah Creek was blocked in order to protect the township from flooding during periods of high water. Thus, the remaining north fork became a lake as the total flow of Putah Creek was channeled into the south fork. The resulting closed watershed system has since contributed to very poor water quality in the arboretum. This problem has been compounded by the waste from the large population of waterfowl residing in Putah Creek. In an effort to raise water quality in the old north fork, it was recommended by the university that natural treatment ponds be developed in Possible Addition Area 3. The output of the sewage treatment plant presently being pumped directly into the south fork of Putah Creek (a live stream) would

see Figure 4

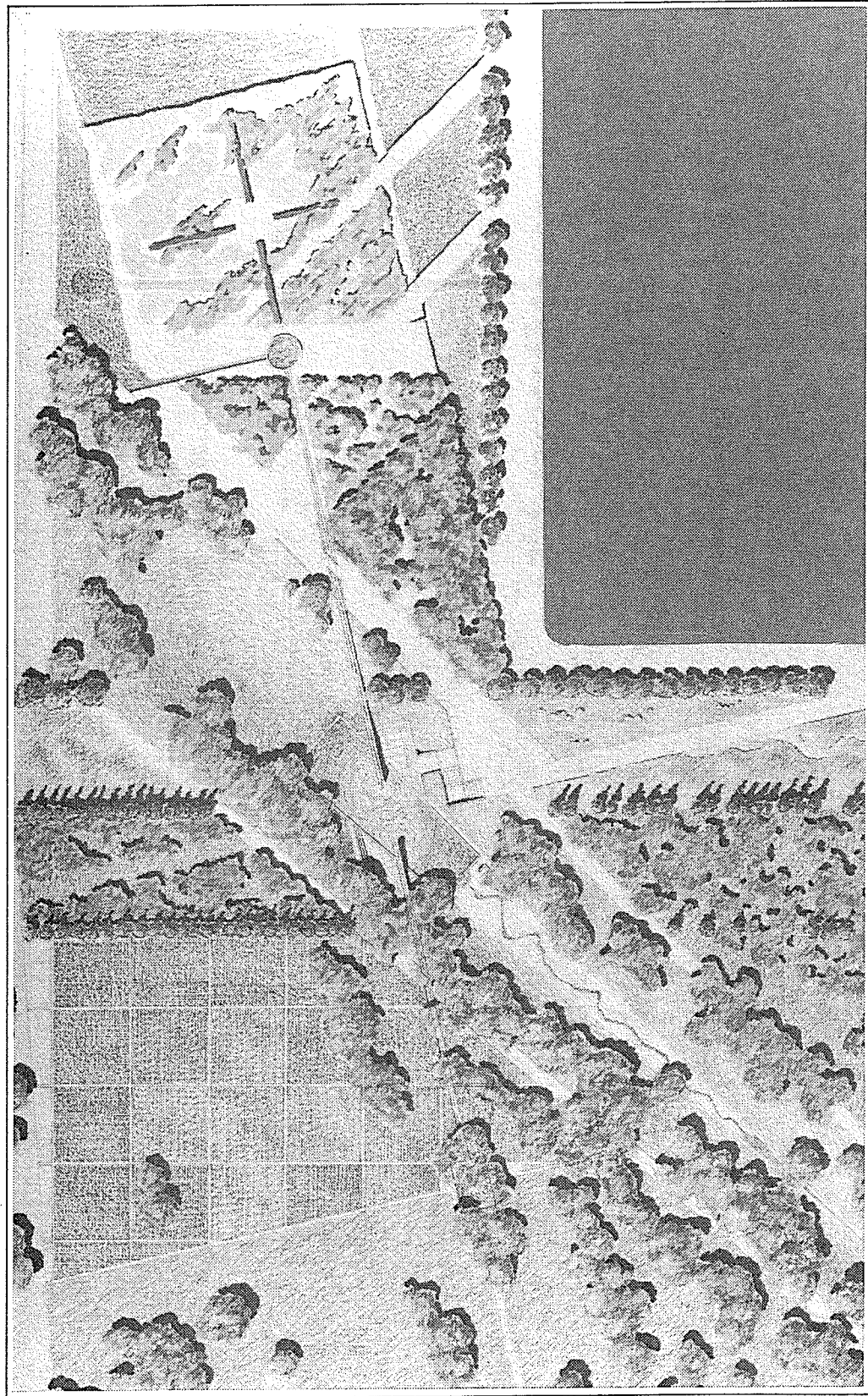


FIGURE 10
Water Treatment/Bird Sanctuary Areas

instead be pumped into the treatment ponds, fall into the west end of the north fork, and finally be pumped from the east end of the north fork into the south fork of Putah Creek. Not only would this end the problems of the closed system but would also result in higher quality water entering the south fork of Putah Creek.

Bird sanctuary

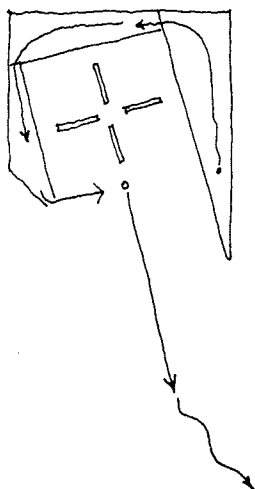


raised area partially flooded

see Appendix D
p. D4

The water treatment ponds can serve the additional function of bird sanctuary. The treatment ponds/bird sanctuary are oriented to the sewage treatment plant. The primary settling pond is located in the southeast corner and secondary and tertiary ponds are located in a clockwise direction around the central viewing "island". The central viewing island could be partially flooded to simulate marshland planted with cattail to absorb heavy metals and further purify the water. On the central viewing island would be set a series of viewing trellises. The physical expression of the water reconnection was a point of careful consideration. Earlier studies explore the water treatment ponds and reconnection as a more "natural" expression. It was ultimately decided that the ponds be geometrically ordered so as not to unduly disguise the truth of the system: that in fact the system is a man-made solution to a man-made problem.

Waterfall connection



The next issue then, was the manner in which the treated water from the bird sanctuary is reconnected to the body of water in the north fork of Putah Creek. This connection was seen as an opportunity to create a waterfall garden from the higher elevation of the bird sanctuary to the lower bed of the abandoned channel of the former creek. Purified water from the bird sanctuary is collected and channelled into an aquaduct-like structure where it is aerated as it falls approximately twenty-five feet into a collecting pool located on axis with the original water treatment plant. The lower garden is accessed by winding staircases and is intended to

offer seclusion from the rest of the campus by retaining its original terraced landforms as a recall of its former active creek condition. On the southern portion of the bird sanctuary axis, the former equestrian grounds would be graded so that the watershed for this area would collect along a spine and into a small pool set beneath a stand of shade trees. During periods of rainfall, excess run-off would flow northwards into another aquaduct structure and drop into the central collecting pool in the lower garden. During periods of rainfall the fountain would transform this hot, dry landscape into a cacaphone of falling water from two fountains. During dry periods, the southern waterfall would be mute.

The purified water is ultimately delivered to Putah Creek from the central collecting pool by means of a spillway into a framed surrogate riverbed where it is allowed to find a meandering path. The meandering path expresses the hydrological principle that a stream of water will flow in the pattern of a *sin* wave until it is interrupted by some obstacle or irregularity. The expression of this principle in hydrology is a symbolic gesture showing that it is now necessary to focus the attention and expertise of the science community on the repair of damaged environments.

The program called for the provision of a 20,000 s.f. hotel/conference centre and two buildings of 10,000 s.f. each to serve as Faculty Club and Alumni Centre including parking for 300 cars to be located within possible Addition Area 6. In keeping with principles of Colin Rowe, the overall form of the complex was decided on a larger scale using a collision of the mile-square grid with the original grid of the town of Davis. The buildings take on the expression of a "wedge" inserted into the landscape. From the interstate highway to the south, the presentational front of the building appears to conform to the dominant mile-square grid. The more informal north side conforms to the original

Hotel,
Conference Centre,
Alumni Centre,
Faculty Club

see Appendix A, p. A12
and Appendix C, p. C6

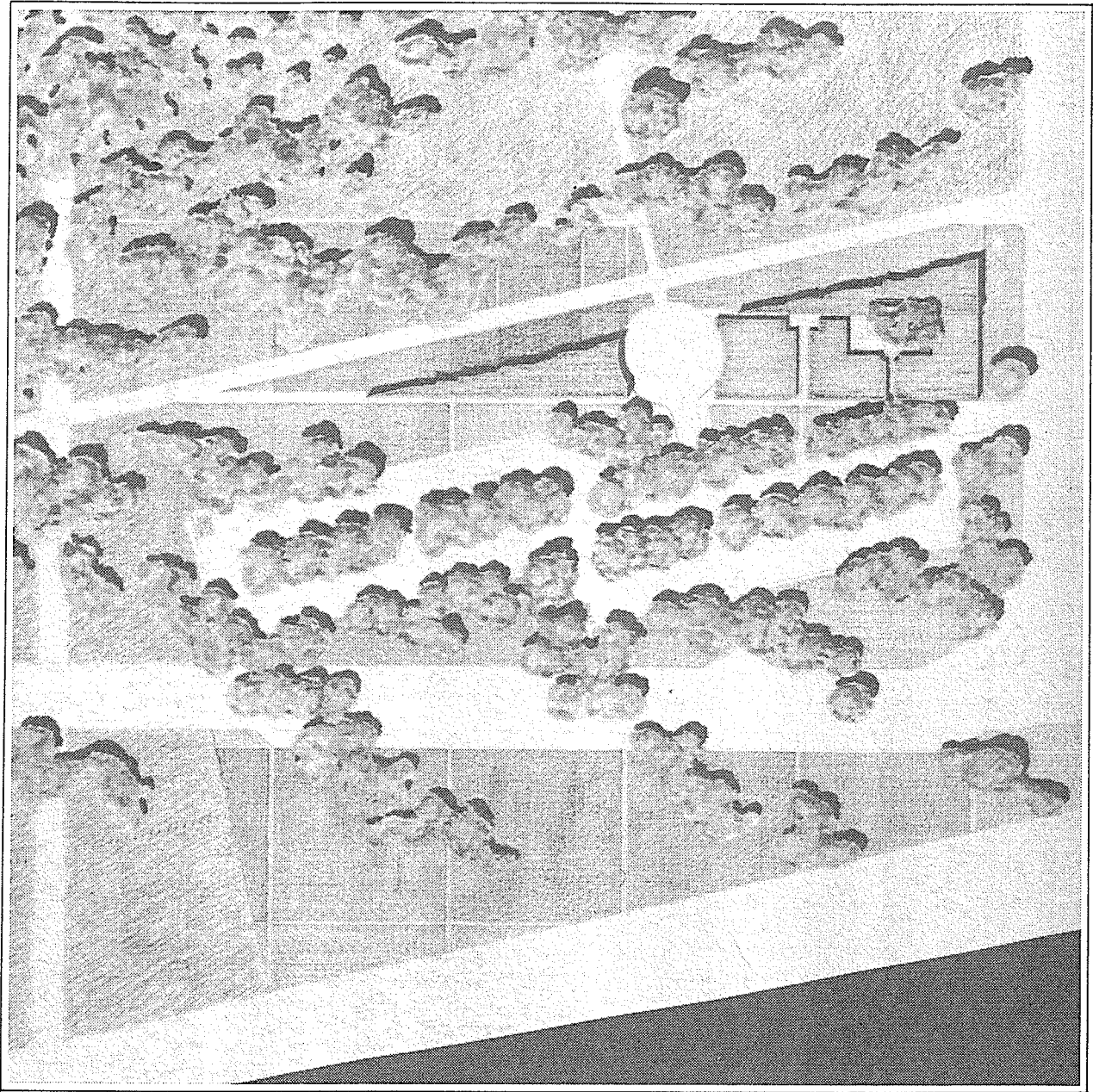


FIGURE 11
Hotel, Conference Centre, Alumni Centre, Faculty Club

orientation of the town of Davis and is "chiselled" or articulated in a scale more suited to the pedestrian who would use the gardens nearer to the arboretum.

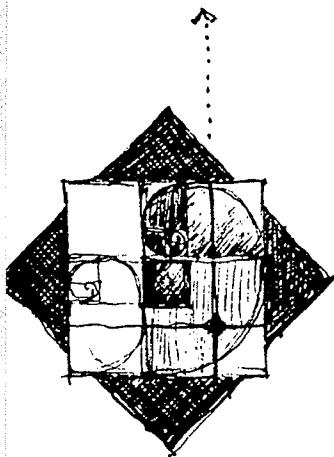
Visitor's Centre

see Appendix C,
p. C6

The visitor's centre was located in conjunction with the placement of the loop road system, the Museum of Natural History and gardens, and the existing Putah Creek Lodge. As outlined in the Questions and Answers addendum of the competition program, there was to be a tripartite relationship between the three building complexes to facilitate access and parking. The floor plan of the Information Centre, like the Hotel/Conference Centre, was suggested at the larger scale of colliding grids and was selected because it fit well into the generating pattern and was satisfactory in terms of traffic requirements and visibility from both the Interstate highway and incoming traffic to the campus.

Museum of
Natural History

History is interpreted by systematically collecting information from many sources and piecing together a "story" or viewpoint in order to explain an object, event, or circumstance. The Museum of Natural History and gardens is an attempt to express this concept. The practise of archaeology is implied by the marking of the square plot on the earth and systematically uncovering layers of the earth. The uncovering system is expressed through the Golden Section proportioning system developed by the ancient Greeks. The division of the square into ever decreasing squares and the resulting "spiral" that is generated using this proportioning system appropriately suggests depth and infinity. The central hollow is the result of removing the square, transporting it and dissecting into four parts. The four parts are placed on an axis which travels beneath the westerly structure, emerging on the lower terrace of the creek. The four buildings



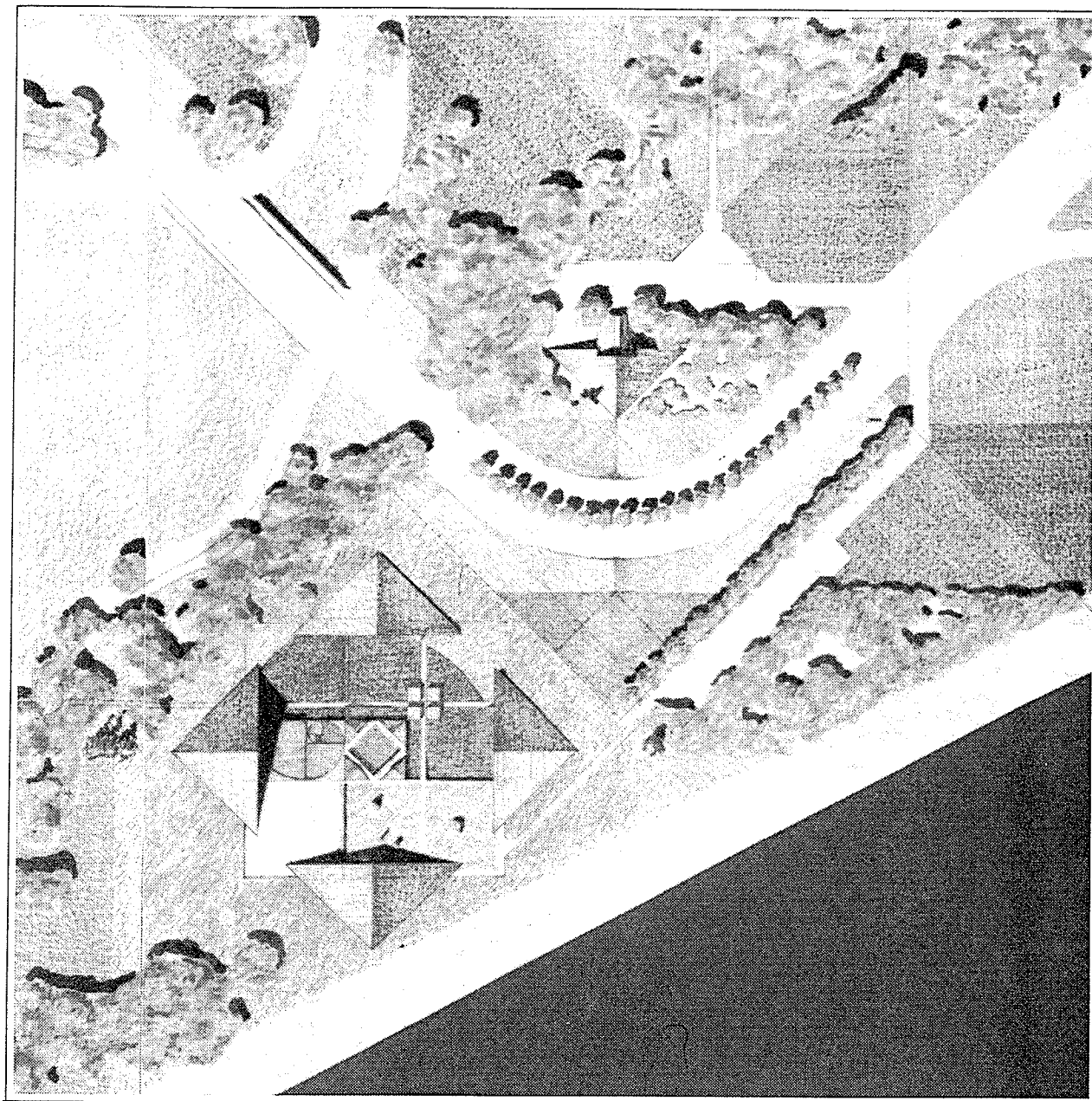
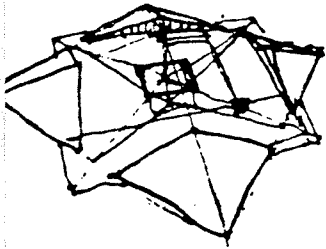
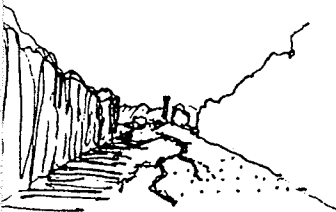
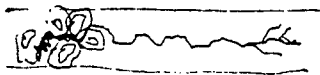


FIGURE 12
Museum of Natural History/Information Centre



West-Facing Garden

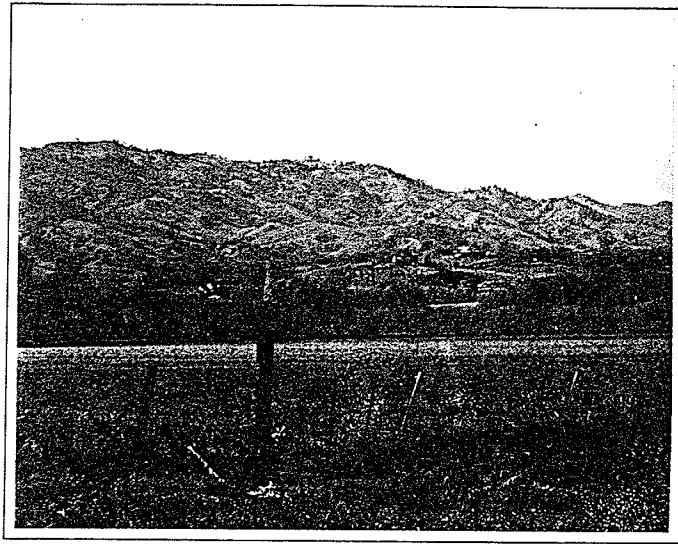


with triangular footprints focus on the central garden in a gesture of study. The positioning of the four buildings with gaps between them suggests the inherent incompleteness of historic recovery. Thus the focus of the complex is on the *act* of historical interpretation (the garden) and the fragments (the buildings) are ultimately assembled to produce a clear suggestion of the whole. Yet the whole is obviously incomplete and therefore, like history, bears the risks of misinterpretation.

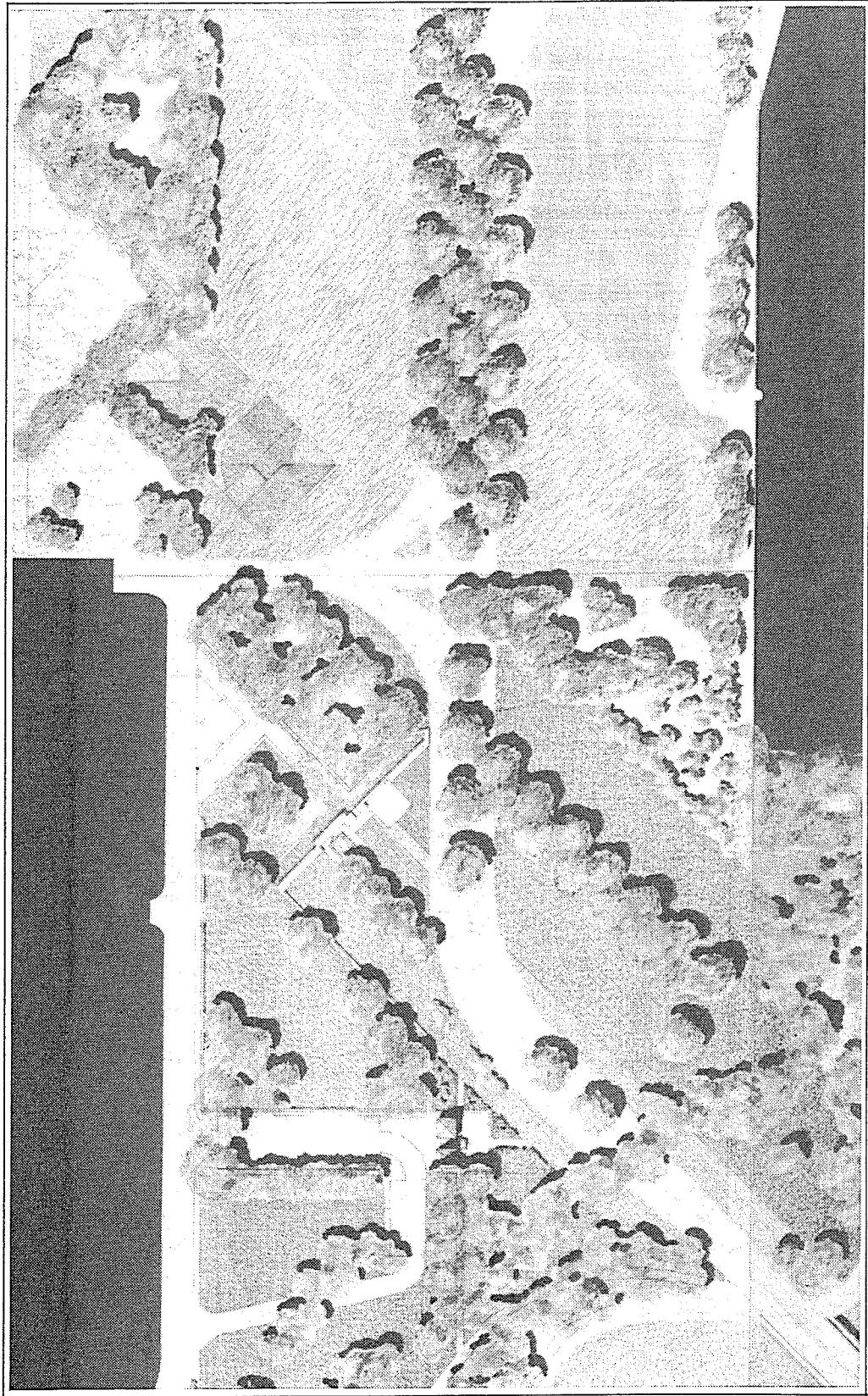
An example of an individual theme garden intended to be incorporated into the masterplan is the West-facing Garden. This theme garden is intended to be an allegory about faith, sustenance, and conservation. The coastal mountains to the west are presently visible from the Ruth Risdon Storer Garden for Water Conservation. The West-facing Garden refers to a combination of the Japanese Mikumari (*Water-distributing*) and the Kamunabiyama (*small mountains located near plains*) types of landscape spatial structures as identified by Higuchi.¹⁷ Traditionally, water in the Mikumari landscape was believed sacred and streams flowing from the mountains were considered to be god's road. The Kamunabiyama refers to a small type of sacred mountain located near a settlement on the plain. Traditionally the mountain was thick with forests and in sharp contrast with to the surrounding plain. These two themes correspond favourably with the existing geographical conditions at UC Davis (see Figure 1). At the west end of the garden would be a series of mounds representing the Coastal Range and the location of the source of Putah Creek. Looking west from the Risdon Storer garden of water conservation, the mounds serve the additional purpose of blocking the view to the waterfall garden

¹⁷ Higuchi, Tadahiko, *The Visual and the Spatial Structure of Landscapes*, pp.166-167.

beyond in a similar manner to the traditional English "Ha Ha".. The garden features a dry stone bed representing Putah Creek flowing from its source in the mountains and dispersing into a simulated alluvial fan just short of the Risdon Storer garden of water conservation. There would be no water in the "stream" symbolizing the pervading absence of spirituality in today's society. All that remains is the trace of "god's road".



9. Coastal Mountain Range



Medicinal Gardens/Entrance Allee

FIGURE 13

Conclusions

This project received an Award of Recognition in the master plan category by the jury for the Design Arts Competition for the University Arboretum at Davis, California in June of 1988. Special mention was made of the solution proposed for the water purification/bird sanctuary area.

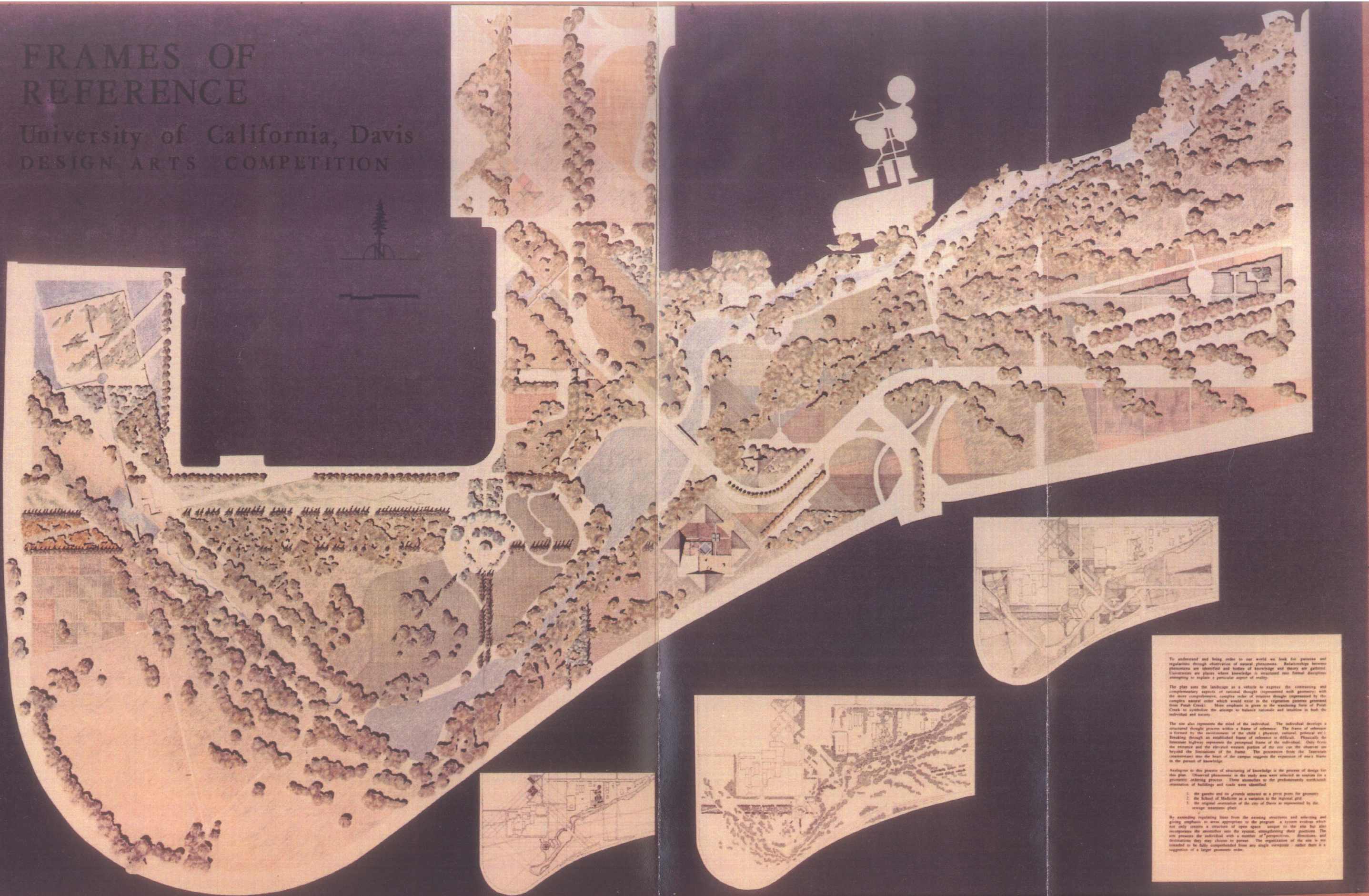
I feel that the practicum submission was successful in several aspects. I believe there is merit in the conceptual development of the project and the layering of organizational systems on the site. The compositional technique as adapted from Colin Rowe has value in generating ordering systems and in assessing and providing emphasis to program requirements. The requirements of the competition program were fulfilled in a manner that suggests social continuity and cultural meaning.

What is lacking is the security of a critical understanding of the context of the site in order to propose a specific workable solution. Throughout the design process, it became increasingly evident that it is difficult for a landscape architect to design appropriately for a region to which he/she is unfamiliar. A superficial understanding of the site and its context will lead to a shallow design expression and possibly the omission or destruction of meaningful opportunities. I believe that for a competition of this nature, where the history and particulars of the site were important considerations in the design solution and only cursorily understood, it was appropriate to develop a *design strategy* or *structuring system* rather than propose a final solution. What was presented was a possible structure of land into which individual thematic gardens could be incrementally situated. Ultimately, the final solution should be developed through a

process of study and consultation with local interest groups to gain an intimate understanding of the site in its historical and social context. In this manner the final solution can evolve, in response to local particulars, into a regional expression.

FRAMES OF REFERENCE

University of California, Davis
DESIGN ARTS COMPETITION



To understand and bring order to our world we look for patterns and regularities through observation of natural phenomena. Relationships between phenomena are identified and bodies of knowledge and theory are gathered. Universities are places where knowledge is organized into formal disciplines attempting to explain a particular aspect of reality.

The plan uses the language as a vehicle to express the contrasting and complementary aspects of rational thought represented such geometry with the more comprehensive, complex order of intuitive thought represented by the complex, organic order which would exist in the vegetation patterns generated from Faust Creek. More emphasis is given to the winding form of Faust Creek to emphasize the attempt to balance rationale and intuition in both the individual and society.

The site also represents the mind of the individual. The individual develops a structured thought process within a frame of reference. The frame of reference is formed by the accumulation of the child's physical, cultural, political, etc. Breaking through an established frame of reference is difficult. Physically, the landscape highway represents the perceived frame of the individual. Only from the structure and the relevant external portion of the site can the observer see beyond the limitations of the frame. The progression from the landscape highway into the heart of the campus suggests the expansion of one's frame in the pursuit of knowledge.

Analogue to the process of structuring of knowledge in the process of design for the plan. Observed phenomena in the study area were selected as sources for a geometric ordering process. These analogies to the predominantly northwest orientation of buildings and roads were identified.

1. the geometry and its grounds selected as a point point for geometry;
2. the School of Medicine as a variation to the regional grid;
3. the original orientation of the city of Davis as represented by the average geometric plan.

By extending regularizing lines from the existing structure and selecting and giving emphasis to areas appropriate to the program, a system order was not only created, a structure of open space emerged to the site but also incorporated the anomalies into the system, emphasizing their positions. The site presents the individual with a number of "perspective" directions, and directions they may choose to pursue. The organization of the site is intended to be fully comprehensible from any single viewpoint rather than a suggestion of a larger pattern, only.

FIGURE 14
Masterplan Submission

Appendix A

COMPETITION PROGRAM

Design Arts Competition
The University Arboretum
University of California
Davis, California, 95616 U.S.A.

The University of California and the National Endowment for the Arts are pleased to announce an International Design Arts Competition for roughly 125 acres of botanical garden land surrounding the U.S. Interstate 80 entrance to the U.C. Davis campus. An additional 110 acres of possible additions are also included in the competition, bringing the potential acreage to 235 acres. Competition lands are part of a long range plan commitment for The University Arboretum at Davis to develop a campus entry which has earth arts and landscape sculpture as the primary determinants of form. Because The University Arboretum has horticultural research and education as its main function, hardscape should give way in the competition to solutions which utilize plants and earth as the fundamental space defining elements. Hardscape and architectural elements can be used to bridge concepts but it is important that access to the soil not be limited. Architecture might also support concepts where a visitor's center, conservatory, garden rooms, restrooms, large amphitheatre, or plant science oriented facility is suggested. The competition hopes are for solutions which are inspiring with a strong sense of excitement, unity, and place, where human scale activities are encouraged. Circulation through the gardens should encourage use.

UNIVERSITY OF CALIFORNIA AT DAVIS CAMPUS

The Davis campus, founded in 1906, is the third oldest campus in the nine-campus University of California system. With approximately 20,000 students and about 1,500 faculty, it offers a full range of undergraduate, graduate, and professional programs. It is a major research university recently ranked in the top 20 by the National Science Foundation. The total campus area comprises approximately 3,800 acres, including a University airport. The campus includes the College of Agricultural and Environmental Sciences, College of Letters and Sciences, College of Engineering, School of Law, School of Medicine, U C's only School of Veterinary Medicine, Graduate Division, and the Graduate School of Administration. With over 70 graduate programs, Davis is considered the most diversified UC campus.

The University of California at Davis has very well respected Departments of Environmental Design and Art. Programs in these departments have been ranked nationally among the top five, and faculty have received many national and international awards. Davis has made a commitment to the arts and design on campus, including the outdoor display of works by internationally known artists and landscape designers such as Giambruni, Gillman, Halprin, Eckbo, and Church.

The city of Davis is a progressive college town of 40,000 people. It is located in the fertile Sacramento valley, 72 miles northeast of San

Francisco, and 15 miles from Sacramento, California's capital. Within an hour's drive is the famed Napa Valley and its wineries to the west, and the historic Mother Lode country to the east. The coastal areas are two hours away, as is Lake Tahoe and the Sierra Nevada with its excellent ski areas. Davis is internationally known as the first U.S. city to enact energy conservation ordinances, the first to establish cooperative cable systems, and is recognized as a leader in such areas as growth management, land trust preservation, and cooperative insurance.

THE UNIVERSITY ARBORETUM

The University Arboretum was established at the Davis campus in 1936. Located along the banks of the old north fork of Putah Creek, existing collections occupy approximately 50 acres along a two-mile length. With an additional 100 acres of water surface and undeveloped land, the arboretum presently totals 150 acres. The University Arboretum is one of the few botanical gardens in the United States not fenced. It serves as a community park and recreation area, an educational facility for some of the world's top plant science programs, and as a major research facility for students and faculty. Because the prevailing climate in Davis closely resembles that of the Mediterranean region, with cool, wet winters and hot, dry summers, the extensive collections well illustrate the variety and range of trees, shrubs, and perennials adapted to such conditions.

The University Arboretum has had a number of major renovations and garden additions over the last fifty years. Lawrence Halprin revised the UC Davis Long Range Master Plan in the early sixties and added some of the most noted design elements to the Arboretum. In the late sixties Ted Osmundson and Mai Arbergast supervised a very extensive development project throughout the length of the Arboretum with major lagoons and pathways added. Some of the most notable collections in the Arboretum include Shields Oak Grove with over 70 oak species from around the world, the Mary Wattis Brown Garden featuring California natives, the Carolee Shields White Garden surrounding the gazebo, the Weier Redwood Grove, and the Ruth Risdon Storer Water Conservation Demonstration Garden.

THE COMPETITION CHALLENGE

The University of California campus at Davis is in great need of an improved entryway at Interstate 80. The University Arboretum is in great need of expanded botanical collections which serve the research and educational needs of the campus community. The Davis community is in great need of expanded access to recreational and contemplative gardens. The policy commitment of the University of California to art on campus has created a great need for diverse design arts projects in the campus landscape. The National Endowment For the Arts has recognized these needs by cosponsoring an international competition to find solutions.

The Design Arts Competition has two basic categories for entry. First, the registration package contains a large base map of all primary and secondary competition lands as well as aerial photographs, on-site photographs, and expanded program information. These lands are relatively undeveloped at this time. Conceptual planning for the 100 acre primary area and the 112 acre

secondary addition areas will be the emphasis of category one and this category will involve some functional design. The location of the west campus loop road and the entrance road should be determined in terms of future location. A campus and arboretum visitors' center must be planned as well as circulation for new gardens, and the possibility of a natural history museum.

In category two, entrants may only be concerned with a conceptual idea for individual gardens located anywhere within the competition area. The concept should be somewhat tied to the existing dimensions of the environment but because the existing land is now relatively featureless, the concept could be a flight of fancy functioning totally on its own. Entrants to category one could expand the detail of conceptual gardens presented in category one and then enter them in category two. It must be remembered that individuals can enter either category or both.

Although The University Arboretum is open minded about potential botanical collections, the drylands theme is most desired. Irrigation and maintenance will be kept to a minimum. The University Arboretum is one of the few in the country not fenced. Vandalism is not a problem, but security for fragile artwork should be a consideration. Some of the collection ideas which could be supported by the entrants include palm gardens, desert gardens, prairie gardens, medicinal gardens, fragrance gardens, habitat gardens (butterflies, birds, etc.), historic orchards, historic agricultural landscape gardens, historic period gardens, California native landscapes, oriental gardens, Mediterranean gardens, African gardens, South American gardens, and Australian and New Zealand gardens. A peace garden or memorial groves for arboretum patrons would also be desirable. Consideration for irrigation may be given to theme gardens of California native woodlands, Eastern USA woodlands, agricultural demonstration pastures where livestock might be grazed, or ecological transect gardens where plants are arranged by altitude, weather, or topography. Although specific plant species should be suggested in competition entries if form is crucial to the solution, actual plant selections will be made by Arboretum staff.

Because this area is very visible from Interstate 80, the University is looking for solutions which are unique and make a very creative statement of entryway. The existing Arboretum is largely located along a creekside environment which greatly ameliorates a hot and dry summer climate. Solutions should address the recreational issue of attracting visitors away from the water and into these new gardens. Lastly, the University hopes to have some of the gardens become strong enough statements in the design arts that they can be cataloged into the University's art and design collections as well as the botanical collections.

ELIGIBILITY

This is a single-phase open national design competition. All Landscape Architects, Architects, Environmental Designers, Artists and Plant Scientists are eligible to compete. Students are eligible to compete if their work is professionally supervised and so indicated on the entry form.

AWARDS

The awards include \$15,000 in cash prizes plus commissions to further develop the winning design upon securement of project funding. Design commissions may go to several of the winners. Because of the two category structure of this competition, it is possible that a composite design, utilizing several of the winning designs, will be necessary. Such a composite design would be the responsibility of the University of California. All final decisions regarding a compromise solution will be the responsibility of the University of California.

Further commissions for design implementation, construction documents, and supervision will occur on a standard hourly rate as mutually agreed upon. Standard University of California reimbursement rates will apply to travel and expenses. Maximum billable hours and reimbursements will be agreed to based on standard professional percentages of estimated project costs. Individuals without professional registration for producing construction documents in California will consult on the preparation of working drawings under supervision of the professional environmental design staff of the University of California or its designee.

Although architectural building footprints may be shown and themes alluded to in sketches, this is a garden design competition and future contracts for building design will have nothing to do with this competition. The University Arboretum will be obligated to recommend implementation of a long range plan for the competition area based on winning entries. The higher authorities in the University of California may or may not accept this recommendation in whole or part.

The cash prizes shall be awarded as follows:

	Category One Overall Master Plan	Category Two Individual Garden
First Place:	\$5,000	\$3,000
Second Place:	\$2,500	\$1,500
Third Place:	\$1,250	\$ 750
Awards of Merit: (Four or possibly more)		\$ 250 each

OWNERSHIP OF SUBMISSIONS

Cash award entries will become the property of the University of California. Entries that do not merit prizes will be available for retrieval from the University, in person, by competitors or their agents from May 31, 1988 to June 30, 1988. No provision will be made to mail or ship any entry back to competitors. Entries not claimed will not be returned. The University of California reserves the right to freely use any entry materials receiving cash awards in whole or in part without any compensation beyond that awarded.

No feature from an unsuccessful submission will be incorporated into the final selected design without the permission of the author of the specific design feature. If the University desires to make use of any individual feature of an unsuccessful entry, the same may be obtained by adequate compensation to that competitor of an amount to be determined or negotiated by the University of California and the competitor. Nothing original in an unsuccessful design will be used without giving the competitor due credit.

Selected entries in the Competition may be exhibited in a local public place after Jury selection. The University of California reserves the right to display, reproduce, and publish all entries. In the event that disputes may arise in the Competition process, the Arboretum Director has been delegated the responsibility to attempt to resolve any and all disputes by arbitration and discussion with and for competitors, jury, and/or the Sponsors.

THE SCHEDULE

Registration Opens	September 1, 1987
Programs Available	October 15, 1987
Registration Closes	Feb. January 15, 1988
Questions Accepted	September 1, 1987
Question Period Closes	January 15, 1988
Answers Mailed	January 29, 1988
Jury Deliberations	April 1988
Announcement of Winners	May 1, 1988

COMMUNICATIONS AND QUESTIONS

For registrants desiring information of any kind regarding the competition, or the program, they shall ask for this information by written request to the Arboretum Director and in no other way. Any request and answer thereto will be sent simultaneously to each registrant as an addendum to these regulations. No questions received after January 15, 1988 will be answered. All answers will be sent to competitors before January 29, 1988.

THE JURY

Theodore Hullar
Chancellor
University of California, Davis

Dr. Marc Cathey, Director
The National Arboretum
Washington, D.C.

Lawrence Halprin, ASLA
Halprin Associates, Landscape Architects
San Francisco

James Wines, AIA
Site Inc., Architects
New York

Robert Arneson
Artist and Sculptor
Benicia

Dr. Mildred Mathias
University of California, Los Angeles

COUNSELING JURY (Alternates)

Larry Vanderhoef
Executive Vice-Chancellor
University of California, Davis

Dr. Richard W. Harris
Professor Emeritus
University of California, Davis

Lou Weiss
Architects and Engineers
University of California, Davis

Robert Kelleher
Physical Plant
University of California, Davis

Warren Roberts
The University Arboretum
University of California, Davis

Mary Burke
The University Arboretum
University of California, Davis

James Wockenfluss
University Cultural Programs
University of California, Davis

James F. Sullivan
Business and Finance
University of California, Davis

Mike Corbett
Davis City Council
City of Davis

The Jury will carefully study the program and any modifications thereof, which may have been made through "Communications and Questions", and will then consider the remaining entries, holding at least one session, and considering at this session all entries in the Competition. Selection of the finalists and awards will be by secret ballot and majority vote. Final award selections will be made before opening the envelopes which contain the names of the competitors.

In making the selections, the Jury will thereby affirm that it has made no effort to learn the identity of any of the various competitors. The Jury will do everything possible to maintain the anonymity of the competitors until the end of the selection process. In the event that a juror inadvertently learns the identity of any of the competitors, that juror will make

this known to the Arboretum Director and will abstain from voting on that entry throughout the jury process.

After the final selection by the Jury is complete, the Arboretum Director will open the Competitor Identification Envelopes and sign each winning entry on the back side of the boards declaring the awards and finalists so granted. The Arboretum Director will then announce the decision of the Jury.

The Jury shall make its selections and recommendations in conformity with the requirements of the program and award any cash prizes. The decision on which entries will receive prizes shall be made at the sole discretion of the Jury and such decisions shall be binding on all parties.

GENERAL PRINCIPLES TO BE OBSERVED IN THE DESIGN REVIEW BY THE JURY

In adjudicating the entries, the Jury will take particular account of the following objectives:

- a. The aesthetic, landscape, and architectonic expression in the community setting;
- b. The clarity and efficiency of the total solution;
- c. The suitability of the entry to the program; and
- d. The economy of the solution in construction and in practice.

REPORT OF THE JURY

The Jury will make a full report setting forth its reasons for the selection of the finalists and cash award winners. A copy of this report, prepared by the Arboretum Director will be available for public review.

RECEIPT OF SUBMISSIONS

Submissions must be received no later than March 15, 1988 (5:00 PM, Pacific Time). The University Arboretum will receive and record upon delivery each submission and will make available to the Arboretum Director all entries for his review. The Arboretum Director will forward to the Jury all entries that meet the submission requirements. The University Arboretum disclaims responsibility for loss or damage of entries while in transit from the entrant. All submissions should be sent to the University Arboretum at the following address:

Design Arts Competition
The University Arboretum, TB-32
University of California
Davis, CA 95616 U.S.A.

The entries to be submitted should bear no name or mark which could serve as a means of identification, nor should any competitor directly or indirectly

reveal the identity of his/her entry, nor communicate directly regarding the competition with representatives of the University of California, any member of the Jury, nor the Arboretum Director, except as provided under "communications and questions". In submitting an entry, each competitor shall certify compliance with the foregoing provisions and agree that any violation may result in disqualification. Each board of each entry should include a Competitor Identification Envelope containing the entry form. The form should be duplicated and signed for each board. The Competitor Identification Envelope shall be taped on the back, upper right hand corner of each board submitted.

Double wrapping of entries shall be required: the outer wrapping shall carry address and transit stamps and shall be removed by an assistant; the inner wrapping of opaque paper shall bear no mark or identification of any kind and shall be opened by a representative of the University of California. The Competitor Identification Envelope shall be securely attached to the back of each board in the upper right hand corner.

REGISTRATION KIT CONTENTS

Sheet A: Base Map at 1" = 100'

Sheet B: Aerial Photograph at 1" = 100'

Sheet C: Base Map with keyed photographs at 1" = 200'

Competition Program

Supplemental Information on The University Arboretum

GENERAL INSTRUCTIONS

Each entrant shall submit an original or copy of all material requested. Submittals become the property of the University of California and will not be returned other than those described in Section 1.10 "ownership of submissions". Materials not specifically required are not to be included and will not be considered in the selection process. The general drawing requirements are as follows:

- a. Boards should measure 40" x 32" (forty inches by thirty-two inches--the long dimension must be vertical) and be of rigid white board, stock, or foam core.
- b. All drawings must be drawn on or attached to the boards. Firmly mounted prints or copies of drawings can be attached to the boards.
- c. Blackline, blueline, or sepia prints are acceptable and can be mounted directly on the boards.

- d. No photographs will be permitted as substitutes for the drawings.
- e. Nothing shall be mounted on the surface of the boards or shall project beyond the boundaries of the boards.
- f. For Category 1, the base map will be presented at a scale of 1" = 100'. Only two boards shall be allowed for Category 1. Only one entry can occur for Category 1.
- g. For Category 2, the individual garden shall be at a scale appropriate to proper presentation. One 40" x 32" board shall be allowed for Category 2 for each garden. The entrants may enter as many gardens as desired. Each board for Category 2 should have a location map.
- h. Lettering may not exceed three inches in height.
- i. An appropriate north arrow must be placed on the boards where necessary.
- j. The use of color or shadowing on the drawings is left to the discretion of the entrant.
- k. Elevations, perspective sketches, or focal area enlargements will be at the discretion of the entrant.
- l. A typed narrative, on 8½ x 11" white paper should be prepared which explains the designer's concept of the scheme. It should also explain how the scheme relates to the site and its surroundings and how it fulfills any functional requirements. The narrative shall be typed for clarity and ease of reading by the Jury. The narrative may not exceed one typewritten page and shall be mounted directly on Board #2 of Category 1 and each board of Category 2. There is no limit to the number of words on the page.

COMPETITION GUIDELINES

The competition area is comprised of two zones whose boundaries will be recognized by all competitors submitting design solutions. These zones have been established to insure harmony of scale, style and function in the development of design proposals.

The first zone comprises land presently assigned to the University Arboretum. Zone one has areas labeled A through G on the aerial photograph. This land forms the core of the competition. The areas are noted on the aerial photograph and are described as follows:

- A. In Area A east end collections occupy approximately 47 acres with 6 acres in surface water. Any alteration of this area should be minimal. This is not to be taken as "untouchable" but a realistic approach is that existing collections should only be disturbed for a dynamic design element that is worth the loss. The north fork of Putah Creek in this area is not a real stream, although extensive riparian vegetation exists on the west end. The north branch of Putah Creek was cut off from the south fork in the 1800's. The creek bed is now a lake fed by storm

water. Some discussions of extending this water into other competition areas has been discussed, as have discussions of fountains and water features. Water quality is not good enough for water sports. The creek environment offers the only topographic relief in an otherwise flat site. The creekside environment has slopes varying from 2:1 to 5:1. The water surface varies approximately 10-20 feet below the competition lands depending on old flood terrace location.

- B. There are 27 acres in this parcel surrounding the campus entrance at Interstate 80 and Old Davis Road. Along the north border of this parcel, the historic roadway east and west through Davis once ran. The base map shows two possible locations for a future campus loop road through this area. These alternatives have been aligned to avoid sensitive landscapes. However, competition entrants are encouraged to feel free to add design elements (traffic circles, bridge, themes, etc.) and to slightly adjust alignments as long as entrance automobile stacking distances are retained and the planted collections and trees are disturbed as little as possible. A gateway on the east where the loop road enters the future arboretum would be desirable. This parcel should also contain a campus visitors' center, which would also serve as an arboretum visitors' center. This structure should contain a building of approximately 6000 sq. ft. with interacting gardens. A parking area for 50 cars should serve the facility as well as the Putah Creek Lodge. A drive-by window with a turn-around for delivery trucks, as well as bus shelters, should also be included. Old Davis Road (and the kiosk) between Interstate 80 and California Avenue Bridge will eventually be removed. Designs in Area B should be flexible enough to improve the area immediately, but allow for the loop road and visitors' center to be built within ten years. It is hoped that some symbolism of the agricultural role of UC Davis might be possible in this area presently surrounded by farmland.
- C. Area C is 17 acres of productive farmland. It is presently leased for agricultural row crops. A parking area for 25 cars would be desirable in this area near the gazebo. A small bathroom facility is also highly desirable in this area. A gateway to the north, where the loop road enters this area should be a consideration. Garrod Road should be relocated as shown on the base map and the upper portion retained as an entrance to the UNITRANS Barn. Entrants should again feel free to slightly alter the Loop Road alignments and intersections in this area as long as the road is functional.
- D. Area D is referred to as the Demonstration Garden Area. It is approximately five acres and is oriented directly east-west. A long axis through the site offers views of the nearby Coast Mountain Range. The Ruth Storer Garden exists on the western edge (as part of area A) as the first demonstration garden emphasizing water conservation. This garden is quite successful but too complex in maintenance and layout to be carried throughout the entire five acres as the design style.
- E. Shields Grove is 7 acres of oaks collected from around the globe. Over 70 species are included in the grove. The oaks are relatively young and the understory landscape is dry and slightly weedy. As the grove

matures, it would be desirable to have a designed groundplain. It should be remembered that most oaks favor a dryland environment and not lawn.

- F. Approximately 16 acres are included in the Arboretum Pasture. This area is presently on loan to the Equestrian Center for grazing. Drains were recently constructed into this area from the Equestrian Center. This is an undeveloped section of the old bed of the north fork of Putah Creek. The panhandle to the northwest is a trail easement which will one day take bike trails to the Garrod Drive Bridge across Highway 113 to a planned campus greenbelt along the old bed of the north fork of Putah Creek located on the west side of the highway. Having water back in this area is a likelihood. The old creek bed follows the area where the trees are in a narrow band. A small portion of the Shields Oak Grove can be seen in the aerial in this area on a wide flat terrace that goes from one end of the area to the other.
- G. The Putah Creek Lodge is a facility managed by the Student Union. It is largely a retreat location for classes and celebrations. It is 7 acres on long-term loan by the Arboretum. The landscape is mostly lawns with picnic areas and grass sports areas. This area (as with Area A) should be altered only if totally necessary.

There are six areas shown on the aerial photograph as possible additions to the Arboretum. They are numbered 1 to 6 in order of feasibility for addition. The decision to include these areas is totally at the discretion of the entrant. Uniqueness and appropriateness of entered designs will determine whether or not these lands will be added to the Arboretum. If an entrant would like to integrate gardens with a rough site plan for any proposed facilities, this would be welcome. Descriptions of the areas are as follows:

- 1. Possible Addition Area 1 is a horse pasture of approximately 14 acres. This area is now flood irrigated so it has the potential for a more water consumptive landscape. A 20,000 square foot natural history museum is being discussed for the campus. This museum would display much of the UC Davis biological collections. If this area seems appropriate to the entrants for such a facility, some of the potential collections mentioned earlier might co-exist, including habitat gardens, grass collections, or transect gardens. The museum might also share parking with the visitors' center and Putah Creek Lodge. This would only be possible with the southern loop road alternative. An organized research unit focused on the plant sciences might also be possible with four 6,000 square foot buildings and 24,000 square feet of outdoor research area. If the loop road goes north of the lodge, the isolation of this area calls for a program based on collections which benefit from being isolated and are not hurt or ignored by it. There is a maintenance access road on the north border of this area which goes through to the Equestrian Center. This area is very visible from Interstate 80.
- 2. Possible Addition Area 2 is a 6-acre parcel including a portion of the Cole Animal Research Facility plus a number of shake and shingle bungalows surrounding the Arboretum headquarters. The Arboretum

headquarters is a facility which weaves in and out of this area. Hence the label of the Arboretum headquarters appears on the aerial to the northwest of the actual center of the facility rather than below the line. The Arboretum has several small bungalows, a restroom facility, a greenhouse, and outdoor holding areas for plants. The bungalows are historic resources and the Arboretum would eventually like to control all of the bungalow area. The oval to the left is the old Cole Facility Horse Arena with barns and pastures surrounding it. These will likely be removed. This area is viewed as a future green area across from the new Food and Nutrition Building and midway between Mrak Pond (out of the competition area to the east) and the gazebo. This may be a good area for a plant research and conservatory complex where butterfly farms or similar exotic landscapes could be housed inside. An edible landscape focused on world hunger could surround the facility or a similar type of irrigated garden. A redwood grove exists at the west end of the arena.

3. Possible Addition 3 is approximately 10 acres and serves as a training area for Equestrian Center horses. There is a proposal to raise water quality in the old north fork of Putah Creek Channel by building natural area treatment ponds in this area. The output of the sewage treatment facility is now pumped to the south fork of Putah Creek (a live stream to the south of campus). By pumping up to these ponds and having treated water fall through a series of ponds back into the old north fork of Putah Creek and then flowing through it to the east, the water could again be pumped to the south fork. This would end the closed system problems.
4. The Equestrian Center is 35 acres of developed horse pastures, barns, polo fields, and arenas. The Equestrian Center is programmed to move to facilities south of Interstate 80 at some point in the future. Although access to this area is very remote, the area is being considered for cooperative student housing including four 6,000 square foot homes and two dozen 250 square foot living domes to be relocated from elsewhere. A 40 car parking lot would be necessary for the housing option. The 20 acre experimental student farm might also be moved here. The Arboretum would penetrate this area as fingers.
5. Possible Addition 5 is 19 acres of productive farmland which would extend the Arboretum north toward the campus core adjacent to the Medical Center. This area is presently being considered for an organized research unit oriented toward the University of California's only Veterinary School. ~~(If collections extend north, then four 20,000 square foot buildings around a central quad with surrounding pastures totaling 5 acres should be integrated with arboretum plantings, and parking for 20 cars should be planned.)~~ A garden emphasizing human and animal relations might occupy this area.
6. Possible Addition Area 6 is prime undeveloped agricultural land totaling 28 acres. It will eventually be bounded on the east by a new road connecting the California Avenue Bridge with the loop road as shown on the base map. South of the loop road, a 20,000 square foot hotel and conference center is being proposed. The hotel and conference center should take advantage of and integrate with Arboretum gardens to the west. Parking would be to the east. Parking for three hundred cars is

deleted -
see p. 6 of
Q and A.
M - 1

desirable, even if some parking had to occur north of the loop road. North of the loop road, core area academic program buildings will eventually reach this area or a campus sponsored research park. Either facility could be viewed as a series of 10,000 to 20,000 square foot buildings joined by quadrangles and parking. The Arboretum would form fingers penetrating to the quads.

deleted.
see p. 6
+
Q & A
(App. C)

The program as outlined is quite flexible. The overall goal is to build a campus landscape of varied style where unique gardens play a central role in supporting the excellence of campus plant science and design arts programs in serving the public. The University of California sincerely appreciates your willingness to join in this effort.

Appendix B

SUPPLEMENTAL MATERIALS

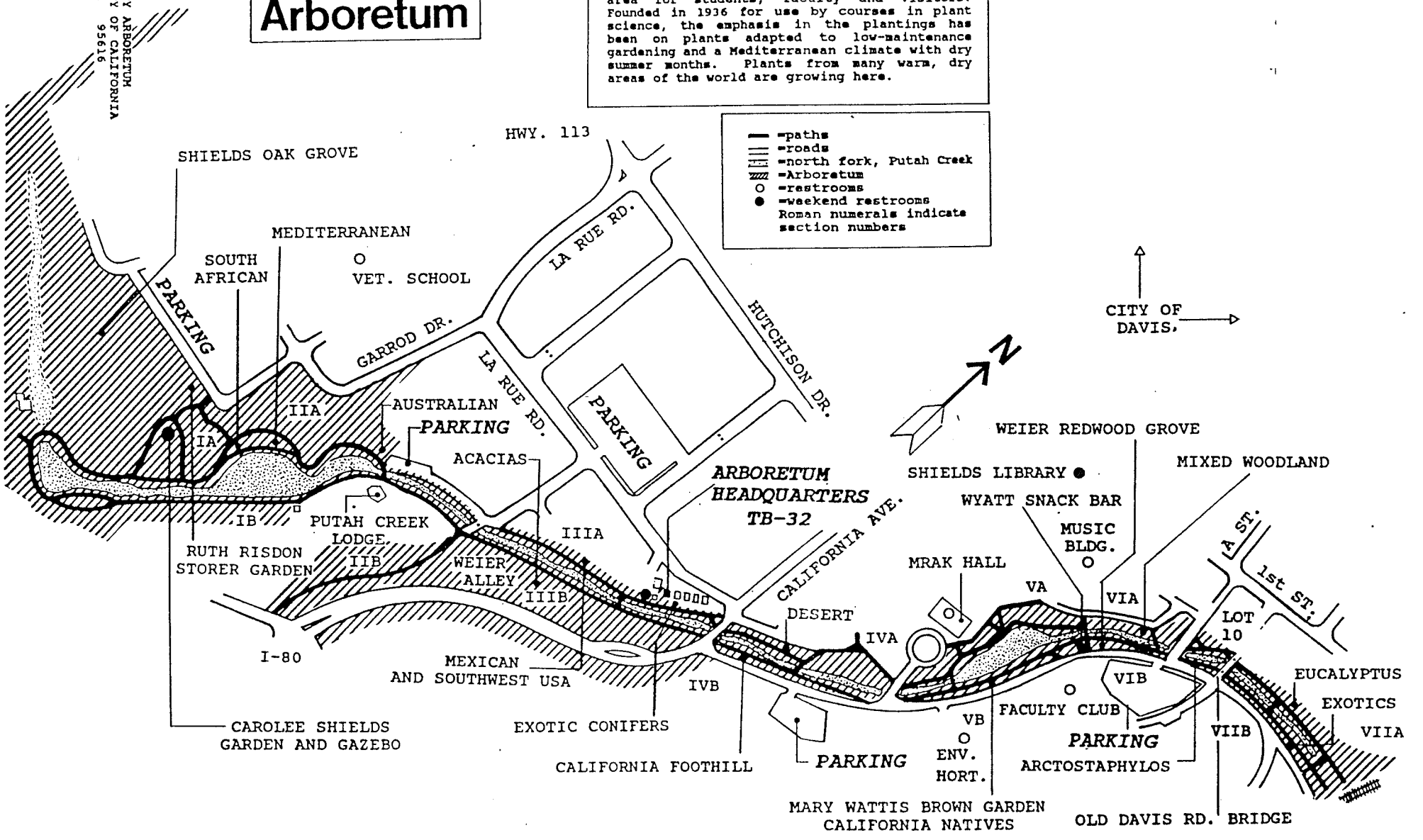
1. ARBORETUM ACADEMIC PLAN (DRAFT)
2. MAP OF ARBORETUM COLLECTIONS
3. DEMONSTRATION GARDEN BROCHURES (OUTTAKES)
4. GENETIC RESOURCES PRIORITIES
5. SAMPLE COPY OF ARBORETUM NEWS
6. FALL TOURS SCHEDULE
7. RECENT HIGHWAY LANDSCAPING SURROUNDING SITE
8. CAMPUS SOILS
9. MISC LOCAL MAPS

UNIVERSITY ARBORETUM
UNIVERSITY OF CALIFORNIA
DAVIS, CA 95616
40821

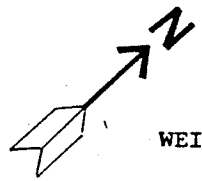
University Arboretum

The University Arboretum, University of California, Davis occupies about 120 acres in a 2 mile strip along Putah Creek on the south part of the Davis campus. It serves as a park, an educational facility and a recreation area for students, faculty and visitors. Founded in 1936 for use by courses in plant science, the emphasis in the plantings has been on plants adapted to low-maintenance gardening and a Mediterranean climate with dry summer months. Plants from many warm, dry areas of the world are growing here.

- paths
- roads
- north fork, Putah Creek
- ▨ Arboretum
- restrooms
- weekend restrooms
- Roman numerals indicate section numbers



CITY OF DAVIS.



self-guided tour

PETER J. SHIELDS OAK GROVE



University Arboretum
University of California, Davis

self-guided tour

RUTH RISDON STORER GARDEN



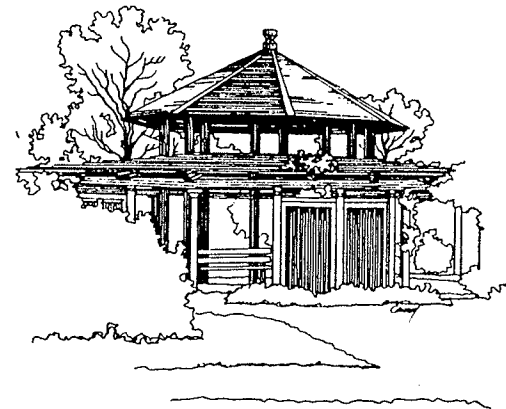
Isomeris arborea

a low maintenance,
water conserving garden

University Arboretum
University of California, Davis

self-guided tour

CAROLEE SHIELDS WHITE FLOWER GARDEN



University Arboretum
University of California, Davis

Peter J. Shields Oak Grove

Shields Grove is a 15-acre planting of oak trees dedicated to the late Judge Peter J. Shields. A Superior Court judge in Sacramento for 49 years, he also maintained a lifelong interest in agriculture. The judge's vision of the future of agriculture inspired him to write the legislation which established the Davis campus. The planting of a grove of oaks, with their promise of future growth, beauty, and scientific usefulness is an appropriate tribute to such a man. One day after Judge Shields' 100th birthday, April 15, 1962, the Grove was named in his presence.

Located along the north fork of Putah Creek, the Grove has many uses. It is a pleasant retreat for students, faculty, and visitors, as well as a teaching collection for students. In addition, it is a research tool—both for the study of the taxonomy of the genus and for developing selections for tomorrow's landscapes.

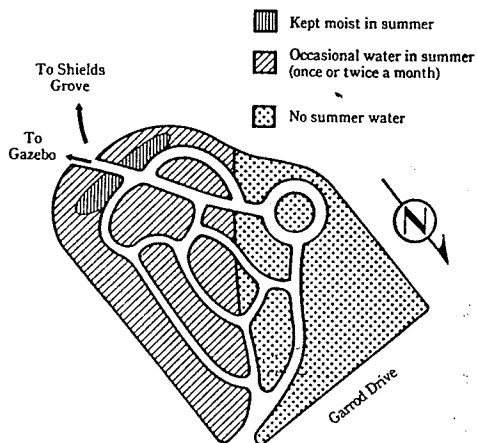
Oaks have long been heralded as symbols of strength, longevity, and dignity. The genus *Quercus*, the oaks, includes over 450 species. They occur in North and South America from Canada through the U.S., Mexico, and Central America, to the northern Andes, and from eastern Siberia through Asia, to Europe, and North Africa. Oak trees furnish timber for buildings and furniture, tanbark for tanning leather, cork for a variety of uses and food for man and his animals. As a component of the environment they provide protection and food for wildlife and areas for public recreation.

Oaks may be either evergreen or deciduous and possess a wide variety of leaf forms. They all have a special fruit called an acorn—a smooth nut surrounded by a hard woody cup. The characteristics of this nut, its cup, and covering of scales, often help to identify a particular species.

To begin the tour, go to the east side of the Gazebo where you will see a large boulder. The tour consists of a series of "information stops", each marked by a numbered stake. A map to help locate the stops along the tour is located in the center of this booklet.

THE RUTH RISDON STORER GARDEN

The Storer Garden is located along the asphalt path which leads from Garrod Drive to the Shields Gazebo. To begin the tour walk to the northeast corner of the garden where you will find a post marked #1. A map which gives the location of each of the numbered posts—or "information stops"—is located in the center of this booklet.



Year-Round Color

The Ruth Risdon Storer Garden is an easily maintained garden which provides a display throughout the year as it changes its color and character. Dramatic in spring, colorful in summer, and delightful even in fall and winter, this garden deserves to be viewed in every season.

Water Conservation

The Storer Garden exhibits plants with various water requirements. The southern end, by the oaks, receives some shade and regular summer water. As one moves north toward the road the beds receive less frequent watering. The north-western section receives no summer irrigation at all. The plants found growing there are for the truly minimum maintenance gardener.

THE CAROLEE SHIELDS GARDEN

The Carolee Shields Garden, which surrounds the gazebo, is a white-flower garden. White was the favorite color of Carolee, Mrs. Peter J. Shields, and her own lovely garden contained mostly white flowers. She was a soft-spoken, gracious, and devoted woman whose generosity has helped to make continued Arboretum development possible. This special garden is dedicated to her.

Theme Garden

A garden designed around a single concept, such as color or season, is a theme garden. Other examples include: a garden of nectar-producing flowers used to attract butterflies or hummingbirds, a garden of plants native to California, and an herb garden.



Moon-Viewing Garden

The white-flower garden is a "moon garden". At night, white flowers and leaves reflect the available light and are visible when colored flowers are not. Moon gardens were constructed in medieval Japan with pale rocks or sand, white chrysanthemums and pools of water. In 1639 the Moghul emperor Jahan built a moonlight garden (Mahtab Bagh) at the Red Fort in Delhi, India. Today, the famous White Garden created by author Vita Sackville-West can be seen at Sissinghurst Castle in England.

Map No. 2: PUTAH CREEK LODGE AREA

The Putah Creek Lodge serves as a site for recreation and informal conferences. It is used for meetings of student groups, evening and week-end conferences, especially by off-campus groups. At the top of the slope behind the lodge, a grove of northern California black walnuts shades a picnic area. A short distance west of the lodge is a fire pit with rows of benches in the form of a mini-amphitheater—an ideal spot for evening song-fests or similar festivities.

A boat house and dock beside the lagoon provide recreational canoeing or instructional sailing in small boats. Behind the boat house is a clump of the oriental tree-of-heaven (*Ailanthus altissima*). These are unusually fine specimens.

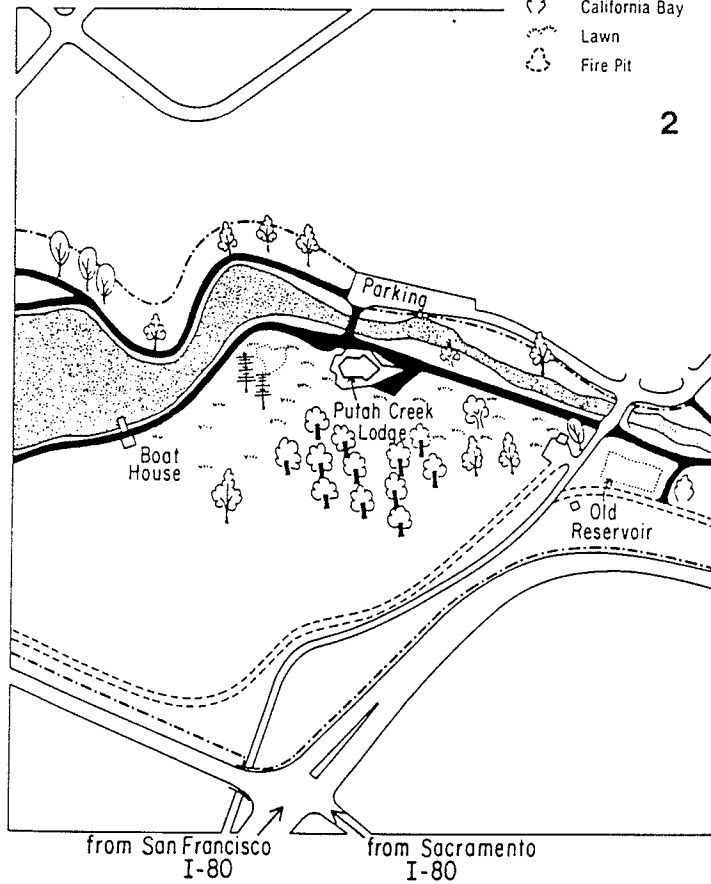
In the lawn area east of the lodge stands a large old valley oak (*Quercus lobata*), a survivor of a grove which occupied this site in the early years of the Davis campus.

Rounding the lodge area to the east is a bike path which crosses the Arboretum and crosses the creek over a culvert bridge. Just beyond this path is an old reservoir of considerable historical interest. Dating back to the 1860's, this is the first concrete reservoir to be constructed in the Sacramento Valley. A collection of native cypress species are planted on the slopes below the reservoir, and native pines and California bay shade it to the east.

The north bank of the lagoon is dominated by an array of Australian trees and shrubs. The majority are of the Myrtaceae family, easily identified by a characteristic "myrtle" aroma: bottlebrush shrubs (*Callistemon* and *Melaleuca*) and prominent stands of *Eucalyptus*. Other parts of the world are represented by pines from the Canary Islands and western Asia and small shrubs from the Mediterranean. On the stream bank are alders from western North America and birches from northern Europe. Ground covers include the

Osteospermum daisy and other plants from South Africa, the vigorous Mexican lippia with its miniature verbena-like flowers, and the creeping boobialla (*Myoporum parvifolium*) from Australia—our most successful ground cover.

- Arboretum Boundary
- == Roads
- == Bicycle Paths
- Bridle Path
- Putah Creek
- 🌰 Black Walnut
- 🌲 Aleppo Pine
- 🌳 Eucalyptus
- 🌲 Redwood
- 🌳 Oak
- 🌴 California Bay
- 🌳 Lawn
- 🔥 Fire Pit



Map No. 3: FOREIGN CONE-BEARING TREES AND ACACIA AREAS

The Exotic Conifer Section: On the slope below the Arboretum office (TB 32) is the exotic conifer section—i.e., cone-bearing trees from foreign countries. Here is an interesting collection of pines, firs, true cedars (*Cedrus*), Australian cypresses (*Callitris*), and others.

At the eastern end of this section (at the California Avenue Bridge) stands a towering Aleppo pine (*Pinus halepensis*), and three more trees of the same species flank the west end, adjacent to the horse corral. One of the most interesting of the numerous pines is a tree of *Pinus oaxacana*, native to the mountains of southern Mexico and Central America. Standing directly beside the walk, it appears like a many-spouted fountain of shiny, drooping needles.

The Australian cypresses (*Callitris*) belong to a different genus from the more familiar North American cypresses (which are members of the genus *Cupressus*). They both belong to the same family, however, and there is a strong family resemblance. But our specimens of *Callitris* have more delicate foliage than the commonly grown cypresses. These species of *Callitris* are well adapted for arid regions, and several of our specimens, growing

under conditions of minimal maintenance, show real promise horticulturally. Where do you think this genus would be useful?

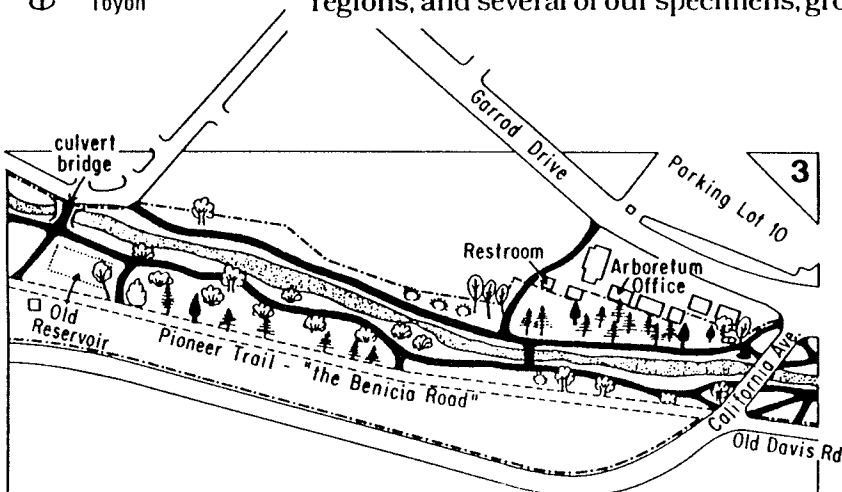
Toward the top of the slope, and partially obscured by other trees, stands a group of cedars of Lebanon (*Cedrus libani*). This is the species of biblical renown that furnished timber for the construction of King Solomon's temple. The true cedars (*Cedrus*) belong to the Pine Family and are native to the Old World. On the other hand, a number of North American trees are commonly called "cedars," but these are members of the Cypress Family—quite a different group.

The Acacia Section: The Acacia Section contains one of the most extensive species collections in the entire Arboretum, at present comprising no less than 60 different species of acacia! Mostly Australian in origin, they range in size from low, spreading shrubs no more than 2 to 3 feet in height, to tall, erect trees. They bear a fragrant profusion of bright yellow flowers, and individual trees will be completely covered when in full bloom. Early spring—February and March—is the most spectacular period, but one species or another is in bloom almost around the calendar. Can you find one in bloom? Would it make a dramatic close-up photo or drawing?

When not in bloom, the acacias display an interesting diversity of foliage, ranging from pale bluish-gray in color to bright or dark green. Some species have delicate, feathery leaves, while many others have highly modified leaves (phyllodes)—small, leathery and lance-shaped, which represent an adaptation to dry environmental conditions.

One species, *Acacia triptera*, is a compact, densely branched shrub 5 to 6 feet tall, its twigs closely armed with stiff, spine-tipped phyllodes shaped like little scimitars. Even more formidable is the aptly-named *Acacia horrida*, an African species, with branches studded with long, straight, wickedly sharp thorns.

- Arboretum Boundary
- == Roads
- == Bicycle Paths
- Putah Creek
- Oak
- Cypress
- Pine
- Acacia
- Aleppo Pine
- Sage
- Juniper
- California Bay
- Redbud
- Foothill Pine
- Toyon



Acacia decora
graceful wattle



The Indians of California made their living from the land. They gathered food from native plants and hunted game. They used plants for purposes other than food--for weapons, tools, baskets and medicine. The Indians used baskets for every conceivable purpose--for storage, cooking, carrying, and even for hats. As a consequence, they developed the art of basket-making more extensively than anywhere else in the world.

This guide is intended for use by teachers as background material for an Arboretum nature study. Some of the material may be too extensive for use with primary grades.

Many of the "edible" plants in this guide are poisonous unless treated before eating.



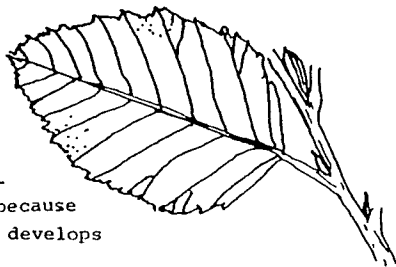
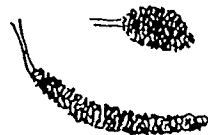
1. Coast live oak (Quercus agrifolia):

The Indians gathered tons of acorns from oaks such as this each year. They prepared the acorns either by pounding them into a fine meal and leaching out the bitter tannins with water, or by burying them in mud for a few months. They could then dry and store the acorn meal, which they used in soup or bread. Occasionally, acorn meal would become green with mould. The Indians used this mould for its

antibiotic properties: they cured external infections with the penicillin produced by the mould. They used the leaves, bark, or galls from the oaks to make an astringent tea for treating wounds and sores.

2. California white alder (Alnus rhombifolia): As you begin to look at this tree, make a small scratch in a branch with your fingernail; look at the color of the scratch (green) and remember where it is. The Indians used the bark of this tree as a source of red-

brown dye for basket material. The "cones" that you see in the tree are the remains of female flower clusters, from which the winged seeds have already flown. Now look back at the scratch mark you made-- it should be darker. That is because the pigment, used in the dye, develops when exposed to the air.



1.



3. Elderberry (Sambucus spp.): The blue- and white-berried species of this plant produce edible berries. The Indians usually dried and cooked the berries. They used the crushed leaves of some species to make a tea to relieve upset stomach, colds and flu. Occasionally, they hollowed the stems and used them to make flutes or whistles.



4. Toyon (Heteromeles arbutifolia)

Also known as California holly and Christmas berry. The Indians collected the bright scarlet berries for use as food. They cooked the berries over hot coals or in cooking baskets.

5. Manzanita (Arctostaphylos spp.):

The berries of this plant are also edible and were an important source of food for the Indians. The Indians crushed the berries and added them to water to make a pleasant, sweet-sour cider, or ground the berries into flour. They made an astringent, medicinal tea from the leaves, or mixed dried leaves with wild tobacco and smoked them.



2.

HIGH PRIORITY EXAMPLES OF SPECIES FOR GENETIC RESOURCES CONSERVATION
FOR CALIFORNIA

ANIMALS

Avian species

California quail (1)
Coastal marsh non-game birds (1)
Chicken research stocks (2)

Mammalian species

Mice research stocks (2)
Sheep research stocks (2)
Cattle breeds with unique genotypes (2)
Bighorn sheep (3)
Tule elk (3)
Salt Marsh Harvest Mouse (3)

Arthropod species

Honey bees (4)
Predatory mite (4)

Amphibian species (5)

Reptilian species

Island night lizard (5)

Aquatic species

Pacific salmon (5)
Rainbow trout (6)
Abalone (6)
Nematodes (7)

PLANTS

Forest tree species

Radiata pine (7)
Coast redwood (8)
Guadalupe Island cypress (9)

Range and Wildland species

Rose clover (9)
Slender wild oat (9)
Beach strawberry (10)
Meadowfoam (11)

Agronomic crop species

Wheat (11)
Rice (12)
Alfalfa (13)
Blackeye pea (14)

Vegetable crop species

Brassicas (15)
Tomatoes (16)
Cucurbits (16)

Horticultural species

Grape (16)
Almond (17)
Walnut (18)
Citrus (19)
Pistachio (19)
Chrysanthemum (20)

MICROORGANISMS

Plant viruses (21)
Pathogenic and nonpathogenic fungi (21)
Yeasts (22)

Parentheses refer to page numbers in the attached description section.



ARBORETUM NEWS

Friends of the Davis Arboretum

SEPTEMBER 1987

Editor: Bob Markson

University Arboretum
University of California
Davis, CA 95616
(916) 752-2498

IT'S PLANT FAIRE TIME AGAIN! -- Everything is shaping up nicely for the 13th Annual Plant Faire. This year's Faire will be held on Saturday, October 3rd, from 8:00 a.m. until 2:00 p.m. It doesn't seem possible, but this year's event promises to be even bigger than those of previous years. The hard-working Plant Propagation Group has about 920 species of plants under propagation -- more than ever! -- most of which are not easily available in commercial nurseries. A list of the many plants which will be available at the Plant Faire is enclosed in this mailing, and a list of the plants that Dr. Ruth Storer had in her personal garden on Oak Avenue will be available at the Information Desk on the day of the Faire. Plant Faire 1987 tee-shirts will be available at Arboretum Headquarters before the Faire for just \$8. Tell your friends, and be certain to come to the Faire yourself!

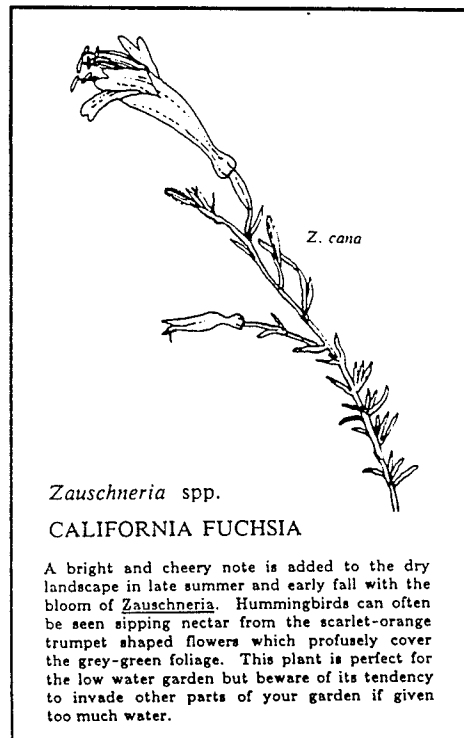
BOOK SALE -- The Arboretum Library will conduct its annual used book sale in conjunction with the Plant Faire. Look for the display and sales tables on the Plant Faire grounds during the Faire. There will be books on gardening and related subjects and some beautiful floral lithographs by nationally-known artist Mary Foley Benson of Davis, as well as a selection of fine handcrafted items. You can help make the book sale a success by donating your used books. All the books you've read and no longer need on gardening, landscaping, horticulture, and subjects related to plants will be gratefully received at the Library at Arboretum Headquarters.

JUNE McCASKILL HONORED -- The Regional Oral History Office of Bancroft Library at UC Berkeley has selected June McCaskill, Curator of the Herbarium in the Botany Department at UC Davis and one of the most active Friends of the Davis Arboretum, to be included in their publication series, "California Women in Botany". They are asking for donations to cover the cost of a professional oral autobiography, which includes research, interviews, transcribing and editing. Anyone interested in supporting this well-deserved honor may send a check, made out to the UC Regents and marked "Friends Oral History", to the Botany Department. Donors of \$50 or more will be listed in the publication.

NEW YEAR FOR DOCENTS -- Once again the Friends start a new business year with great enthusiasm. Many things are in the works. One of the most important is the training of new docents. We need to recruit candidates, and all you members can help out by encouraging friends to apply. Docents are knowledgeable and enthusiastic volunteers who lead public tours of the Arboretum and perform a host of other tasks necessary to the successful operation of the Arboretum, such as plant labelling, mapping, and record-keeping.

Classes -- Docent trainees attend a year-long training course in botany and horticulture; they learn the Arboretum collections and tour-leading techniques. Dr. Fred Addicott, Professor Emeritus of Botany at UC Davis, will be the principal instructor for this year's course. The class will meet Wednesdays from 9:00 until noon, beginning October 7th.

Introductory Meeting -- Experienced docents will meet with people interested in becoming docents on Wednesday, September 9th, from 9:00 a.m. until noon, in the library at Arboretum Headquarters.



I.M.S. GRANT -- We have received a grant for \$18,000 from the Institute for Museum Services to fund a survey of the Mary Wattis Brown garden, to evaluate the plants for their condition and value as endangered or threatened species. Gale Matteson and Ellen Zagory, who prepared the grant request, are encouraged by this recognition by I.M.S., and look forward to future success in grant funding.

OUTDOOR EDUCATION PROGRAM -- One of the most successful and significant activities of the docents is introducing children to the wonders of nature as displayed throughout the Arboretum. Under the leadership of senior docent Maxine Schmalenberger, the Arboretum Outdoor Education Program last year took more than 650 children on discovery nature walks. Outdoor Education Program docents include Dick Blanchard, Mary Lou Brown, Louise Conn, Jeanne Enos, Meg Hehner, Annie Main, Nancy Merrill, Suzanne Pearl, Susan Post, Tom Vasey, Lois Weeth, and Dorothy Yerxa. Also, Superintendent Warren Roberts and docent Lois Weeth led a tour in Spanish for a migrant education class. Schools from Davis, Dixon, Woodland, Yuba City, Fairfield, Loomis, and Pleasant Grove participated.

Environmental Education Grant -- The Arboretum received a grant of \$3000 from the California State Department of Education to develop a special training program for docents to lead children's tours. The training will be shorter and more specifically focussed on environmental education than the regular docent training. If you are interested in sharing your love of nature with elementary school children and would like to participate in the training program, please call Diane Stumbo at Arboretum Headquarters for more information.

MEMBERSHIP RENEWAL -- You have probably already received a letter from Margaret Algazi, President of the Friends of the Davis Arboretum, asking you to renew your membership in the Friends for the 1987-88 business year. In the past, we have kept a lot of people on our membership list even when they have not renewed their memberships for one or more years, but we can no longer afford to do that. If you wish to continue receiving this newsletter, the plant list for the annual Plant Faire, and notices of Friends trips and special events, you must renew your membership! Other benefits of membership include use of the circulating horticultural library and discounts on garden trips, classes, and workshops. Next year, members will be admitted early to the Plant Faire, and we are hoping to arrange reciprocal membership agreements with other botanical gardens and arboreta in the near future. And of course, you will have the satisfaction of supporting an important resource for research, education, conservation, and sheer pleasure!

NOTES FROM THE CURATOR -- We are pleased to report that the nursery inventory, the Friends Plant Faire plant list, the inventory of nearly 1900 packets of seed in seed storage, and some of the old planting records have been computerized. In addition, The University Arboretum Inventory, which includes botanical name, common name, family, and location of every plant in the Arboretum, has recently been proofed and corrections are being made. The Inventory is in frequent use and we are hopeful about eventually tying plant names to actual Arboretum accession numbers.

Although the computer files are not yet linked together (our long-term goal), we now have multiple cross-referenced lists and have found them to be invaluable planning and management tools. We will continue to submit proposals for additional funding that will allow us the staff time to develop a completely linked database application for plant records at the Arboretum.

TRAVEL NEWS -- The Travel Committee has decided to postpone the "Old Hawaii" trip until the spring of 1988, in order to thoroughly research the area and make plans for the most stimulating and enjoyable trip possible. Anyone who would like to help with the planning or who has suggestions of gardens or parks to visit should call June McCaskill at 752-1091, or Arboretum Headquarters.

This year we are planning to offer quarterly day or weekend trips to gardens in California. In the fall, we will visit Western Hills Nursery in Sonoma County and Smith and Hawken garden supply in Marin. We are planning a trip in the late winter to see the petroglyphs and desert wildflowers near China Lake. And next spring we hope to visit the gardens of Harland Hand and Mrs. Bancroft in the East Bay. Look for announcements of these and other events in your mailbox!

PUTAH CREEK RESERVE WORK DAY -- You can help us enhance the quality of our beautiful riparian reserve on Putah Creek and celebrate the 200th anniversary of the signing of the U.S. Constitution, too! "Take Pride in America", a series of volunteer activities organized by Federal employees for this special month and year, has taken on the following local projects: removal of undesirable weedy exotic shrubs and small trees and trash from the Reserve and, later, the establishment of a grove of the native valley oaks along the South Fork of Putah Creek. Jack Barry (USDA Forest Service Pest Management), Darwyn Briggs (USDA Soil Conservation Service), Gary Carrasco (Arboretum "graduate"), and Warren Roberts are the organizers.

All of you are invited to participate on Saturday, September 26th, starting at 8:00 a.m. Bring pruning saws and loppers or shovels, and meet at the Reserve: go south on Old Davis Road (south of I-80) and just before you cross the creek turn left onto the gravel levee road towards the railroad bridge. Light refreshments will be provided. Toilets will be available. Also, please bring gloves and wear sturdy shoes and long trousers. Phone 752-2498 if you have questions. Here's your chance to do something significant to honor the anniversary of our great Constitution!



NURSERY AND GARDEN NEWS -- A new Cushman electric cart has been a boon to nursery operation as well as construction projects by supplying our staff with its own means of transportation. Its brightly-painted yellow form can be seen humming along the Arboretum's asphalt paths carrying tools, workers, mulch and supplies to and from the work sites.

A soil conveyor for loading soil into the new elevated soil storage box on the potting shed has arrived. With a little work it will soon be in operation as part of the move toward modernization of nursery operation and greater safety (less back strain). All of this equipment was purchased with University funding.

The nurseries have been improved and very well-kept by Ellen Zagory and Parker Sanderson with the student staff: Rochelle Davis, Tim Hickman, Dave Kelley, Janet Moore, Rena Nayyar, Chau Nguyen, Jason Traut, Karl Tucker, and Jon Small. Rena and Chau have just finished putting the planting tags on all nursery plants, a big and important project and very well done.

Some other long-awaited construction projects have been completed by our hard-working student staff. A new fence between the headquarters building and greenhouse was recently finished by Jason Traut, and he has nearly completed the new lath house propagation frames. The frames will be fitted with bottom heat cables for use during cold weather and for greenhouse propagation overflow.

Njokum Mbah kept the new plantings near the campus entrance watered and weeded this summer. Carolee Shields' white flower garden at Shields Grove gazebo shows good results from the recent plantings and this summer's careful care by Stefanie Brown and Groundskeeper Jack Klein. The Ruth Risdon Storer Garden is also doing very nicely with its new and maturing plants and good tending by Miguel Purcell and Ernst Schneider. Both of these gardens are looking the best ever.

Mary Wattis Brown Garden Development -- Grading for the new decomposed granite path and patio has begun using a plan completed by student intern Christopher Curry. Paths will provide structure for a new native plant display area which will include both irrigated and non-irrigated areas. Ellen and Parker are working with Tim, Dave, Rena, Chau, and Jason on this project. Paul Lynch continues to care for the new plants in the Mary Wattis Brown Garden and helps Groundskeeper John Hawkins and Grounds Supervisor Bud Radebaugh keep the area tidy. We depend on Bud and his crew of Groundskeepers (John Hawkins and Jack Klein plus Janet Alameda, Harry Klemm, and Ramón Ramírez) and other support from the Grounds Division for keeping The University Arboretum looking good. We regret that the area between King Hall and Putah Creek Lodge has not had an assigned Groundskeeper since March, but the Grounds crew works hard and we're grateful for their accomplishments. María García, a new student staff member, has just completed mapping of current plantings in the Mary Wattis Brown Garden and will be drafting a large scale plan using this information. Her map will serve as the template for future plantings in the area and as a planning and development tool.



UNIVERSITY ARBORETUM TOURS -- FALL 1987
Sundays at 2:00 p.m., UC Davis, (916) 752-2498

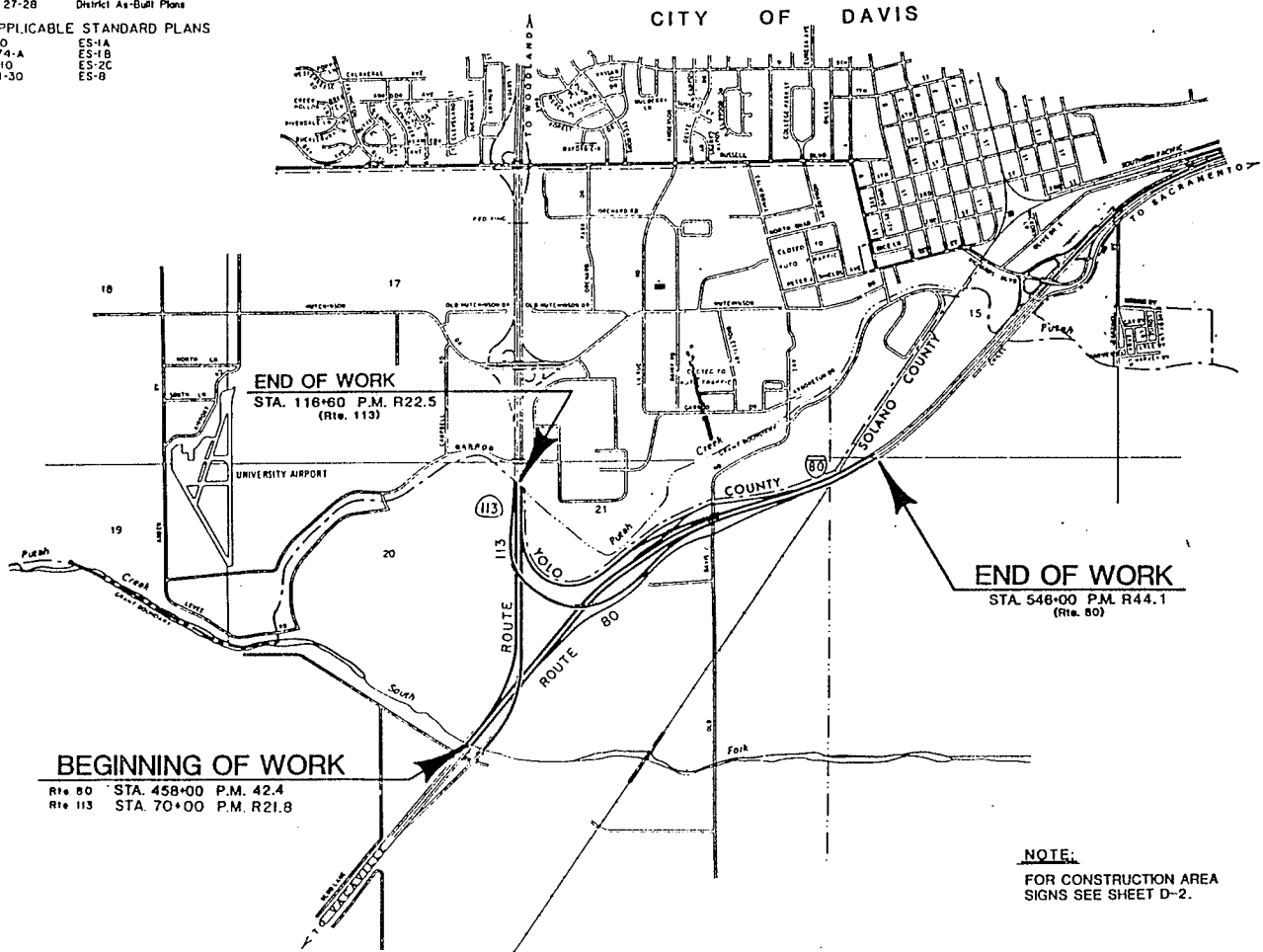
<u>Date</u>		<u>Meeting Place</u>	<u>Tour Leaders</u>
October 11	THE SHIELDS AND STORER GARDENS <i>Ideas for valley gardeners -- demonstration gardens with many ground covers and flowering shrubs.</i>	Shields Grove Gazebo	Jeanne Enos Pat Murray
October 18	CALIFORNIA NATIVE PLANT COLLECTION <i>Learn to recognize California's wild plants, and consider these water-conserving, low-care natives for your garden.</i>	Arboretum Headquarters	Judy Schneider Annie Main
October 25	SHIELDS OAK GROVE <i>A wide variety of these beautiful trees, symbols of strength and longevity. More than 100 species from five continents.</i>	Shields Grove Gazebo	Jesse Dutra Meg Hehner
November 1	EUCALYPTUS AND BOTTLEBRUSH <i>A many-splendored group -- interesting bark, blossoms, and pods. See the low-growing mallees.</i>	Wyatt Snack Bar	Dick Blanchard Tom Vasey
November 8	MRAK HALL AREA <i>Trees and shrubs for the home landscape, including some good ones for lawns.</i>	Arboretum Headquarters	Annette Braddon-Walker Eleanor Buehler
November 15	THE DESERT COLLECTION <i>Includes groupings of small cactus, graceful nolina, and towering yucca.</i>	Arboretum Headquarters	Barbara McCandliss Winnie Spurr
November 22	REDWOODS, MANZANITAS, NORTH COAST TREES <i>Enjoy the tranquility of our beautiful redwood grove.</i>	Wyatt Snack Bar	Lois Weeth Evie Neithercutt
November 29	WEIER ALLEY -- NATIVE CALIFORNIA CONIFERS <i>Learn to identify our native pines, firs, and cedars, from the desert, foothills, and high Sierra.</i>	Arboretum Headquarters	Maxine Schmalenberger Dorothy Yerxa
December 6	THE MEDITERRANEAN COLLECTION <i>A wide range of shrubs, ground covers, and herbs suited to our dry climate.</i>	Shields Grove Gazebo	Jane Slaybeck Sharon Casey
December 13	EXOTIC CONIFERS <i>From low-growing junipers to tall pines, including unusual exotics such as weeping cypress and callitris from Australia.</i>	Arboretum Headquarters	Mary Lou Brown Eleanor Buehler

IR-080-2(254)73

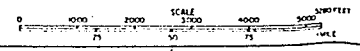
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John L. ...
 REGISTERED LANDSCAPE ARCHITECT NO. 1210
 APPROVED: December 23, 1985

- INDEX OF SHEETS**
- Sheet No. 1 Title & Location Map
 - 2 Plant List & Plant Specifications
 - 3-10 Planting Plans
 - 11-12 Vertical Pools
 - 13-20 Irrigation Plans
 - 21-22 Miscellaneous Details
 - 23 Booster Pump Pumping Equipment
 - 24-26 Booster Pump Electrical Equipment
 - 27-28 District As-Built Plans
- APPLICABLE STANDARD PLANS**
- A10 ES-1A
 - A74-A ES-1B
 - T-10 ES-2C
 - BH-30 ES-6



VICINITY MAP



NOTE:
 FOR CONSTRUCTION AREA SIGNS SEE SHEET D-2.

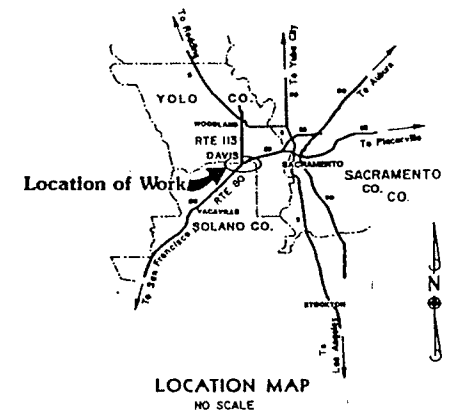
The Contractor shall possess either a Class A license or the following Class C licenses at the time this contract is awarded Class C... C-22



APPROVAL: *Edmund ...*
 REGISTERED LANDSCAPE ARCHITECT NO. 1210

REDUCED PLAN
 USE SCALE BELOW

3 INCHES ON ORIGINAL PLAN

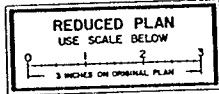


STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 PROJECT PLANS FOR HIGHWAY PLANTING ON
 STATE HIGHWAY
**IN SOLANO COUNTY NEAR DAVIS ON ROUTE 80 FROM
 SOUTH FORK PUTAH CREEK BRIDGE TO 0.2 MILE
 NORTH OF SOUTH DAVIS OVERHEAD AND ON
 ROUTE 113 FROM THE EAST JUNCTION ROUTE 80
 TO THE YOLO COUNTY LINE**

To be supplemented by Standard Plans dated July, 1984

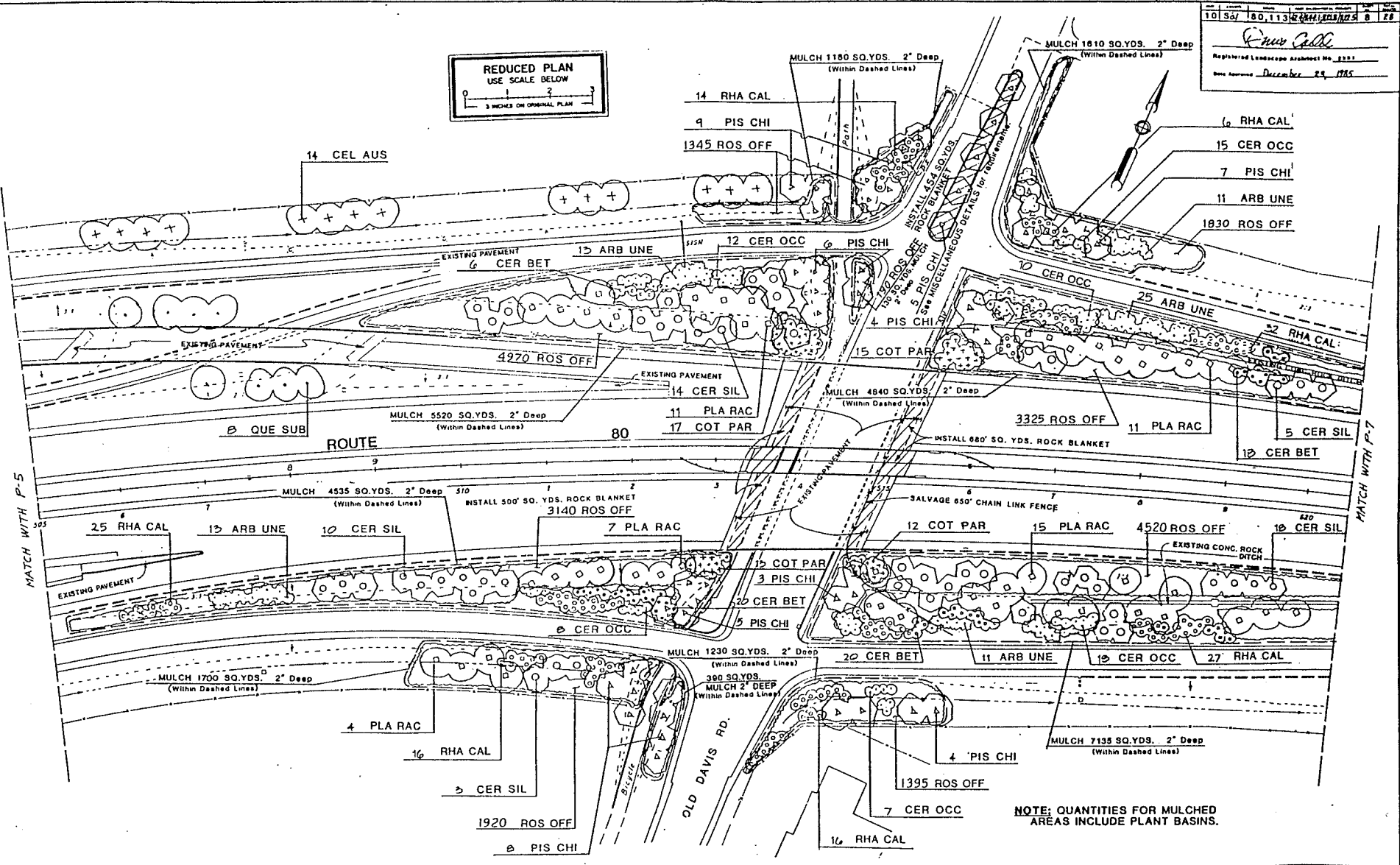
Contract No. 10-223704

10200-223704



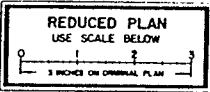
101547 180.113 2/24/11 11/11/11 8 28

Erin Cole
Registered Landscape Architect No. 23211
Date Issued December 29, 1985



NOTE: QUANTITIES FOR MULCHED AREAS INCLUDE PLANT BASINS.

EG Coltrane LANDSCAPE ARCHITECTURE	STATE OF CALIFORNIA	Designed By:	Date Revised:	Contract Number:	PLANTING PLAN	P-6
	DEPARTMENT OF TRANSPORTATION	Drawn By:	Revised By:	223701		



PLANT LIST AND PLANTING SPECIFICATIONS

(UNDERLINED PORTIONS OF BOTANICAL NAME INDICATES ABBREVIATION USED ON PLANTING PLANS)

10 30/ 80.03 ALA/MAJ/REIGRAD 2 28
Chris Allen
 Registered Landscape Architect No. 4421
 Date Approved December 23, 1985

NOTE: SEE SHEETS P-6 & P-7 FOR MULCHED AREAS WHICH INCLUDE MULCH FOR BASINS.

PLANT GROUP	PLANT NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	HOLE SIZE		BASIN SIZE (Diameter)	IRON SULFATE	SOIL AMMEND.	COMM'L. FERT. (Application Rate)		* MULCH (Wood Chips)	TREE STAKING	PLANTING LIMITS					REMARKS	NOTE
						Planting	PH Est'd				Minimum	Distance From			On	Pvmt	Fence	Wall	Ditch		
A	1		<u>ARBUTUS UNEDO</u>	STRAWBERRY TREE	1 GAL.		SUFFICIENT TO RECEIVE ROOTBALL	2'	NCNE	NCNE	1/2 LB.		1 CU. FT. PER BASIN	NCNE REQUIRED	12'	12'	12'	12'	10'	SHRUB	
	2		<u>CERCOCARPUS BETULOIDES</u>	MOUNTAIN MAHOGANY	"	"	"	2'	"	"	1/2 LB.	"	"	"	12'	10'	10'	10'	10'	"	
	3		<u>CERCIS OCCIDENTALIS</u>	WESTERN REDBUD	"	"	"	2'	"	"	1/2 LB.	"	"	"	10'	10'	10'	10'	10'	"	
	4		<u>RHAMNUS CALIFORNICA</u>	CALIFORNIA COFFEEBERRY	"	"	"	2'	"	"	1/2 LB.	"	"	"	15'	15'	10'	10'	15'	"	
	5		<u>COTONEASTER PARNEYI</u>	RED CLUSTERBERRY	"	"	"	2'	"	"	1/2 LB.	"	"	"	10'	10'	10'	10'	10'	"	
B	6		<u>CELTIS AUSTRALIS</u>	EUROPEAN HACKBERRY	5 GAL.		SUFFICIENT TO RECEIVE ROOT BALL	2'	NCNE	NONE	1/4 LB.		1 CU. FT. PER BASIN	SEE DETAIL	20'	15'	15'	15'	AS SHOWN	TREE	
	7		<u>CERATONIA SILIQUA</u>	CAROB	"	"	"	2'	"	"	1/4 LB.	"	"	"	20'	20'	15'	15'	"	"	
	8		<u>PISTACIA CHINENSIS</u>	PISTACHE	"	"	"	2'	"	"	1/4 LB.	"	"	"	20'	15'	10'	10'	"	"	
	9		<u>PLATANUS RACEMOSA</u>	CALIFORNIA SYCAMORE	"	"	"	2'	"	"	1/4 LB.	"	"	"	20'	20'	20'	10'	"	"	
	10		<u>POPULUS FREMONTII</u>	FREMONT COTTONWOOD	"	"	"	2'	"	"	1/4 LB.	"	"	"	30'	15'	10'	10'	"	"	
	11		<u>QUERCUS LOBATA</u>	VALLEY OAK	"	"	"	2'	"	"	1/4 LB.	"	"	"	20'	20'	25'	25'	"	"	
	12		<u>QUERCUS SUBER</u>	CORK OAK	"	"	"	2'	"	"	1/4 LB.	"	"	"	20'	20'	25'	20'	"	"	
LINER	13		<u>ROSMARINUS OFFICINALIS PROSTRATUS</u>	ROSEMARY	SEE SPECIAL PROVISIONS		SEE SPECIAL PROVISIONS	NONE	NONE	NONE	—	20 LB/1000 SF	1/2 CU. FT. PER SQ. YD. (2" THICK)	NONE REQUIRED	6'	6'	4'	4'	30"	GROUND COVER	
	14		<u>QUERCUS SUBER</u>	CORK OAK	"	"	"	"	"	"	1/2 LB.	"	1 CU. FT. PER PLANT	"	30'	20'	20'	20'	AS SHOWN	TREE	

Landscape Architecture *Caltrans*

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Calculated By: _____
Checked By: _____

Date Revised: _____
Revised By: _____

Contract Number: 223701

PLANT LIST SHEET

OF ...

THE SOIL SURVEY



University of California, Davis
(Campus and Adjacent Lands)
Department of Land, Air and Water Resources - 1981

GENERAL NATURE OF THE AREA

The University of California lands, adjacent to the Davis campus, encompass 1119.75 hectares (2764.82 acres)¹ of cropland, pasture, orchard, vineyard, and field facilities located west and south of the campus.

The survey area is located in the southern portion of Yolo County and the northern part of Solano County, California (Fig. 1). The physiography consists mostly of nearly level to very gently sloping recent alluvial plains and a few remnants of older alluvial plains. The soils of the area have formed in alluvium derived mainly from sedimentary rock sources and deposited by Putah creek and its distributaries.

The area is bounded on the south by the present channel of Putah Creek and its South Fork. The western boundary runs north from Putah Creek from about the center of section 24, T. 8 N., R. 1 E., MDBM to County Road 32 (Yolo County). The north boundary runs east along County Road 32 to its intersection with County Road 98, thence south about 457 meters along County Road 98, east about 701 meters and returning due north about 457 meters to Road 32. From this point it runs east along Road 32 (Russell Boulevard) to State Highway 113. The boundary then turns south along the west side of Highway 113 to the North Fork of Putah Creek, follows easterly along the Fork to the northeast corner of Parcel B-1, thence along the northern boundary of Parcel B-2 (in Solano County) to the Southern Pacific railroad right-of-way; thence southwesterly along the west side of the right-of-way to its intersection with the west boundary of section 22, T. 8 N., R. 2 E., MDBM; thence south along this section line to the South Fork of Putah Creek. State and Federal Highway rights-of-way are excluded from the area.

The survey area is in Major Land Resource Area 17.² Elevations range between 14 and 23 meters.

¹ In this report, length, volume, mass and temperature are expressed in the metric system. Land areas are expressed in both metric and English units. Hectare figures used have been converted from existing parcel acreages, reported to 0.01 acres, prepared by the Office of Architects and Engineers, U.C.D.

² United States Department of Agriculture. 1972. Land Resource Regions and Major Land Resource Areas of the United States. Soil Conservation Service, Agric. Hbk 296, 82 pp., illus., map.

CLIMATE

Table 1 gives data on temperature, precipitation and evaporation for the survey area as recorded at the National Weather Service registered climatologic observation station 2294-02, University of California, Davis, during the period 1931 to 1960.^{1, 2} Table 2A shows the probability of receiving freezing temperatures after given dates in the spring and before given dates in the fall. It also provides data on length of the growing season. Table 2B gives the probability of receiving various levels of annual precipitation.

In winter, the average temperature is 8.3°C, and the average daily minimum temperature is 3.1°C. The lowest temperature on record, which occurred in December 1932, is -11°C. In summer, the average temperature is 22.8°C, and the average daily maximum temperature is 33.5°C. The highest recorded temperature, which occurred in July 1950, is 45°C.

The mean annual precipitation is 418 mm. Of this, only 57 mm, or about 14 percent, usually falls from April through September, which includes the growing season for most crops. The heaviest 1-day rain fall during the period of record was 76 mm in December 1955.

The average relative humidity during the day is about 80 percent in the winter and 40 percent in the summer and early fall. Humidity is higher at night. The average is about 90 percent in the winter and 60 percent in the summer and early fall.²

The sun shines about 95 percent of the time possible in summer and about 45 percent in winter. Radiation fogs obscure the sun up to about 20 percent of the time in late fall and winter months. The average annual daily solar radiation is 431 langley's per day, ranging from 688 in July to 173 in January.⁴

The prevailing wind is southerly, reflecting the frequent incursion of marine air through the Carquinez Straits into the Sacramento Valley. Commonly, the wind directions shift to northwest diurnally. Wind velocities are higher in these directions. Several times a year strong winds blow from the north. When winds are apparent, about 40 percent of the time the velocities are less than 6 km per hour; 50 percent of the time they are less than 13 km per hour; and only about 10 percent of the time do they exceed 26 km per hour for short periods.²

Fig. 1 - Location of survey area in California.

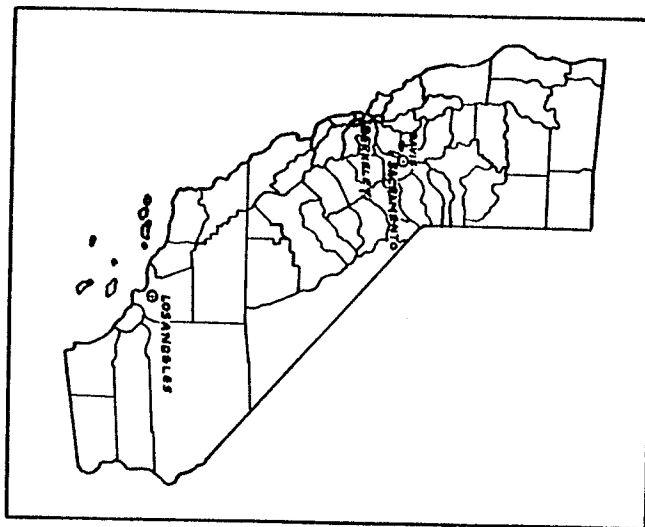


Table 1.¹ Monthly and annual temperature, precipitation and evaporation data for the survey area.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Ann.
Mean Temperature (°C)	7.4	9.6	11.9	14.9	18.2	21.6	24.0	22.9	21.7	17.3	11.7	7.9	15.8
Mean Precipitation (mm)	83.6	82.5	54.3	34.5	14.5	3.3	T	0.25	4.3	19.3	34.8	86.6	418
Mean Evaporation (mm) (Class A pan)	30.7	49.5	99.1	149.9	212.8	257.0	282.4	250.7	202.9	132.1	63.2	33.3	1763.8

¹ Source: Climate of Yolo County. 1971. University of California Agricultural Extension Service, Woodland, California.

Table 2.¹ Probabilities for freezing temperatures and precipitation.

A. Probability of freezing temperatures after given date in spring, or before given date in fall.

T°C	Spring											Fall										GS
	P	90	80	70	60	50	40	30	20	10	P	10	20	30	40	50	60	70	80	90		
0°	97	1/20	2/8	2/18	2/26	3/5	3/12	3/19	3/28	4/10	93	10/30	11/14	11/9	11/13	11/17	11/21	11/26	12/4	12/18	257	
-2°	71	*	*	1/1	1/7	1/15	1/21	1/28	2/5	2/15	86	11/19	11/24	11/30	12/3	12/9	12/13	12/19	12/24	#	328	

T° Freezing temperature
 P Probability that T° will occur during season (%)
 GS Growing season (days)
 * Less than this percentage after Jan. 1st
 # Less than this percentage before Dec. 31st

B. Probability of receiving less than indicated annual precipitation within the survey area.

Probability	5%	10%	25%	33%	50%	67%	75%	90%	95%
Less than indicated precipitation (mm)	211	246	315	343	401	486	503	607	676

¹ Source: Climate of Yolo County. 1971. University of California Agricultural Extension Service, Woodland, California.

The area lies just south and outside of the Rice-Burmudagrass Plant Climate Subzone within the Maritime Plant Climate Area of California.³

¹ Gay, R. C. Specific climate characteristics of locations in Yolo County, pp. IV-D1 - D9. In Climate of Yolo County. 1971. Univ. of Calif., Agricultural Extension Service, Woodland, Calif. 61 p., illus.

² Elford, R. C., M. R. McDonough, J. E. Stilz. General climate of Yolo County, pp. 11-30. In *ibid.*

³ Gilbert, D. Plant Climates of Yolo County, pp. III2-10. In *ibid.*

⁴ Dept. of Water Resources. 1978. California Sunshine - Solar Radiation Data, Bull. 187. The Resources Agency, State of California, Sacramento, Calif. 109 p., tables, illus.

GEOLOGY AND GEOMORPHOLOGY

During recent (Holocene) geologic times, Putah Creek has formed an extensive alluvial fan in the southern Sacramento Valley. It extends somewhat irregularly from its apex near the town of Winters, easterly and southeasterly on a gentle gradient into the Yolo Basin. The sources of the alluvium are from eroded soils and weathering rock in the eastern foothills and mountains of the Coast Range. The rocks underlying Putah Creek's upland watershed are mainly of marine sedimentary origin - sandstones and shales. However, parts of the upper reaches of the watershed are also underlain by volcanic flow and serpentine rocks which contribute some material transported by the Creek.

In the Sacramento Valley, the present channel of Putah creek acts as part of the boundary between Yolo and Solano Counties and is located in the northern part of its alluvial fan close to its northern edge. During the past 100 years, flood control efforts straightened and leveed the South Fork channel of the Creek to carry seasonal flood waters more safely into the basin. This caused the main channel of the creek and its South Fork to be incised about 10 to 15 feet and effectively orphaned its North Fork distributary from receiving further normal seasonal flow.

Soil texture patterns on the Putah Creek alluvial fan, mapped in both the Yolo and Solano County Soil Surveys (USDA, 1972 and 1977, respectively), as well as remnants of distributary channels and low alluvial ridges, indicate that the principal channel of Putah Creek has wandered in an episodic manner during the development of this fan. Evidence indicates that the channel moved to its current position in relatively recent times. Profiles of many of the soils on the recent fan within this survey area show an older surface soil horizon about 1 m below the present surface. E. L. Begg (personal communication) has obtained radioactive carbon dating from the humic material in the buried surface horizons that suggest an age of about 4,000 years B.P., indicating that the present surface soils are younger.

Part of the northern margin of the fan lies across the western end of the survey area close to and paralleling Road 98. The flooding patterns of the Creek as it built the northern part of its fan were controlled at this point by eroded remnants of the Plainfield Ridge. The latter is a series of knolls of much older valley fill, that flank the Creek from the vicinity of Stevenson's Bridge to just west of the survey area.¹ A local interfan area has been formed between the recently active north limb of the Putah Creek fan, a less active alluvial plain of Dry Slough north of the survey area, and the remnants of the Plainfield Ridge. The clay soil (Capay series) west of Road 98 within the survey area, occupies this interfan area, and reflect quieter waters that occupy such interfan areas during flood times and from which fine-textured sediments accumulate. Variable patterns of coarse and fine surface soil and substrata textures on the recent fan surface in the remainder of the survey area reflect the past variability in flooding and deposition of materials from a series of former smaller distributaries of Putah Creek. These are now otherwise obscured. Deep borings and some trench exposures have revealed some former meandering gravelly channels.

Remnants of an older fan system of Putah Creek is evident from the soil mapping but is not superficially apparent to the eye. These remnants are suggested from the bodies of Jacinto and Zamora soils in the north central part of the area. These soil bodies are old enough to have formed minimally developed subsoils through illuvial accumulation, suggesting a late Pleistocene age, in contrast to soils of the recent fan that have no subsoil development or that at most have only weak subsoil horizons of alteration.

Very deep trench exposures, such as at the land-fill dumping site west of Road 98, and those formed during the construction of Highway 113 through the area, show further that in many places bodies of fine textured soils like the Capay soils of the interfan area underlie soils of the recent fan at depths of 8 to 10 feet. Below this lies an erosional surface cut into yellowish colored, strongly developed soils formed in compact very old, yellowish alluvium. The Haploxeralfs mapped along the present Putah Creek channel are thought to be exhumations of these older soils from the recent man-induced incisement of the channel. Thomasson, et al.,¹ recognized and traced exposures of these older sediments along Putah Creek. Projected upstream, their general dip suggests they correlate with the current land surface in the vicinity of Allendale, south of Winters in Solano County. Clay pan soils of the San Ysidro series are mapped in this latter area. Those soils bear some resemblance to the buried paleosols observed in the deep exposures within the survey area. In

relation to the very old valley-fill material in the vicinity, such as that of the Plainfield ridge remnants, the underlying, older sediments and associated paleosols are likely to be mid-Pleistocene in age.

¹ Thomasson, H. G., F. S. Olmstead, E. E. Le Roux. 1956. Geology and groundwater resources of Putah, Suisun and Fairfield areas of Solano County, California. U.S. Geol. Water Supply Paper 1464, in cooperation with USBR, Washington, D.C. USGPO 1960.

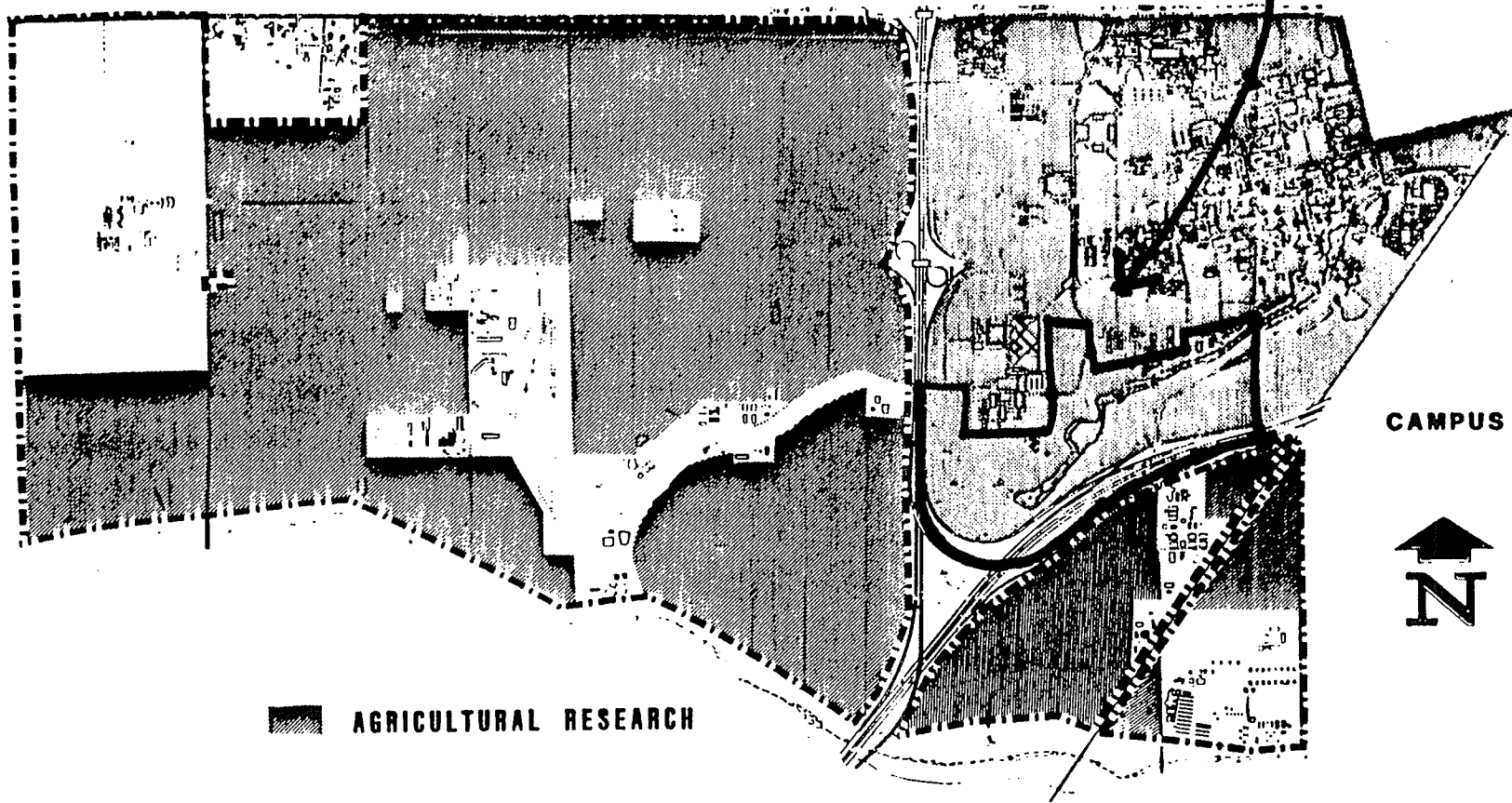
THE GENERAL SOIL MAP

On the following page, the General Soil Map of the survey area shows the extent of the soils by series (map color differentiation) and the extent of surface textural phases (delineations within colored areas).

This map is useful for general planning or for understanding the overall spacial relationships among the soil series or surface textural phases within the area. It is not suitable for detailed planning of research plots or land parcels. Further information about the soil series and their surface texture phases is given in the section on Detailed Soil Map Units.

The pattern of soils within the "campus area", as shown on the General Soil Map, was adapted from a detailed soil map of part of the University lands prepared in 1952 by the Department of Soils and Plant Nutrition.

Competition Site

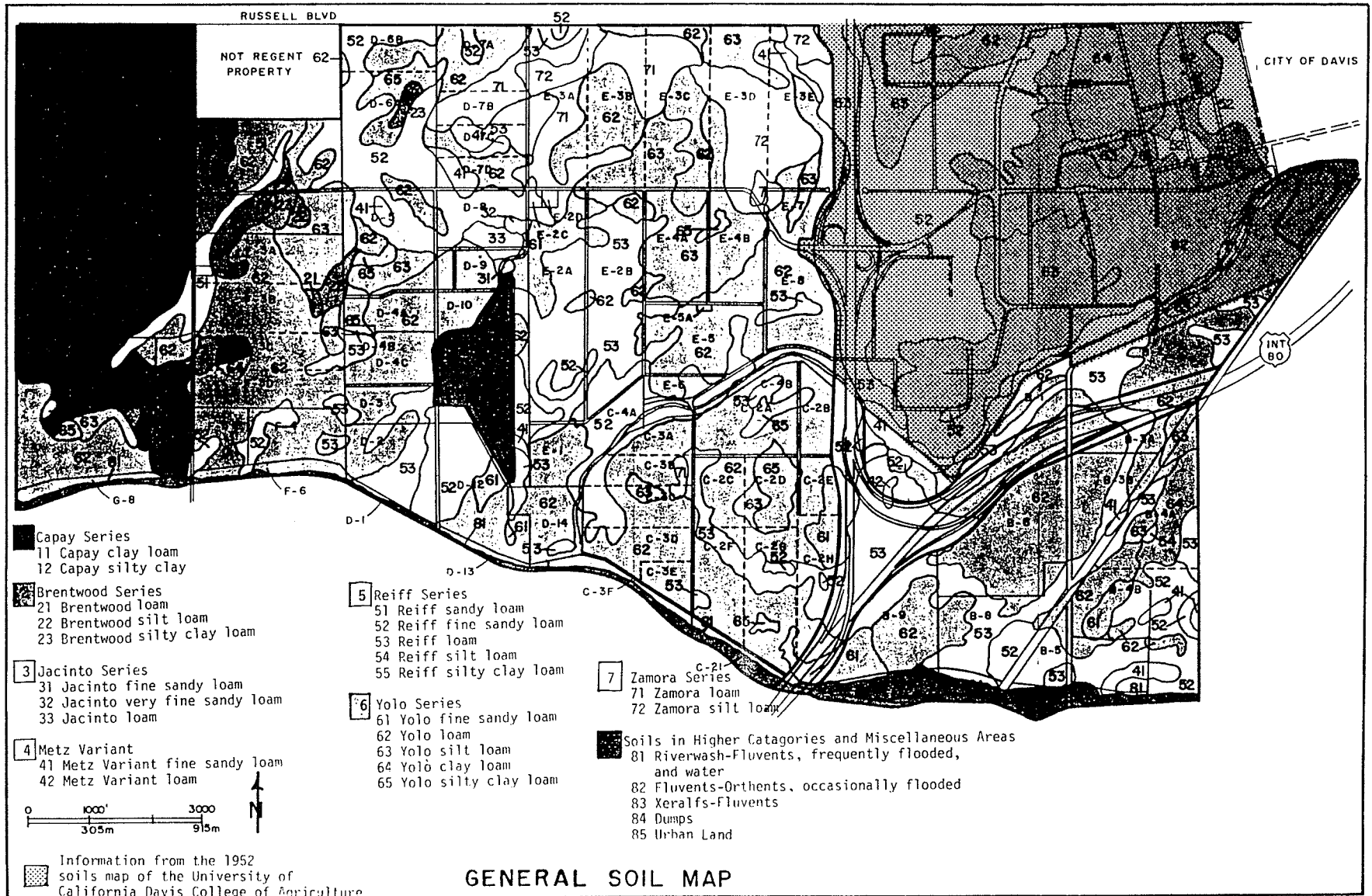


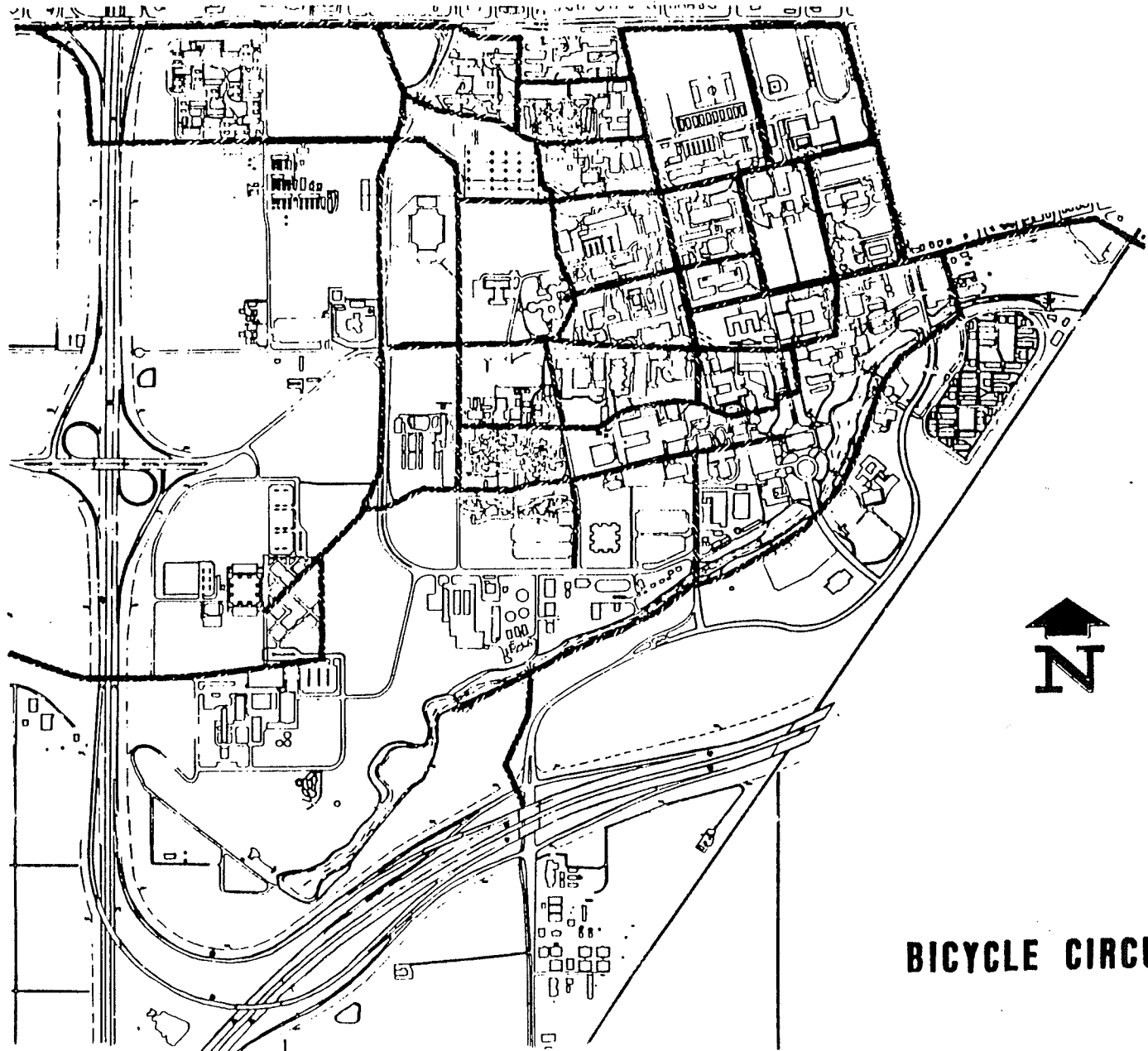
AGRICULTURAL RESEARCH

CAMPUS CENTER

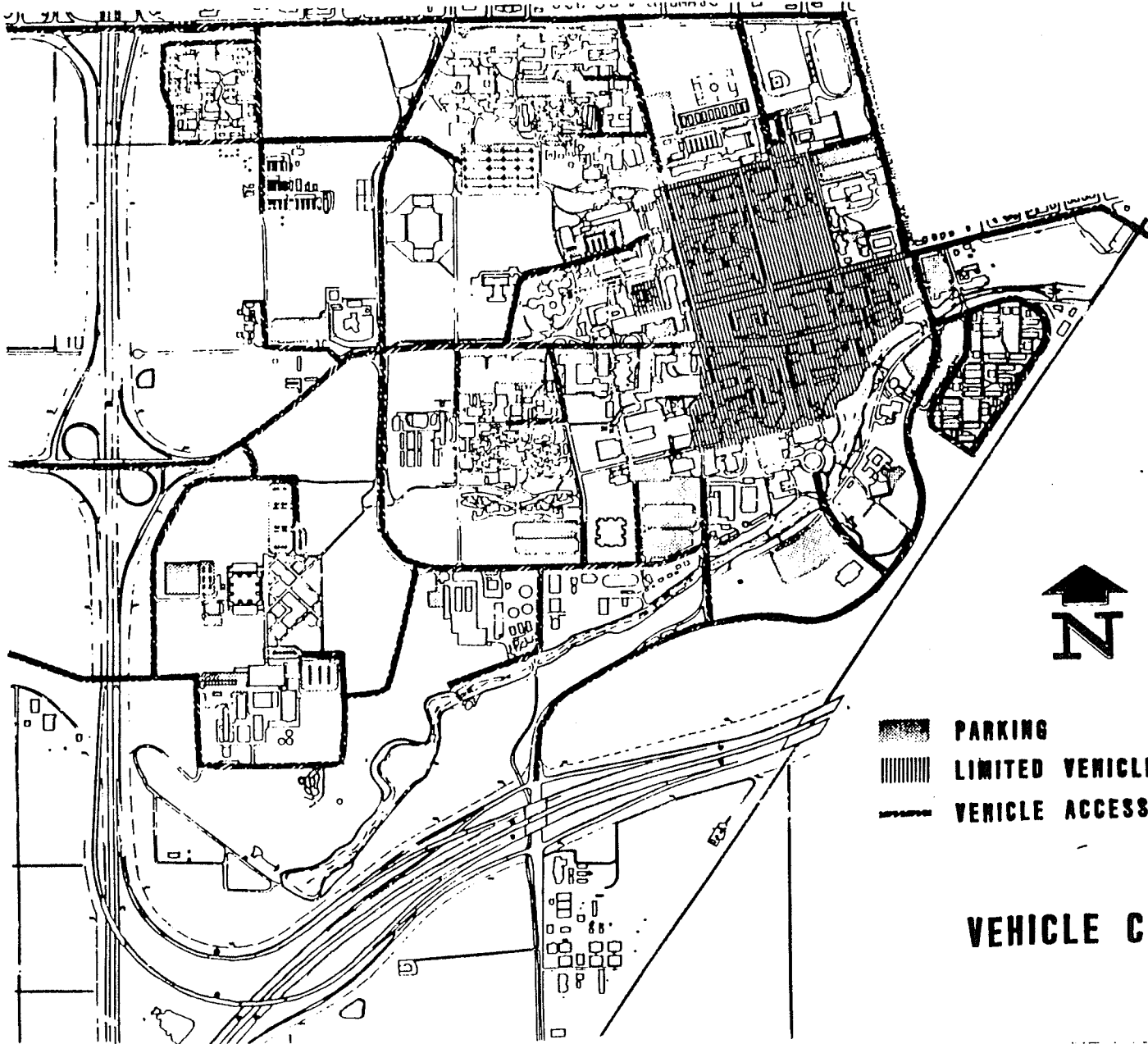




LAND USE OF EXTENDED CAMPUS





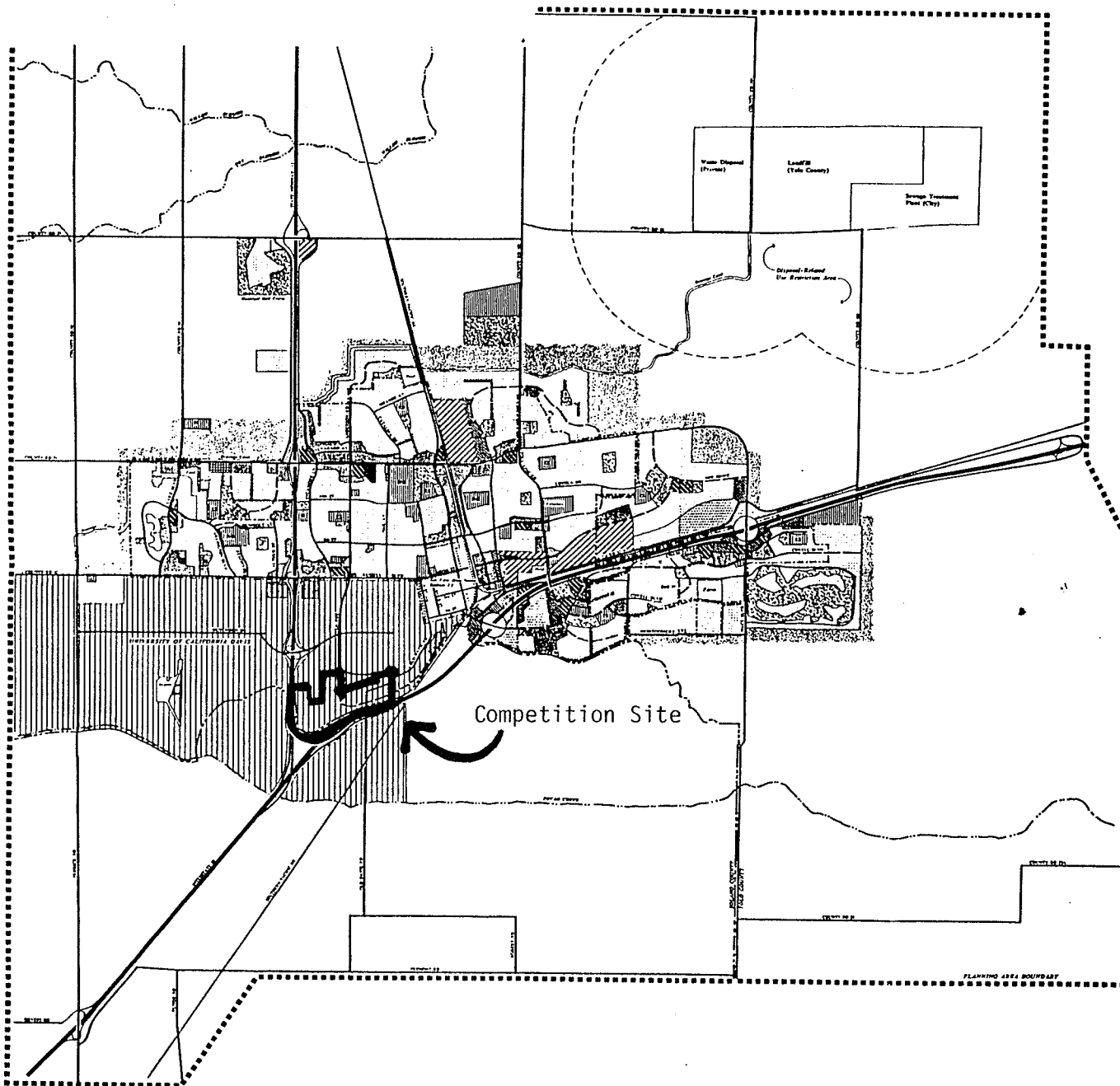
BICYCLE CIRCULATION



















-  PARKING
-  LIMITED VEHICLE ACCESS
-  VEHICLE ACCESS

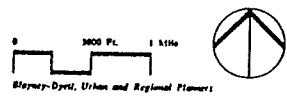
VEHICLE CIRCULATION

City of Davis
DAVIS GENERAL PLAN
 Draft
 October, 1987



-  RESIDENTIAL-SINGLE FAMILY
Detached/Attached: ≤ 2 Units per Gross Acre
-  RESIDENTIAL-MULTIFAMILY 12.5 Units Per Gross Acre;
20 To 30 Units Per Net Acre On Infill Sites
-  RETAIL SHOPPING
-  OFFICE
-  HIGHWAY/SERVICE COMMERCIAL
-  LIGHT INDUSTRIAL/BUSINESS PARK
-  INDUSTRIAL
-  UNIVERSITY OF CALIFORNIA, DAVIS
-  PUBLIC/SEMPUBLIC
-  PARKS/RECREATION
(* Denotes Public Park)
-  GREENBELT
Schematic Indication
-  URBAN/AGRICULTURAL BUFFER
-  AGRICULTURE
-  FREEWAY
(Interchange Subject To Redesign)
-  ARTERIAL
Existing/Proposed
-  COLLECTOR
Existing/Proposed

(This General Plan Map accompanies City of Davis General Plan, Volume 1: Plan Policies, Draft, October 1987.)



Appendix C

Questions and Answers

Design Arts Competition
The University Arboretum
University of California
Davis, California 95616 U.S.A.

1. Would it be possible to get a contour interval topographic map of the competition area?

Answer: Yes, enclosed is a 2 foot contour interval topographic map. This information was not available when the competition began but has been collected from interstate construction documents, building projects, and recent spot elevations throughout the competition area.

2. Would it be feasible to move the Arboretum maintenance headquarters?

Answer: Yes, but it should be remembered that the Arboretum buildings are historic craftsman-style structures from 1936.

3. Would it be possible to get a campus wide landscape plan?

Answer: No comprehensive landscape plan exists. However, we have enclosed copies of recently completed maps of significant plant collections, historic landscapes, and valley oak locations. These maps are under drafts review.

4. Would it be possible to utilize KP-5 paper (a paper similar to PMT paper) to present our drawings?

Answer: Yes, any commonly used means to reproduce drawings is acceptable. However, the scale must remain 1" = 100'.

5. Will category 1 and 2 entries be juried together or separately?

Answer: Category 1 and category 2 will be juried separately. However, entries in both categories by the same entrant will be keyed together so the jury can cross-reference them.

6. Since the program was written last summer, has the thinking on the campus Long Range Development Plan (LRDP) changed?

Answer: Yes, the campus has been involved in an update of the LRDP since last summer. But, the draft LRDP will be published next summer leaving time for the results of the competition to be included. Maps of the three present alternatives are included. These are very rough. It should be noted that competition Possible Addition Area 4 is presently being thought of as a native grassland nature reserve associated and managed by the Arboretum, rather than housing or the student farm. Priorities for Possible Additions 2, 3 and 5 have changed little. Possible Addition 1 and 6 are still shown as agriculture in the alternatives because decisions have not been made on their future. Lands labeled A,B,C,D,E,F and G inside the Arboretum remain as described in the program.

7. Concerning communication contacts (page 8 of program), what does "representatives" mean?

Answer: Anyone may be talked to at UC Davis except the Arboretum Director, Competition Jury, and Administrators governing ultimate decisions in the Arboretum (most notable would be members of the Arboretum work group... see supplemental materials).

8. Can one obtain UC records and files on the site that are public information?

Answer: Any public information on campus is available for review. UC Davis is a very large and old institution with libraries, collections, and many departments. Any such available information would not be organized. The campus is open for anyone to visit.

9. Can UC employees be valid competitors?

Answer: Anyone can be a competitor except Arboretum employees, the Primary Jury or Counseling Jury, or the Arboretum Work Group.

10. What is the role of the counseling jury?

Answer: The Counseling Jury is made up of campus administrators and staff as well as community representatives. This group will review the entries before the Primary Jury and will select a spokesperson to pass along local input into the process through a presentation to the Primary Jury. The Primary Jury can accept or reject any Counseling Jury Advice. The Counseling Jury will also act as alternates in the event that members of the Primary Jury can not attend.

11. What is the elevation and quality of the water in North Fork Putah Creek?

Answer: The water in the Arboretum is storm water run-off. At 41 feet in elevation, water is pumped out. In dry years, the water elevation can drop but generally is held constant. For the first time this year, a water quality monitoring program has begun. Results are not yet available but indications are that water quality is very poor. Lack of oxygen is a problem in the fall so fountains may be a consideration. Page 12 of the program (under Possible Addition 3) describes another solution to improve water quality.

12. Can the boat house be removed since water quality is so low?

Answer: Yes, it is not now used.

13. What function does the drive-by and turn-around serve (page 10 of program)?

Answer: Delivery trucks pickup maps and information at the window without having to park. A turn-around would only be necessary if the design was not drive-through.

14. What is meant by stacking distance (page 10 of program)?

Answer: Cars must not be backed up on Interstate 80. There are no standards for stacking distance but it should be noted that this intersection gets crowded with commuters. A design at the entrance (traffic circles, etc.) which allows cars to continue moving onto the loop road moving without stopping would be best.

15. Is there a standard bus shelter (page 10 of program)?

Answer: No.

16. Is the equestrian drain, on page 11, what is shown on the base map South of Shields Grove?

Answer: Yes.

17. What is the water quality of the equestrian drainage water?

Answer: This area was recently constructed and has no existing monitoring data. It is though to be poor.

18. Which direction does water now flow?

Answer: Westerly to submerged pumps at the western end. In the scenario of Possible Addition 3 (page 12 of program), water would be piped to the West Northern end of Possible Addition Area 3) and then flow East.

19. Where are the old terraces located (page 10 of program)?

Answer: See topo map.

20. Is water from the sewage treatment plant suitable for the Arboretum as is?

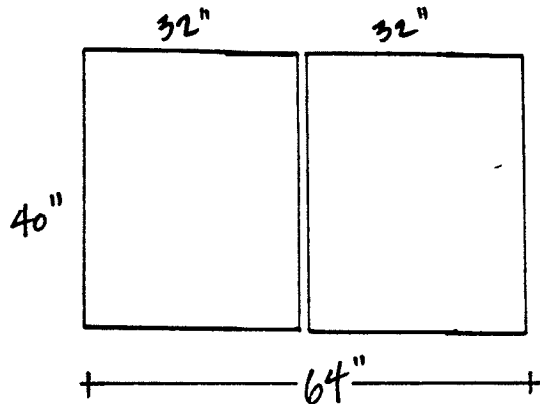
Answer: No, it would need the additional treatment described on page 12 in Possible Addition 3.

21. What is the bank erosion problem?

Answer: Ducks and geese dig in the banks. The ducks and geese are of many species with no particular use pattern. They are occasionally thinned but remain numerous. Any solution to this problem is welcome.

22. Please explain further the board format for category 1.

Answer: In category 1, the base map should be trimmed to fit the boards as shown.



also see attached map

The boards may be taped in the middle as long as the boards fold together. Otherwise, the map will be split between two separate boards but placed next to each other when exhibited.

23. Are extra copies of the base map, aerial photos, or program available?

Answer: Yes, but only by ordering another package. The costs of prints, copying, tubes, and mailing exceed the fees charged for the competition package.

24. Is Highway 113 limited access?

Answer: Yes.

25. Is there organized information on irrigation?

Answer: No. Irrigation is very limited. Only piped irrigation water is available.

26. Are equestrian center structures of historical significance?

Answer: No.

27. Where would the gateways on page 10 (areas B and C) be located?

Answer: - This would depend on where the entrant decided the future location of the Arboretum boundary should be. This is an issue totally at the discretion of the entrant. For example, if the Possible Addition Area North of C is added, the gateway would move Northward.

28. Can a model of a garden be submitted?

Answer: No, but photographs of the model may be. In addition, however, a site plan of the garden must be on the board.

29. How should the typed narrative be attached?

Answer: Permanently affixed anywhere desired on the front of the boards.

30. Will the new plants added along old Davis be removed with the road and kiosk?

Answer: Yes. However, any ideas will be considered for retaining these elements.

31. Which loop road is most preferred, A or B?

Answer: The present preferred alignment of the loop road is shown in the attached LRDP alternatives. It differs slightly from A and B. It follows the alignment of A to the North and past Putah Lodge but instead of moving to the edge along I-80, it splits the space between the creek and I-80 in half. However, since the whole area is controlled by the Arboretum, it should be remembered that any ideas on the loop road alignment in the competition area will be considered.

32. Is Garrod Road to remain functional for traffic?

Answer: Yes.

33. Will the Interstate 80 and Highway 113 landscaping by Caltrans remain as is?

Answer: Yes.

34. If one registration with sepia is purchased by a school for a class project, how should the entry be handled?

Answer: One entry in each category can be submitted representing the best work of the class. Any other students in the class may enter by February 15 and pay the entrance fee to assure that their work can be submitted even if not chosen by the class.

35. Are teams of more than one person allowed to enter?

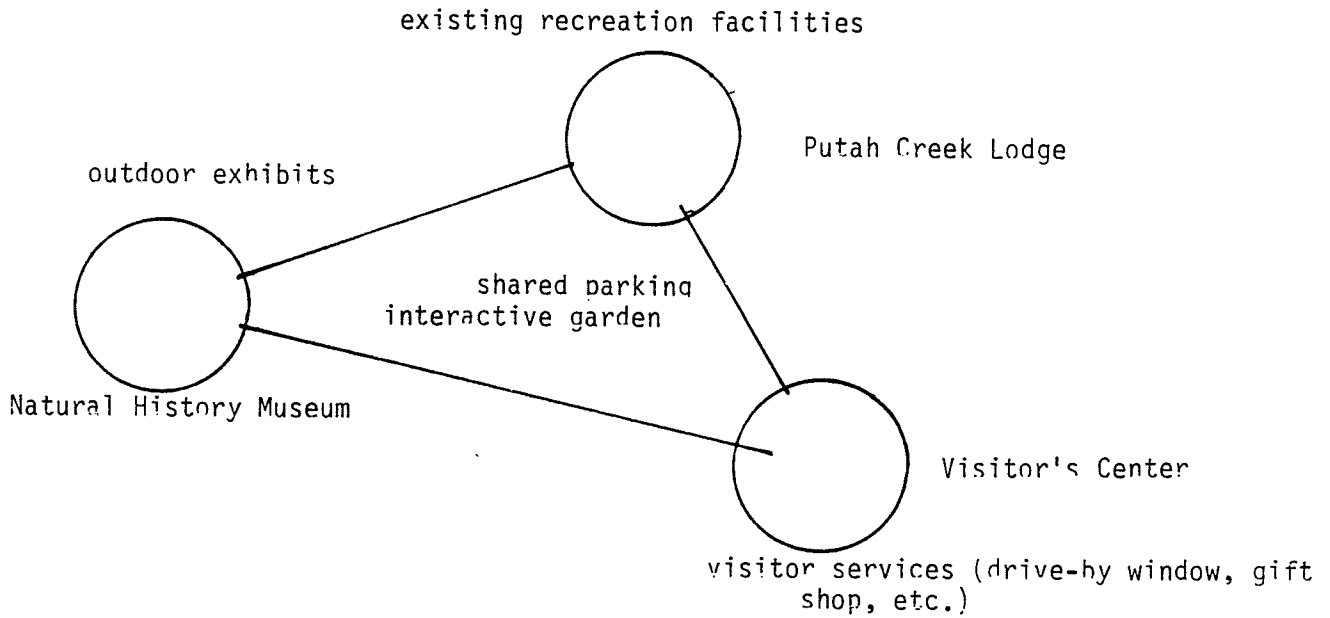
Answer: Yes, but their work must represent an equal group effort and only the lead person (first person listed on the registration) will be eligible to negotiate and manage the future implementation of the design.

36. How do academic departments use the Arboretum?

Answer: - Most use of the Arboretum is for research in the plant sciences. Educational use is varied from drawing classes to environment psychology. Ideas to expand uses are welcome.

37. How would the parking and interactive garden for the Visitor's Center, Putah Creek Lodge, and Natural History Museum work?

Answer: Enclosed is a rough map of the thinking for the Natural History Museum. The Visitors Center would combine the kiosk with an Arboretum gift shop. The parking and garden might work like this:



38. Is the Hotel/Conference center still a possibility?

Answer: Yes, although there is the thought now to combine the Hotel/Conference Center in a cluster similar to the Visitor's Center, Natural History Museum, and Putah Creek Lodge. But, the Hotel/Conference Center would be combined with a 5-10,000 square foot Alumni Center and a 5-10,000 square foot Faculty Club. The location would be as described in possible addition 6 (page 12 of program) or possibly along the creek North of the loop road in Arboretum area B (page 10 of the program). It is not likely that the academic buildings proposed in possible addition 5 (page 12 of program) or in possible addition 6 (page 13 of program) will occur.

total 20,000 \$
 mini 10,000 \$
 fully 10,000 \$

 40,000
 max

39. Are there any guidelines for board titles?

Answer: No, just height. The entry could be untitled, use the "Design Arts Competition" title, or go with a title selected by the entrant.

40. Is there any budget information?

Answer: - There is no budget. The projects will be costed after the competition and future construction/maintenance costs worked into the Arboretum LRDP.

41. Do academic departments contribute funding to the Arboretum?

Answer: No.

42. Will the Natural History Museum be a public facility?

Answer: Yes.

43. Would a children's garden be desirable?

Answer: Yes.

44. Would a demonstration children's barnyard be desirable?

Answer: Yes.

45. Would a tea garden or cafe be welcome?

Answer: Yes.

46. Is there information on climate available?

Answer: Yes, on page 17 of the supplemental materials.

47. Are there known fault lines or earthquake dangers?

Answer: There are no known faults and only a very slight earthquake danger.

48. Is the registration deadline February 15?

Answer: Yes, the poster is correct but the program has a typo.

49. Is there specific information on tree trunk locations?

Answer: No, the aerial photograph is the best reference.

50. Could you please further clarify the ownership of submissions (page 4 of program)?

Answer: Yes, if an entry receives an award, the University will integrate the design into the Arboretum LRDP. This is a good faith agreement between the University and the competitor that the University will compensate the competitor when the design is ready for implementation. It is similarly expected that the competitor will not sell the design to others or submit them to other competitions. Unsuccessful designs do not have any restrictions unless the university reaches a use agreement with the competitor as described in the program. Once awarded, the entry materials belong to the university. However, the design ideas can not be used until compensation is agreed to per the

standard agreements as described in the program.

51. Is utility information organized for distribution?

Answer: No.

52. Are there campus landscape guidelines?

Answer: No, they are now being developed as part of the LRDP.

53. Should we include a cost estimate?

Answer: It is not required but any submittal information will be accepted as long as it meets format requirements.

54. Is extending water beyond the areas suggested in the program acceptable?

Answer: Yes, as long as it doesn't conflict with the LRDP map alternative that are enclosed.

55. Is noise or smell a major consideration?

Answer: No.

56. In which direction do you see mountains?

Answer: The coast range to the East is close but on clear days the Sierra Nevada to the West is visible.

57. What is the maximum speed for the loop road?

Answer: 35 mph.

58. Should there be a campus entrance sign?

Answer: Yes.

59. Since the area borders Interstate 80, would an electronic events sign be possible.

Answer: Yes, approximately 18' long and 6' tall..

60. Is there a mistake on the 1" - 200" map with the photo's?

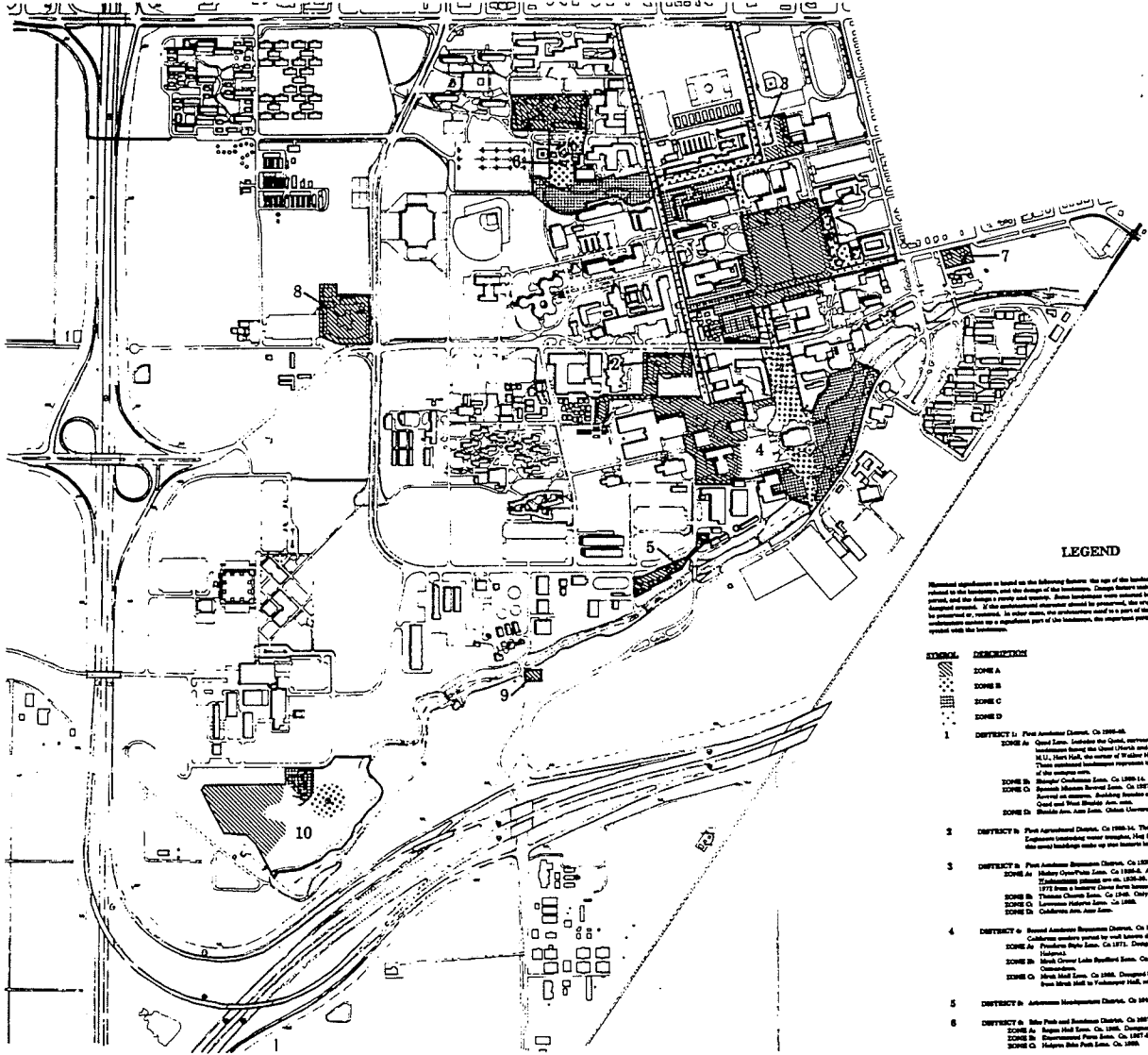
Answer: Yes, some of the bar scale is mislabeled, the scale is 1" = 200'.

61. This is an exciting competition but I am registering late and would like the maximum time to work. Is it possible to extend the deadline?

Answer: Yes. Because of the delay of a few program packages over the heavy Christmas mailing period and to give entrants the maximum time to study program updates resulting from the question/answers, THE DEADLINE IS EXTENDED FROM MARCH 15 TO APRIL 1. Entries must arrive by 5 pm (U.S.

Pacific Time) on April 1, 1988 at the University Arboretum.

We wish to again thank all entrants for their participation in the competition and to offer our encouragement in your creative effort.



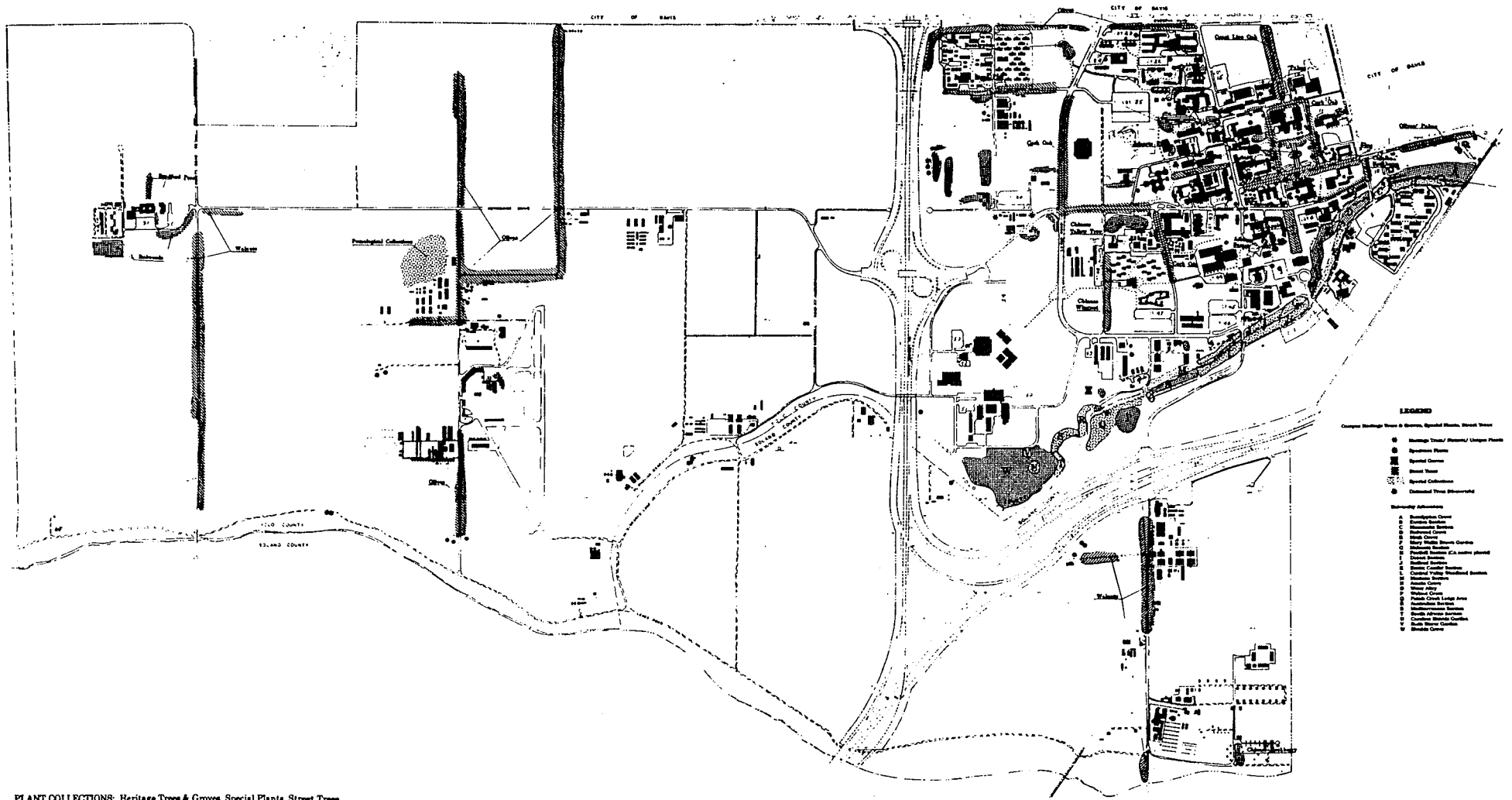
LEGEND

Districtal boundaries are based on the following factors: the type of the buildings, irregular profile or overall extent of the buildings, and the design of the buildings. Change factors include: the design of facades, the design related to the buildings, and the design of the buildings. Change factors include: the design of facades, the design related to the buildings, and the design of the buildings. If the architectural element is prominent, the original buildings themselves are not changed. In other cases, the buildings need to be part of the historic landscape. When an element is not a significant part of the landscape, the original pattern of the landscape may continue to be applied only to the buildings.

- | SYMBOL | DESCRIPTION |
|-----------------------|--|
| (Dotted pattern) | ZONE A |
| (Horizontal lines) | ZONE B |
| (Vertical lines) | ZONE C |
| (Cross-hatch pattern) | ZONE D |
| 1 | DISTRICT I: First Academic District, Ca. 1885-86.
ZONE A: Quad Zone. Includes the Quad, surrounding streets buildings, and adjacent buildings facing the Great Plaza and Board Walk, the "Y" intersection of M.L. Hall Walk, the corner of Walker Hall, and the north Library Annex. This residential development represents the original campus and later's center of the campus core.
ZONE B: Woodard-Castellano Zone, Ca. 1928-14.
ZONE C: Rowland Holmes Rowland Zone, Ca. 1927-31 only western Rowland Holmes Rowland zone, including Rowland Holmes and Rowland Holmes Holmes Rowland Zone and West Woodard Ann. zone.
ZONE D: Rowland Holmes Ann. Zone, Oakes University Farm Rowland Holmes. |
| 2 | DISTRICT II: First Agricultural District, Ca. 1905-06. The site, like Davis (1911) Avenue in Eugene showing outer campus, Hay Barn, and Pheasant (not to be shown to the main building make up the historic landscape). |
| 3 | DISTRICT III: First Academic Extension District, Ca. 1898-06.
ZONE A: Historic Green-Park Zone, Ca. 1896-06. First Old Building Green and west of Haskins/Haskins building on ca. 1892-99. Most other parties were incorporated in 1973 Zone & historic Green Park Zone.
ZONE B: Thomas Church Zone, Ca. 1908. City Church landscape on campus.
ZONE C: Lawrence Holmes Zone, Ca. 1898.
ZONE D: Oakes Ann. Ann. Zone. |
| 4 | DISTRICT IV: Second Academic Extension District, Ca. 1900-71. Before incorporation of the California center period by walk between divisions.
ZONE A: Frederick Park Zone, Ca. 1912. Designed by George Edwin Libster done by Haskins.
ZONE B: Frank Green Lake Rowland Zone, Ca. 1927-A. Designed by Thomas Oakes/Haskins.
ZONE C: Walk Mall Zone, Ca. 1908. Designed by Lawrence Holmes. The Mall connects from Walk Mall to Walker Hall, and is the only center walk on campus. |
| 5 | DISTRICT V: Academic Improvement District, Ca. 1902-06. Single-Terrace style. |
| 6 | DISTRICT VI: Site Park and Academic District, Ca. 1897-06.
ZONE A: Signe Hall Zone, Ca. 1905. Designed by Lawrence Holmes.
ZONE B: Transportation Park Zone, Ca. 1897-01. Includes three open to campus.
ZONE C: Maderon Hill Park Zone, Ca. 1898. |
| 7 | DISTRICT VII: Early Childhood Development Center, Ca. 1898. |
| 8 | DISTRICT VIII: Extension Park, Ca. 1908. Largest modern post-war of the Museum. Designed by Thomas Oakes. |
| 9 | DISTRICT IX: Old Basement, Ca. 1899. |
| 10 | DISTRICT X: Historic Frank Green Campus.
ZONE A: Frank Green.
ZONE B: Central Historic Green Campus.
ZONE C: East Green Campus. |

HISTORIC LANDSCAPE INVENTORY LONG RANGE DEVELOPMENT PLAN UNIVERSITY OF CALIFORNIA AT DAVIS

Prepared by The University Arborists December 1987



PLANT COLLECTIONS: Heritage Trees & Groves, Special Plants, Street Trees

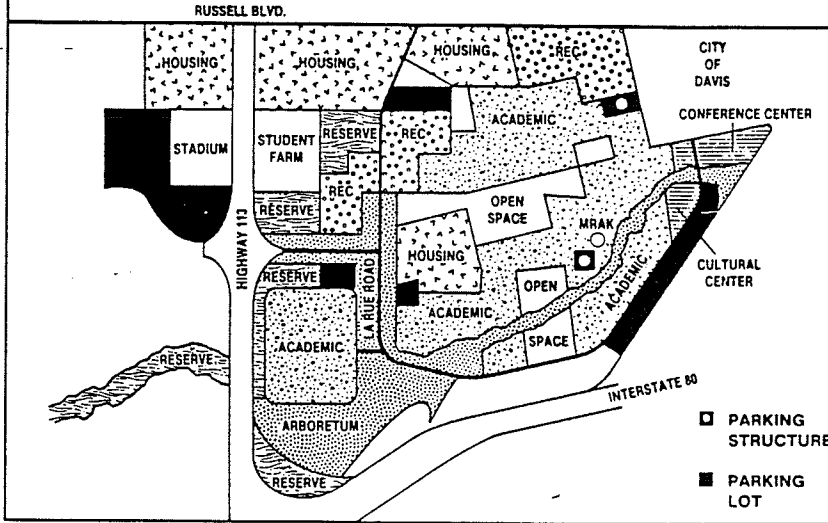
LONG RANGE DEVELOPMENT PLAN

UNIVERSITY OF CALIFORNIA AT DAVIS

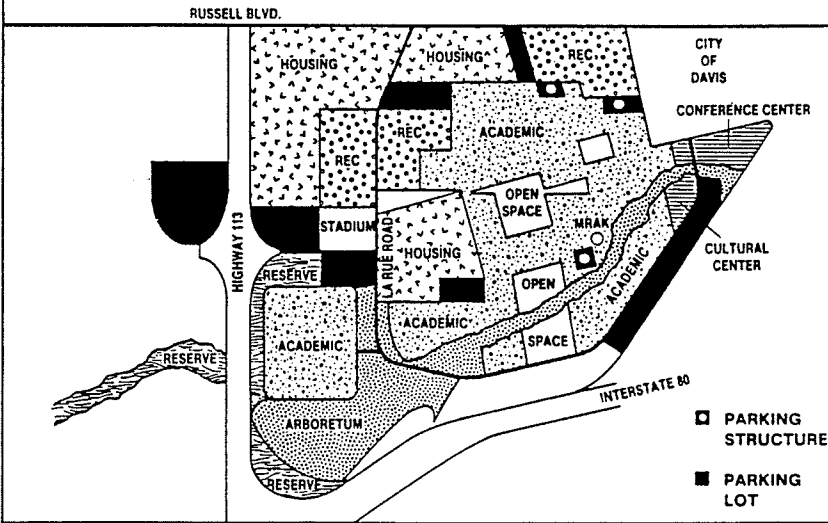
Prepared by The University Arboretum

December 1967

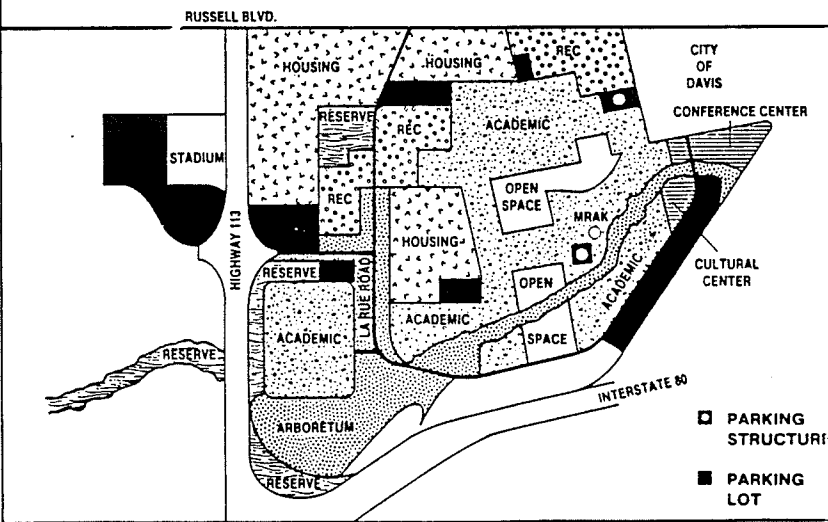
ALTERNATIVE 1

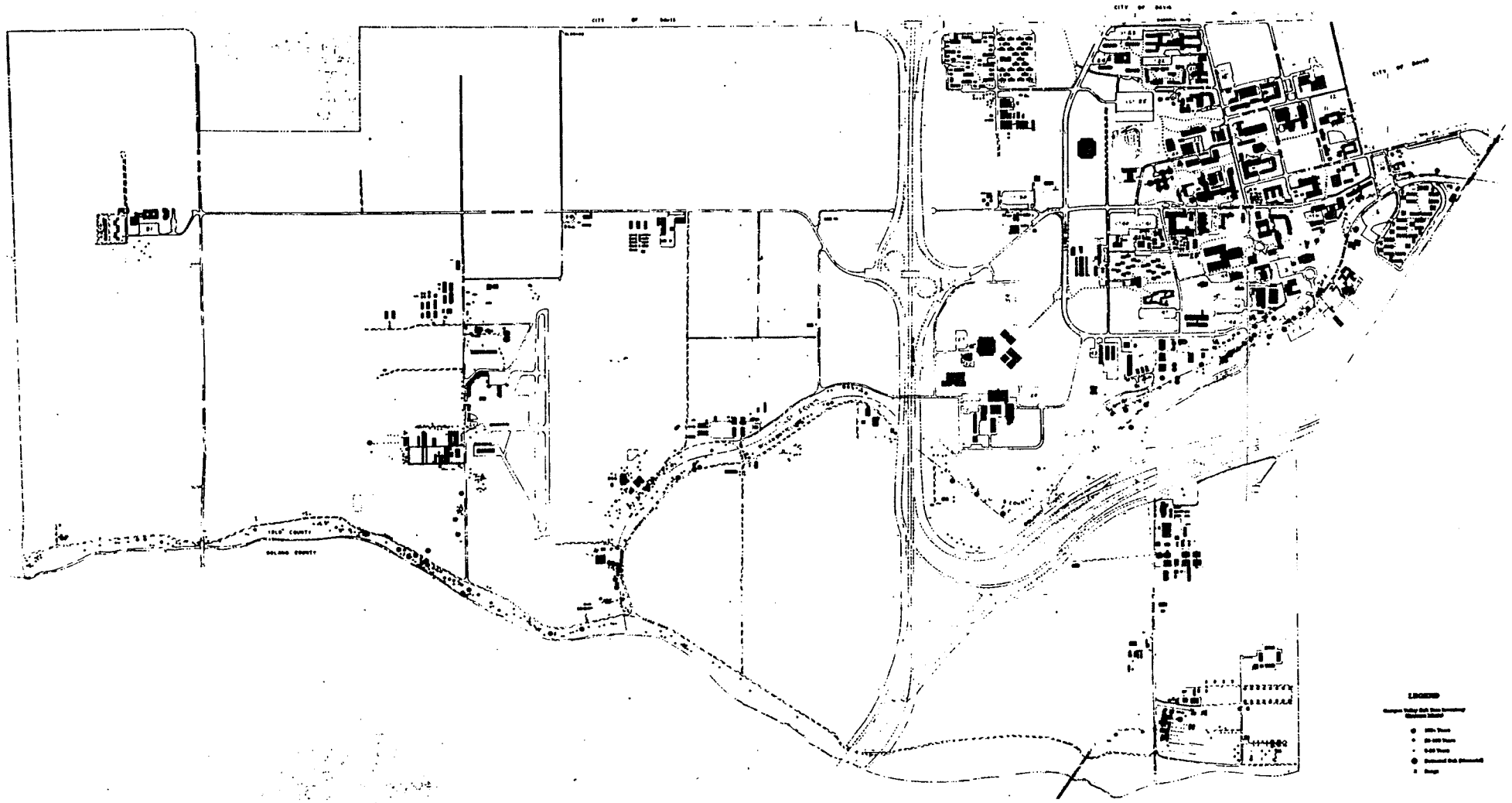


ALTERNATIVE 2



ALTERNATIVE 3





PLANT COLLECTIONS: Valley Oak Inventory

LONG RANGE DEVELOPMENT PLAN

UNIVERSITY OF CALIFORNIA AT DAVIS

Prepared by The University Arboretum

December 1987



Key: areas to add sketches, titles, etc.

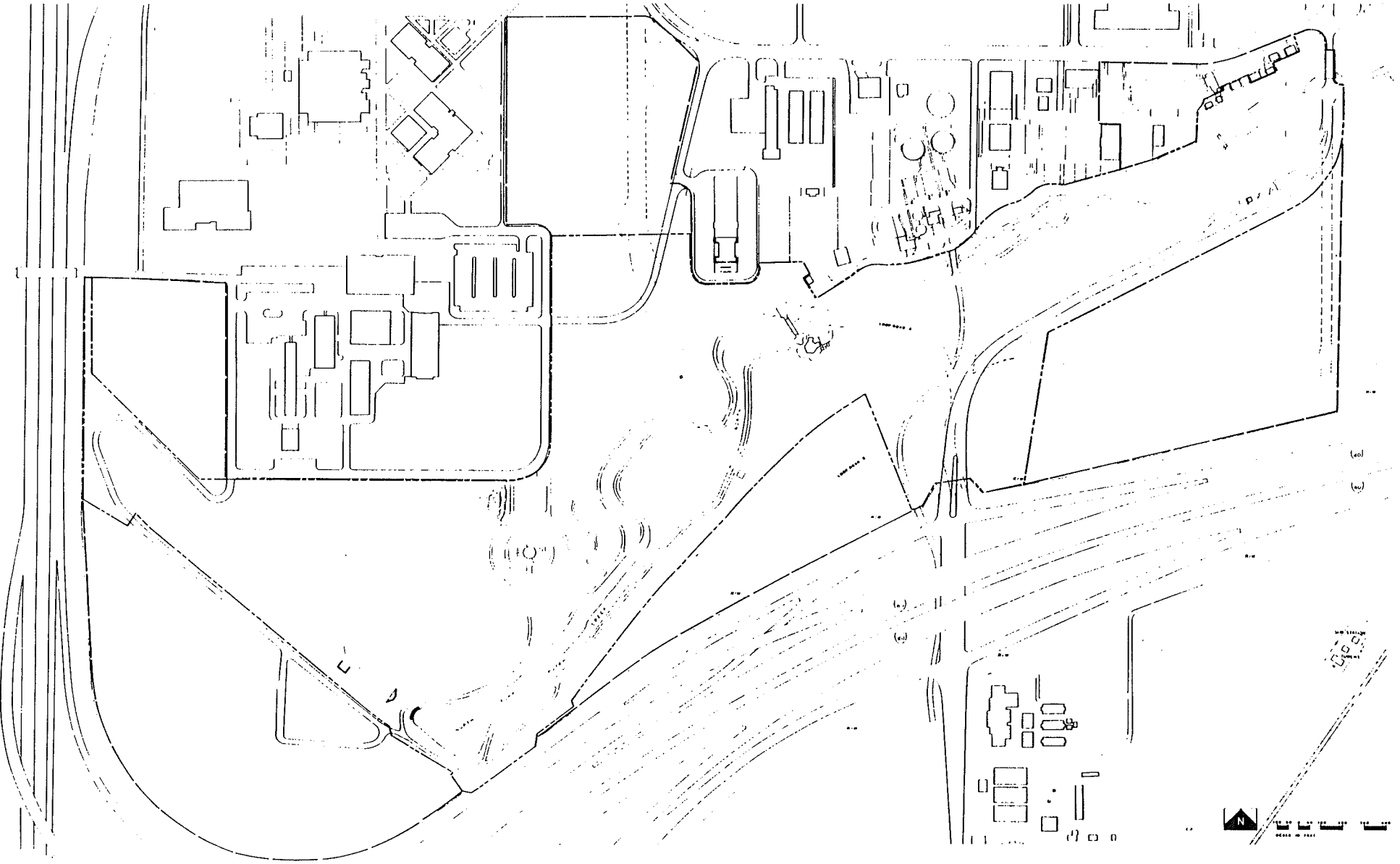
32"

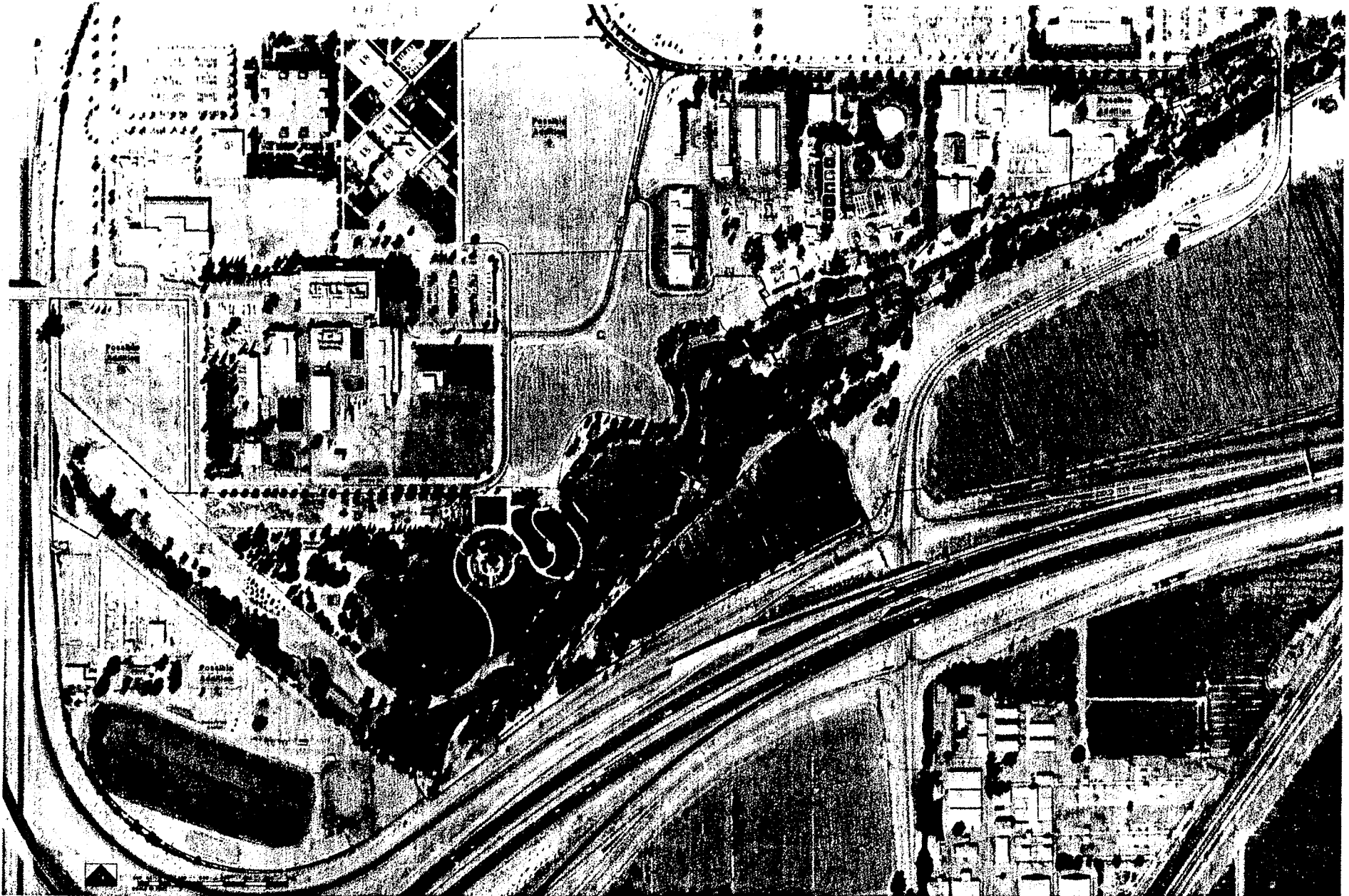
32"



40"

64"

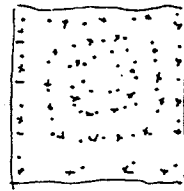
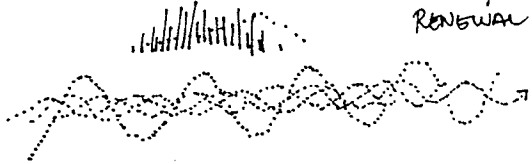
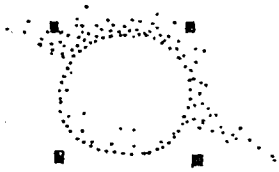




Appendix D

The following is a collection of notes, sketches and studies in the approximate order in which they were generated to serve as a record of design process.

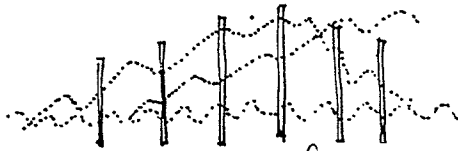
The Garden as A SYSTEM: RENEWAL/DEATH/
RENEWAL



the garden of
10,000 years.

- the non-substantial garden

Amorphous, LEFTOVER LAND →



nature
spirit



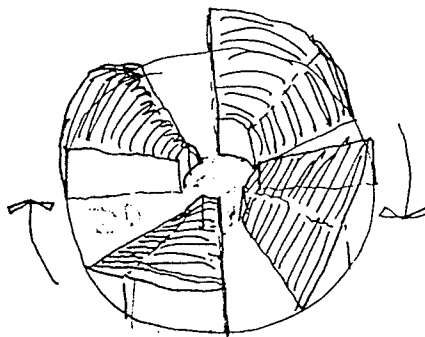
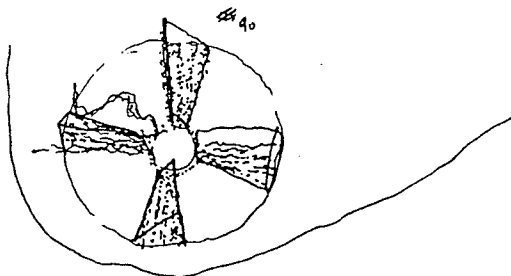
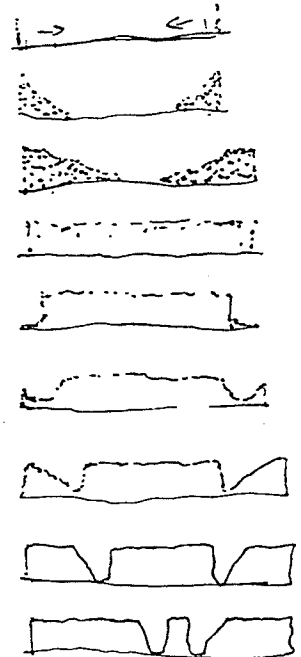
city
mind



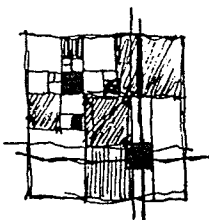
- the call of opposites.

- (life)
- the garden as cycle -
- = as a response to the garden as climax condition.
- : the role of history and hist. preservation

the garden of dilemmas



Garden of 10,000 Years...



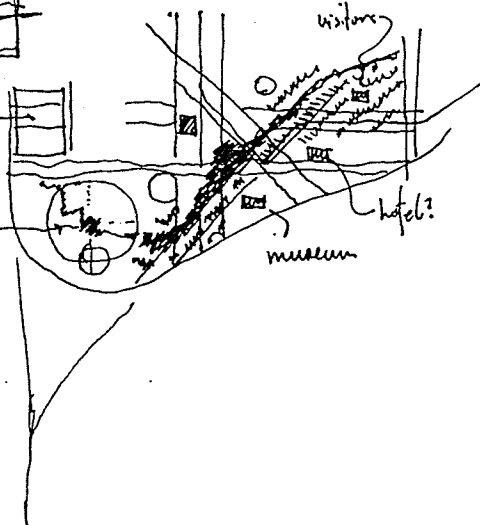
Villa Lante?
Prairie Garden



the garden of 10,000 years

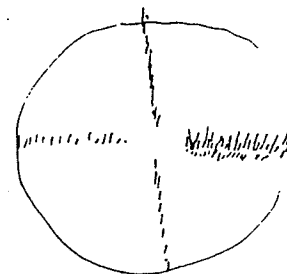
birth nature
life man
death

CYCLES



history

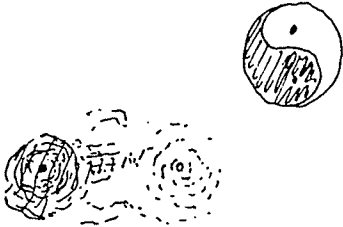
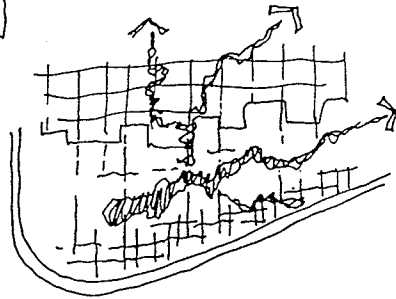
hotel?
museum



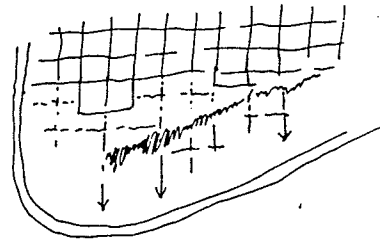
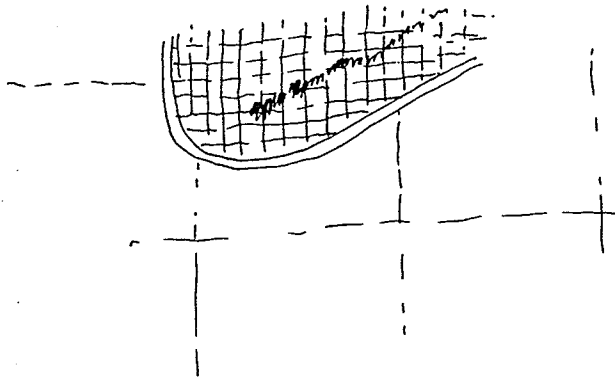
Sketches of garden themes



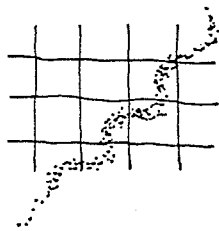
campus as extension



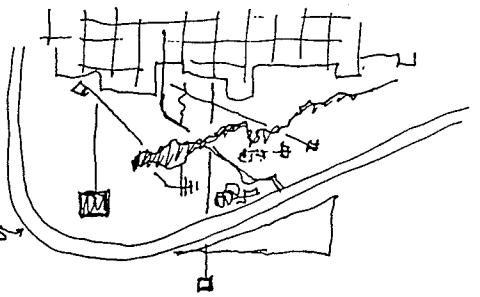
land as commodity to be "divided" up.



suggests accretive development



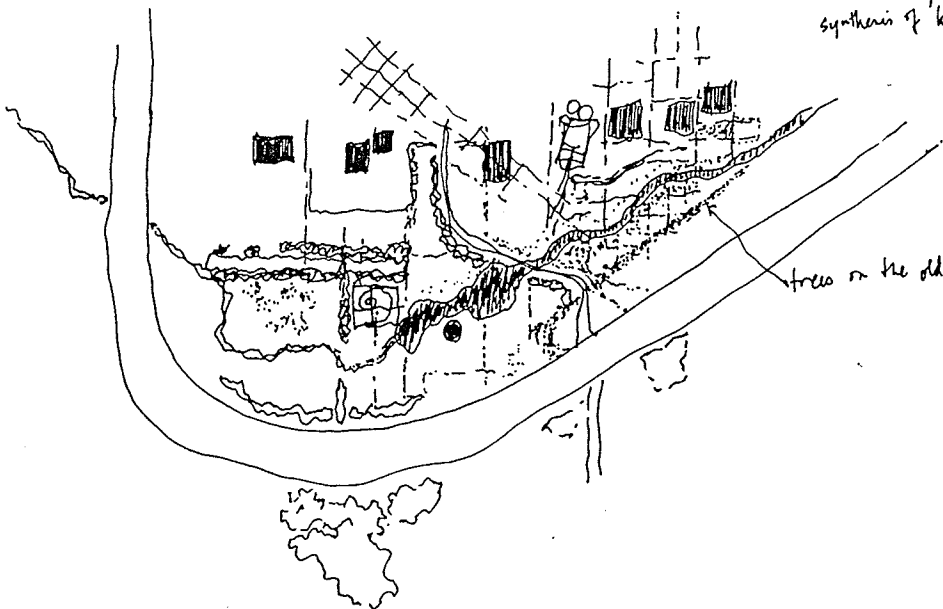
the land allocated as "canvas" for composition



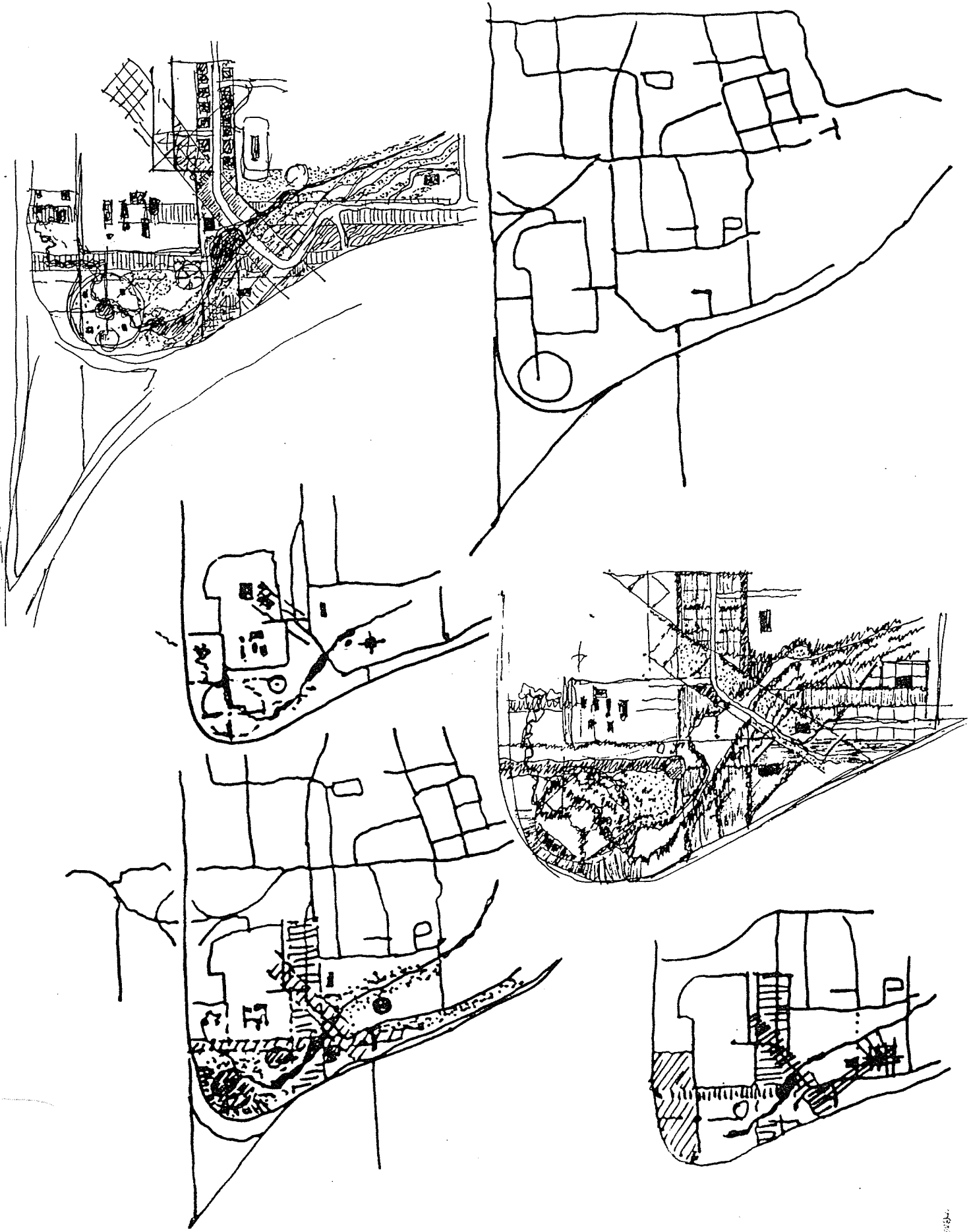
the frames

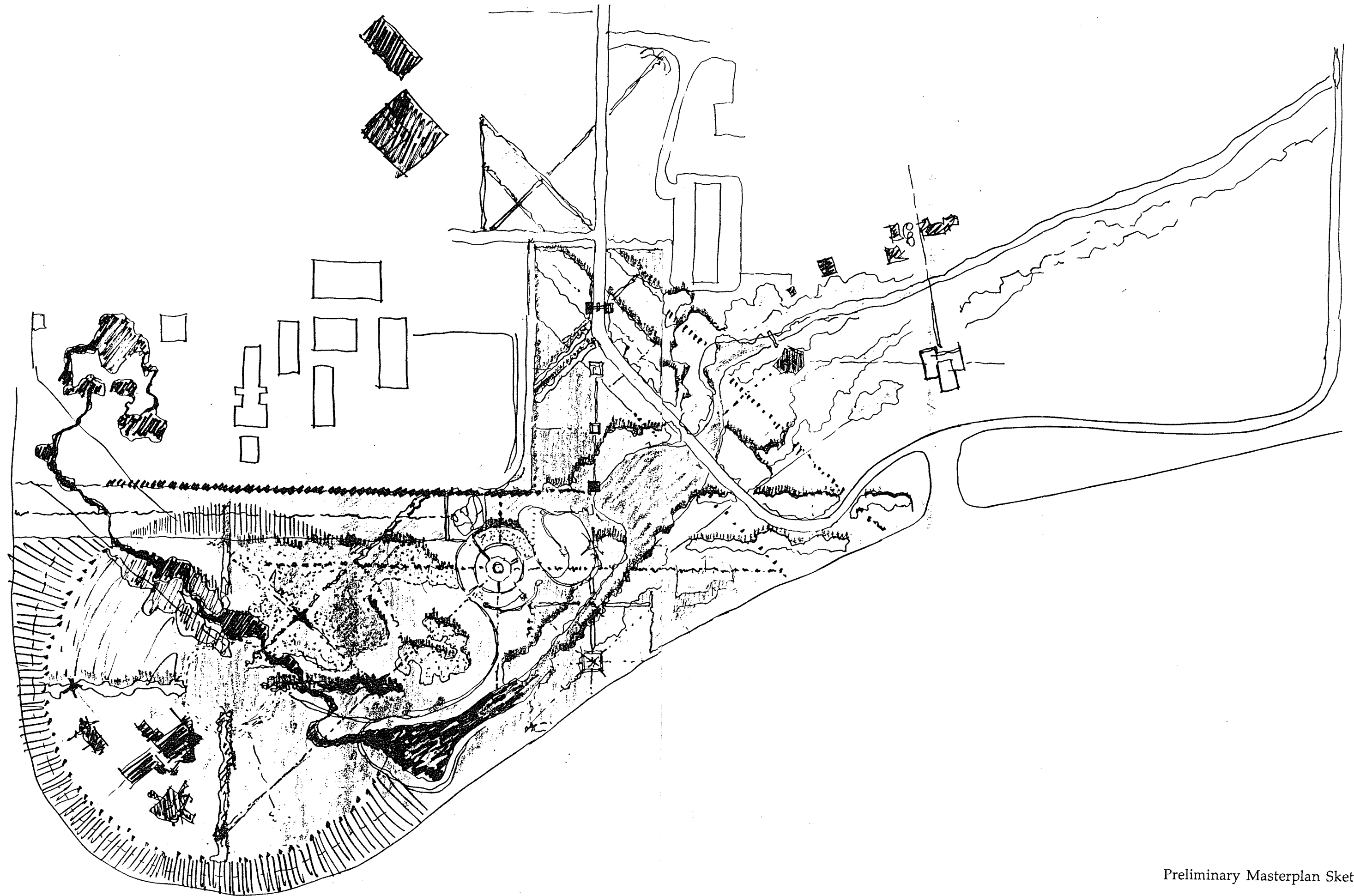
PROGRAMMING: is the program adequate/correct?

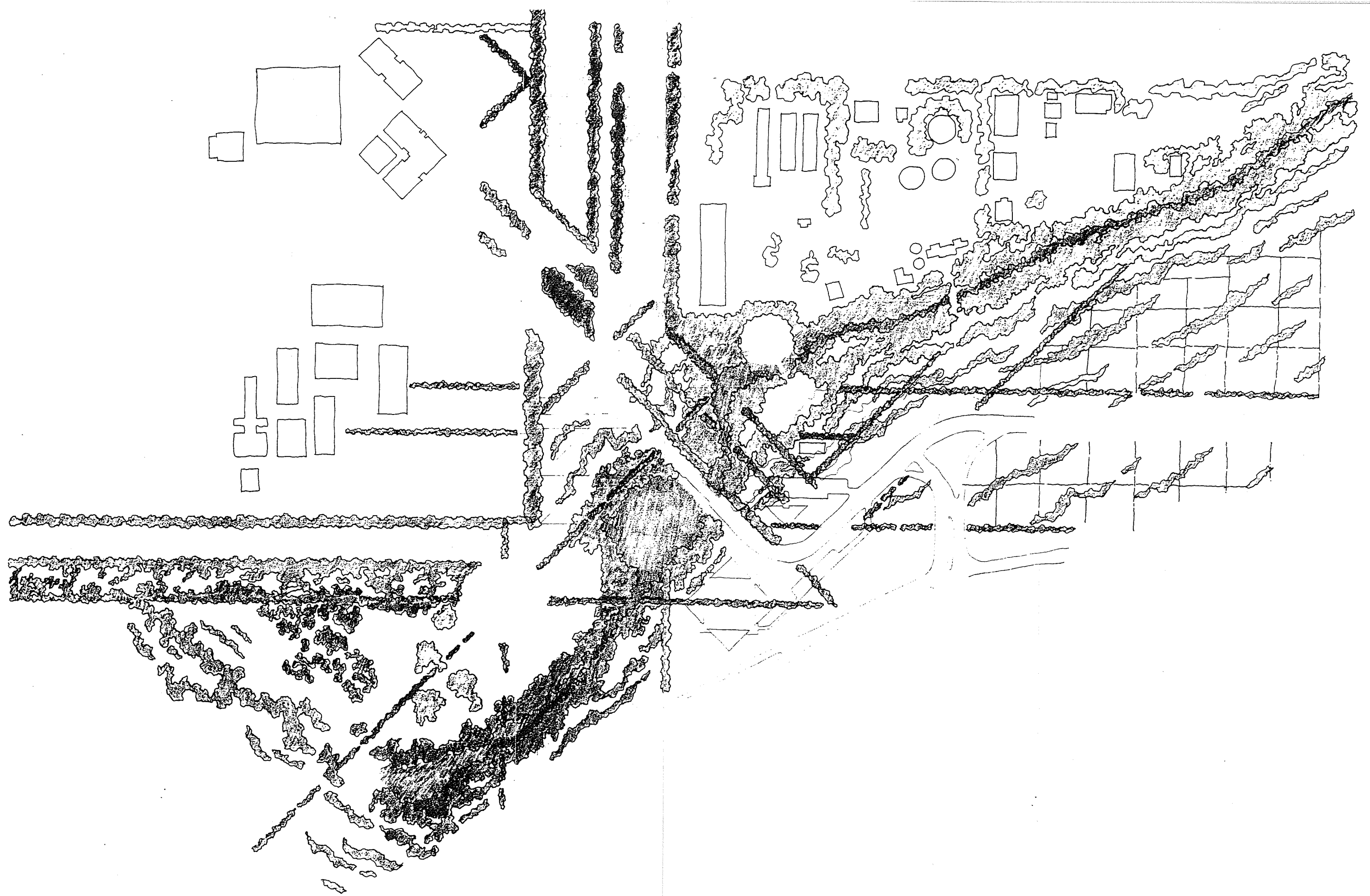
synthesis of 'logic' and 'natural'

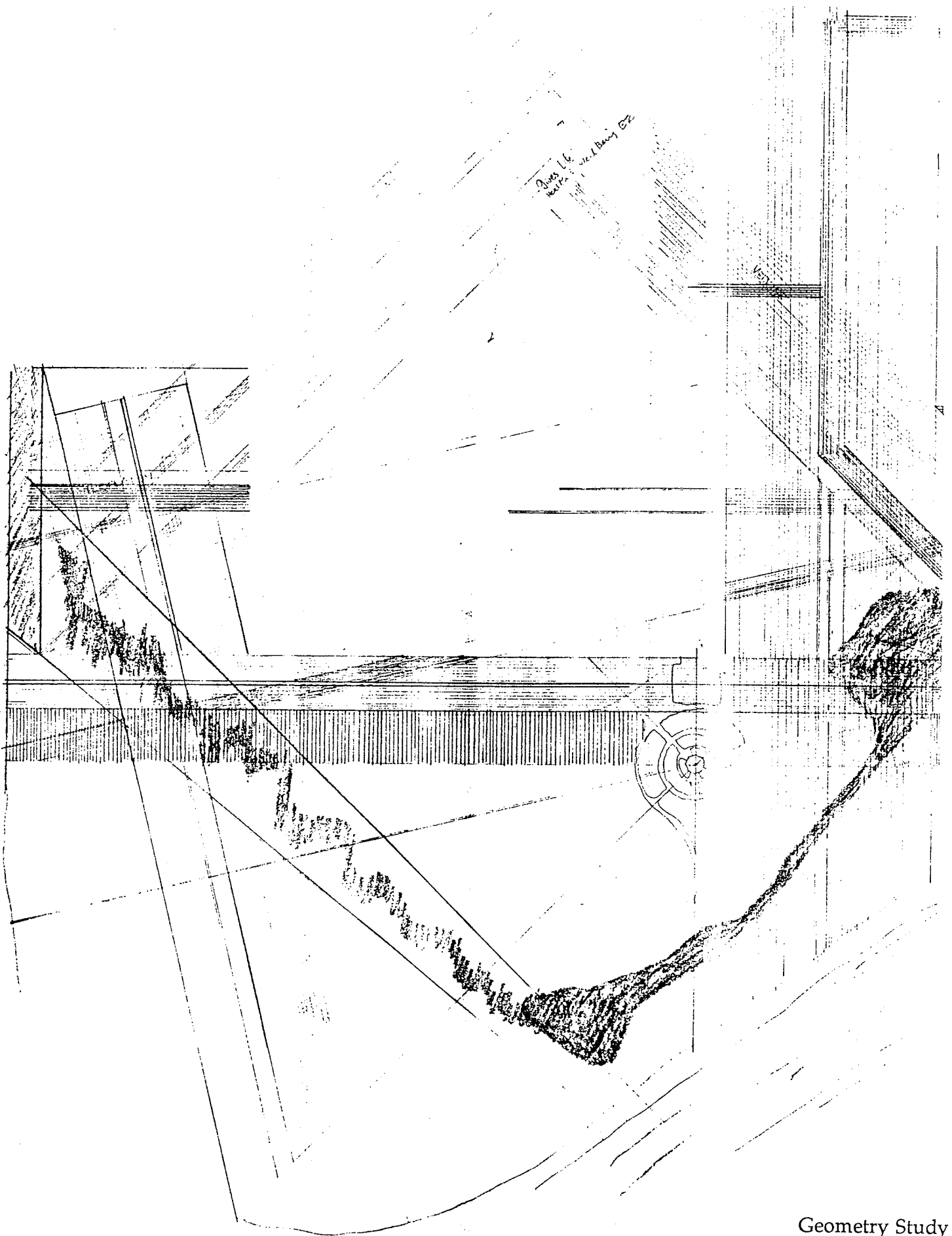


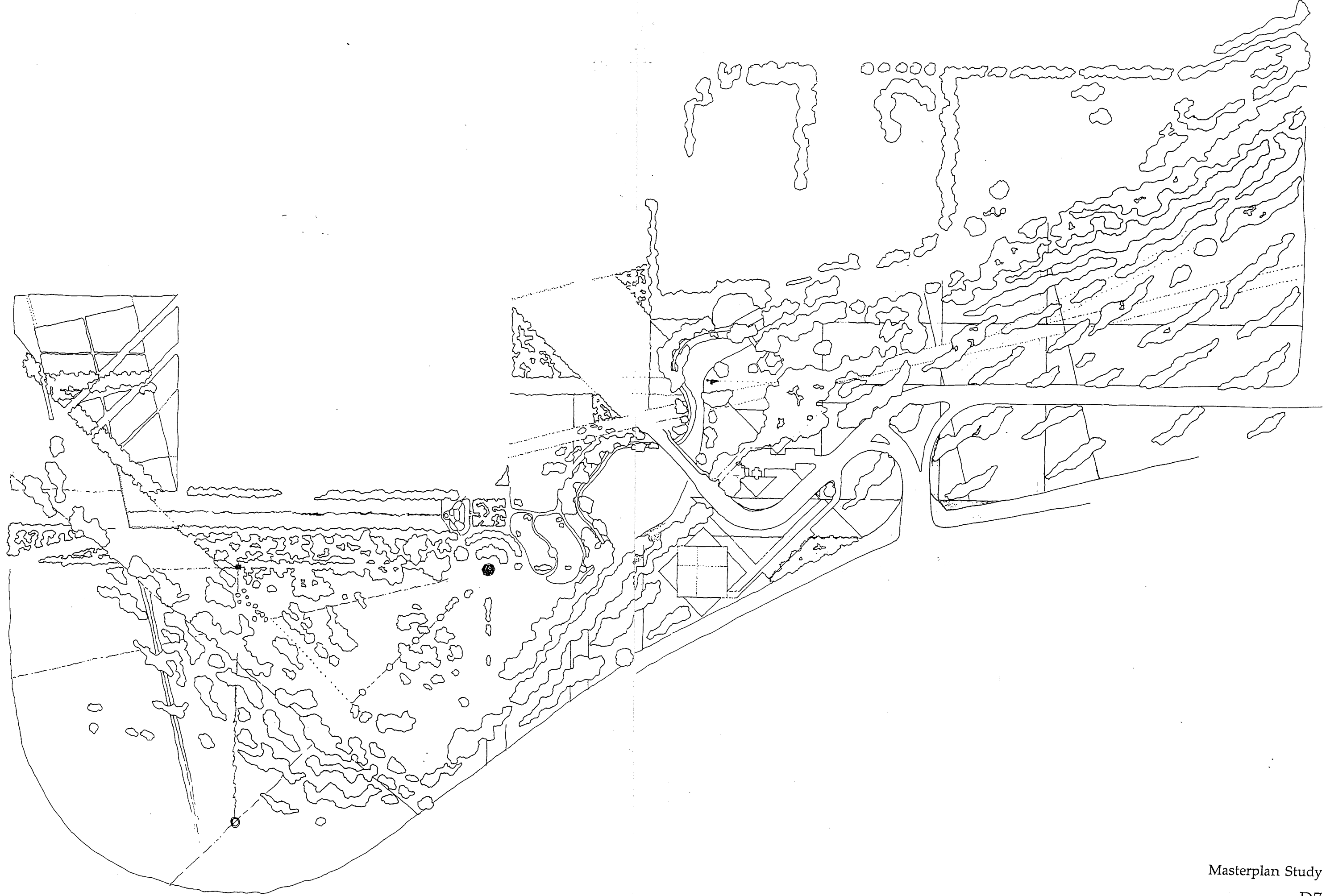
trees on the old Davis road.

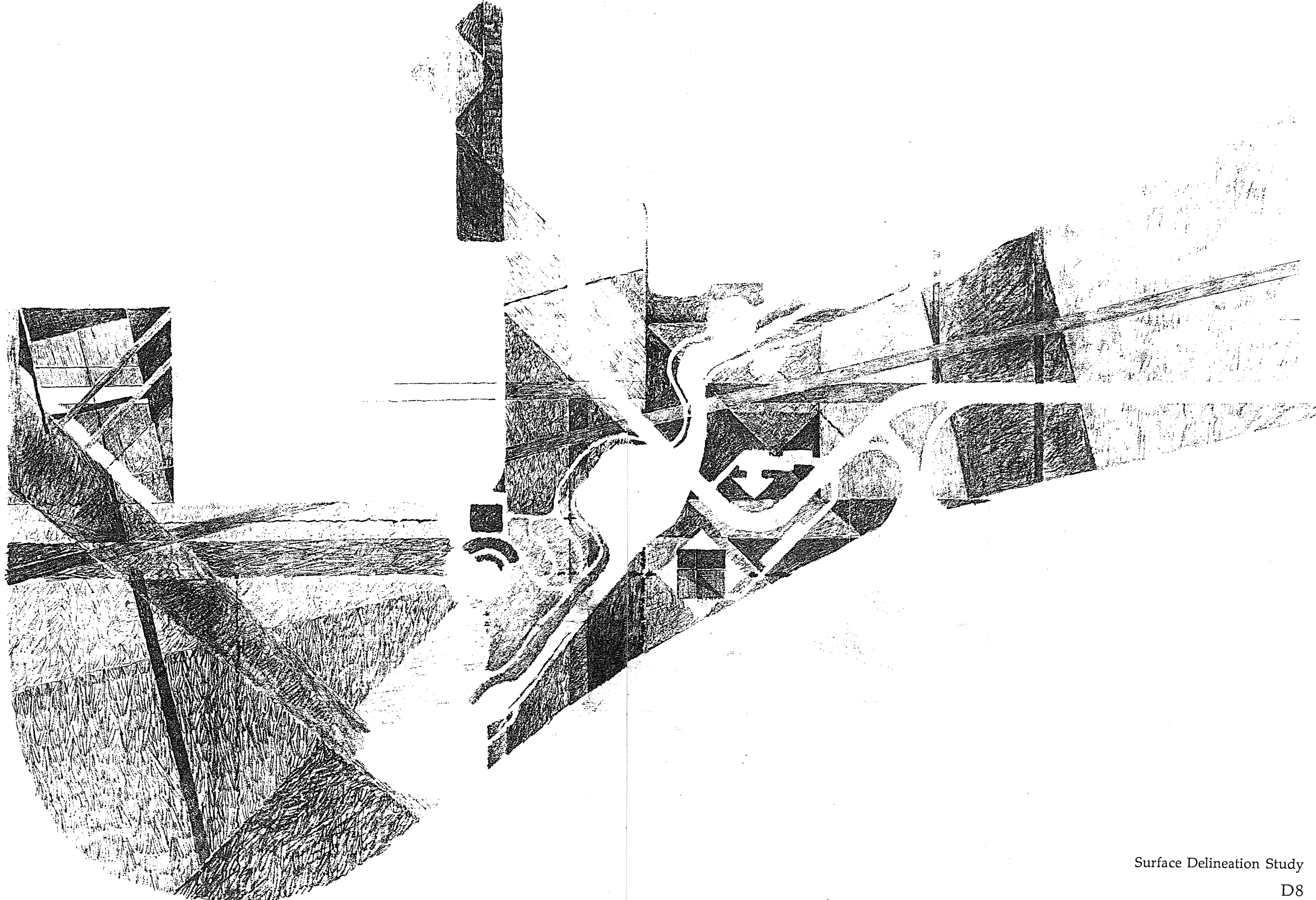


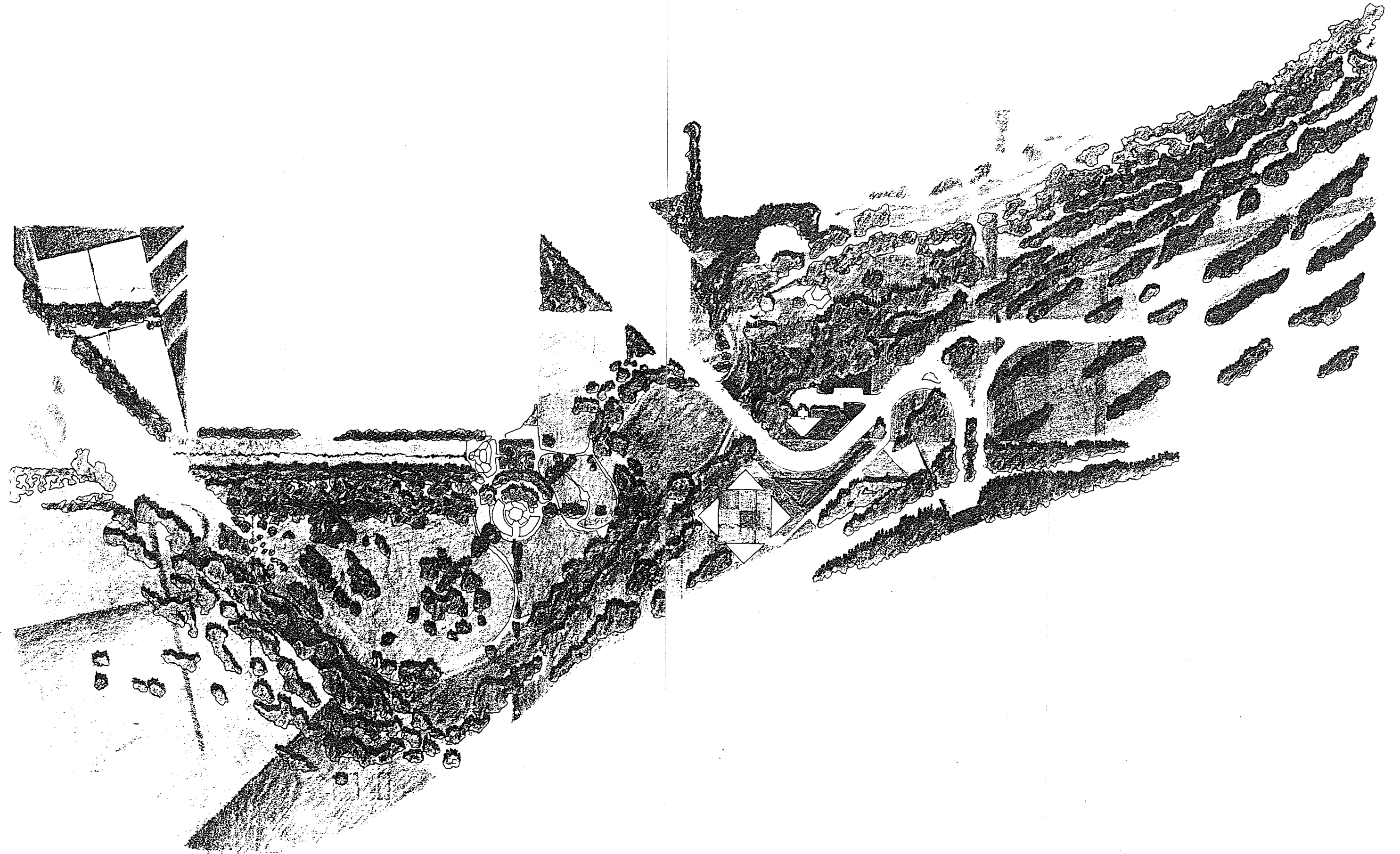


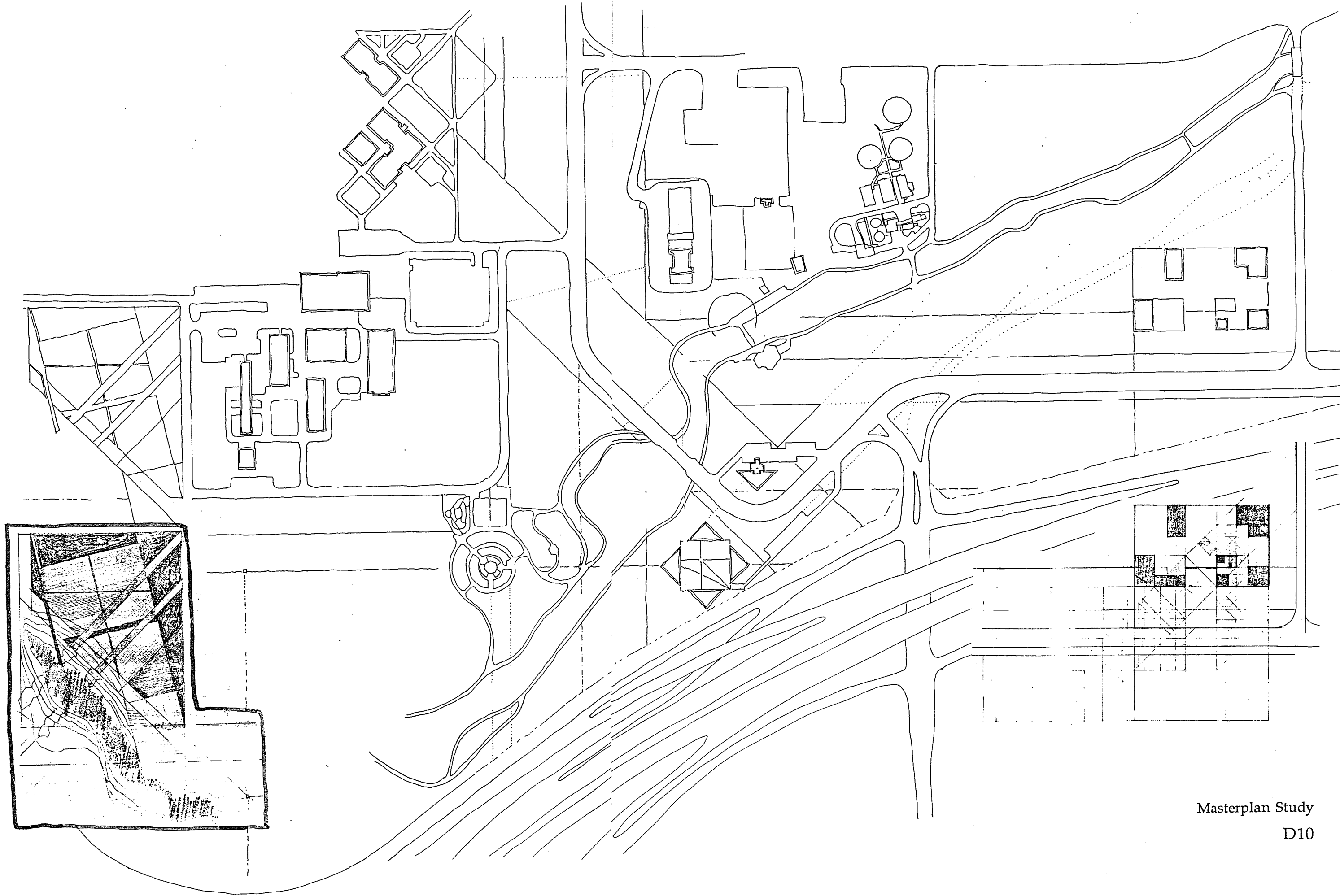


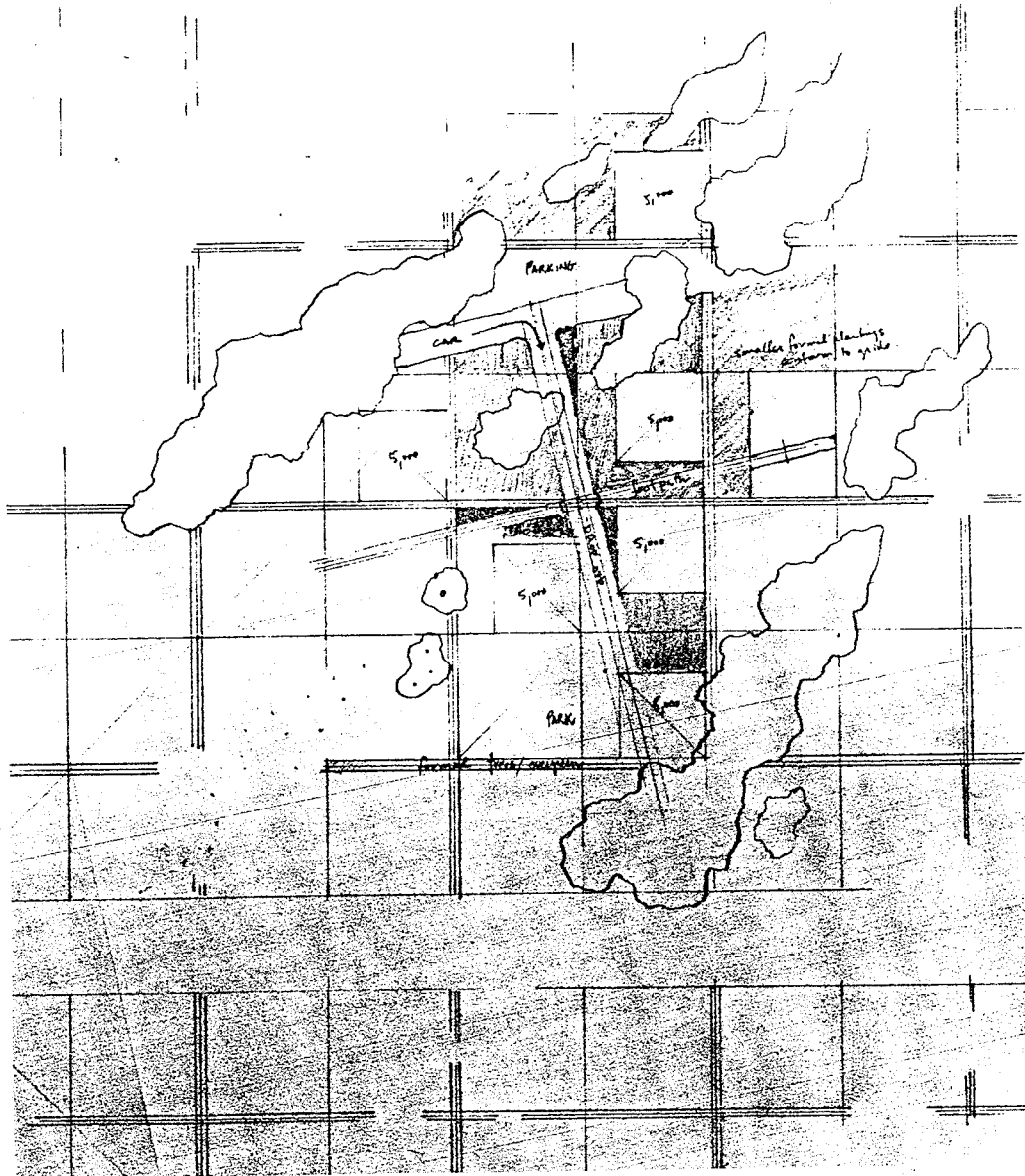


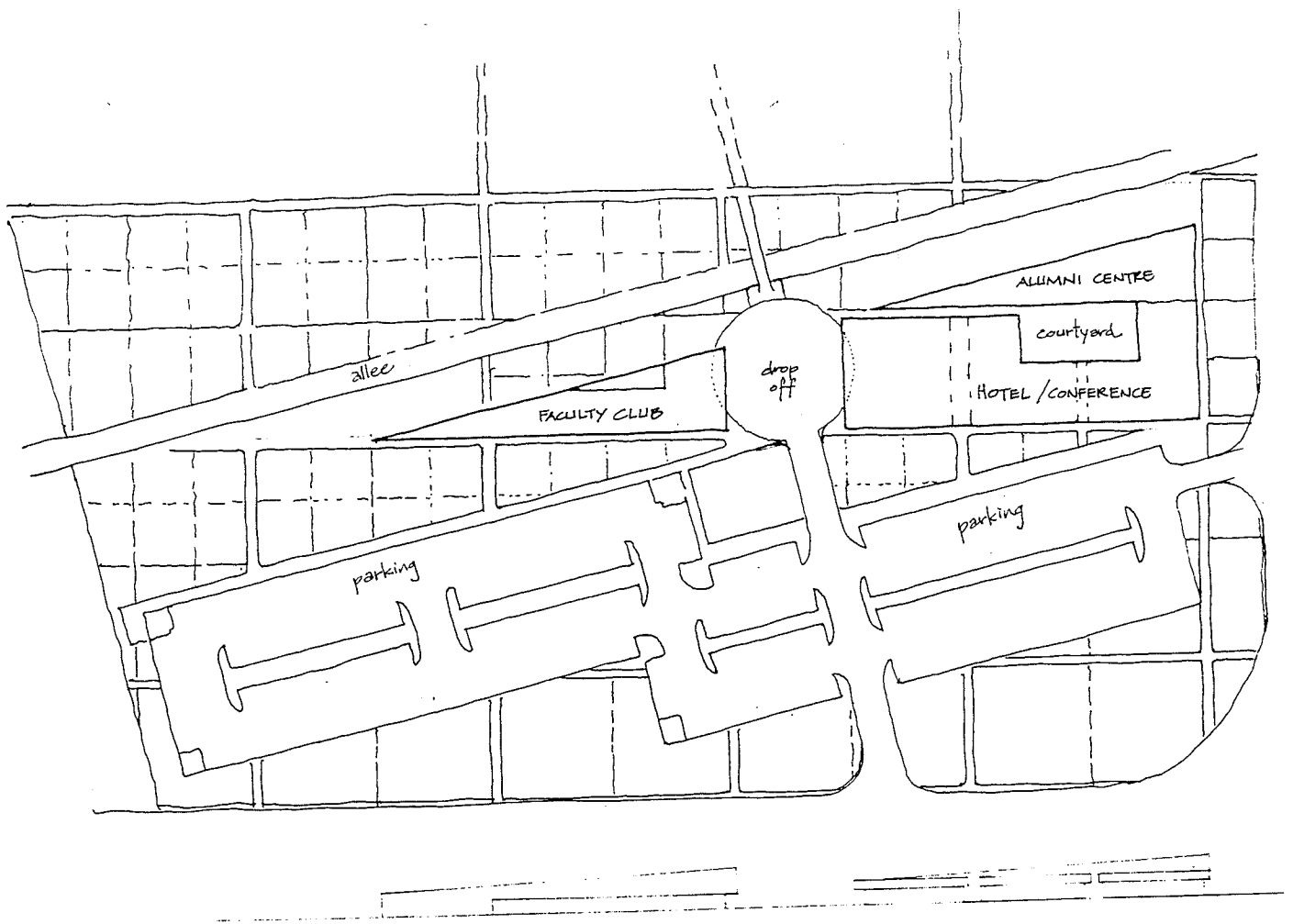




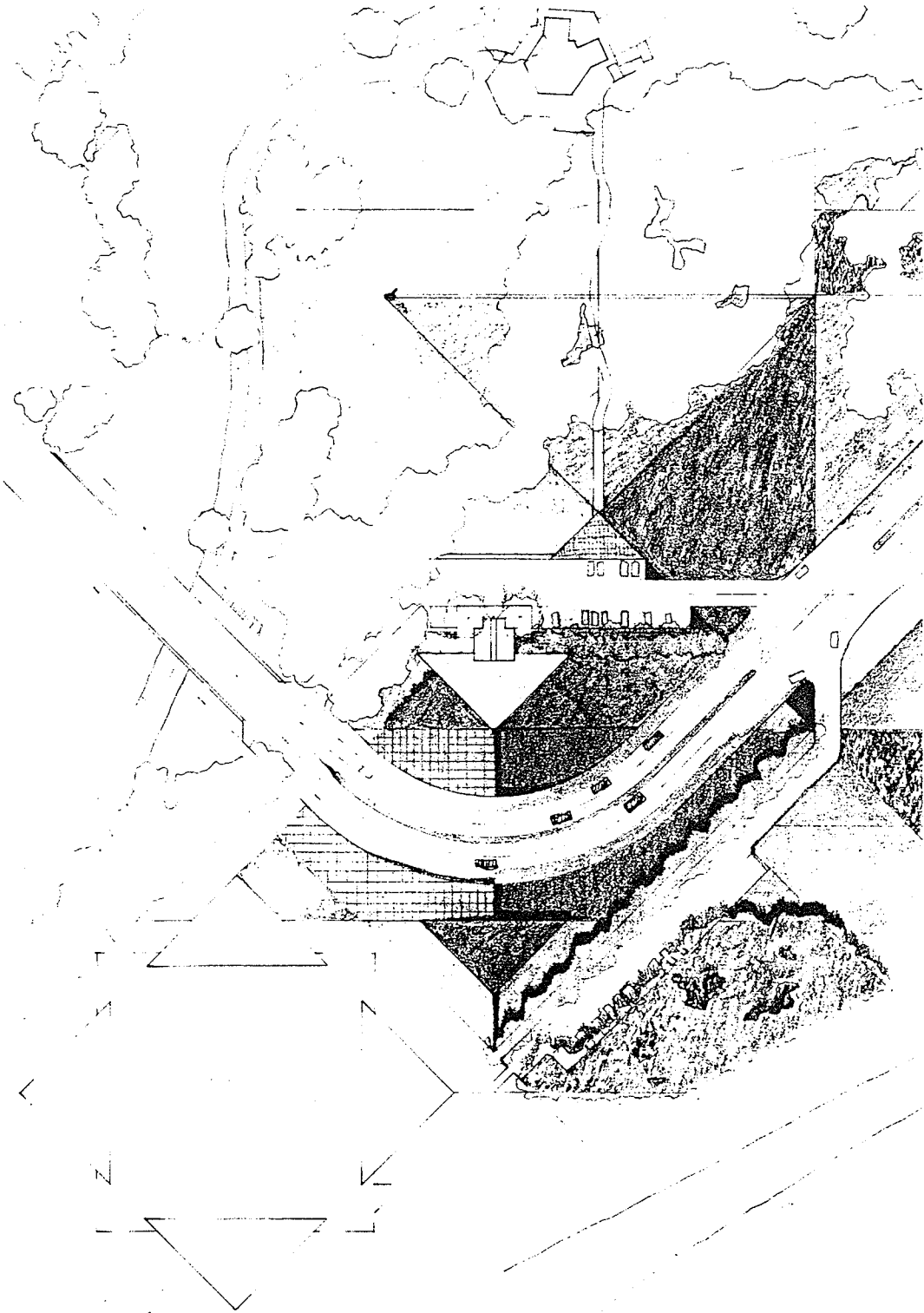




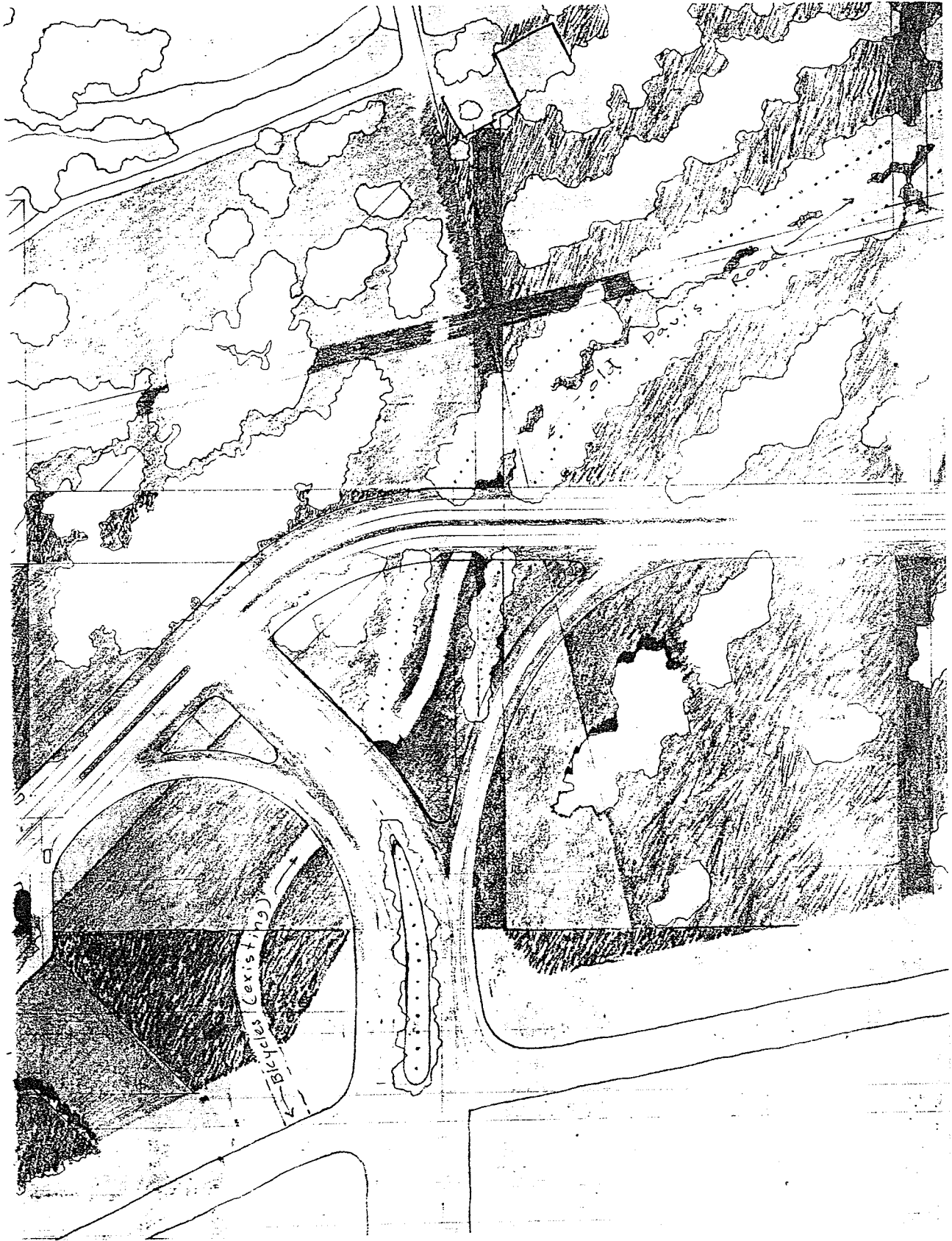




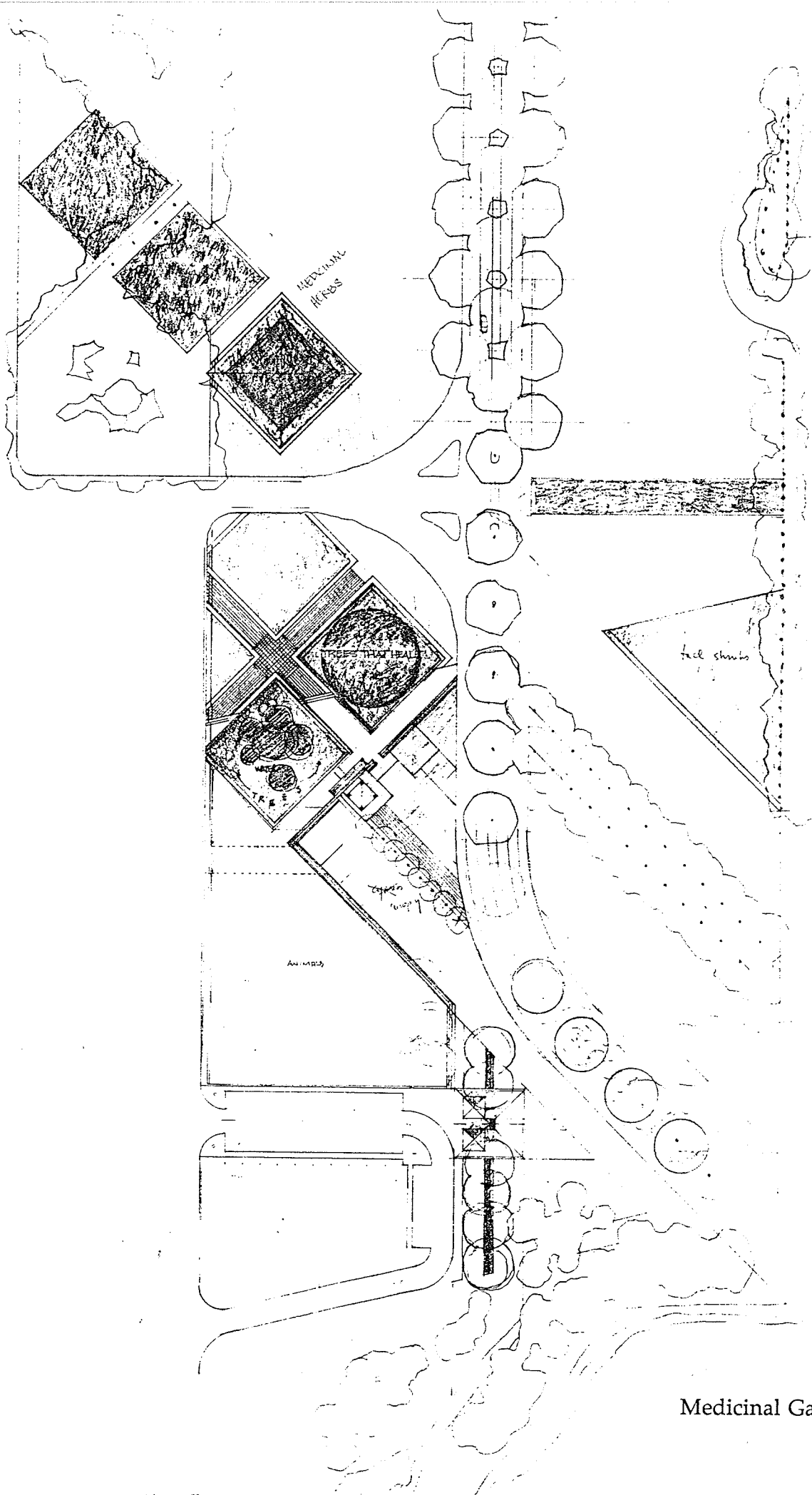
Hotel, Conference Centre,
Faculty Club, Alumni Centre Study

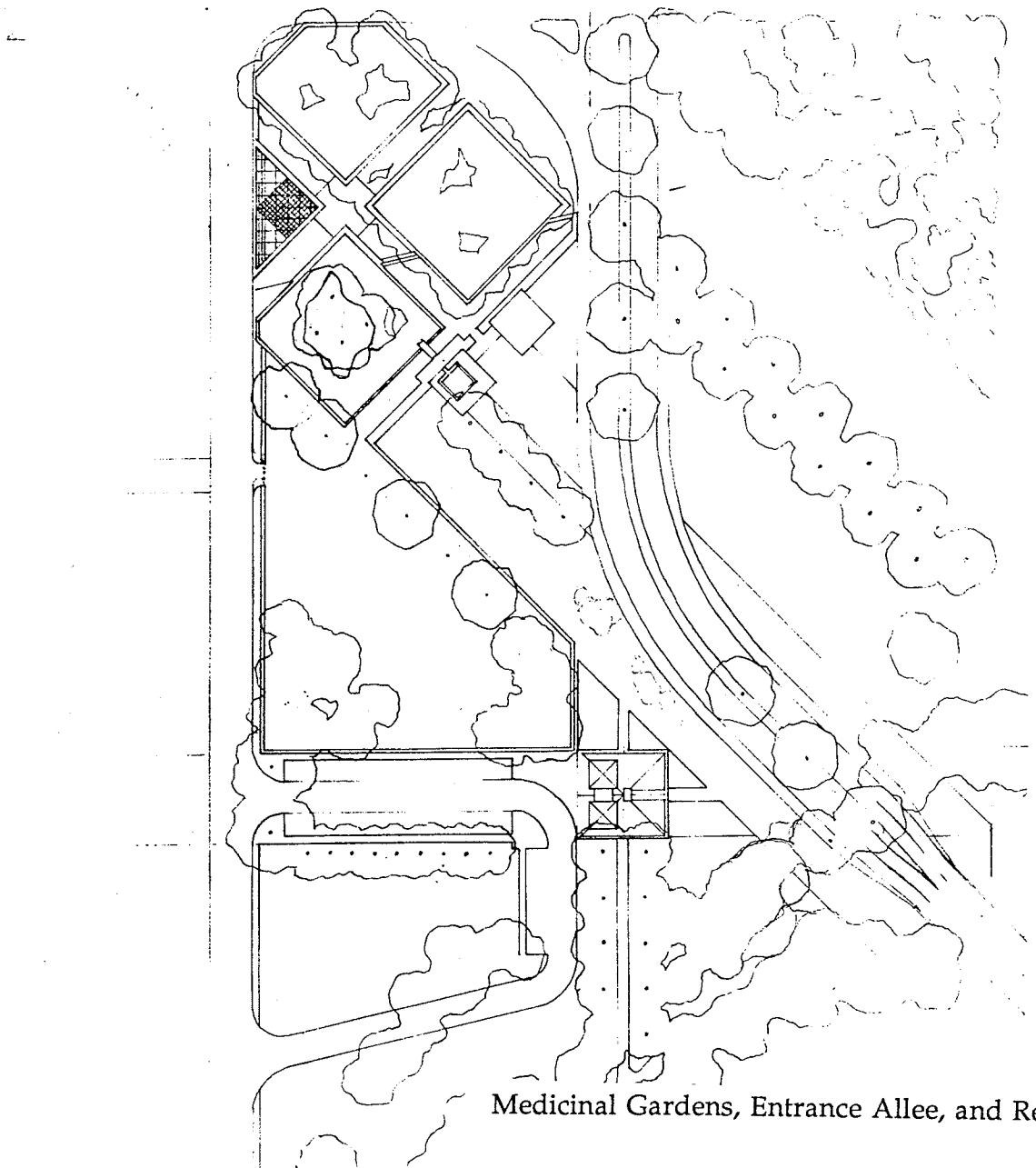
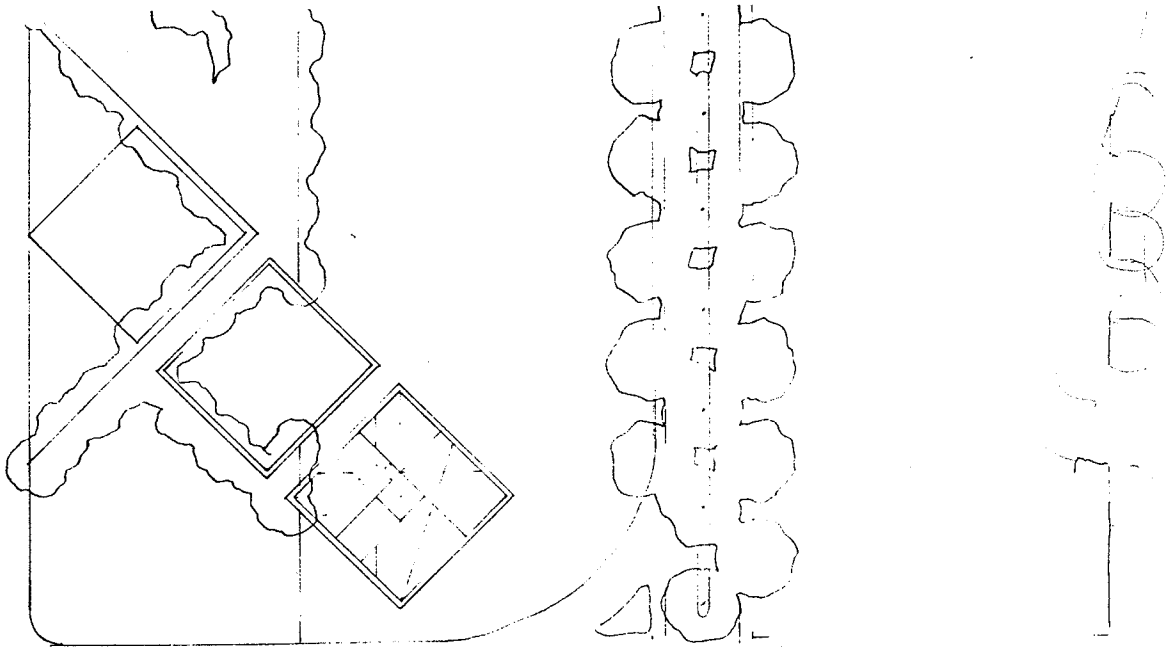


Information Centre
Museum of Natural History

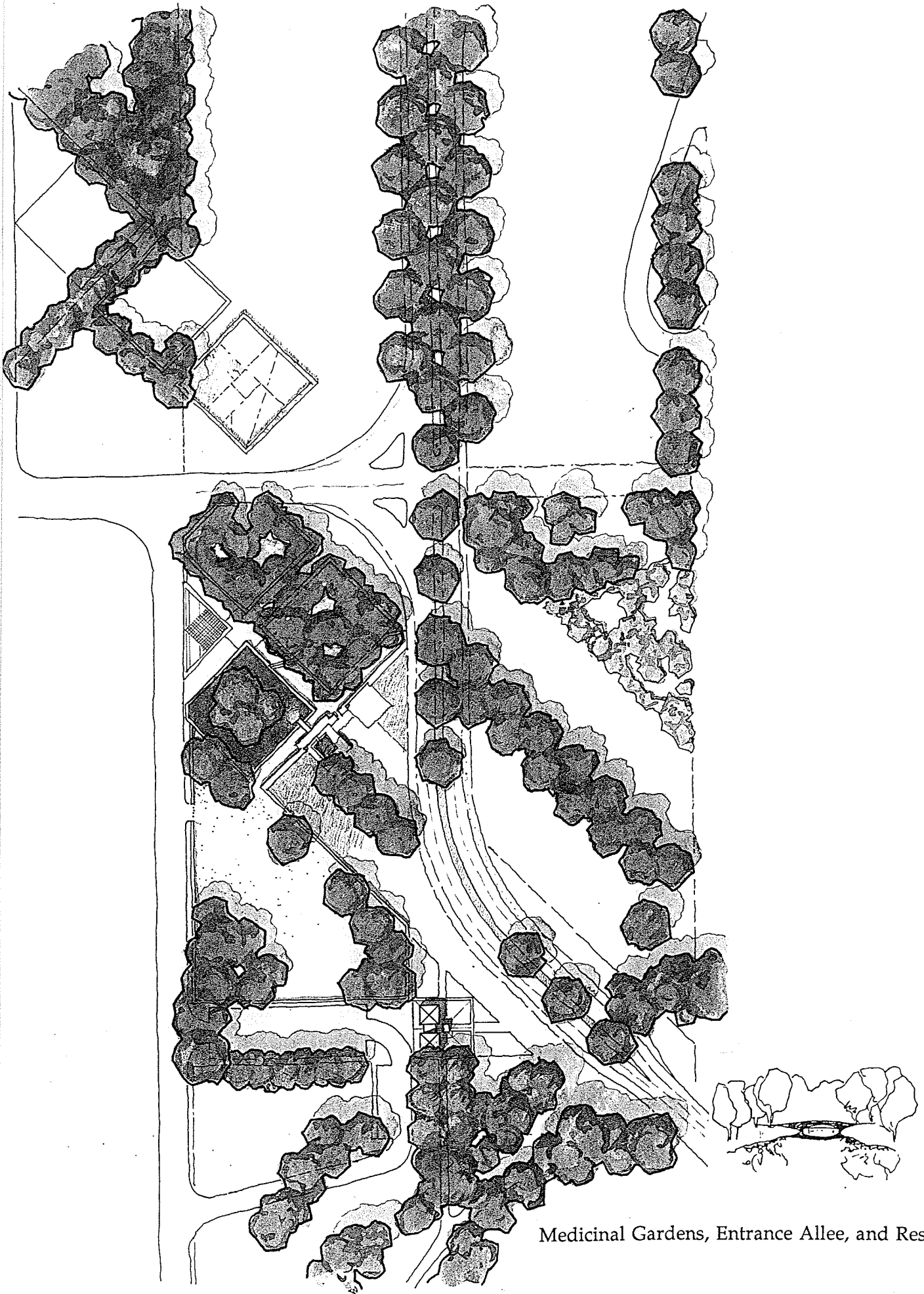


Entrance to Campus Loop Road System

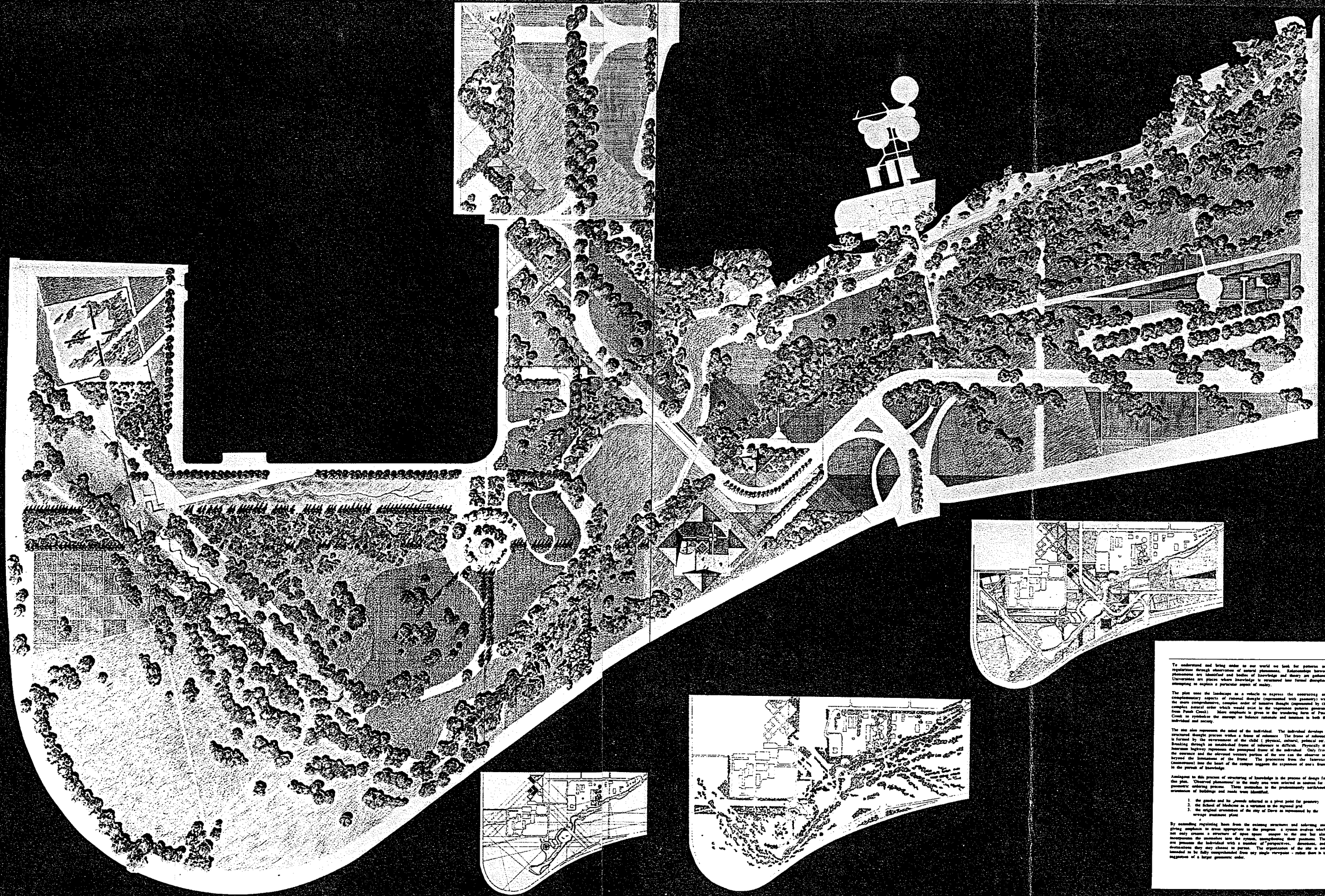




Medicinal Gardens, Entrance Allee, and Rest Area



Medicinal Gardens, Entrance Allee, and Rest Area



To understand and bring order to our world we seek the patterns and regularities through observation of natural phenomena. Relationships between phenomena are identified and bodies of knowledge and theory are developed. Theories are tested against knowledge by systematic and logical application of methods to practice aspects of reality.

The plan uses the landscape as a vehicle to express the underlying and complementary systems of rational thought (conceptual) and sensory perception (physical) which would give to the individual a sense of order and direction. Only from the experience and the abstract sensory perception of the environment can the individual gain the knowledge of the world. The plan is designed to provide the individual with a sense of direction and order in the physical world.

The plan also represents the world of the individual. The individual develops a personal concept of reality through a series of experiences. The process of education is a series of experiences which are organized into a system of knowledge. The individual's experience is a series of experiences which are organized into a system of knowledge. The individual's experience is a series of experiences which are organized into a system of knowledge. The individual's experience is a series of experiences which are organized into a system of knowledge.

Assigned to this process of structuring of knowledge is the process of design for the plan. The design process is a series of steps which are organized into a system of knowledge. The design process is a series of steps which are organized into a system of knowledge. The design process is a series of steps which are organized into a system of knowledge. The design process is a series of steps which are organized into a system of knowledge.

1. The plan is designed to provide the individual with a sense of direction and order in the physical world.
2. The plan is designed to provide the individual with a sense of direction and order in the physical world.
3. The plan is designed to provide the individual with a sense of direction and order in the physical world.

By analyzing existing plans from the existing structures and analyzing and applying techniques to these structures in the program, a system of knowledge which would give to the individual a sense of direction and order in the physical world. The plan is designed to provide the individual with a sense of direction and order in the physical world. The plan is designed to provide the individual with a sense of direction and order in the physical world. The plan is designed to provide the individual with a sense of direction and order in the physical world.

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