A COMMUNITY COLLEGE FOR THE NEW RIVER VALLEY: PROCESS METHODOLOGY AND DESIGN PROPOSAL

by

Walter J. Currin

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APPROVED:

W. C. Bauman, Jr., Chairman

H. S. Hill

W. R. Kark

J. C. Wang

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V. INTRODUCTION

1. Thesis Objectives

It is intended that the thesis be principally a design experience. The primary objective is to design a facility whose plan incorporates and reflects an understanding of architecture; a facility that is right for its purpose, its people, and its surroundings. A secondary objective is to document the design methodology leading to the proposed solution. It is hoped that the thoughts, aspirations, criteria, concepts, decisions, and the programmed physical requirements for the building are integrated into the design solution such that their intended relationships are better illustrated by the drawings and models than by the narrative explanation of the design scheme. If the building stands by itself in this manner, then the project is successful.

It should be pointed out that the methodology employed during this design project and documented, to some extent, by this paper is not intended to be presented as a rigid and inflexible sequence of actions applicable to all design projects. It is well realized that design methodologies are not and should not be alike for any two people and that furthermore an individual designer will employ different methodologies for different project requirements. However, although methodologies differ, basic considerations must be somehow and somewhere appropriately dealt with and an understanding of architecture must be continually present and exercised if the design solution is to be successful. The methodology documented herein must deal appropriately with these perpetual considerations and must reflect an incorporation of valid architectural principles and decisions.

2. The Design Facility

The project building type is a community college facility to serve approximately 850 students within a planned building area of 85,000 square feet. The site is a one hundred acre tract of land located at Dublin, Virginia. The challenge is to design a building that is right for its intended purpose, for the particular people it will serve and for its physical environmental surroundings.

VI. STATE OF THE ART

1. Characteristics of Community Colleges

It is helpful to be aware of the historical and physical evolvement of the community college system of which the project facility is to be a working part. However, the educational, social and architectural philosophies that have generated and guided the physical evolvement are criteria more useful to the aspirations of this design project. These intangible characteristics of community colleges are unique to only this particular kind of college and they constitute design criteria of vital importance. Obviously, the constant architectural criteria such as physical environmental factors, structure, circulation, vista, mechanical systems, electrical systems, activity space requirements, natural lighting, and others are fundamentally important. To disregard any of these essential architectural criteria is to insure failure of the design solution. However, it is felt that the design criteria for this project that should be given highest priority are those architectural criteria that are generated by the educational and social philosophies that are unique to community colleges. These are the criteria that have the potential to make the building right for its purpose, its people, and its surroundings.

The following unique characteristics of community colleges were isolated by reviewing the state of the art through reading and by visiting and studying existing facilities, and are felt to be criteria of the type described. These will be regarded as primary design generators throughout the design process.

(1) A characteristic that differentiates community colleges from other universities and colleges involves the local-indigenous nature of the community college's programs and its student body.[1] The facility and its programs must be particularly sensitive to the aspirations and objectives of the community it serves. It is important that the image and identity of the community college be one that will be compatible with, but simultaneously enriching to, the life styles of the local community.

(2) The indigenous nature of the community college in conjunction with their intentionally small student and faculty body suggests that the design scheme should emphasize human scale spaces of warmth and comfort[2] rather than the monumental massive, masculine architecture that is present on many of our larger university campuses. The facility should be a comfortable and relaxing place rather than imposing and monumental.

(3) The limited numbers of students and faculty members offer an opportunity for more personal relationships than is possible at larger universities. The administrators should not be isolated from the students. Privacy choice for the administrators must be provided, but the opportunity to the designer exists to arrange circulation and activity relationships in such a way as to promote enough contact so that the students and administrators feel that they know each other.

(4) The community college should be, in many senses, also a community center[3] whose facilities offer themselves to all members of the community whether enrolled in classes or not. Its library, exibitions, recreational facilities, auditoriums, laboratories, machine

shops, the complete facility, should strive to involve the entire community as a constant objective. The facility should be designed in such a way as to project an image of community ownership and service; a center of activity for all the people of the community.

(5) The significant educational trend toward the increased use of mass media in teaching is a factor to be dealt with and gives additional importance to the library or learning resources center.[4] The fact that many new community colleges have the learning resources center incorporated as the nucleus of their floor plan indicates the priority given to this particular activity.

(6) The embrionic status of the evolvement of community colleges is a factor that suggests a need for flexibility particularly in terms of interior spaces.[5] It is not uncommon for a building area used for classes during phase I to be used completely for administrative activities during phaseII or III of a ten year master plan. This situation in conjunction with the fact that the various phases are constructed several years apart and are often designed by different architectural firms imposes a criteria that the design be open-ended and accomodating to these types of modifications and expansions.

(7) The distinct division of the typical community college into vocational-technical and college parallell curriculums[6] is a characteristic that must be appropriately dealt with. The varying requirements of these two academic orientations and their inter-relationships generate significant design parameters.

(8) All students and faculty members commute daily from their homes nearby. No housing is provided.

2. Analysis of Existing Facilities

A rewarding aspect of conceptual thinking involves an examination of selected existing facilities in an effort to gain some appreciation of the criteria and relationships that other architects have felt important in designing community colleges. Schematic diagrams are a useful tool for summarizing analysis of existing facilities primarily because they condense a maximum amount of information into a single visual picture and they clarify and emphasize relationships between various criteria in a way that is impossible narratively. For purposes of illustrating the methodology employed, two example analyses of existing facilities are presented next.

New River Community College
Pulaski County, Virginia
650 Enrollment
65,000 Square Feet Total Enclosed Space[7]

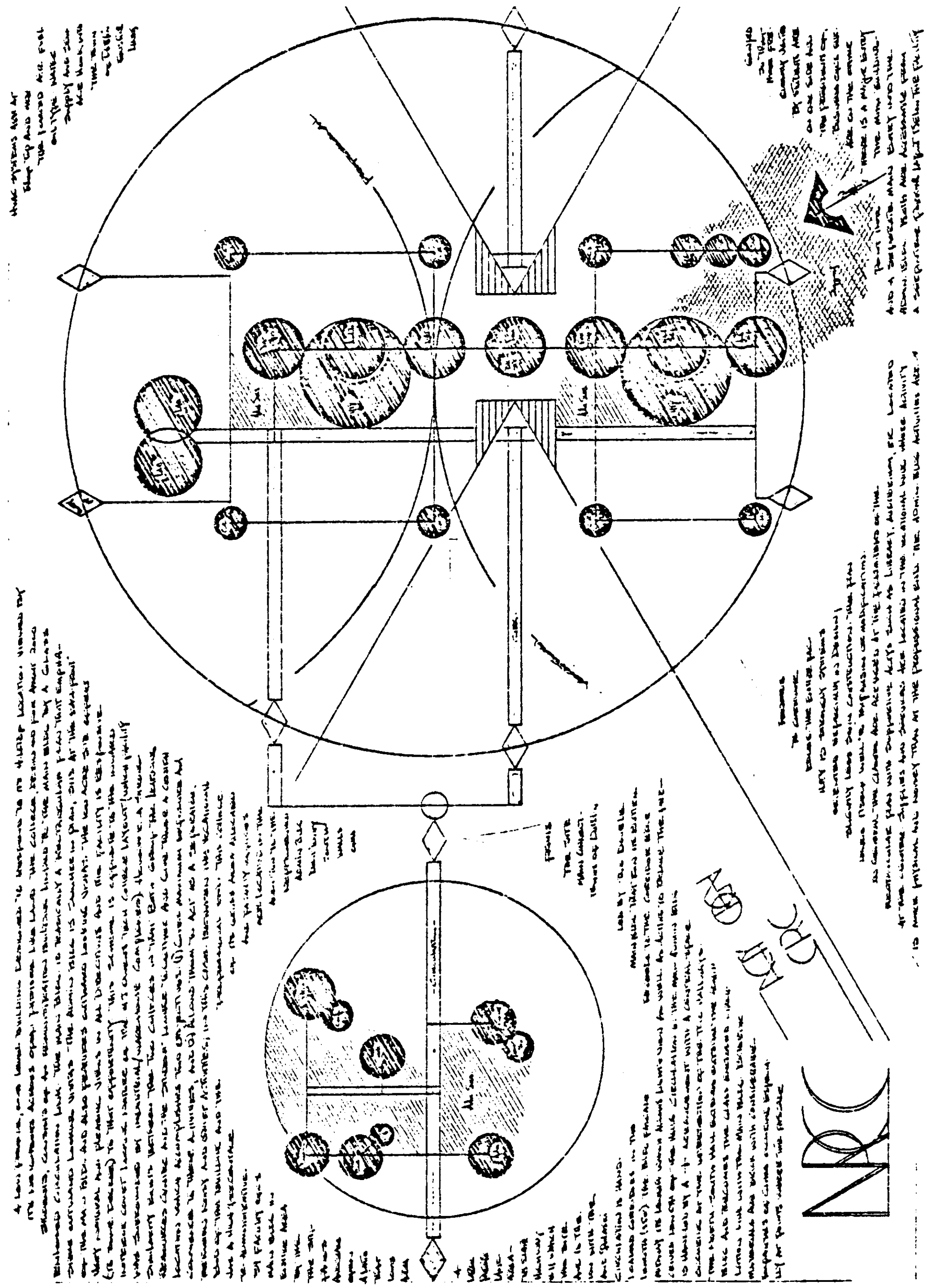


Fig. 1: New River Community College, Diagrammatic Representation

The New River Community College facility is a low profile one level building designed to respond to its open hilltop location and is viewed by its neighbors across rolling pasture-like land. The plan incorporates an administrative building seperate from the main building but connected by means of a glass enclosed circulation link. The administrative building which is square in plan sits at the east-front of the rectalinear main building. Both buildings feature outward looking vistas. The site offers natural and pleasing rural views in all directions and the outward looking visual scheme is responsive to that opportunity. The learning resources center and the student lounge are given the central location in the main building which gives maximum exposure and convienience to these activities and also allows them to act as a separator between the quiet activities located in the professional part of the building and the more noisy activities located in the vocational-technical part. The student lounge faces south and glass walls open onto a patio that looks across the pastureland area to the main highway that fronts the site. Circulation is handled by two double loaded corridors in the main building that run its entire length of 350 feet. The building fascade receeds to the corridor edge midway its length which creates an entry condition, allows light and view and acts to reduce the perceived length of the halls. The long double loaded corridors are connected by several cross-over links. Circulation in the administration building is handled by a cross arrangement of circulation paths that form a central space which is the entrance lobby. The north-south hall is allowed to continue outside of the perimeter of the administration building and becomes the glass enclosed circulation link between the two buildings. Exterior materials are brick with considerable expanses of glass occuring especially at points where the fascade receeds to the corridor edges. The entire facility is strongly systems oriented especially in design, less so in terms of materials and construction. The interior concrete masonry walls enclose predetermined spaces in a permanent manner that does not invite re-arrangement in spite of the fact that flexibility of interior spaces is an essential feature for the evolving community college. The architectural plan is receptive to the use of demountable partitions or operable walls although they are not incorporated. The plan lends itself well to future expansion or modification. Generally the classrooms are arranged at the perimeter of the rectangular plan with supportive activities such as library, auditorium, book store, and student lounge located at the center. Supplies are received and maintenance service activities are located at the far end of the vocational-technical wing where activity is more physical and noisy than in the professional wing. Both major entries are accessable from a serpentine parking layout that is below and fronts the building. The administrative building activities are grouped so that those frequently visited by students are on one side and the president's office, business manager's office, etc. are on the other. The activity organizations and circulation paths incorporated have resulted in the administrators being significantly isolated from the students. There is a major entry point into the administration building and a separate major entry point into the main building such that the administrators use theirs and the students use theirs. As a result the two groups seldom meet and talk spontaneously, meetings must be planned and executed. This situation is not consistent with the local-personal philosophy that should characterize a community college. The administrators must have privacy choice but the separation is too extreme.

Teachers offices are located in the main building such that a reasonable degree of spontaneous contact takes place between the teachers and the students. I would like to see the administrators at least have to pass through or by the student activity spaces in moving from parking to their private office area. This brief but periodic spontaneous contact would be appreciated by both students and the administrators.

M. J. Owens Community College
750 Enrollment
75,000 Square Feet Total Enclosed Space

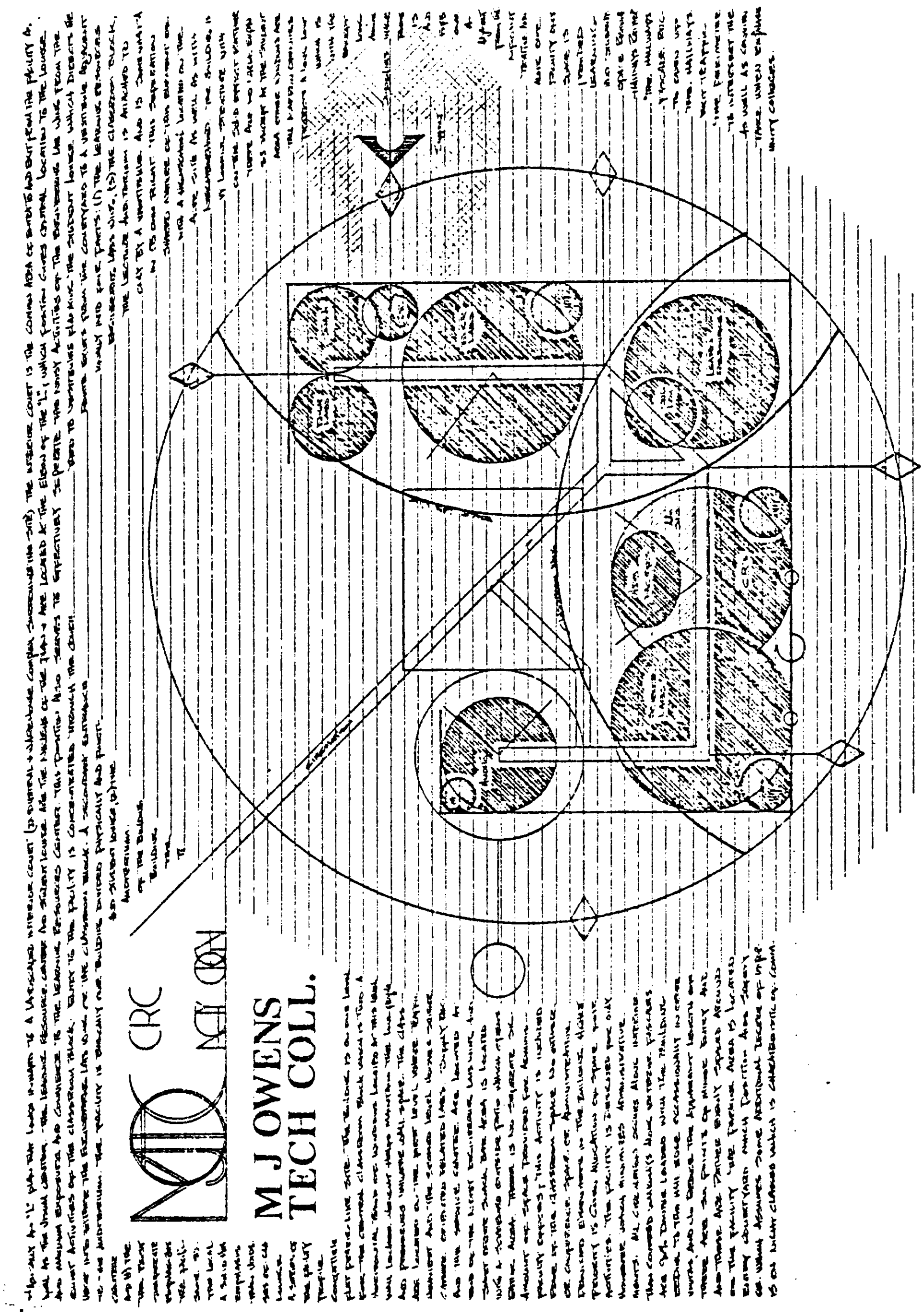


Fig. 2: M. J. Owens Community College, Diagrammatic Representation

The M. J. Owens Community College facility is basically an ell plan that looks inward to a landscaped interior courtyard. The visual scheme responds to rather grim vistas created by the industrial and warehouse complex surrounding the site. The interior courtyard is the common area of entry to and exit from the facility as well as the visual center. The learning resource center and student lounge are the nucleus of the plan and are located at the elbow of the ell, which position gives central location to the lounge and maximum exposure and convienience to the learning resources center. This position also serves to effectively seperate the noisy activities of the engineering lab wing from the quieter activities of the classroom block. Entry to the facility is concentrated through the courtyard to vestibules flanking the student lounge which directs the user into either the engineering lab wing or the classroom block. A secondary entrance route exists from the courtyard to a vestibule adjacent to the auditorium. The facility is basically one building divided physically and functionally into four parts: the learning resources center and student lounge, the engineering labs wing, the classroom block, and the auditorium. The auditorium is attached to the rest of the building only by a vestibule and is somewhat a seperate building in its own right. The seperation emphasizes the shared nature of this element of the facility with a high school located on the same 52 acre site as well as with the local community. The building is a solid heavy looking structure with emphasis on the solids rather than the voids. There are no large expanses of glass except at the student lounge area. Other windows are a series of tall narrow openings. The facility projects a long low profile which is compatible with the flat prairie-like site. The building is one level with the exception of the classroom block which is two. A long horizontal band of windows located at this level above wall locker height helps maintain the low profile image and preserves valuable wall space. The classrooms are located on the first level where traffic is heaviest and the second level houses science and career-oriented related labs. Supply receipts and the service center are located at one end of the noisy engineering lab wing and a short order snack bar area is located adjacent with a screened outside patio. All circulation occurs along interior hallways that are ninety percent double loaded with the building fascade receeding to the hall edge occassionally to bring in light, create vistas, and to reduce the apparant length of the hallways. There are six points of entry and exit traffic rather evenly spaced around the perimeter of the facility which prevents the existence of any central space. The parking area is located so as to intersect the interior courtyard which proximal position is convienient and increases safety at night which assumes an additional degree of importance with emphasis on night classes which is characteristic of community colleges.

3. Comparative Evaluation of Facilities

It is interesting to think about existing facilities, such as these two and others studied, in regards to the architectural criteria that have been determined important, itemized previously in this section and discussed throughout this paper. Which of the criteria have the designers of these facilities incorporated in a meaningful way into their plans, and which have they not incorporated? The answer to this question is that one of the criteria seems to be universally accepted and incorporated, one of the criteria seems to be significantly neglected and not incorporated and the rest of the criteria are recognized and incorporated in varying degrees in various facilities. There seems to be almost universal agreement that the learning resources center should be centrally located because of its increasing importance and the shared nature of this activity. There is agreement that the student lounge, the book store, perhaps the auditorium and other shared activities should also be located centrally in the plan. There are two major advantages to this scheme. The first involves the shared nature of these activities. The central location gives maximum convenience and accessability to these activities. The second advantage involves the use of these activities as a seperator or buffer between the comparatively noisy activities of the vocational oriented spaces and the quieter activities of the professional oriented spaces. This activity organization seems widely agreed upon and is in agreement with the criteria discussed previously.

The criteria that is most neglected and least incorporated by existing facilities studied involves the local nature of community colleges and the increased need for spontaneous interaction between the students, the faculty, the administrators, and the neighborhood people who may not be enrolled in classes but still should be encouraged to use the facility. The provision of several widely dispersed major entry points in the New River Community College plan, the M. J. Owens Community College plan and typically in other community colleges studied, prevents the existence of a central space in the facility and discourages the degree of spontaneous interaction between all the users of the facility that should occur at the community college scale. In a community college all of the people should be brought together in an unselfconscious way, by circulation and activity arrangement, such that all the people know each other and exchange of ideas is maximized.

VII. ARCHITECTURAL PROGRAM

1. Design Criteria

The architectural program that follows has two general objectives: (1) to externalize certain particular goals, concepts, criteria, relationships, and requirements imposed by this unique project which should become the basis for conceptual thinking during the design process; and (2) to document the broad activity categories involved and their physical space requirements. The following characteristics of community colleges have been isolated and selected as design criteria at this point and they, along with the programmed activity and space requirements, form the basis for beginning the schematic design phase of the project facility. These architectural concepts are outlined briefly at this point since they have been mentioned previously and are discussed and dealt with continuously throughout the project.

(1) The community college is a commuter college with indigenous people and programs[9]; the facility should have a local identity and should reflect but simultaneously enrich the local community that it serves.

(2) The intended small scale in terms of enrollment and facilities suggests emphasis on human scale personal architecture[10] rather than the massive monumental type found on larger campuses; more a residential atmosphere than institutional. Design, materials, selection and construction should emphasize spaces of warmth and comfort.

(3) The administrators should not be physically isolated from the students in a community college. Administrators must have privacy choice but circulation patterns and activity locations should be arranged to promote enough spontaneous contact so that the students and administrators feel that they know each other.

(4) The community college should be designed to be a center of local activity[11] with its facilities and programs designed to involve all the citizens of the community - not just the enrolled students.

(5) The educational trend toward increased use of mass technological media emphasizes the importance of the learning resources center[12]. Learning resources should be centrally located for convenience and should perhaps be the nucleus of the plan.

(6) The embrionic status of evolvement and the ten year master plan phased construction concept used by the Virginia Department of Community Colleges[13] demands open-ended flexible design planned to be modified and expanded, especially in the case of interior partitions.[14] Permanent type interior walls should be minimized.

(7) Typical division of community colleges into vocational-technical and college parallel curriculums[15] and the different characteristics of the two will heavily influence activity organization.

(8) There must be a central space, a mixing place, where all of the people are brought together spontaneously and briefly as a matter of daily routine. A single major entry into the building should arrive at this focal point from which the people disperse to their particular activities and pass through again in leaving. The space should be designed to encourage people to stop, talk, rest, observe,

to exchange ideas with people, an agora-like place, not just a circulation node but more than that.

(9) Emphasis on night classes influences parking arrangements and exterior lighting.

(10) All students and faculty members commute daily from their homes nearby. No housing is provided.

(11) Client imposed emphasis on economy in construction and operation[16] is a restriction to be considered.

2. Summary of Activity and Space Requirements

The Community College facility will serve approximately 850 students within a planned building area of 85,000 square feet with parking provided for 500 vehicles. The following activity categories and their accumulative physical space requirements[17] are criteria to be incorporated.

Activity	Square Feet	
	Space Requirement	Totals
Vocational-Technical Activities		
Engineering Technologies	12,550	
Health Technology	2,910	
Business Science and Technology	8,000	
		23,460
Professional Activities		
Humanities	4,060	
Natural Sciences and Math	9,485	
Social Sciences	4,790	
		18,335

Activity	Square Feet	
	Space Requirement	Totals
Shared Activities		
Learning Resources Center	10,985	
Student Lounge	3,430	
		14,415
Administrative Activities		
Counciling Center	1,720	
Health Service Unit	160	
Administrative Offices	3,450	
		5,330
Support Activities		
Custodial	1,460	
Toilets	1,200	
Mechanical Space	1,410	
Service Space	2,000	
		6,070

Sub Total = 67,610

Add estimated 25% for circulation, walls, etc. = 16,900

Total = 84,510

VIII. SITE DESCRIPTION

The site is a 100 acre tract of land located near the Southwestern Virginia town of Dublin which is in Pulaski County, a part of the New River Valley Planning District. The maps included at the end of this section indicate the site location graphically.

Actually the site offers very few obstacles to the designer's imagination. The rural views are pleasing in most directions, wooded areas and pastureland areas are available, the site is completely accessable along two of its sides, the 100 acres offers ample space, there are no existing buildings on the site, climatic conditions are moderate, and there is no significant potential for earthquakes or hurricanes. This description is verified by the site data presented at the end of this section[18].

There is, however, a site factor that must be carefully dealt with in order to avoid the possibility of structural problems and ground water pollution problems developing after construction is completed. The site exhibits a "Karst" topography[19] which is characterized by sink holes or closed internally drained topographic depressions. The sinkholes are a continuously occuring phenomenon caused by both limestone and dolomite being dissolved by infiltrating rain water which is the process by which most of the caves and caverns in the state of Virginia have been formed over the centuries. Typically limestone-dolomite areas, such as exists at the project site, consist of a honeycomb of cavities covered by a layer of topsoil. When the cavities become large enough to lose their roof support they collapse and form sinkholes such as those present on the project site. There is a potential danger that this collapse may occur suddenly. There have been numerous examples, most notably in Florida, Alabama, and Kentucky, of buildings being damaged or destroyed by sinkholes forming and collapsing underneath them. Because of this potential danger, a closely spaced drilling program should be accomplished beneath the proposed building site and for a reasonable distance around it. The drilling should core at least 20 feet into bedrock to verify that there are no significant cavities present that might become sinkholes and eventually collapse. For purposes of this project, the assumption is made that the proposed construction location has been verified by drilling as described above. The second problem introduced by these geological conditions present at the site involves groundwater pollution caused by the presence of the dissolved cavities through which groundwater passes rapidly and unfiltered. Septic tanks located in such a subsurface would pollute the groundwater for a considerable distance from its location. Also parking lot run off, grass fertilizers, etc, contribute to groundwater pollution in these types of areas. For these reasons it is difficult to obtain a clean water source on these areas. This difficulty is relieved in the case of the subject project however since the site is located within the bounds of the city of Dublin's municipal water and sewage utility services and therefore no need exists for a well on the site.

The photograph following at the end of this section of a model of the 100 acre site illustrates the site contours at 10 foot intervals, the property boundaries, adjacent highways, the location of the forested and the open areas, and various other site information. The town of Dublin water and sewage lines available to the site are located along state highway 11 which is the south boundary of the site. The less traveled state highway 100 represents the east boundary of the site. The model contours illustrate the approximate 100 foot elevation differential present on the site as well as drainage patterns. The wooded area located on the north end of the site extends approximately 500 feet beyond the north boundary and at that point opens up into rural farmland such that any views in the north direction from the site present a natural forested atmosphere. The land adjoining the west boundary is open pastureland similar to that located on the front two-thirds of the site. Small privately owned homes are located along the off-site side of route 100 which is the east boundary of the site. State highway 11 along the front or south side of the site is lined with small commercial buildings and service stations, not especially well kept. The small town of Dublin is located approximately two miles east on highway 11.

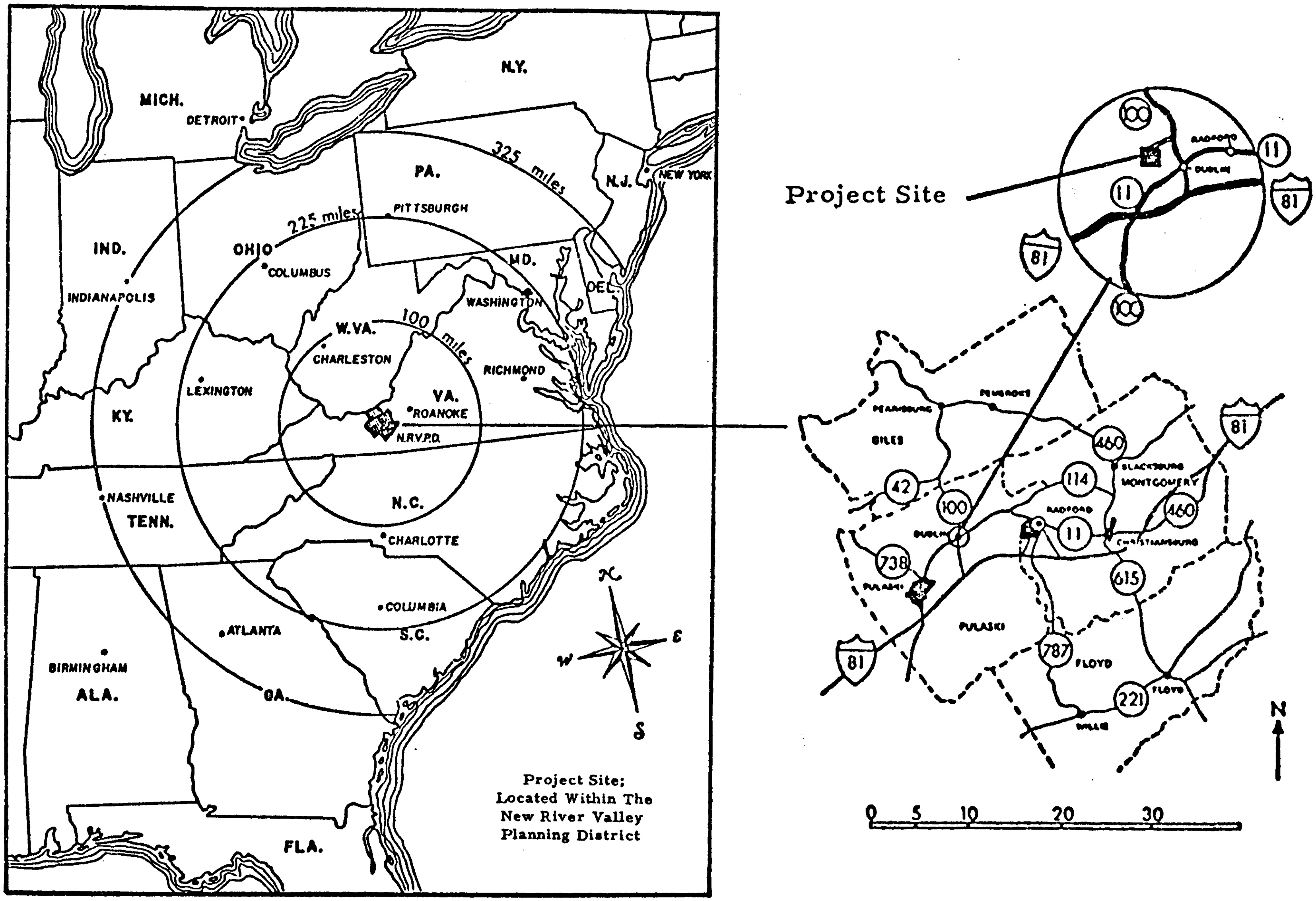


Fig. 3: Site Location

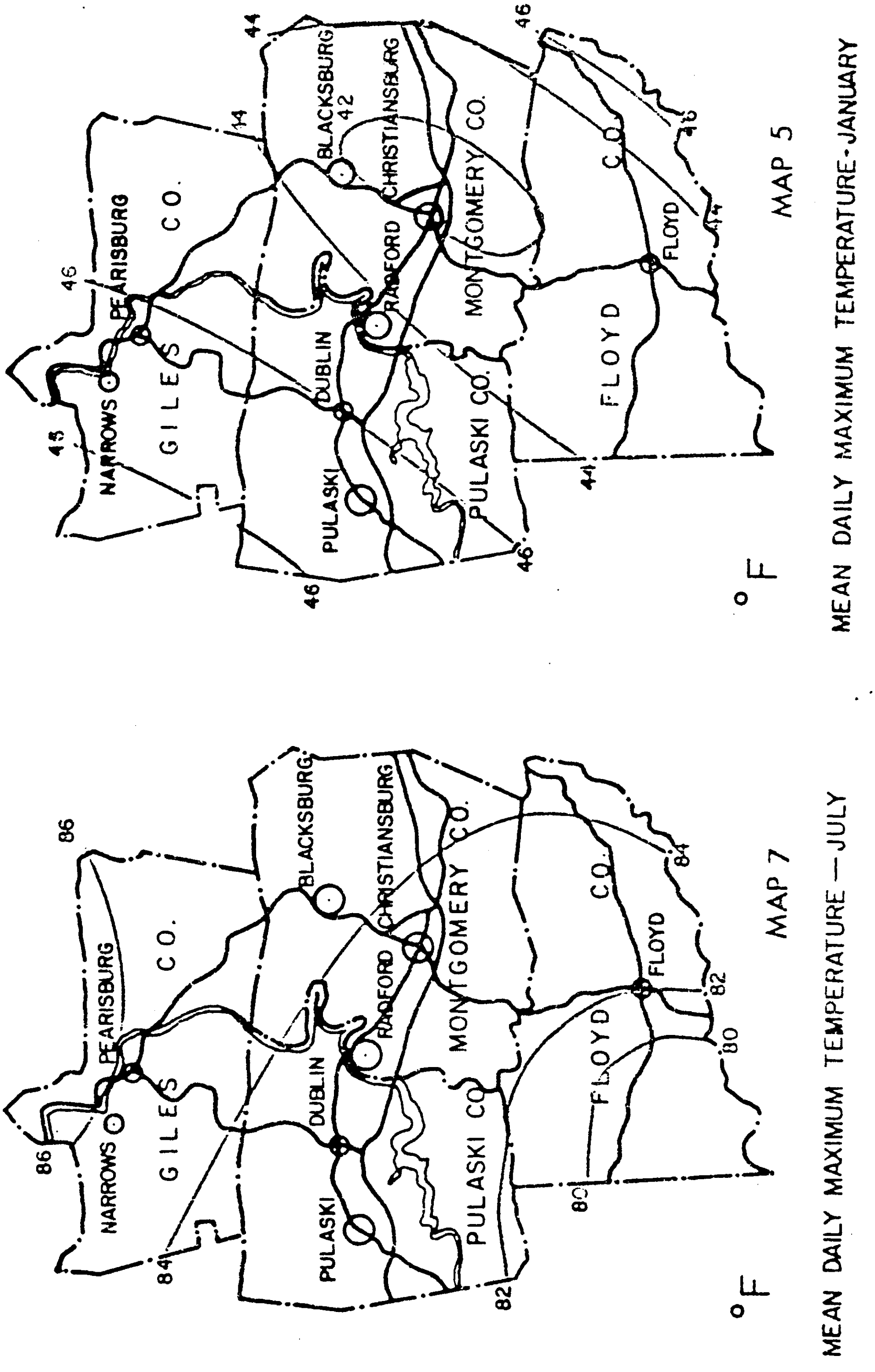


Fig. 4: Site Description Data

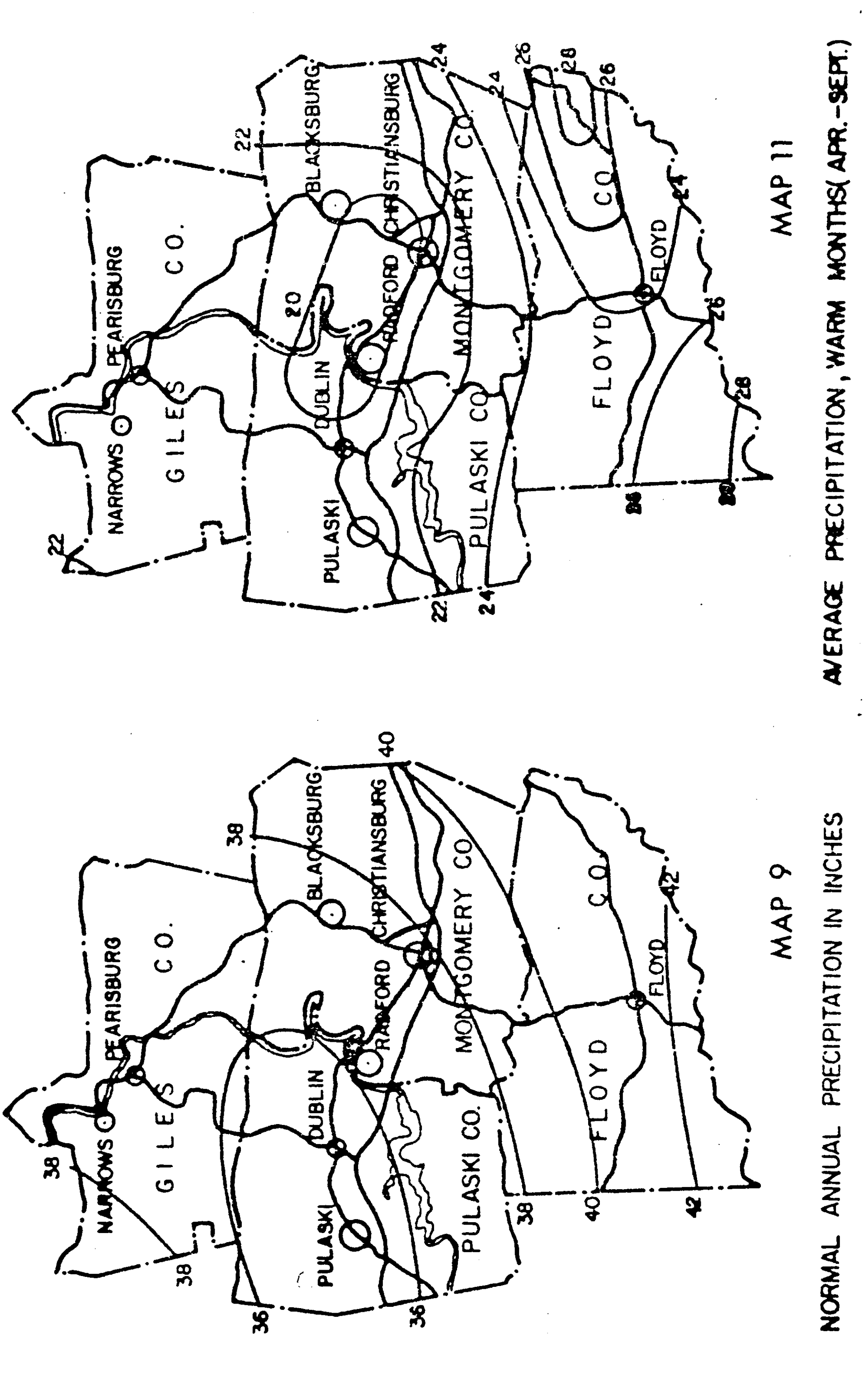
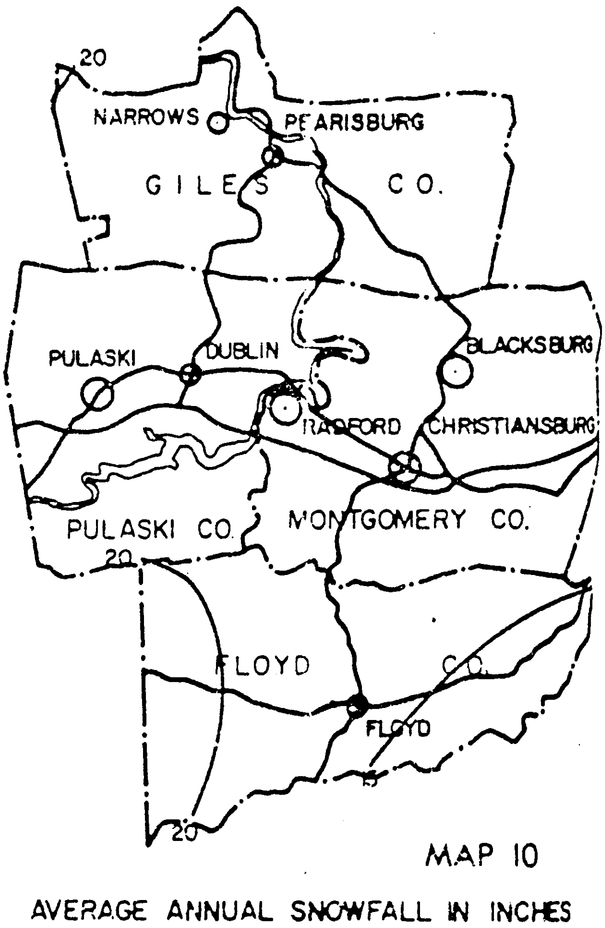


Fig. 4: Site Description Data



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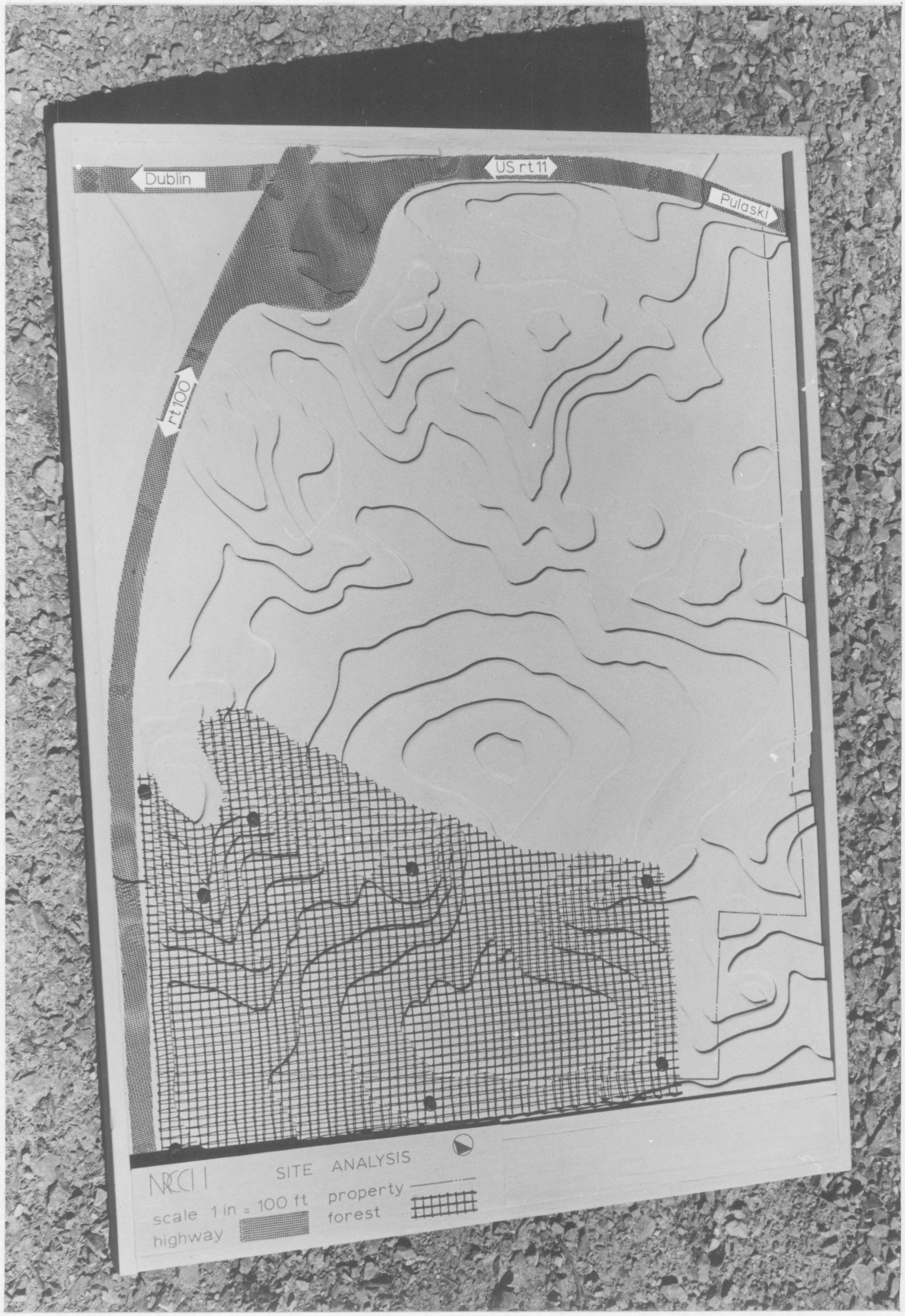


Fig. 5: Site Model

IX. PRELIMINARY DESIGN

1. Program Analysis and Activity Organization

Fifteen activity categories and their respective space requirements have been presented previously in the activity and space requirements portion of the Architectural Program. A significant part of preliminary design involves the physical jauxtapositioning of the involved activities into an optimum arrangement such that the characteristics of each activity are compatible with and complementary to the other activities grouped in close proximity. Simultaneously the resulting circulation patterns, social interations, etc. must incorporate and reinforce the design criteria that have been previously established as concepts selected to generate and guide the design solution. The schematic diagram that follows is a representation of the activity organization that has been selected as the physical arrangement that best integrates the concepts incorporated by the established design criteria. Eleven of the fifteen activity catagories listed are shown on the diagram. The four other activities - custodial space, toilets, mechanical space, and service space - are activities whose influence is not felt dominant enough at this early stage of conceptual thinking to be included on the diagram, although they are not forgotten, ie: the organizational diagram begins to indicate certain relationships even about these four activities. The diagram schematically illustrates the following relationships, ideas, intentions and possibilities. The building may be divided generally into three parts; the professional part where the activities are clustered that

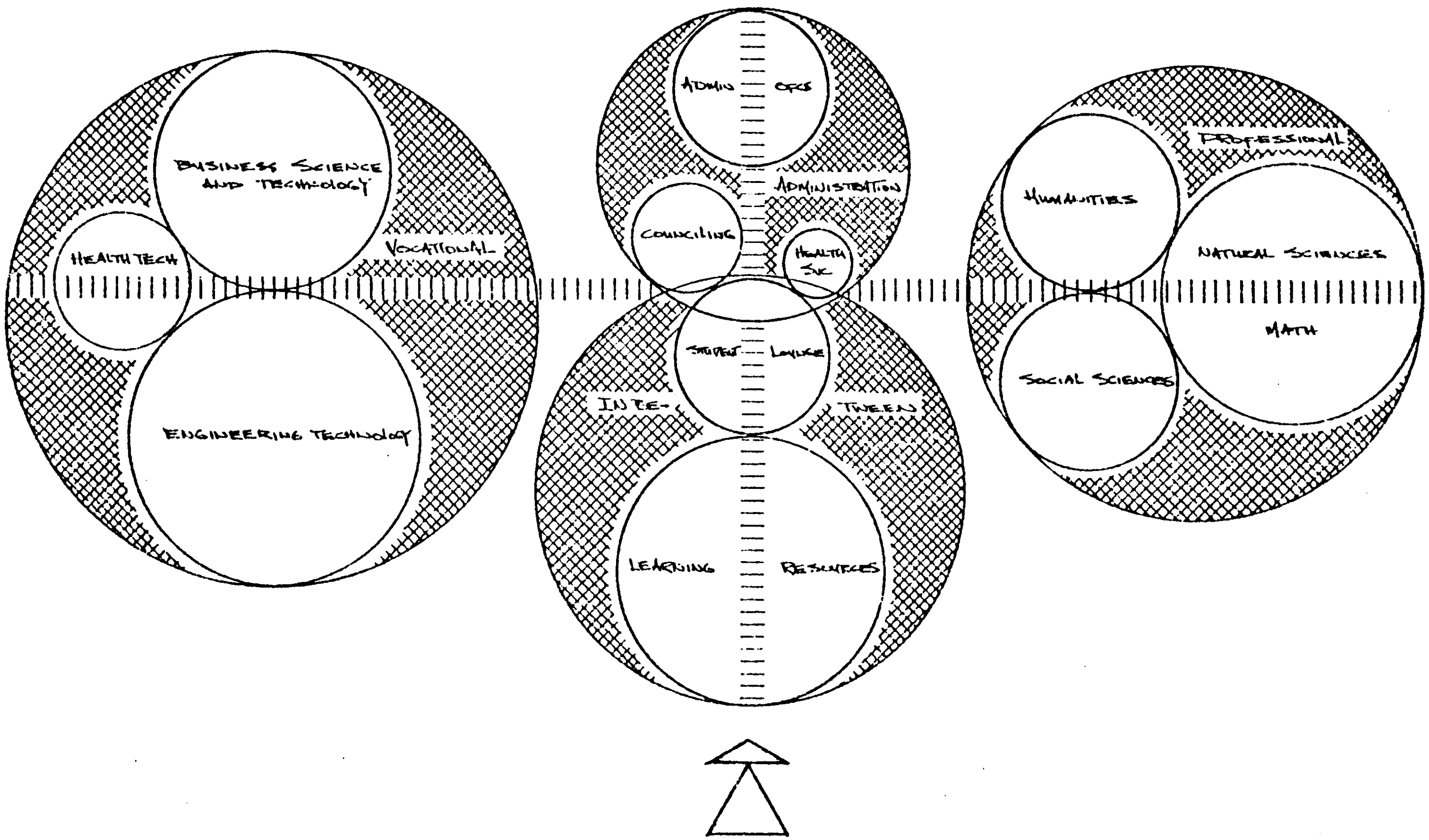


Fig. 6: Activity Organization, the Project Facility

need quiet spaces; the vocational-technical part where the activities are more physical and noisey and where heavy materials and equipment will demand different structural support, electrical power, ventilation, etc. ; and the shared part where the activities are located that are utilized equally by the users of both other parts of the building. The diagram illustrates the selected physical arrangement of the eleven activity categories into the three building parts. The shared part of the building becomes a separator between the relatively noisey and physical activities of the vocational-technical part and the quieter less physical activities of the professional part. The one large arrow represents the single major entry path into the building intended to bring all the people together into a central space before dispersing to their particular activities. The arrow and the activity bubbles indicate that the learning resources center should be readily accessable upon entering and leaving to encourage use by the students and to be convienient to community users. The entry scheme causes administrators to pass within close proximity of the student lounge and the learning resources center as they walk to or from their offices, which is intended to encourage some varying degree of spontaneous interaction with the students. The counciling and health service activities are located near the circulation node in order to give equal accessability to both parts of the building. The idea is emphasized that everybody should enter together into a central space, a meeting and congregating place before separating to their chosen activities; which is infinitely better than having a separate entry for the vocational-technical students, a separate entry for the professional students and a separate entry for the administrators such that everybody never meets and consequently seperate cliques or camps are formed. The activity-organization diagram places the learning resources center and the student lounge at the center of the plan such that these may become the nucleus of the plan. The diagram does not recognize the particular site that the facility must adapt to but rather is independent of the site. Neither does the diagram intend to indicate any particular mass, form, or configuration of the building. The separation of the parts may be accomplished vertically or horizontally, the facility may be a single structure or a complex of separate buildings. No decisions of this type have been made at this point. The diagram simply attempts to represent the physical activity organization selected as the arrangement that best integrates the various characteristics of the involved activities and the established design criteria.

At this point in the design process the project requirements and certain design criteria or objectives have been established, a state of the art search has been accomplished, site analysis has been started, and a tentative physical activity organization has been documented. Considerations concerning these aspects of the design process have been initiated but are by no means completed at this point. Decisions and convictions generated and somewhat documented at this juncture are tentative and flexible and subject to change as the process progresses. Actually no methodological part of the overall design process is ever completed, but rather becomes a recognized consideration to be simultaneously and continuously interfaced with the myriad other considerations as a means of testing their validity. At the end of the design process, factors that were initiated at the beginning are still being dealt with. Decisions are continuously interfaced with other decisions and changes made such that the process is a snowballing affair that becomes progressively less a step by step process but rather more a constant taking of detours to go back and re-think certain aspects of the design in view of more recently introduced factors in order to insure that certain decisions mesh in an optimum way with all other incorporated decisions. The thought process becomes progressively more wholistic such that at the end every factor is interfaced with every other factor so that each decision complements and reinforces other related decisions and the design solution is optimized. Although the thought process becomes more and more a back and forth situation, the physical production of the building progresses more sequentially as is indicated by the following paragraphs.

2. Site-Facility Relationships

The site plan following illustrates the first inclination to place a building physically onto the site, the bubble diagram of the activity organization representing the footprint of the building. At this point, the building may begin to be generated in terms of mass and form, internally by the requirements of the various activities and externally by the surrounding physical environment. Obviously, site plans other than the one presented were explored. The principal factor that prompted the selection of the plan presented involves the presence of the forested area which lies on the high ground at the back of the site. Simply, the quality of the environment in and around the forested area on the high ground is superior, for the purposes, to any other part of the site. The most desirable place to be on the site is either in the forest or perhaps even better near the front edge of the forest on the highest ground with a view of the open pastureland comprising the front two-thirds of the site. There are, however, more definitive advantages offered by the selected site plan, some practical, some aesthetic. Practically, to locate the building within the wooded area leaves the open more level land available for athletic fields, tennis courts, and other activities requiring such terrain. The main entry to the facility is more relaxed and safer when located off of the less traveled route 100 then when located off of the main arterial highway route 11 which fronts the site. The location of parking within the woods provides a natural screen for the automobiles such that when the facility is viewed by its neighbors the automobiles are not obtrusive. The trees offer the building protection from the winds in winter and offer shade from the sun in summer which will result in significant reduced costs for heating and cooling. The wooded area represents the quiet sector of the site located furtherest from the main highway. These conditions offset the probable fact that construction costs for the building will be higher at the selected location then if built out in the open on a level spot, although it is possible to use a sloped site to advantage rather than disadvantage. It is felt that the proposed location can be justified in terms of practicality, however as stated earlier, the most important justification is simply the fact that the physical environment in and around the wooded area on the high ground represents the highest quality site space within the boundaries of the property. The site plan shows the building footprint just within the edge of

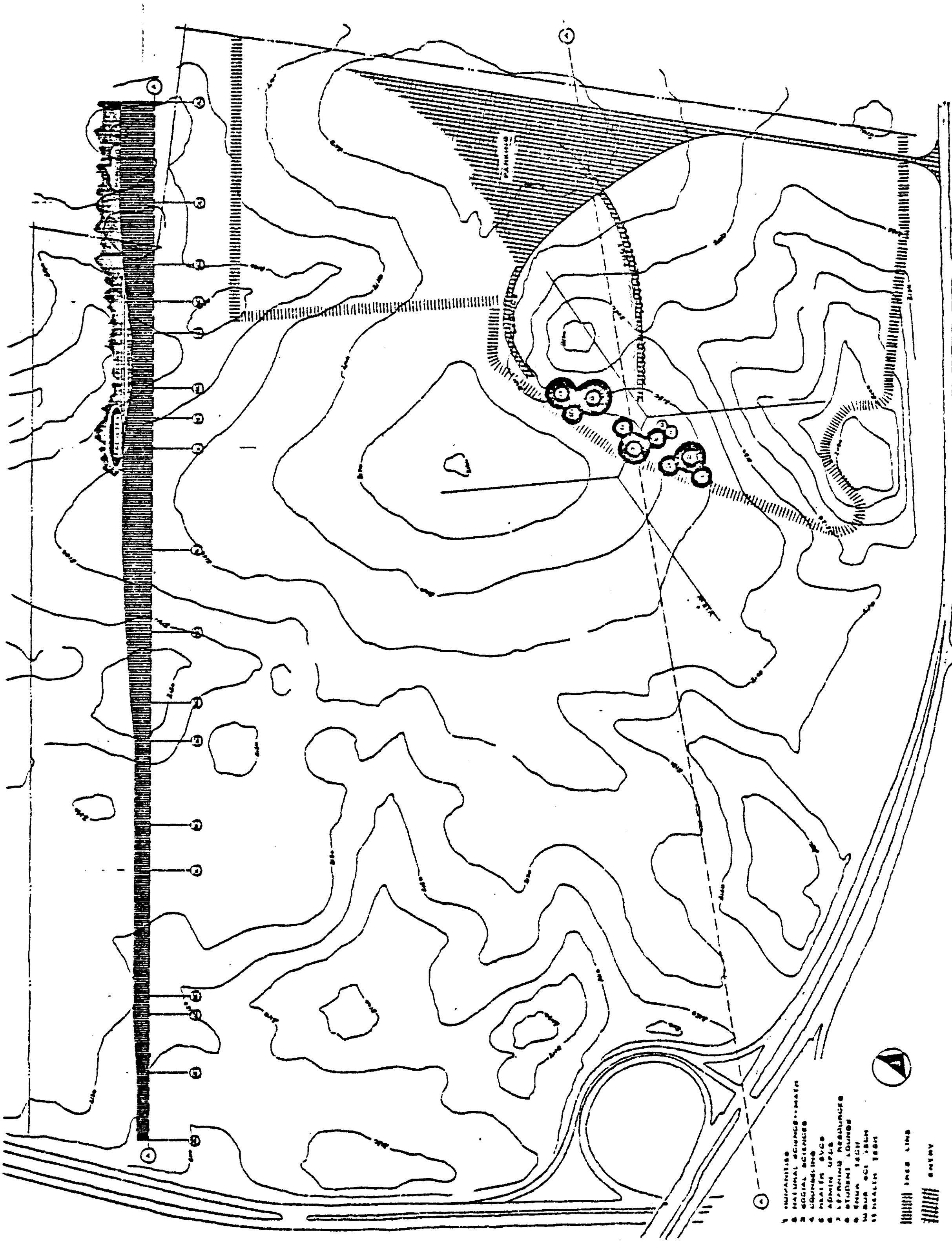
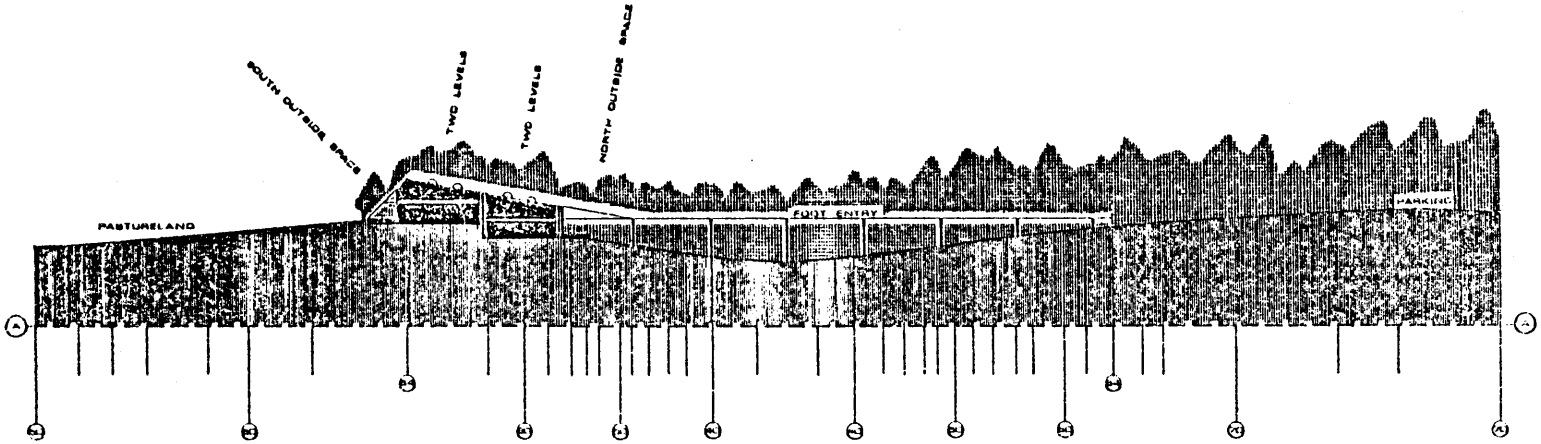


Fig. 7: Preliminary Site Plan

the treeline positioned to give the building a view of the front two-thirds of the site and also so that the building is not completely hidden from its neighbors who are, in the case of a community college, its owners. Investigation of the site contour lines reveals also that the terrain slopes at a rather even and not too steep rate at this location which is condusive to a stepped foundation scheme. The preliminary site plan illustrates that parking will be located on a large relatively level portion of the wooded area. The resulting foot path from parking to the facility can be seen to occur across a saddle in the site which drops 35 feet below the parking area and rises again 30 feet to the facility. The schematic diagram, drawn at the top of the site plan, of a section through this portion of the site shows this geological-activity relationship and suggests the possibility of entry to the facility occuring along some type of raised footbridge across the saddle. This idea would elevate the user to a level among the major limbs of the trees and would reinforce the idea mentioned earlier of having entry occur entirely into a central space located at the shared activity part of the building from which point the users would then separate to their chosen activities. The footbridge would serve to bring all the people together at the central space; a lobby, an attrium, an agora-like place, flanked by the learning resources center and the student lounge. The site plan illustrates the selected building location, the tentative traffic patterns necessary to support the location, the parking area, the main entry to the facility, major visual corridors, the proposed activity organization for the building, and gives various other site information, but there still is no indication of the building beginning to take on mass or form. Still the building is represented by a schematic bubble. It has been mentioned that the sloped construction site may be condusive to a stepped foundation scheme. Generally there are three, or a combination thereof, alternatives in adapting a building to site topography; the building form may reflect or go with the topography, the building form may contrast or go against the topography or the topography may be basically ignored such that other criteria are used to form the building. It is felt that the selected location is one that cannot be justifiably ignored. The construction site is not a neutral location as may be the case when the construction site differs very little from surrounding locations. The selected location has very dominant and articulated characteristics. The compelling idea of having the facility and its major activities occur within the forest gives priority to the presence of the forest and it is felt that the building should blend unobtrusively into the forest; that is, the facility should co-exist with the forest rather than attempt to dominate. The design criteria drawn from this conviction is that the building should not rise conspicuous and high above the tree tops but rather should honor the line formed by the treetops and should break that line only minimally. The building should blend into the woods unobtrusively. The quality of the environment created by the presence of the forest is the dominant reason, although by no means the only reason, for selecting the construction location. The presence of the facility must not change the human sensory perception of that environment or else the principal motivation for the selection is lost and thereby the location is no longer valid. Because of this conviction, it is felt that the building profile should be kept within the envelope of the trees within practical limitations.

3. Mass and Form Studies

If the construction location is such that the topography cannot be ignored, then the structure must either reflect the topography, contrast with the topography, or employ some combination of these two alternatives. The original motivation was that the building form should reflect or go with the construction site in keeping with the conviction that the building should blend into its surroundings rather than draw attention to itself. The building section illustrated by Fig. 8 on the following page represents the scheme that seemed to incorporate more of the established criteria and aspirations than any other explored at this juncture. Consequently, the idea was developed further by means of a study model (Fig. 9). The sectional diagram illustrates the adaptability of the stepped foundation to the sloped construction site which results in two levels at both the front and rear of the building with a strong indication of a circulation spine occuring between the front and back spaces. The elevated footbridge idea from parking to the building would cause the major entry to occur into the second level at the rear of the building. The schematic diagram is drawn closely to scale and it can be seen that the building profile would fall within the envelope of the trees even with generous floor to ceiling and plenum heights. The front of the building has been sloped down to complement the longer more gradual opposing slope of the main roof and also to offer structural support for sun screens necessary to counter glare from the south sun. The study model illustrates the adaptability of the scheme, both in section and in plan, to the selected construction



BLDG RESPONSE TO SITE CONTOUR

Fig. 8: Preliminary Section One, Building Response to Site Contour

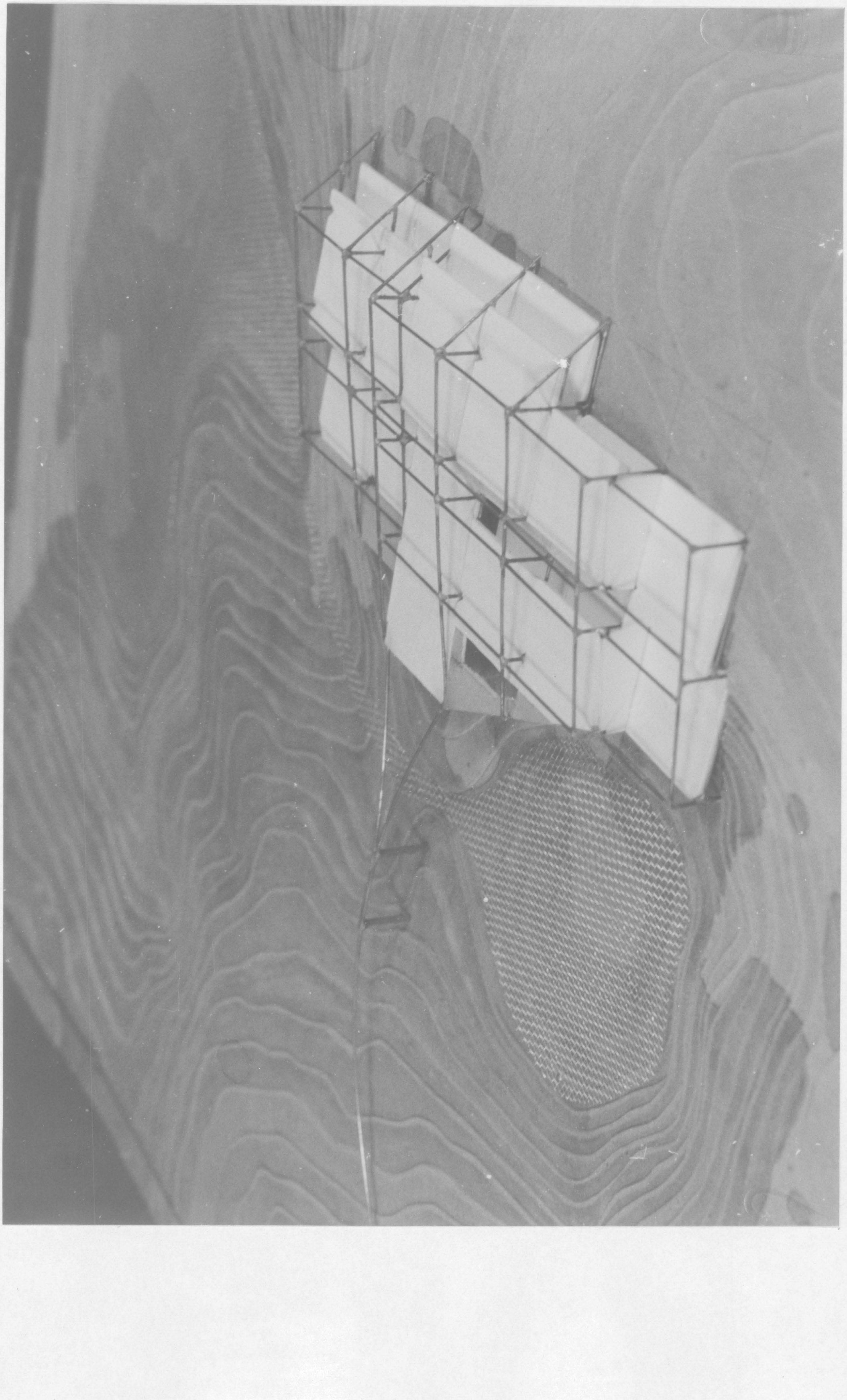


Fig. 9: Study Model One

site. The 85,000 square feet required by the program are provided within the model which fits well onto the site space and slope with one major modification found to be necessary. The two foot contour intervals built into the site model represent the earth slopes at the construction site accurately and the model reveals that in addition to the 15 foot step in the foundation from front to rear of the building, it is necessary to step the foundation also 15 feet from left to right. The model illustrates the logical points for the level changes to occur in order to minimize earth excavation and excessive visible foundation above grade. The study model deals with relationships involving feasibility of the selected construction site with respect to required building space, adaptation of the form statement to the site contours, location of the building relative to the tree line, vehicle entry to the site and to parking, foot movement from parking to the facility, and is a structural diagram of the form statement representing the foundation scheme, the major structural framing members, and the levels, spaces, and circulation paths created. The model illustrates foot entry to the building as being elevated approximately 30 feet at the lowest elevation of the earth depression over which it passes which would put the user up among the trees as he approaches and enters the building. The two topographic depressions shown that form the saddle between parking and the building are actually sinkholes and the model introduces the possibility of creating two ponds of water with a connecting stream running underneath the footbridge. This feature could be easily accomplished since water from springs located within each of the two sinkholes presently runs from the first to the second and passes through a steel culvert under state highway 100 which was built up approximately 40 feet above the bottom of the adjacent sinkhole during its construction. It is felt that the presence of the spring fed ponds and the stream underneath the footbridge would add to the natural forest environment that has been assigned high priority for this project. The model is a three-dimensional diagram and does not pretend to be a physical model of a developed building. However, the building's sectional outline shown schematically by Fig. 8 has been expanded by the model such that the main structural members are indicated and the resulting horizontal planes and three-dimensional spaces are shown. The model is built closely to scale based upon a 60 foot grid or bay size and the required 85,000 square feet are provided. The three building parts, professional, shared, and vocational-technical, established by the activity organization diagram (Fig 6) have been incorporated and are positioned from left to right respectively when the model is viewed from the front or south. The professional part is lowered 15 feet for site contour reasons previously discussed. The structural framework illustrates that the front and back bays are seperated the entire length of the building by a 30 foot wide circulation spine. As has been discussed previously, the major entry occurs into a central space located at the shared part of the building located at its physical center. The spine is intercepted at its midpoint by a central space which is a large area approximately 60 by 60 feet. The result is that the corridor length is never more than 120 uninterrupted feet. Development of the circulation spine represents a significant architectural project in itself. It poses interesting problems as well as possibilities in that in actuality the spine is a long double loaded corridor which presents both positive and negative potentialities. The negative potentialities involve the tendency for double loaded corridors to become long dull tunnels of low quality space in which no activity takes place except physical movement from location to destination. The positive potentialities involve the functional efficiencies offered in terms of minimizing floor space requirements allocated to circulation and the clarity of circulation created, which reasons are why the double loaded corridor finds its way into existance so frequently, often with little done architecturally to relieve the negative potentialities. There are several opportunities available within the framework of the schematic scheme illustrated by the model to minimize the negative tendencies. The large open central space located midway the corridor length should be handled in such a way as to up-grade the quality of the circulation spine; ie, the central space when viewed from either corridor half should screen the opposite half so that there are actually two corridors rather than one. The central space should be a source of light and interest when viewed from the corridor, a transition from a comparatively restricted space to a larger more open space. The generous 30 foot width given to the corridor, which is not prohibitively extravagant since this is the circulation spine of the building, offers adequate space for plants, seats, displays, telephone pods, or other devices to articulate the space and break up its linearity. The corridor width offers the possibility that the floors be allowed to cantilever out into the 30 foot space such that the circulation paths become cantilevered balconies with the central 15 feet of the spine kept open as clear space from ground level to skylighted roof. In this case, the entire circulation spine is opened up and visible at all levels when viewed from any level which would significantly increase the level of visible activity occuring as well as increase the feeling of spaciousness along its length. In summary, the spine should become a mall of activity rather than simply a means of moving from place to place. There should be areas to stop, sit, talk, for plants, artwork, displays, etc. There is a limit to the degree of incorporation of this line of thinking that is feasible in view of the fact that there are educational activities occuring on both sides of the spine that demand a significant degree of quietness and freedom from interruption. This requirement must not be violated. However, it is felt that, with the above reservation in mind, the spine should be developed to be a mall of diverse activity rather than simply a mono-functional space in which people move from door to door. The left-most part of the model, when viewed from the front, illustrates an initial attempt to articulate a portion of the building to accomodate the machine shop and the auto-mechanics shop whose characteristics and requirements are significantly different from the various other activities included in the facility. The building form should respond and be likewise different. It can be seen that these activities are located at the vocational-technical end of the building which is compatible with the activity organization documented earlier. The location of the shops would allow their supply requirements to be accomodated by a service road established from the parking area along the contours surrounding the west sinkhole to the west end of the building. Although the model has been described as a structural diagram rather than a physical model of a building, certain statements of mass and form are nevertheless made. It can be seen that, at this point, the building is envisioned as a single structure whose various parts are tightly bound together within basically a rectilinear plan. There are no interior courtyards, no extensive projections and recessions of the fascade to form outside spaces that extend inside the major envelope of the plan perimeter. The plan represents a definite seperation of outside space from inside space.

At this point in the design process a feeling had gradually developed that the building should perhaps be broken apart in some way so that outside spaces would occur within the major perimeter of the plan. The outside-inside relationship should be dealt with so as to better incorporate the everpresent idea that the building should blend into and be a part of the forest that surrounds it. The outside character of the woods should extend into the building. The exploration of this breaking apart of the building idea is summarized by the study model presented by Fig. 10. It was felt that the shared part of the building where the footbridge leads to the central space represents the natural place for the building to come apart. In exploring this alternative, the possibility emerged to allow some portion of the building to move out and surround the footbridge so that a part of the footbridge would then become actually an academic street inside the building. Consequently the learning resources space and the student lounge space were moved out along the footbridge as indicated by the model. The movement of these activities generated a possibility that the central space become an interior courtyard, an outside space rather than the provious interior space. The east end of the building housing the professional space was moved forward 60 feet to open the courtyard up to the outside space to its rear. The west end housing vocational-technical space was left in place. In retrospect, it is felt that the extent of the exploration did not justify abandoning the concept. However, interest in the idea dwindled as a result of a growing realization that the strongest architectural statement made by the previous model lay within the basic concept that major entry to the facility occur by footbridge (exterior space) into the central interior space which is the circulation and activity node of the building and from which the circulation activity spine for the building eminates. This transition from the exterior footbridge to the interior central space is the most important transition incorporated by the statement and should not be compromized. The central space or attrium and the mall-like corridors which are extensions of the central space are multi-level clear space areas from foundation to skylighted roof from east end to west end of the building. The functional spaces should arrange themselves around this extended circulation/activity node. This concept is the dominant architectural statement incorporated at this juncture. The breaking apart of the building seems to weaken this statement and for this reason the idea was discarded.

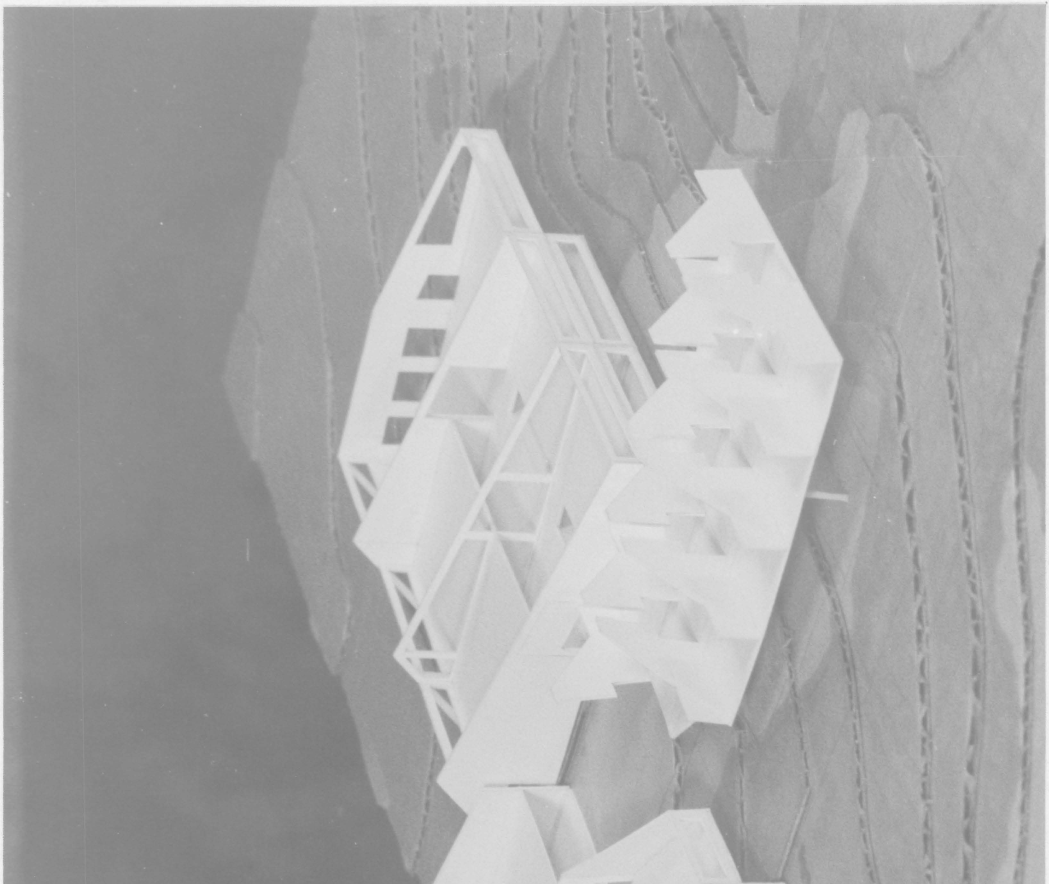


Fig. 10: Study Model Two

X. SCHEMATIC DEVELOPMENT

At this stage in the design process, an alternative was explored that evolved the mass and form statement that was actually developed to the proposed design solution. The form statement is illustrated by the sectional diagram and schematic model presented on the following pages. The motivation was to reverse the major slope of the roof so that the form of the building would contrast the contour of the construction site with the roof slope rising at approximately the same rate that the site slope falls. In this case, a natural extension of the roof structure to the ground structurally and visually anchors the entire building to its site in a natural and pleasing way and also provides support for a sun screen device for the front-south fascade of the building. This scheme provides more interesting interior spaces in that the building now consists of a single level occuring on the south side of the circulation spine and three levels occuring on the north side, except that at the center bay there are two levels and four levels. Because of the reverse slope of the site, the top of the building is still kept within the envelope of the treetops. It is felt that this scheme presents a more aesthetic form statement, that the structure is more organically connected to its site, that more differentiated interior spaces are created, and that the form offers more opportunity for meaningful deformation and articulation as design development occurs.

At this point a conviction stated in the opening paragraph of the paper, that the building design if successful should speak for itself such that narrative justification is unwarrented, comes to mind.

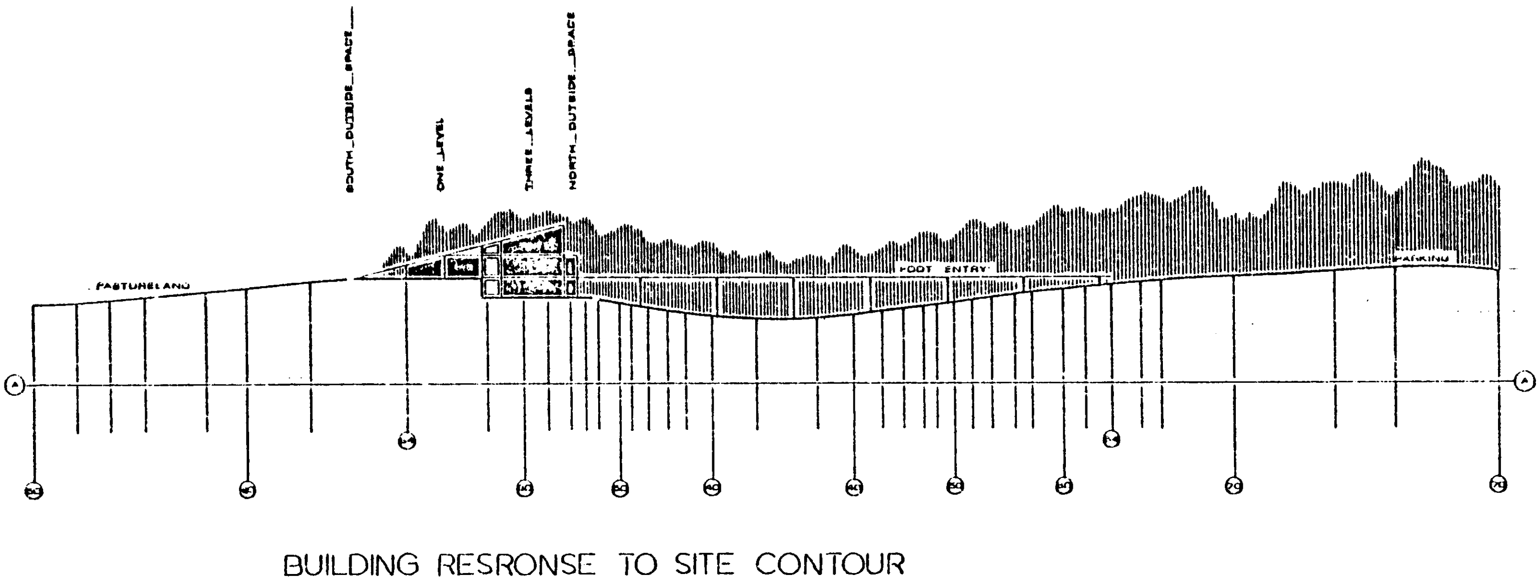


Fig. 11: Preliminary Section Two, Building Response to Site Contour

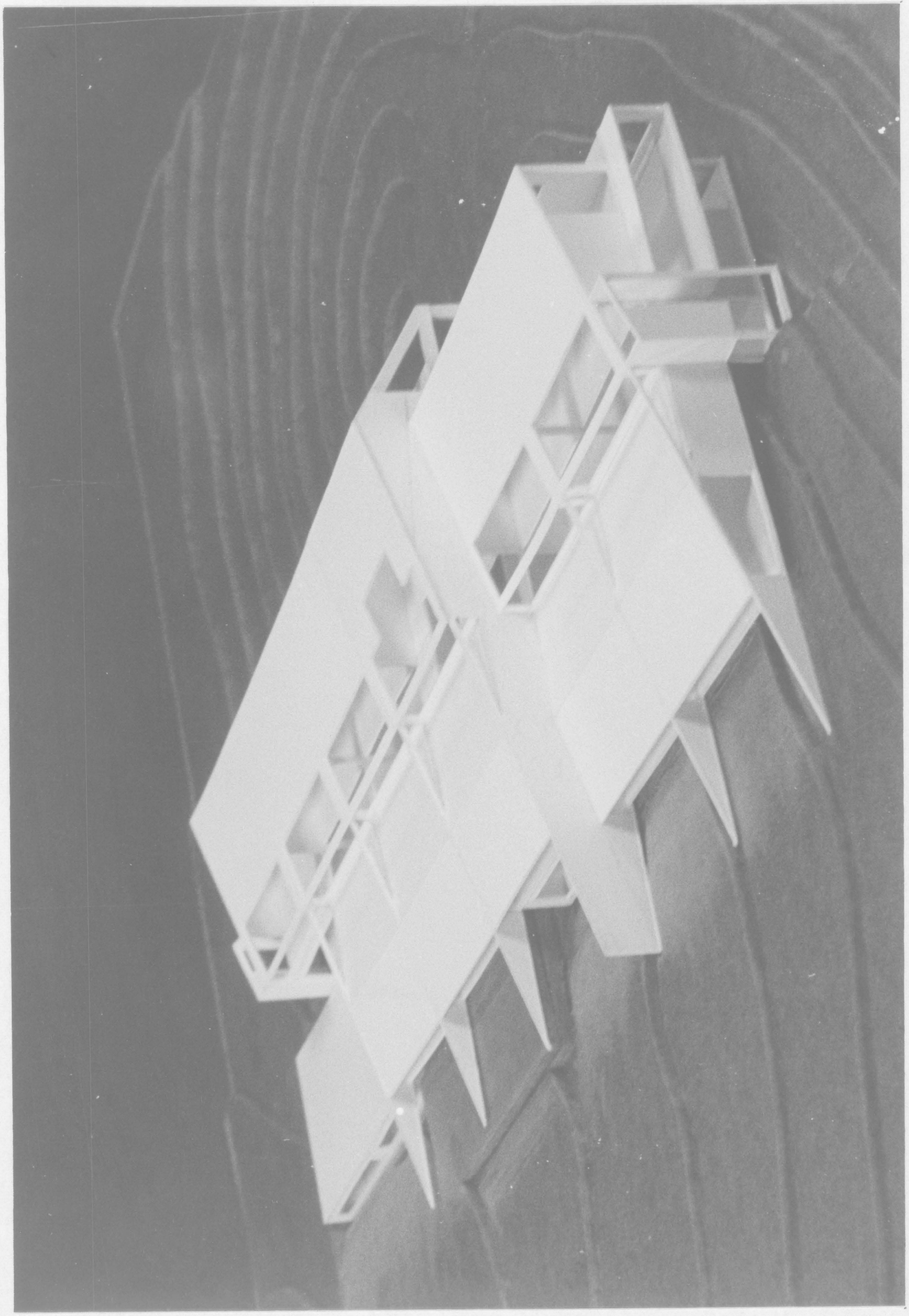


Fig. 12: Schematic Model

Fig. 12: Schematic Model

The motivations, aspirations, and architectural criteria and requirements intended to be incorporated by the design have been presented throughout the paper so that the design intentions should be clear at this juncture. The two objectives stated in the introduction were, primary and secondary; primarily to design a building that is right for its purpose, its people and its surroundings, and secondarily to document, to some extent, the process methodology that led to the design solution. A narrative defense of the design solution is not an objective of the project. However, with respect to the design methodology documentation objective, the following brief statement explaining why the schematic alternative presented on the previous pages was accepted in lieu of continuing to search for still others is felt necessary. Obviously, the reason for the acceptance of the form statement involves a sense of satisfaction that the design is right for the stated criteria, a satisfaction that was not felt in working with the other alternatives. Following briefly are some features incorporated by the proposed design scheme that promote that feeling. The form statement is felt to be one that is simultaneously aesthetic and functional, aesthetic in that the statement is clear and strong, not a confused mixture of forms. Basically the form statement is a wedge driven into a sloped site which receeds at the same rate that the roof of the wedge ascends. Major deformations that have articulated the wedge, best illustrated by the schematic model (Fig. 12) include: (1) deformation employed to accentuate and to bring light into the central space and the circulation spine, (2) deformation caused by the stepped foundation scheme designed to follow the slope of the construction site, (3) deformation caused by the structure's response to the special requirements of the machine shop and the auto-mechanics shop which are significantly different from the others, and (4) deformation resulting from the significance of the elevated footbridge entry which has caused the building to respond to entry condition requirements in that area. Naturally, other cuttings into the wedge and extensions from the wedge have taken place to accomodate various requirements, but the four listed are the dominant deformers. It can be seen that generally the pure shape of the wedge has been retained by having the deformation occur primarily by means of space enclosure planes while holding the structural components constant which is intended to maintain the clarity of form sought. The form statement is functional in that it encloses the required activities with a minimum of exterior walls, the building is dug into the site significantly and the building profile is within the envelope of the trees which factors both reduce heating and cooling costs, construction costs are kept in line since the building components are repetitive throughout, and the form incorporates the central space with extended circulation spines idea that gives clarity and efficiency to interior circulation. It is felt that the slope of the roof line is significant in that it relates to the transition in vertical scale from the open pastureland at the front edge of the building to the 60 feet high treetop line at the back of the building. The roof extension from ground zero in front to 60 feet high in back also serves to orient the building visually back into the forest which reinforces the atmosphere intended. The form statement is based upon and emphasizes the idea of major entry occuring by elevated footbridge into a central space or atrium from which the mall like circulation/activity spines extend. The various other activities are arranged about this framework. Because of the extreme importance of the footbridge entry and the central space created by the atrium, a study model (Fig. 13) was used to explore design alternatives in this focal part of the building. The atrium and the extension of the atrium into the circulation malls have great potential for giving excitement, unity, and clarity to the building and it is felt that the design statement incorporates and reinforces this concept. It is felt that the structure housing the shops, which can be seen to be very different formwise from the rest of the building, gives meaningful articulation to the facility and that the reasons for their contrasting form are clear. The shop spaces are simply an extension of the 60 by 60 foot grid in plan but depart from the rest of the building in section and elevation. The building profile is kept within the envelope of the trees which is a design objective. The design scheme offers opportunity for significant natural ventilation and lighting by means of the north and south fascades in addition to the continuous band of windows and skylights along the building spine.

These features are some that justify the selection of the form statement to be developed and also justify the discontinuation of furthur search for significantly different form statement alternatives. Of course, it is well known that design decisions are always somewhat subjective no matter how fervently one attempts to itemize objective justifications. The satisfaction felt with this selected form statement is, in addition to the objective justifications noted, fostered by a subjective conviction that it is right for its purpose; not the only form statement that might be valid for the requirements, but one that is valid.

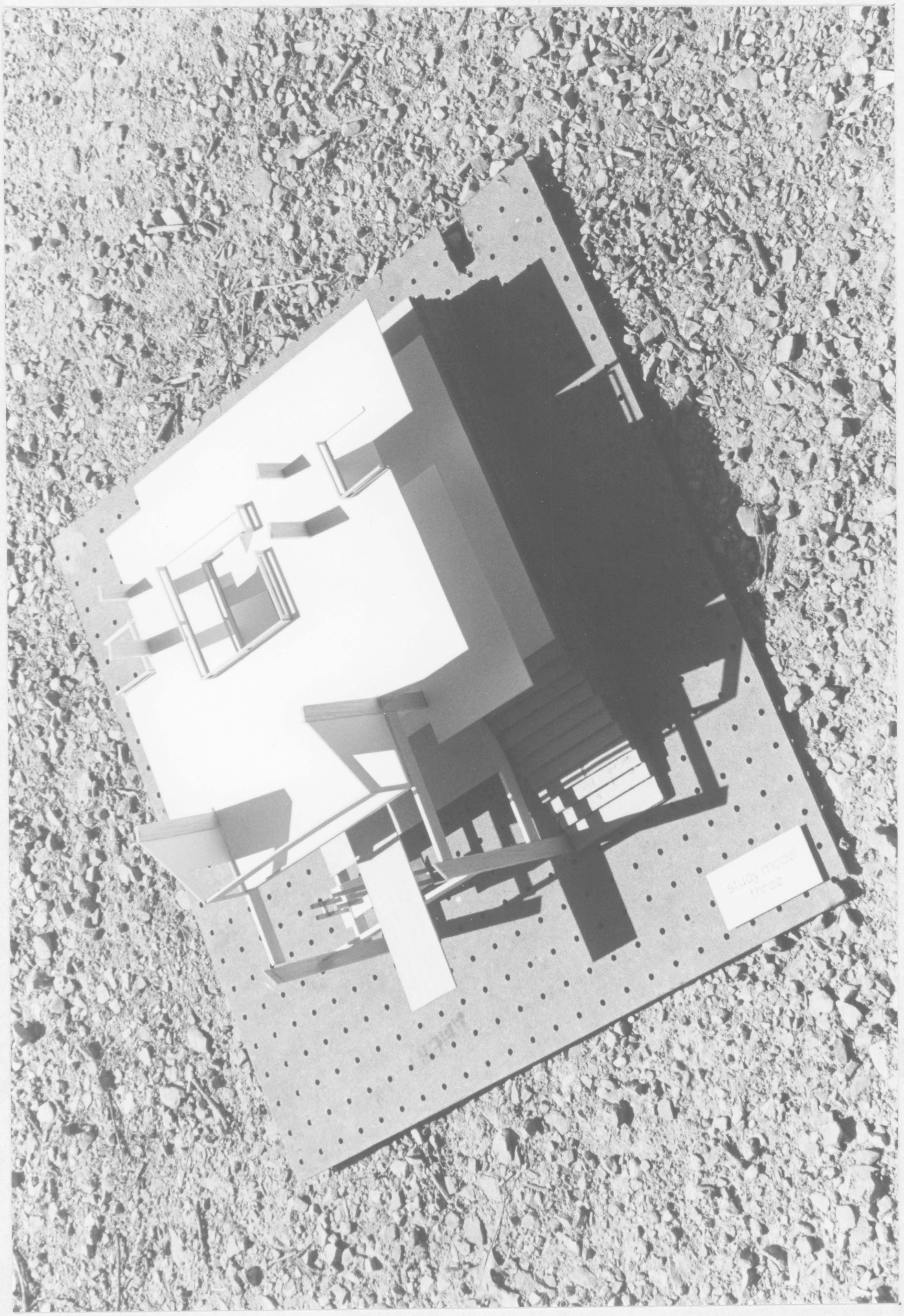


Fig. 13: Study Model Three

XI. PRESENTATION OF SCHEMATIC SOLUTION

With the foregoing requirements, convictions, and intentions documented the following drawings are presented to describe the proposed design solution. It is at this point that the contention that the design solution should stand by itself is justifiably enforced. The reader is entitled to freedom from further narrative persuasion.

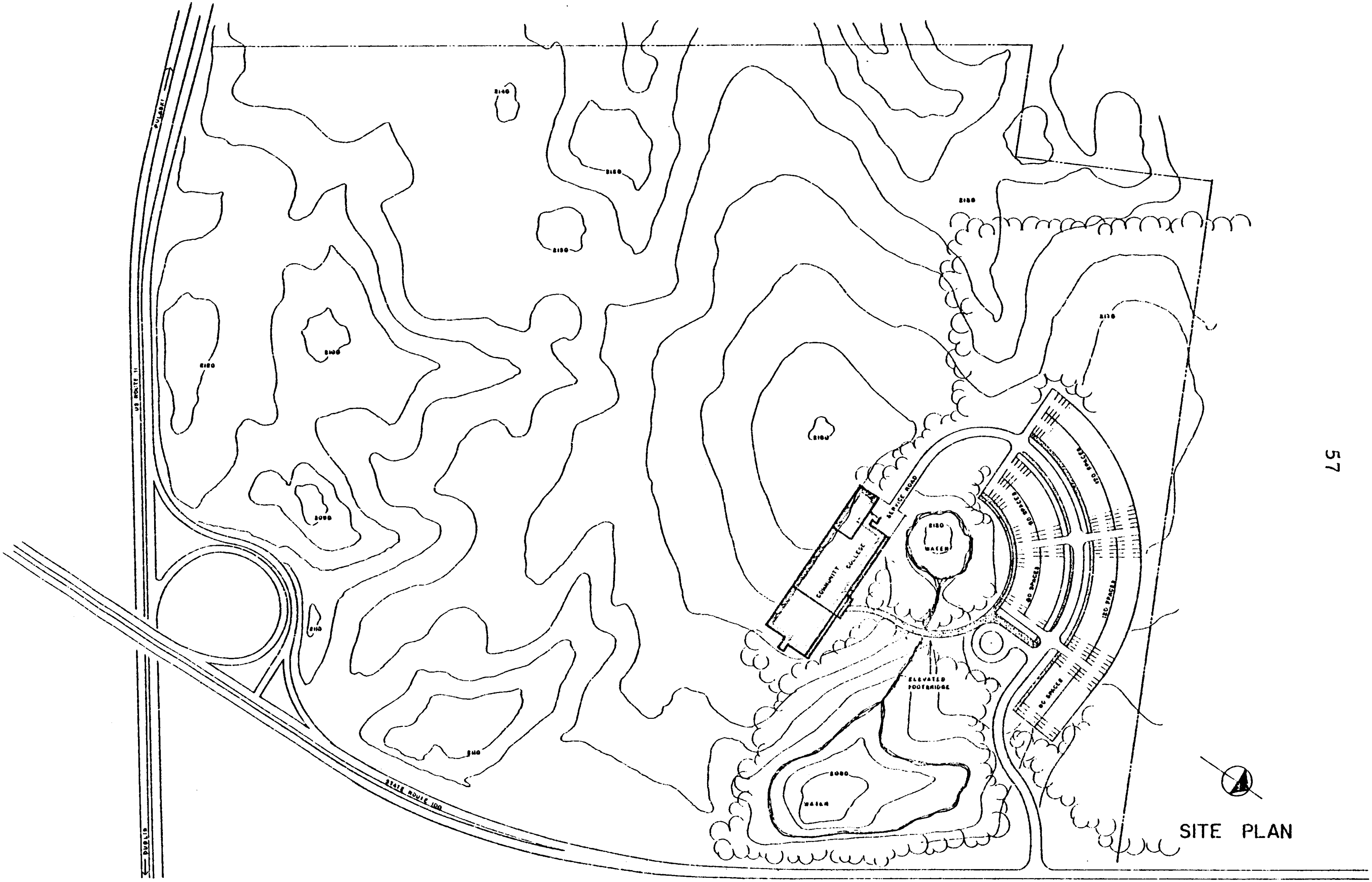


Fig. 14: Site Plan

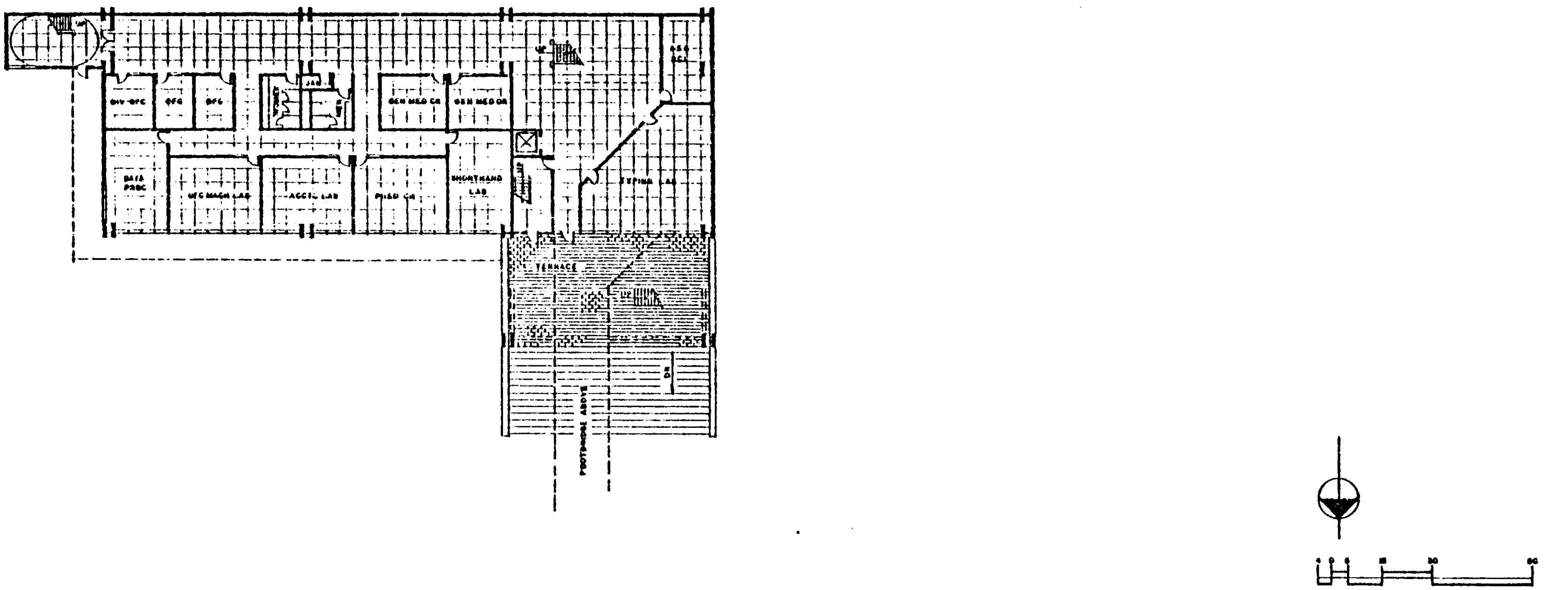


Fig. 15: First Level Plan

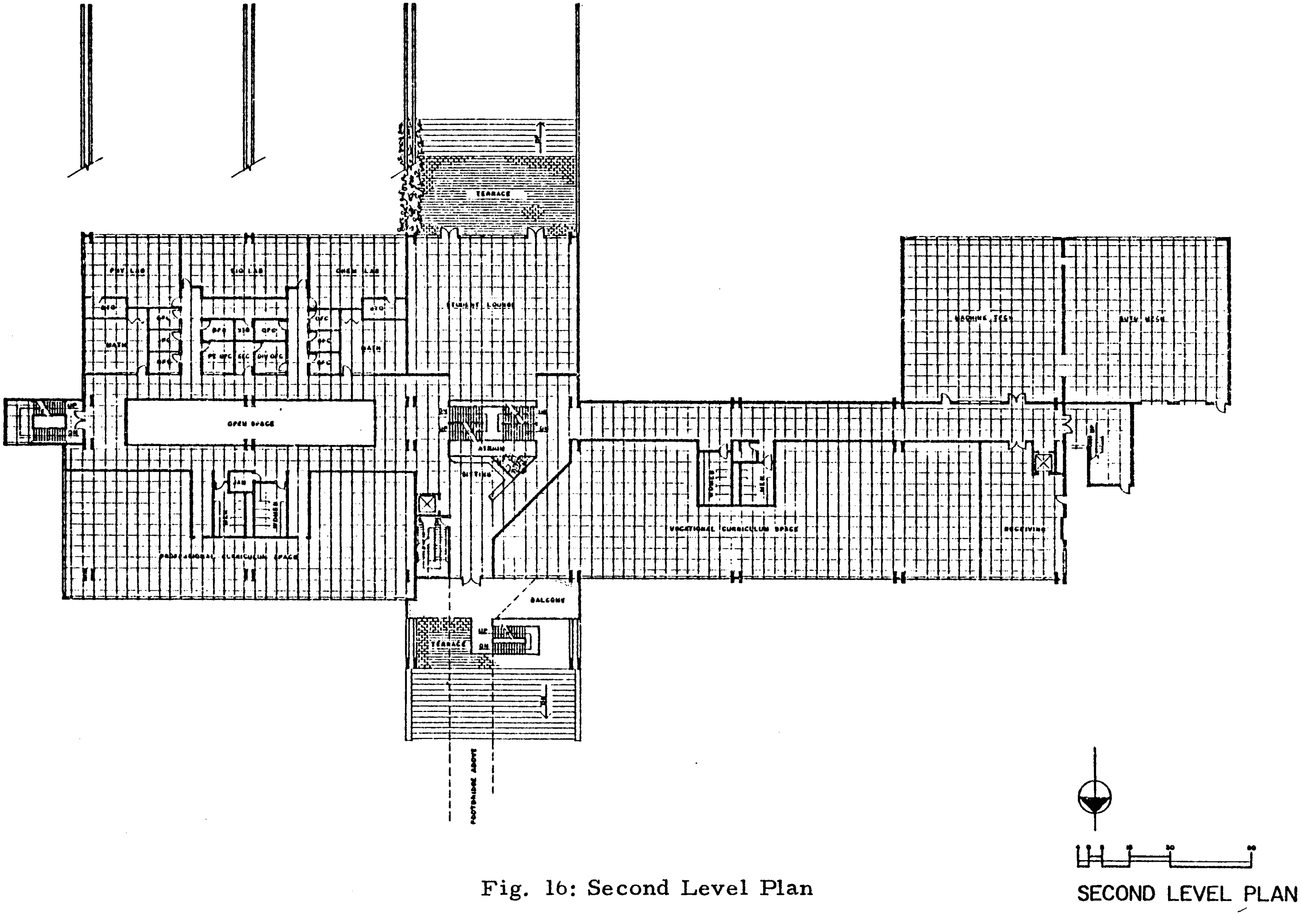


Fig. 16: Second Level Plan

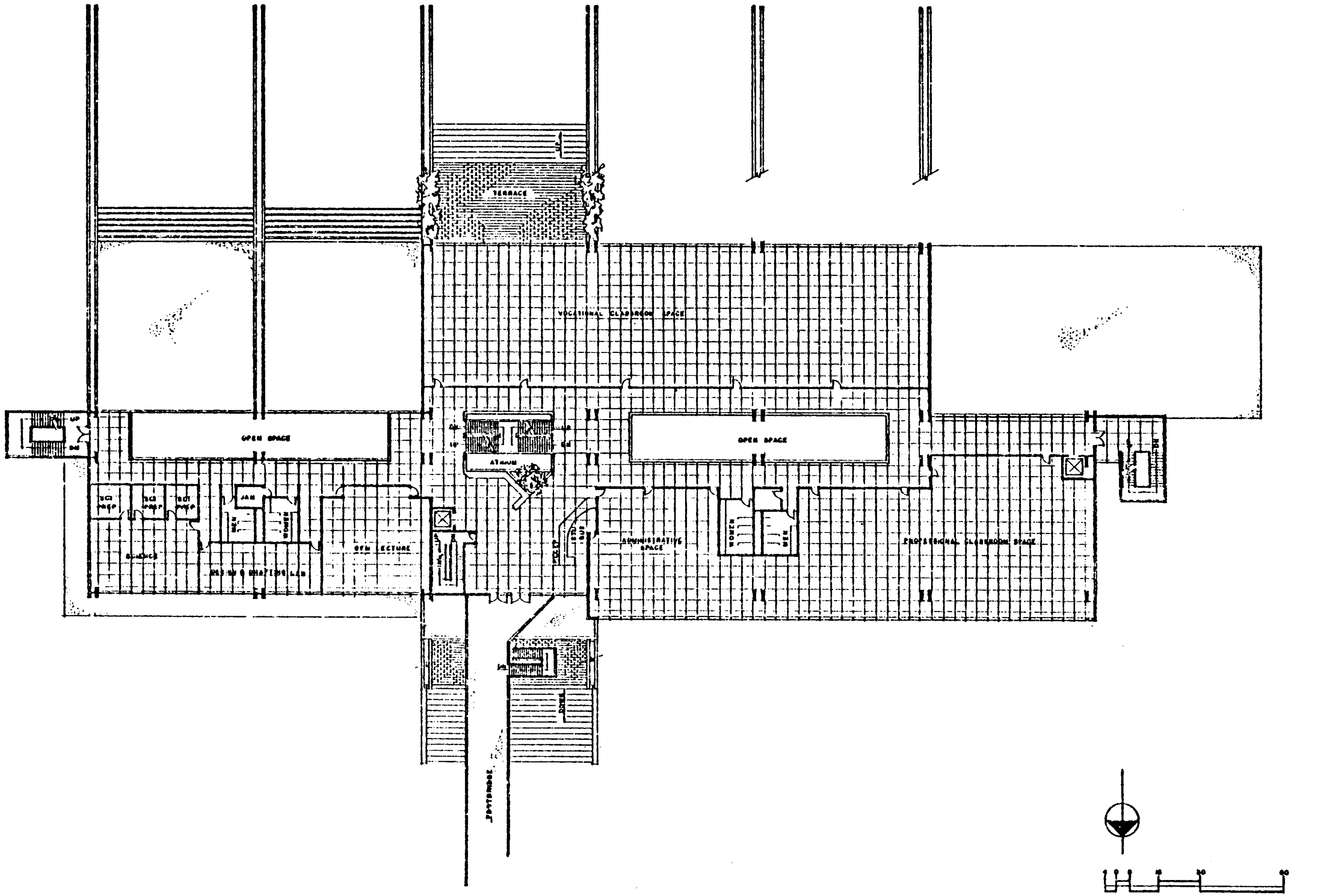


Fig. 17: Third Level Plan

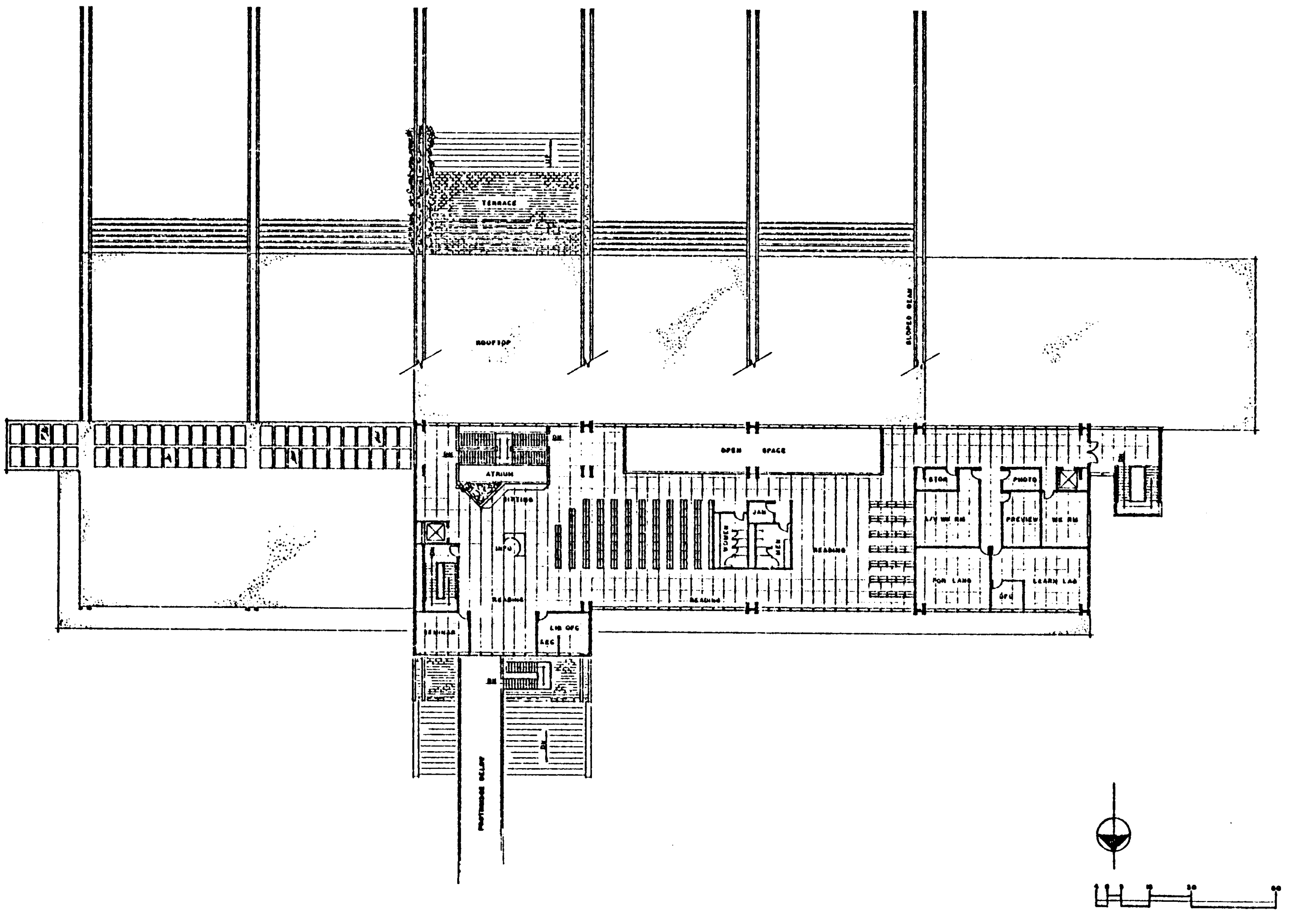


Fig. 18: Fourth Level Plan

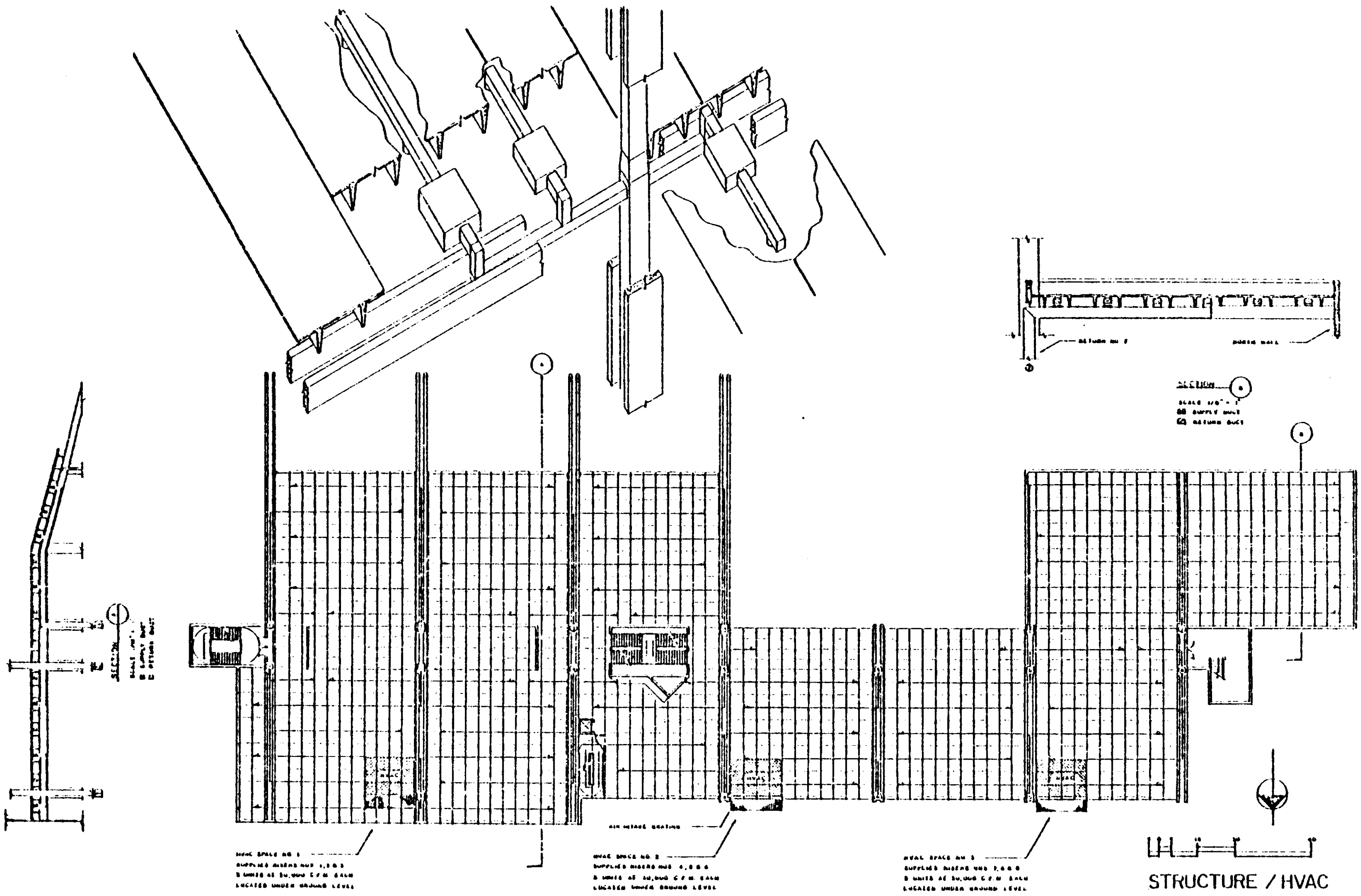


Fig. 19: Structure - HVAC Integration

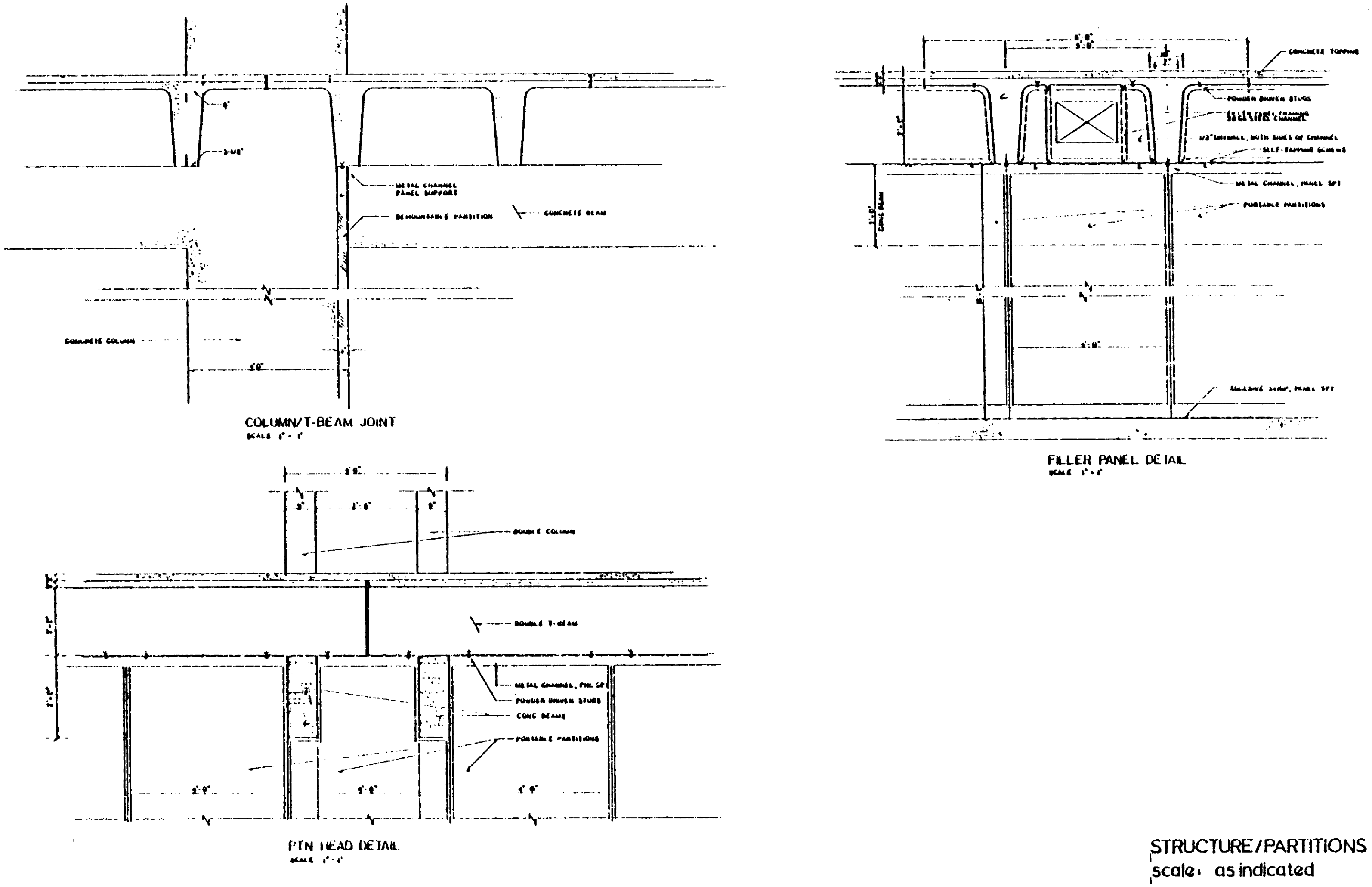


Fig. 20: Structure - Partitions Integration

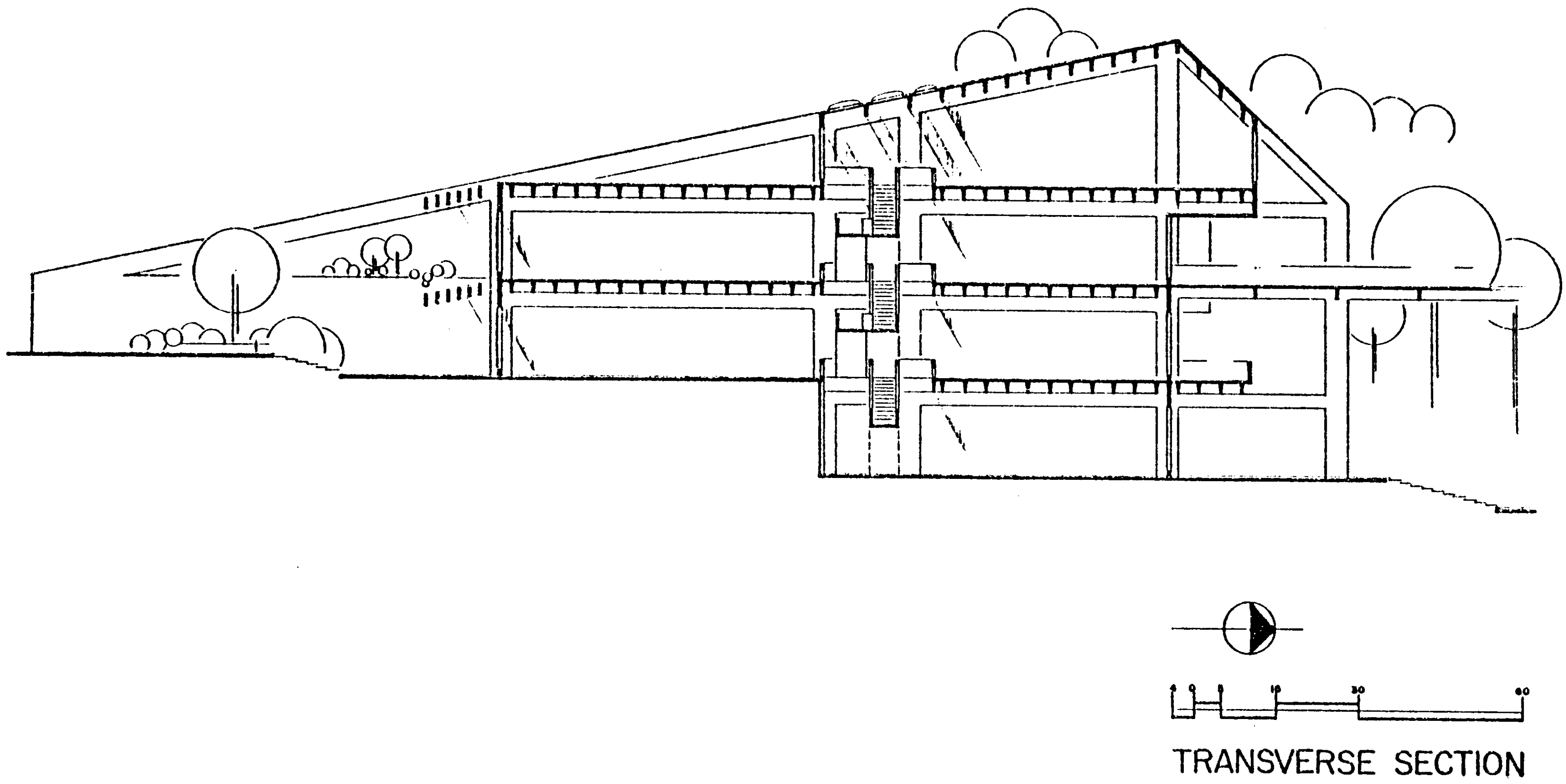


Fig. 21: Transverse Section

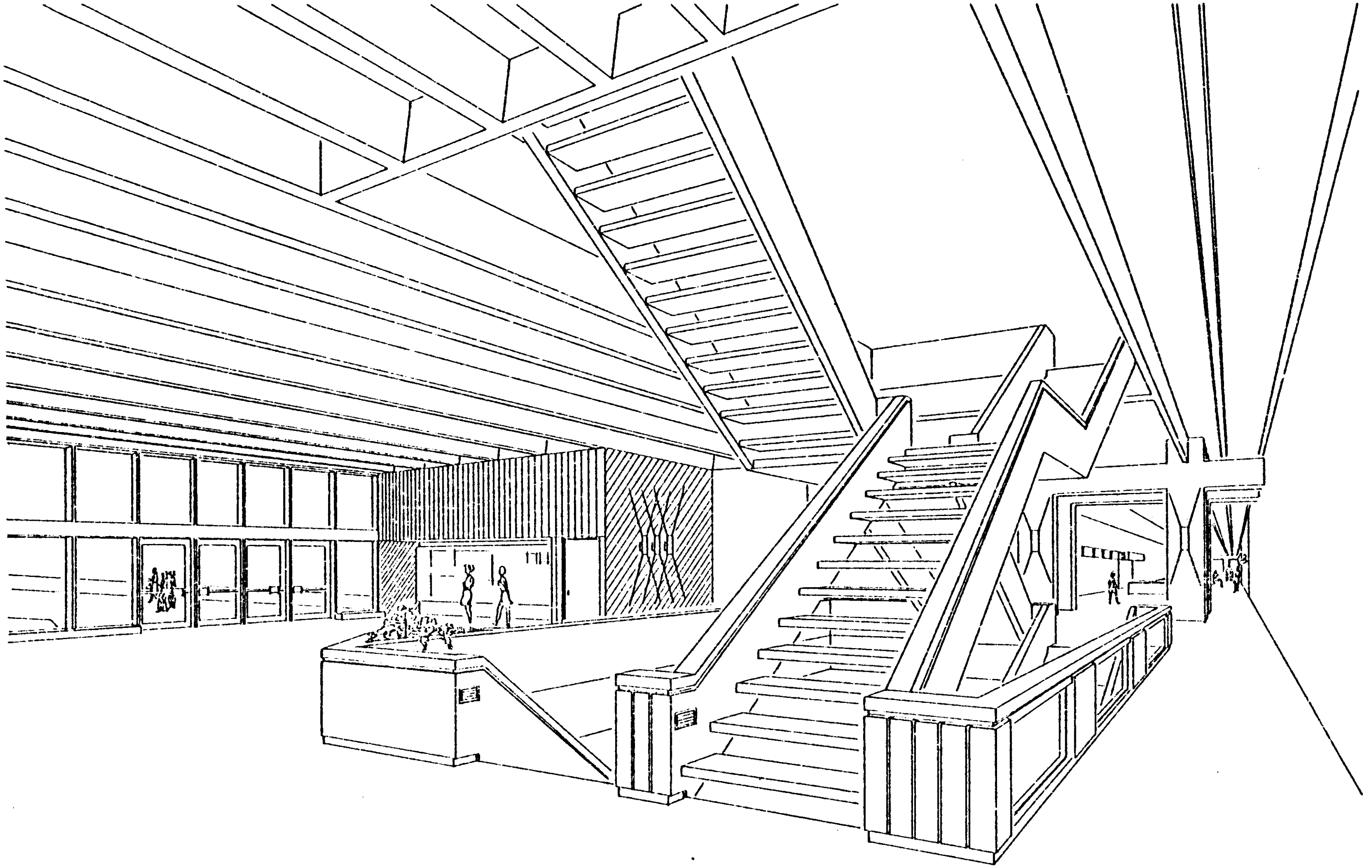
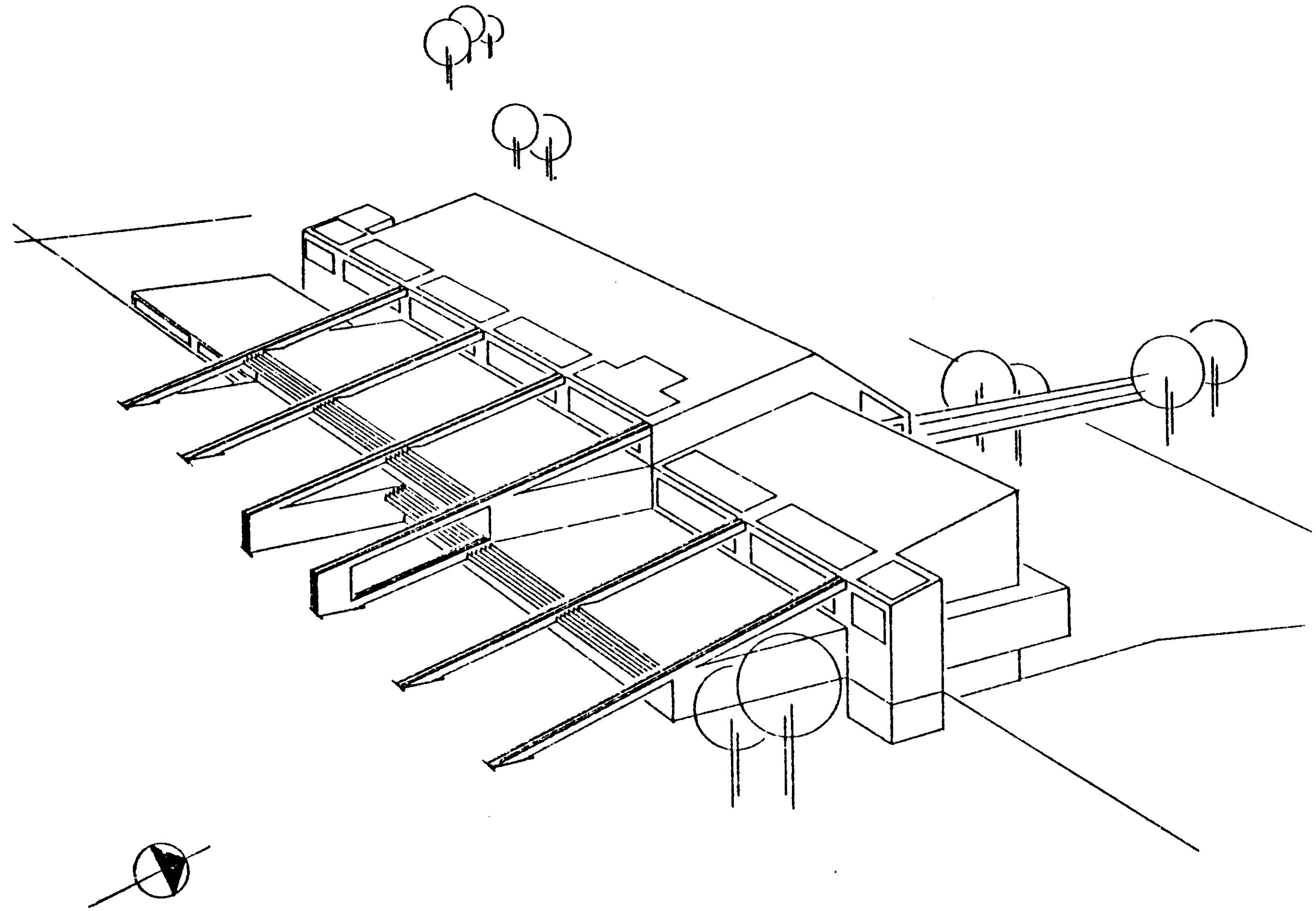


Fig. 22: Interior Perspective



SOUTHEAST PERSPECTIVE

Fig. 23: Exterior Perspective

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A COMMUNITY COLLEGE FOR THE NEW RIVER VALLEY: PROCESS METHODOLOGY AND DESIGN PROPOSAL

by

Walter J. Currin

(ABSTRACT)

The thesis project has two general objectives. The primary objective is to design a facility whose plan incorporates and reflects an understanding of architecture - a facility that is right for its purpose, its people and its surroundings. A secondary objective is to document the process methodology leading to the proposed design solution.

The project building type is a community college facility to serve approximately 850 students within a planned building area of 85,000 square feet. The Virginia Department of Community College's activity and space requirements document, dated November 1968, set forth for construction of phase II of the existing Radford-Pulaski Community College has been incorporated as a program requirement for this thesis project. The project site is the site of the existing Radford-Pulaski Community College which is a one hundred acre tract of land located near the Southwestern Virginia town of Dublin, in Pulaski County a part of the New River Valley Planning District.

The thesis paper traces the development of the proposed design

solution through the various phases of the design process to the final presentation of the proposed facility. The paper externalizes criteria selected to generate and guide the design effort; documents objectives, motivations, convictions, intentions and design decisions; discusses process methodology employed and presents various diagrammatic drawings and physical study models generated along the design path. The paper ends without a lengthy narrative justification of the proposed design solution, but instead with a presentation of architectural drawings illustrating the proposed facility.