

The Recovery of Substance and Intimacy:  
Material and Character in Architectural Design

by

Donald David Klema  
A.B., Princeton University  
1978

Submitted to the Department of Architecture in Partial  
Fulfillment of the Requirements for the Degree of  
Master of Architecture  
at the  
Massachusetts Institute of Technology  
September, 1982

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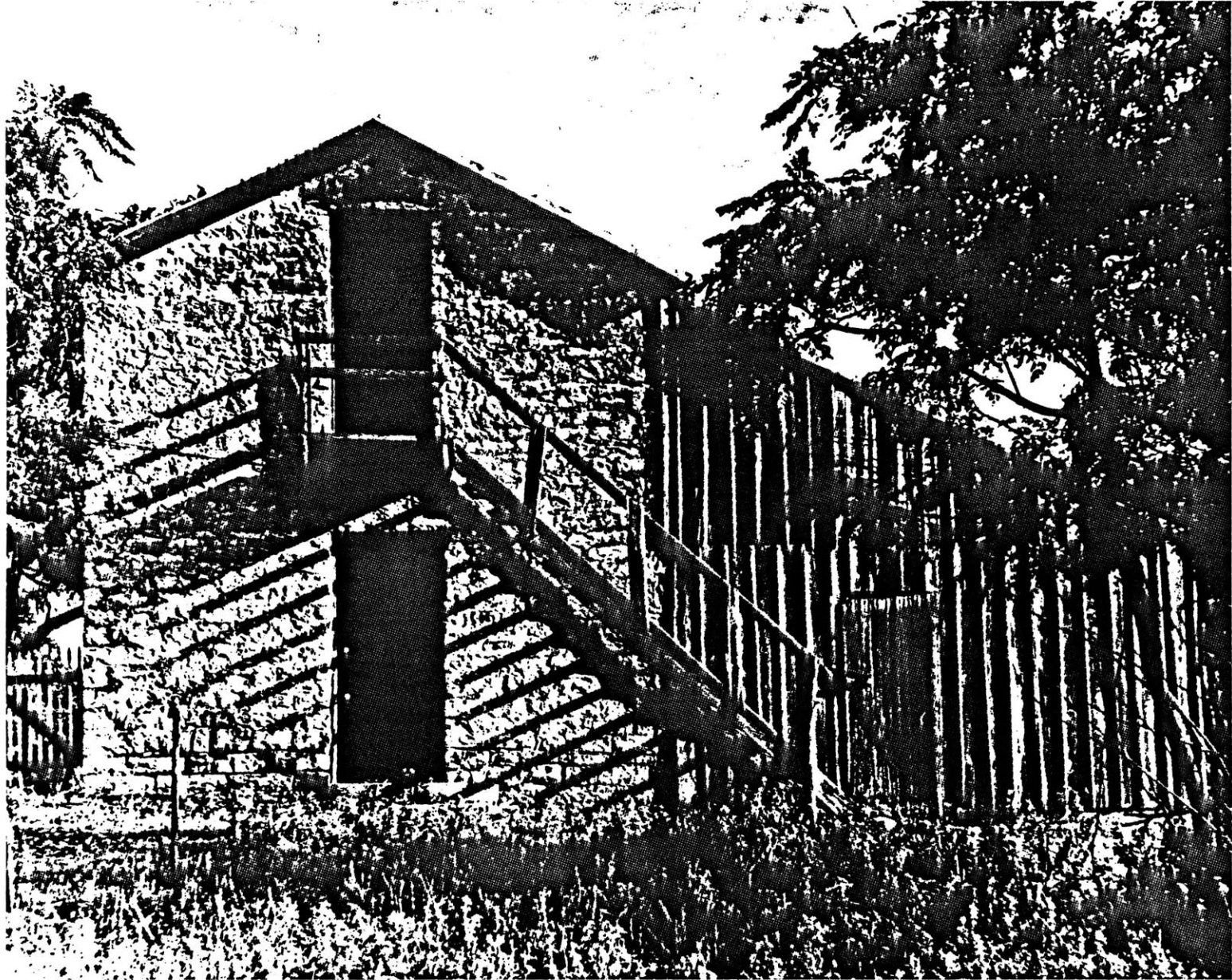
Signature of Author \_\_\_\_\_  
Department of Architecture  
June 18, 1982

Certified by \_\_\_\_\_  
Fernando Domeyko  
Associate Professor of Architecture  
Thesis Supervisor

Accepted by \_\_\_\_\_  
Shun Kanda  
Chairman, Departmental Graduate Committee

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OF TECHNOLOGY

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ABSTRACT

This thesis is essentially a diary, drawn and written, following the design of a home for abused children. The site is located in the Hill Country of Texas, and the project was first undertaken in an architectural design studio at Rice University, in the spring of 1979. In its structure and sequence, the thesis illustrates a way of designing, with the purpose of making that more conscious and explicit. The incremental process of recognizing appropriate images or organizational devices, and then incorporating them in an evolving project, is documented through a series of sketches kept in a notebook over the course of the semester.

The basic intent is to move beyond the diagrammatic organization of space, to a more positive consideration of structure and materials, particularly as they interact to form a building's edge. This centers upon an understanding of architectural character, as it is manifested in those boundaries whose form and material interpret a given spatial order, and relate it to its physical context.

Thesis Supervisor: Fernando Domeyko  
Title: Associate Professor of Architecture

## ACKNOWLEDGEMENTS

This thesis is dedicated first of all to my parents, for harboring me again after a number of years away, and supporting an education whose duration and utility they must have questioned.

To Fernando, for becoming intimately involved with the project, and avoiding the intimidation and silent judgement so common to faculty members here.

And to the students of room 7-404. In a peculiar context including margueritas and music sung by chipmunks, camaraderie very much enhanced the work, and the education.

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## INTRODUCTION

The goals of this exercise are both academic and personal. Its initial purpose is to take a project which was a synthesis of a series of programmatic and formal concerns, and now employ it as a laboratory for further examination of some of the spatial properties of structural systems and building materials. In addition, this process will enable me to compare prevalent attitudes toward design at two different schools of architecture, Rice University and M.I.T., as manifested in work done within each milieu, and thereby to locate my own tentative position relative to them.

An attribution must be made at this point to the book Genius Loci: Towards a Phenomenology of Architecture, by Christian Norberg-Schulz. Many of the methods and terms of analysis are taken from there, as is a more general emphasis upon the physical and existential component of architecture.

The thesis, as did the studio before it, employs the basic intention, philosophy, and program of the Hill Country Youth Ranch as its point of departure. The Youth Ranch provides a haven for neglected, abused, and abandoned children. During the nineteen seventies, a significant increase occurred in the incidence of serious child abuse, both reported and confirmed, in the state of Texas. The new Texas Family Code, effective January 1, 1974, legally recognized child care facilities, and established guidelines for their regulation. The Code distinguished between facilities for the seriously disturbed or delinquent, and those particularly suited to the needs of abused or neglected children,





removed from their families by the court. Still, no funding was provided for the latter group, and so their care was left to the private sector<sup>1</sup>.

A publicly supported, non-profit organization, the Youth Ranch is intended to house approximately one hundred children, both boys and girls, aged three to eighteen. They live in groups of from eight to twelve children per house. A married couple acts as houseparents for each unit, working for six days, followed by three days off, during which time alternates fill in. The houseparents' accommodation is also their home. The children can be grouped either according to age, or to approximate a "typical" family, and the basic activities of home life take place in these groups.

In parallel, communal spaces are required for the home as a whole. A gymnasium, and a place for collective dining, entertainment, and meetings are the two largest elements. In addition, there are a number of educational facilities on site, studios, a classroom, a library, and a nursery school. The administration is also housed in the complex, including space for monthly board meetings. Visitors, whether students, parents, or professionals, would be accommodated overnight in a hostel, which would also serve as temporary lodging for children waiting to join the Youth Ranch.

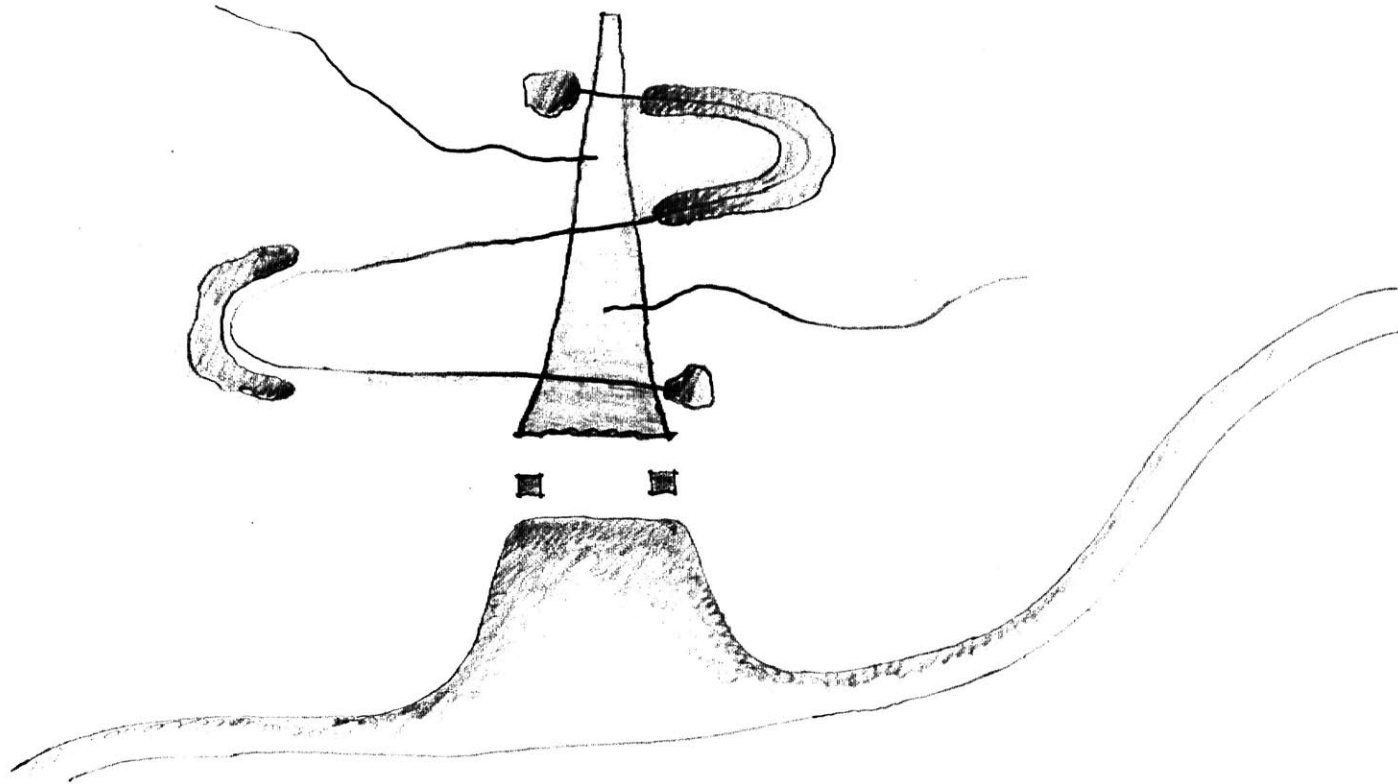
The relation between the home and the town of Ingram, population seven hundred, on whose outskirts it is located, is one of cooperation. The children attend the local schools, and



the townspeople share the sports and educational facilities. The home acts as a microcosm of the town, but must remain incomplete, to encourage interaction with those outside, whom the children will eventually rejoin.

The children themselves have all been neglected, abused, or abandoned, but none are orphans, mentally retarded, or physically handicapped. Most are, however, emotionally handicapped, with a low sense of self-esteem, isolated, antisocial, and resentful. Having been alienated from the social system, many have learned to look after themselves from an early age. They come from a wide range of economic, ethnic, and social backgrounds, and have lived in diverse contexts<sup>2</sup>.

Adele Santos, Studio  
description (Rice  
University, spring, 1979).



2/2/79

Ideogram of community structure.

Collective elements neither grouped into single building nor dispersed, but rather joined to form a line, a street. Importance of threshold. Collective line originates there, is formal, measured in its treatment, a device for orientation within the community.

Network of paths give access to residential clusters. Complements structured collective street. Diffuse, incomplete.

Intersection of two linear systems: points of particular significance. Together they bound larger areas. These accommodate activities that require more space, less structure.

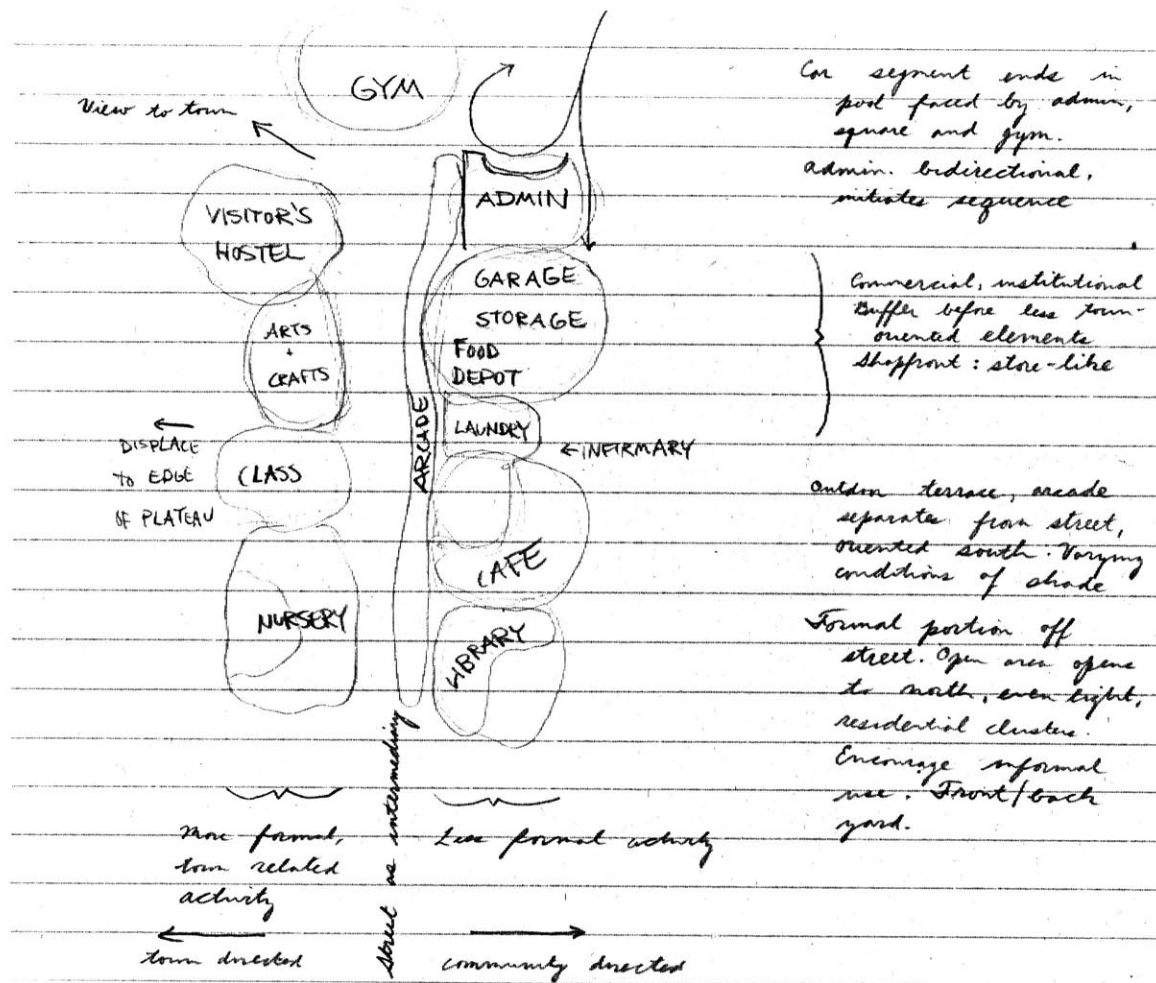
## BRIEF

The following are excerpts from a brief developed at the beginning of the studio at Rice to inform the design process, providing criteria for the evaluation of the proposal at each stage.

Within this community of children and adults, it is assumed that the delicate structure of the family, whether nuclear or extended, cannot be duplicated. Significant population instability and the memories of those participating preclude a meaningful imitation. The clusters of the children's and adults' accommodations will thus not directly simulate the family, but rather be intended to facilitate interaction amongst peers, seeing this as the first step toward comfortably relating to the community at large. These clusters cannot be isolated from one another, for no one stage in the life cycle is self-sufficient.

The children must have a space immediately adjacent to their rooms, and thus within their conceptual domain, for play, recreation, and the entertainment of friends. It should be oriented to the south, with direct access to an outdoor patio or terrace.

The dining room/kitchen will serve as an intermediate between the realms of the children and adults, a place of union, and as such would probably function as the heart of the cluster. Both a formal table, and a breakfast area, oriented to the east, should be provided.



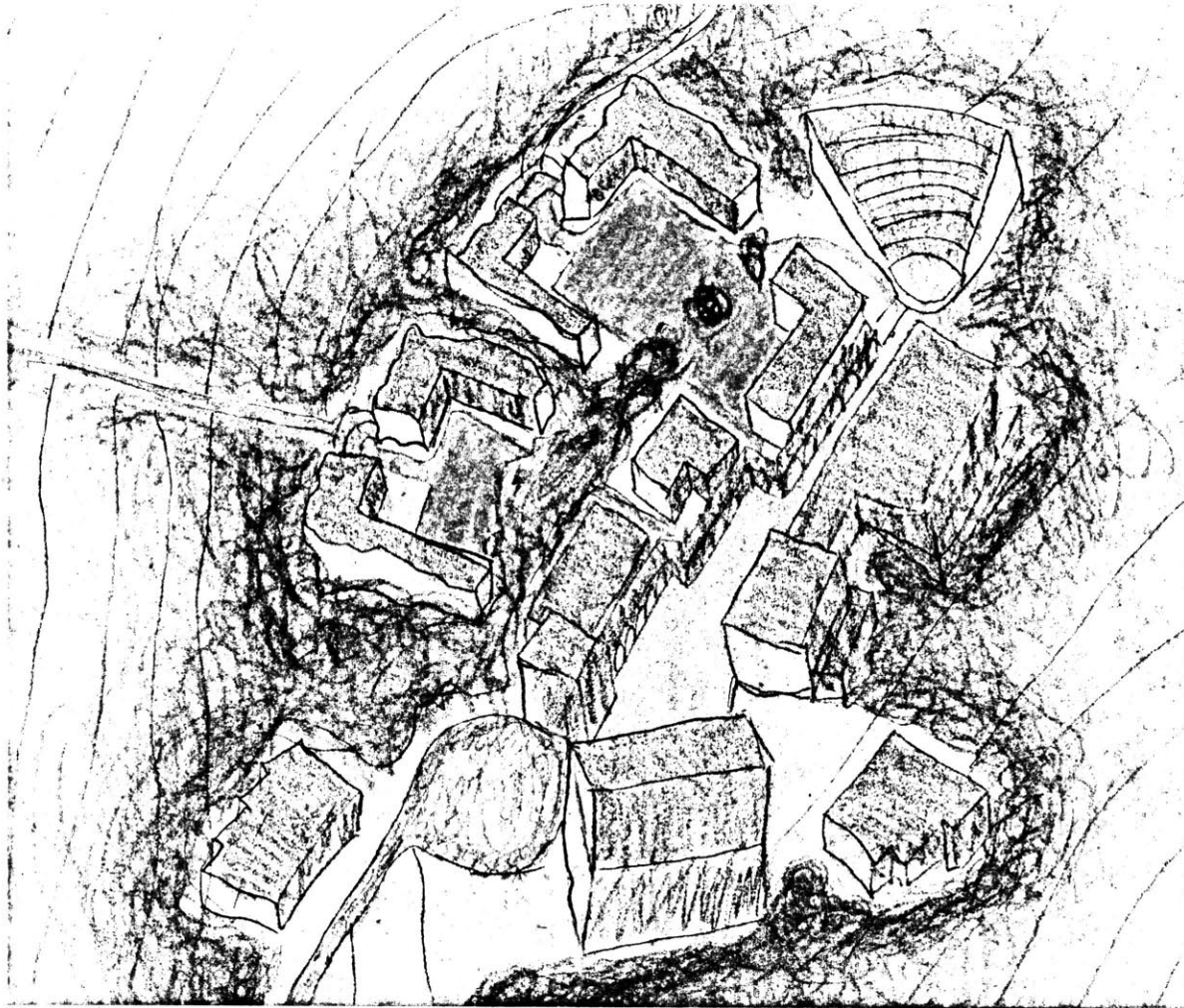
2/7

Initial placement of public/communal elements. Concatenated to define pedestrian street, gradated with respect to intensity of use by townspeople. Elements more private to the Youth Ranch brought deeper into the community.

The gym will be a potential interface with the town itself. The home must encourage townspeople to be aware of, and participate in certain of its activities in order to generate good will, and avoid a self-defeating isolation. Like the dining room in the cluster, between adults and children, this space together with the studios and classroom must function as a point of contact and exchange between the town and the Youth Ranch.

Another interface is the visitors' hostel, accommodating new children, parents, students, and other visitors on the edge of the community, neither violating its integrity, nor upsetting the delicate equilibrium. It should attempt to evoke the feeling of a roadside inn, drawing its energy from the fortuitous collection of individuals momentarily brought together. The children could feel themselves to be legitimate visitors, perhaps following the daily routine of a dwelling cluster, and yet returning to their own room at night to reconnoiter. A gradual introduction and acclimation could thus be effected.

Since most of the children's contacts in school will also be peers, it is essential that the clusters be closely inter-related, physically and in terms of shared activities. Settings for informal interaction, such as cafes, library/study areas, and studios must be abundant, and easily located. The circulation network itself will provide exposure to children of other ages. Only through consistent contact can the older children



2/11

Buildings begin to configure outdoor space.

Housing units surround courtyards oriented S-SE, to receive summer breezes, winter sun. Living spaces look inward, toward these courts, bedrooms outward, to woods. Courts leveled, serve as areas for play. Front yard/ back yard distinction promoted.

Along pedestrian street, arcade joins communal buildings, is screen to patios off street. Displacements occur at junctions with paths to housing clusters.



become role models for their younger counterparts.

Ideally, the community will become a microcosm of an urban concentration, with larger scale elements inserted into a residential fabric. Each cluster must have a clearly recognizable relationship to the other elements, namely an address. Essential to this microcosm is the hierarchical ordering of places, and their interconnections.

The urbanity of the community will also be reflected in the provision of specific opportunities to participate in a variety of activities, visible when simply moving about. Thus can even reticent children be captivated and engaged in relations with others through the medium of doing something enjoyable. Spontaneity and improvisation must be encouraged.

The community will not be utopian, given that its express purpose is to prepare those that mass society has mistreated or neglected to be reintroduced into that society. But, of necessity, it must provide opportunities for interaction unavailable in a typical low density, homogeneous suburb, such as are beginning to overtake Ingram. I believe that an urban model is admirably suited to the development of those opportunities in a non-deterministic manner.

HILL COUNTRY YOUTH RANCH

Urban design studio, Spring 1979, 12 weeks

CRITIC

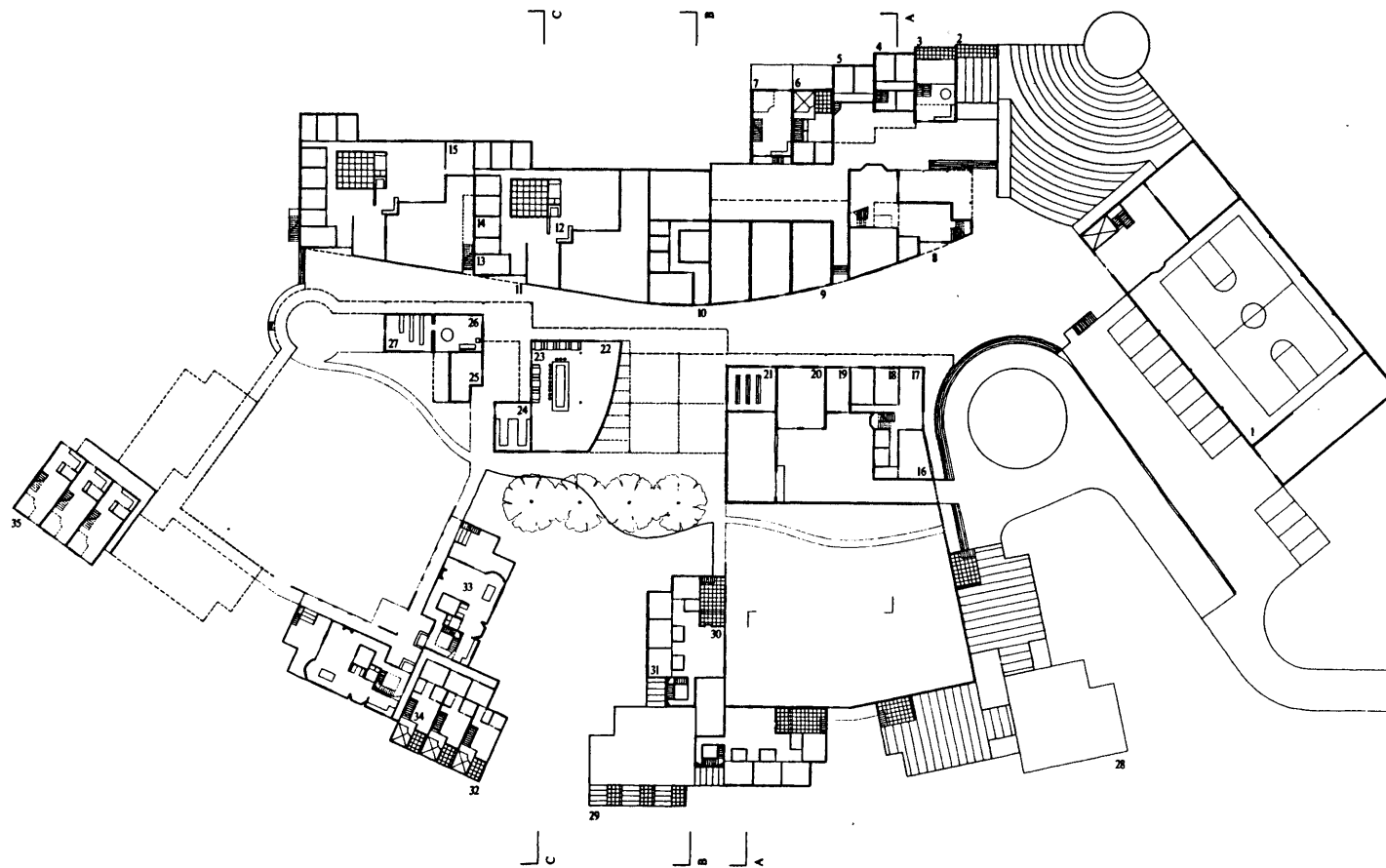
Adele Santos

SITE

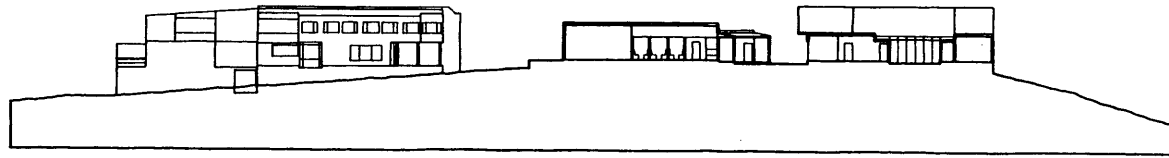
Along a valley with views to the Guadalupe River, on the outskirts of Ingram (population 700), in the Texas Hill Country.

PROGRAM

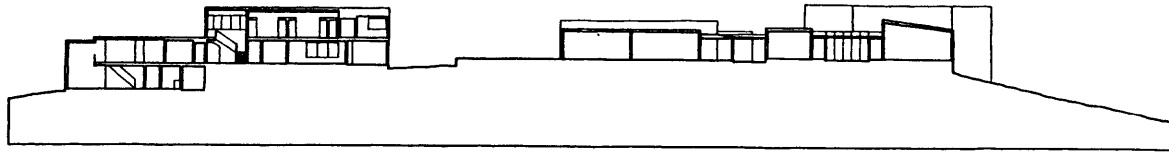
- |                                      |                                                |
|--------------------------------------|------------------------------------------------|
| 1. Gymnasium                         | 19. Machine shop                               |
| Teenage independent living           | 20. Vocational training                        |
| 2. Roof plan                         | 21. Food depot                                 |
| 3. Upper level: common living/dining | 22. Cafeteria                                  |
| 4. Middle level: private bedrooms    | 23. Cafe                                       |
| 5. Lower level                       | 24. Kitchen                                    |
| Housing for on site counselors       | 25. Classroom                                  |
| 6. Upper level: bedroom              | 26. Lounge                                     |
| 7. Lower level: living/dining        | 27. Library                                    |
| 8. Hotel                             | Housing for adolescents                        |
| 9. Studio (x 3)                      | 28. Roof plan                                  |
| 10. Nursery school                   | 29. Upper level:                               |
| 11. Housing for youngest children    | 30. Children's common room                     |
| 12. Kitchen                          | 31. Bedroom (divisible by partition)           |
| 13. Houseparent bedroom              | 32. Middle level:                              |
| 14. Double bedroom                   | 33. Family living/dining                       |
| 15. Alternate houseparent bedroom    | 34. Houseparent bedroom                        |
| 16. Boardroom                        | 35. Lower level: Houseparent living/<br>dining |
| 17. Reception                        |                                                |
| 18. Counselor (x 2)                  |                                                |



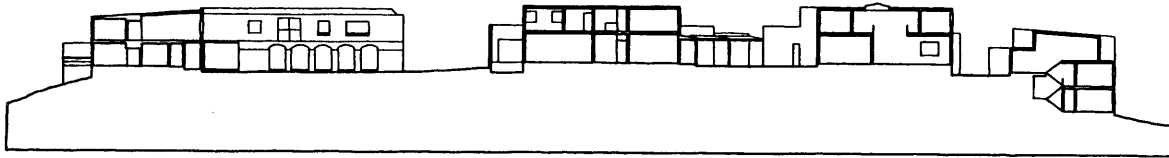
PLAN  
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C-C

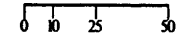


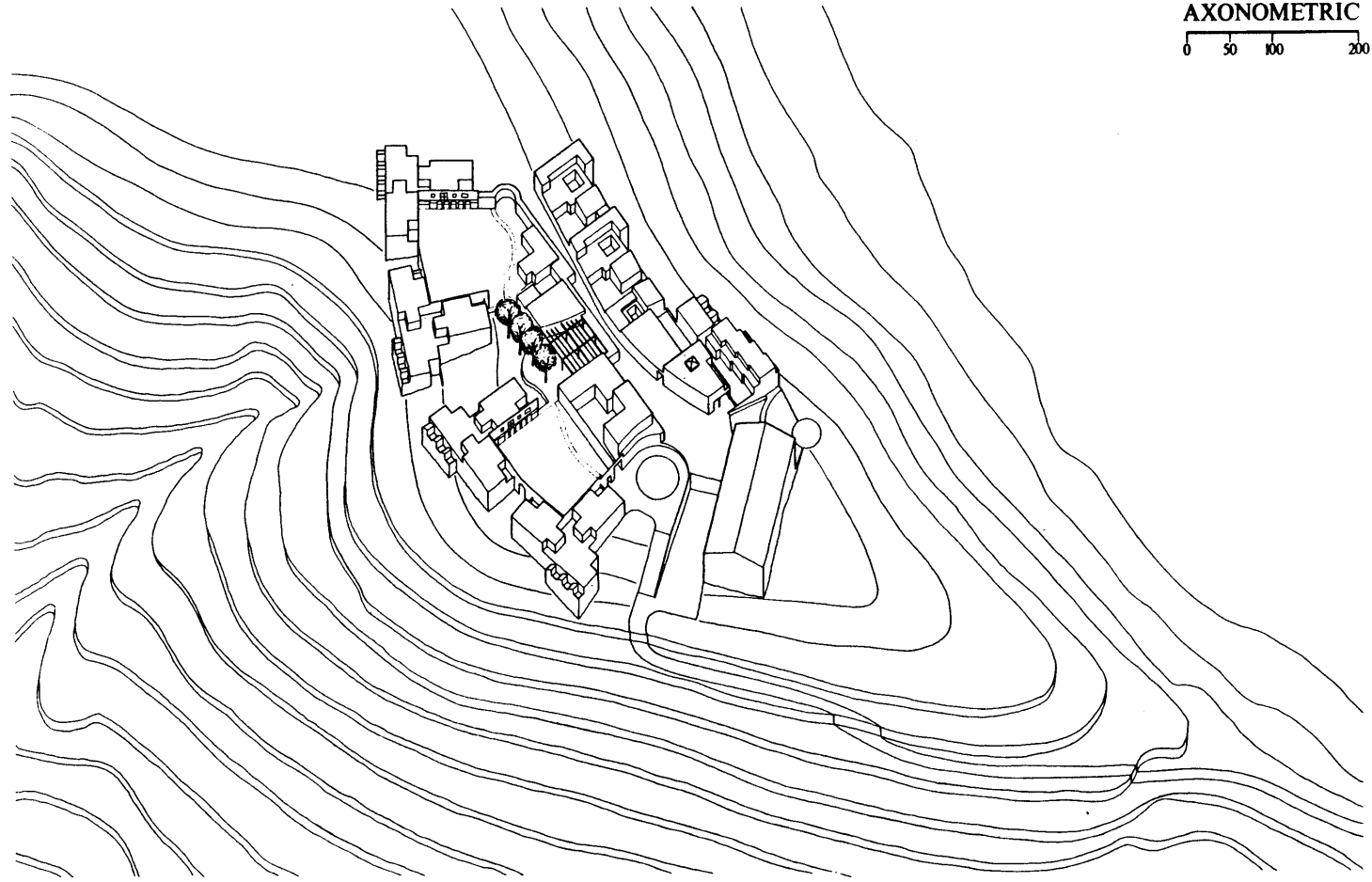
B-B

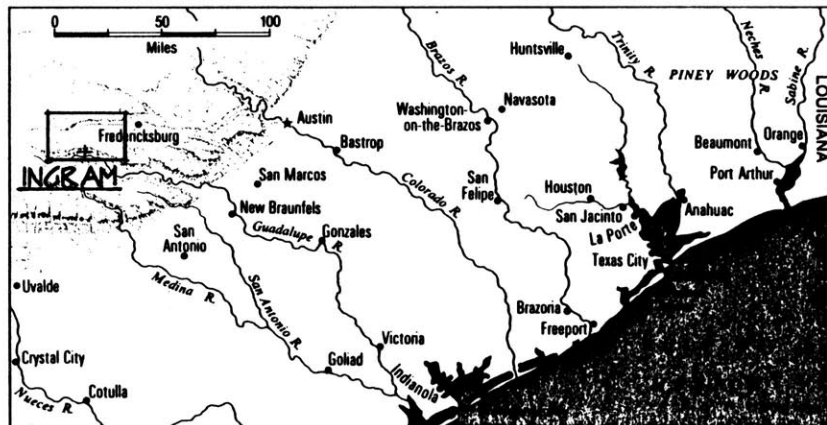


A-A

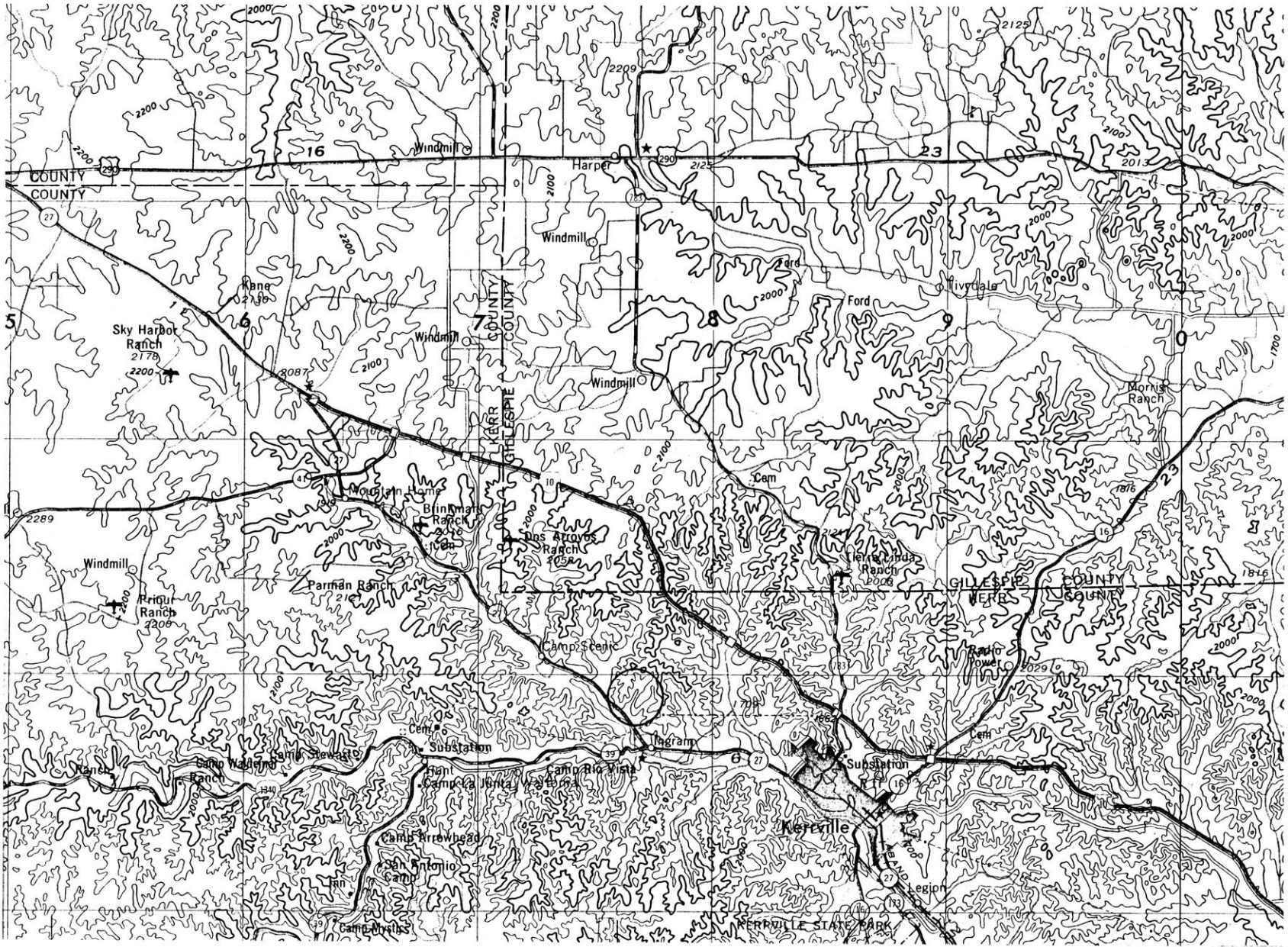
SECTIONS



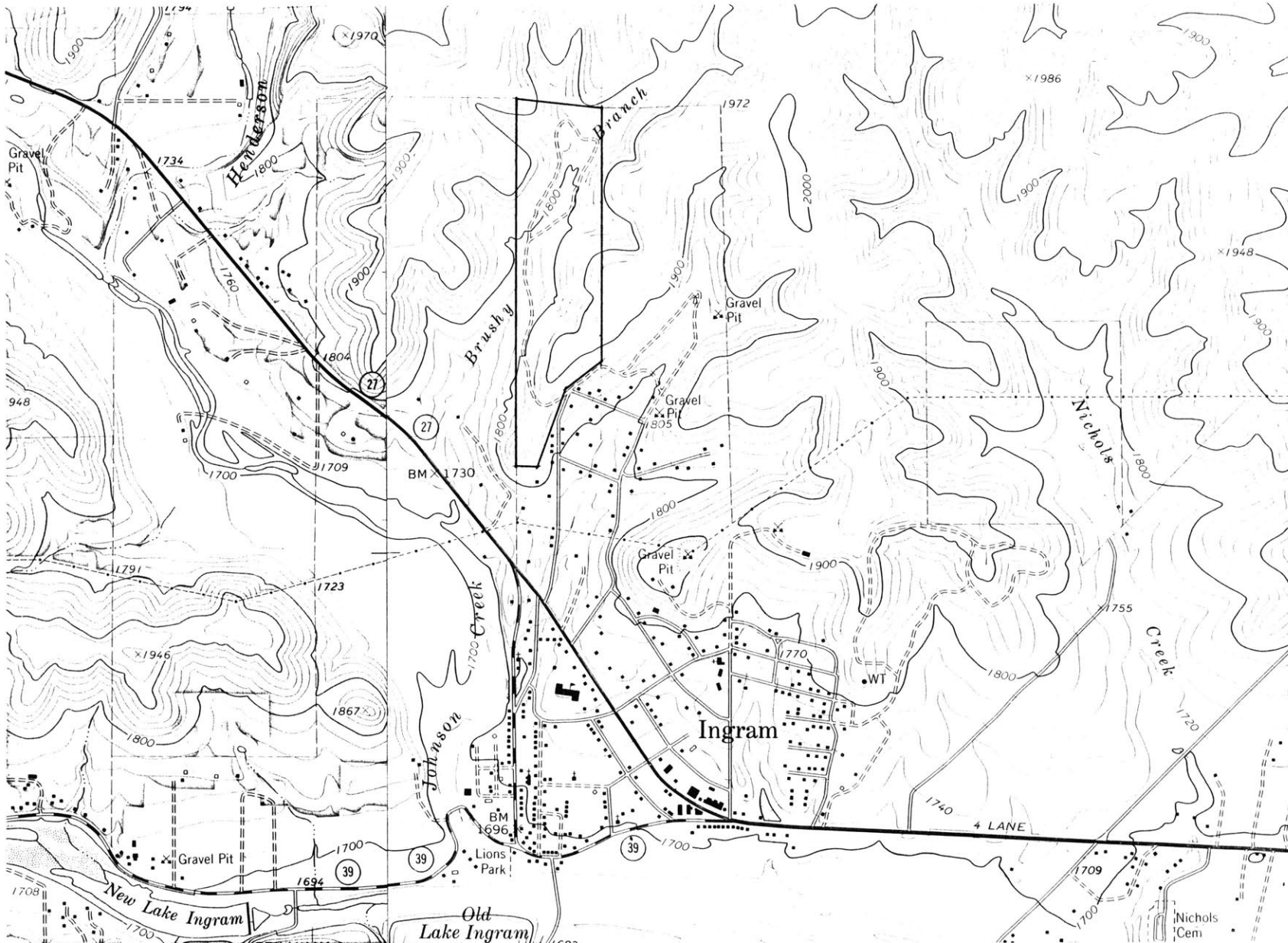




Reproduced from: Joe Frantz, Texas: A Bicentennial History, p. xii.



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1:24,000

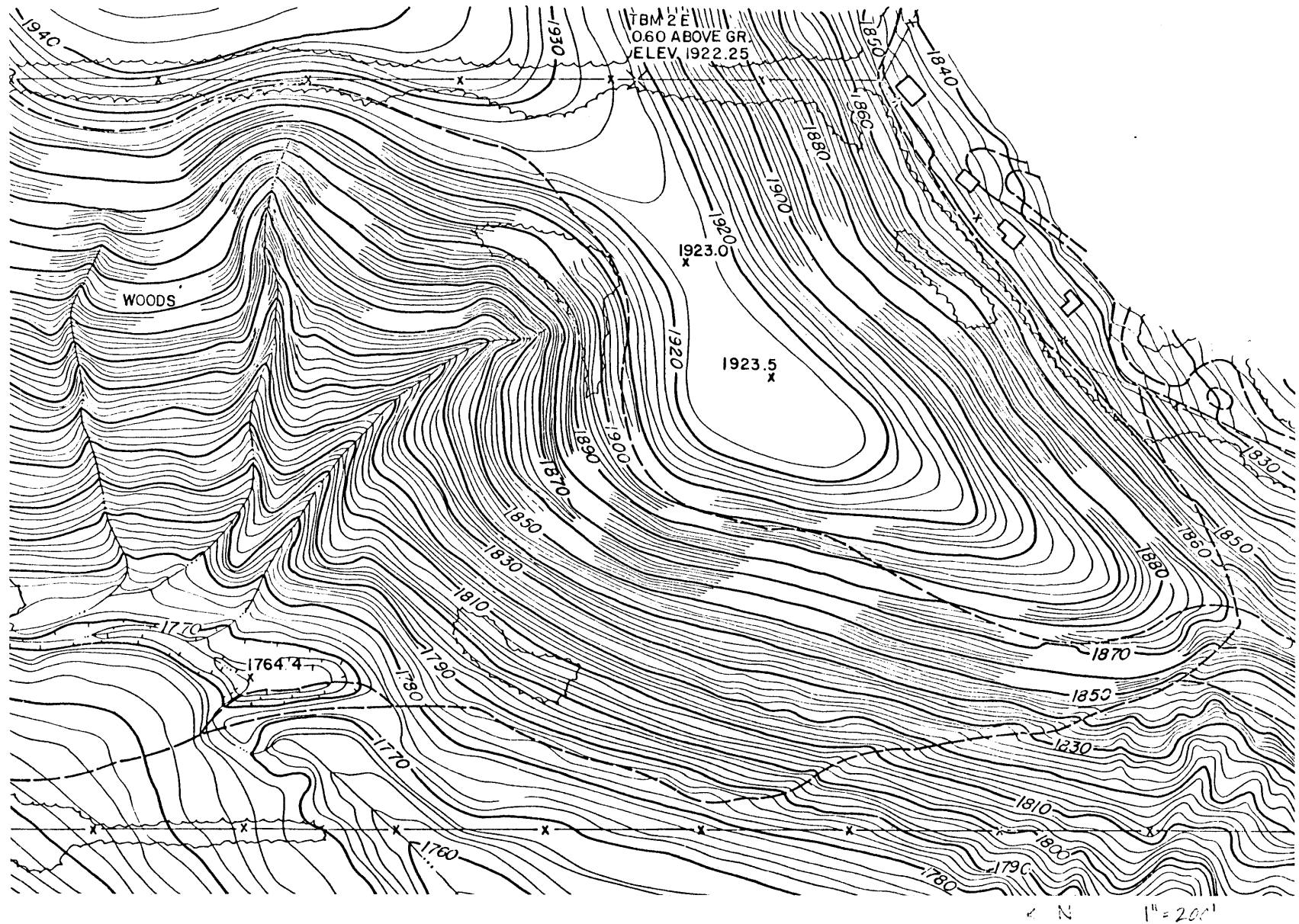


## LANDSCAPE

The Hill Country, located in south central Texas, derives its form and character primarily from the limestone platform deposits which underlie it. They are both the basis of its relief, and the source of its harsh caliche soil. This is an example of a water-generated landscape, formed through deposition and erosion. Infrequent, but heavy rains have acted upon the homogeneous rock structure to create a series of dendritic stream valleys, extending in all directions from rivers such as the Guadalupe, which flows to the south of Ingram. The streams are hierarchically ordered, with the larger ones carving deeper and wider features. These valleys have become the dominant land forms, and are bounded not by hills, but rather by the remnants of a once continuous plateau, at about two thousand feet above sea level, now serving as a datum against which the valleys can be read.

The reciprocity, or fingering, between valley and plateau is extreme, separating adjacent valleys completely. Each becomes a distinct entity, with a series of ravines and convex hill surfaces forming its boundaries, and creating an ordered sequence of spaces. Thus, there are structural affinities between the rivers as systems, and each of the streams which feed them.

The enclosure and directed extension of the valleys is complemented by a general extension, and long views, at the level of the plateau. From there, the steep slopes bordering the rivers in places can be seen as major space defining elements. Also, if the valleys act primarily as paths, to the west of



Kerrville the plateau broadens to form a more continuous domain. Similarly, the flood plains of the rivers slope only gently, and so have become the site for many towns, such as Ingram and Kerrville.

In the Hill Country, vegetation plays a much less significant role than the relief in the definition of natural places. Generally low and sparse, due to harsh soil and a lack of rain, the native cedars and live oaks have been further ravaged by ranchers seeking more grassland for their cattle, sheep, and goats. Beneath the plateaus, which are still generally forested, stands of cedars have been retained as wind breaks for livestock. Such groves are dense, and serve as boundaries rather than defining space within themselves. In contrast, the Guadalupe is lined with majestic pecan and cypress trees. Typically, the vegetation defines particular places within the larger, more powerful order established by the relief.

Whereas the vegetation is instrumental in fashioning more intimate places than are afforded by the topography, the sky operates, through its light and color, at a much larger scale. Whether clear or clouded it appears high-- the big sky of Texas-- and is bounded by the horizon of the plateau. Since the sky appears as large as the space from which it is seen, it is an important force in this area.

Climatically, the Hill Country is subtropical and semiarid, with humid winters and dry summers. It receives about twenty six inches of rain a year, mostly in the spring and fall, and



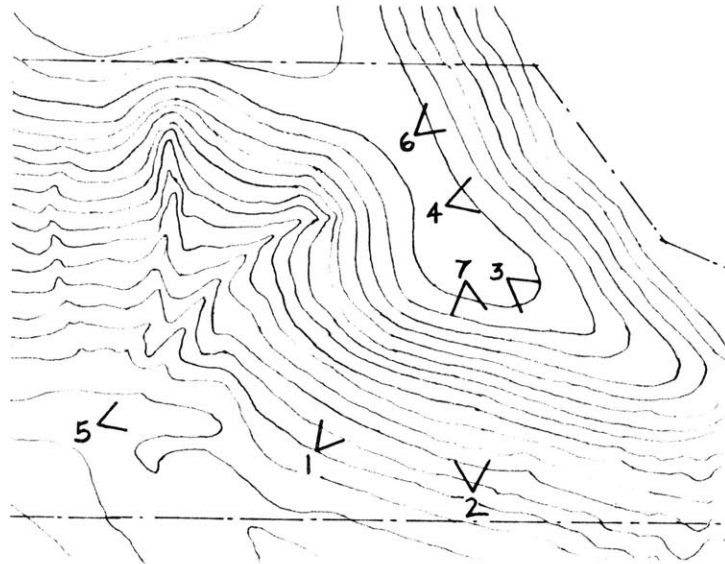
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2



3



Climates of the States  
(Detroit: Gale Research  
Co., 1980), pp. 1112-5.

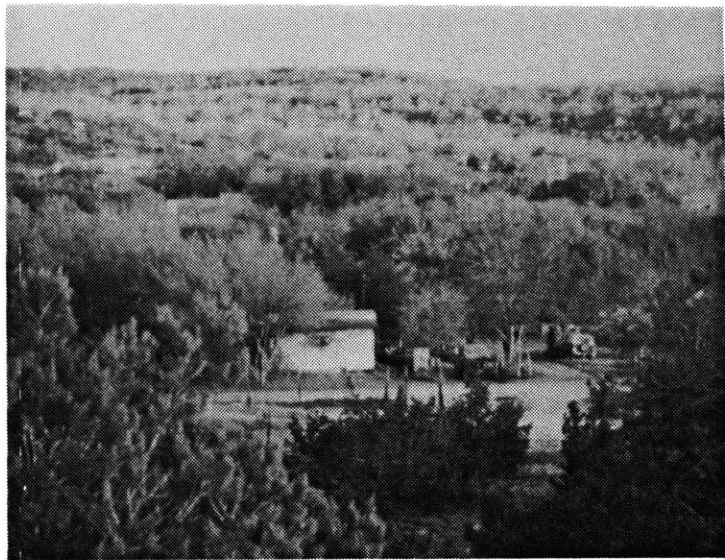
virtually no snow. In Kerrville, about eight miles east of the site, the mean maximum temperatures are 61° in January and 94° in July, and their minimum counterparts 34° and 68° respectively. The winds come from the northwest in winter and the southeast in summer.<sup>3</sup>

Given this situation, Victor Olgyay in Design with Climate recommends a shaded and dense layout, with dwellings clustered to create patio-like areas. They should be continuous along an east-west axis, to yield a volume effect mitigating heat gain from solar radiation. Similarly, in each house, the walls of daytime living areas should be of massive, heat storing materials to delay heat impacts, whereas those of night use rooms can be of light heat capacity, to promote radiational cooling.<sup>4</sup>

Victor Olgyay, Design with Climate (Princeton, 1963), pp. 167-8.

In more general terms, the settlement can and should have structural affinities to the landscape of which it is a part. Indeed, the existential purpose of building is to make the site become a place, and uncover meanings potentially present in the given environment.<sup>5</sup> Orientation and identification in the Hill Country derive from the experience of natural place within natural place, a hierarchical system moving from hillock and ravine to stream valley, and eventually river basin. This is thematically similar to the desired urban hierarchy identified in the brief, and the two can be related so as to be part of a continuity of experience, operating at a series of scales. In particular, parallel to the land forms themselves, the buildings can act more reciprocally with the slope and the cedar forest

Christian Norberg-Schulz,  
Genius Loci (New York, 1980),  
p. 18.



4



5



6



7

than in the initial design, being less complete and object-like, and the plateau can be conserved as a place, with dramatic views to the river, rather than being extensively built upon.

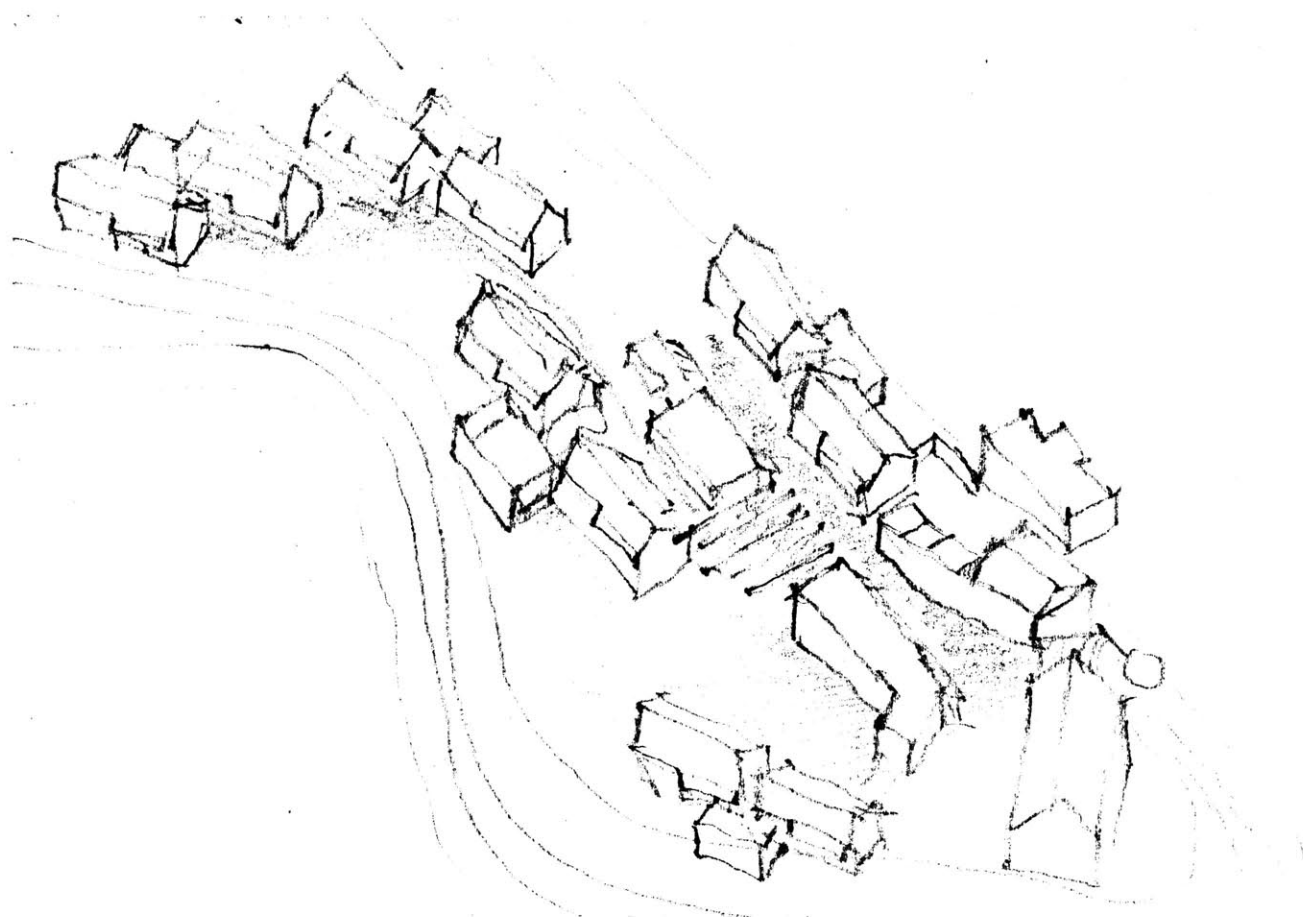


2/14/82

Generate more overlap between lines of building. Allow landscape, trees to enter. Buildings loosely enclose flat, usable outdoor space-- the original plateau-- rather than formal, geometrically controlled courtyards.

Overlaps create urban exterior spaces-- public. Highest degree of built definition. Have quality, dimensions of paths, as well as domains.

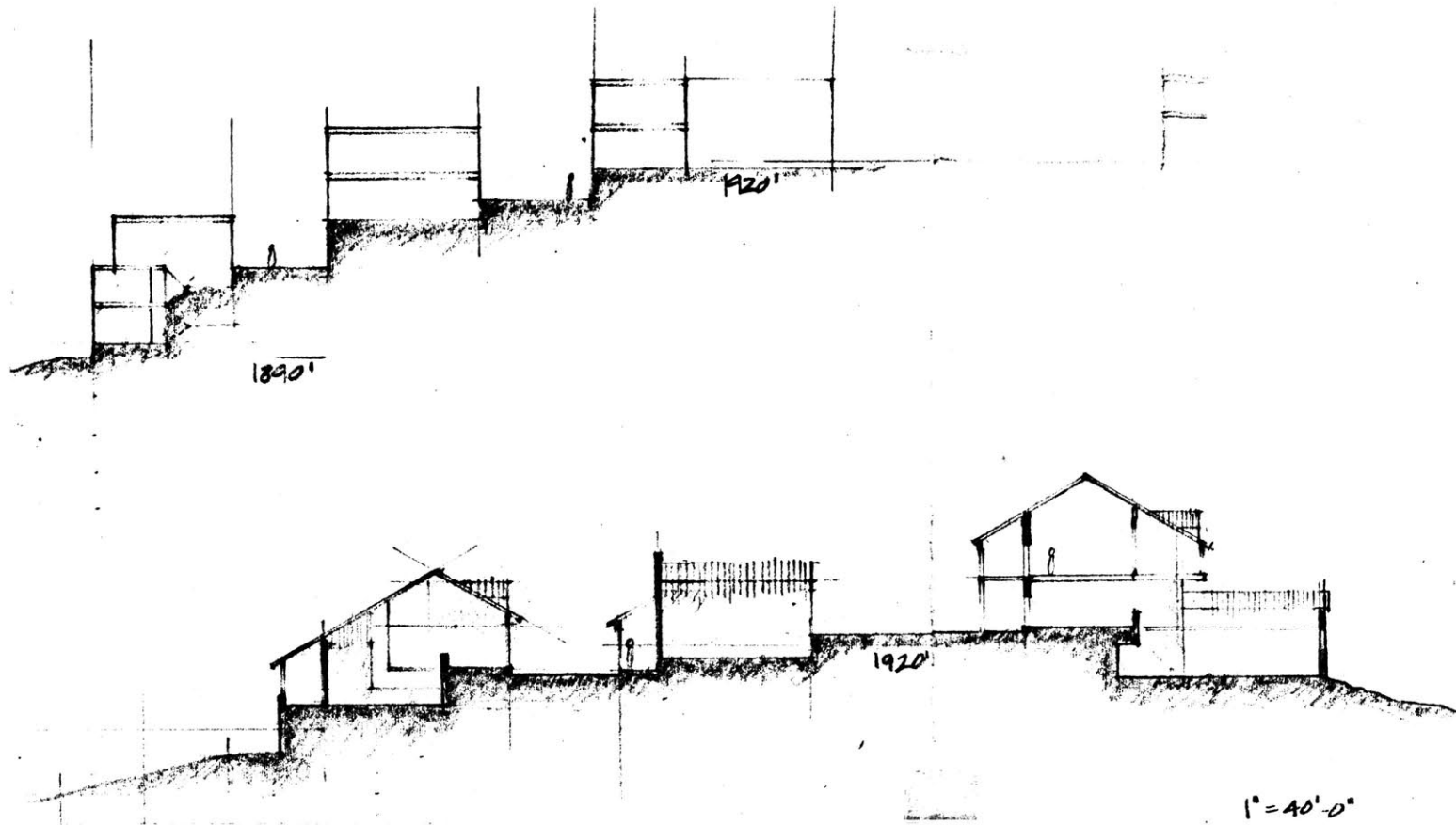




2/15

Relation of houses and communal buildings to outdoor space. Should there be normative house/garden connection, orientation? Beginning to create exterior places to the north of housing: value of shade vs. band of dark as separator that Alexander warns against.

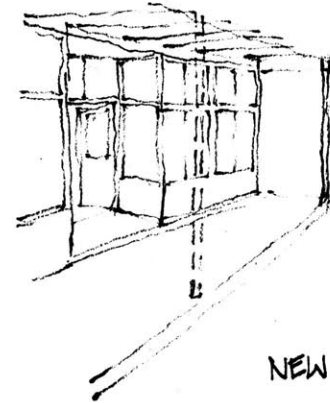
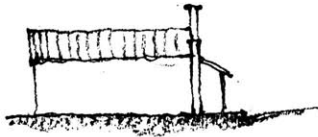
Possibly pedestrian street should become vehicular as well, more in manner of main streets of surrounding towns.



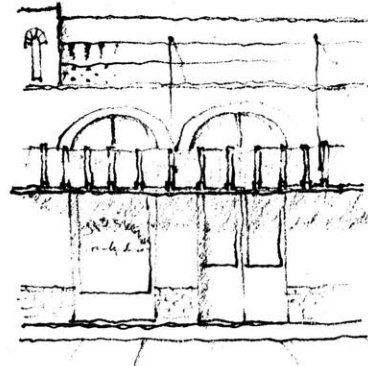
2/18

Preliminary study of section through hillside. Main street at level below that of plateau-- it has been displaced off edge to free plateau surface for use. Street volume then has affinities to stream valleys in landscape. Take up section changes within the houses themselves-- can differentiate realms of parents and children.

COMMERCIAL



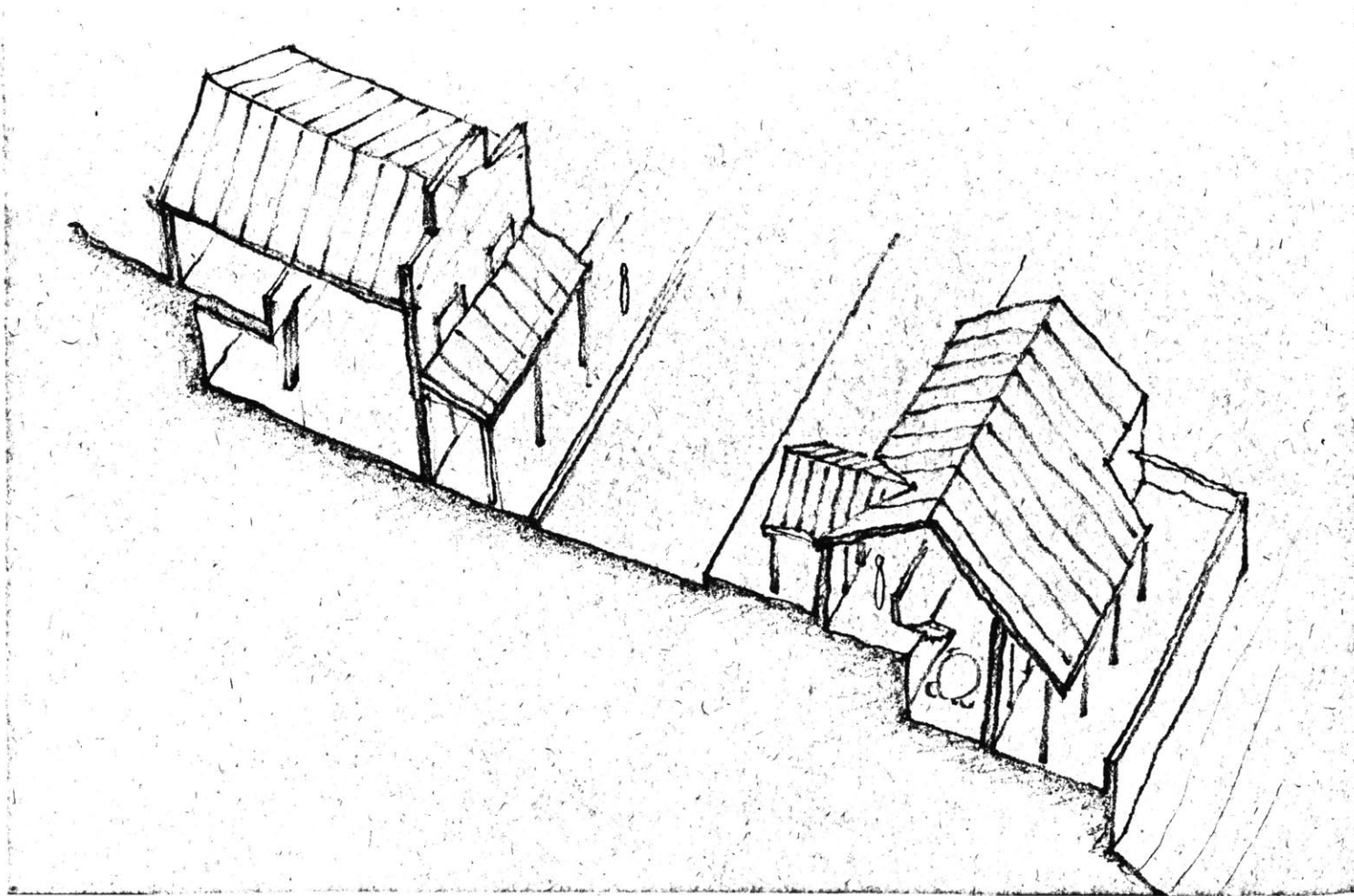
NEW BRAINFELS  
(P. 135)



WÄELDER (P. 141)  
SHADOW/REFLECTION  
SYSTEM. AWNING DOUBLE  
FUNCTIONS.

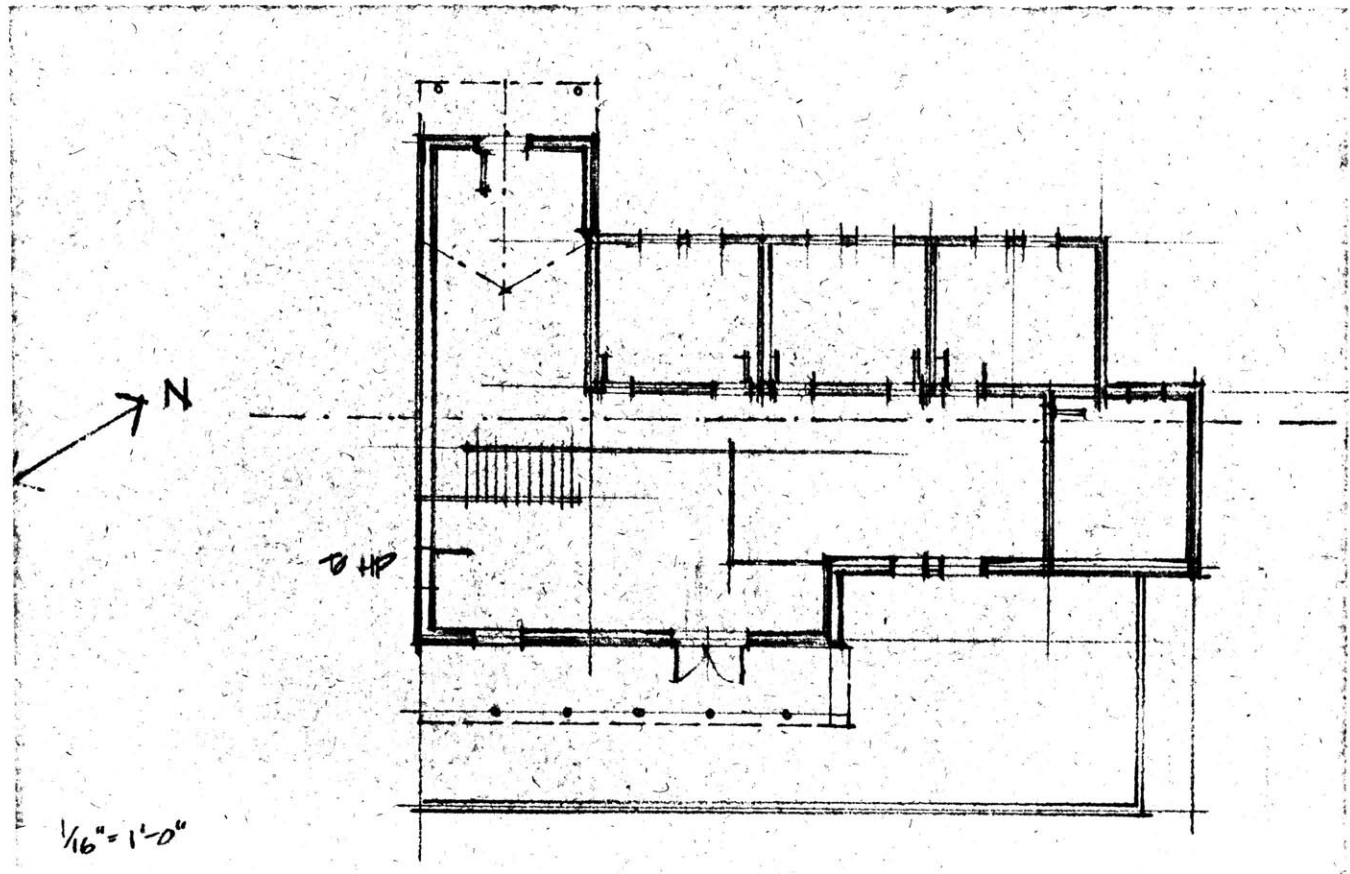
2/20

Commercial edges in adjacent communities. Importance of porch/awning as part of system for the introduction of diffuse light without heat. Screen wall can exist behind protection.



2/22

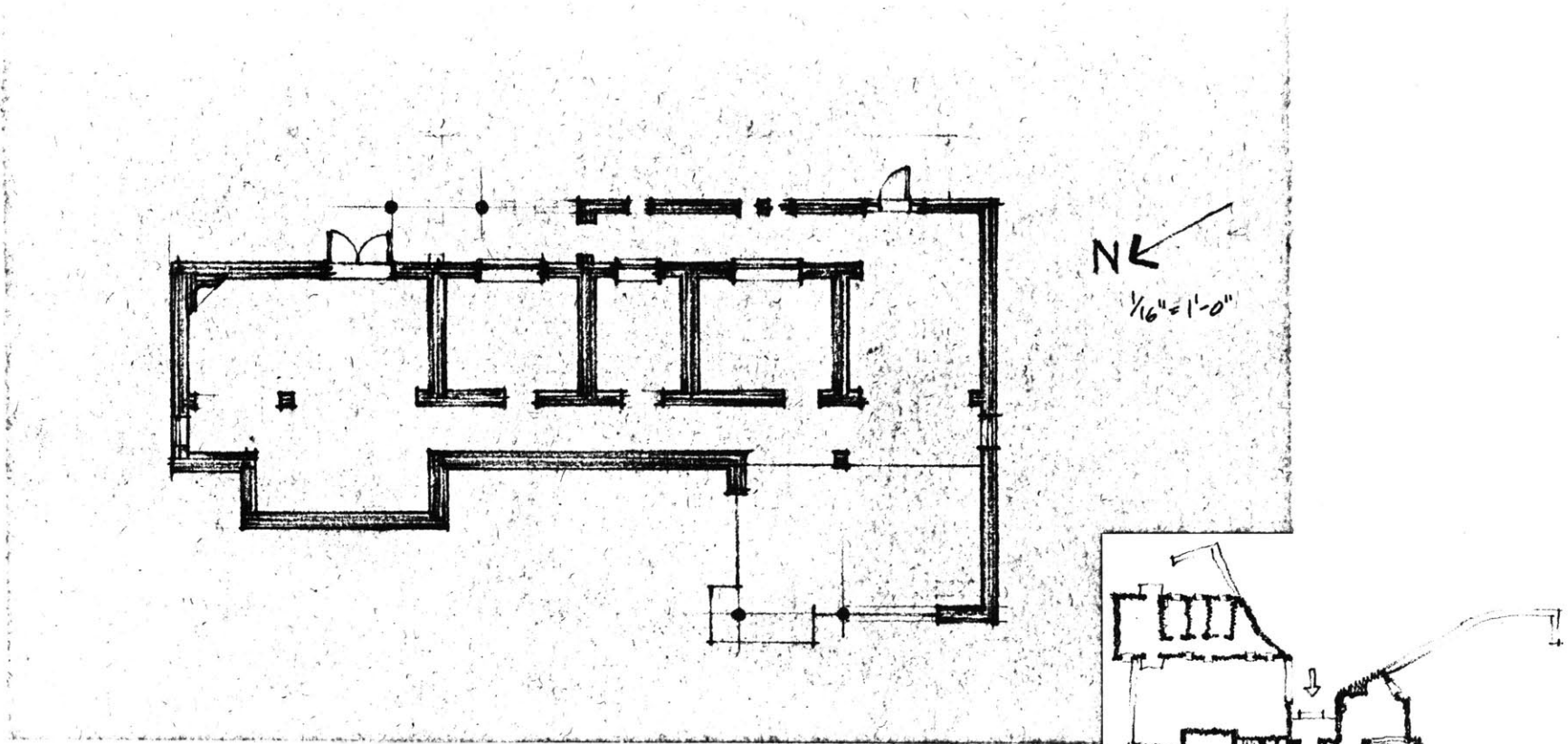
Section through main street. House steps downhill to terrace. Cafeteria to left steps up to plateau, is literally in the image of local commercial buildings with their false fronts. Recognizes typical distinction: houses are set with ridges parallel to street, commercial buildings perpendicular.



2/22

Initial house plan, for south side of slope. Massive walls define public rooms, daytime uses, to buffer heat gain; lighter weight enclosure employed for bedrooms to north, to promote radiational cooling at night.

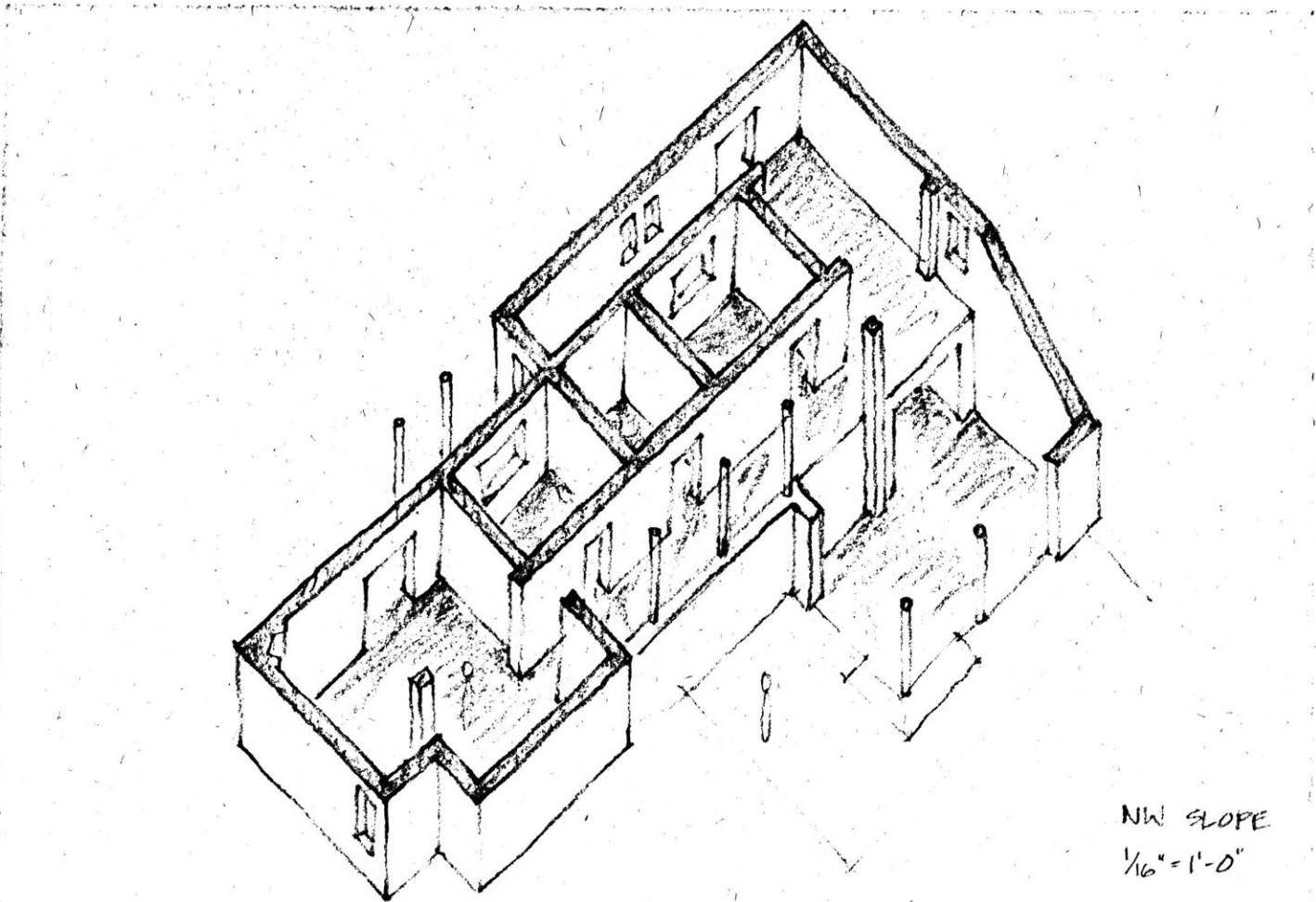
Problem: ignores continuity of light, view, movement provided by breezeway or entry hall of typical indigenous house, its organizational value.



2/23

Second iteration of house plan, this time for northern slope. Based upon MLTW's Jackson House for Santa Fe, N.M. Entry connects to corridor running the length of house, public rooms differentiated, separated. Adobe as primary material.

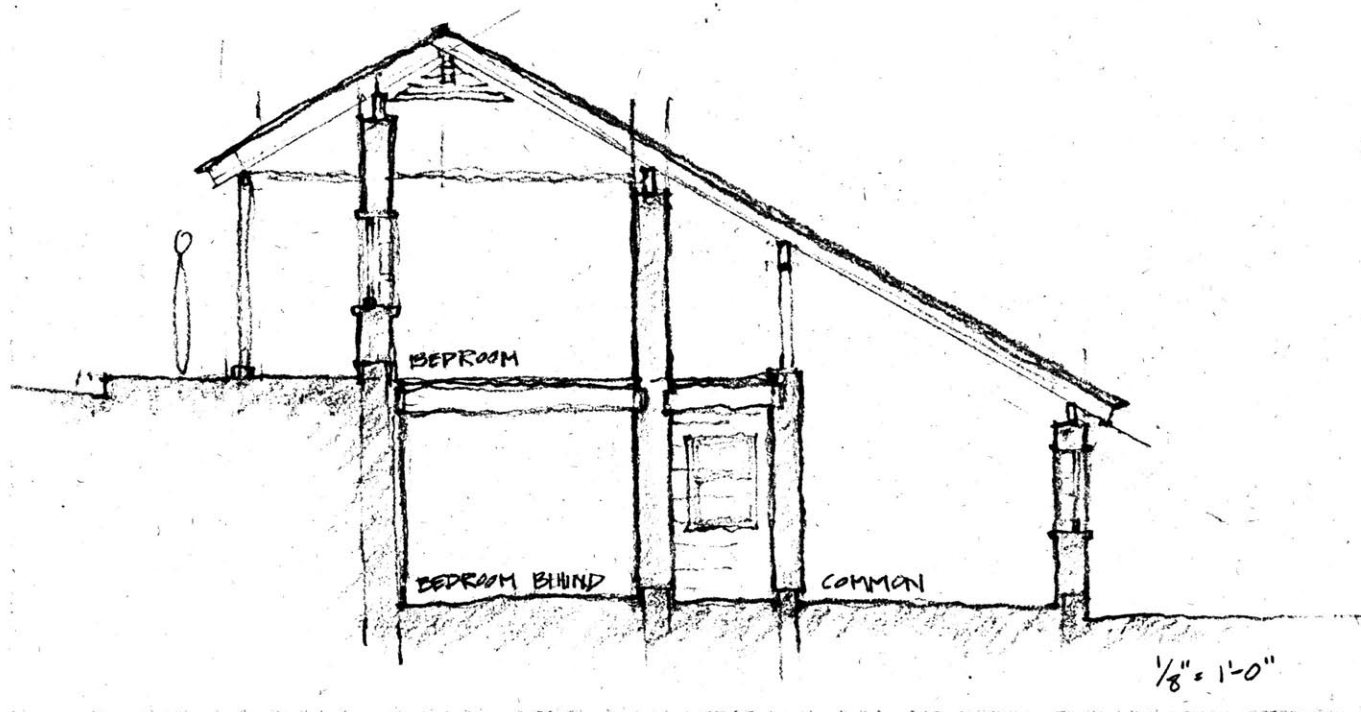
Use Kahn's "ruins wrapped around buildings" to shield house against S and W exposures. Baffle for light. However, this is strange in that adobe is seldom used in multiple layers around a single space.



NW SLOPE  
1/16" = 1'-0"

2/23

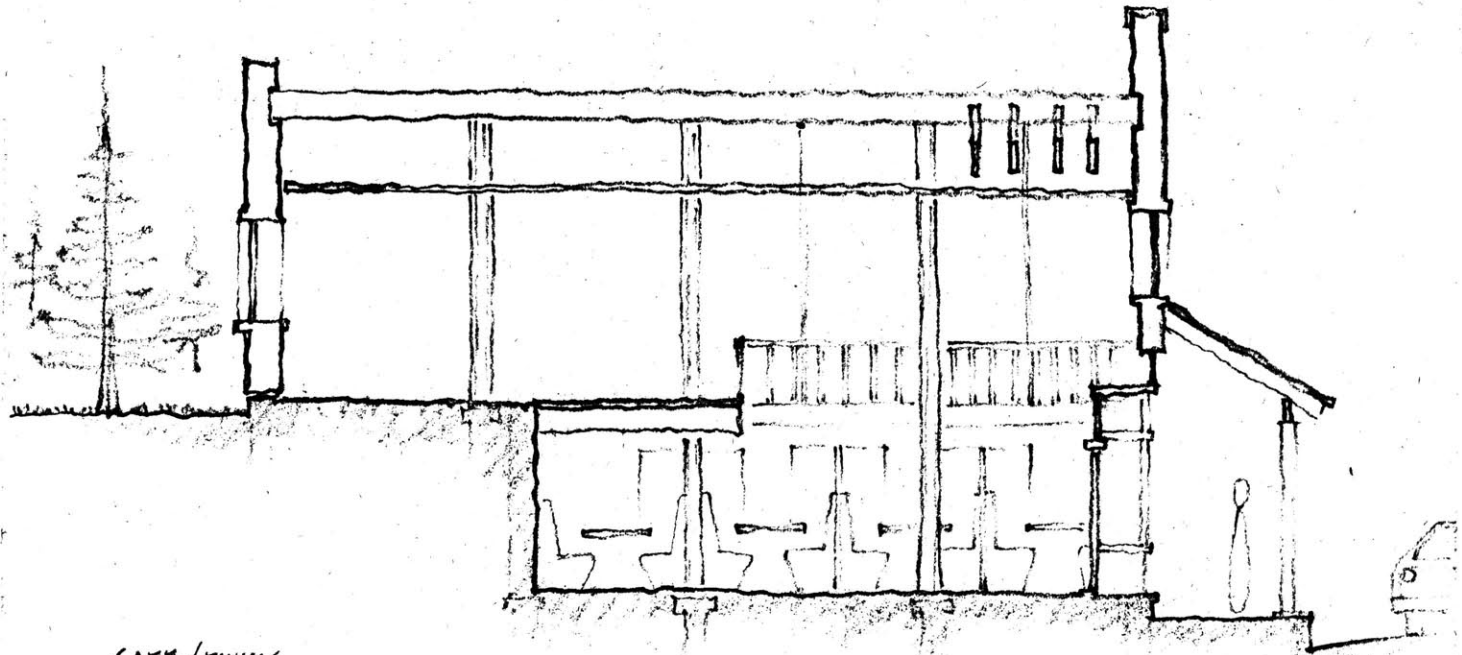
Axonometric of previous plan. Gallery accesses bedrooms, becomes upper part of living room.



2/23

Section of houseparent cottage for southern slope. Single roof follows stepping floor level below. Larger, more continuous roofs should be maintained to outside edge of community-- more unified image from a distance. Different scales of roof and activity within-- Aalto's Maison Carre.





CAFE/DINING  
 $\frac{1}{8}'' = 1'-0''$

2/24

Section of cafe/dining structure. Booths beneath mezzanine, along street edge. That surface treated as spatial screen to admit diffuse light, connect sidewalk and interior, as identified in local commercial buildings.

Plateau level brought into building, at level of mezzanine.

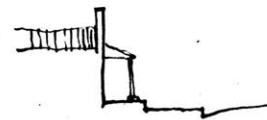
ROAD EDGE CONDITIONS :



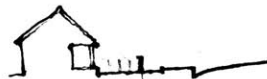
COMMERCIAL

PIONEER...

PP. 134, 131



P. 133



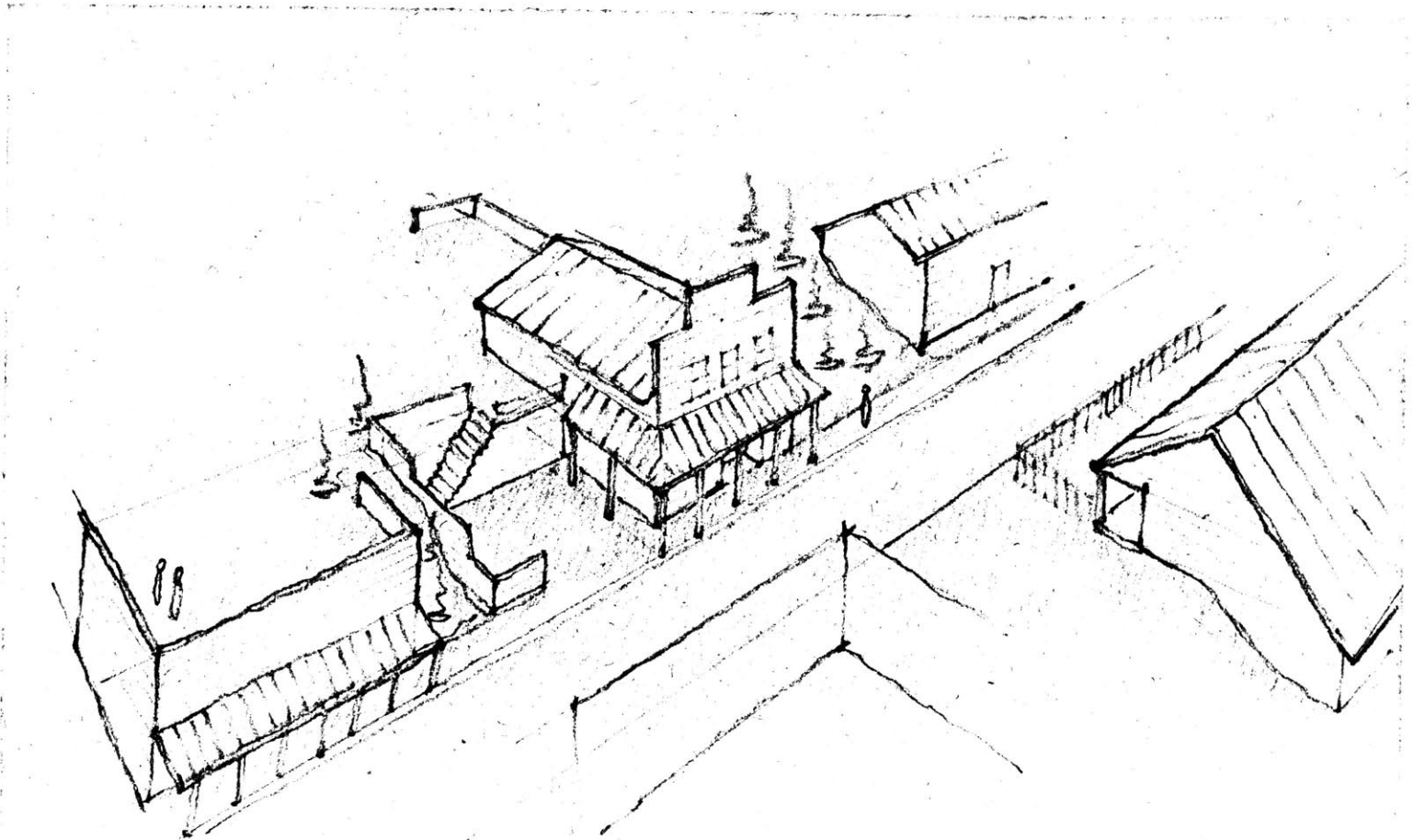
RESIDENTIAL

PP. 50, 62

*often no sidewalk  
picket fence*

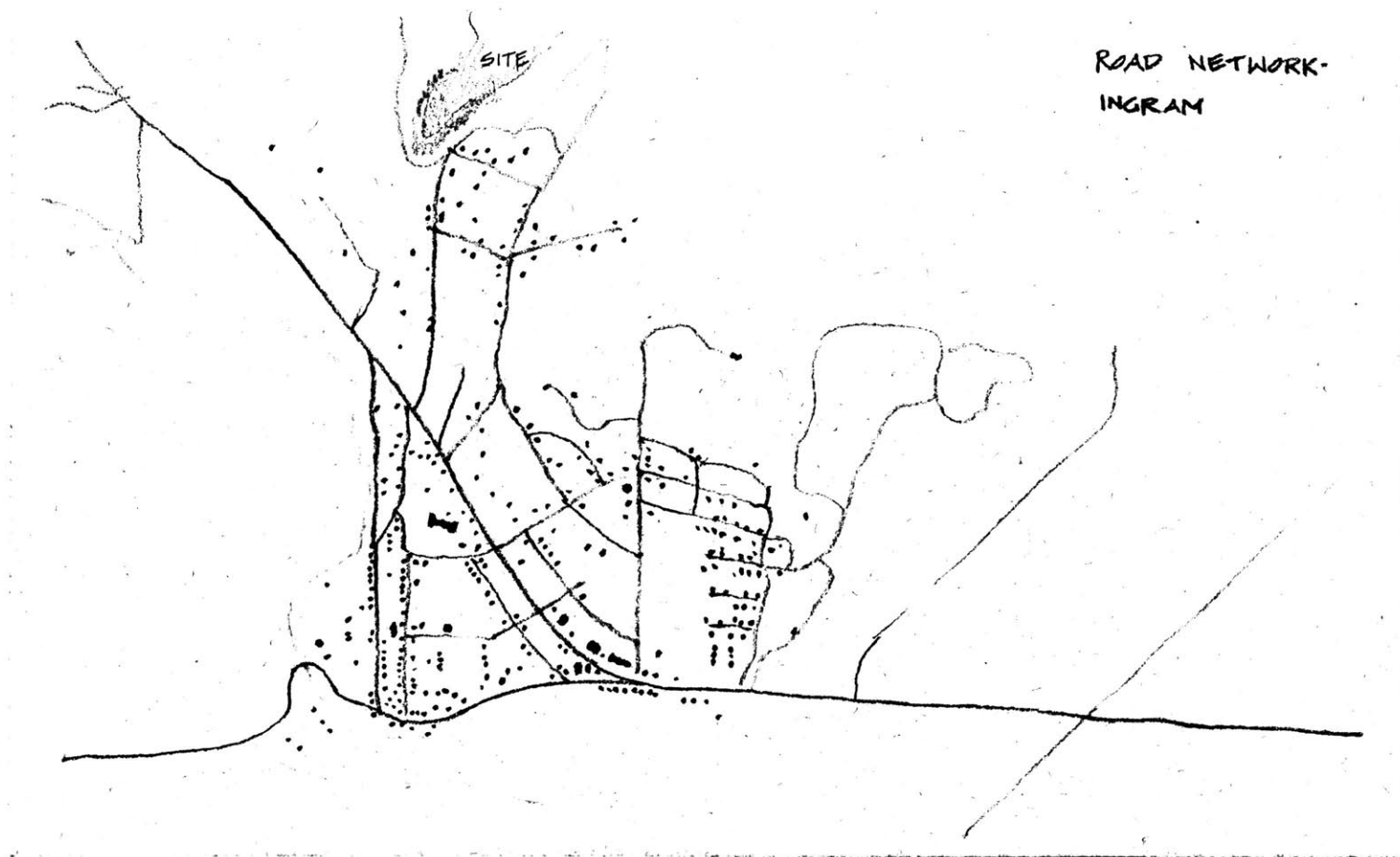
2/24

In the immediate context, setback, treatment of sidewalk and yard, and roof ridge direction all act to differentiate building types, and determine the quality of the street volume enclosed.



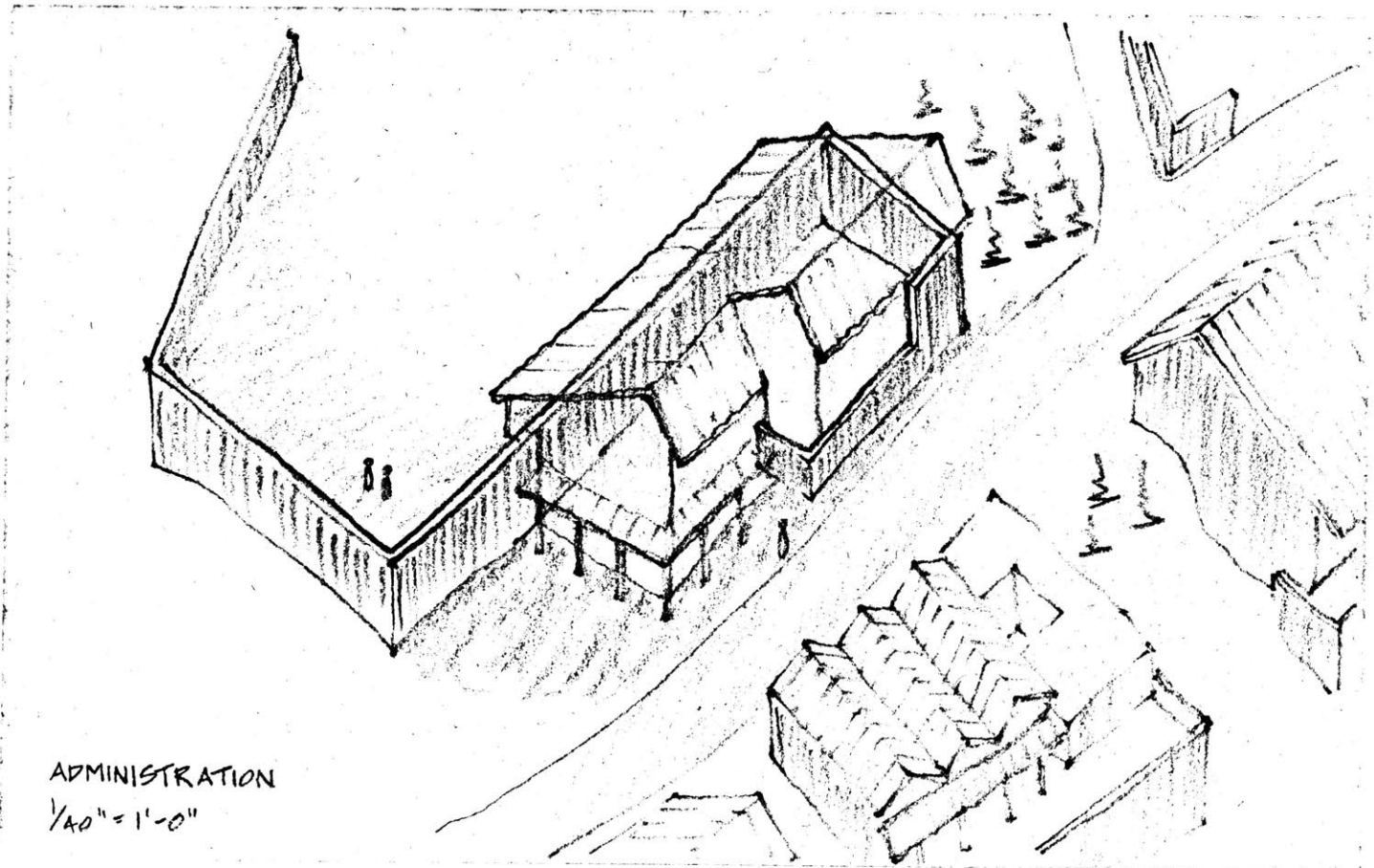
2/24

How do stairs between public buildings rise to plateau behind? Consequence of decision to lower main street. Attempt to define representative public space off street, to side of cafe. Volume of street expands and contracts laterally. Cafe still extremely literal. Possibility of occupying roof of administration building to lower left, for view to Guadalupe River.



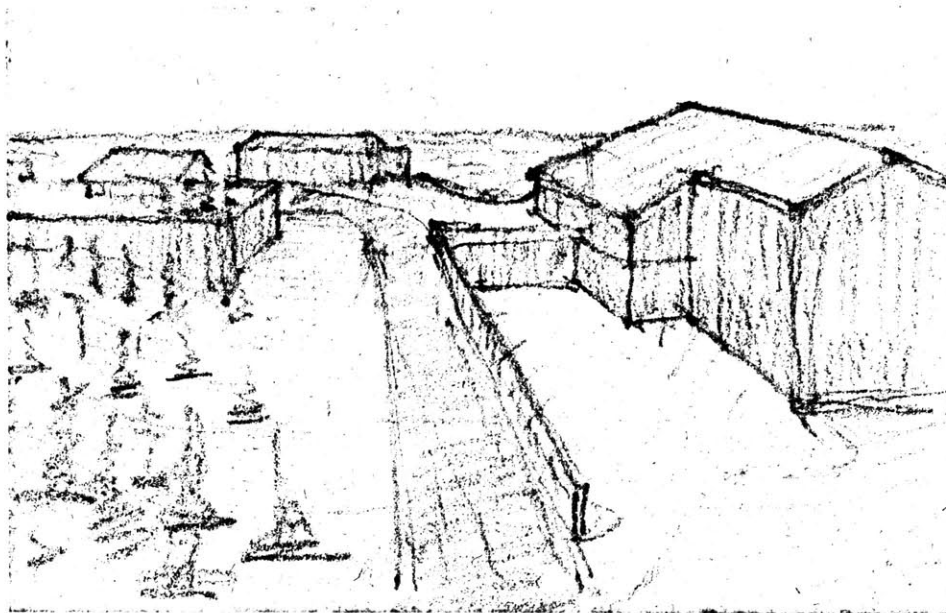
2/26

Ingram developed at confluence of Johnson Creek and the Guadalupe. The two initial streets ran parallel to creek, with few cross streets-- very linear organization.



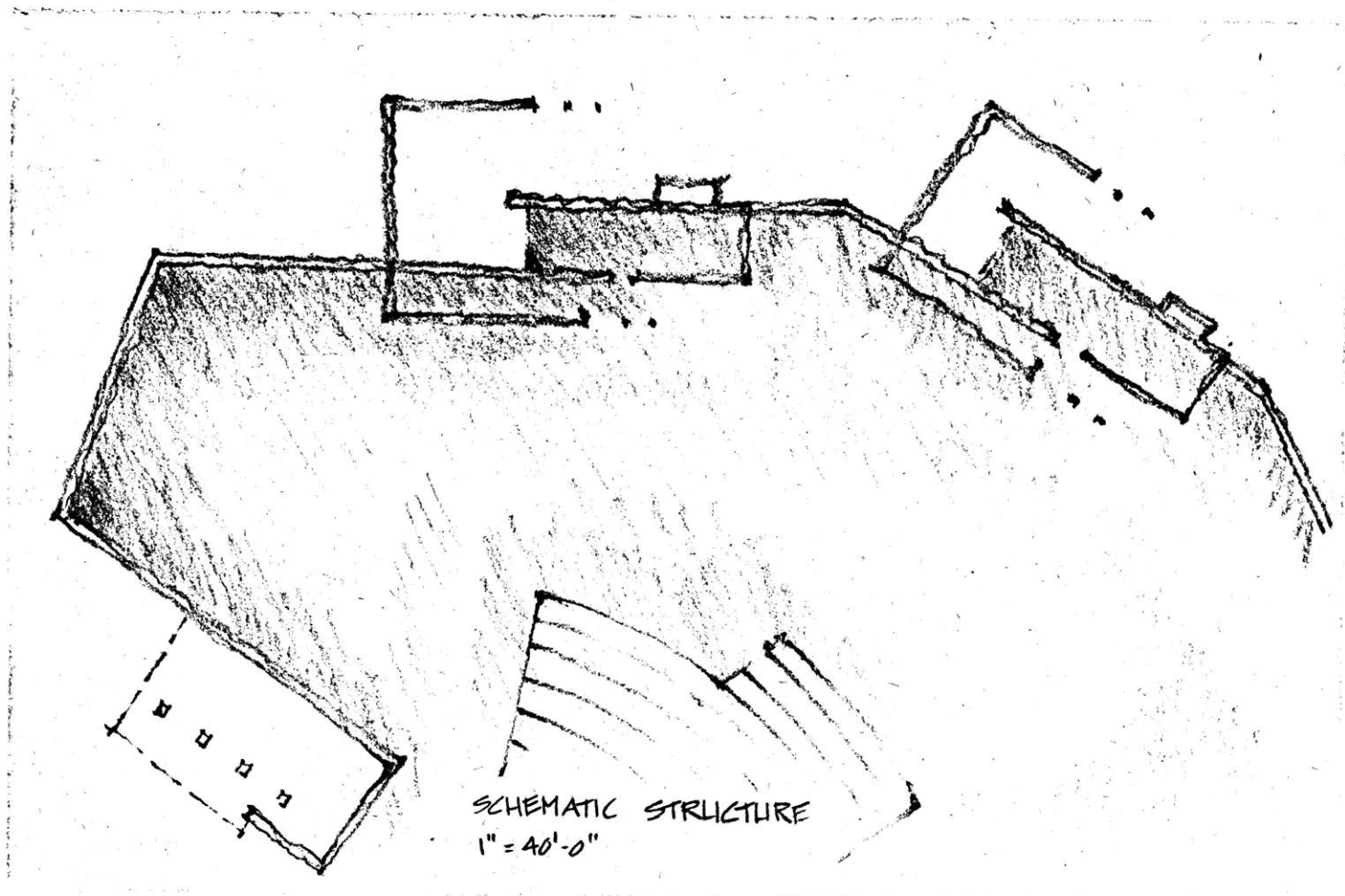
2/27

Need large, landscape scale definitions, to which smaller building units attach or relate. Here, administration building is enclosed by the returned portion of a retaining wall, which formalizes the edge of the plateau, making it more remote to the general public, and thus more internal to the Youth Ranch itself.



2/27

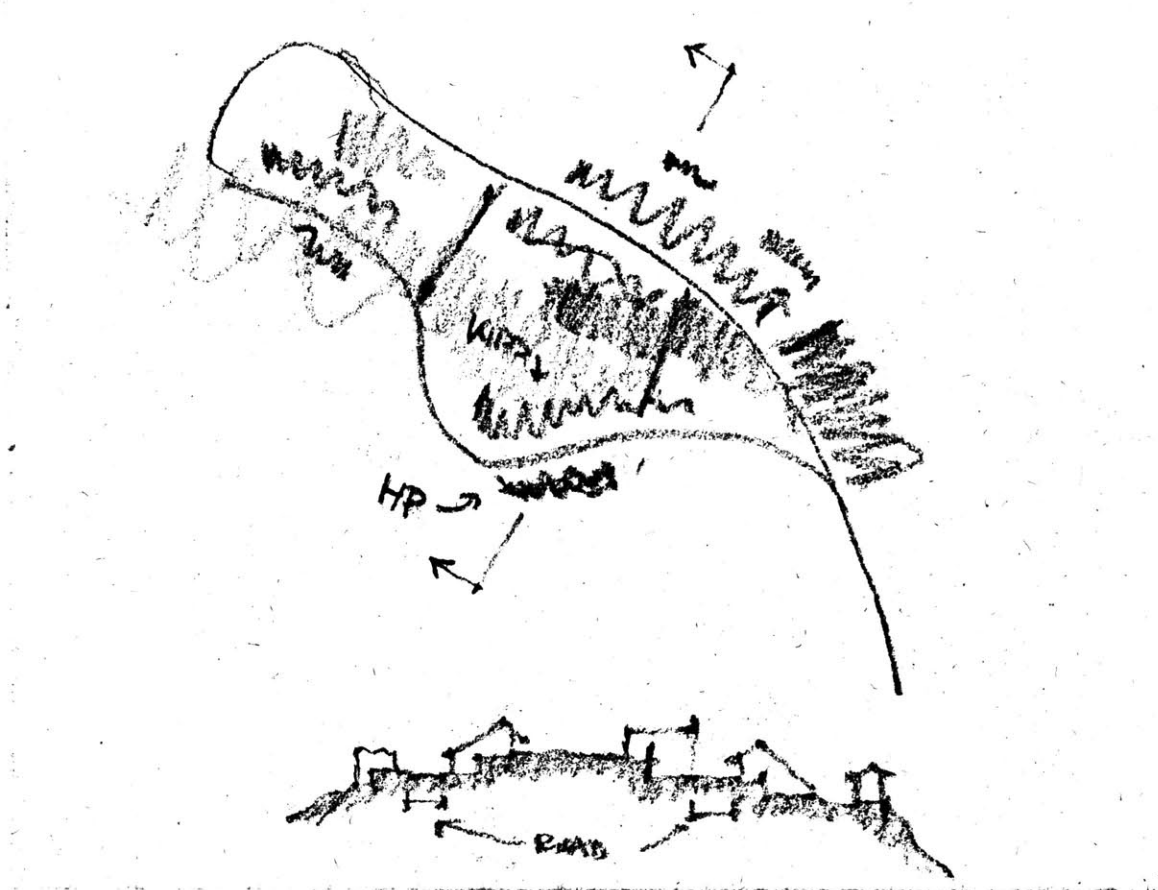
View from entrance.



3/1

Definition of houseparent cottages must extend beyond house volume itself-- walls and terraces. Can thus be related to wall edging plateau. Displacement in that wall generates opportunity for house. Continuity of terrace levels, access.

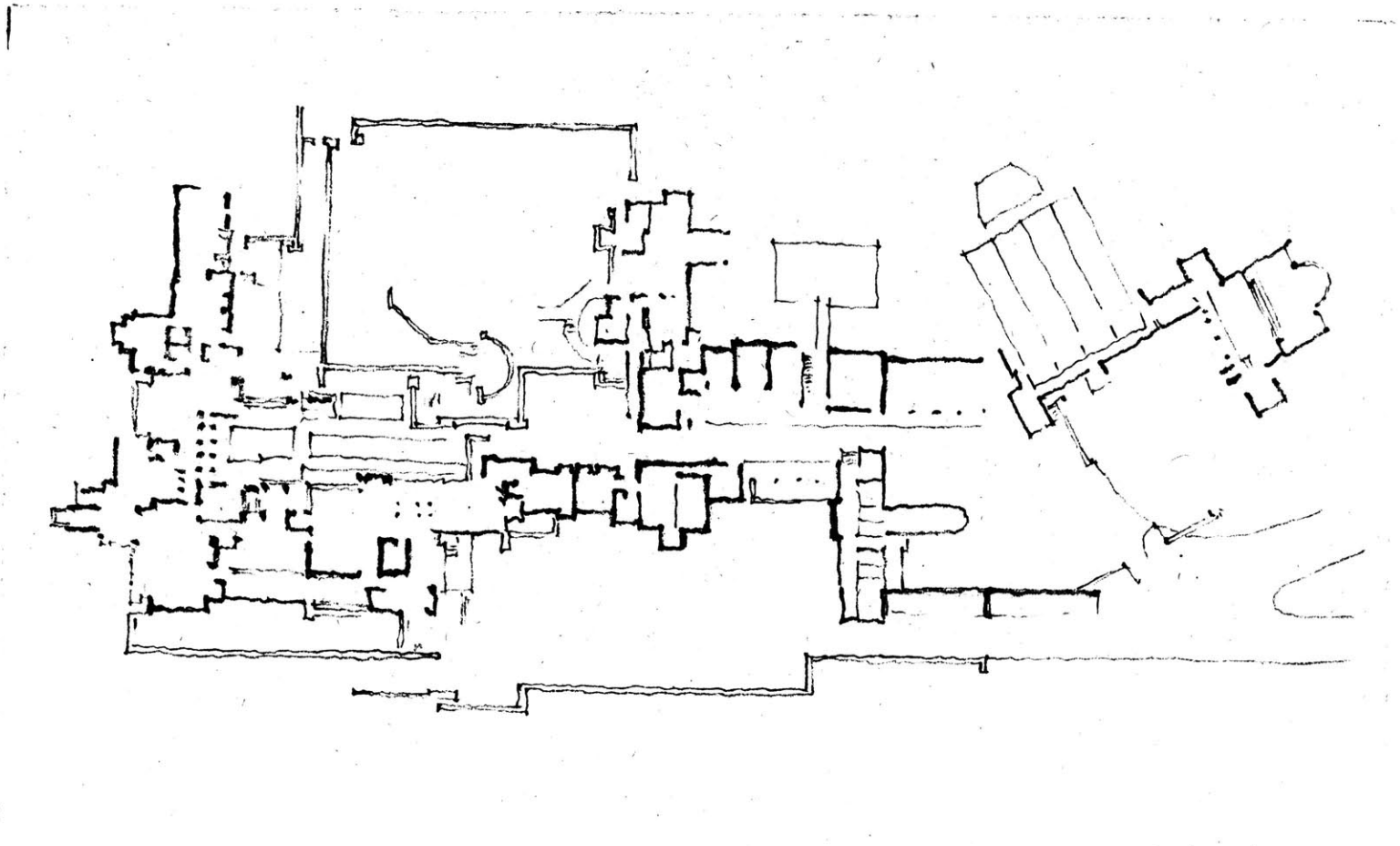
Can possibly move amphitheater up, to connect street and plateau. Avoids fragmenting public into completely separate pieces, generates movement through amphitheater, and concentrates outdoor activity.



3/3

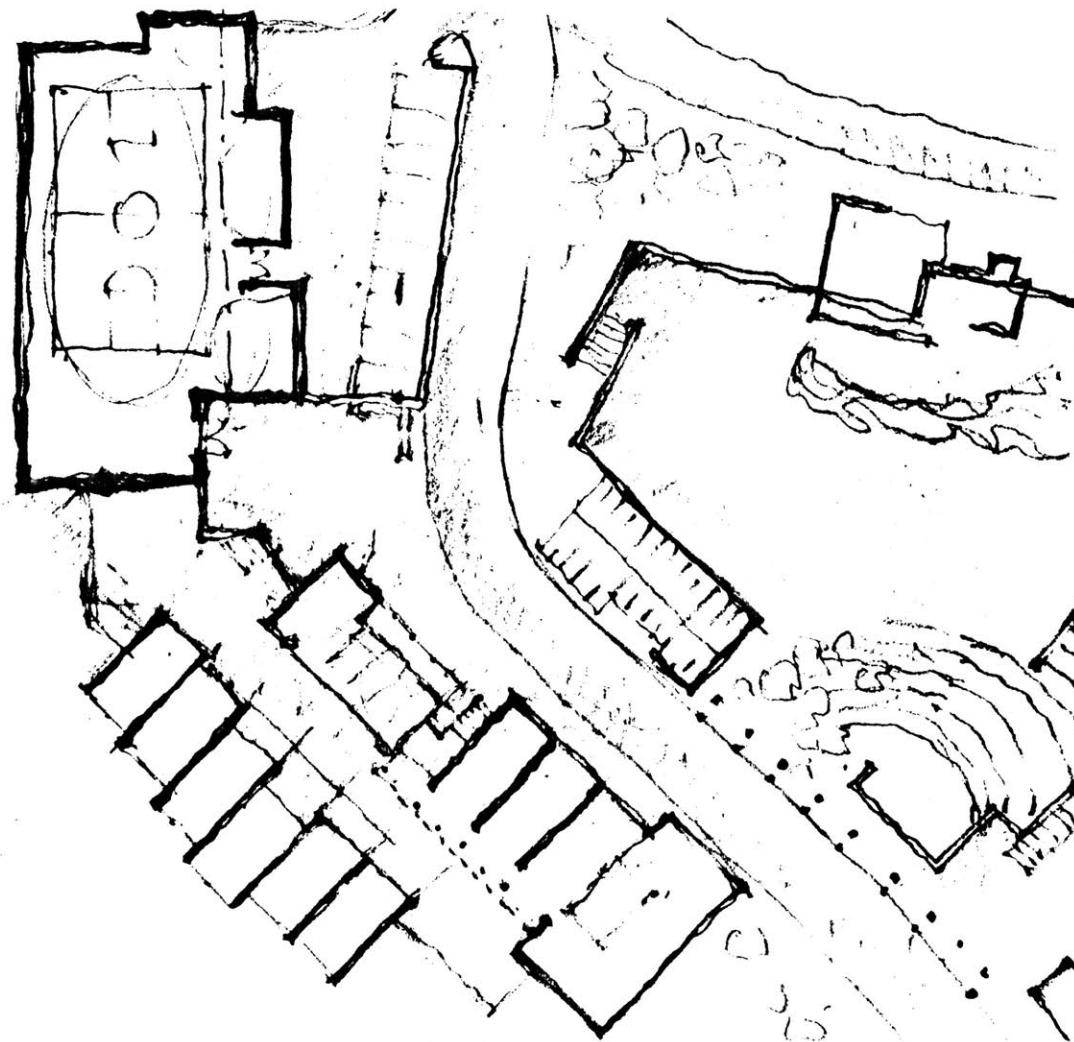
Loop road chosen as concrete scheme for access and connection, circumscribes plateau. One side, toward the town of Ingram, is more urban, enclosed, active-- the main street; the other is looser, less explicitly defined, and more a part of the landscape-- the access to the houseparent cottages. Differential quality of street/road reinforces place qualities already inherent in site. Importance of movement.





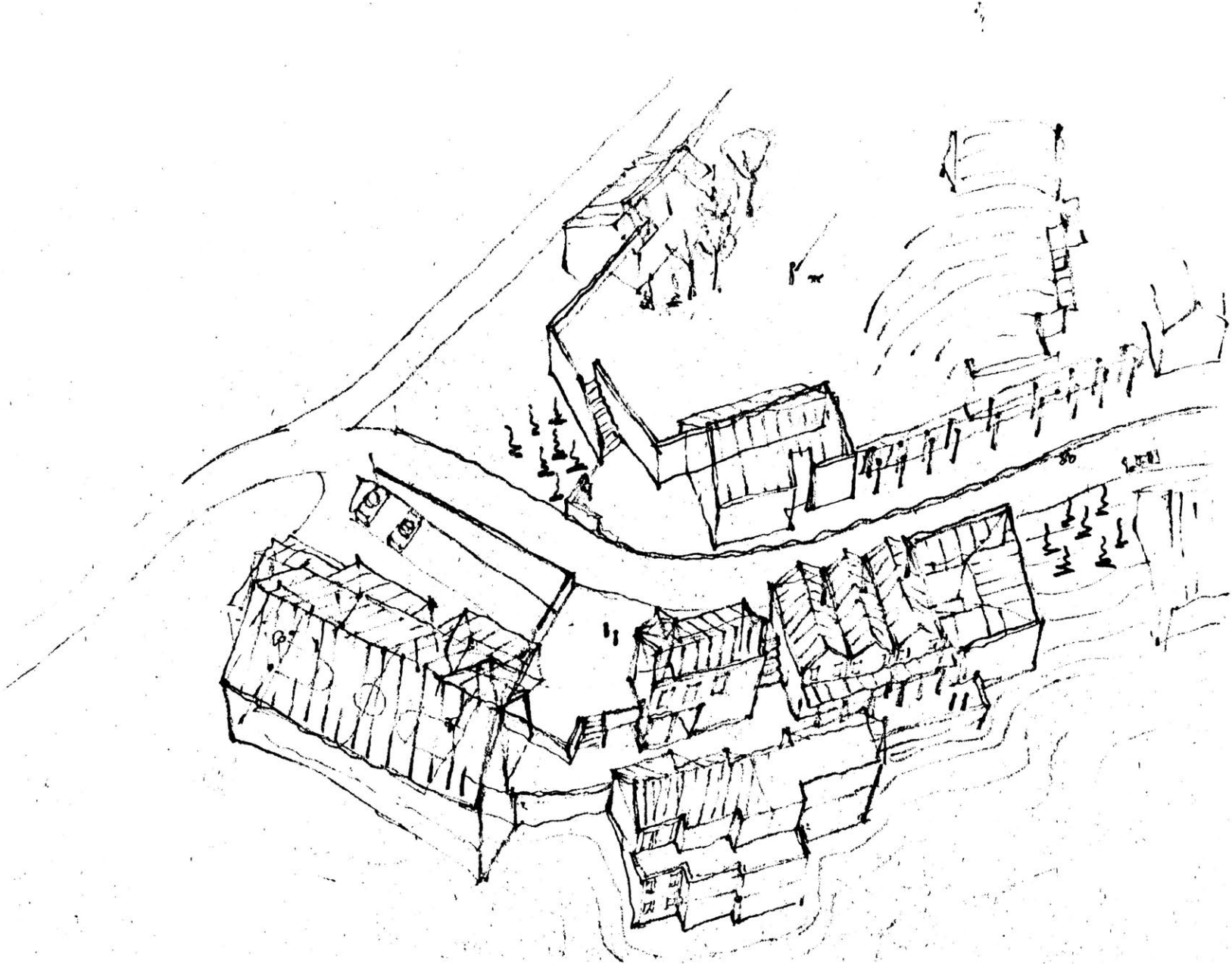
3/3

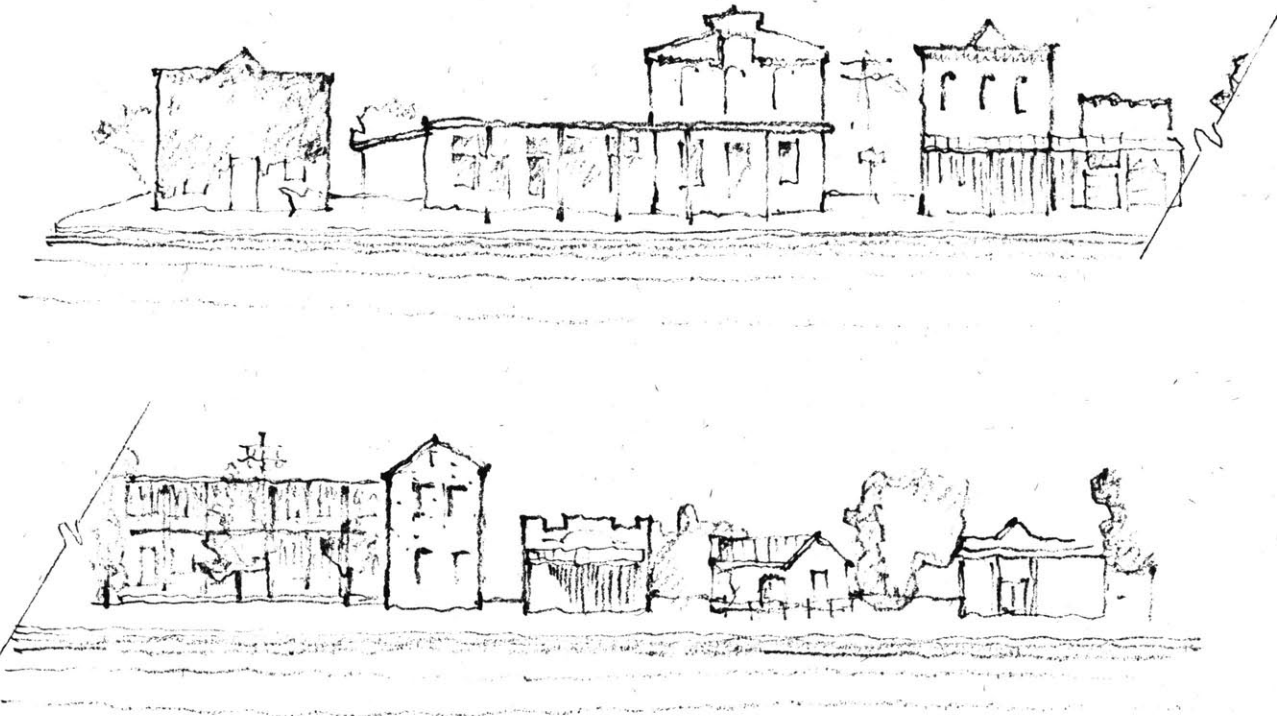
Frank Lloyd Wright's Taliesin East taken as a reference. Through lateral extensions and outbuildings, it defines a series of exterior courts.



3/7

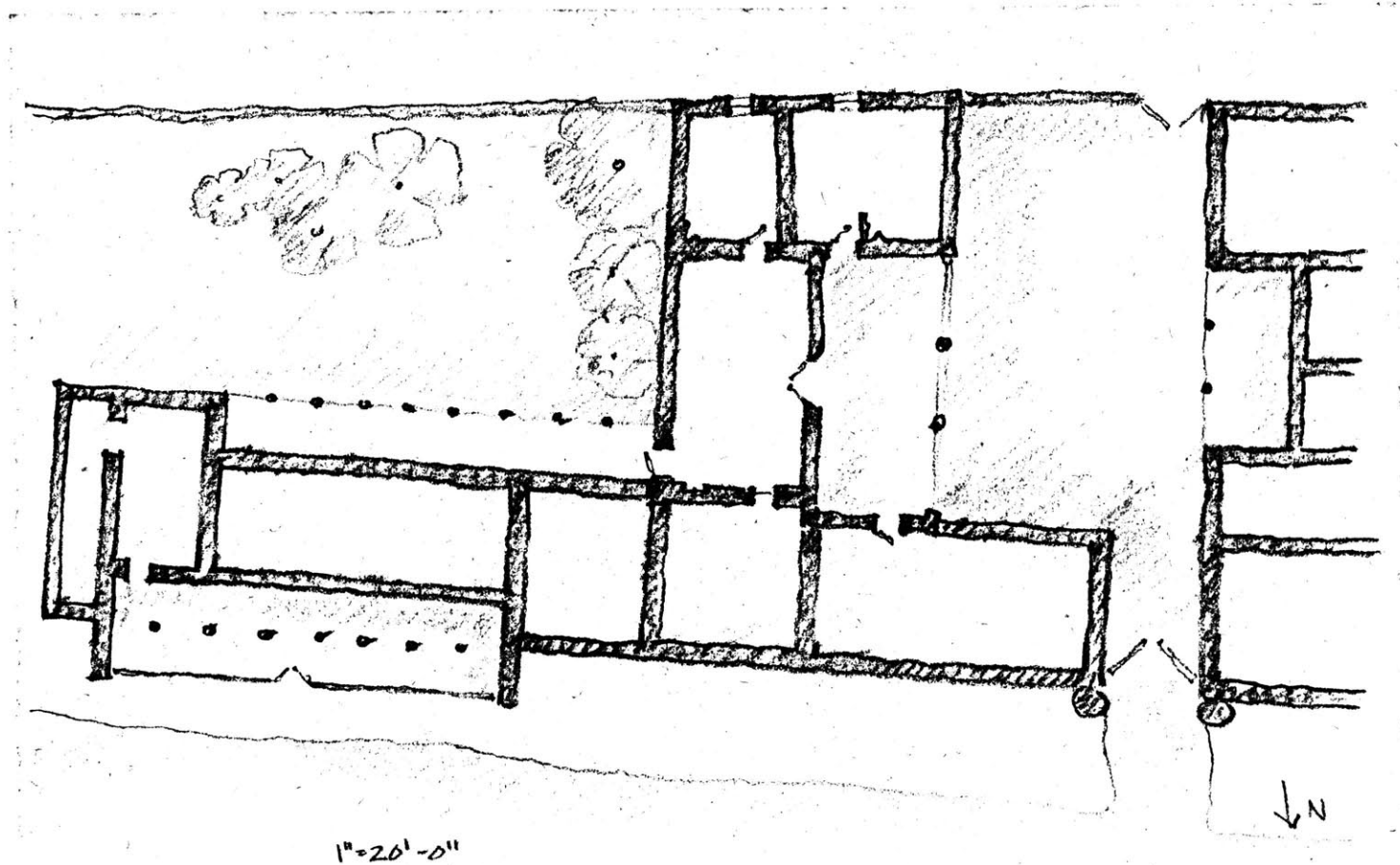
First pass at public elements along main street. Sheds attached along street side of gym to reduce scale (barns never occur at road edge). Amphitheater grows from natural slope, is but a more formalized version of that slope.





3/7

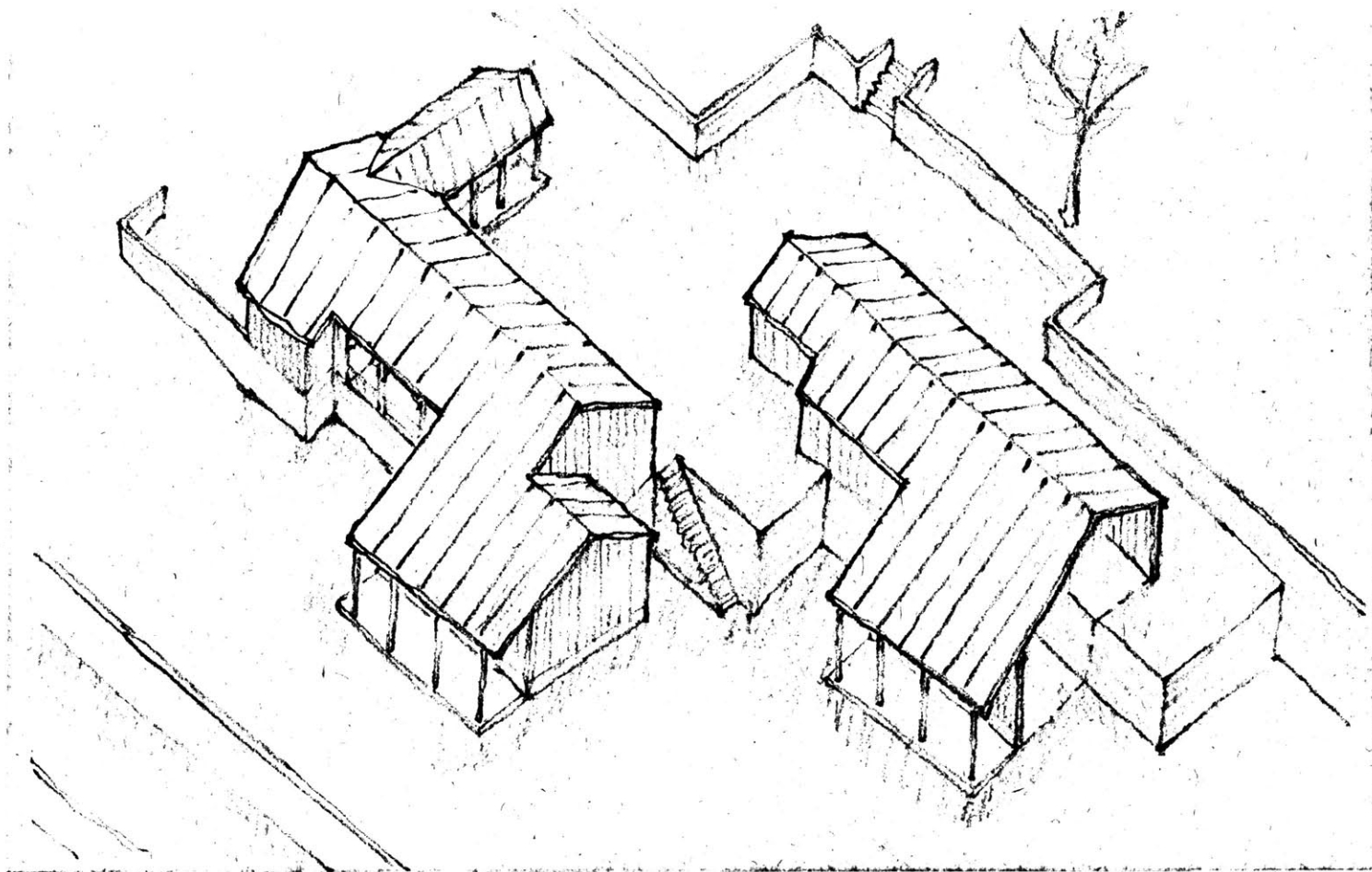
Elevation of Main Street, Comfort, Texas (about 27 miles east of Ingram), redrawn from Pioneer Texas Buildings, pp. 136-7. Vegetation between public/commercial buildings, in front of residences. Fence, lawn distances house. Hotel as one model or image of collective living, with porch as communal element viewing street. Height, surface density diminishes in one direction: an urban gradient.



3/10

Romero House, Taos, N.M., redrawn from Taos Adobes, p. 70. Site of Hill Country Youth Ranch has extensive caliche deposits, which can be used to make adobe blocks.

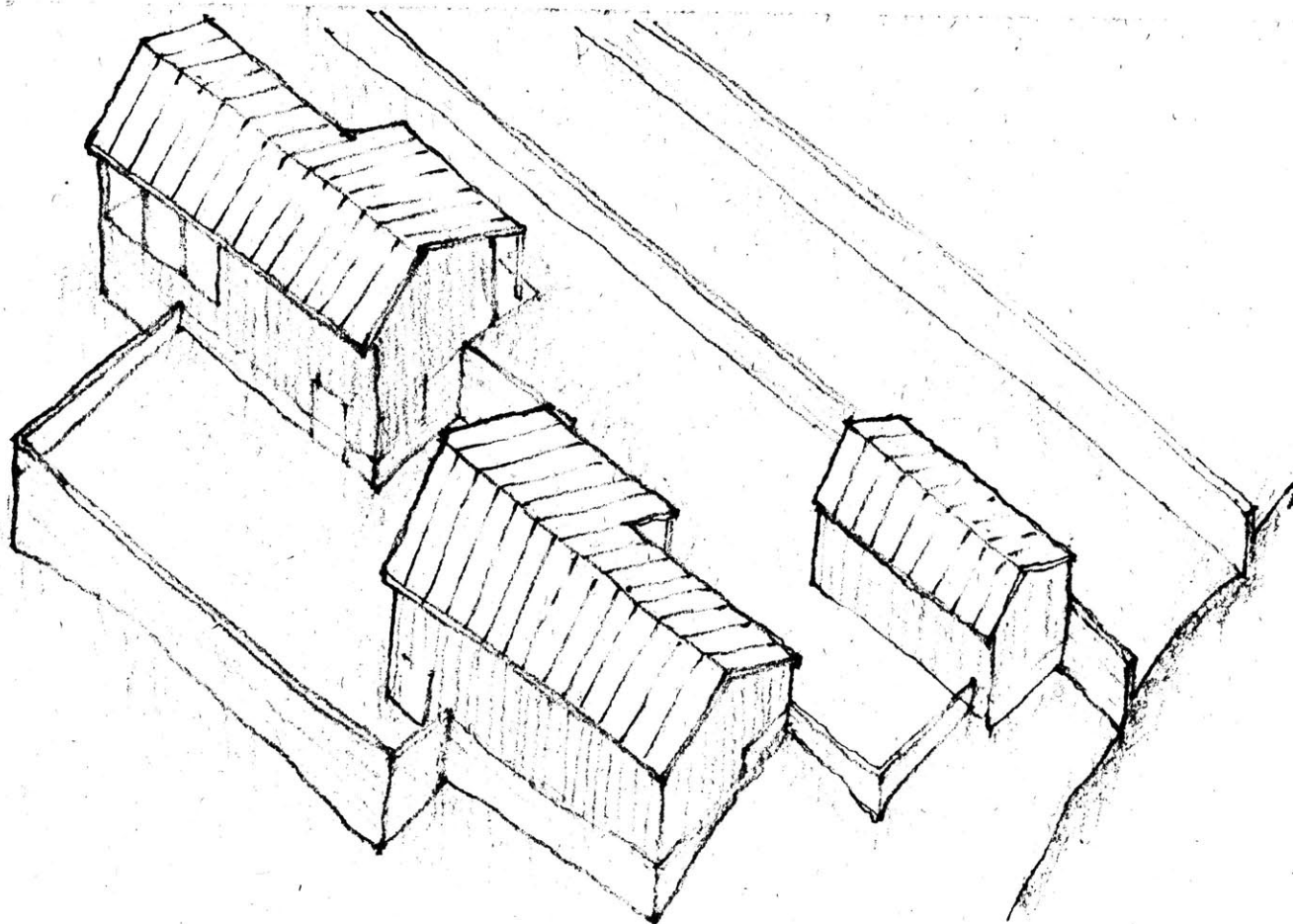
In the Romero House, uniform spanning capability of vigas, about 18 feet, establishes continuity of parallel bearing walls. Interior space becomes an extrusion, can be subdivided. Linear organization is used to partially enclose a variety of exterior spaces, with different orientations.



3/11

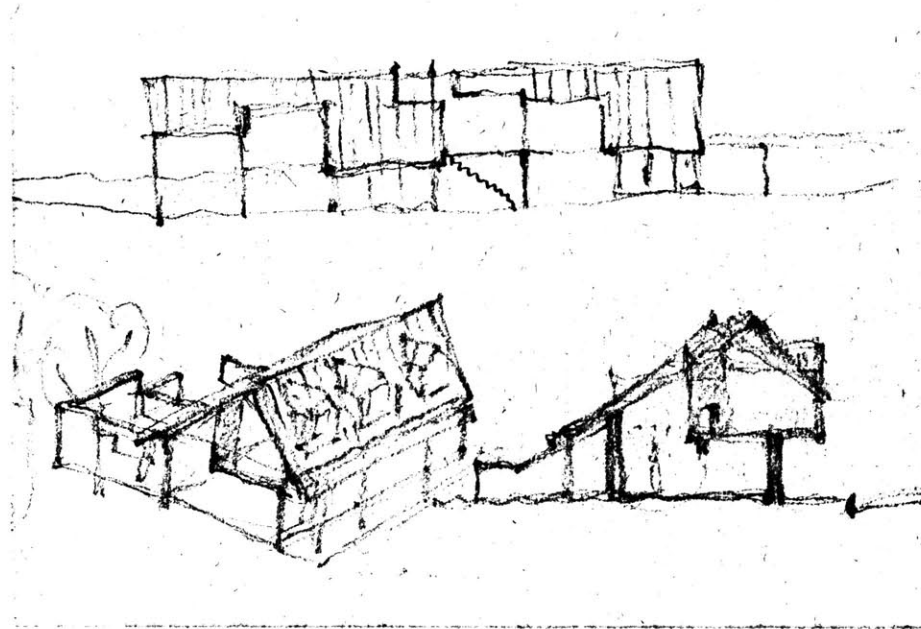
Distinction between cottages above road, and those below: again, explore differences between natural areas that constitute site. Thus, one can understand the place more fully through the buildings. Two cottages and one set of houseparent apartments constitute a cluster, grouped about informal front yard, as in Ingram.

Uphill houses: more areal in extent, greater overlap, single floor of bedrooms, back yard access to plateau.



3/11

Downhill houses: more linear, no overlap due to steep slope, two floors of bedrooms, walled terrace below.

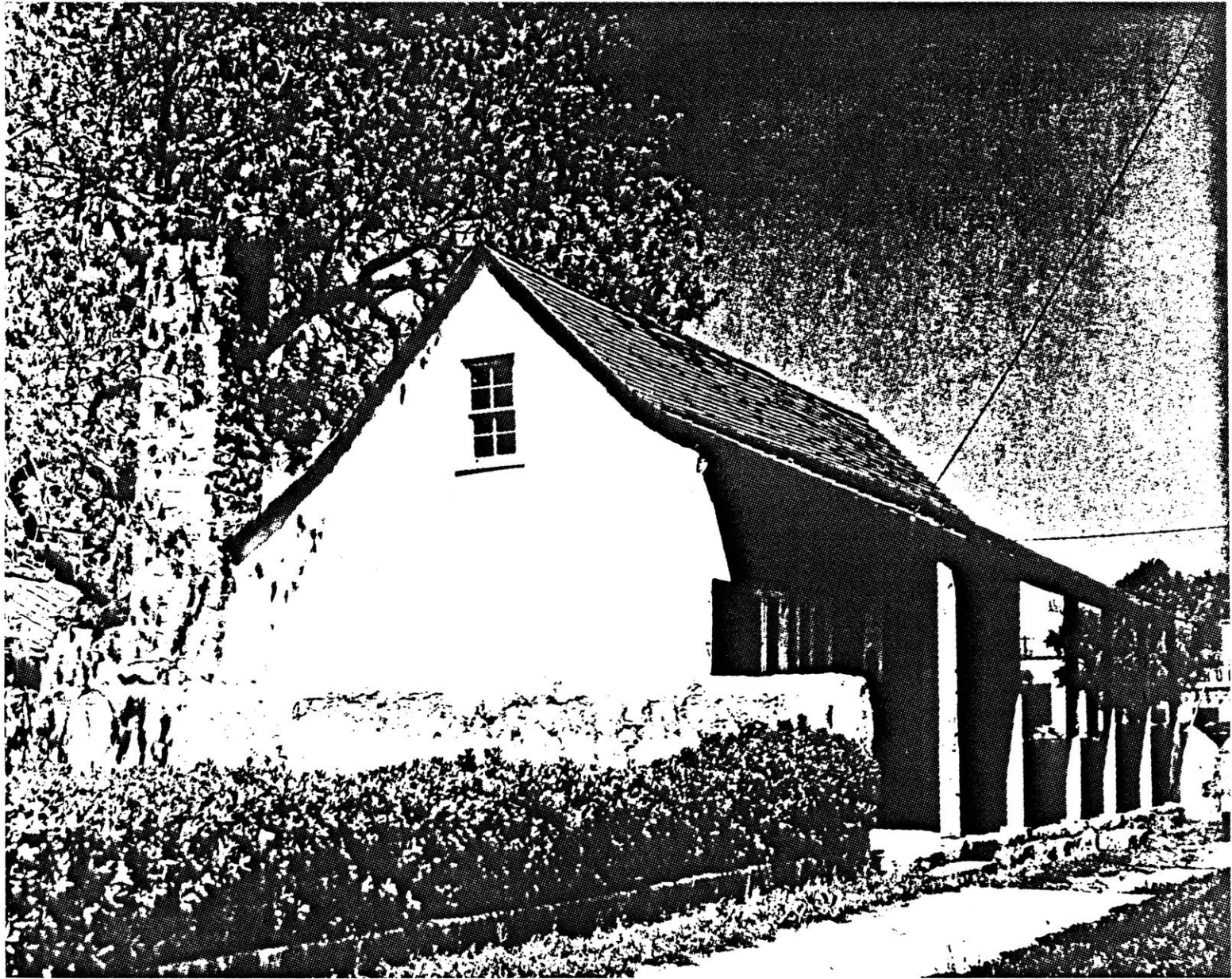


3/12

Houseparent apartments. Three units concatenated, each identified by dormer.  
Bedroom associated with roof, defined by same material. Private walled gardens  
behind.







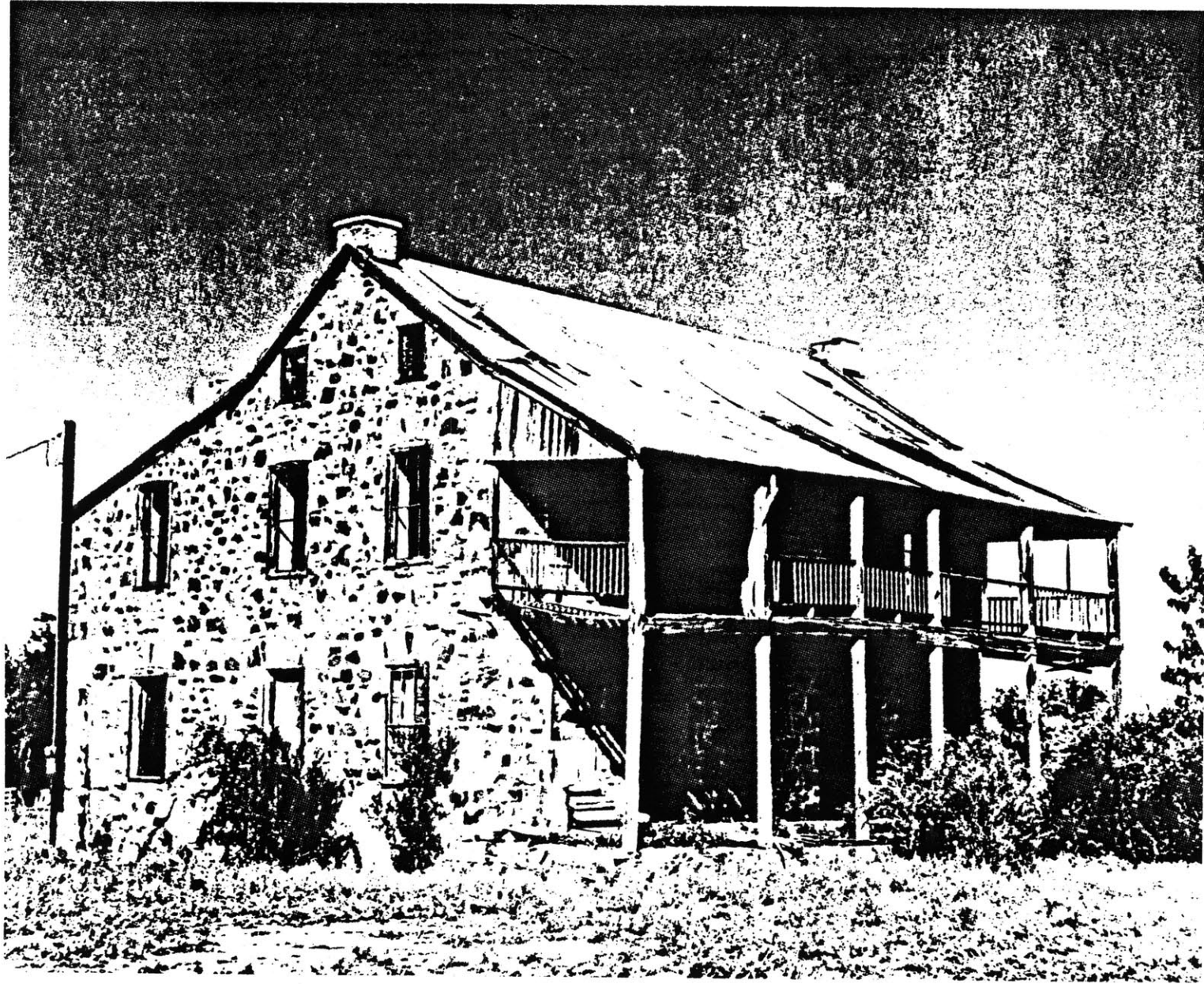
## CHARACTER

Architectural character, as discussed by Christian Norberg-Schulz in Genius Loci, is primarily dependent upon the physical fabric of buildings. Similar spatial organizations may be given different characterizing interpretations, and thus distinguished by the concrete treatment of their boundaries. Character is rooted in how things are made, and how the basic mode of construction relates to formal articulation. Norberg-Schulz goes further to develop categories describing such articulation, namely how the building stands, rises, and opens.

One can identify a series of elements through which a building is related to its immediate environment, those being the base, walls, roof, corners, and openings. In a coherent man-made place, the majority of buildings are related to the earth and sky in the same fashion, expressing a common way of life. Within this general agreement, individual articulation still differentiates particular buildings from one another. Across the whole set, however, one repeatedly finds characteristic solutions to critical parts of the structure, particular types of doors, windows, and roofs for example. Through these typical elements, the character is condensed and distilled into recognizable motifs. If such motifs are abstracted into conventional elements, they can then be used to transpose character from one place to another.<sup>6</sup>

Norberg-Schulz, p. 15.

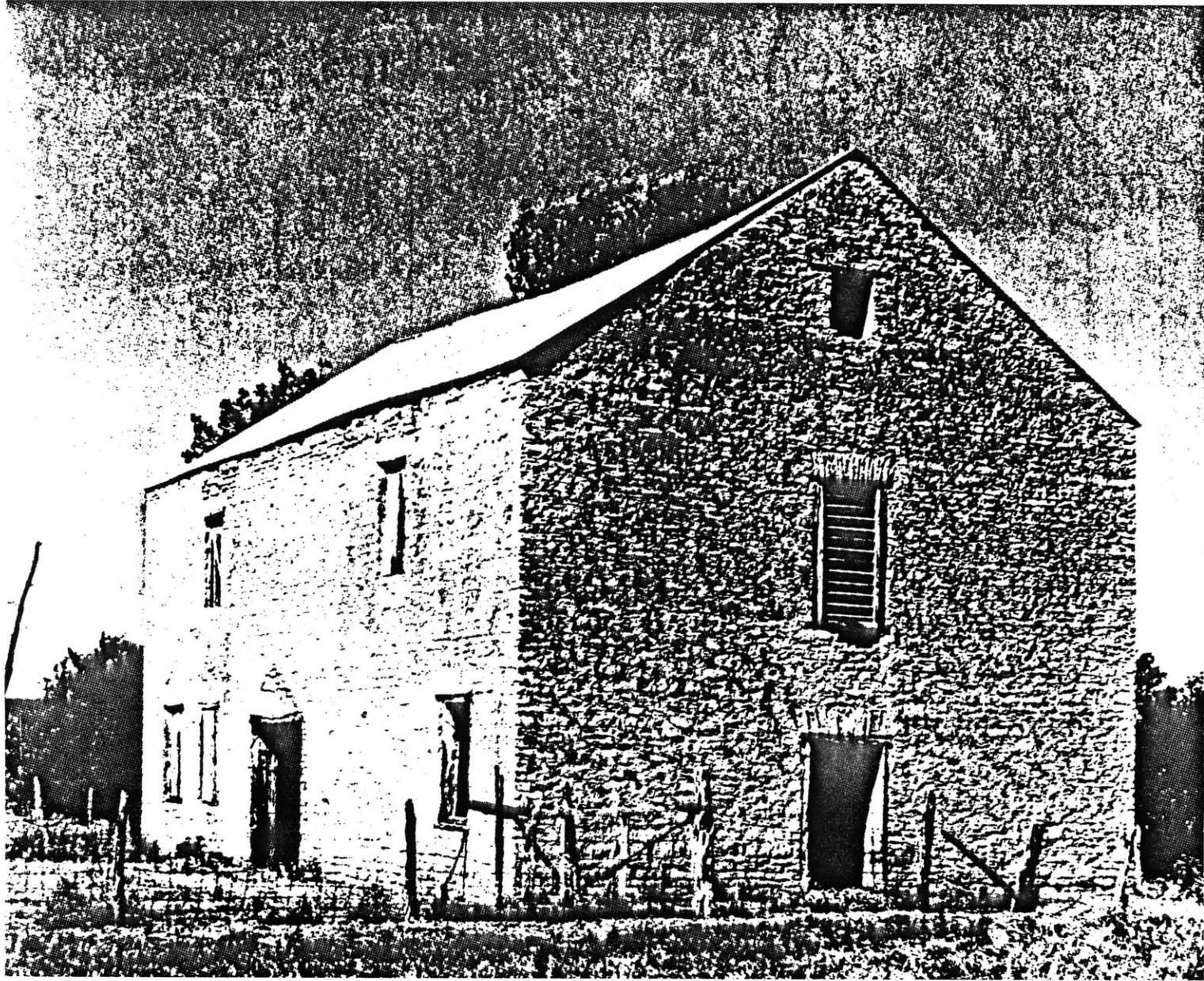
In the Hill Country of Texas, many of the older houses seem to manifest such a common character. Built by German, English,



and Polish immigrants in the latter half of the nineteenth century, they share a directness and economy of means. These houses often take the form of simple rectangular prisms, with walls of heavy masonry, and gabled roofs framed in wood and now sheathed in galvanized iron. The horizontal ridge makes a neutral, static silhouette against the sky, broken only by the masonry chimney rising through or alongside it. The eaves project slightly, not altering the reading of the box below, but still create a deep band of shadow, due to the nearly vertical orientation of the sun in this region ( $83^{\circ}$  from the horizontal at noon in the summer,  $36^{\circ}$  in winter).

The houses stand on the ground, rather than in or over it, and the expression of the foundation is played down, so that the walls appear to rise directly out of the earth. The ground floor is normally set one to two feet above grade. The walls have little surface relief to temper their massiveness, and are seen as simple omissions of the wall, neither large nor numerous enough to undermine its integrity. Edged in wood, the glazing is brought flush to the exterior surface, again reducing relief, and producing deep internal reveals that reflect light into the house. Due to the intensity of that light, from the outside the window becomes a void, rather than a mirror to the surroundings. These features combine to accentuate the basic volume of the house.

Unlike the windows, the doors are usually set deep into their timber frames. Often, small panes of glass provide light

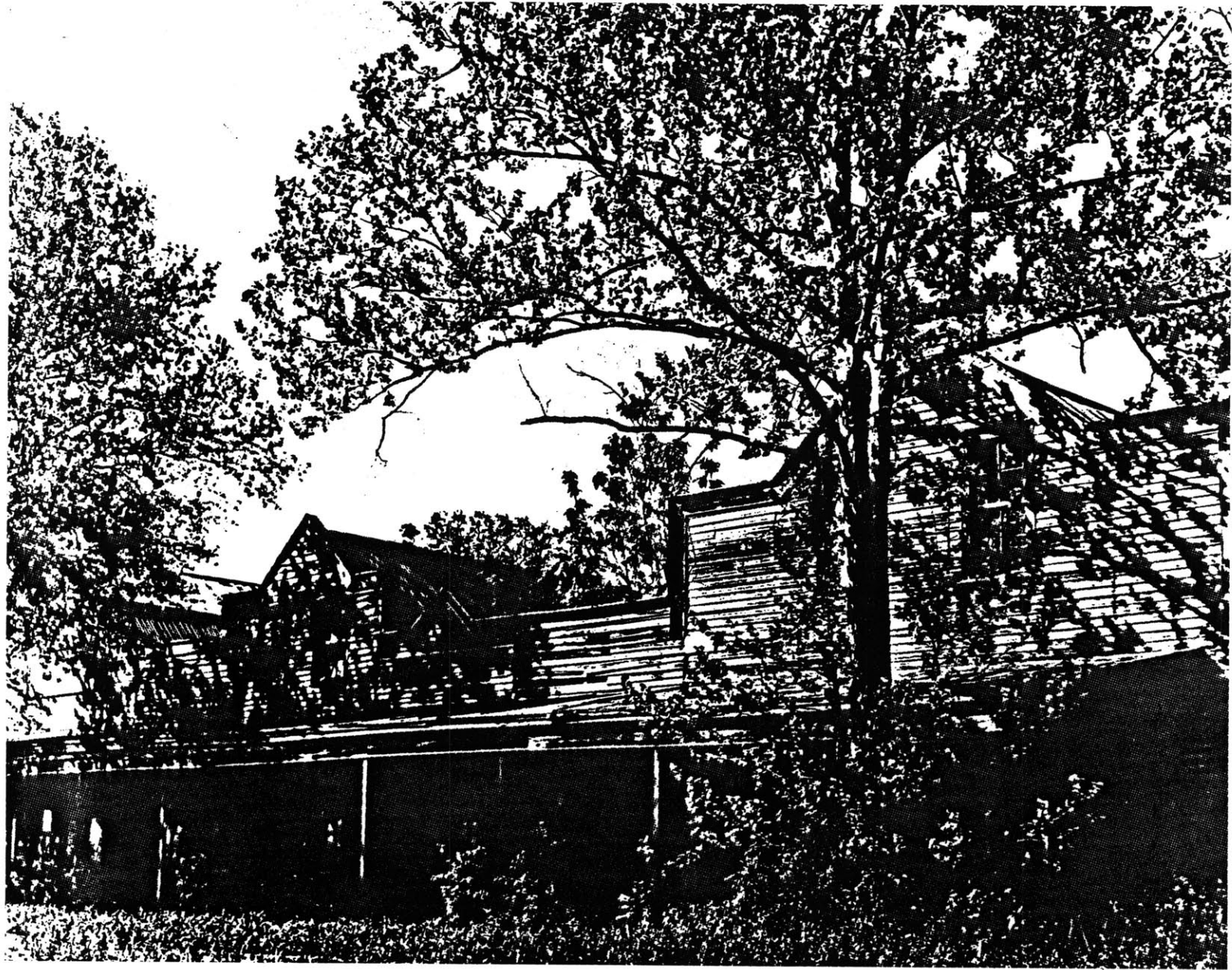


above or to the sides of the door, preserving the memory of dog-trot breezeways, and the open view through the house which they permitted. The door typically opens into a hall between rooms, again reminiscent of the breezeway as an organizing device.

The porches of these houses act as major characterizing elements. They can be carved away or added onto the volume of the house, and either one or two stories in height. Also, they either continue the slope of the roof, change angle, or attach beneath its eaves. Invariably, the porch indicates the front of the house, establishes an intermediate place between inside and out, and in effect builds a shadow, allowing larger openings in the protected wall behind. It complements the mass of the house, being skeletal, open, and transparent. Through it, the frame-like quality of the roof is carried down to the ground, forming a spatial screen. The members are quite attenuated, and either assembled (balusters), or carved away (cornices), to modify the light passing through, and enliven the edge of its shadow. This becomes a system for the introduction of diffuse but still animated light into the house.

Occasionally, the porch is enclosed either in wood or metal, and becomes a more complete definition. Such spaces usually occur at the second floor, propped up on posts or knee braces, and are more directly associated with the roof than the ground.

The barns of the Hill Country are similar in form to the houses, only larger and with fewer windows, and in fact their

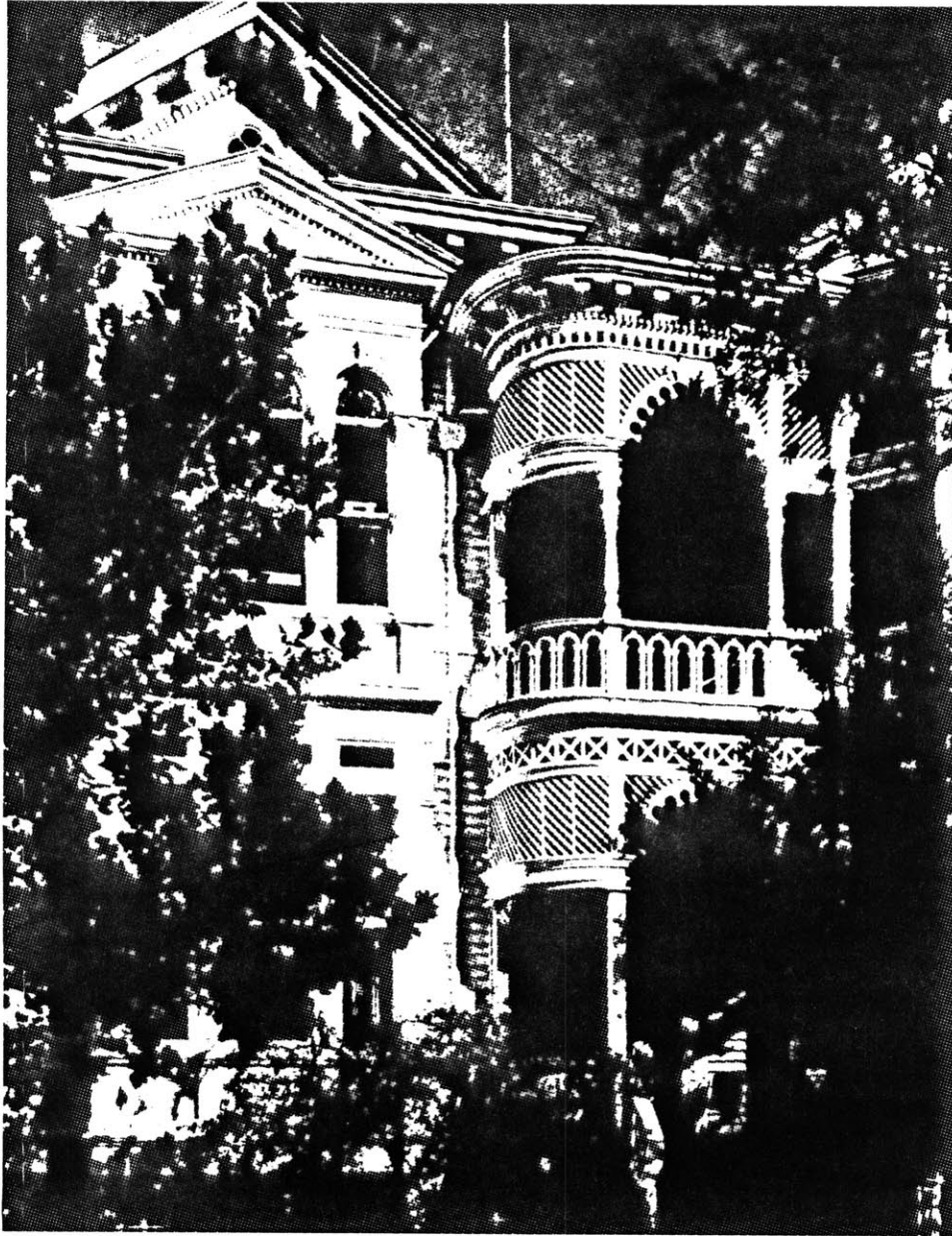


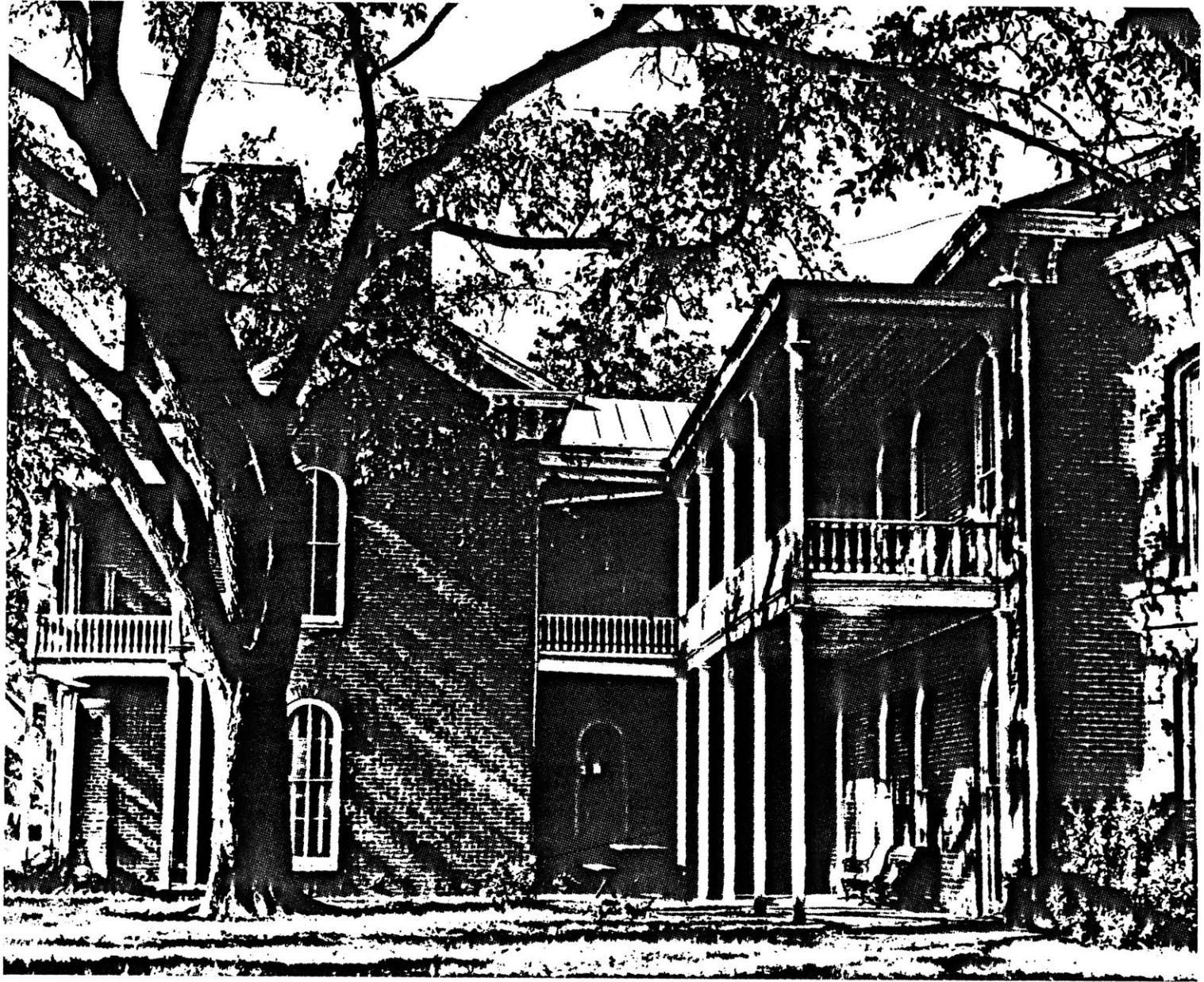


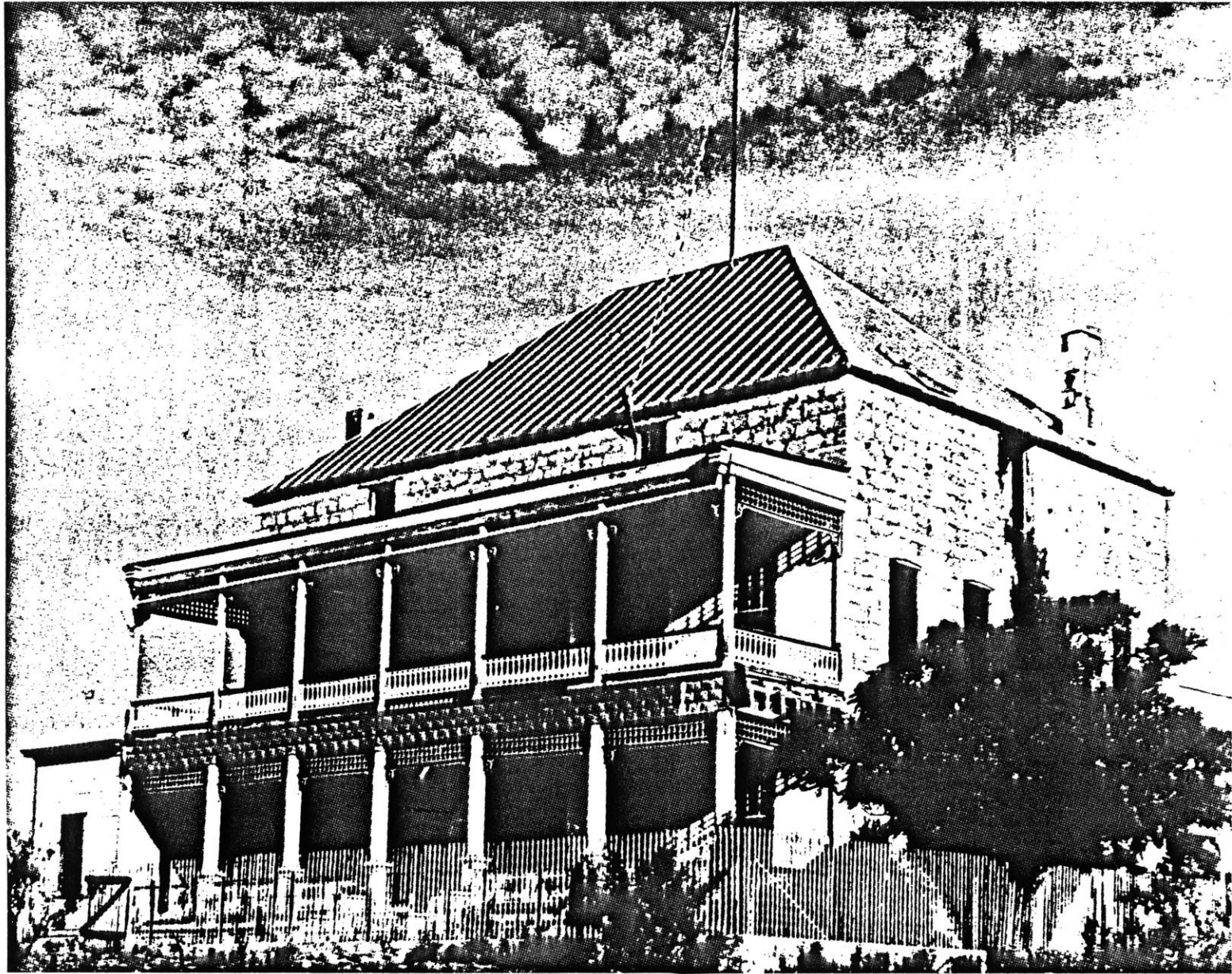
uses have at times been interchangeable. In general, due to their longer spans, the barns have more elaborate roof framing, usually trusses of light weight members. Also, a number of lean-to sheds are often added about their perimeters over time.

Commercial structures in the area differ more from their residential counterparts. Placed with their shorter, gabled end perpendicular to the road, rather than parallel as for the houses and barns, this gable is then obscured by a false front. Whether of wood or stone, the walls show much greater surface relief, with windows set deep in their frames and vertically divided into a series of panels. Beneath the awning of the front porch, the wall may be dissolved completely into a screen of glass and wood or metal, uniting sidewalk and interior. Here, protected, the windows behave as mirrors, rather than voids. Again, awning and screen function as a system for the introduction of indirect light, without accompanying heat.

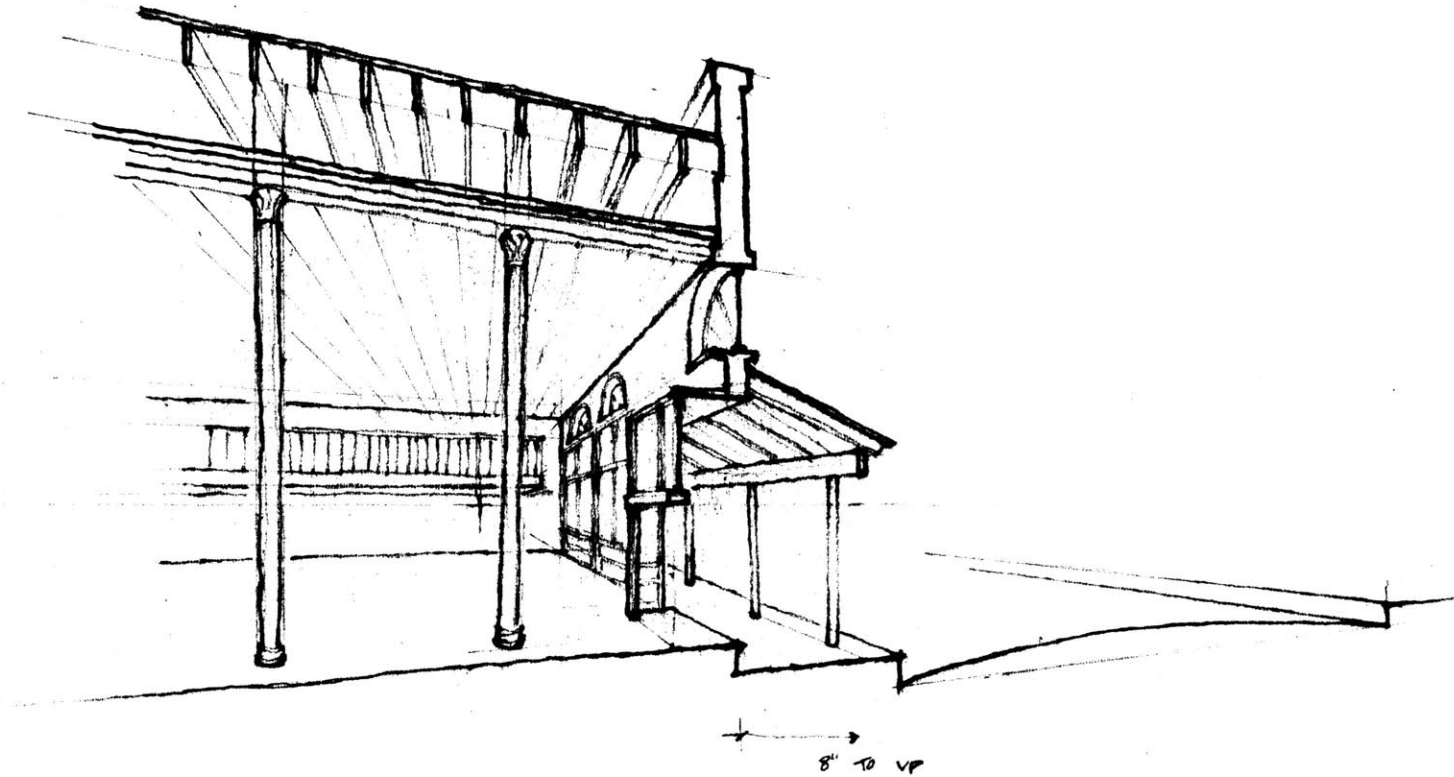
In summary, the buildings of the Hill Country are extremely straightforward as volumes, and characterized by massive walls, lightweight roofs, and simple outlines against a broad sky. The porch becomes an important element, in terms of identity, level of articulation, and modulation of light.







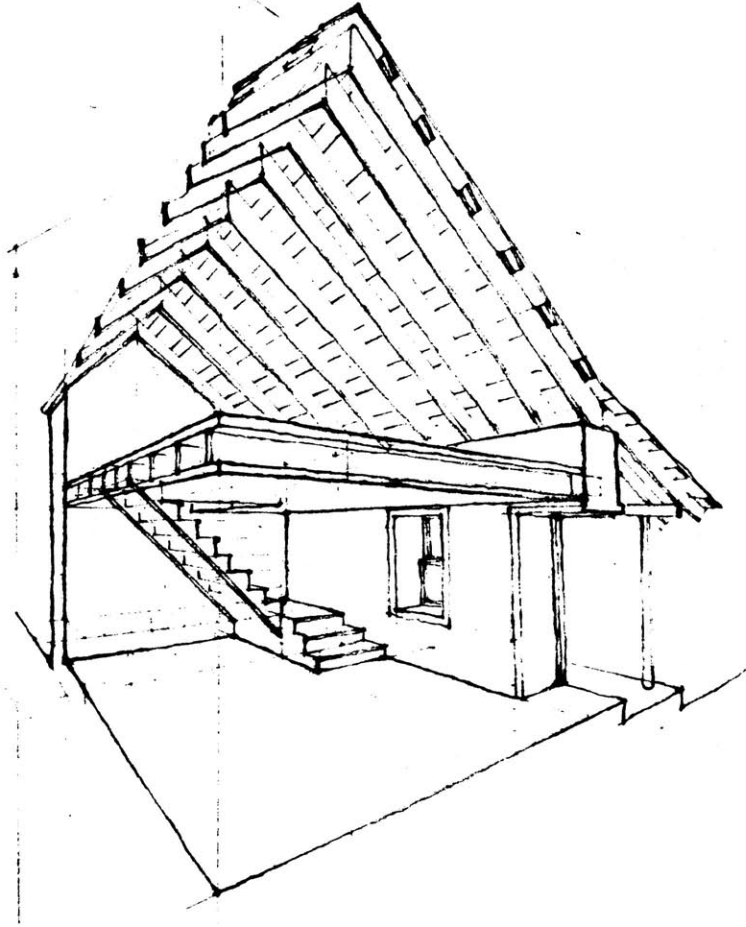




3/13

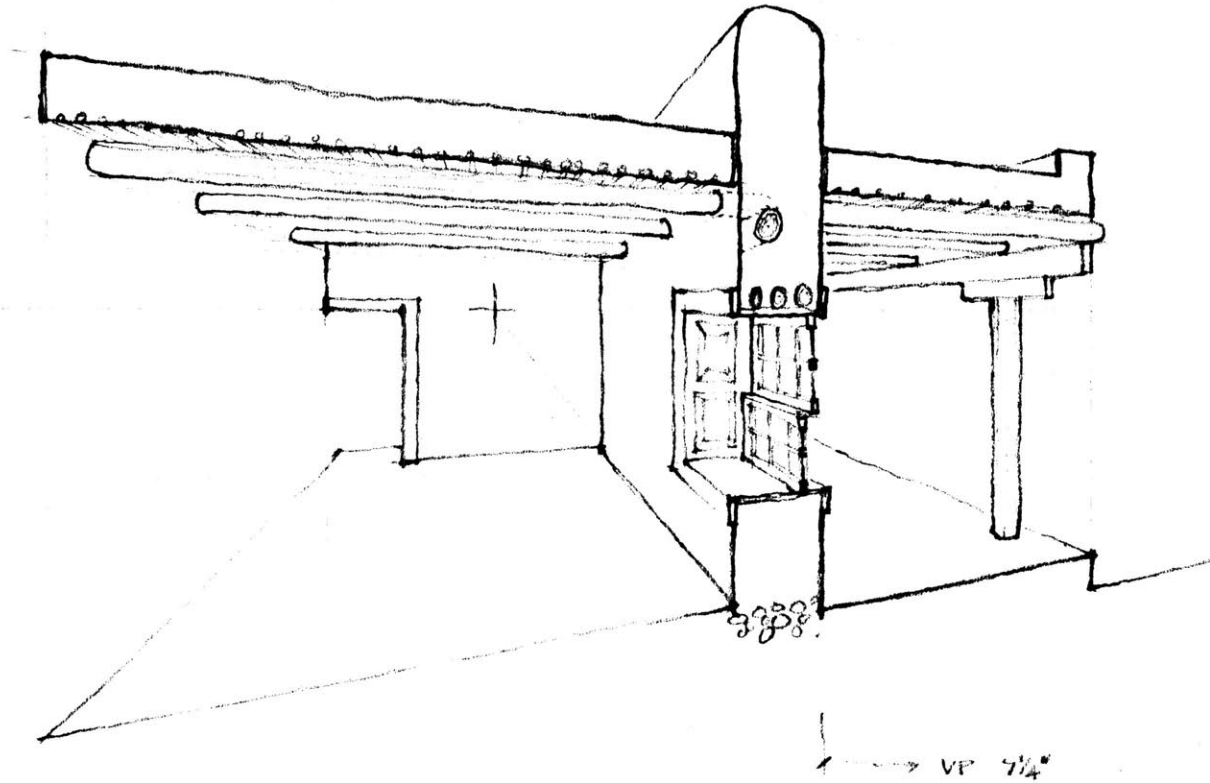
Character drawings: attempt to distill character of a building type in a single perspective, to portray assemblage of materials and defined space.

Here, a typical commercial building, showing porch/screen wall system at entrance.



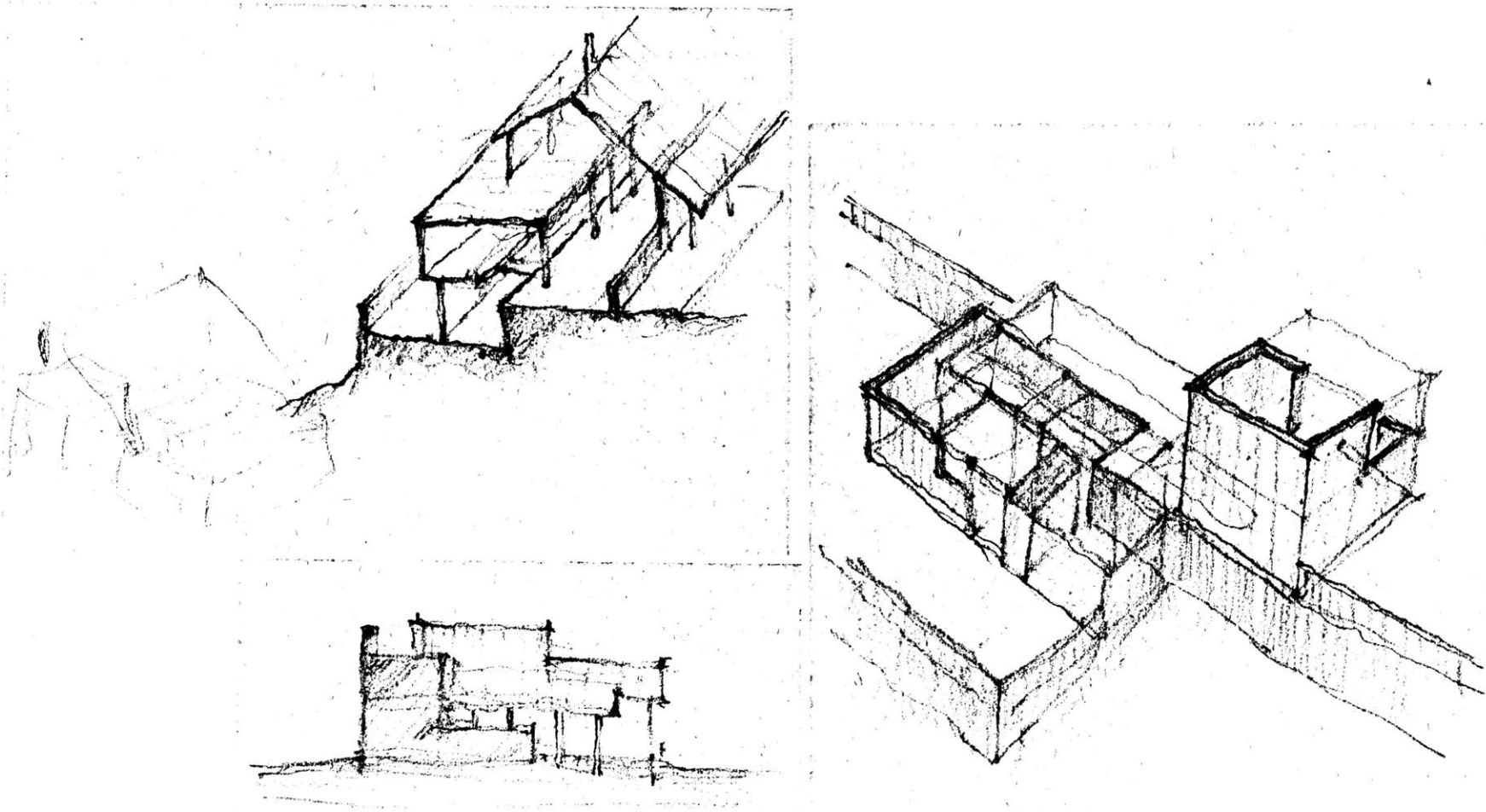
3/13

Hill Country house, from the nineteenth century.



3/13  
Adobe house, New Mexico.



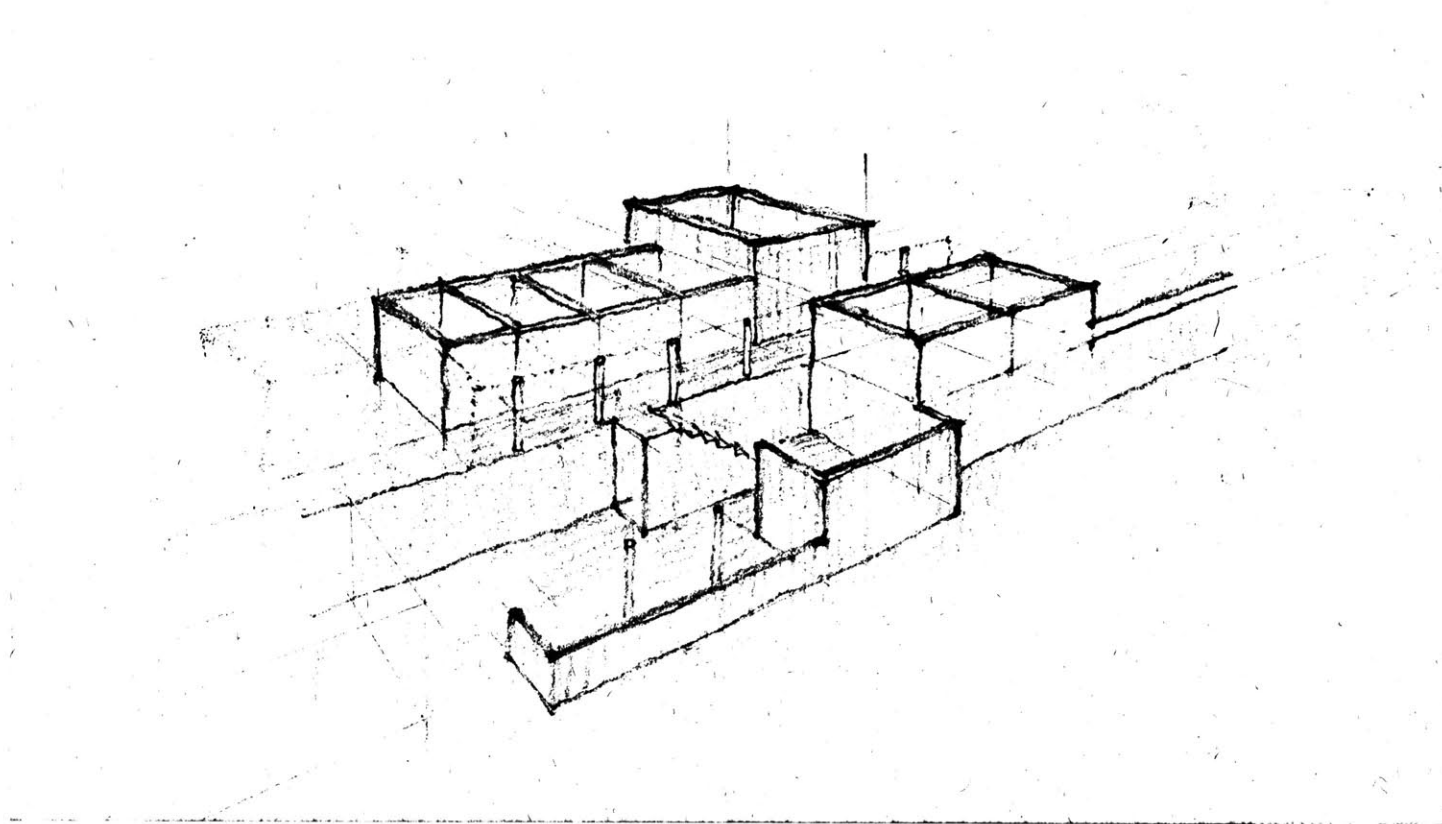


3/15

Palette of materials finalized: concrete retaining walls and foundations, adobe exterior walls, metal stud exterior and interior walls, concrete slab floor on steel deck spanning between light gage steel joists, and rigid insulation sandwich roof deck on steel joists and purlins.

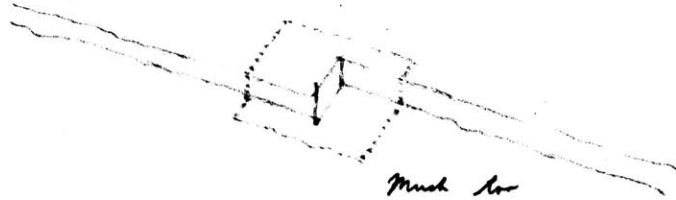
Steel: lighter, smaller moves; intensifies relief; builds volumetric and sectional continuities. Bedrooms.

Adobe: larger, simpler moves; corners; occurs to south and west to buffer solar impact. Living areas.

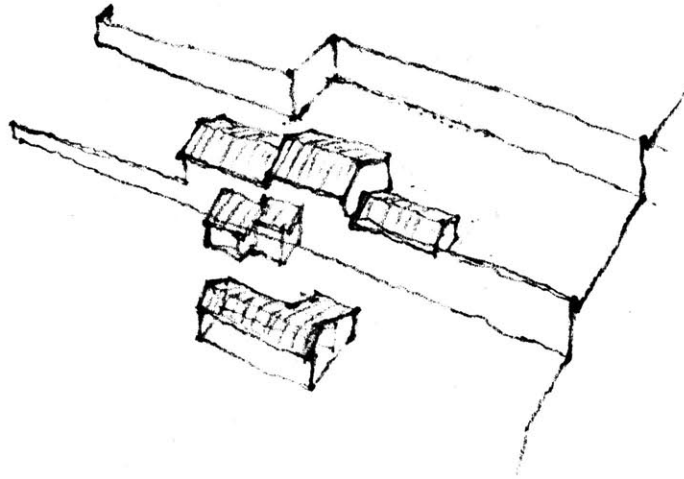


3/16

Uphill house: split single floor of bedrooms into two groups, with collective spaces located at break. Similar to Aalto funeral home. Continuous corridor becomes gallery above living room.

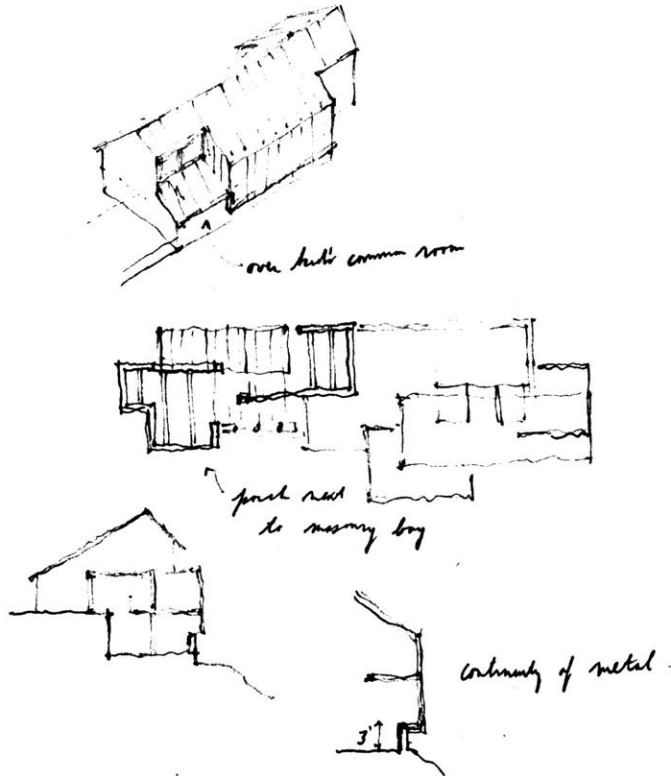


*Much too  
object-like*



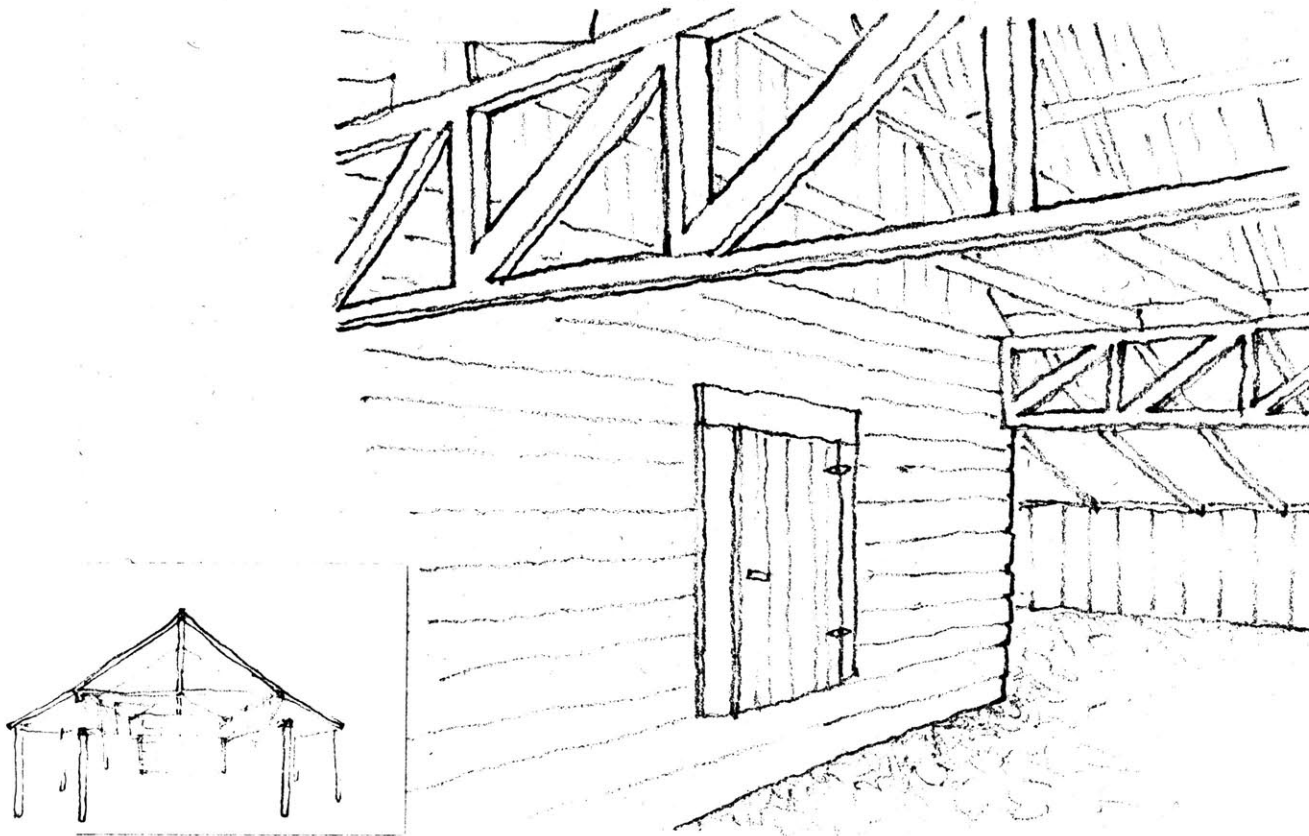
3/23

Relation of housing cluster to terrace wall: perhaps works as a series of parallel definitions, capturing space between themselves, as in site plan of 2/14.



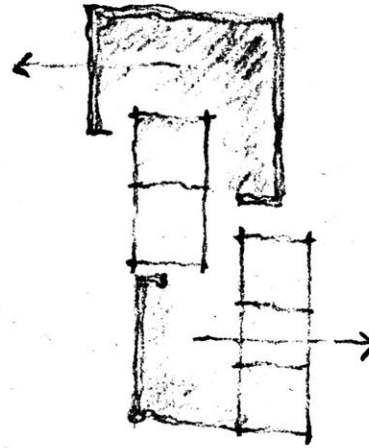
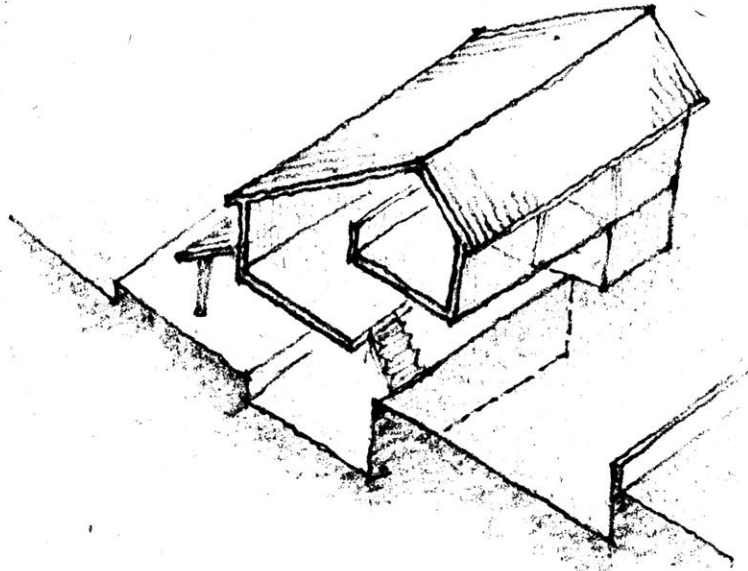
3/25

Downhill house: relation between use of adobe and metal. Configuration of roof, openings for light.



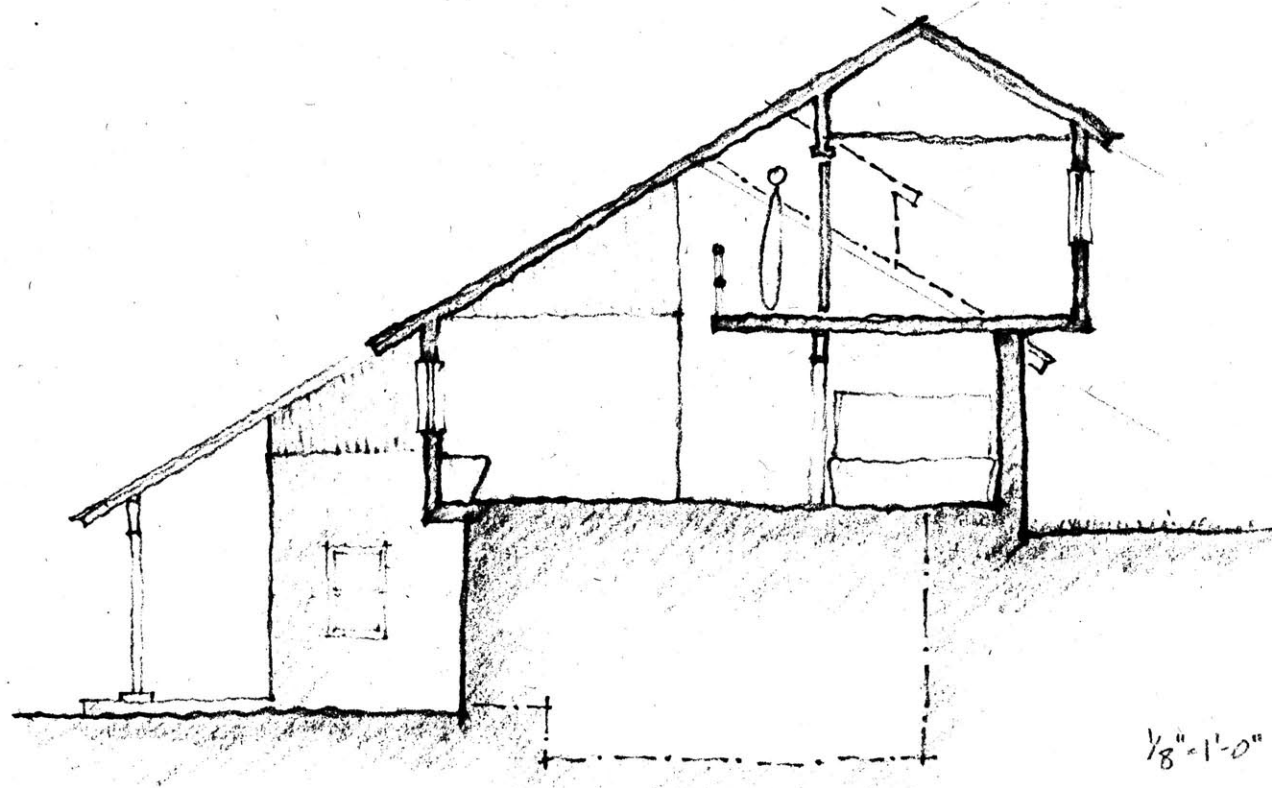
3/26

Texas tie barn (walls constructed of railroad ties), redrawn from Built in Texas,  
p. 89. Assembled frame supports thin metal roof.



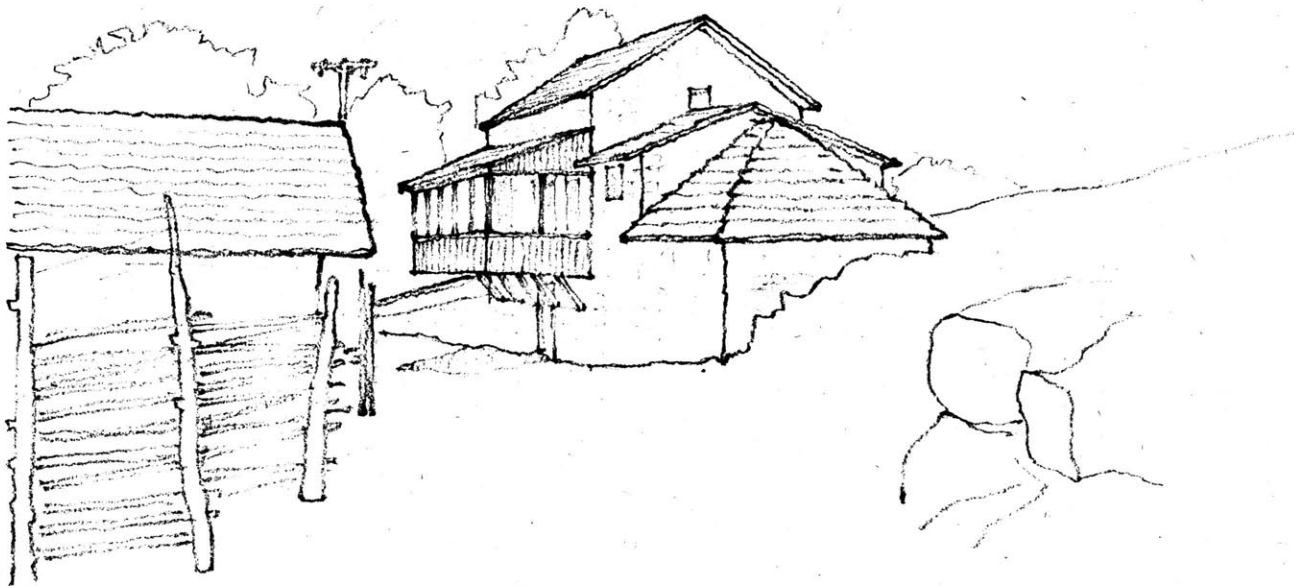
3/27

Another iteration of uphill house. Staggered bedrooms retained, but are now on different floors. Steel frame and surface of roof extended downward to define bedrooms, create extruded section, intensifying level change in ground below.



3/27

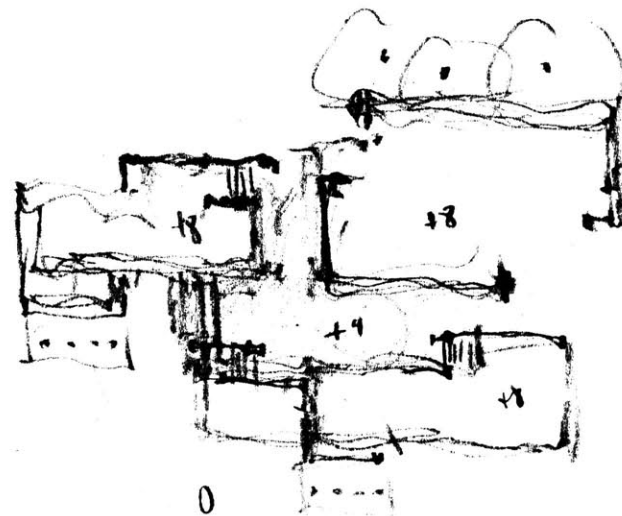
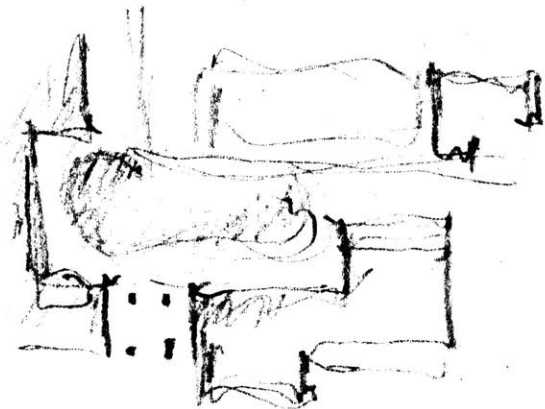
Section through uphill house. Adobe associated with earth, steel with sky, in the manner of Jefferson's brick and white painted wood. Interior changes in level connect two different outdoor spaces, the upper one more private to the house, and the children.



3/29

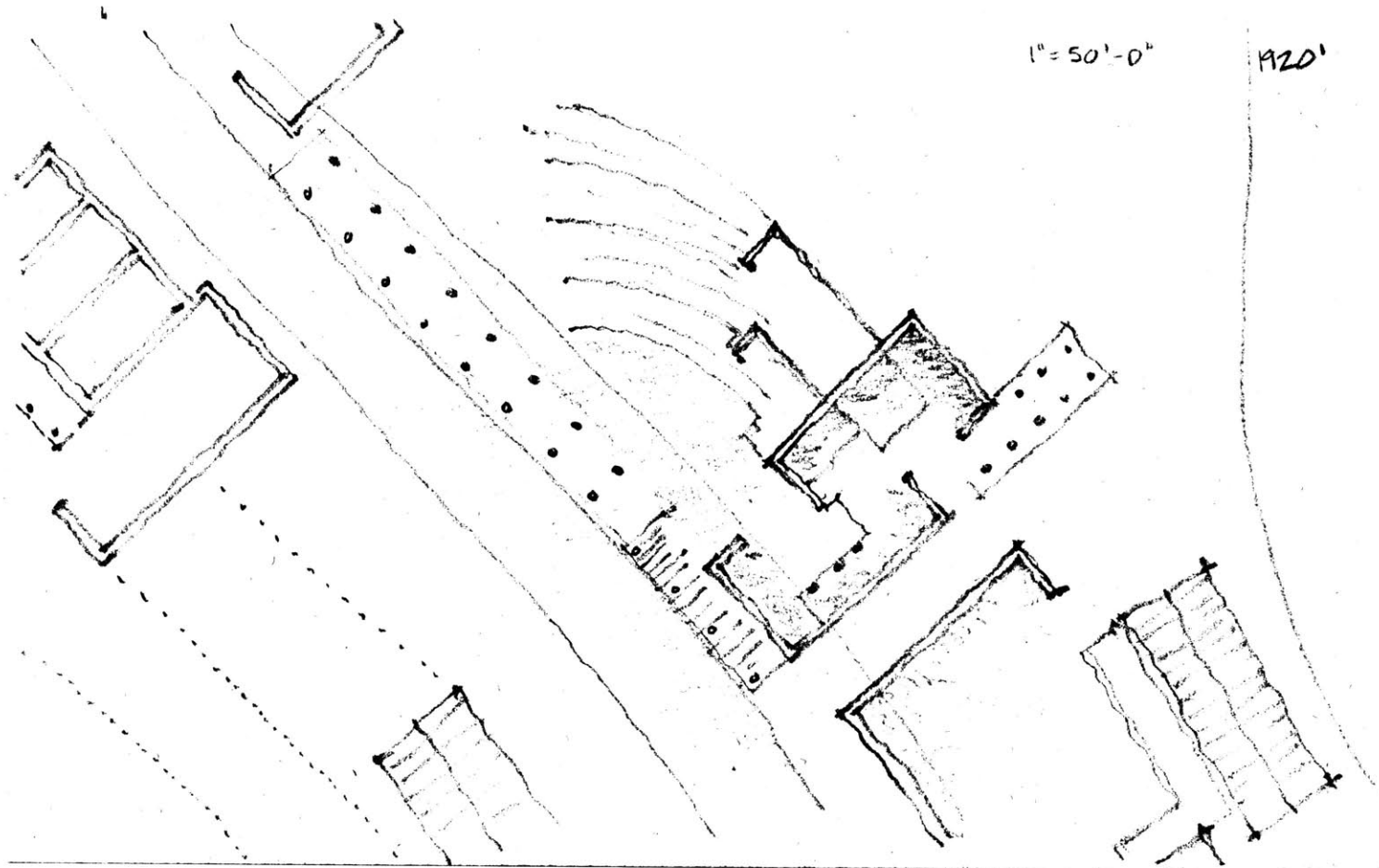
House in San Geronimo, Texas as reference, redrawn from Pioneer Texas Buildings, p. 115. Front facade continuous with retaining wall, house built into hill, roof steps down to ground behind. Second floor porch volume supported on knee braces, complements massiveness of house, acts as elaboration of roof system.





3/29

From Taliesin East (diagram to left): layered outdoor space, range of degrees of enclosure. Here, displacement of two houses generates intermediate outdoor room or patio, with diagonal connections to courtyards above and below.

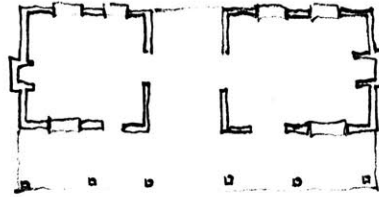


3/30

Steps begin at large scale as dining levels in cafeteria, exit to form amphitheater, and then dissolve into the natural slope. Lateral continuity. Large concavity renders plateau more accessible, connected to the volume of the street. Arcade or portico acts as filter between the two. Amphitheater has views to the Guadalupe River, across the town of Ingram.



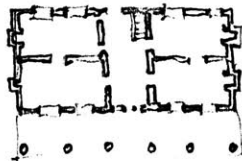
Dog run



Two room house w/ porch

Alexander, p. 12

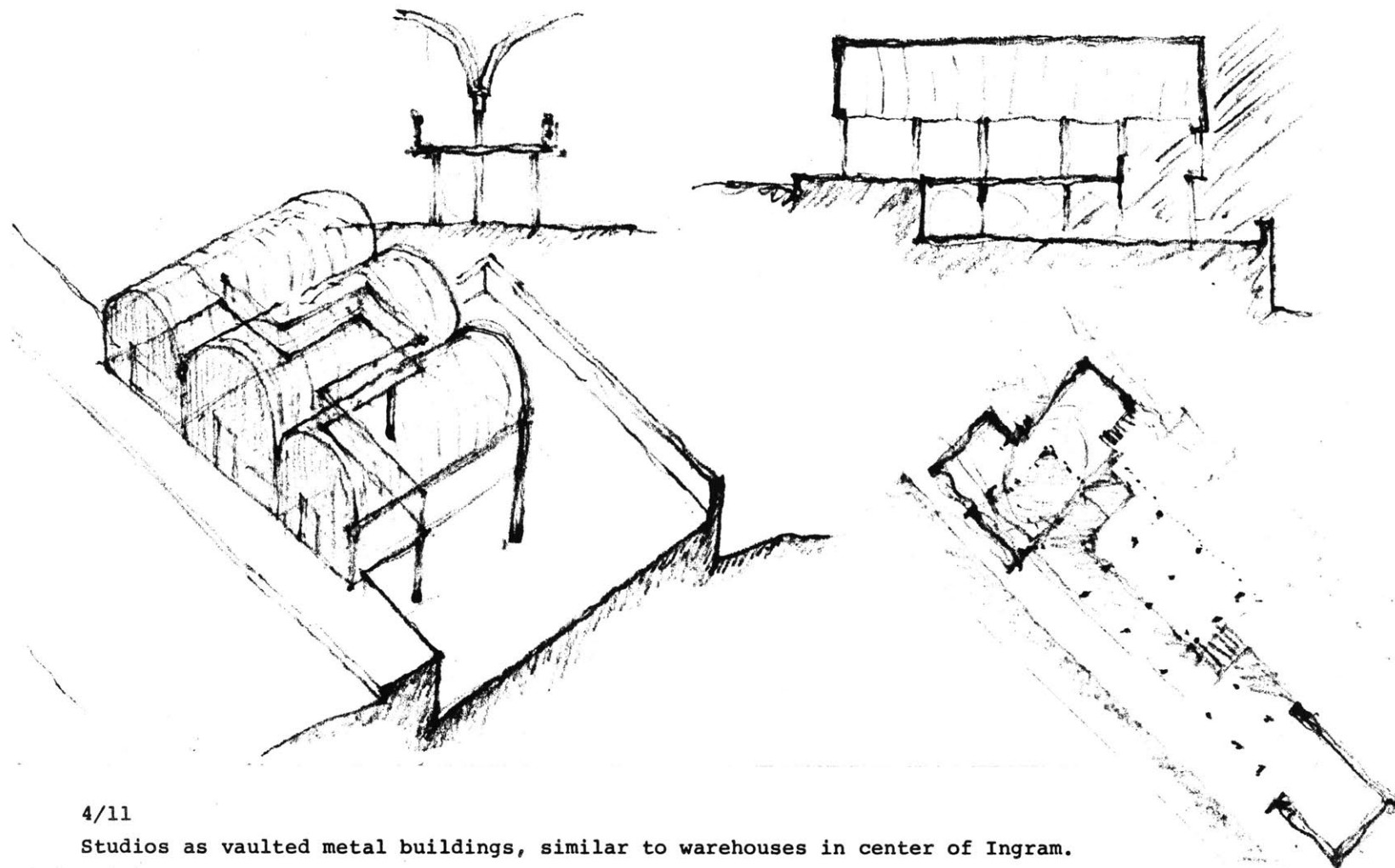
German houses: 2 room deep, nearly square in plan, steep roof pitches, porch w/ lower pitch attached to front.



Greek revival house plan  
Double in above  
(Alexander, p. 86)

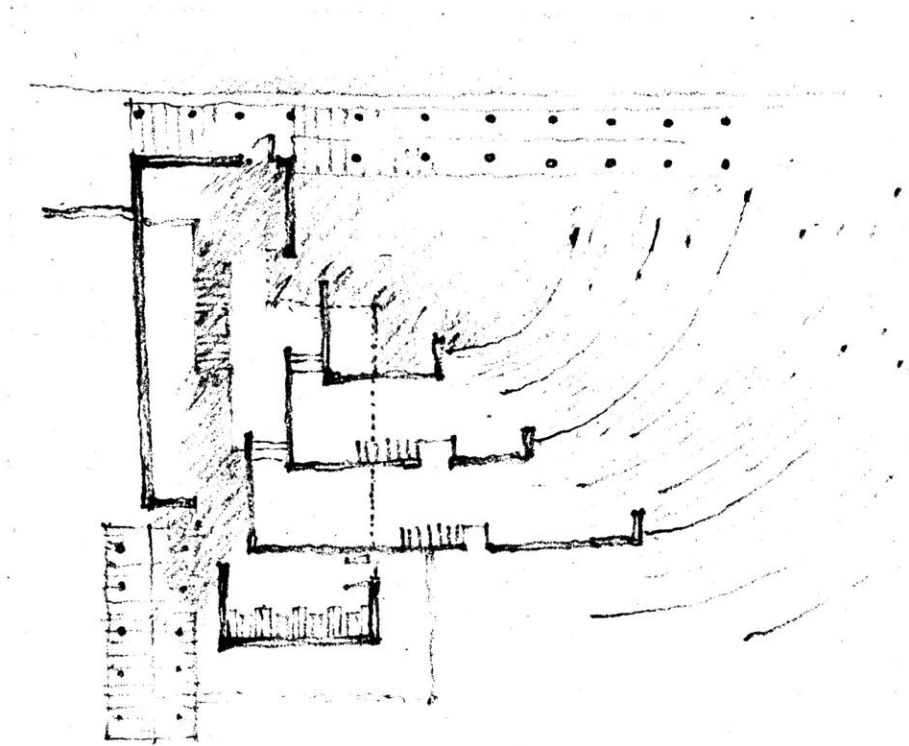
4/7

Basic indigenous house plans. Importance of breezeway as organizing device.



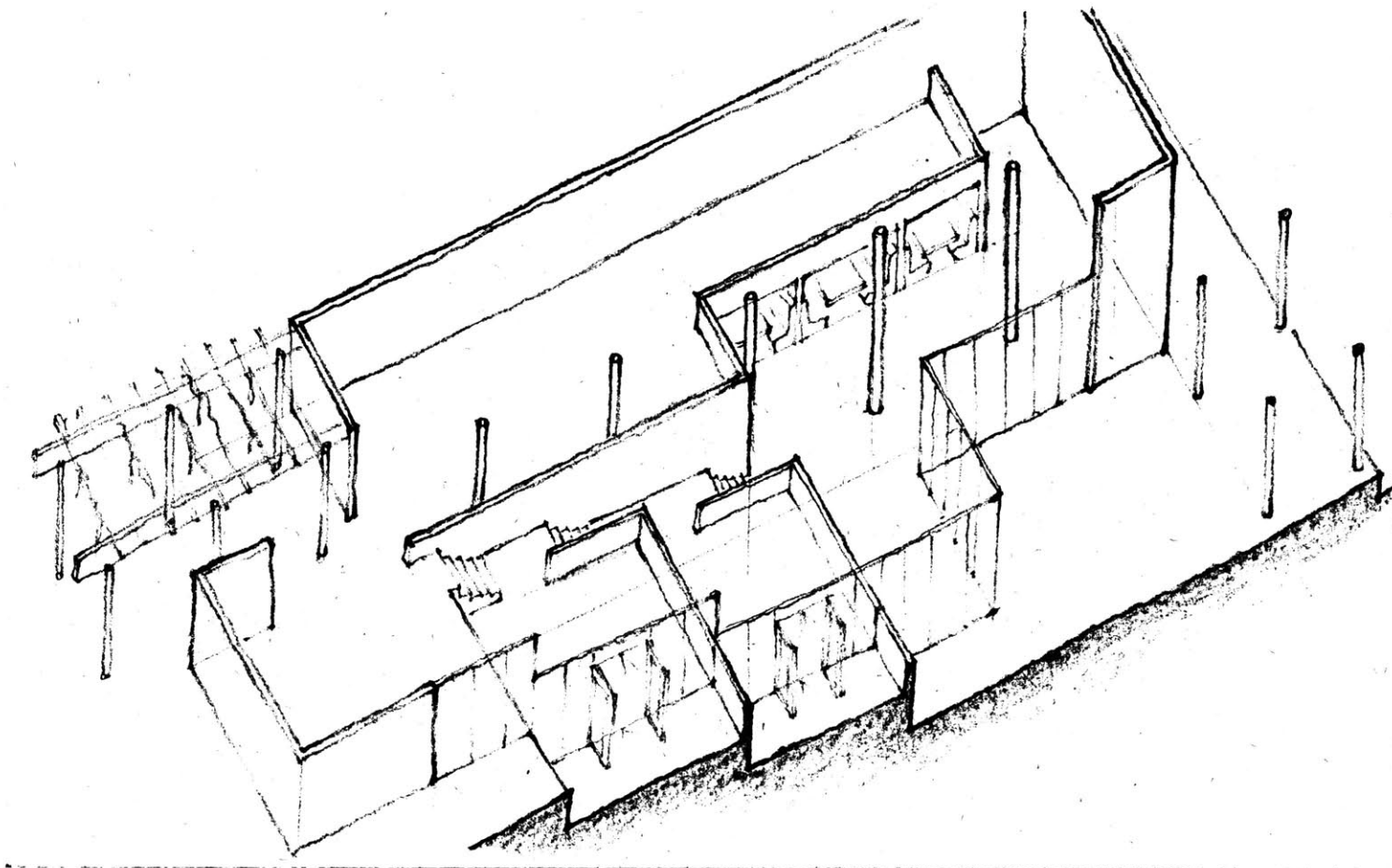
4/11

Studios as vaulted metal buildings, similar to warehouses in center of Ingram. Skeletal in character. Vaults overstep terrace wall, mezzanine continues upper level. Part of larger organization, including nursery school to left, and the hostel to right.



4/12

Cafeteria functions as elaborate stair, generates amphitheater, connects street and plateau levels internally. Room-sized dining terraces inside and out. Problem: stair within is too discontinuous- should be single differentiated entity.



4/14

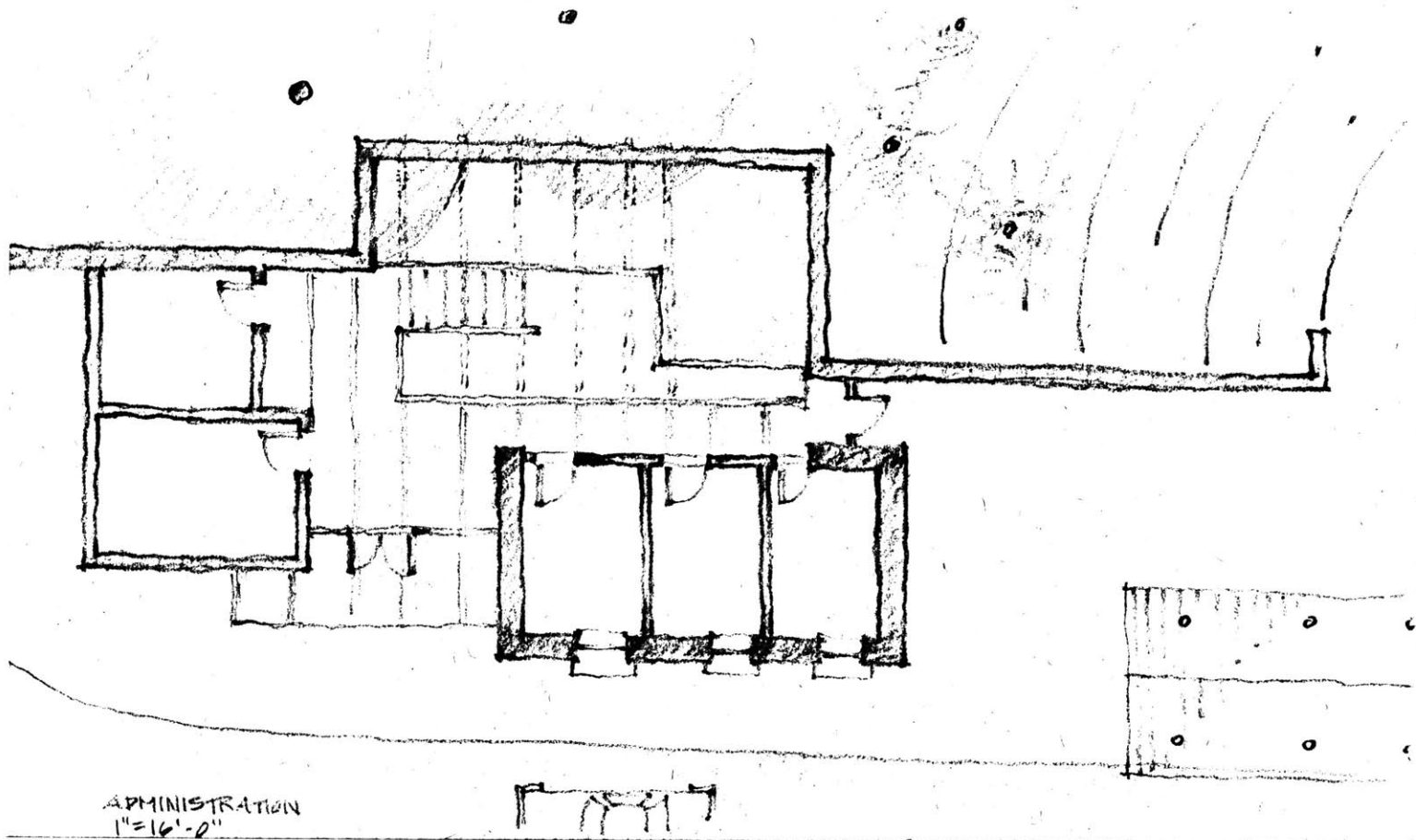
Interior development of cafeteria. Cafe booths brought back down to main street level, beneath mezzanine. Stair accessing dining terraces is now more continuous. Porch, trellis mark entries. Greater reciprocity between street and plateau levels.



4/18

Elevation of cafeteria and library along main street. Stair between as alternate route up to plateau. Ground rises along library, street itself reaches level of plateau.

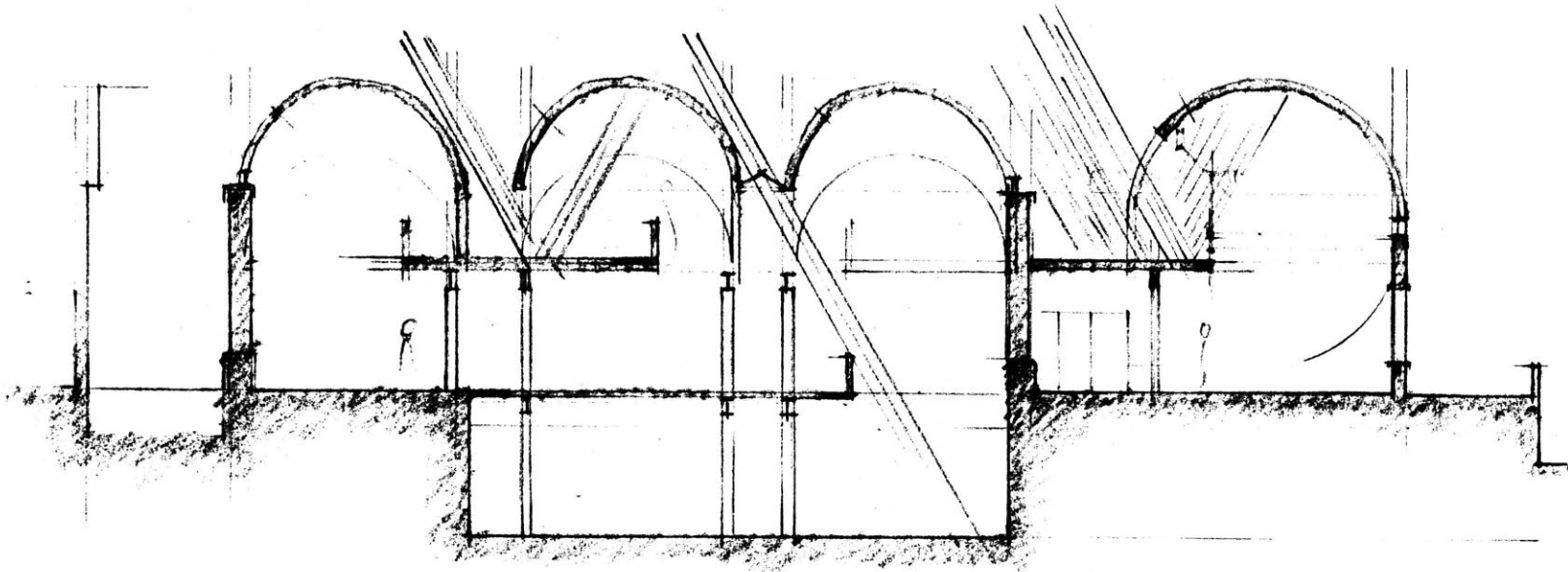
Cafeteria composed of interlocking volumes-- clerestory to north produced. Still, is becoming somewhat out of scale in height.



4/21

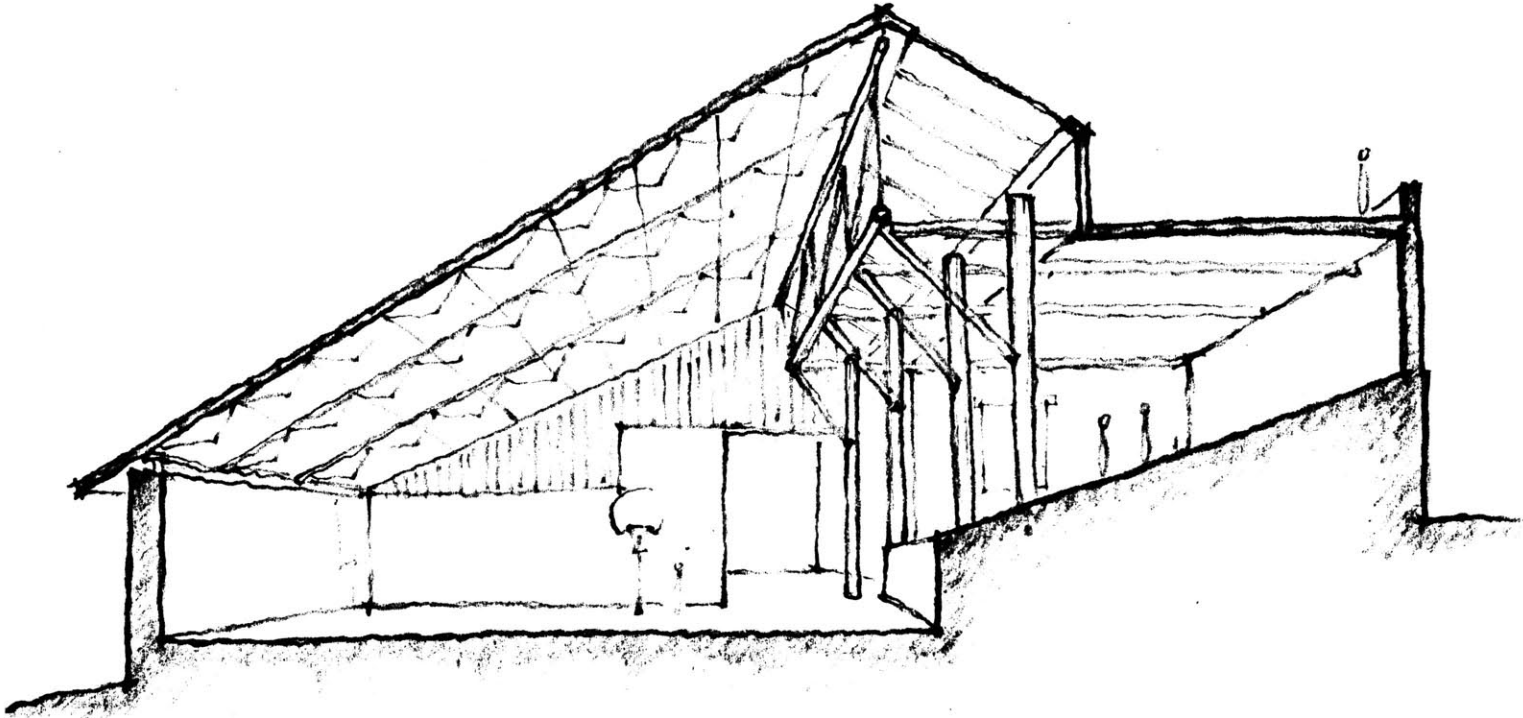
Plan of administration building. Terrace wall breaks to create landscaped court at intermediate level on plateau side of building. Adobe establishes dimensions larger than those of individual rooms, can then be subdivided with lighter weight partitions, as at Romero House in New Mexico.





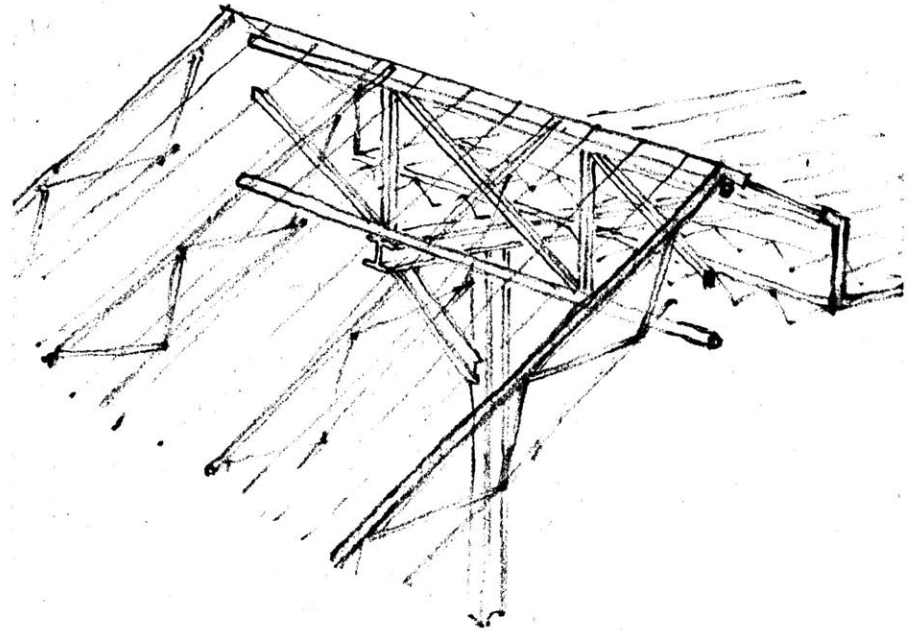
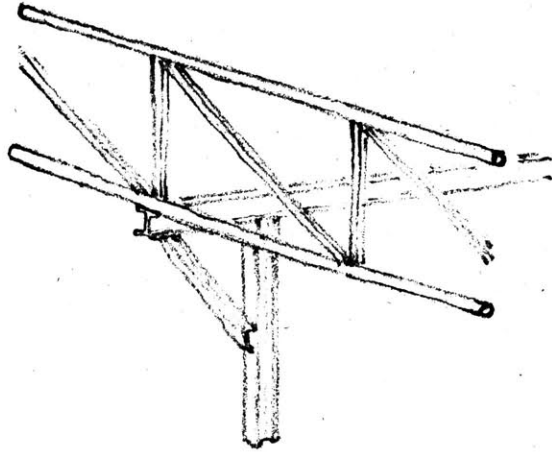
4/22

By separating the vaults of studios, light can be introduced between them, illuminating the center of the space, and strengthening the clarity of the vaulted forms themselves.



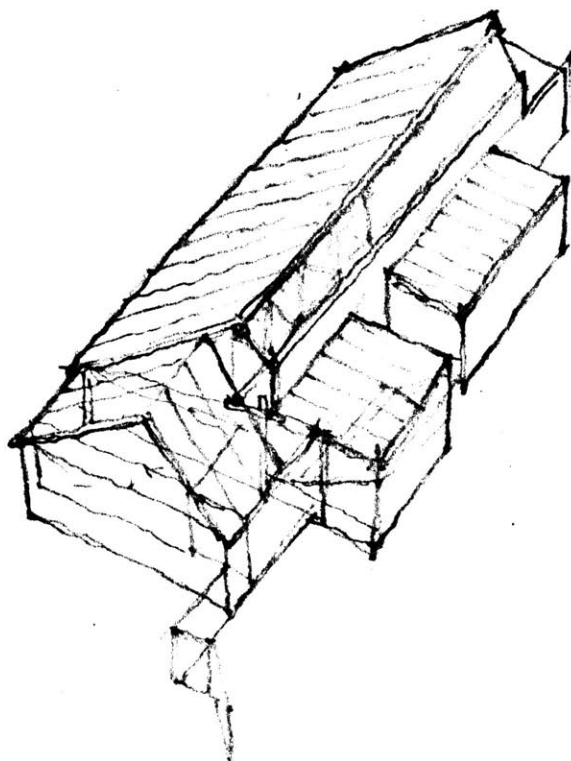
4/23

Section through gymnasium. Floor level steps down with topography, providing spectator seating above basketball court, with views out to the side. Truss offset from line of columns, although extravagant, reduces roof span and produces spatial assemblage of structural steel, through which filters northern light from clerestory.



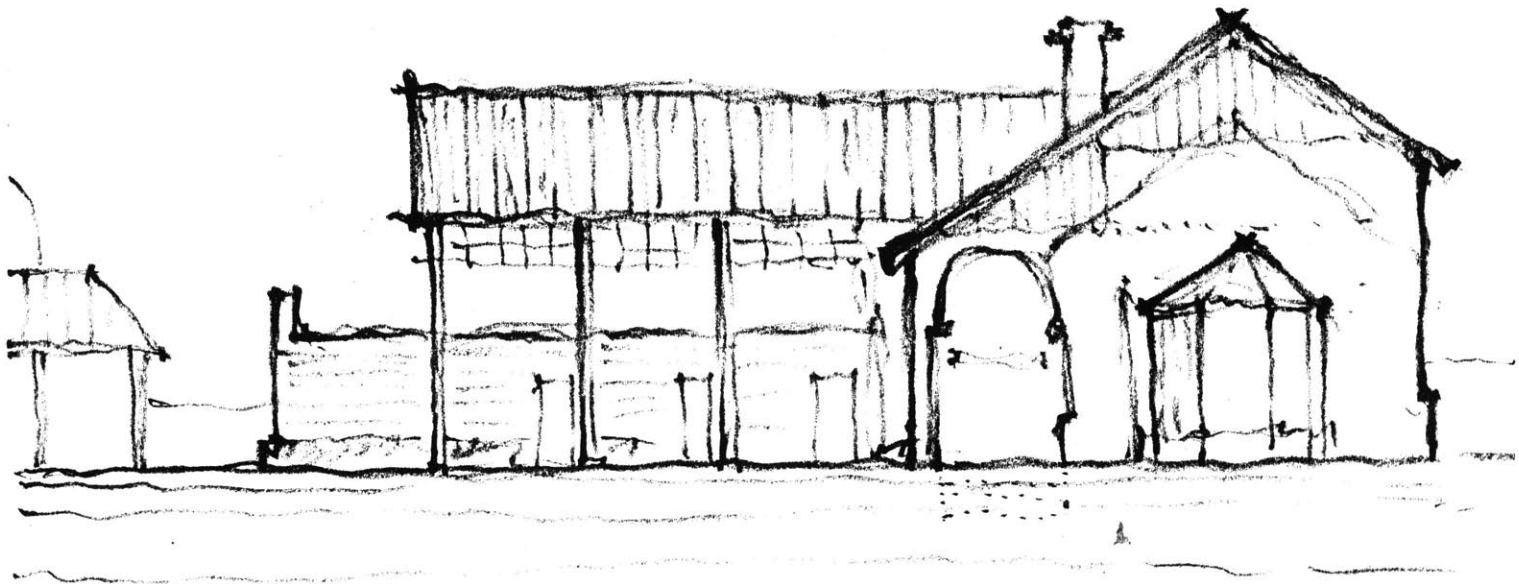
4/23

Studies of steel framework, taking Albert Kahn's Chrysler Half-Ton Truck Plant as a reference.



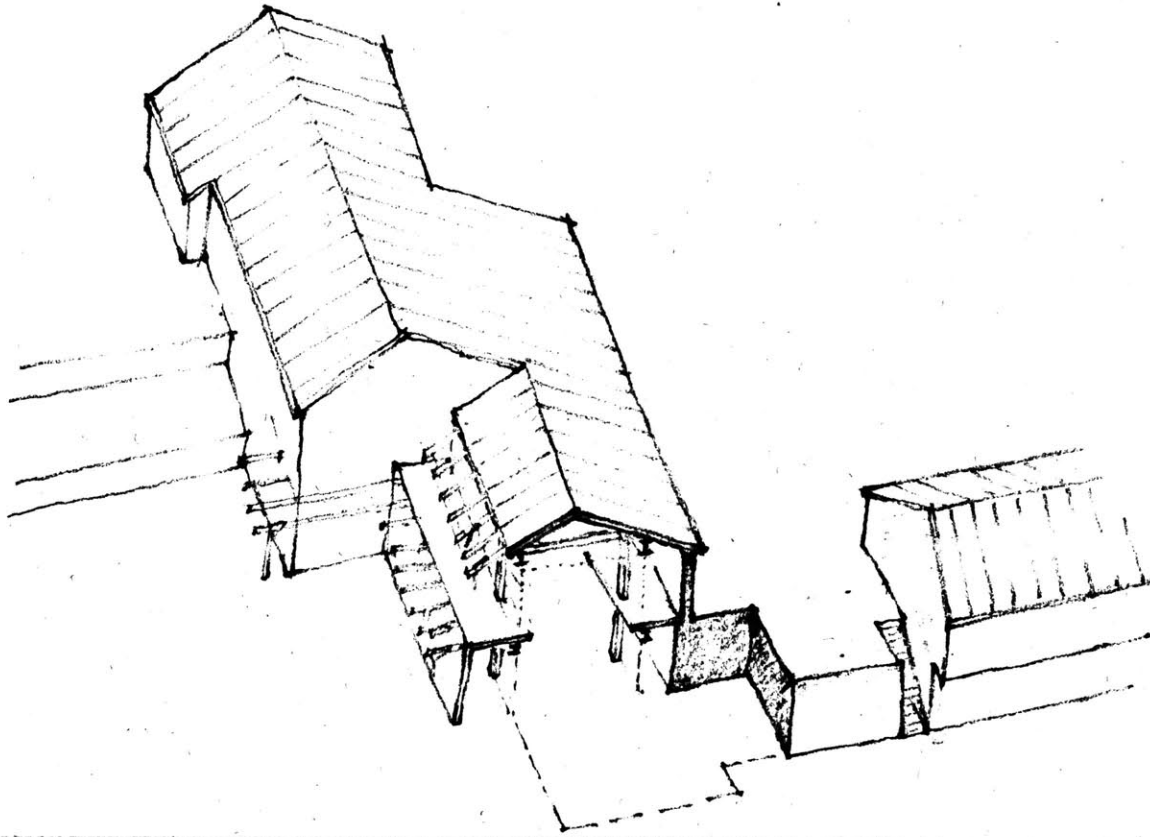
4/24

Exterior massing of gymnasium.



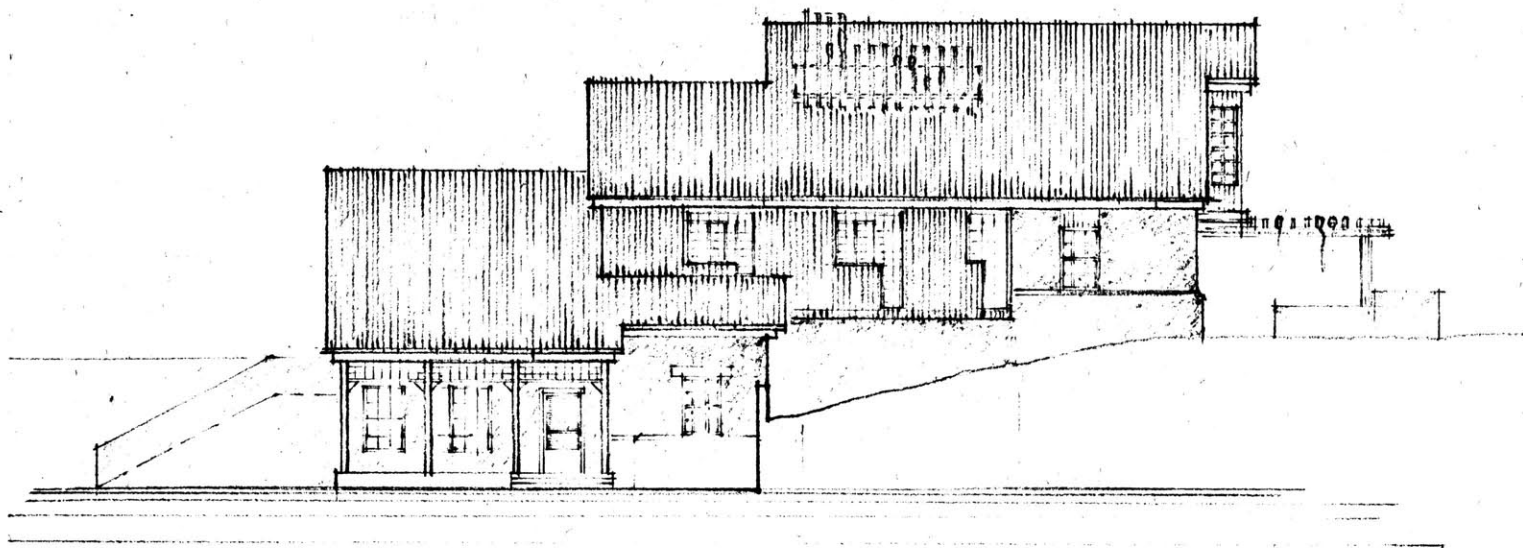
4/30

Elevation study of hostel along main street. Metal roof supported on attenuated columns above adobe ground floor. Gable turned perpendicular to street and bay window indicate collective space of hostel behind. Gateway leads down to apartments for teenagers. Entire complex becomes like old Texas roadside inn, arranged about an informal courtyard or patio.



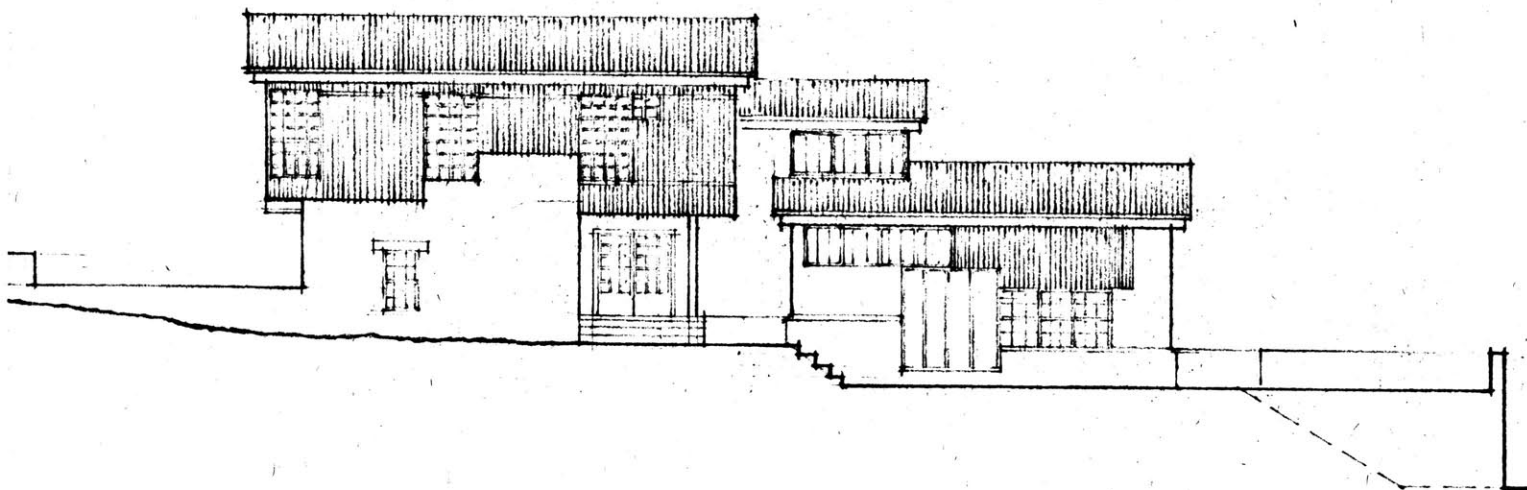
5/1

Cafeteria clerestory eliminated-- too tall. Trelliswork bay acts as counterpart to mezzanine, framed in same fashion, modifies light along public edge. Roof lowered, simplified.



5/6

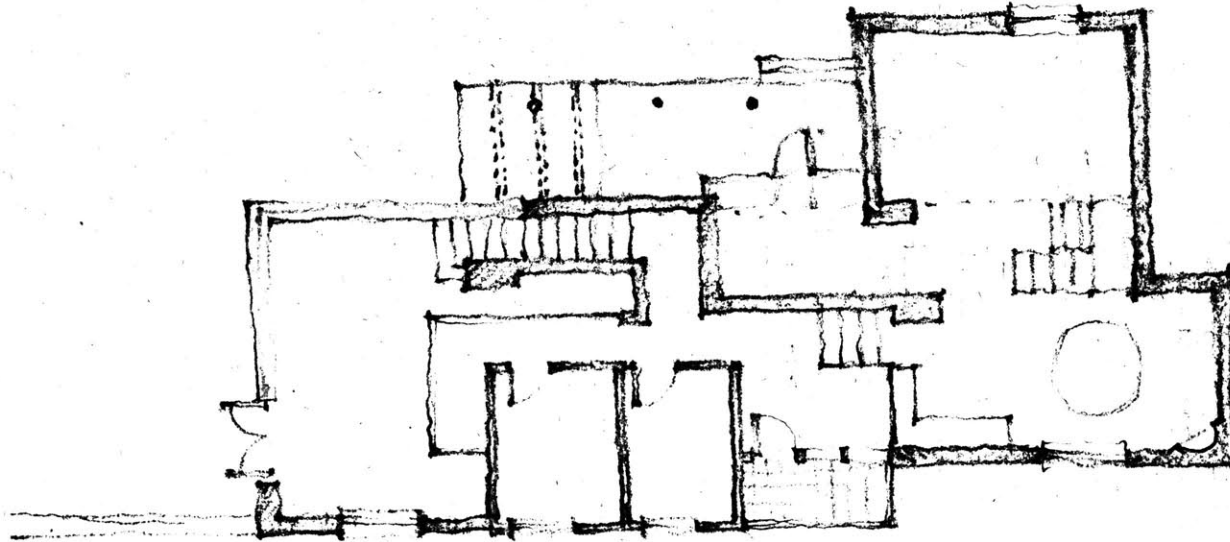
Road elevation of uphill house. Corrugated metal of roof extends downward to sheath bedrooms. Windows in metal wall more skeletal, extensive than those in adobe. Building steps down along hillside to informal front yard.



5/6

Garden elevation of uphill house. Large window at lower right illuminates stair as it rises, turns.

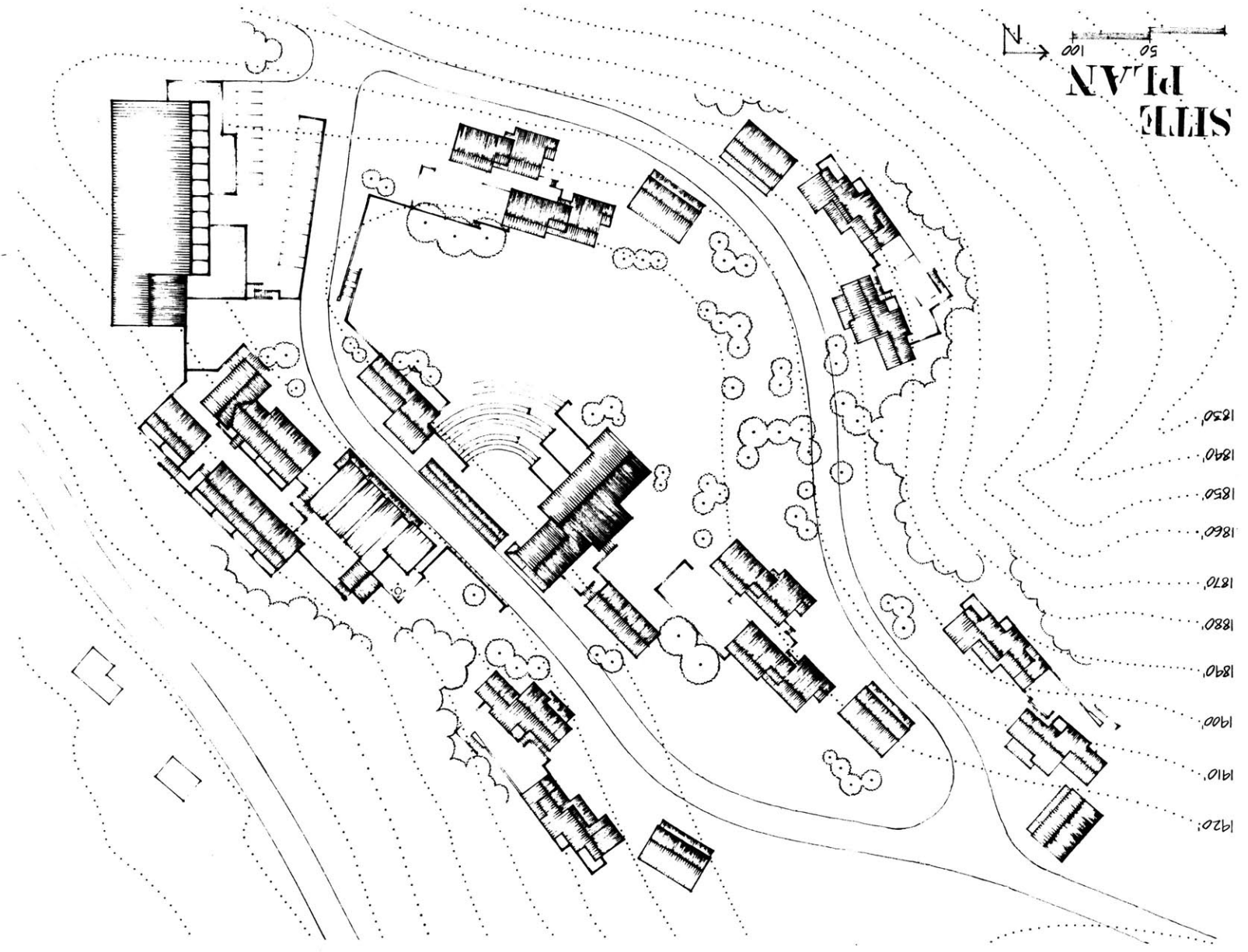


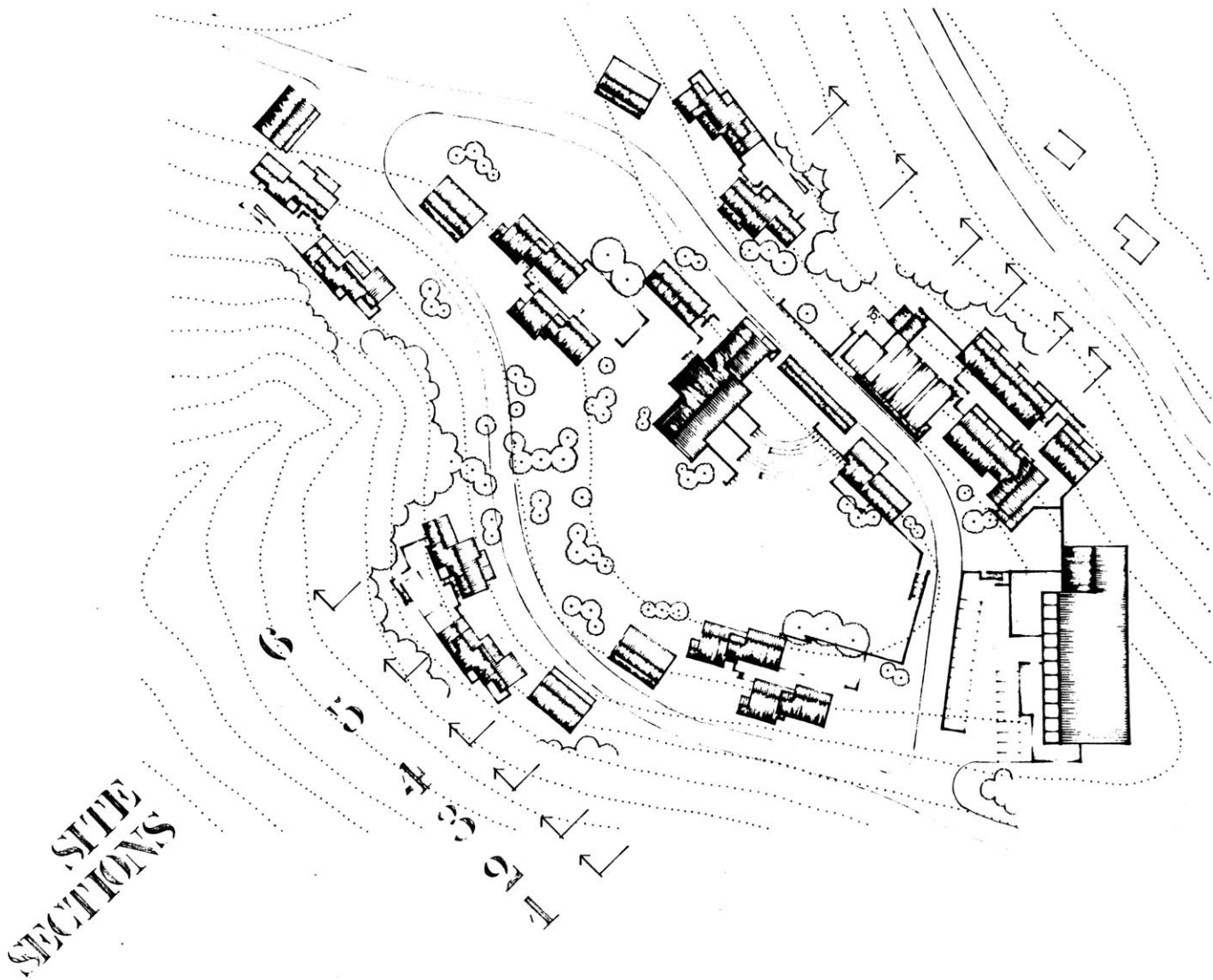


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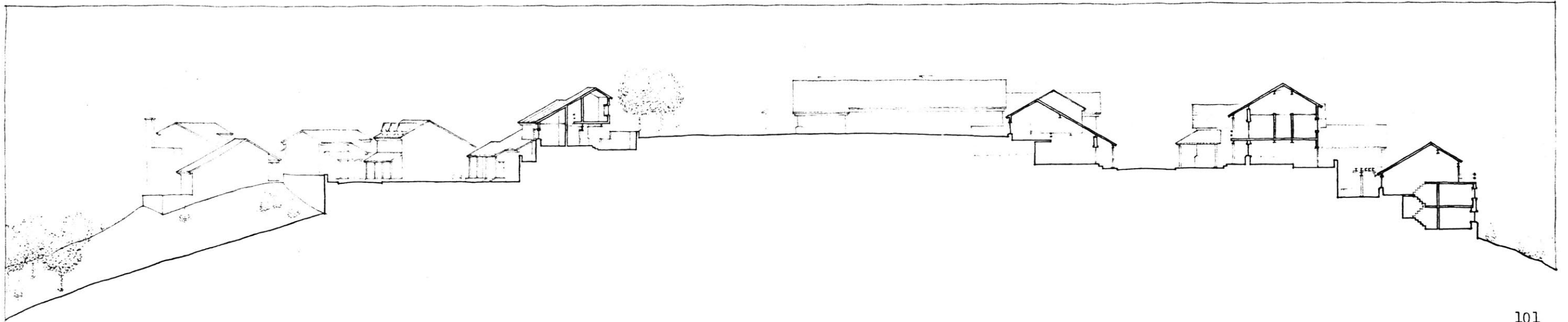
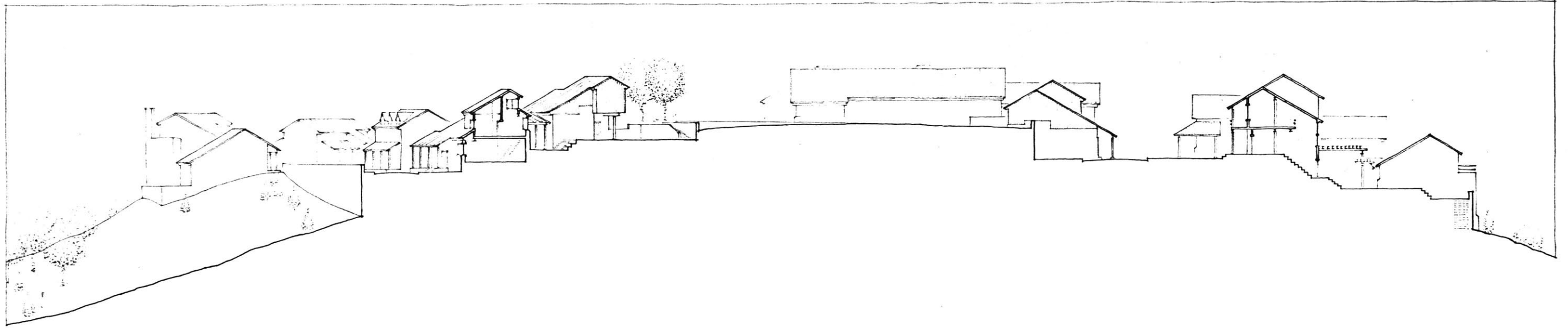
Plan of downhill house: entry has view to landscape beyond-- memory of breezeway. Stairs run in direction of contours. Small terrace where direction of entry meets that of stairs. Fireplace treated as bay, an annex that defines dining area.



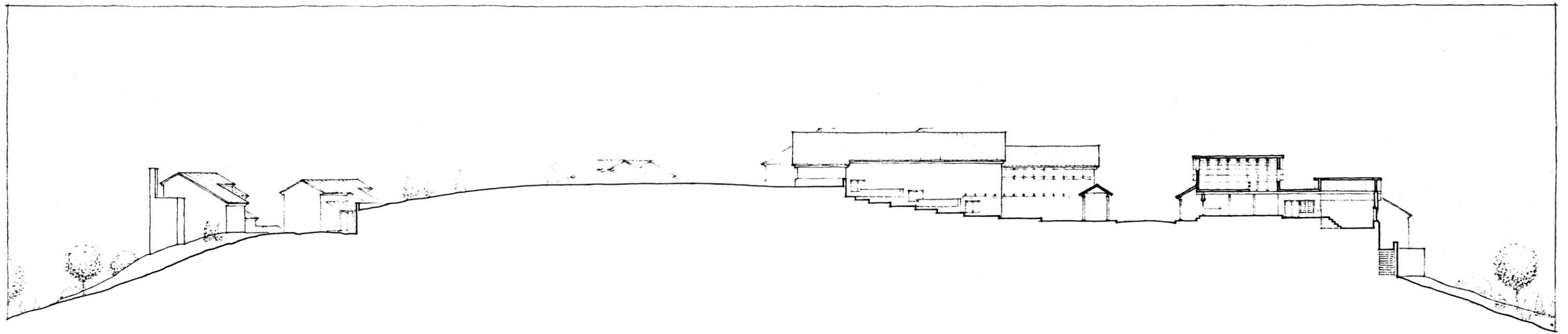
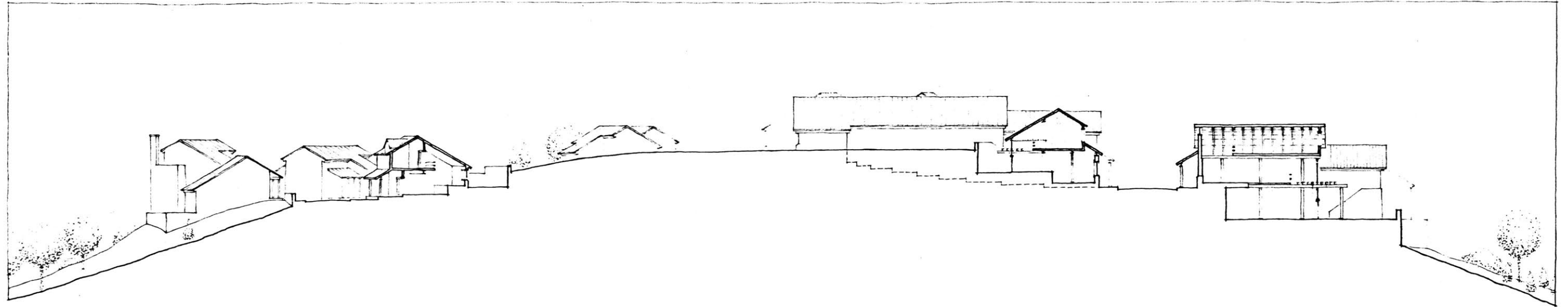




SITE  
SECTIONS

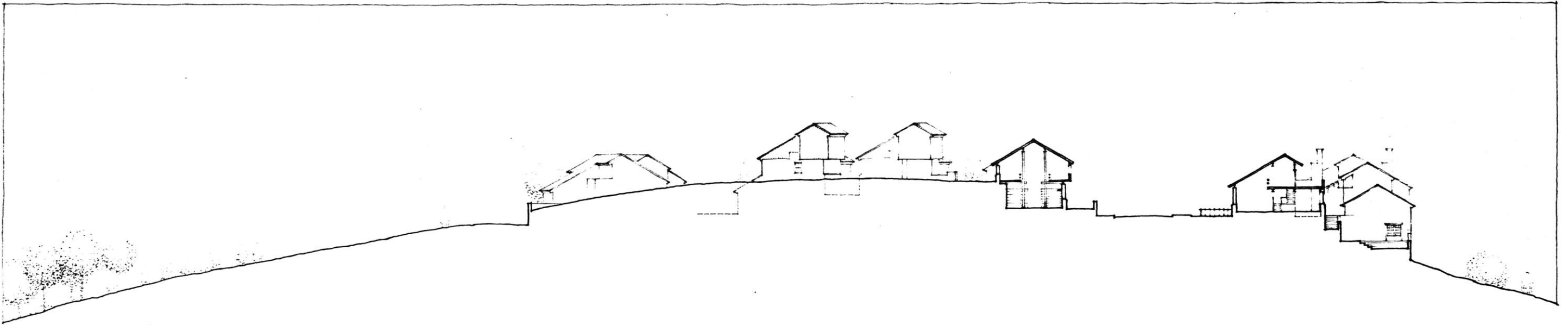
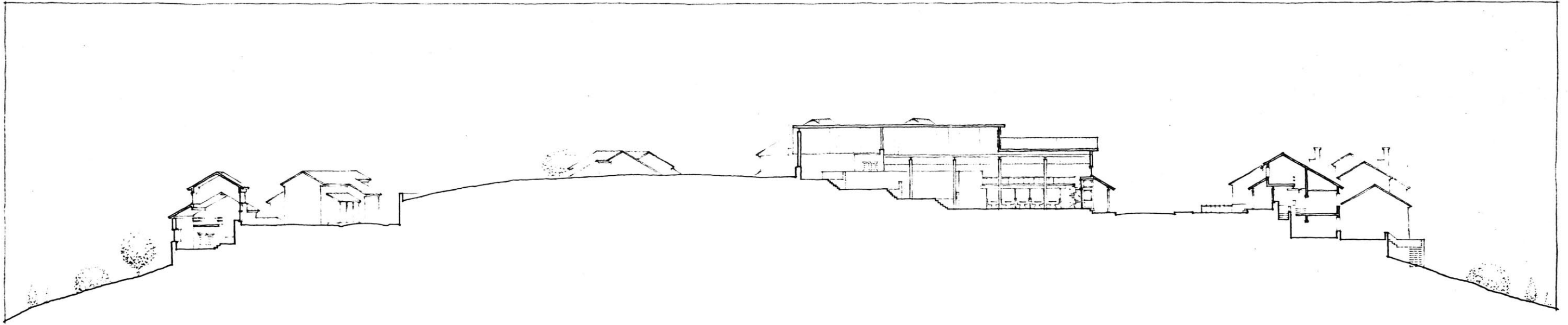






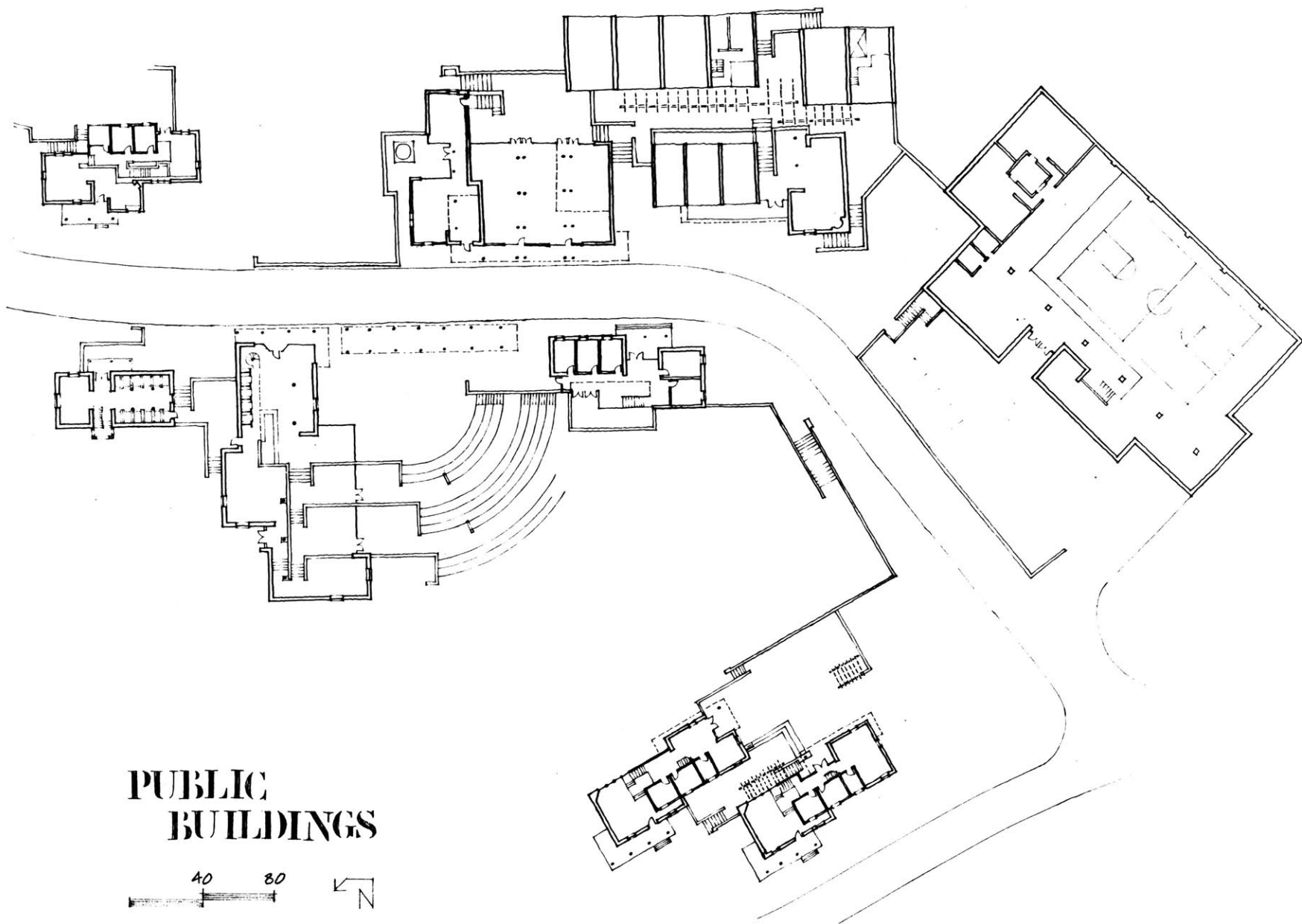






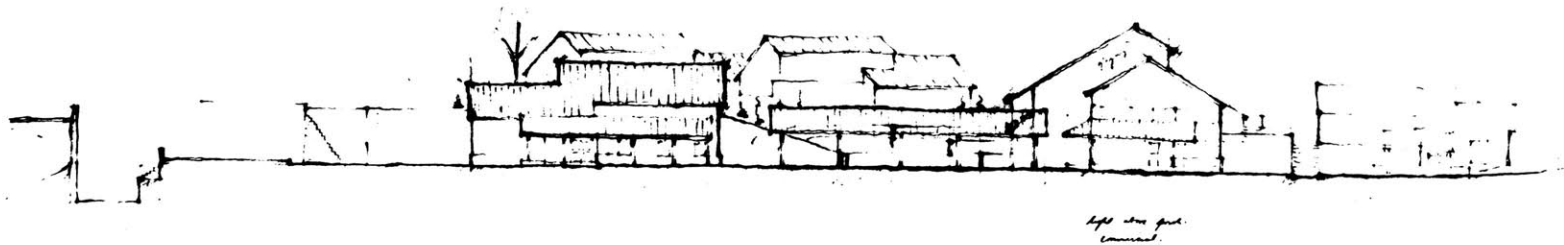
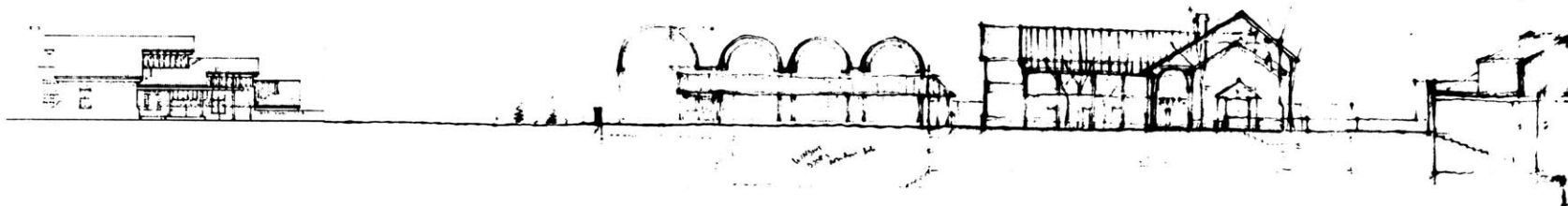






**PUBLIC  
BUILDINGS**

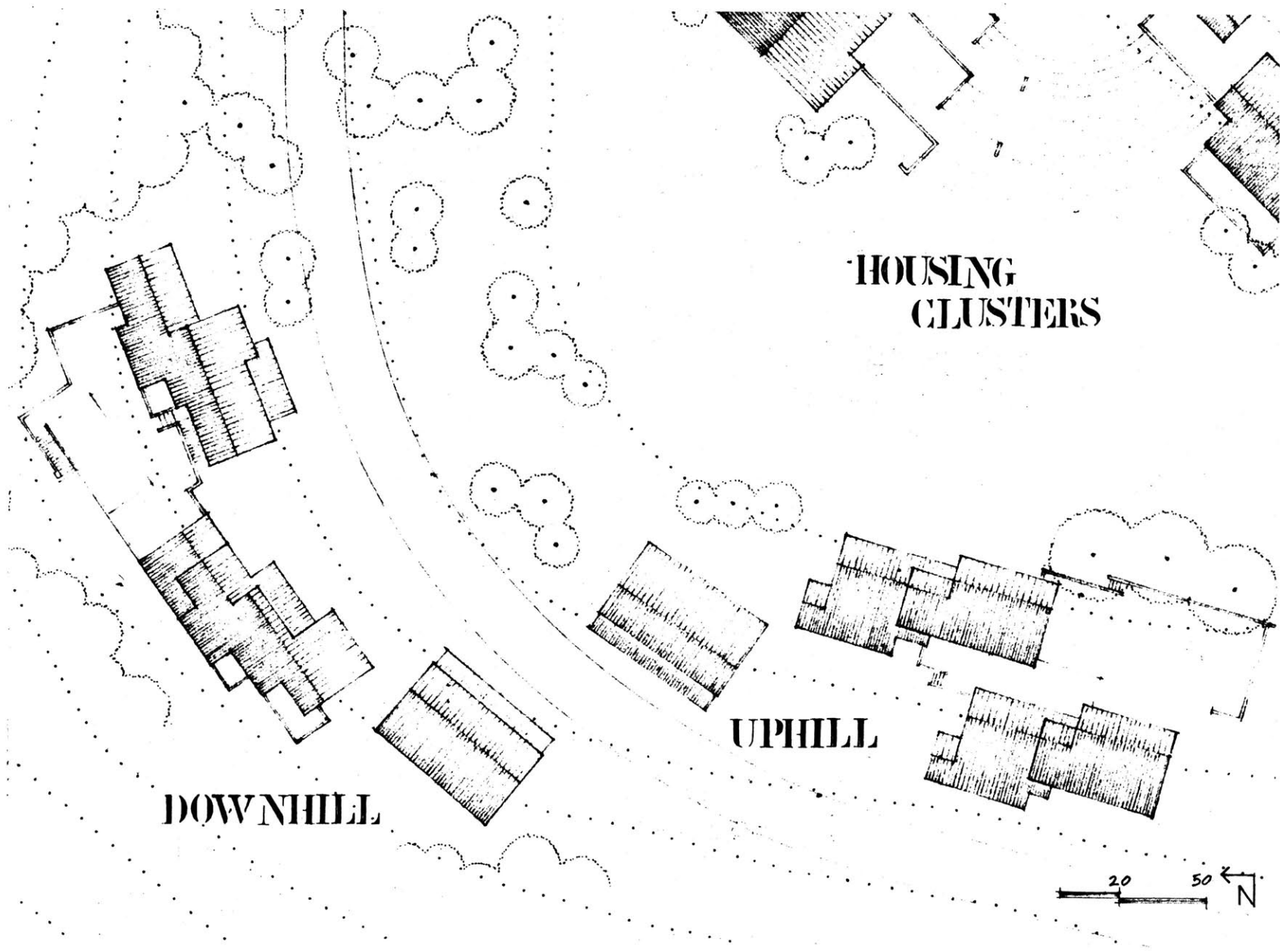




**MAIN STREET ELEVATIONS**







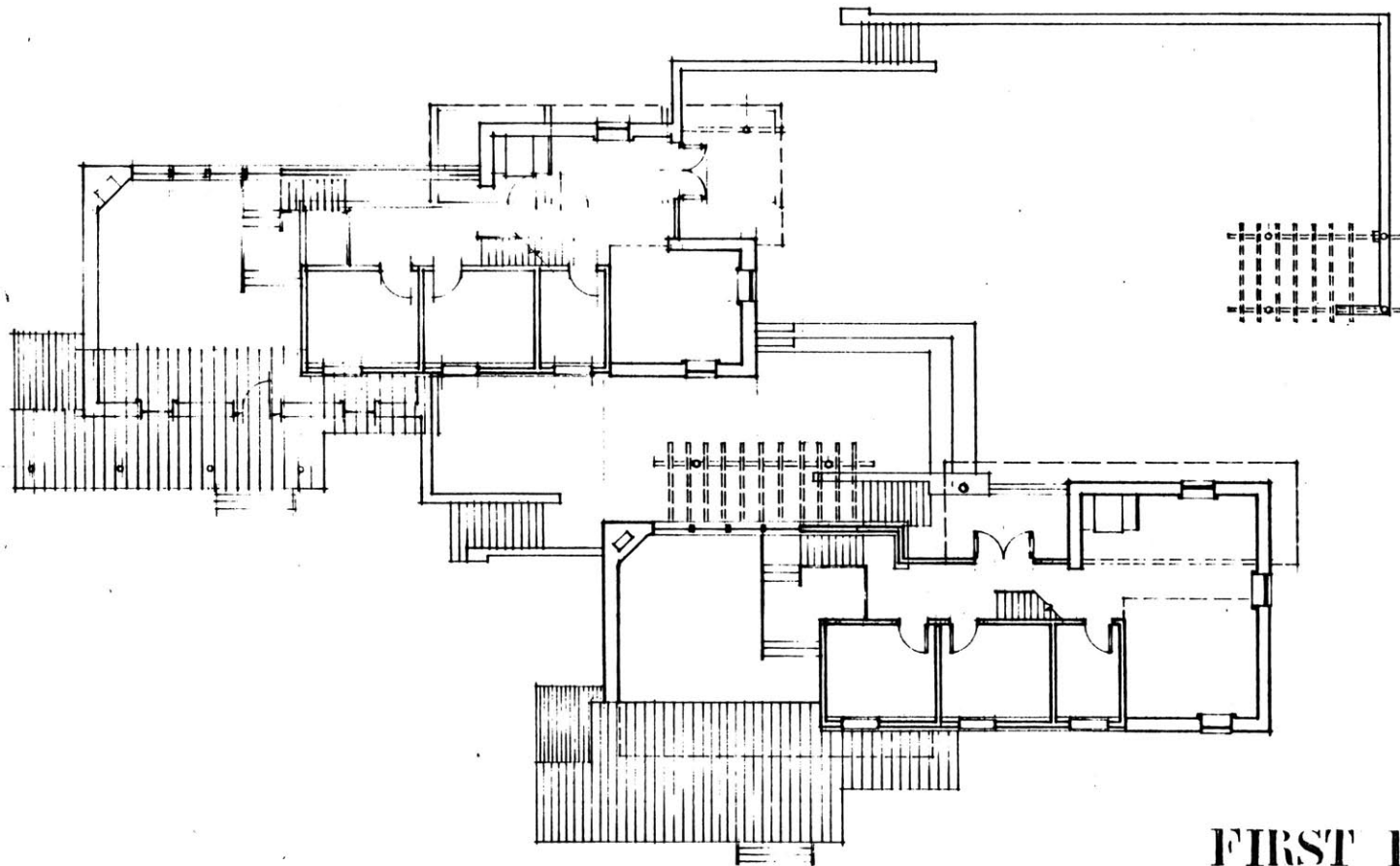
HOUSING  
CLUSTERS

DOWNHILL

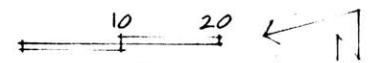
UPHILL



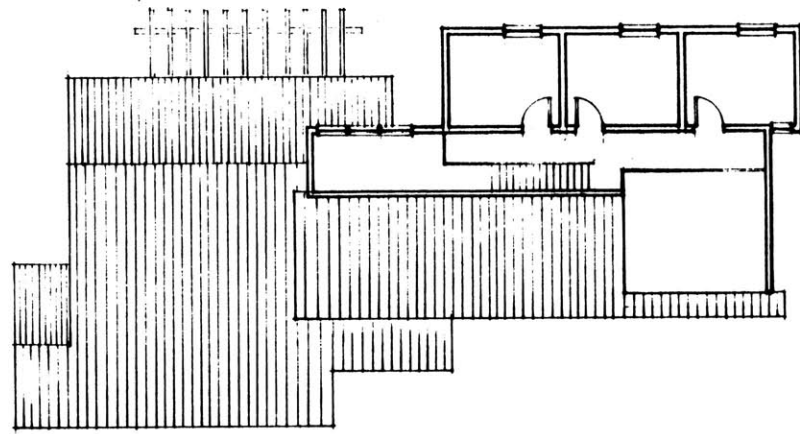
# UPHILL HOUSE CLUSTER



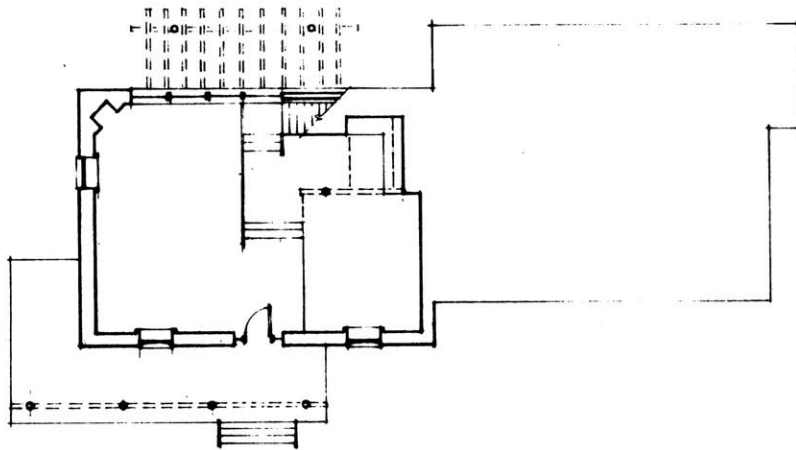
FIRST FLOOR



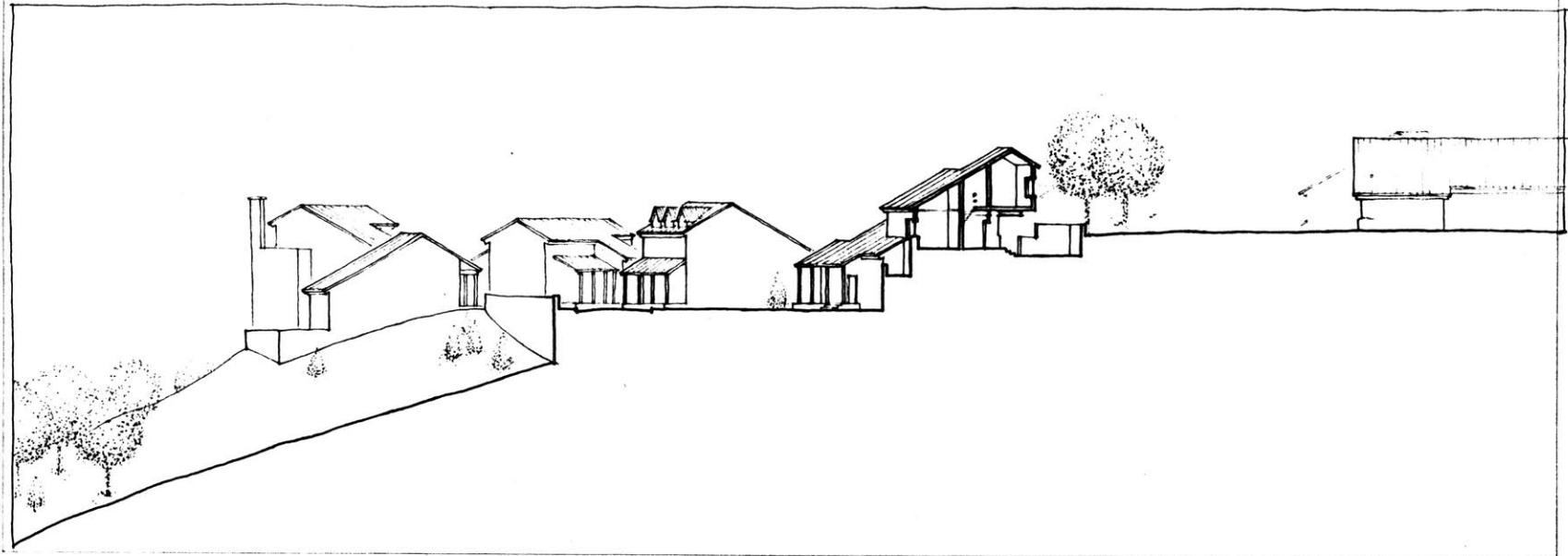
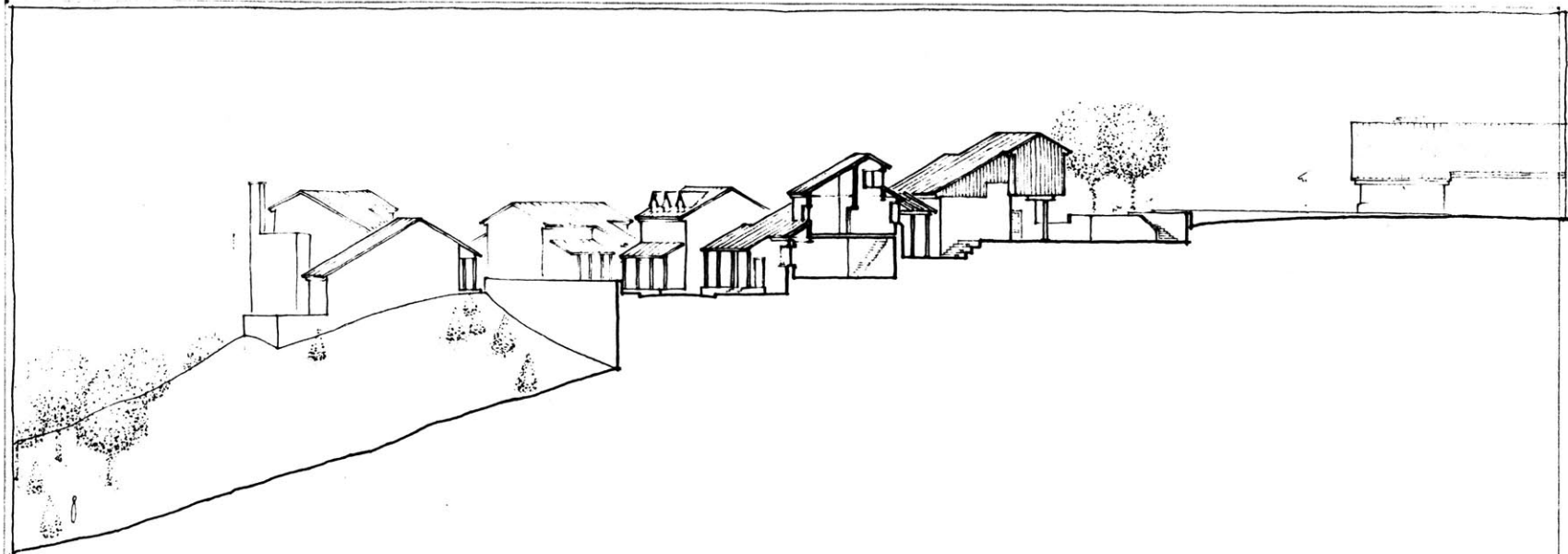


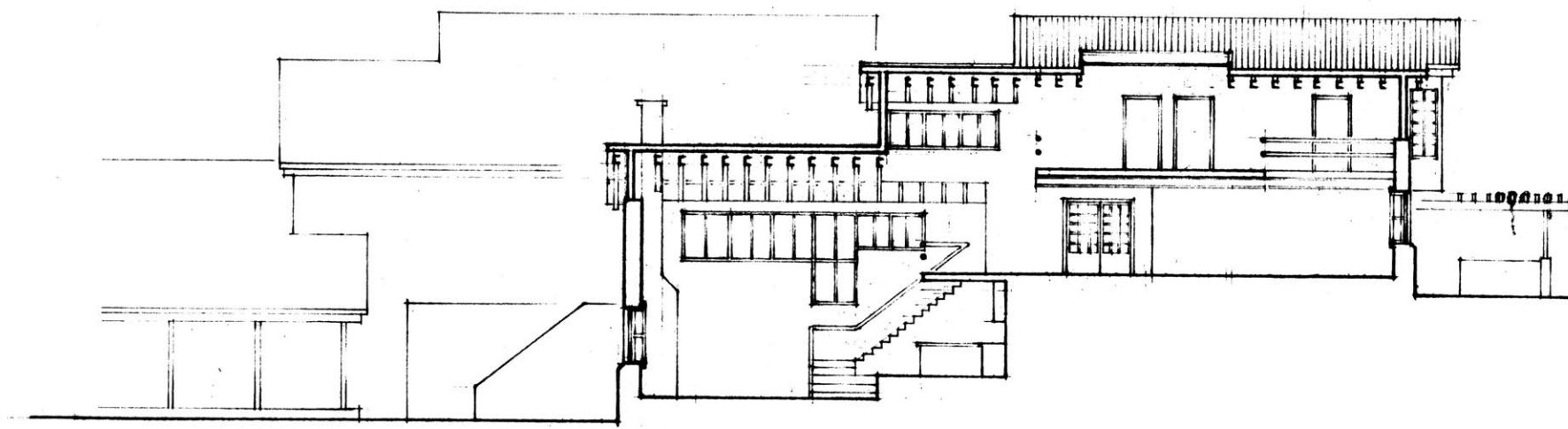
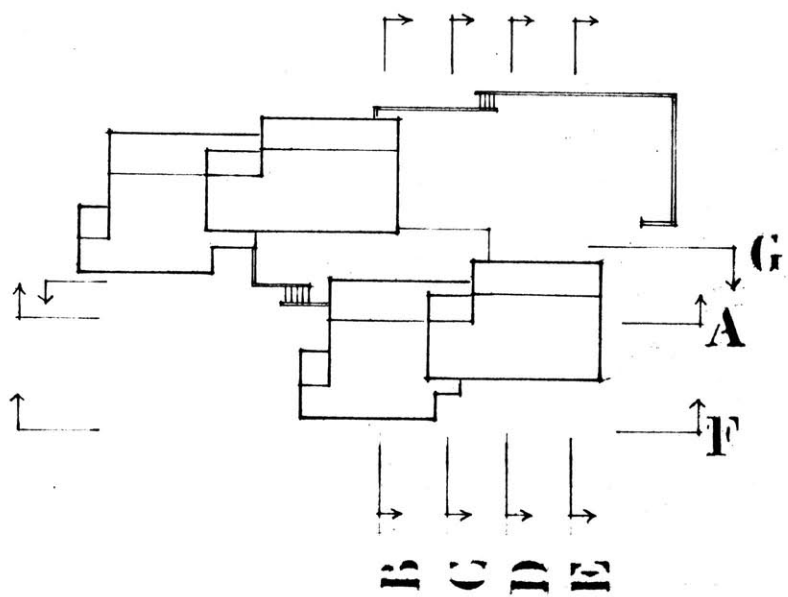


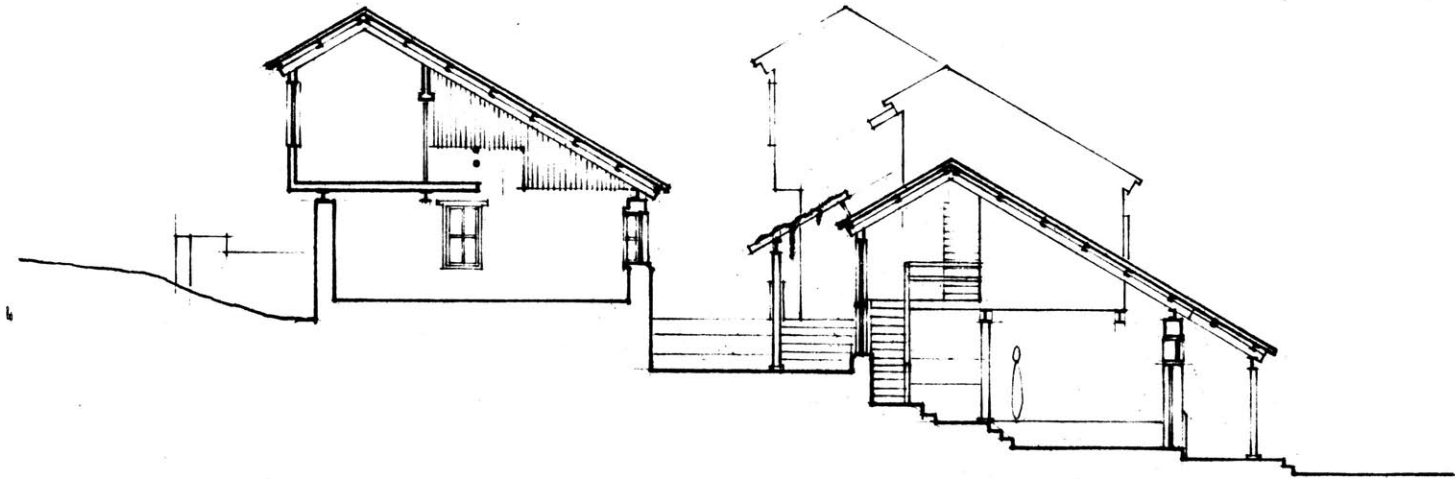
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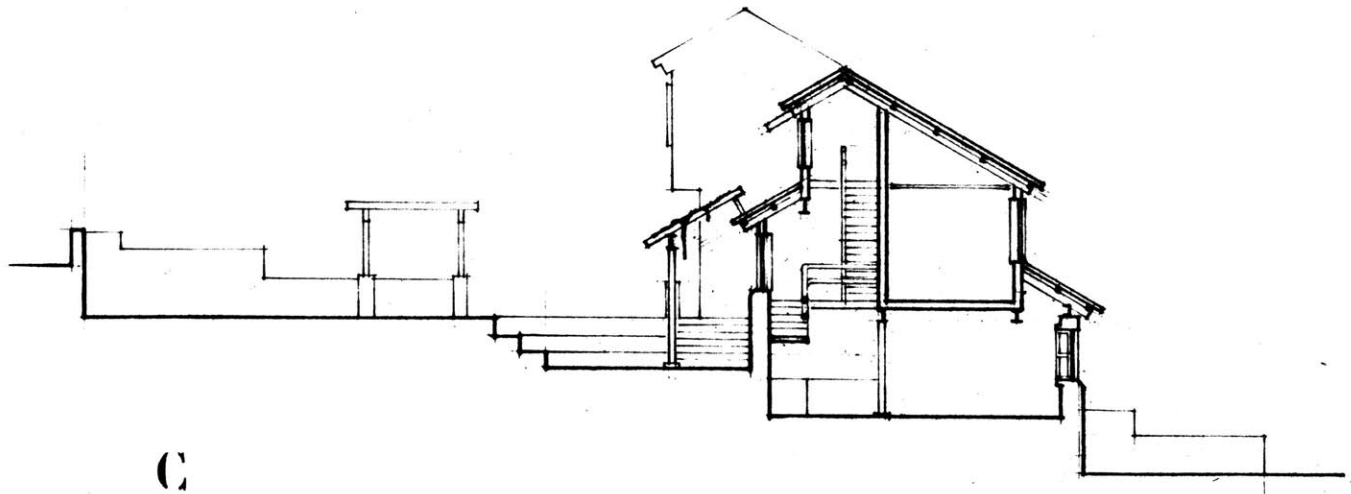
**GROUND FLOOR**



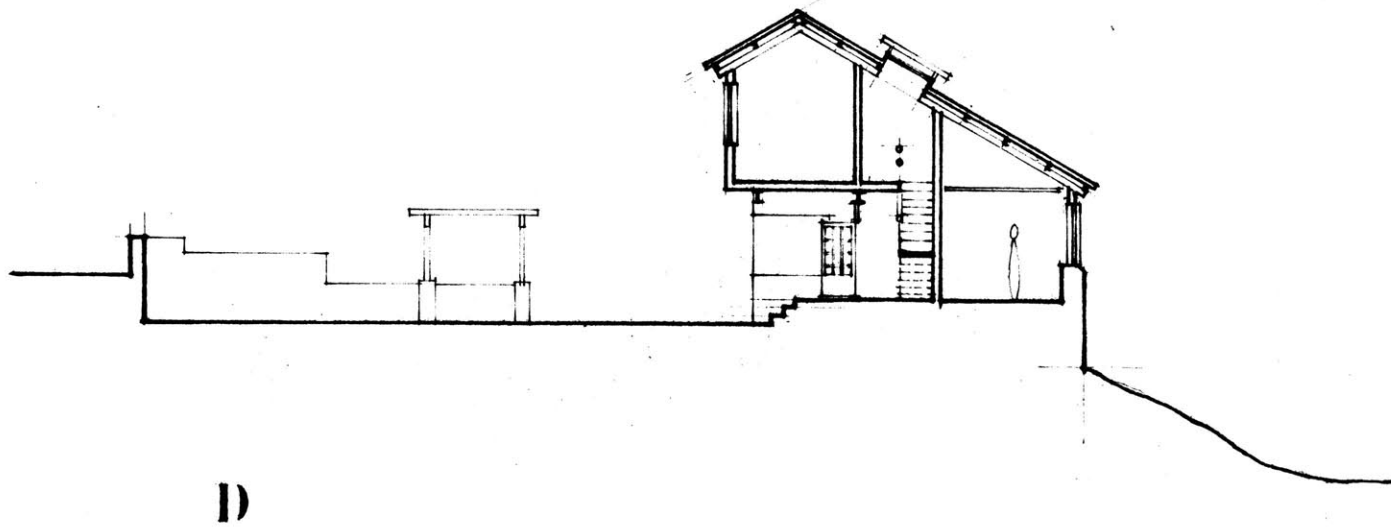




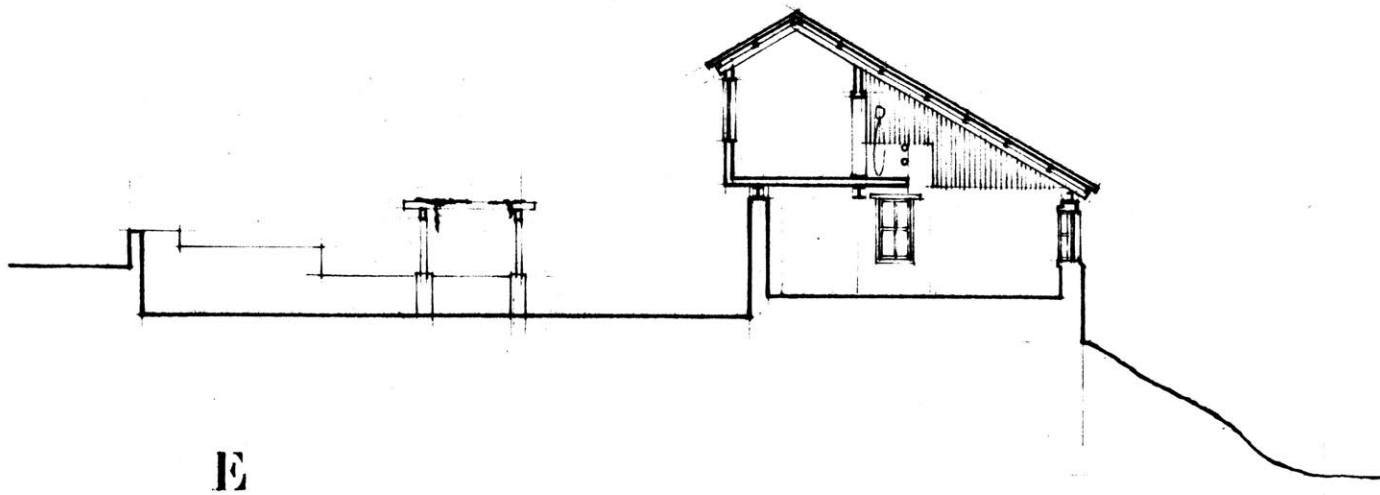
**B**



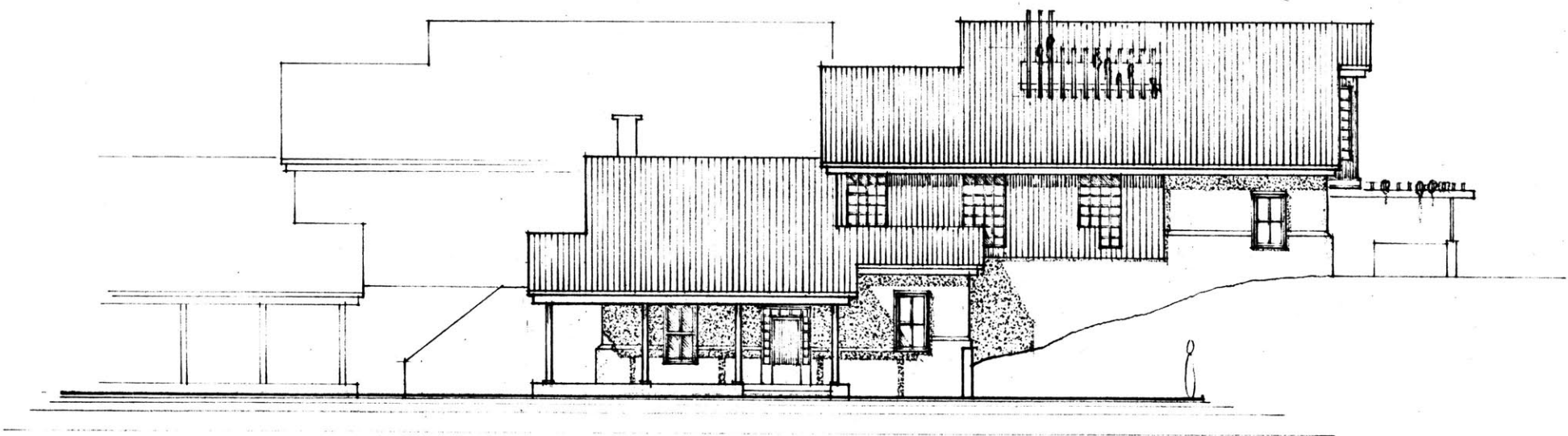
**C**



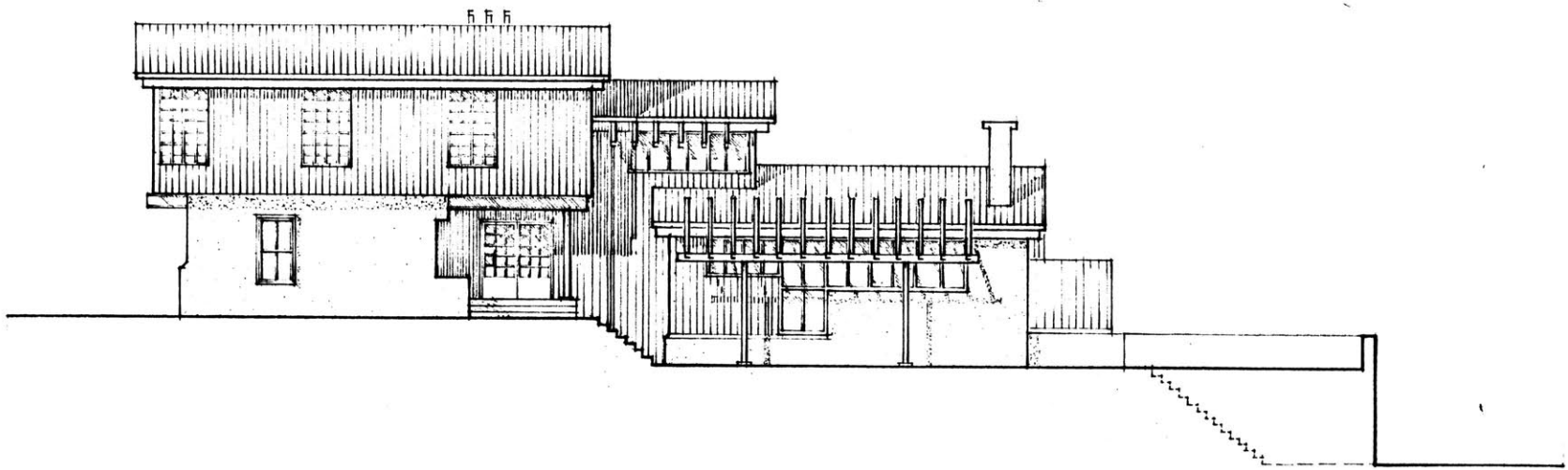
D



E

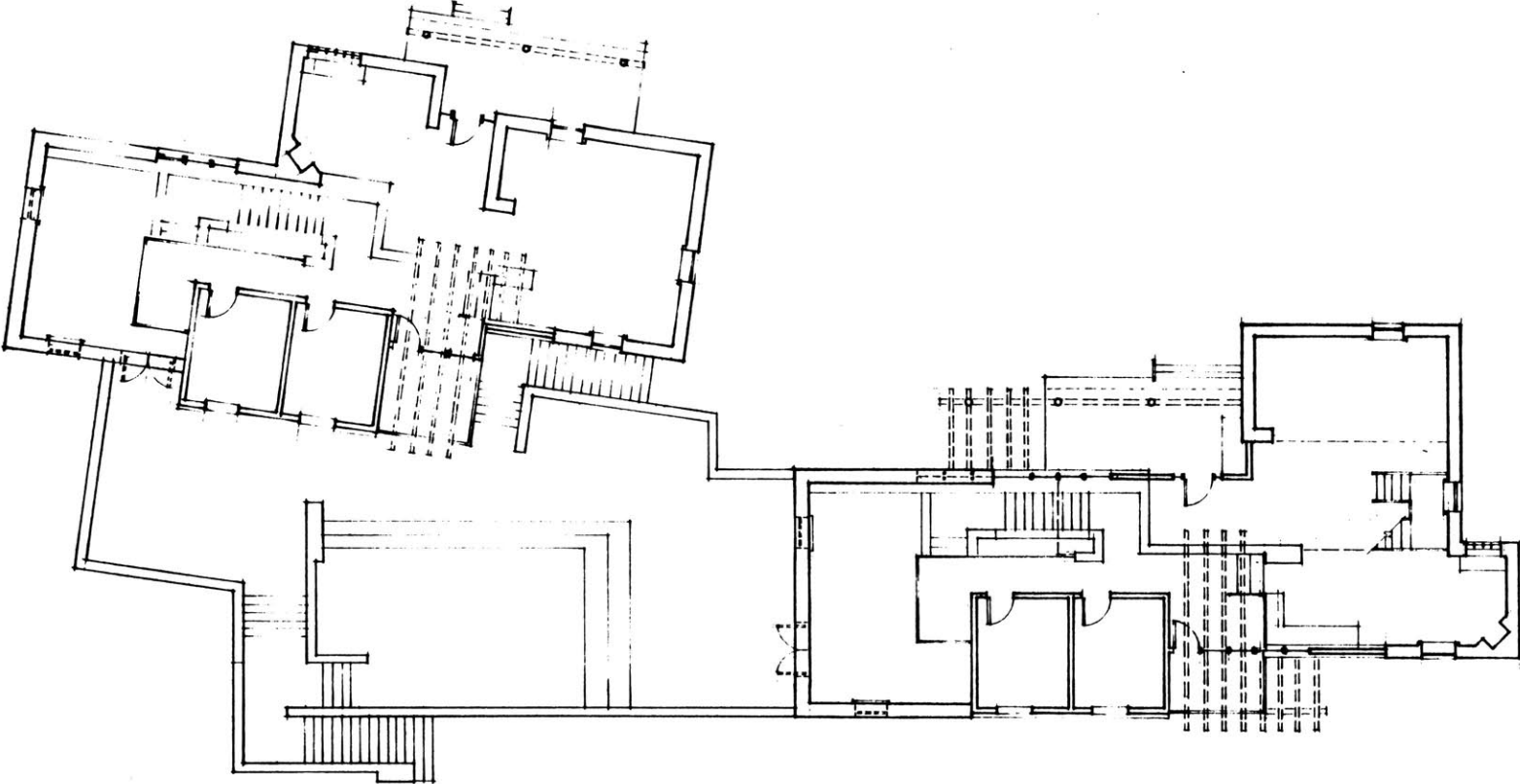


**F**

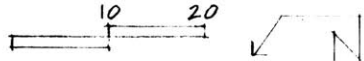


G

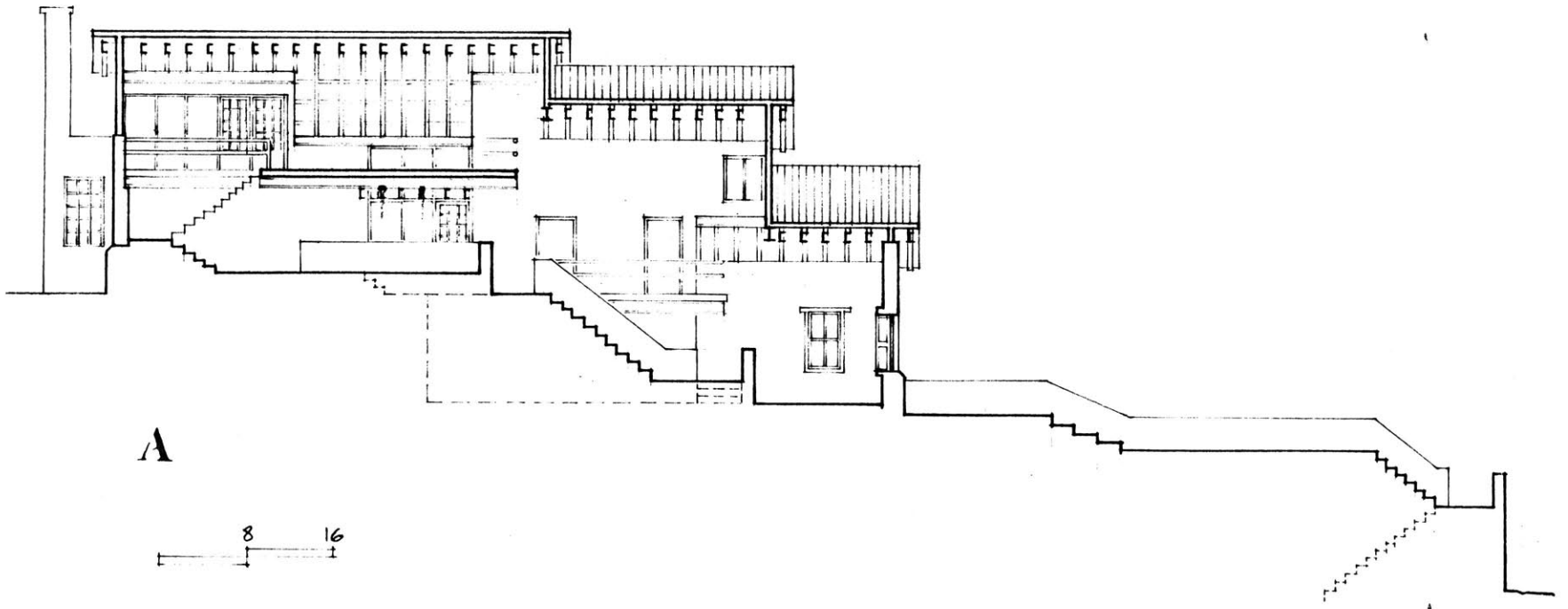
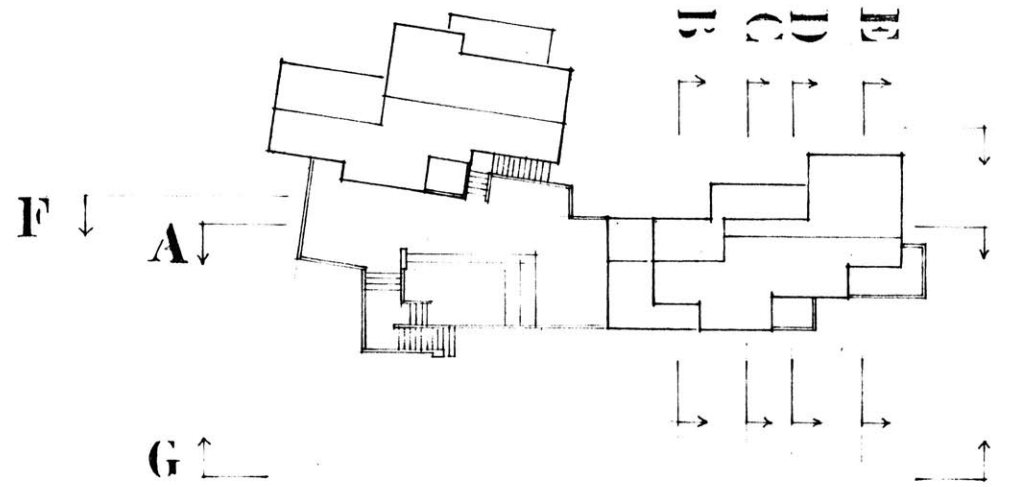
# DOWNHILL HOUSE CLUSTER

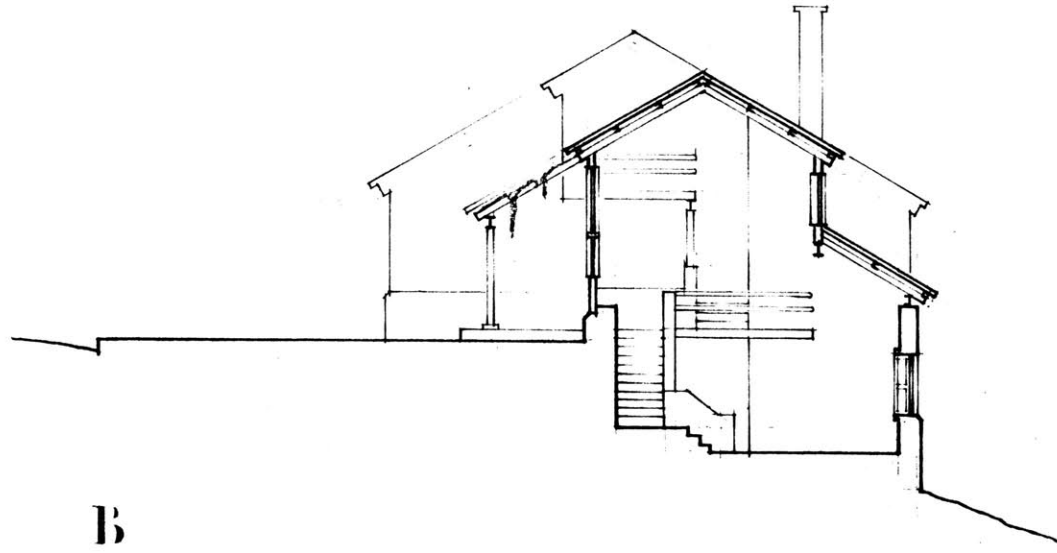


FIRST FLOOR

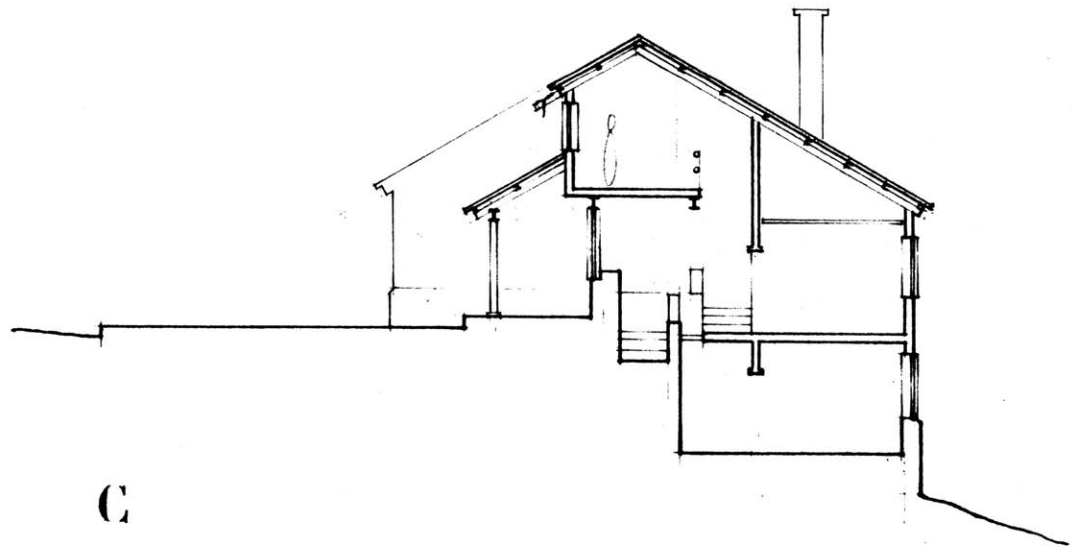




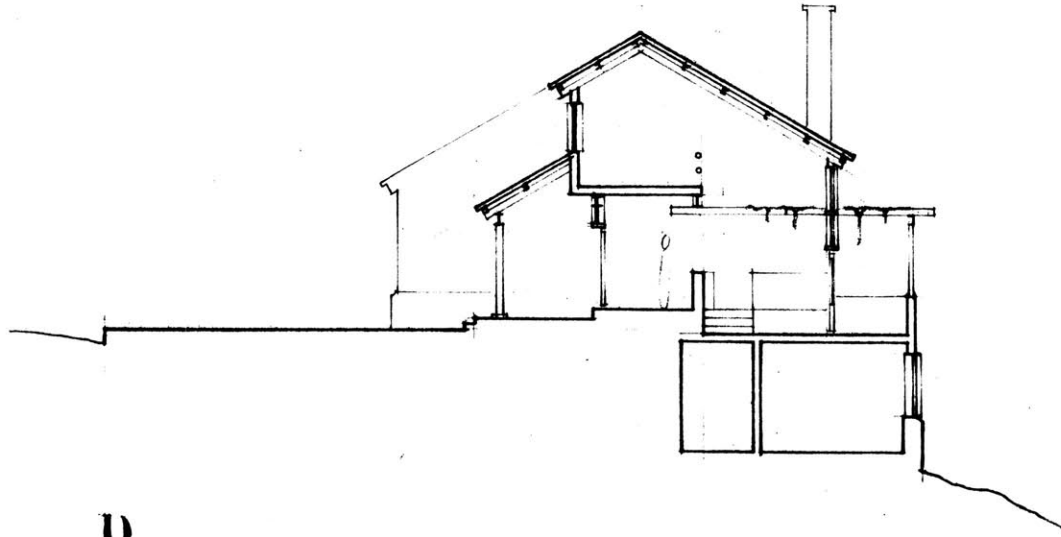




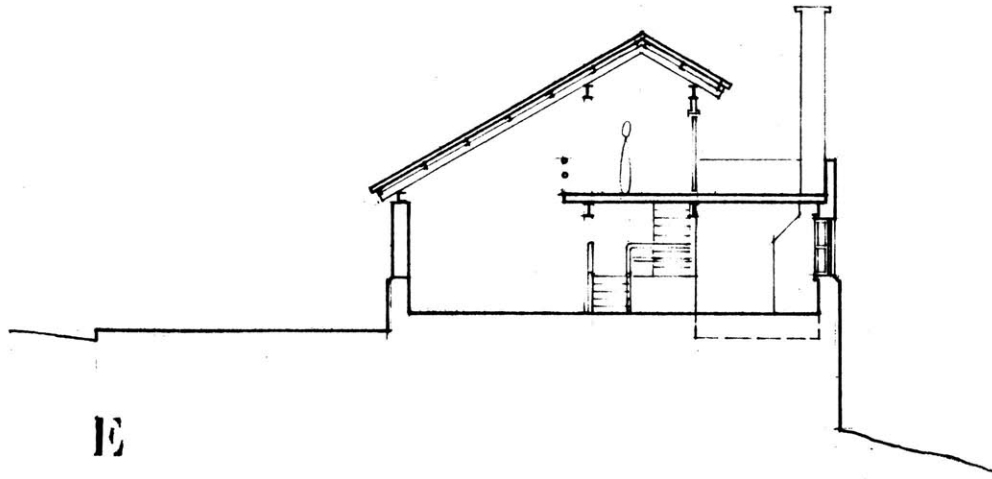
**B**



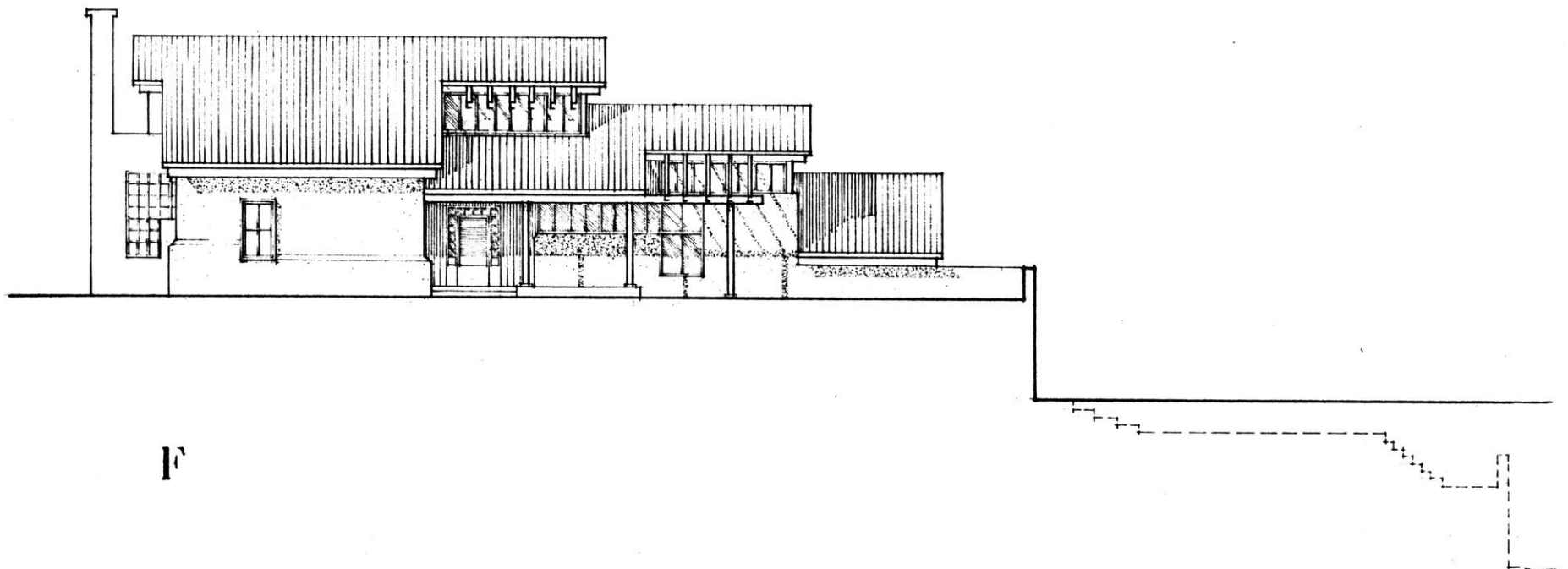
**C**



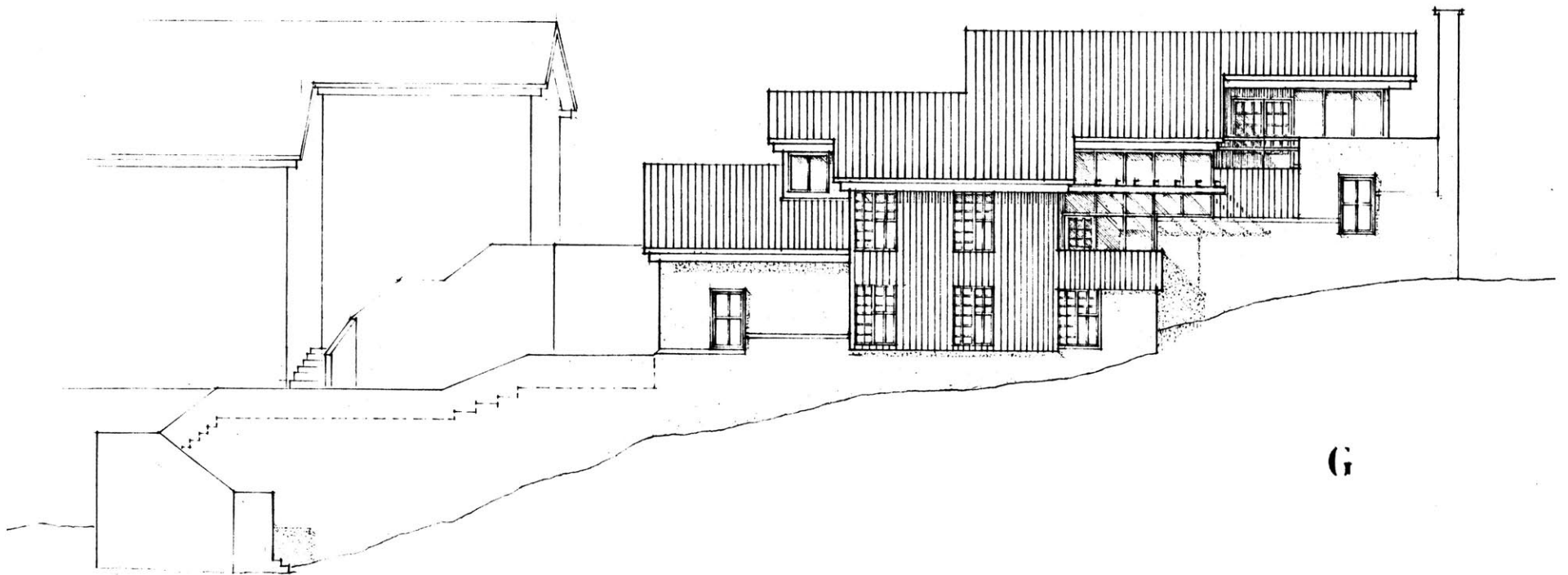
**D**



**E**



F



**G**



## CONCLUSION

The initial title of this thesis had been "Beyond the Threshold of a Diagram: the Generative Role of Building Materials." Over the course of the semester, the project and the attitudes underlying it evolved and clarified themselves to the point where the second clause was no longer appropriate.

The thesis proposal had outlined a particular scenario, based upon the development of a more continuous structural framework, which then provided a setting for the manipulation of building elements, such as masonry walls and piers, free-standing columns, and lighter infill. These elements would be assembled according to a grammar internal to the set, in a manner sympathetic to the program, topography, and orientation.

And yet, I was unable to do this. The materials and structural system proved to have little of the generative capacity ascribed to them by the earlier title, remaining inert and unsuggestive. Also, the idea of a controlling grammar was too abstract, and removed from anything in the context, to be of direct use. These components require larger scale decisions independent of the system to inform their deployment, and seem less useful as tools than the elements of character later identified: base, roof, corner, opening, etc., which determined the actual physiogomy of the buildings. In the second formulation, the materials and structure are seen as part of the continuum of the context, in image and meaning, and not treated independently, with an internal compositional system of their own.





The process documented in the sketches is one of adapting those aspects of the context which are sympathetic to the given program, such as the main street and front yard as organizational devices, and the porch as a characterizing element. In this way, the design is literally generated from an interpretation of the context. In fact, one could argue that not enough transformation occurred here, for many of the buildings were derived from archetypal plans in the Hill Country.

Although the original, rather paternalistic development of a house type for each age group of children was abandoned, the houses still correspond to their programs quite closely, allowing for little reinterpretation, or change over time. Perhaps the correlation between material definition and type of space is too explicit.

The spatial organization of the complex itself is derived in part from a reading of the landscape, and the system of natural places it manifests. The site plan of the original design, done at Rice, was object-like and complete. It became essentially a concatenation of pavilion buildings, which did not vary according to position or topography, and it fully occupied the plateau, preserving little of the latter as outdoor space. These criticisms were addressed in the second iteration of the design.

At the scale of the community, as in the houses, a figurative expression of function occurs, but here it seems more necessary. The careful distribution of activities, preceding the



physical form, was intended to be coherent, supportive, and evocative to the children dwelling there, and I still believe in the validity of that intent. Such a correspondence between social and spatial dimensions facilitates orientation and identification, and enables the buildings to act quietly in support of their occupants.

This semester has been spent attempting to attribute a definite character to the diagram developed previously, rendering it more substantial without losing the human accommodation upon which it was based.



LIST  
OF  
ILLUSTRATIONS

Page	Source	Subject
2	Drury Alexander, <u>Texas Homes of the Nineteenth Century</u> , p. 70.	Dietrich Rode Barn, Cherry Spring
57 L	Clovis Heimsath, <u>Pioneer Texas Buildings, A Geometry Lesson</u> , p. 58.	Peter Tatsch House, Fredericksburg
R	Alexander, p. 59.	Door detail, Fredericksburg
58	Alexander, p. 54.	Kammlach House, Fredericksburg
60	Alexander, p. 68.	Peter Lang House, Castell
62	Alexander, p. 80.	Norway Mills, Clifton
64	Willard Robinson, <u>Texas Public Buildings of the Nineteenth Century</u> , p. 69.	New Ulm, Austin County
66	Alexander, p. 205.	Sonnenthal House, Galveston
67	Alexander, p. 197.	John Wesley Mann House, Waco
68	Alexander, p. 69.	Dietrich Rode House, Cherry Spring
69	Alexander, p. 225.	Major George W. Littlefield House, Austin



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