PROJECTIVE ARCHITECTURE:

STUDIES TOWARD THE MEANING AND GENERATIVE LANGUAGE OF

ASSOCIATIVE BUILT FORM

by

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Projective Architecture:
Studies Toward the Meaning and Generative
Language of Associative Built Form

Andrés F. Mignucci-Giannoni

Projective architecture is an attitude toward design which stems from the
notion that architecture, form, and territorial definition must provide
the concrete physical framework for achieving collective association and
individual identification.

This thesis is an exploration of the language of projective architecture.
The philosophical ground of this attitude is presented through a series
of studies on observation and projection in the city of Old San Juan,
Puerto Rico. It is divided in three major parts, the general intention
being that the working process itself will serve as the tool for descri-
bing what projective architecture involves as an attitude.

The first part deals with the integral aspects of projective architecture:
association, use, form and built; concentrating on form as generated by
phenomenological forces called constants.

The second part is a series of observations in the context. These were done in four areas, each representing a different condition (as well as a different element) at the scale of the city. These were the public elements: street and plaza, and the private elements: block and unit.

The third part consists of the analysis of the structure and identity of the context based on the observation studies of part two and the subsequent projection in a site in the north section of the city, its program being housing with small scale commercial, services, and supporting activities.

Thesis Supervisor...............................
                              Maurice Smith
                    Professor of Architecture

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ABSTRACT

PREFACE

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                                 building

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                                 personal

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IV. PROJECTIVE ARCHITECTURE

      : Fourth Introduction: Beginning

GLOSSARY

LIST OF ILLUSTRATIONS

BIBLIOGRAPHY

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en especial a Gail Peters, a mis hermanos Alberto, Arnaldo y Antonio,
y a mis padres, sin quienes éste no hubiera sido posible. A ellos se
la dedico.

This thesis is an exploration of a language, an attitude toward design. Its essence being that a projection, an architectural intervention is the continuation of a context. It is not a continuation by repeating, mimicking, or copying the existing, but by and through an understanding of the principles, rules, and relationships embodied in it. In the same way that the existing serves as context/reference for projection, the pro-jection itself, once built, will become a reference for future projections. These projections are then seen as articulated physical frameworks, partial definitions or settings, which serve as built references/contexts for future inhabitation and intervention. It is both generative and additive, for every existing decision serves as reference for a future decision. Projective architecture is, therefore, contextual.

Seeing architecture as the making of built physical settings, it makes the distinction between the different controls that intervene, and the levels of intervention of each. It is not seen as 'made' by one individual or entity, but by many people at different levels. Each level is autonomous, each has its own rules and principles, and forces affecting and directing it. Each, however, serves as the setting for the next level of inter-vention. This is the basis of the balance between collective association and individual identification.
Projective architecture presupposes both.

PREFACE

The language then deals with those interventions which people inhabit directly, and where there is a balance between collective order and individual expression. This thesis deals specifically with housing (although aspects of the work are applicable to workplaces, collective buildings, etc.). It does not negate or contradict complete and singular collective/ processional buildings (such as churches, institutions, etc.).

This thesis is divided in three major parts:

> 1: projective architecture
> 2: observations and
> 3: analysis and projection.

The first explores the basic aspects of projective architecture: association, use, form, and built, providing the philosophical groundwork for the thesis. Association is meaning - the paramount goal of projective architecture. This, in terms of physical form, is translated into use. Form embodies both the physical definition and the principles (grammar) which support use. When form supports use, it is associative. Built is the physical realization of form and deals with the aspects of materials and processes of assemblage which make form possible.

In the second part are the observations within the context. These were done in four different sectors of the city of Old San Juan, Puerto Rico. These four areas represent the four basic elements of the city: plaza, street, block, and unit.

The third part is the analysis or interpretation of these
observations as related to the structure of form. The
projection, the intervention in a specific site in the
north part of the city, and the analysis are presented
according to their specific level of intervention. A
sketch problem using Ballaja', the abandoned military bar-
racks of the Spanish army, as a site explores the genera-
tion of a framework through public movement. The analysis
and projection explore the site at the level of the city,
of the tissue, support (building), unit (plan and facade)
and room.

1 PROJECTIVE ARCHITECTURE

Projective architecture is concerned with form in the
sense of its intrinsic capacity to convey and project
meaning and significance. Form can be supportive in
meaning. But form can also be contradictory, depend-
ing on how it is used, on how we interpret it, through
the values we attach to or add to it, and based on how
we have been taught to see and behave. This capacity
to convey meaning and significance is then dependent
on the interaction between people and form -
in other words: Use.

The way we use form depends on the associations which
that form holds for us, and in this process we are
thrown back on our experience - at the mercy, that is,
of the established patterns and systems of relation-
ships and values of the total world we are part of,
as well as that part of the world we are familiar with.

Architecture, however, sensitive to the needs, hopes,
and expectations of those it is supposed to serve,
must represent no authority, for authority no matter
who exerts it, contradicts the relevance of people
being referred to. Seen through a different eye and
in different situations, a form will evoke different
associations, new and changing meanings.

DECLARATION

If form is then to be a vehicle for meaning and significance,
it must allow a range of individual, as well as collective,
interpretations. It is this capacity to accept different but
supportive interpretations within the set of agreements and
system of relationships that gives people the opportunity to
exercise their individuality, the basis of identification.

The understanding of the 'structure', that is the system of
relationships among elements common to the different interpre-
tations, is the basis of the understanding of the whole, the
awareness of the outside world as related to oneself. It is
the structure that binds the individual parts into a coherent
whole. The structure is therefore the generator of the con-
crete physical setting in which the particular differences
take place.

This concrete physical setting, if we believe in an architecture
which is relevant to people, must deal with those things which
are part of our day to day living. We cannot accept architec-
ture as a luxury reserved only for those able to pay for it or
for those activities so extraordinary that they don't form part
of our daily life.

Architecture, and therefore form, must be the built (concrete,
physical) expression of our daily existance through use. In this
way, form is use and use is form. This reciprocity being the
basis of projective architecture.

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Projective architecture is based on the notion that
architecture provides, or should provide, the concrete
physical framework for achieving individual identifi-
cation and collective association.

Association involves the experience of meanings as
triggered by a stimulus.
This stimulus may be a person
            , a thing
            , a place, or in the case of architecture
            , physical definition.
Architecture is concerned with how physical form, and
its spatial resultant, territory, supports and
reinforces particular associations or meanings.

Man's association with his environment starts with
what serves as the comprehensive stage for everyday
life,
his immediate context,
the field in which the actions of his daily existance
take place. Every person has long associations with
his town or city and these associations are full of
memories and meanings.

We are not simply observers, detached from the play
called life
, but are ourselves part of it
, on the stage with other participants.
However, it is not other participants at a given
time alone. The stage is constantly being transformed
by people and forces, social and physical, over many
generations.
While there might be certain conditions which are
stable for some time,
in detail it is ever changing.
There is no end
, no final result
, only a continuous
and layered
succession of phases.

Nothing then is experienced by itself,
but always in relation to its surroundings
and the forces , internal and external
                , physiological and psychological
                , social and cultural
                , manmade and natural , past and present
which shape such experience.

Association, then, implies an understanding of the forces affecting our experience. The meaning or understanding of the forces involved is manifested in the way we interpret such stimuli.
When dealing with form and physical definition, as a stimuli, such interpretation is referred to as use.

Tradition has the force of a law honored by everyone through collective assent. It is thus accepted and obeyed, since respect for tradition gives collective control, which acts as a discipline.

Amos Rapoport
House Form and Culture

Use, not in the exclusive and limited sense of 'function', but rather in the more inclusive sense, physical and mental, of the interaction between man and form.

When the understanding of particular meanings or associations is shared it becomes collective. Collective association is the result of the collaboration of many people over many generations. It is the result of the interaction between physical form and users influenced by social forces, such as culture, history, politics, and economics; natural forces, such as topography and climate, as well as physical forces, such as the nature of materials and the processes governing their assemblage. It is a set of agreements.

It is far more important that we thoroughly understand the idea of binding observance itself, which is the alpha and omega of all sociology, but which is not easy to see and even when once seen tends to escape from our intellect. I emphasize the fact that its two most marked characteristics are these: 1: that the binding social observances, whatever be its origin, does not present itself to us as something that depends upon our individual adherence, it is there, we are obliged to reckon with it, and hence it exercises its coercion on us, since the simple fact that we have to reckon with it, whether we want to or not, is already coercion; 2: contrarywise, at any moment we can resort to it as to an authority, a power to which we can look for support.

Jose Ortega y Gasset
Man and People

The system of relationships embodied in a set of
collective agreements is called a model or theme.
It is the model, this language of relationships,
which binds the meaning fragments together into a
coherent, understood whole.

However, for different people, under different
conditions and circumstances, a form will evoke
different interpretations, new and changing mean-
ings. Architecture, and therefore form, must
have the capacity to allow and accept a range of
interpretations and expressions. It is precisely
this range that makes possible the expression of
our individuality. So before one begins to use
form for the communication of a concrete associa-
tion one should learn the greatest possible variety
of options inherent in the relationships of the
forms acting at that particular intervention.

When speaking in terms of a theme or model, these
expressions of our individuality take the form of
variants. The model then serves as a framework for
the variants to take place.
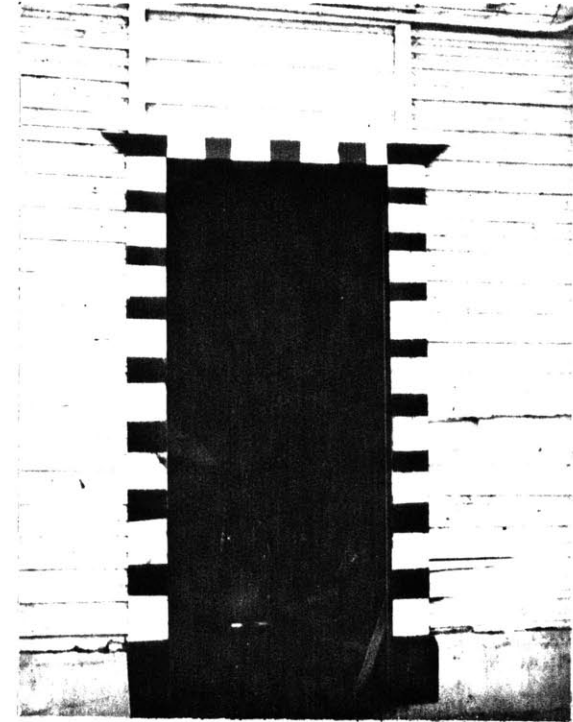
If the form is designed for an optimum
diversity of uses
, it will itself bring a great many more
uses to light
without in any way
inhibiting the original
, primary function it was intended to
serve.

                                    Herman Herzberger

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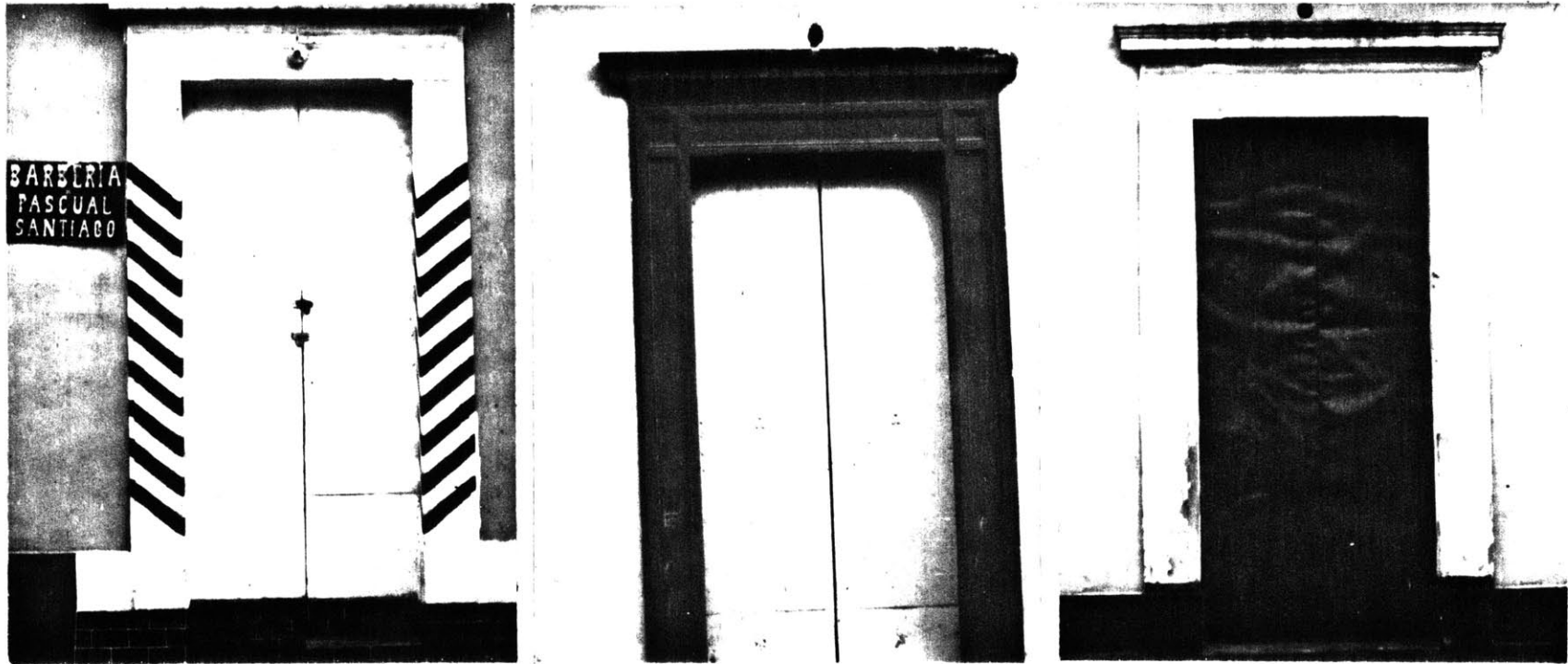
In languages...verbal, visual, physical, we match the
flux of visual experiences with image-cliches, stereo-
types of one kind or another, according to how we have
been taught to see. (inherited from our cultural
environment)
And having matched the data of experience with our
abstractions (associations) visual, physical, or verbal,
we manipulate those associations, with or without
reference to the data (form). We exercise options.
When the data (form) and our abstractions (associations)
correspond...we feel at home in what we regard as our
world. We feel we belong.   (form is then associative)
The language (model) then stems from the relation between
form and the structure of our conciousness.

Gyorgy Kepes
The Language of Vision

Environmental images are the result of a two-way
process between the observer and his environment.
The environment suggests distinctions and relations,
and the observer - with great adaptability and in
the light of his own purposes - selects, organizes,
and endows with meaning what he sees. The image
so developed now limits and emphasizes what is seen,
while the image itself is being tested against the
filtered perceptual input in a constant interacting
process. Thus the image of a given reality may vary
significantly between different observers.

Kevin Lynch
The Image of the City

True association presupposes both the collective
understanding as well as individual identification.
The challenge of architecture lies in the ability
to correlate physical form and territorial definition
with the collective and individual goals, objectives,
needs and expectations of those we are supposed to
serve. This balance, this reciprocity between form and
our associations, is the most crucial goal of architec-
ture. It will be this balance which will enable us,
as architects, to set options rather than impose solu-
tions.

theme and variation

Uses, activities take place in territories. Ter-
ritories serve as the setting in which use, the
interpretation of our associations through the in-
teraction with form, occur. Territories are then
defined, articulated, and supported by form. Being
built is the precondition for form and territory to
become concrete realities.
Use by way of the built———→ to form
Form, by way of use ————→ to territory
Territory, by way of form———→ to use.
In this way use, built, form and territory are aspects
of the same totality, association. They are indivis-
ible, for one cannot exist without the other.

In order to allow a number of different but supportive
interpretations (associations), territories must accomo-
date a range of uses. This does not mean 'flexibility',
as dependent on neutrality of form and lack of definition
(in which everything is supposed to be possible and
nothing is) - but rather on directed definition where the
projected forms serve as clues, references, or physical
frameworks for the interpretations or uses to occur.

Physical frameworks are not neutral, they don't
suffer from lack of definition. In fact, they are
dependent on the right amount of definition: the
right amount for the form to act as a clue or refer-
ence, and the right amount for the territory to
allow a range of interpretations. They cannot be
underdefined for the form won't be able to trigger
a stimulus, and they cannot be overdefined for it
will become too specific; hindering all other possi-
ble interpretations. Form and territory, if they
are to be responsive and supportive with respect to
use, must be pluralistic and inclusive,
rather than singular and exclusive.

A thing, exclusively made for one purpose,
suppresses the individual because it tells
him exactly how it is to be used.
If the object provokes a person to deter-
mine in what way he wants to use it,
it will strengthen his self identity.
Merely the act of discovery elicits greater
self-awareness.
Therefore a form must be interpretable-
in the sense that it must be conditioned
to play a changing role.
It must be made in such a way that the
implications are posed beforehand
as hidden possibilities, evocative
but not openly stated.
Everything must be formed so that one can
make it relevant to himself according to
his own nature,
with adequate implications for everyone.
In this sense the building acts as a
framework to be filled in
by everyone
according to his own prediction.

                    Herman Herzberger

Form is the result of the interaction between
external and internal forces. Every force acts
in a medium, exists in a field. Any process
induced by forces makes sense only in reference
to its surroundings, as an interaction between
the forces and the medium in which they act.

These forces are the Structure,
the set of agreements and system of relationships
and values about use, territorial control, and
physical organization which generate the identity
of form.
Identity
is, then, the character of form,
and Structure, the formal properties of a system of
relationships.

Form is generated through three basic sets of
relationships:
1: those that come from phenomenological forces or
   'constancies'.
2: those informed by the context.
3: those that come from the nature of materials
   and their processes.

FORM

```
1:    Constancies=
(A) Natural/Landscape
      1:   forces in relation to      a: continuity
           physical elements          b: territorial zones
                                       c: zones of exchange
                                       d: reciprocity
                                       e: horizontal generation


      2:   cosmic forces
           _____ course of the sun   f: orientation
                  cardinal points      g: direction
                  prevailing winds


      3:   light                       h: light


      4:   temporal rhythms            i: change
                     time              j: additive quality
           _____ seasons


(B) Man-made Place                     k: containment



2:    Context
(A) History                            l: character of elements
    Culture                            m: patterns of use
    Tradition                          n: nature of assemblage

(B) Climate
    Topography

(C) Local Materials
    Building Processes
```

3:    Nature of Materials and Processes
      (A) Type of Material   o: each material with
                                                 its own process of
      (B) Levels of Permanency   assemblage contri-
                                                 butes supportively
                                                 to the generation
                                                 of the spatial
                                                 territory.
                                              p: growth and change
                                              q: additive assemblage

Form encourages or hinders particular ranges of

uses and associations.

An understanding of the associative behavior of

form, then, permits the selection, assemblage,

and deployment of built-definitions to support

use intentions.

The intrinsic behavior of particular definitions

is (considered) constant and predictable.

An understanding of the structure of form

behavior must begin with the order from .which

form is generated.

on additive and generative growth

How do things grow?

They always come from something,

they are not created.

They are continuous with their source

, they grow through movement

, they grow in certain fluid

, non mechanical but

generative ways.

Form making is never finished

but continued

to either expand ever outwardly

          (expansion to a field)

or to divide and change internally.

In this way, buildings grow from the existing

, through movement

to the articulation of such movement

          , through the partial

definition of parts reinforcing its direction

          , and from there

continued growth

into the three-dimensional world

of the built environment.

THE QUALITY OF LIFE IS JUST LIKE THAT: IT CANNOT
BE MADE, BUT ONLY GENERATED.

When a thing is made, it has the will of the maker
in it. But when it is generated, it is generated,
freely, by the operation of egoless rules, acting
on the reality of the situation, and giving birth
of their own accord...
The brush stroke becomes beautiful, when it is
visible only as the end product of a process__when
the force of the process takes over the cramped
will of the maker. The maker lets go of his will,
and lets the process take over.
And just so, any thing which lives can only be
achieved as the end product of a process, whose
force takes over and replaces the willful act of
creation.

                    Christopher Alexander

Built form is then generated from a natural order

, existing in the landscape   (or field)

, through movement   (access)

, from the context   (site)

This idea suggests a greater relatedness and
harmony between people

                , physical objects

                , society

                , institutions, and

                the unbuilt world.
It is then possible to establish and explore the
intrinsic nature of things
(form definitions, elements and resultant territories)
and rules for their behavior so that the new generated
environment will be continuous with such natural order.

These rules (constants), rather than inflexible
principles, are vocabularies of building,
which are employed to generate variable and responsive
environments as positive extensions from, and appropriate
to the context.

Through these principles we can extend our understanding
of the lateral transformations of form,
the nature of growth and change,
of territorial definition,
of materials and their processes, and of
natural systems,
to the way in which
the generated form   (movement and elements, and
                          their further movement (growth))
support a range of
associations reinforcing
particular intentions regarding use.

The logical conclusion of additive growth
(expanding to a field),
is that the growth of the singular affects the collective
form. All expressions of form making are relational
in that an action / form results in other action and form
responses. As a system of relativity we can , then ,
identify a vocabulary of relational responses and dichotomy
limits (polar opposites).

(The behavioral range in a form transformation is defined
 through the identification of the particular polar
 opposites encompassing such transformation.)

Partial vocabulary of relational responses
as identified through their dichotomy limits,
                    the polar opposites they encompass.

1: continuous   and   intermittant structure
    continuity   and   seperation (discontinuity)

2: reciprocity   and   adjacency

3: endotopic   and   exotopic form

4: containment   and   openness

5: direction   and   focus

6: partial definition   and   completion

7: collage   and   subdivision

Forms and forces interact in a field. External forces
are those outside the form itself which affect and
inform its behavior and character. These, in general,
are particular to the field (context, setting) in which
form acts. They might be natural (eg., climate, topo-
graphy, orientation) or man-made (history, culture,
socio-political forces, economy). External forces act
from the outside in. On the other hand, internal forces,
the intrinsic nature characteristic of a particular fam-
ily of form and the dynamic tendency of this intrinsic
nature to integrate the impacts of the environment, act
within their specific frames of reference. In terms of
the external world, internal forces work from the inside
out. External and internal forces (as manifested through
the transformations of form) are constantly informing,
defining, and re-defining one another.

External forces, although particular to the context, also
have their intrinsic nature and behavior. Of physical
external forces, perhaps two of the most crucial in terms
of form are light and horizontal generation. Horizontal
generation, the essence of topography, generates the use
surface. Consequently, terracing gives us maximum asso-
ciation. Light is what allows visual perception. Light
as a force (in its range of types and manifestations)
reinforces territory.
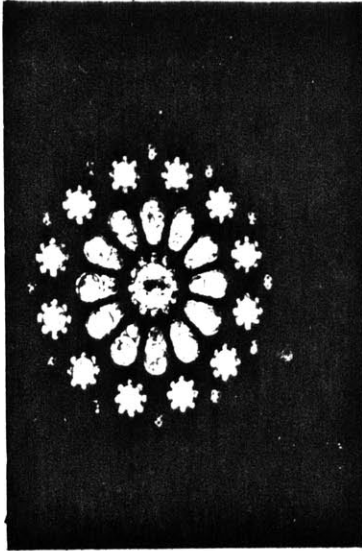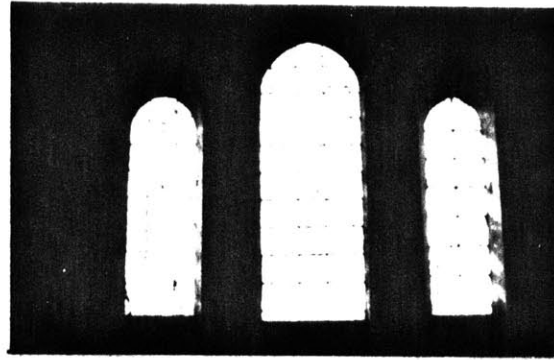
1 built light........2 lineal framework....................................

from

(light equivalent of form family transformation

_reverse___ _ _ _ _ _ _ _ _ _ _ from continuous surface to framework)
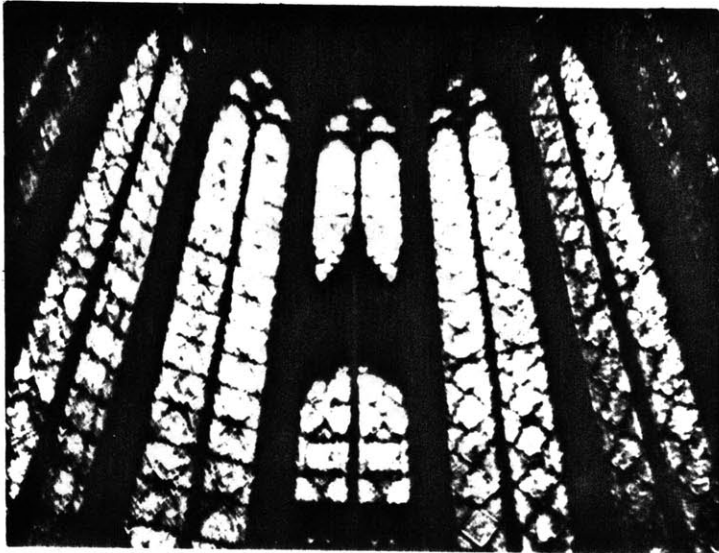
.7. light screen .... to .4. 3-d screen

LIGHT

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1.

In nature, terracing, the incremental displacement
of horizontal surfaces, was the consequence of the
movement of water. Through time, man has used
terracing in an attempt to make this use surface
available. Through terracing, man 'civilized' the
landscape to enable the movement (transportation)
of water, to facilitate his own movement, for cul-
tivation of comestibles, and subsequently for
housing. To reinforce the horizontal is to rein-
force use. Vertical dimensions are then gained
through the displacement of horizontal surfaces in
order to make them associatively habitable.

2.

4.
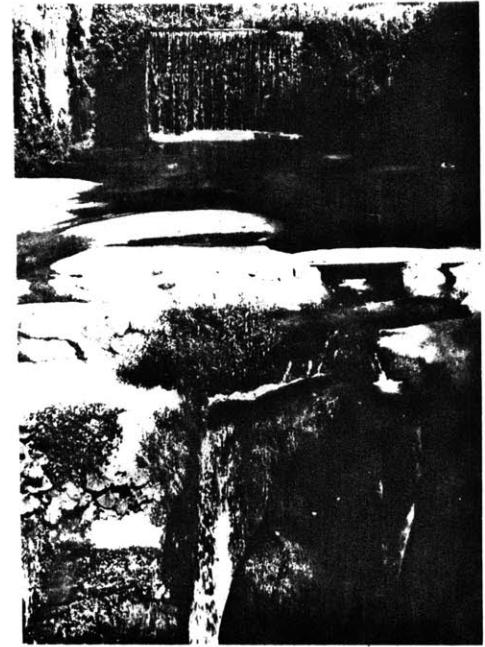
1: terracing through movement of water
2: cultivation
3: public movement
4: housing

3.

HORIZONTAL GENERATION

Spatial forces cannot be described in terms of
particular elements or objects, only as relation-
ships, or as relational responses between external
and internal forces.
They can be described as
organizational relationships which form takes in
response to certain forces,
        external, in relation to forces acting in a
        field, and
        internal, in relation to the intrinsic nature
        of the elements involved.
Further, even as relationships, they cannot be
defined as a specific, particular
condition,
but only as part of a spectrum, a range.

Each range of relational responses encompasses
particular polar opposites or dichotomy limits.
It is then possible through the identification
of these limits (and the transformation within
their spectrum) to manipulate form when making
territorial definition.

Note: Also an example
of reciprocal defini-
tion between landscape
and water at a range
of sizes.

CONTINUITY.. of the landscape

access continuity - - - - - - - - - building continuity 43
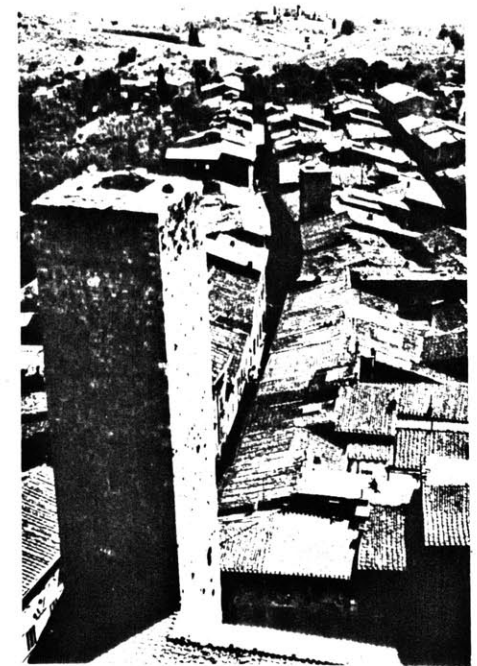
The distinctive quality of the landscape is extension.
This may be more or less continuous. Topography, sur-
face relief and the landscape's horizontal dominance
are physical expressions of this continuity.

Continuity, in general, reinforces the direction of
movement. In this way the second basic component of
the built environment, access, is principally continuous.
Buildings(in a relatively packed environment), having
a mutually defining (reciprocal) relation with access,
are also continuous; not individually (for their basic
nature is that of containment), but in their
aggregation.

The three major physical environment components,
    1: living territory
    2: access,   and
    3: landscape,
offer three different continuities...each particular in
form, use, and range of completion/addition,
adding their particular differences together in
reciprocity.

きつ物・小物

雑貨

ラジオ・テレビ
玩具・土産・小物

金物・工芸雑貨

building continuity
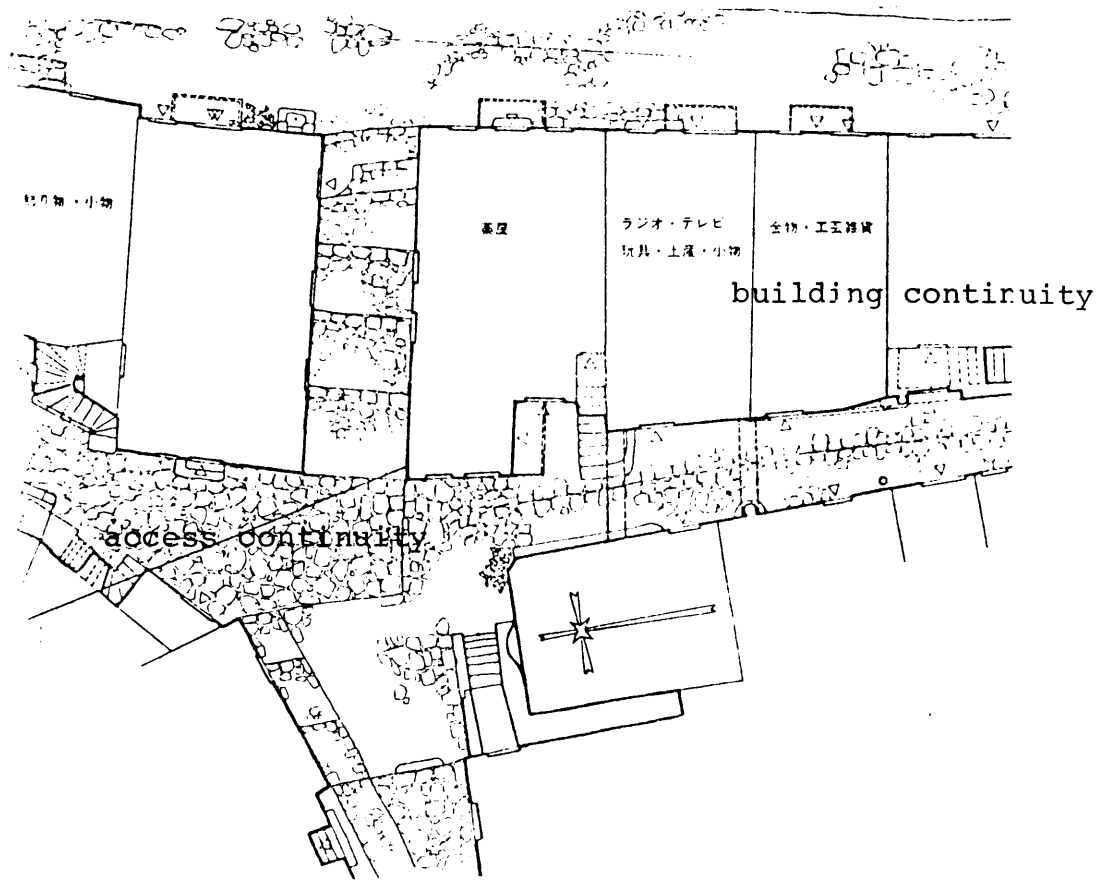
access continuity

partial focus: emphasizing place

1: landscape continuity......essence of natural place.

2: horizontal continuity.....terracing. displacement
                            of horizontal surfaces.

3: access continuity.........continuity of movement.
                            path-place continuity.

4: building continuity.......block. collective aggre-
                            gation.

5: visual continuity.........extension of visual field
                            beyond one's immediate
                            containment.

6: light continuity..........point light aggregating to
                            field. extension of light
                            through a number of ter-
                            ritories.

7: use continuity............optional extension of use
                            to adjacent territories.

8: material continuity.......continuous surface.

9: vertical continuity.......(sectional) continuity of
                            vision / of light / of ven-
                            tilation (through convection).

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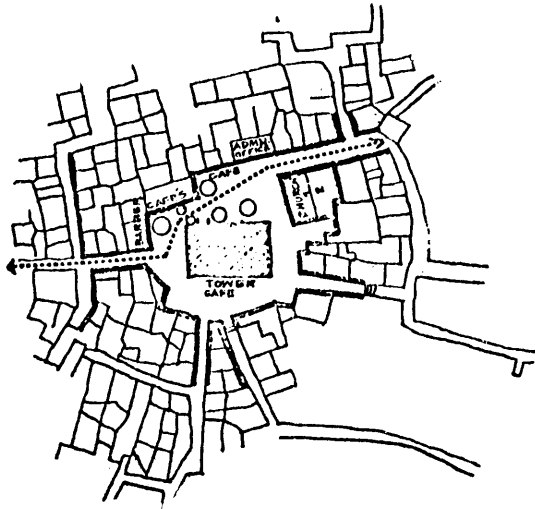
The church square as the centre of interest in Olympos on the island of Chios. Chairs are clustered alongside the major through-way although there is plenty of space on other sides of the church.
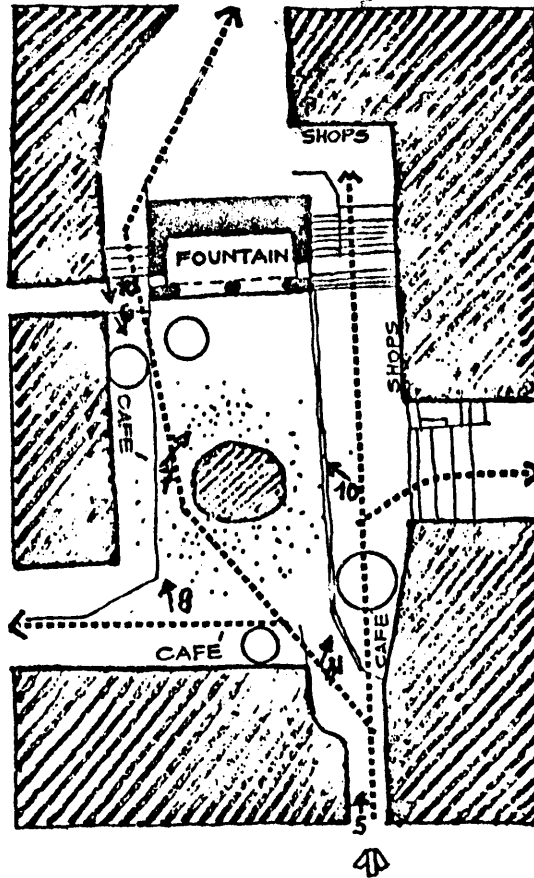
Space as a social place in the village of Pirgos on the island of Tinos. The narrow street opens out into the public square (with a fountain) where café chairs are strategically placed to take in the best view of what is going on.
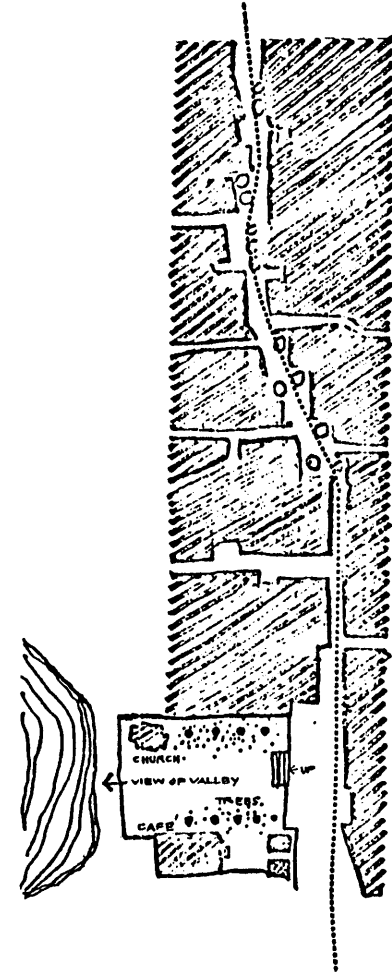
Left: Again in the main town of Skyros the pleasant plateia is only used during the holidays. Normally chairs are bunched in the right angles of the narrow street.

FROM

'SENSE OF PLACE' IN GREEK ANONYMOUS ARCHITECTURE

S G THAKURDESAI

CONTINUITY OF ACCESS AND PLACE

The distinctive quality of man-made place is
containment or enclosure. While continuity
reinforces movement, containment reinforces
place. Containment's enclosing properties are
made distinctive through its boundaries, while
its openings make its structure visible as
continuous or discontinuous extension.
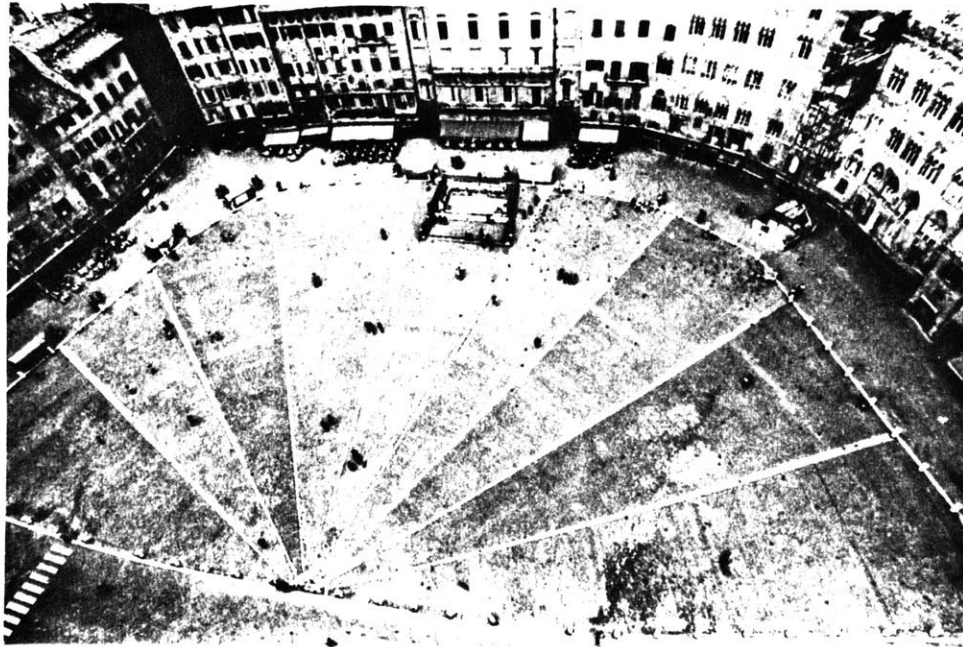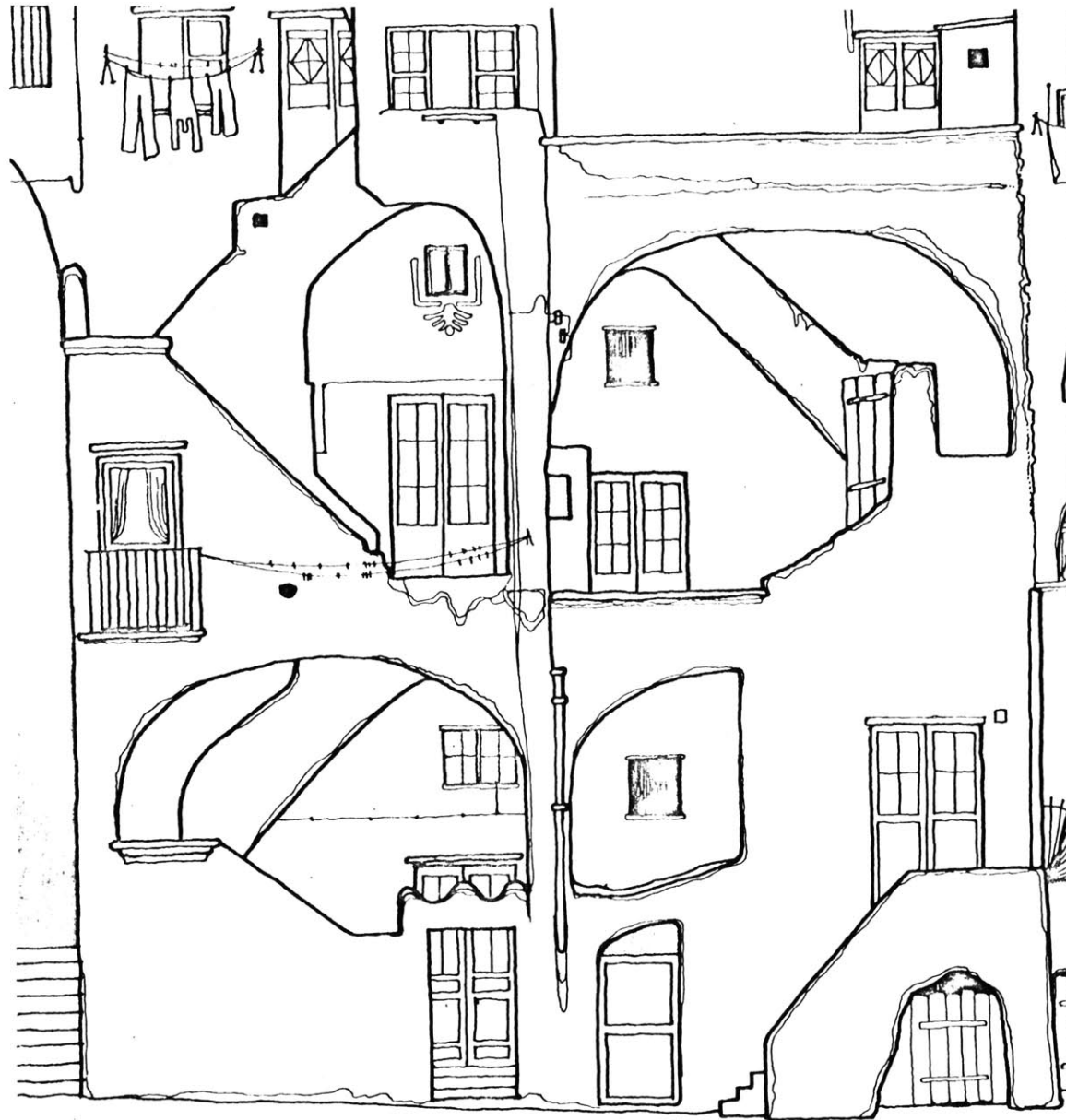
CONTAINMENT

Arches and vaults
as containing forms

Reciprocity implies a mutuality of definition
between space,
     form,
       and movement
between place and physical definition, and
between the elements in relation to each other.
It involves an interlocking and interpenetration
between each of these continuities and
definitions.

Its polar opposites can be described as adjacency.
It is the abutting of these continuities and
definitions in a line or plane.

"The formation of higher, intermediate articulation
by the interlocking of certain main elements such
as the alternate shifting of a grid pattern which
results in the overlapping and interpenetration in
the structural pattern of a brick wall."

                               Klee
                The Nature of Nature
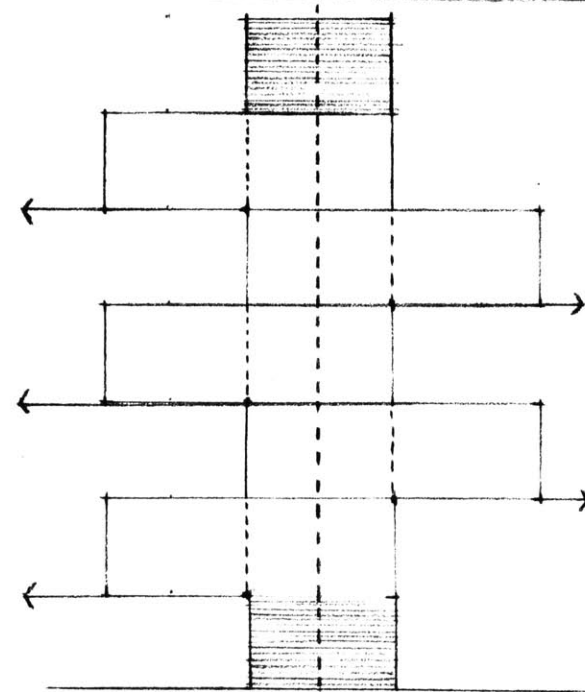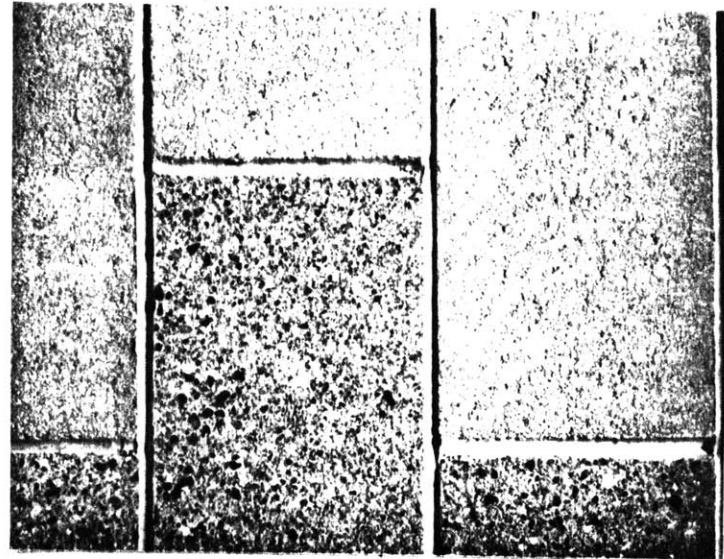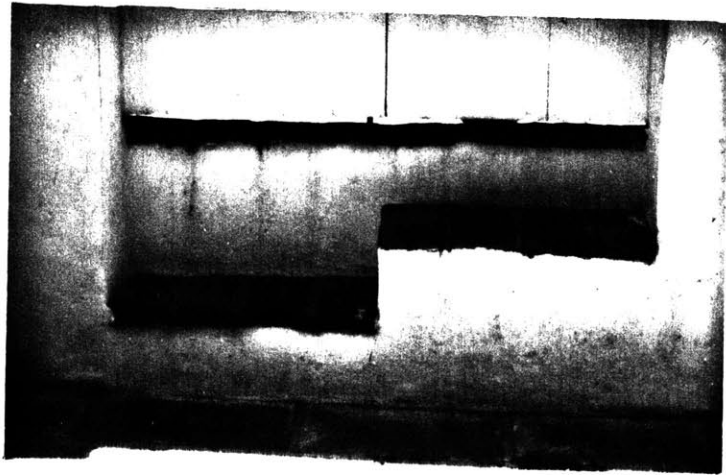
The spatial exchange of built and unbuilt elements
in a field generates a directional field. This
field, like form, is then also generated by move-
ment - but in relation to heavier, more permanent
elements which define that field. In nature, these
may be mountains and meadow, or land and water;
or in the built world it may be the exchange between
buildings and access, or buildings and water (which
can be access, as in the case of Venice). In gen-
eral, then, the direction of association is rein-
forced by the direction of public movement, while
the discontinuities (which are the privacies or con-
tainments) are the more permanent elements which
shape the field.

In the organization of a field, the ground elements
(rocks) are permanent anchors or weights around which
the less static and more continuous elements (sand or
water) are defined. This analog can be extended to
the territories of use and the physical definition of
the movement field.

Rocks: the ground from which
things grow (weight).
equivalent to use:
privacies, contain-
ments, and discon-
tinuities.

Sand
or
Water: the growing changing
nature of the field
(movement).
equivalent in use:
shared spaces, pub-
lic continuities,
access.
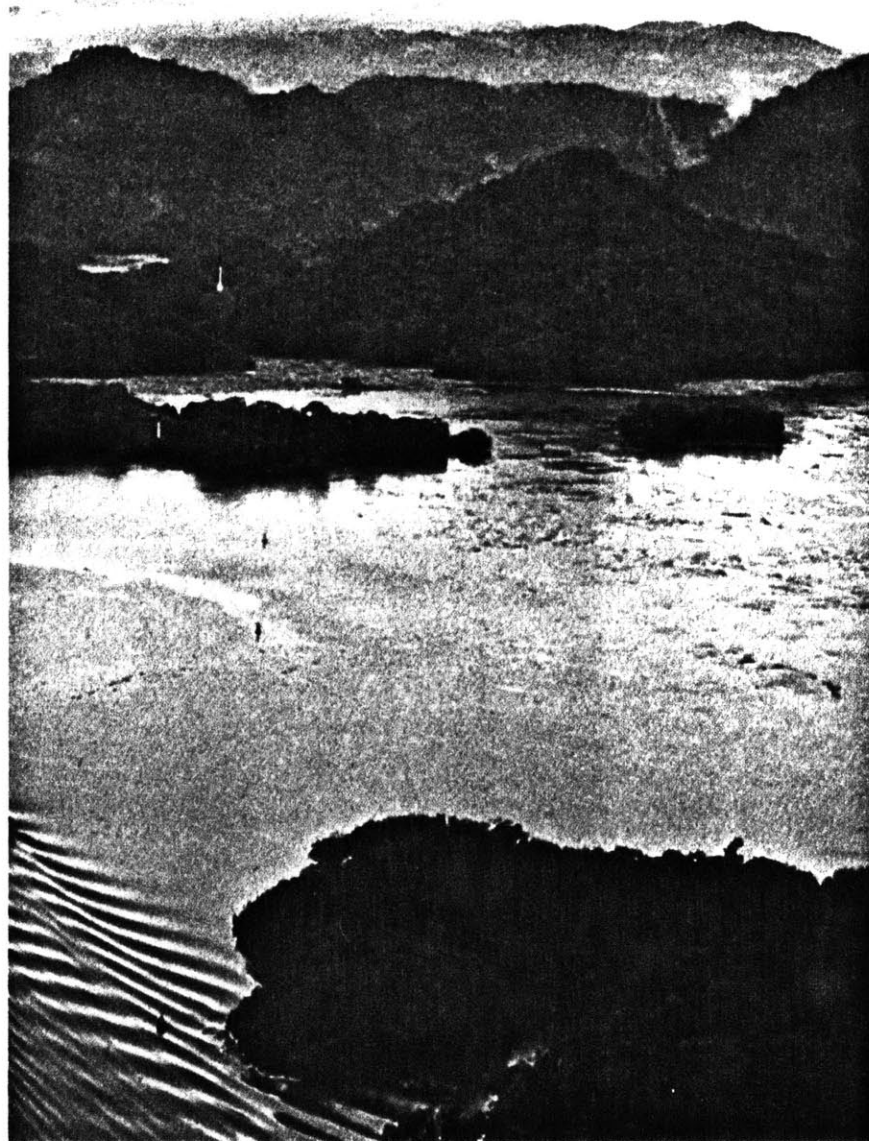
SPATIAL FORCES IN A FIELD: DIRECTION

53

'Rocks &
Water'

54
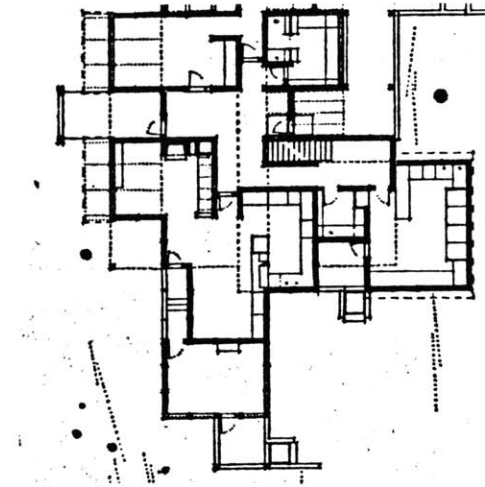
collage

Collage...simultaneous layering
                    perception
                    use
        (at the city scale)... integration of
                                  functions

Subdivision...separation
              compartmentalization
        (at the scale of the city)...segregation
                                  of functions.
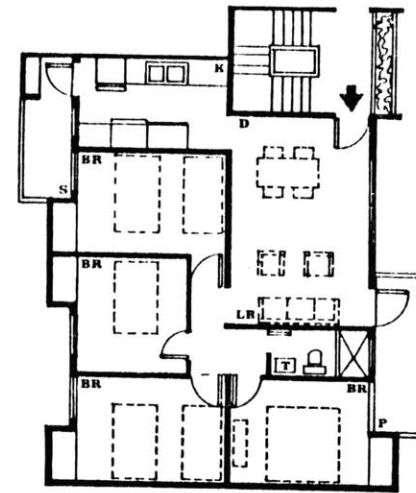
subdivision

PLAN
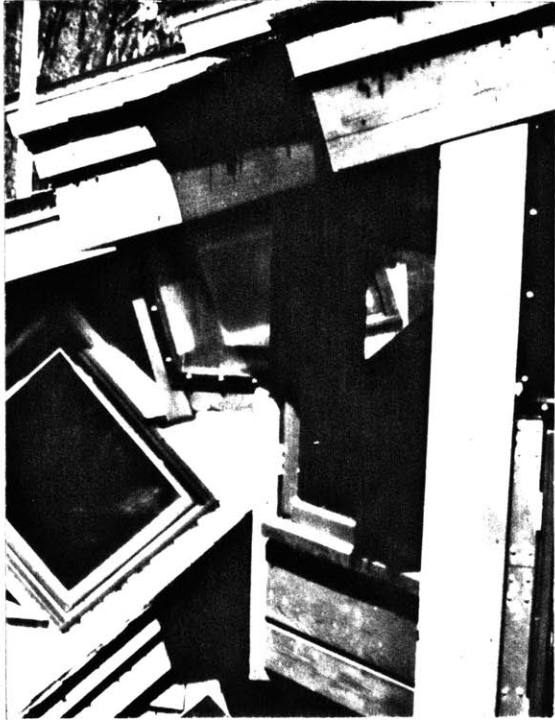
COLLAGE

SUBDIVISION

"A stone, a tree, or a fish has its own particular type of existance. The stone is static with the latent perpendicular movement of its weight. The tree can expand in any direction but cannot change its position. The fish can move and take any position. Each behaves according to its specific nature."

Kepes

Families of form behave in a similar way, each according to its own nature. Positions, directions, and differences in sizes and materials are inherent qualities of these families. Although affected by external forces, the physical, cultural, and socio-political environment, these qualities remain relatively constant. Internal forces are those that shape the intrinsic properties of form families into stable entities. This 'self-stability' is dependent on the physical properties of the materials particular of each form family as manifested in the family's ability to reach, what can be called, intrinsic territoriality. This condition, the essence of self-stability, occurs when a form family is territorial without depending on its relation to additional or external physical definitions. For example, continuous surface (eg. concrete, unit masonry: when it is not planar) is by nature territorial, therefore self-stable. Lineal framework, however, being based on the aggregation of point supports, has to be three-dimensional (1: not in the physical, but spatial sense) (2: whose minimum is that of three points) to be self-stable.

INTERNAL FORCES

Self-stability, however, is not restricted to a natural (intrinsic) level, perceptually, it involves a dimensional reciprocity between the form and the field in which it acts. This relation might be physical, for example: building(s) and landscape, or spatial; as in form and space (solid-void). This form of self-stability is per-ceived as a dimensional equilibrium product of the dynamic tendency toward balance between forces and their form response.

In order for (the architect) architecture to project
use intentions, form (architecture) must attain
reality in its own world, the built.
There is a need to examine the nature of built form.
The architect can never translate his value-biased
impressions (into form) without first recognizing and
clarifying his own domain. He must clearly understand
the relationship between interpretations and physical
definition, and in so doing, grant primary importance
to the built phenomenon, as the physical realization
of those relationships. The architect, then, has to
be conscious not only of what he projects (form), but
how (built) he projects it, and especially what allows
him to make his generation - his tools and the rules
that dictate their usage.

The way form is built is dependent on
>   the intrinsic properties of the families of form
>   the nature of materials
>   the process governing their assemblage, and
>   the behavioral range of the form families in
>   transformation.

Built is not only a term describing the technical charac-
teristics of form making (construction), but a qualita-
tive term describing the generative processes of form.

BUILT

Form families are identified through their direct
physical attributes.
1: single-sided surface (continuous ground-form)
2: two-sided surface (inhabited ground-form)
3: partial containments (extrusions/channels)
4: planes
5: screens (from planar screens to 3-D screens)
6: lineal frameworks

Transformation: Continuous Surface to Framework.
1 and 2 block space directly,   while in
3 to 6 light/space increases toward maximal openness.

Each territorial self-stable form family in transfor-
mation develops the characteristics of another,
while maintaining, recognizably,
some of its own properties.

1. single-sided surface
(continuous ground form)

2. 2-sided surface
(inhabited
ground-form)
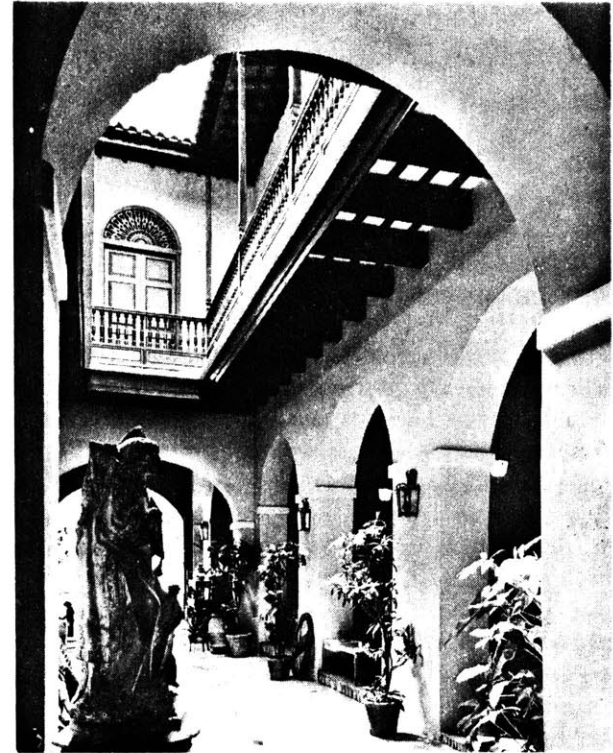
3. partial containment

families of form
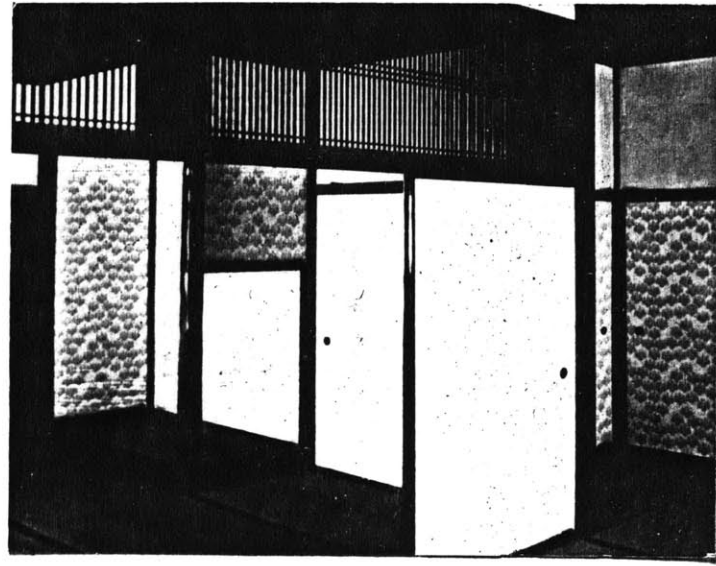
4.planes

5. screens

6.3-d screens
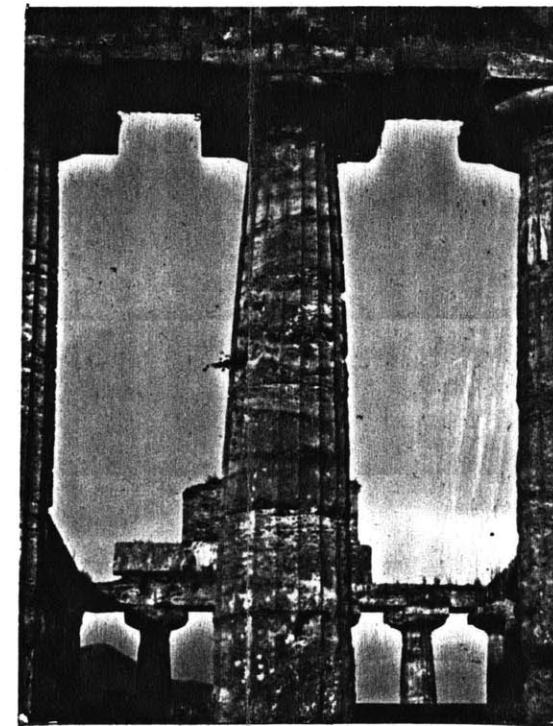
7. lineal frameworks

63

Registration is the principle presiding over such
process. It is also described as comparative move-
ment based on the understanding that the direction
of movement or generation is always relative to an
existing physical reference.

Every action/decision is based on actions/decisions
already made___ consequently,
every decision becomes a reference for the next set of
decisions.
Registration implies an association to what is existing.
It is an association to an existing physical reference,
and not to an imaginary element or line.

In general one registers to an edge.
The edge determines the direction of registration.
The direction of registration in a particular set of
decisions can be described as justification.
One also registers/maintains a reference to
three types of dimensions:

      1. hand and body dimensions
         (based on human scale)

      2. use dimensions
         (based on the sizes
          appropriate for certain
          activities)

      3. built dimensions

         (based on the size of materials).

change

continuity

zone of the material
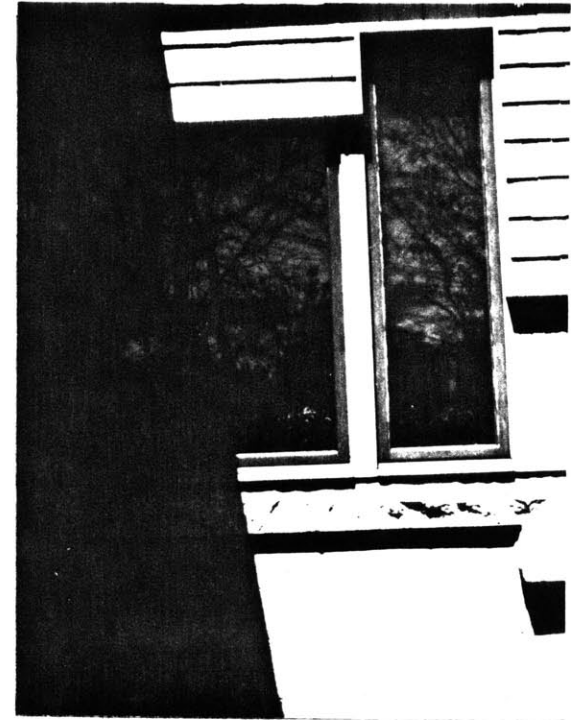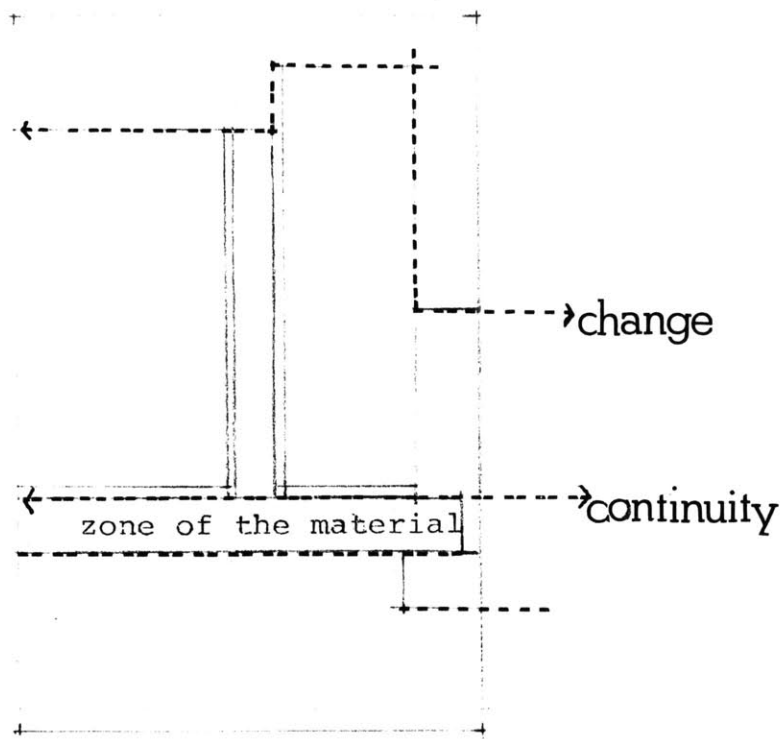
... mantaining a reference to an edge - - - - - - →

1:    2:   3:   4:
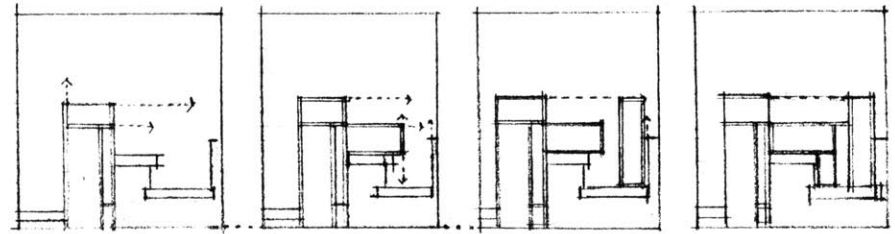
Slack is a dimensional tolerance resulting from the
assemblage of a series of 'fit elements' in a given
registered action. As an infill decision, it is one
which can be made after a whole series of actions
have already been made. It demands a <u>non</u> coincidental
relationship (dimension and position) between
element(s) and opening. There are different types
of slack:

> 1: designed slack: slack as a pre-defined or
> dimensionally calculable element. eg., a
> four ft. opening with a three ft. door and
> two inches at either side for framing -
> gives you an eight in. slack which is option-
> ally fillable.

> 2: positive slack: usually horizontal. It is
> the gaining of a use territory through a
> fit-slack exchange or through a passing con-
> nection.

> 3: spatial slack: is the dimensional resultant
> of a spatial junction or a passing connection.

note: 'fit element'....pre-made,
                        standardly manufactured
                        element.

      'slack'   ....1. dimensional tolerance.
                         2. handcrafted element to
                            take up this tolerance.

SLACK

68
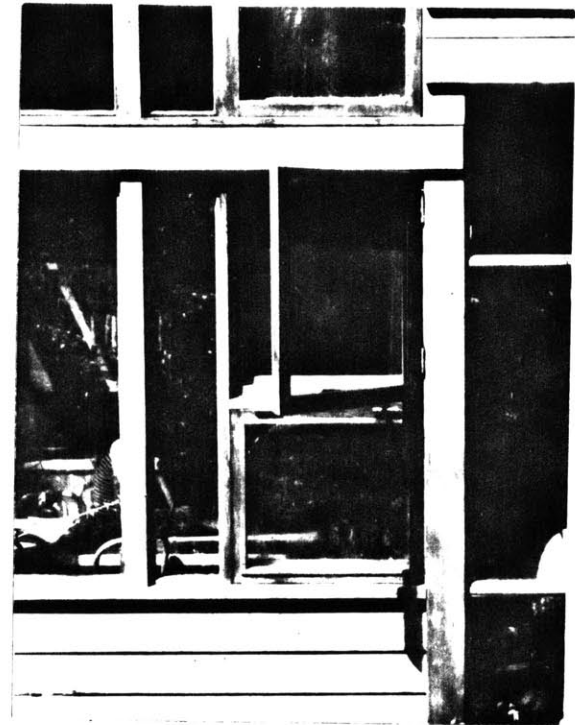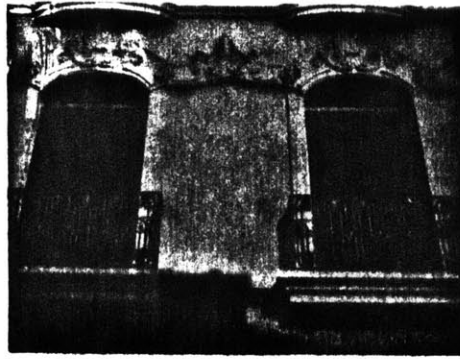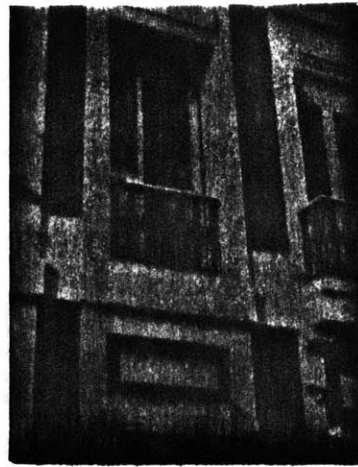
from **1**·recessed   **2**·flush   **3**·minimal extension   **4**·open balcony·single
exterior claiming interior .... use extension

6+   FLUSH   8-12"   16-4'   2-4'   2-6'

70
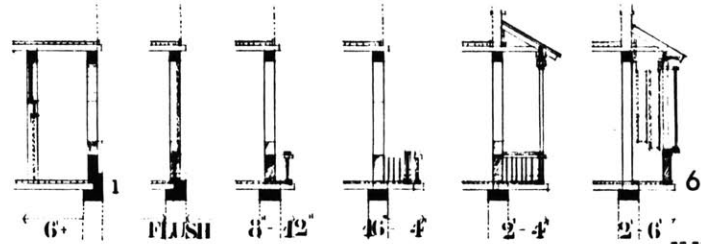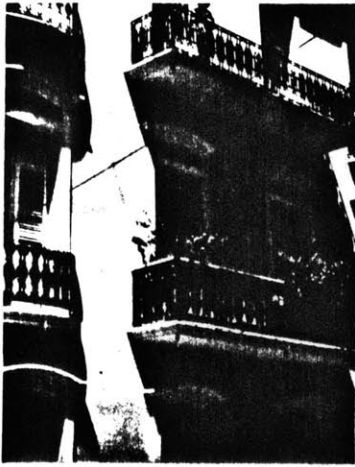
5 ·open balcony·extended **6** ·covered balcony to **7** ·glazed·screened balcony bay
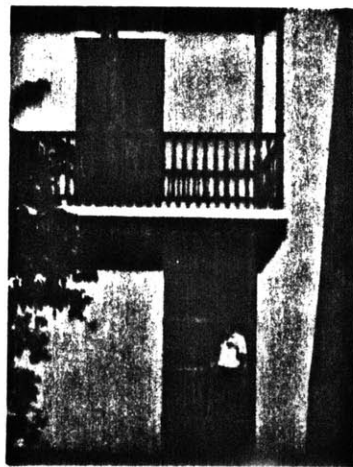
interior claiming exterior

- - - - - - - - - - - - - - - - - - →from RECESSED BALCONY···to···GLAZED BAY TRANSFORMATION
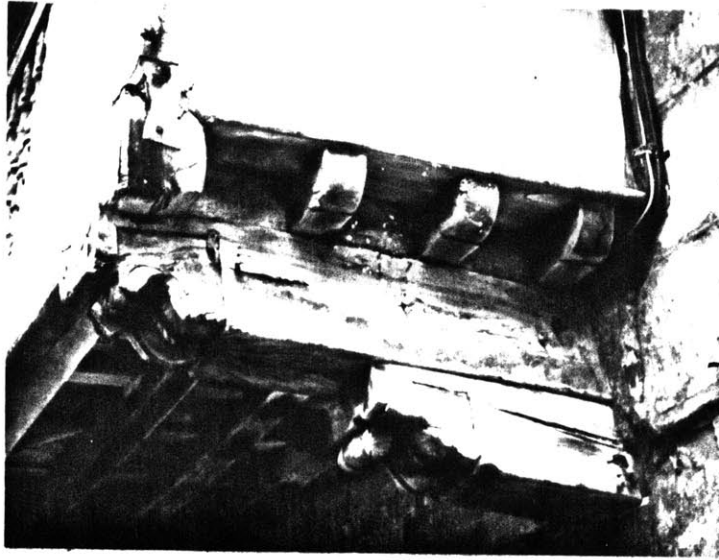
from: **1 cantilevered extension** . . . . **2 braced** . . . . to wall . . . .
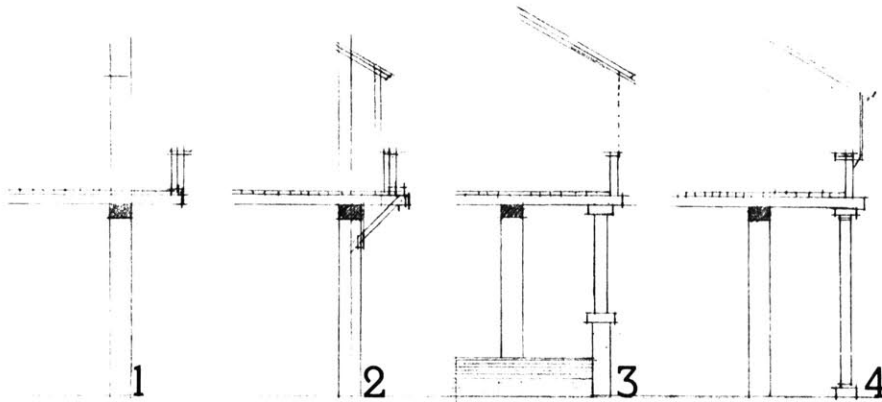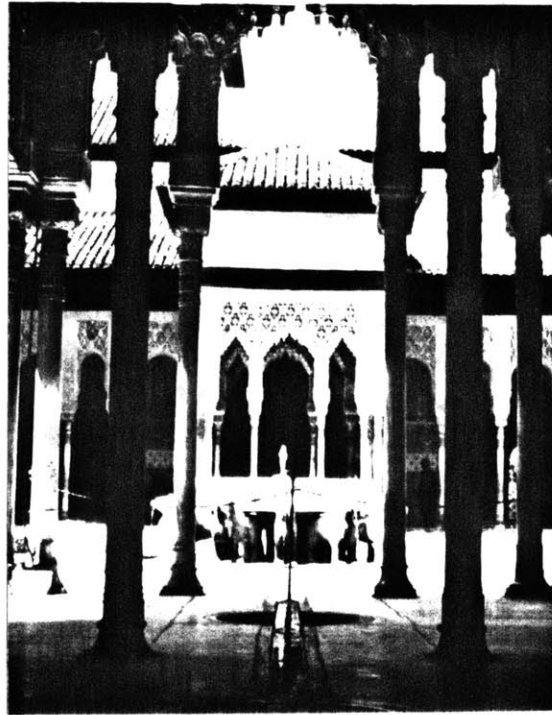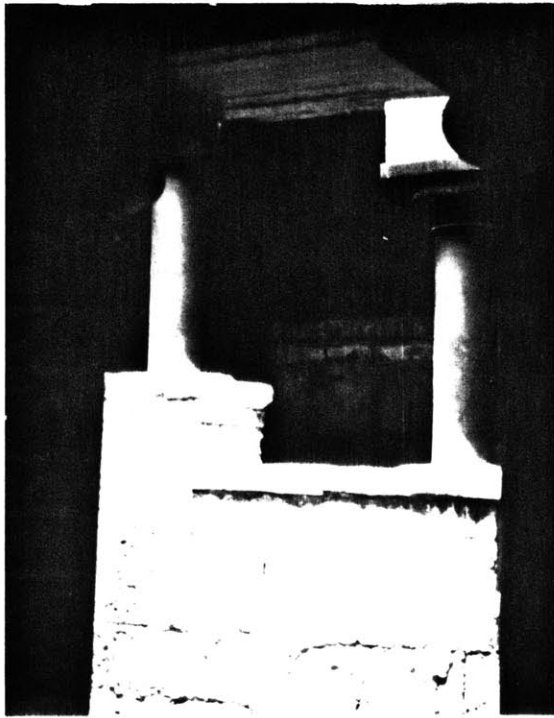
1   2   3   4 . . . .

3:propped to 4:supported
---------- to ground form---------------------to ground
floor

----- -- -- --- ----- --- -- --- ---- --- --- -- --- -from CANTILEVER to SUPPORT

1 --- 2 ---------------

from SURFACE INTENSIFICATION

3 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ 4

_ to INTENSIFICATION OF EDGE
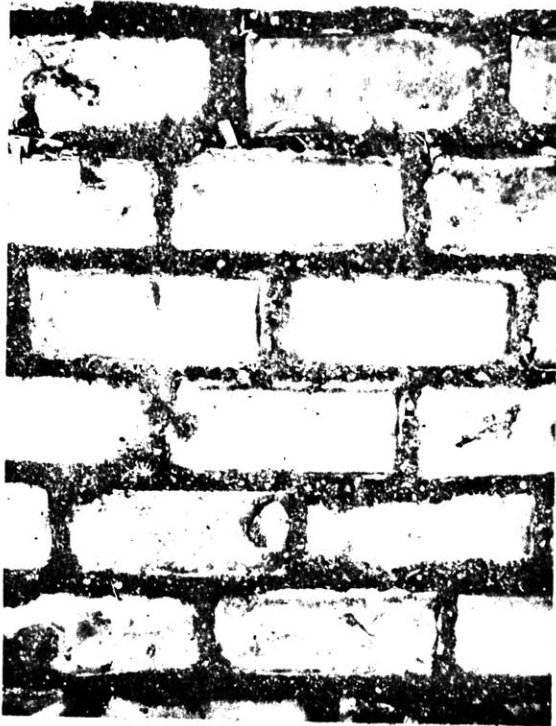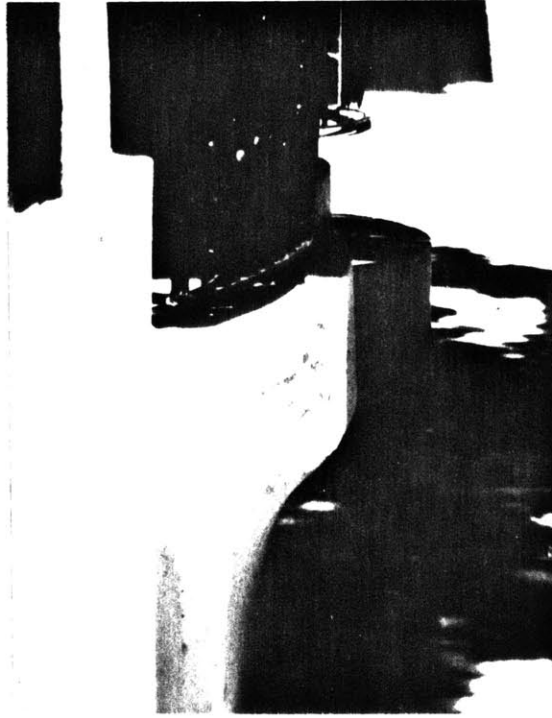
2

OBSERVATIONS

"Experiments deal with intervention into what is
explored. Observation leaves the world as we
find it, and is the beginning of all research.
It is not just seeing: it is seeing with detach-
ment - the suspension of knowledge and certain-
ty. It is curiosity, before the question is
asked. The answer is the end of observation and
the beginning of theory. The theory leads to
understanding, and the understanding makes us
see the world as we could not see it before. It
allows us to see more which may lead again to ob-
servation.

Observation leads to a record - a sketch, a photo-
graph. But the record is not an observation, but
rather the beginning of an answer."

                                        Habraken

Observation is the basis for the understanding of

those relationships (forces) informed by the context,

the city of Old San Juan, Puerto, Rico. These obser-

vations are directed toward two major goals. The

first is the identification of the elements at the

different sites of intervention:

> 1: city / urban structure / landscape
>
> 2: tissue / collective / access
>
> 3: support / building
>
> 4: unit / individual
>
> 5: room / personal

And second, the examination of the rules (relationships)

regarding the range of dimensions, positions, and direc-

tions characteristic and particular to those elements.

SECOND INTRODUCTION

Since the program for the projection was housing, the
emphasis was on the tissue (collective) and support
(building or unit aggregation) scales.

The observations were done in four different sectors
of the city, each representing a different condition,
nature, and character. These differences were relative
to their location, basic function (residential, recrea-
tional, commercial, services, or institutional) and to
the particular urban element dominant in each sector.
These basic elements were identified as:

    A: public elements

        1: street (pedestrian and vehicular)

        2: plaza

    B: private elements

        3: block

        4: unit

The observations concentrated on how the basic unit
archtype changes and transforms under different
conditions.

The areas were selected not only because of
their relevance (in particular those of the plaza
and the pedestrian street) to the site chosen for
the projection. The selected areas for observa-
tion were:

      1: street:

        pedestrian: Callejon del Hospital

        vehicular: San Sebastian (residential)

      2: plaza:

        Plaza San Jose (including church)

        San Sebastian Street (commercial)

      3: block:

        block bounded by Luna

                    Sol

                    San Jose   and

                    Cruz Streets
                    (residential and
                         commercial)

      4: unit:

        Sol Street (residential)

el morro   park

ballajá

site

plaza san josé   san sebastián

2

cristo

sol

3

callejón del
hospital

luna

4

callejón de las
monjas

plaza de armas

SITE PLAN

n

81
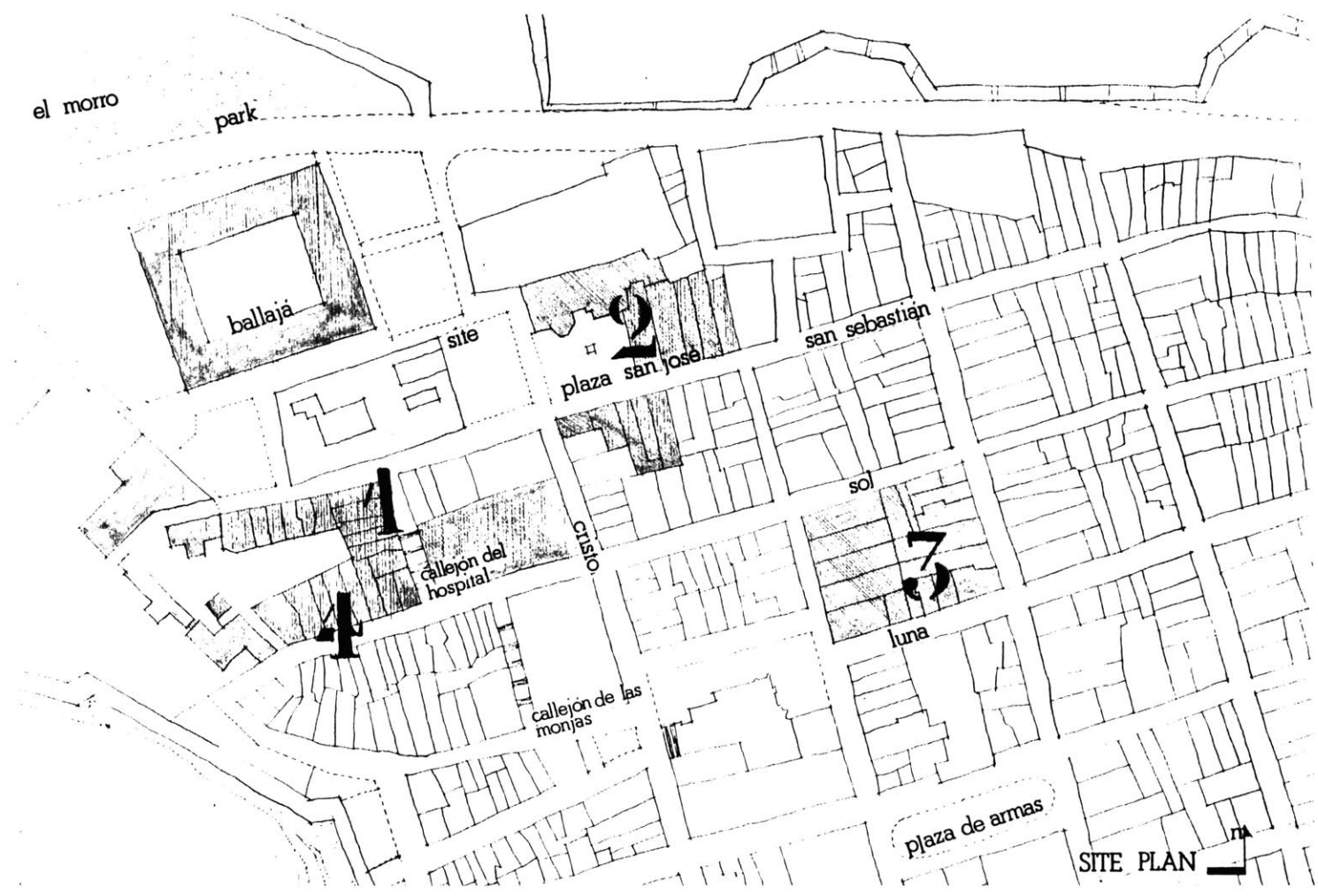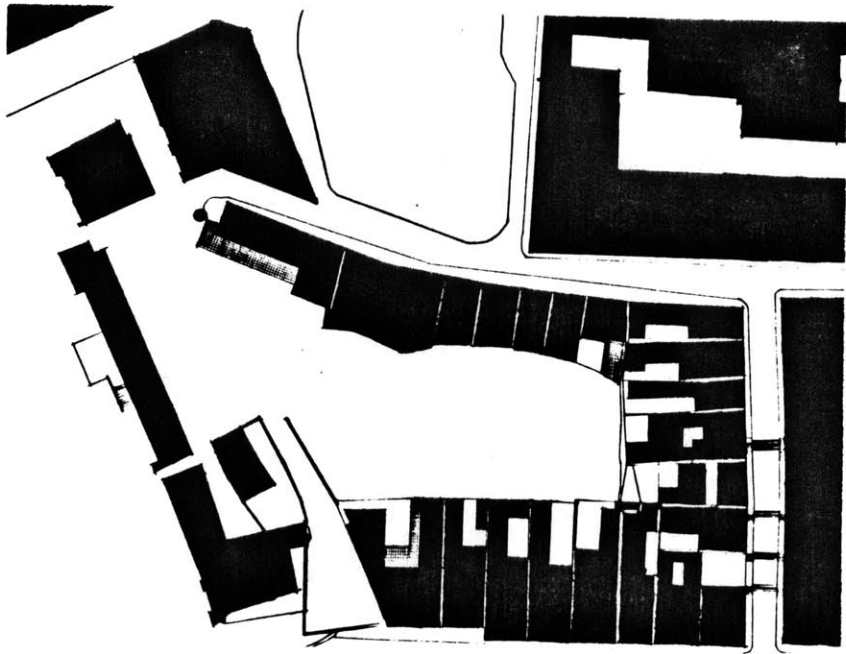
callejón del hospital--PEDESTRIAN STREET

88
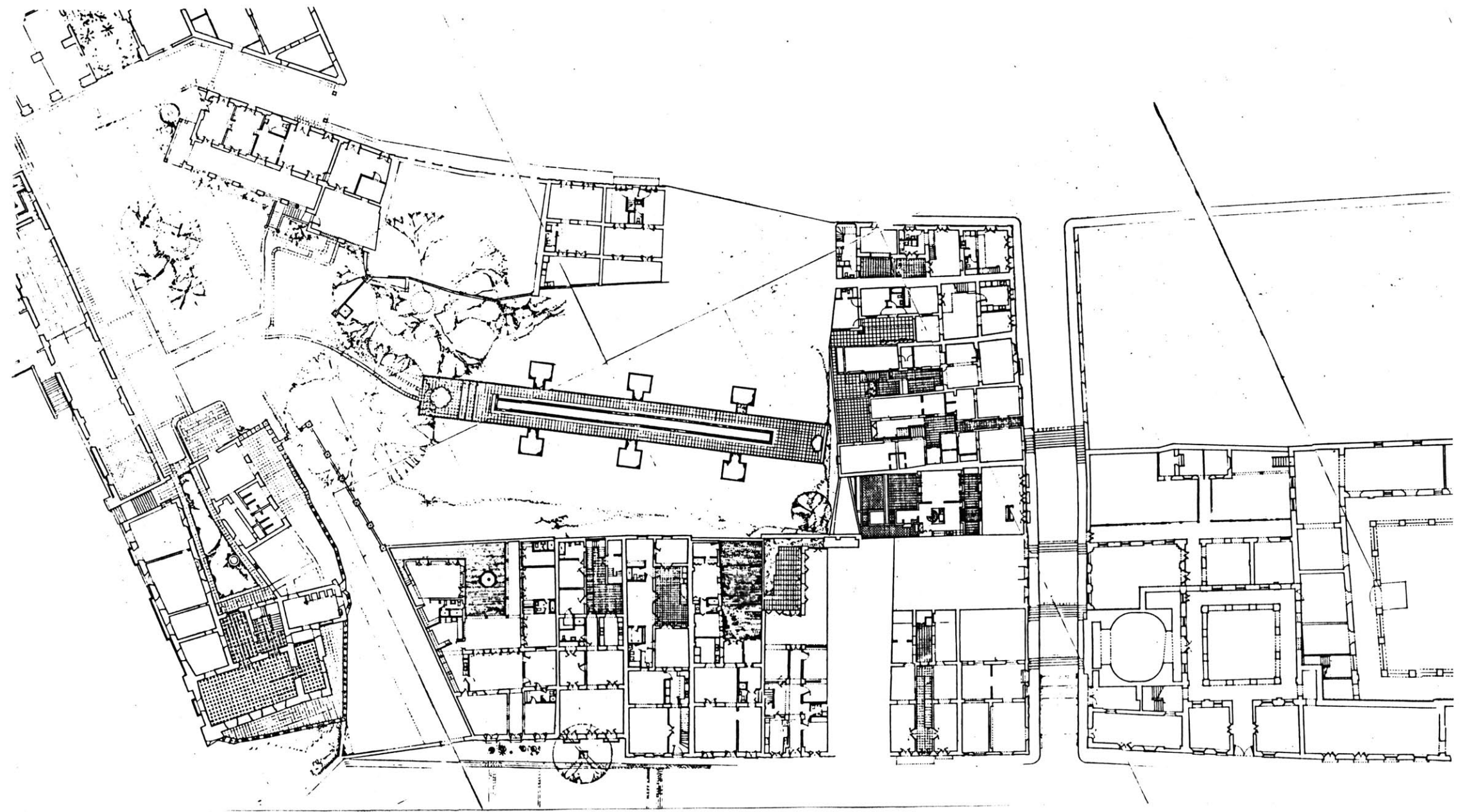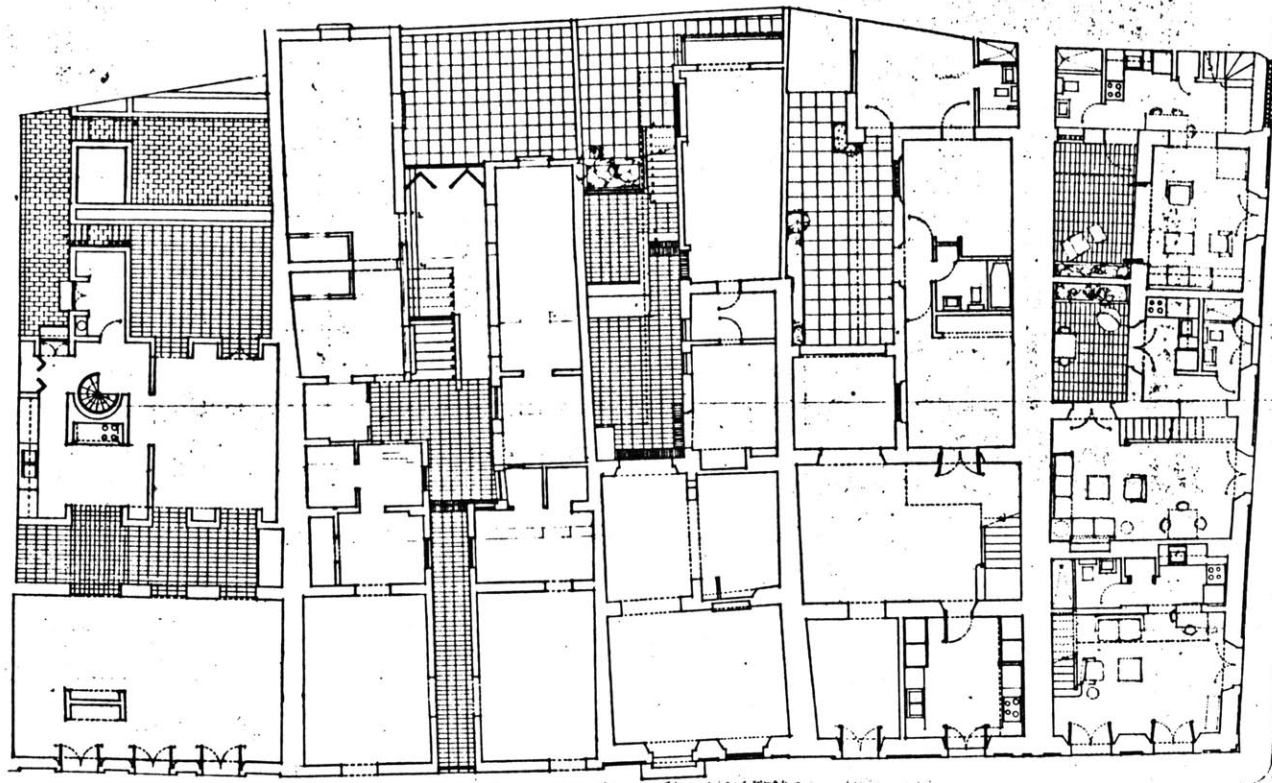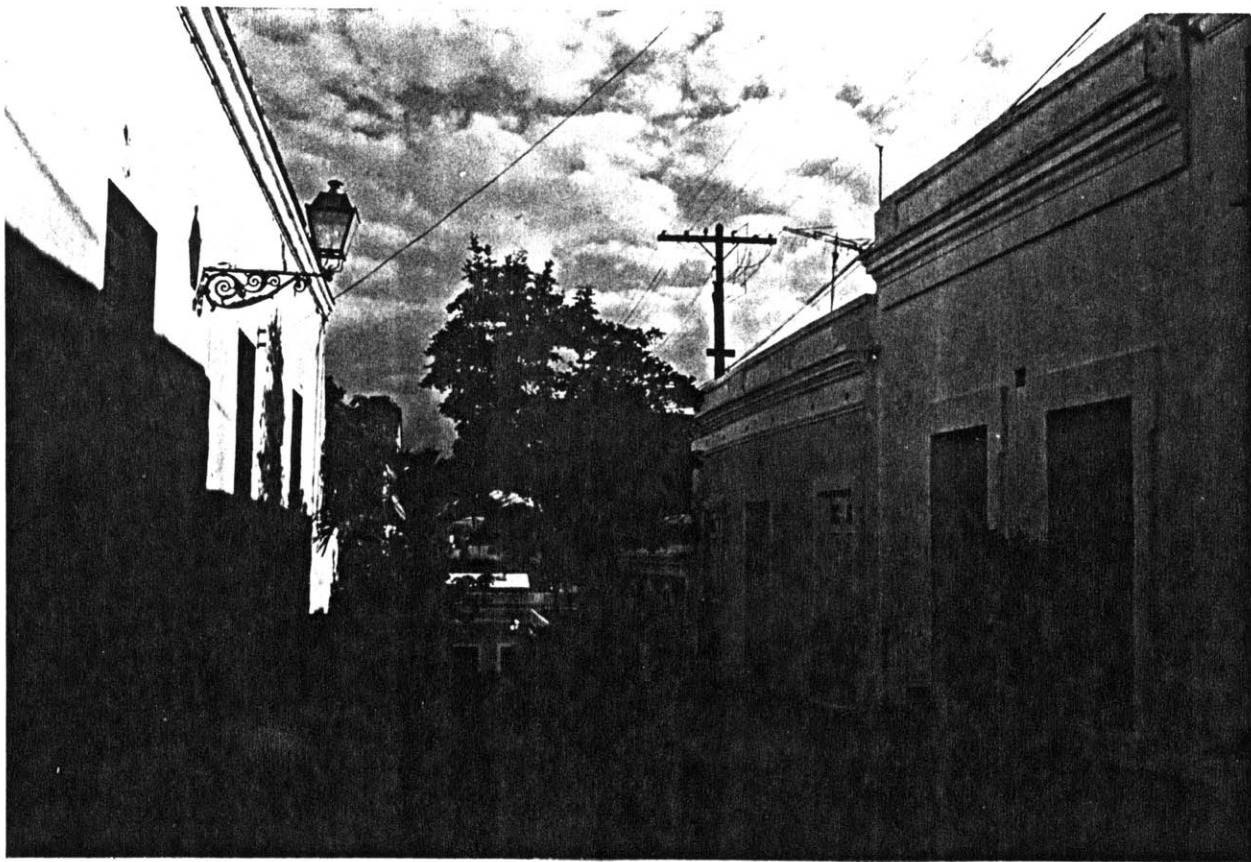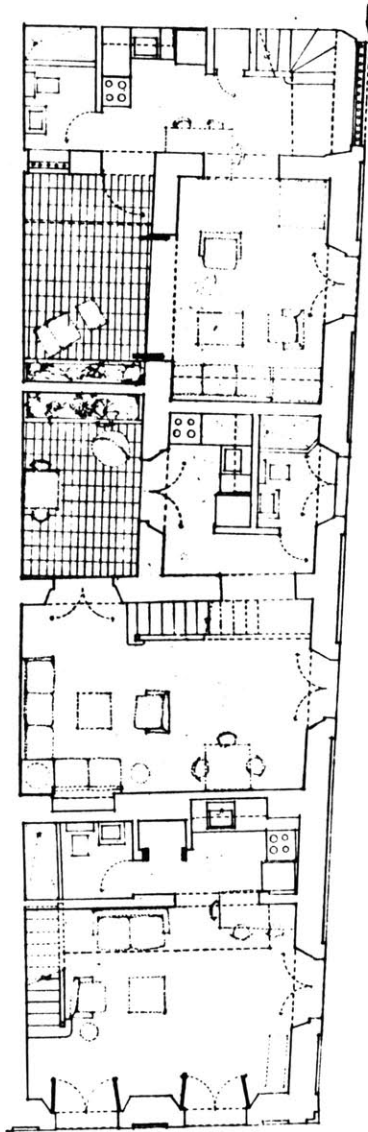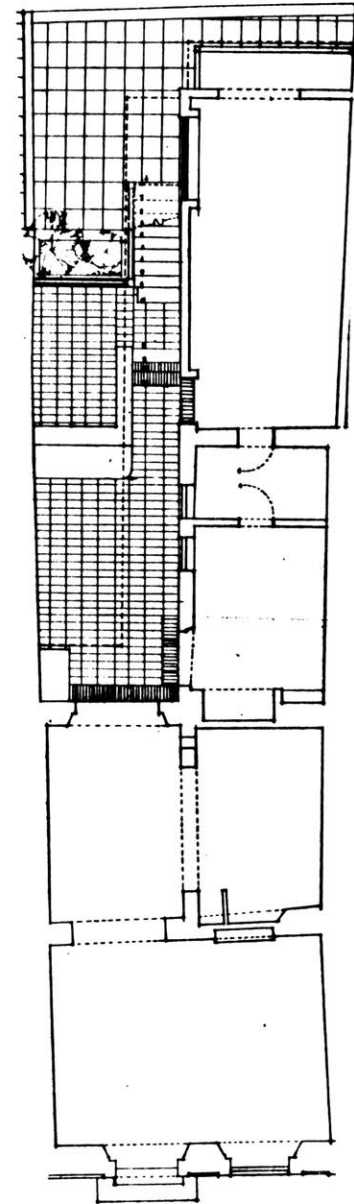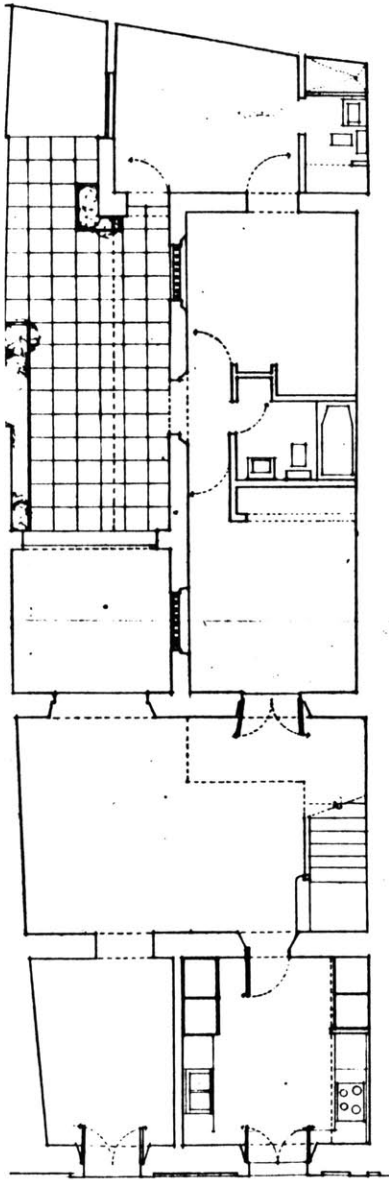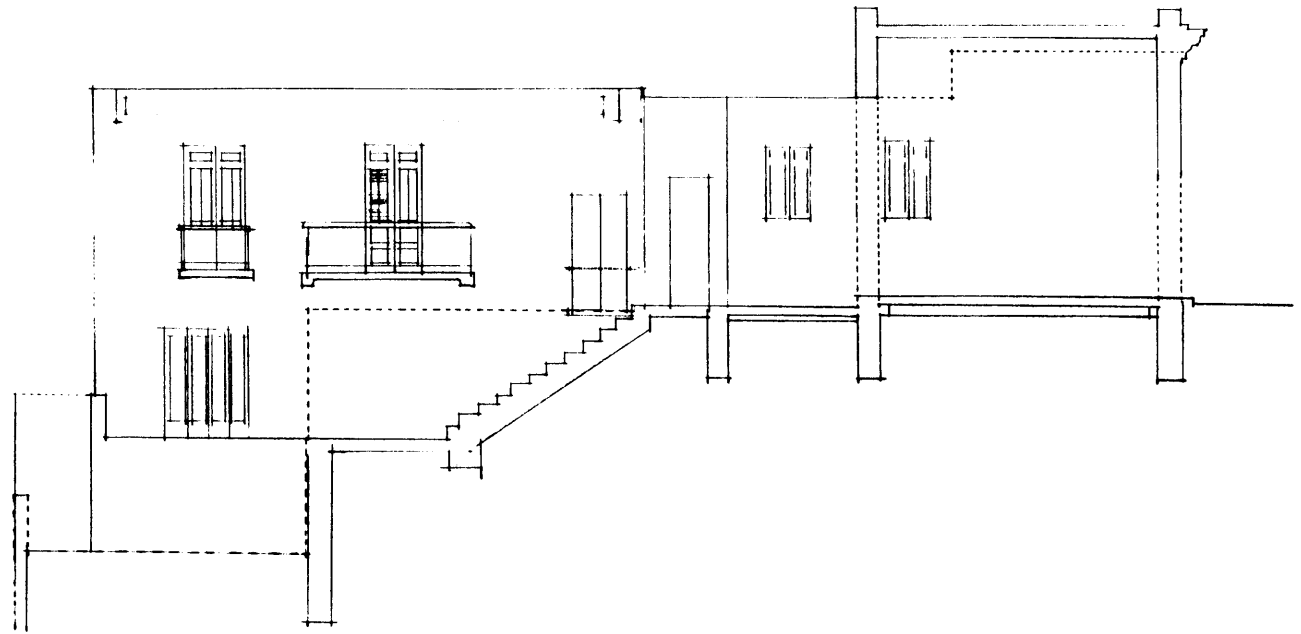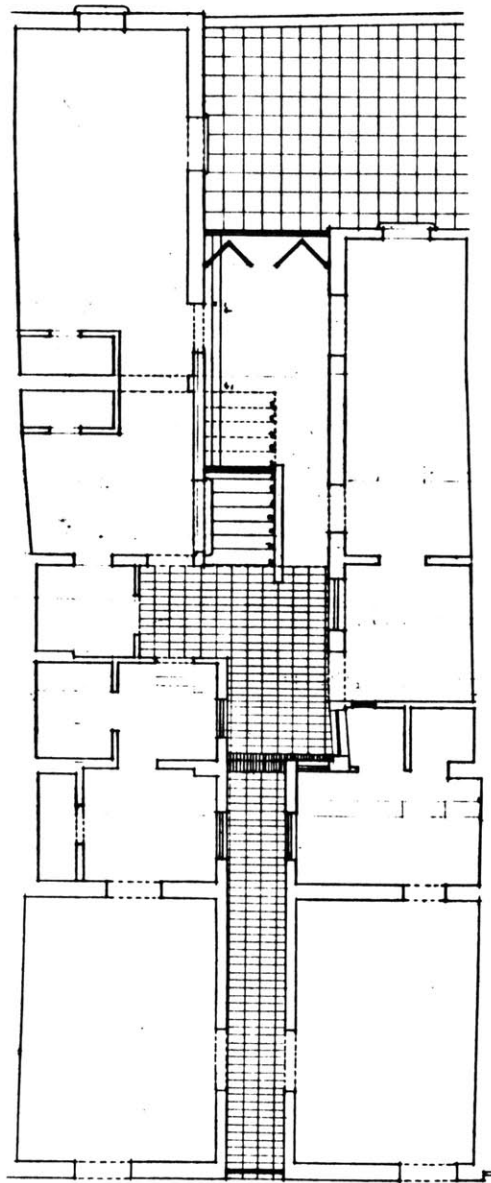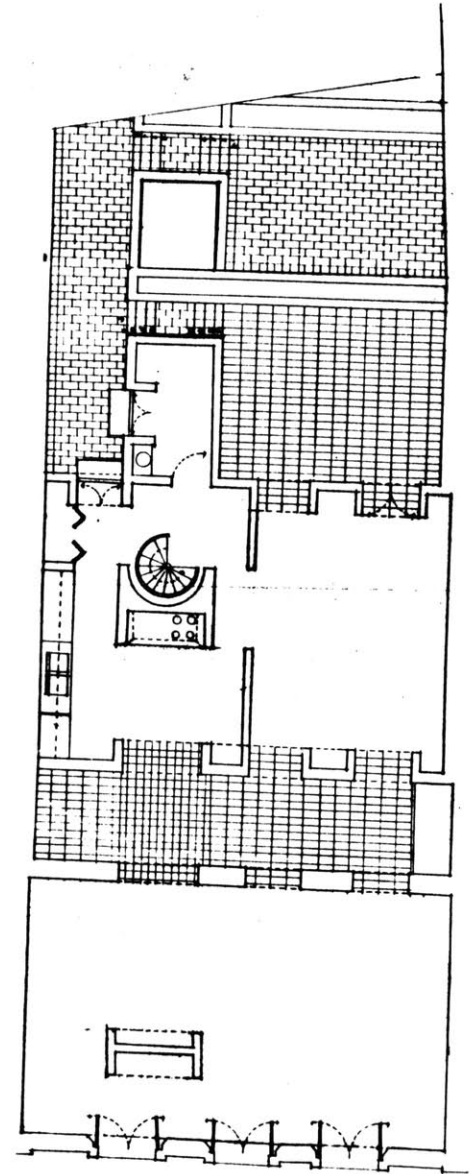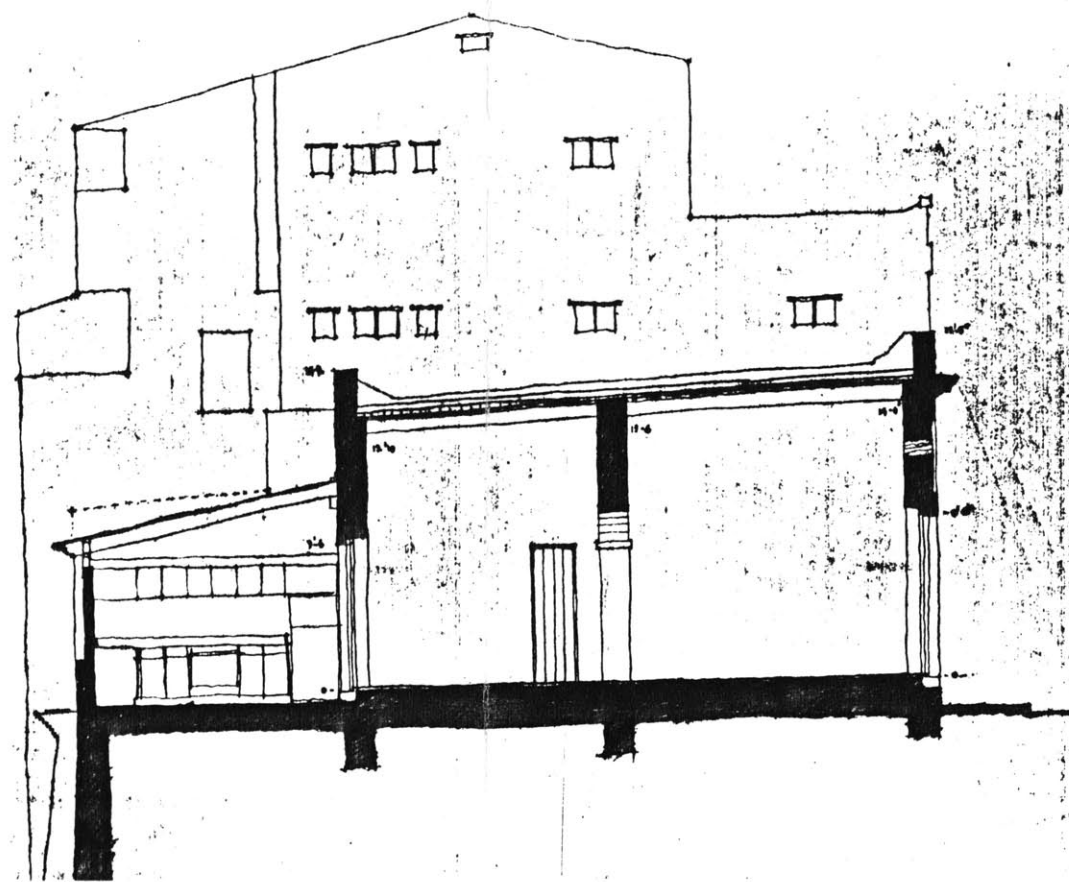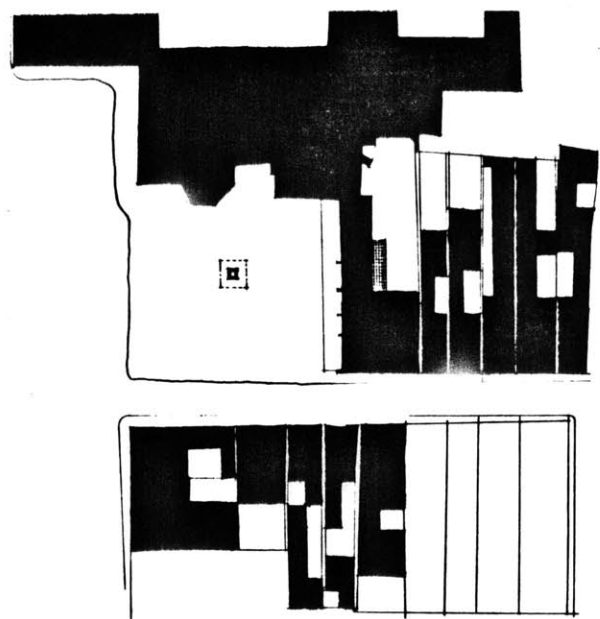
SAN SEBASTIAN

plaza san josé
calle san sebastián

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Z S Z S

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ZAGUÁN
SALÓN
PATIO
LETRINA

*16 *18 *20 CALLE SAN SEBASTIAN

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8

SAN SEBASTIAN

PARED DE BLOQUES
A CONSTRUIRSE
ALTURA NIVEL DE
TECHO SEGUNDO
PISO

PISO NUEVOS DE LADRILLOS

NUEVOS PISOS
DE LADRILLOS

SAN SEBASTIAN

AUG 1981

115
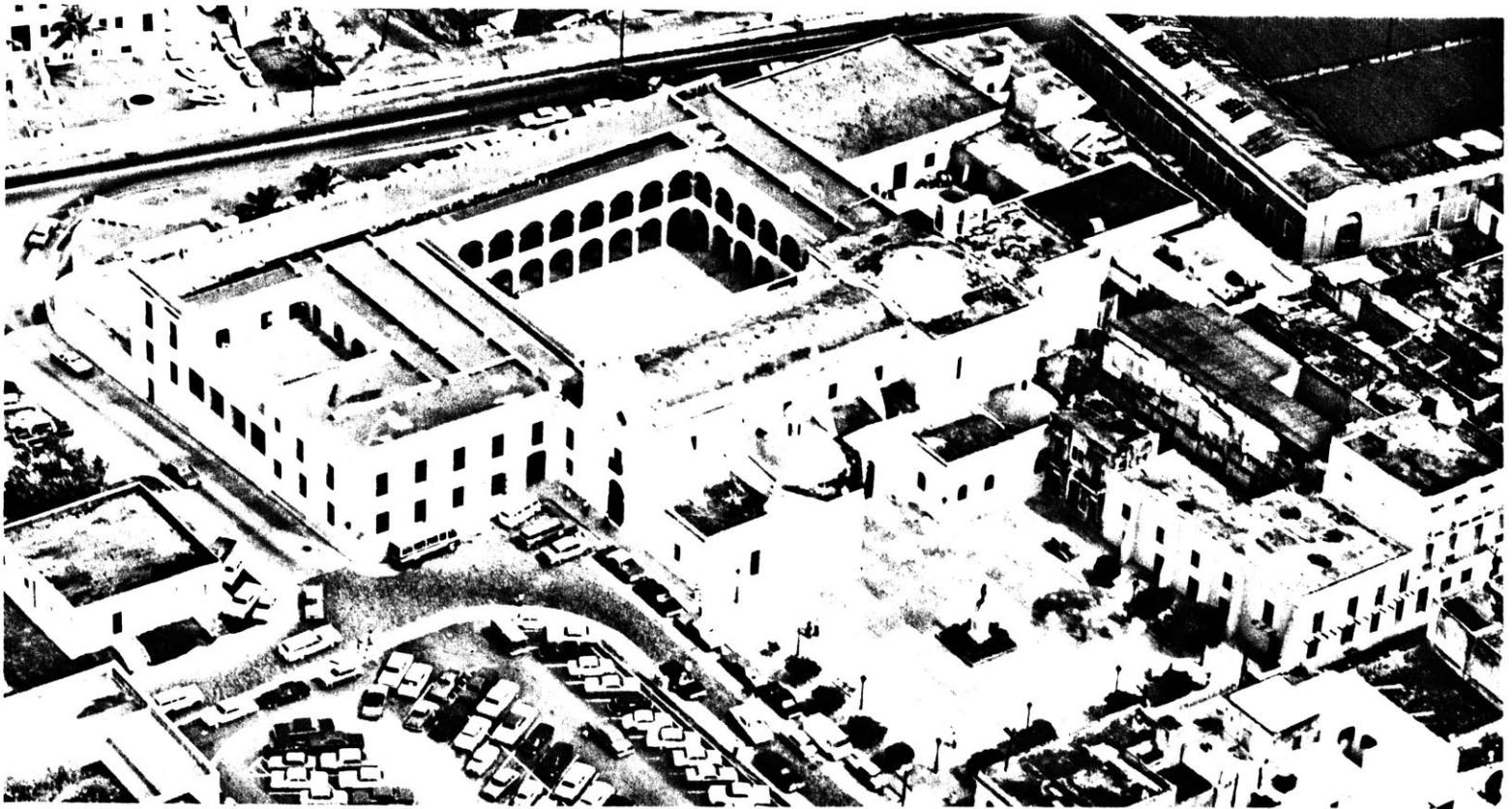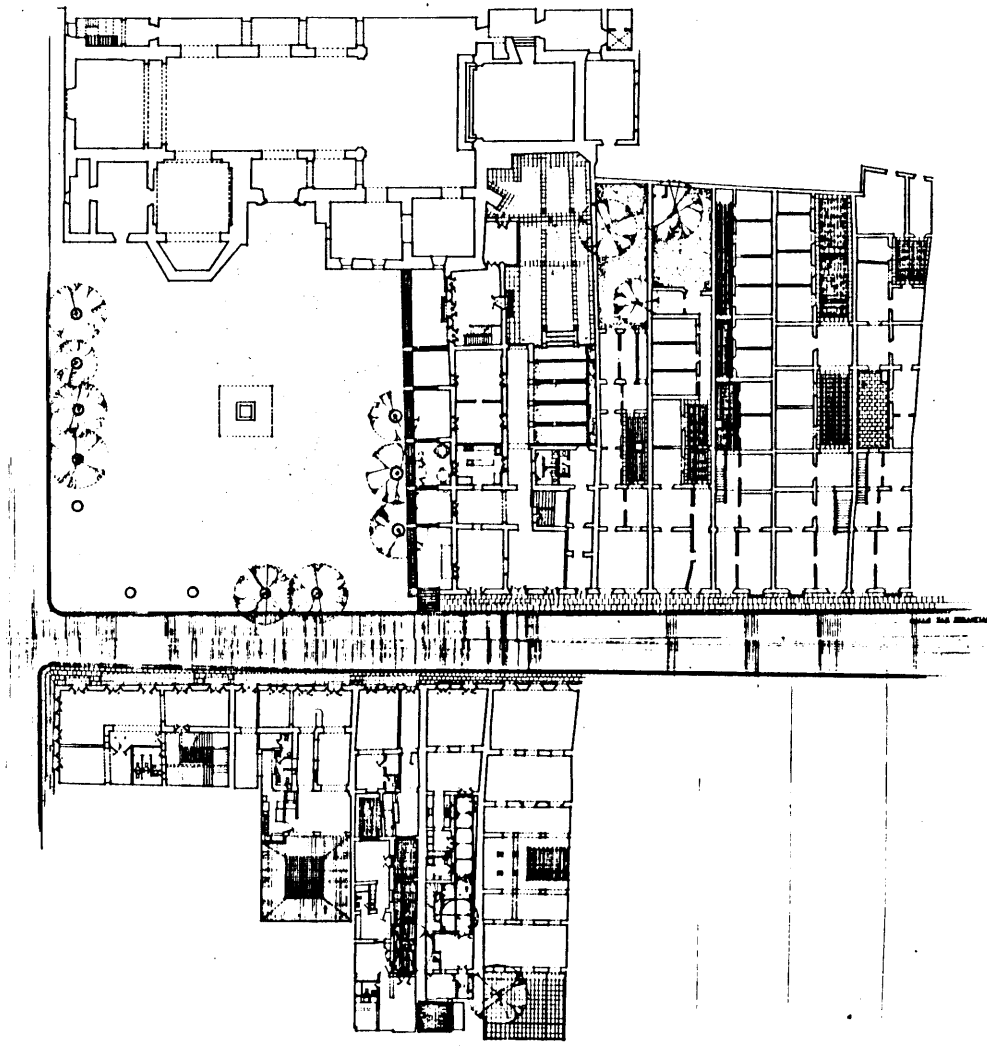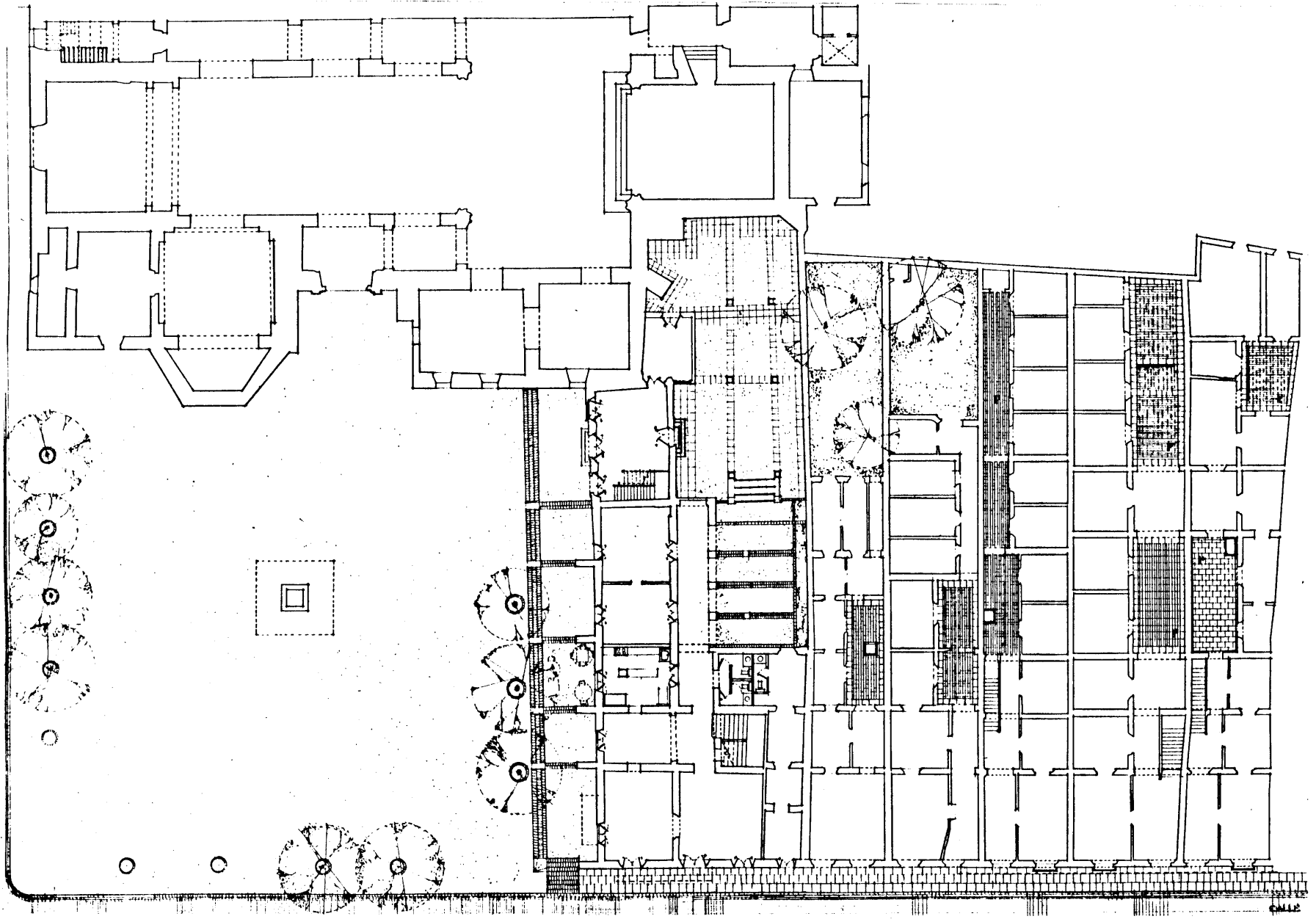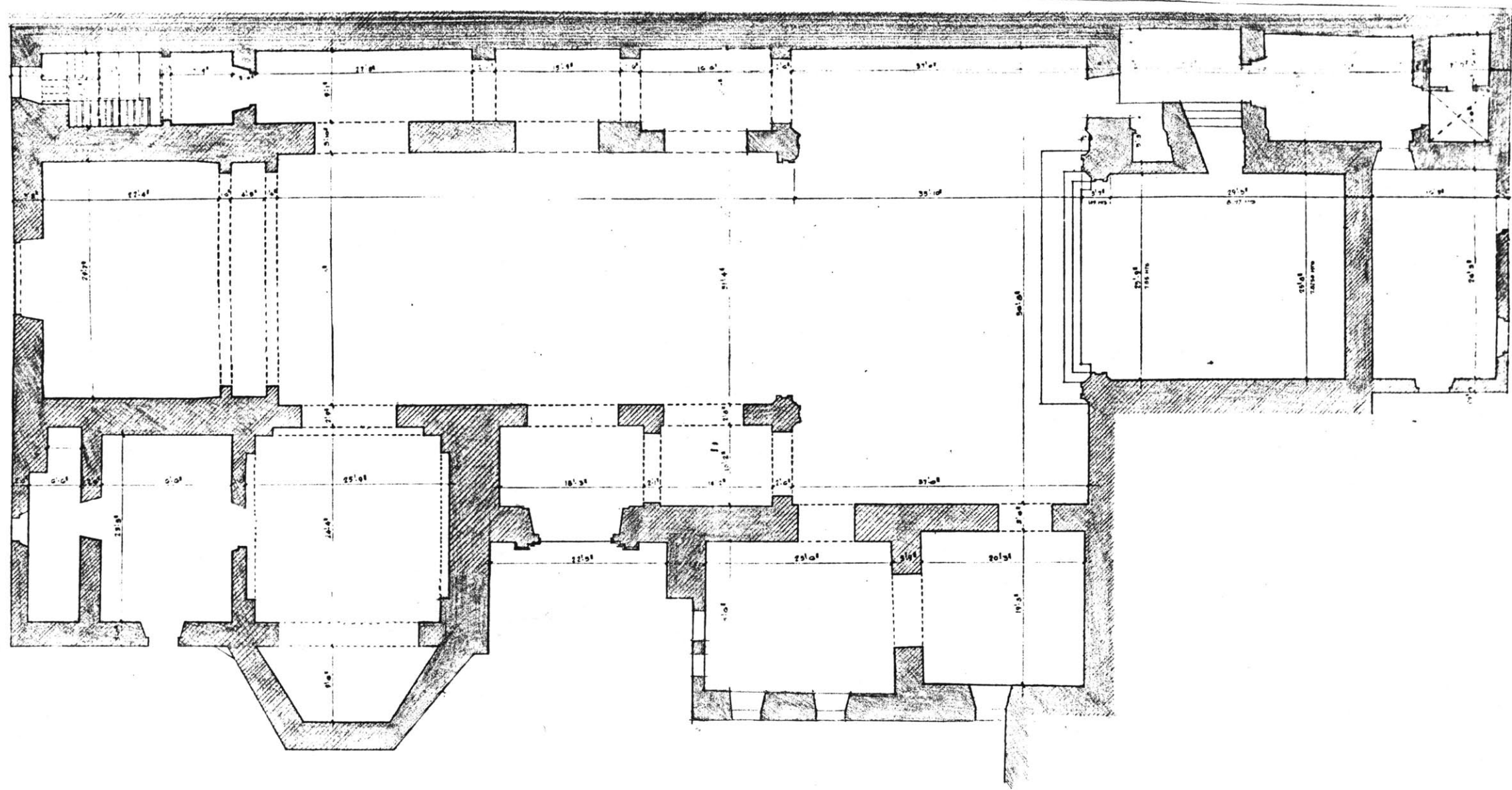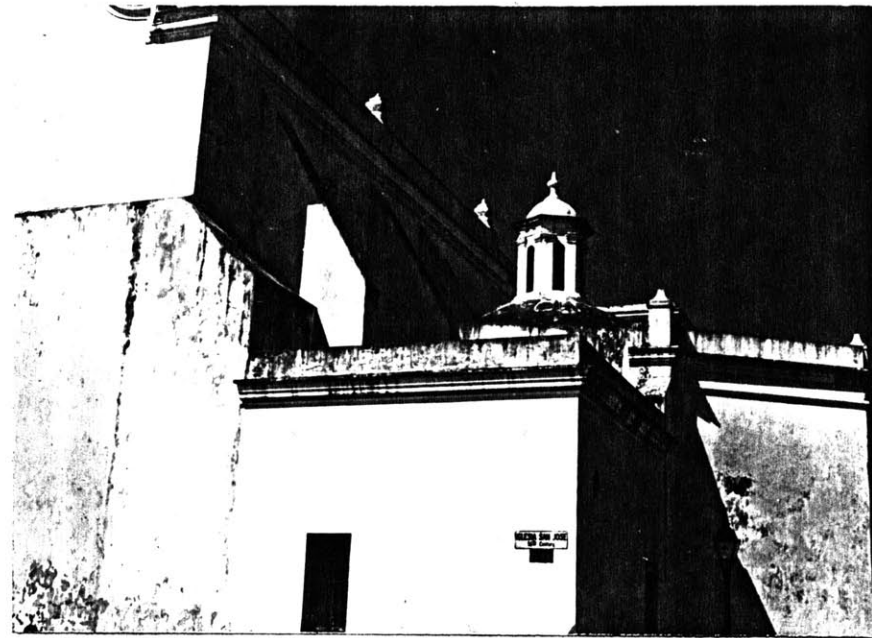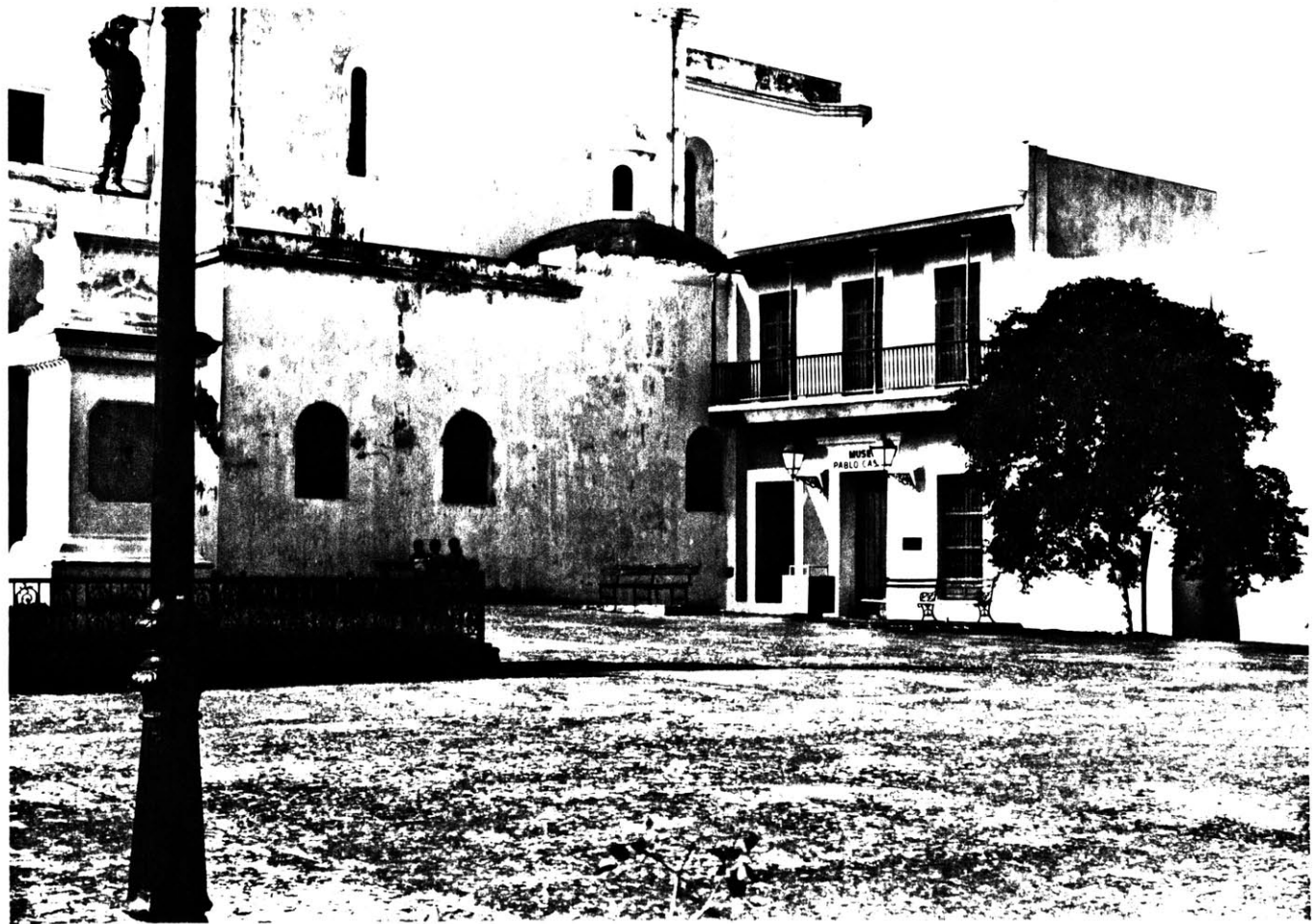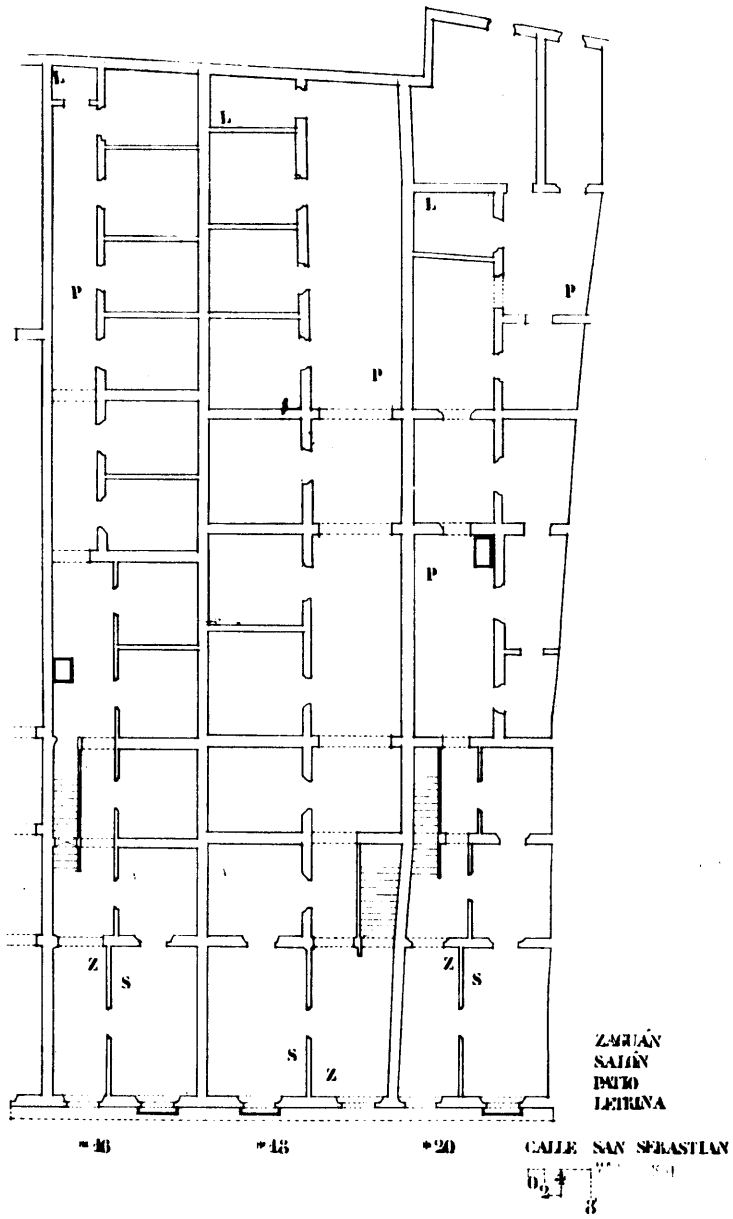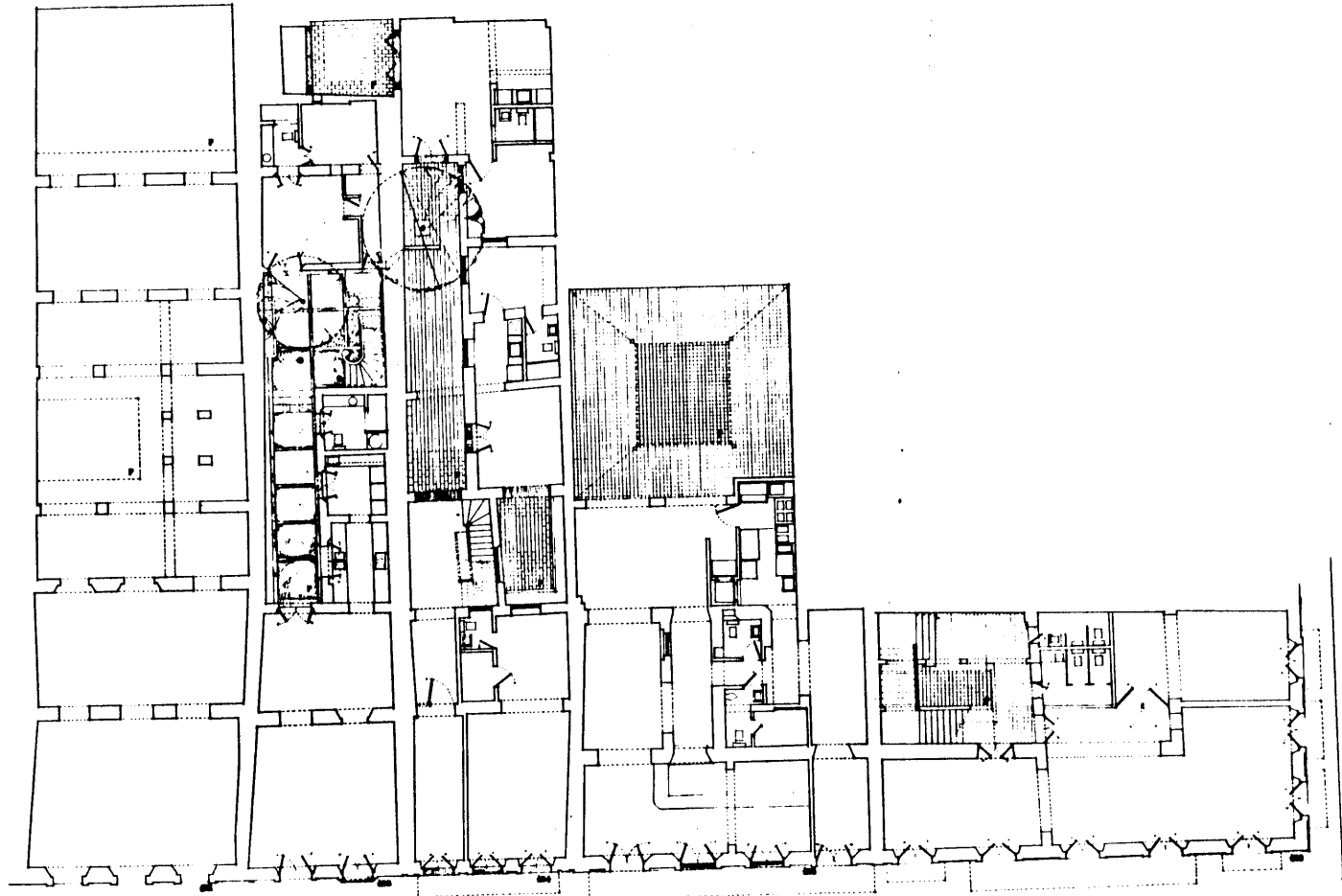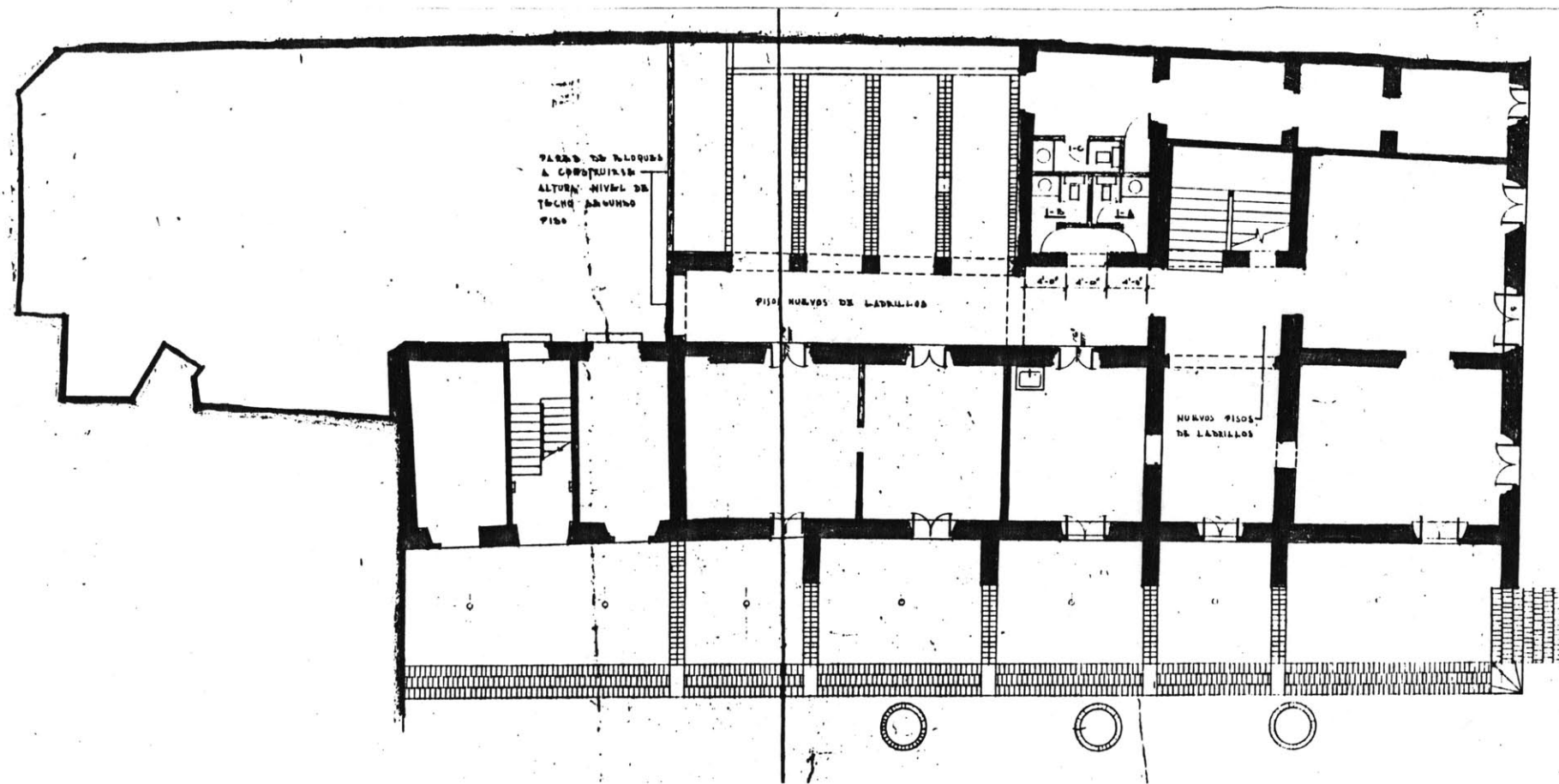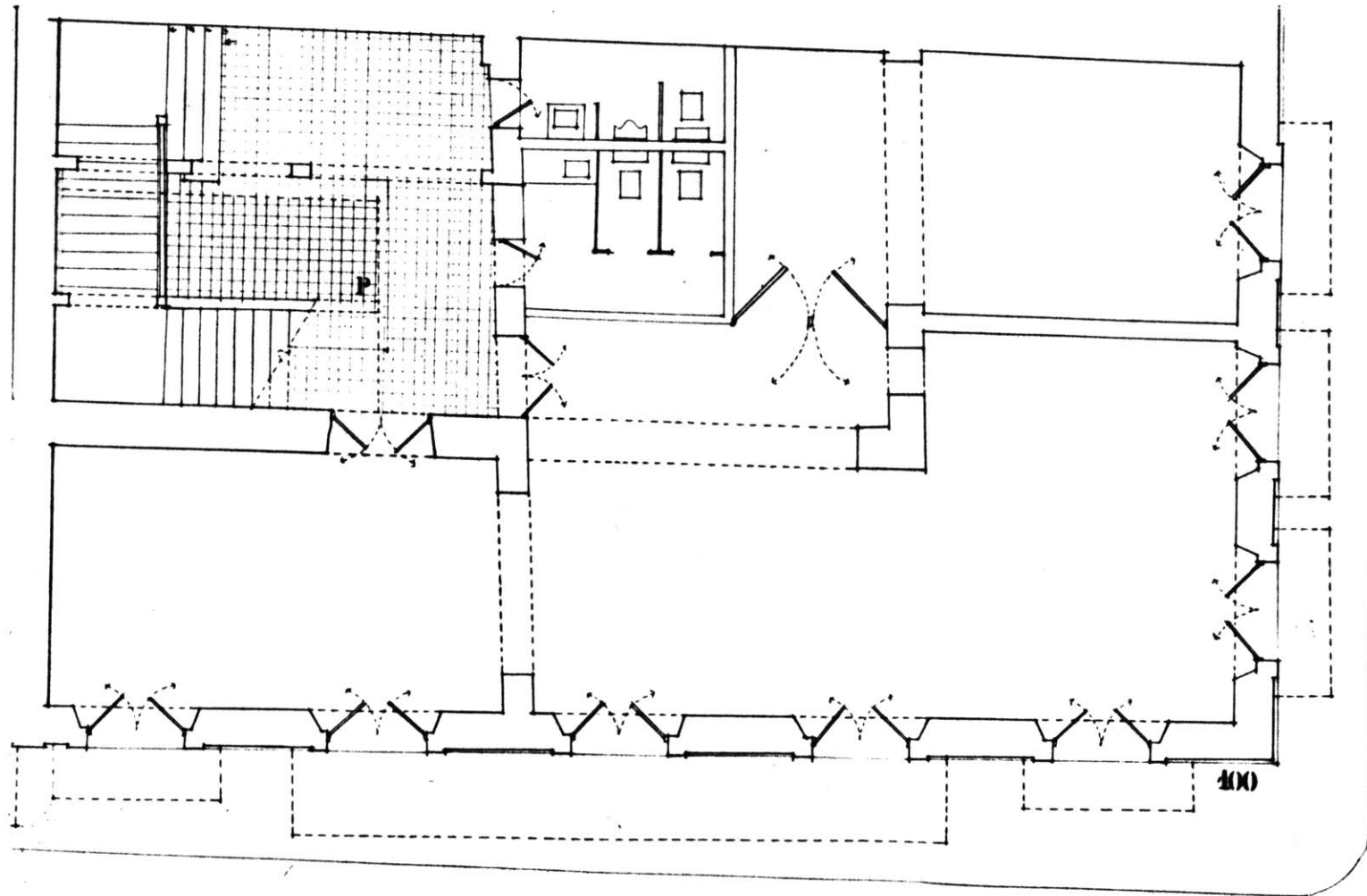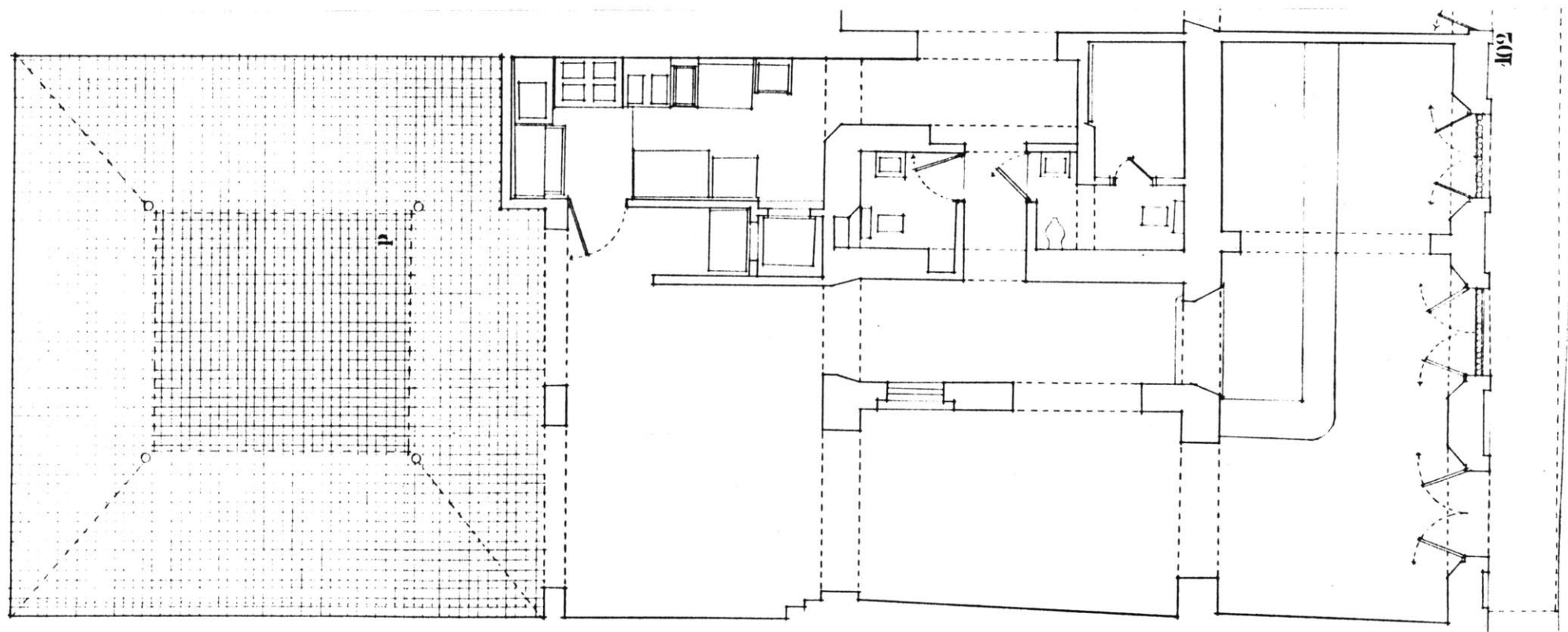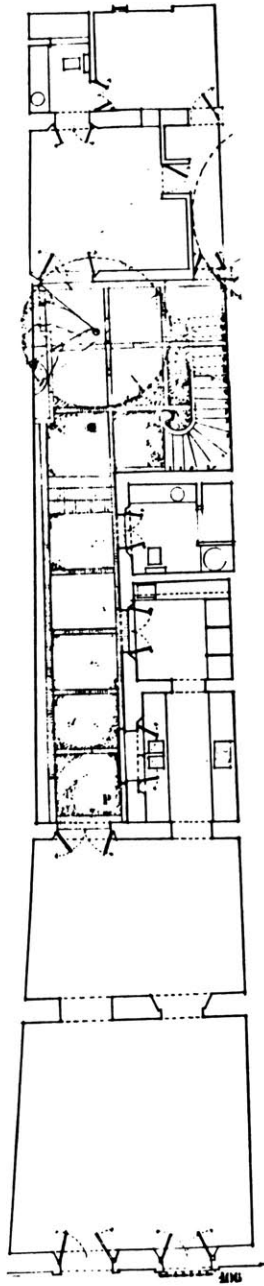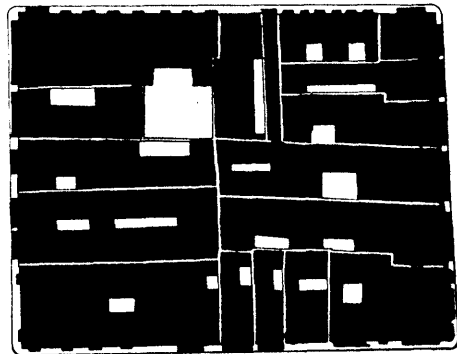
cruz
luna
sol
san josé _____BLOCK 119

405   407   409   SAN JOSÉ ESQ. LUNA

SOL 470   CRUZ 104   CRUZ 106

0 4 8   16   JUL 1981
              DEC 1981

SAN JOSÉ 407   DE LA CRUZ 406

DEC   1981

sections 123

S.JOSÉ

CRUZ

CALLE LUNA

109   451   153   155   157   108

124
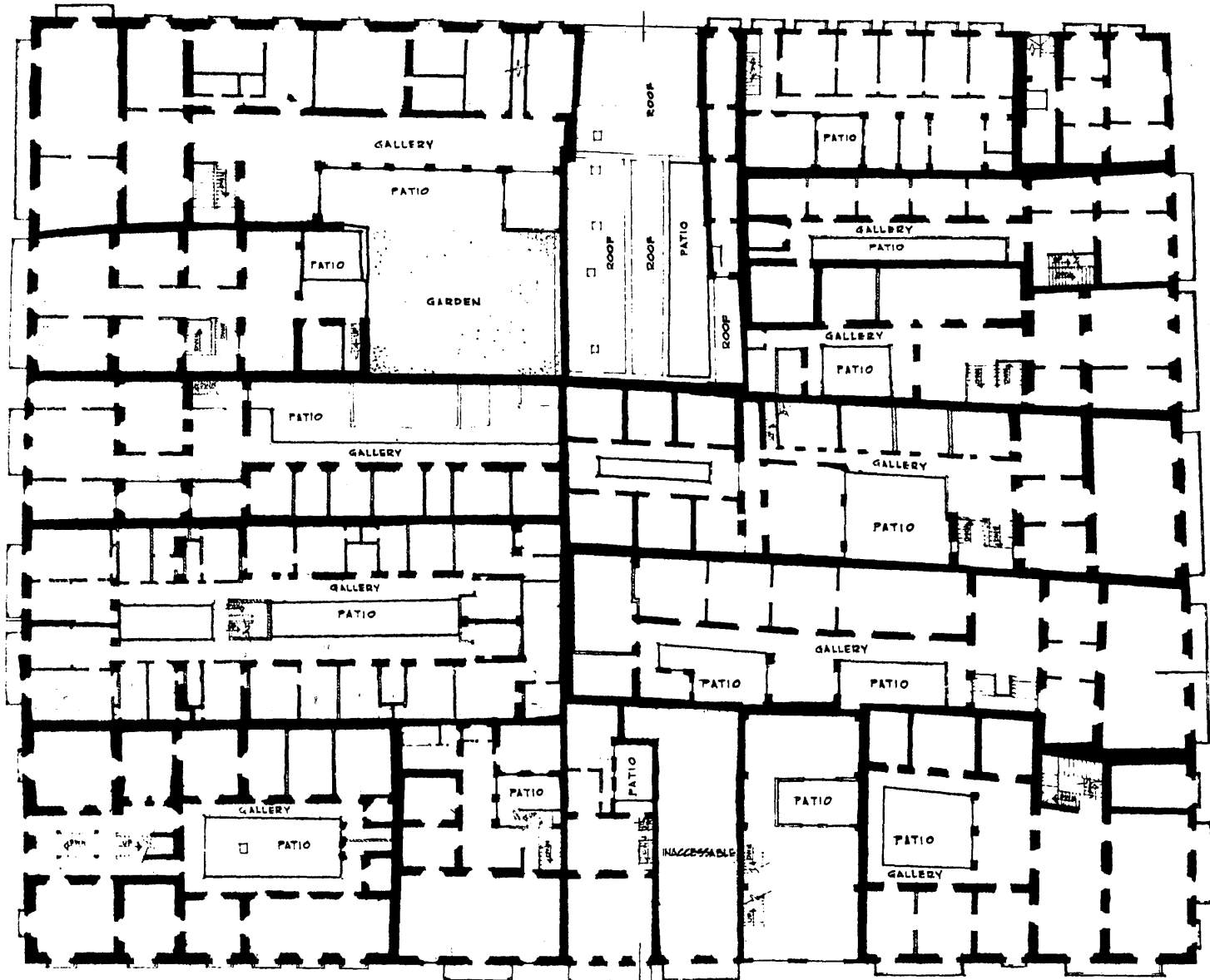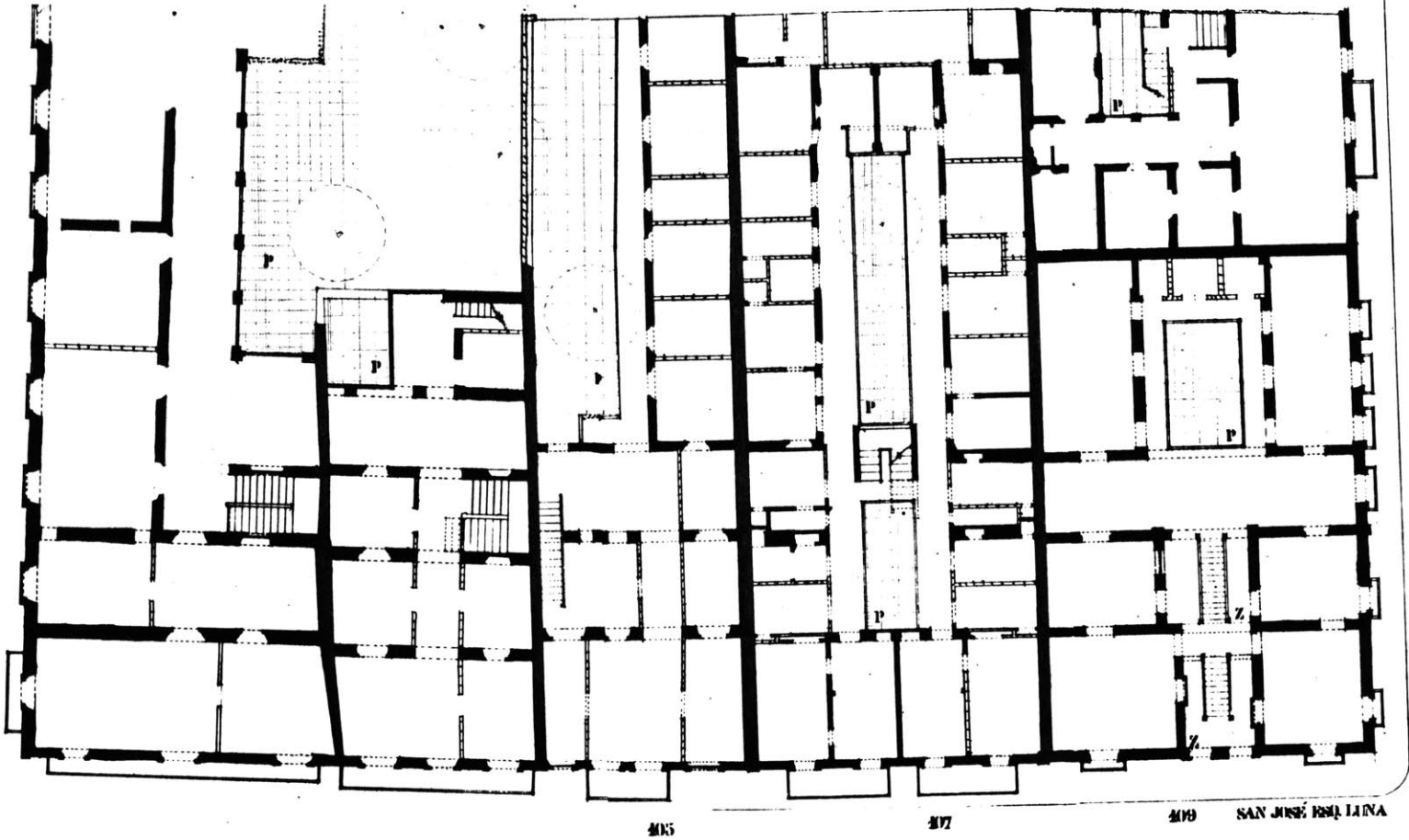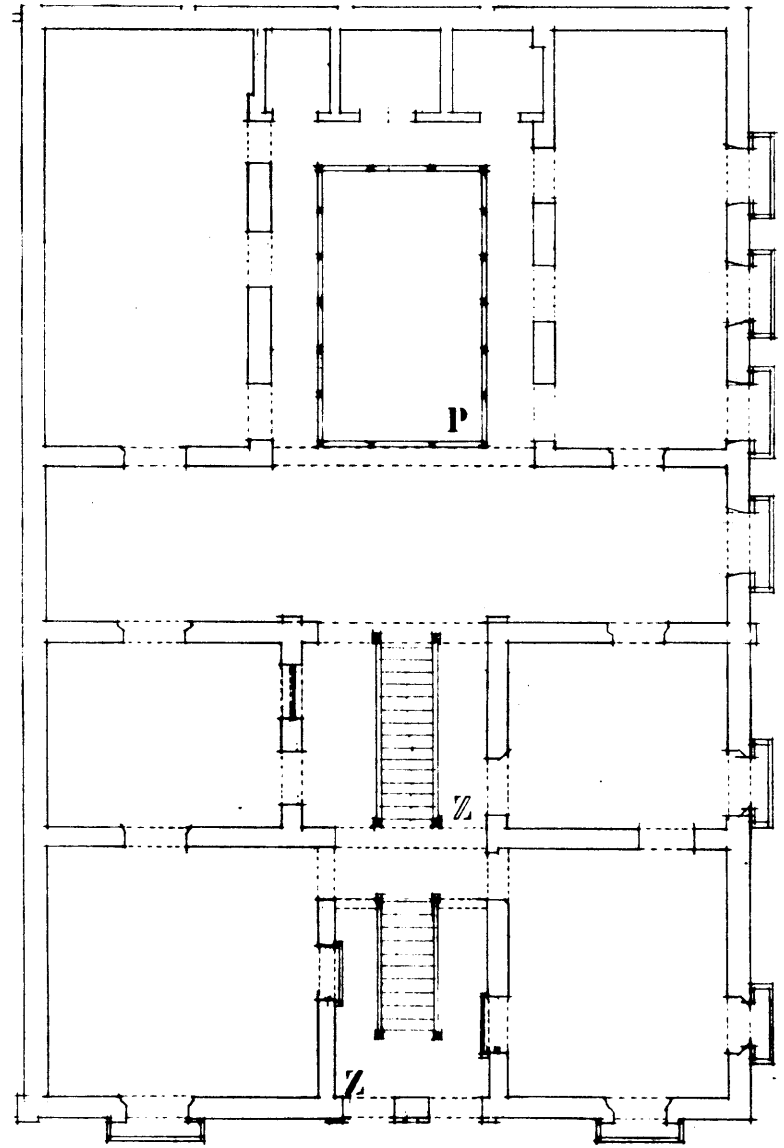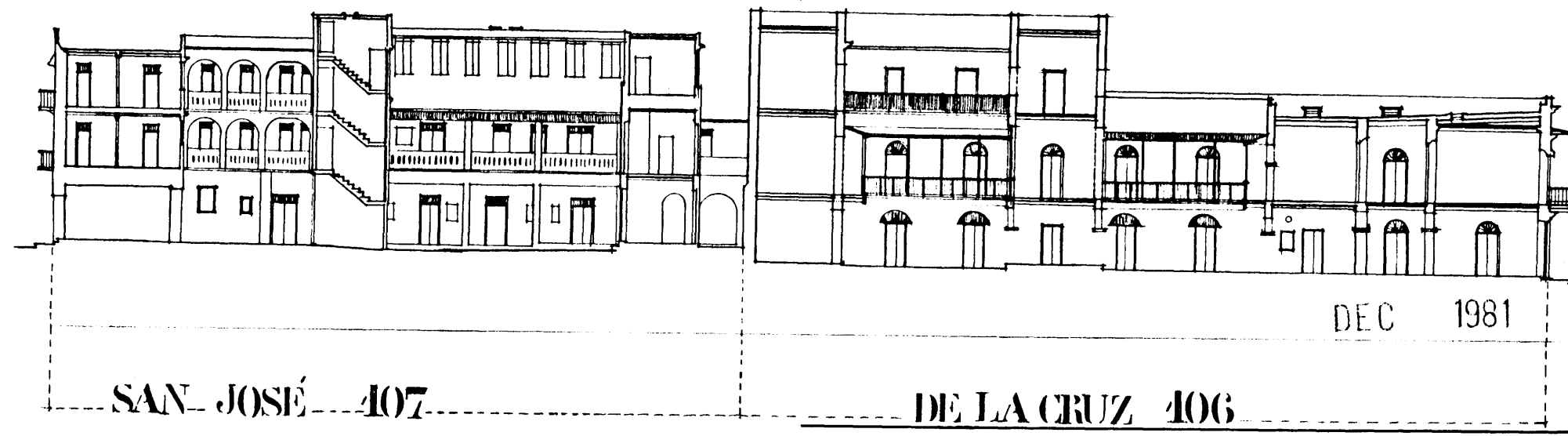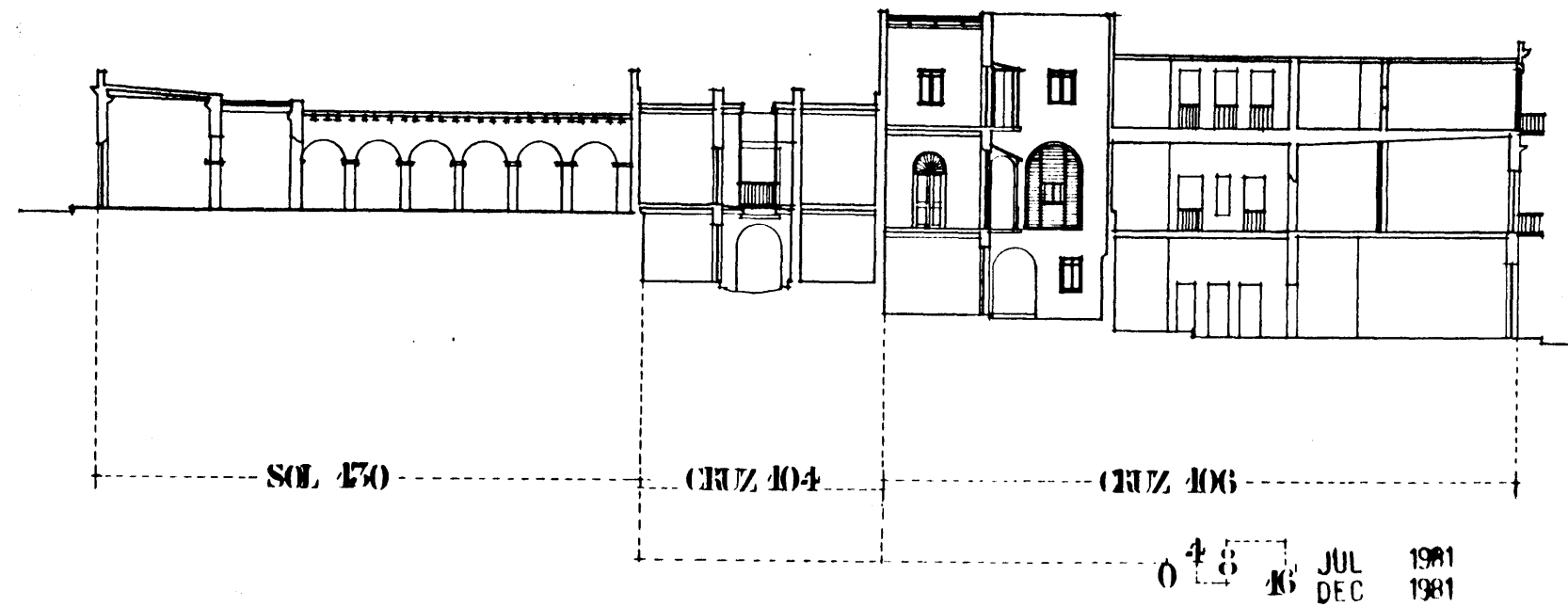
NO.100 CALLE DE LA CRUZ

0 2 4 8'

sol_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _UNIT _UNIT 129

SOL
AUG 1981

130
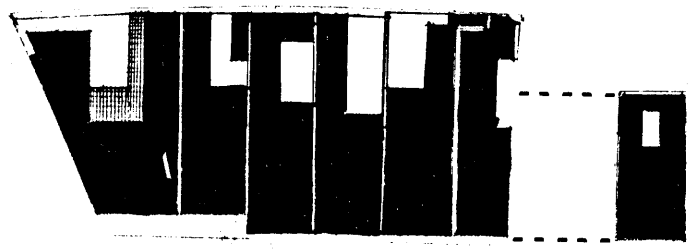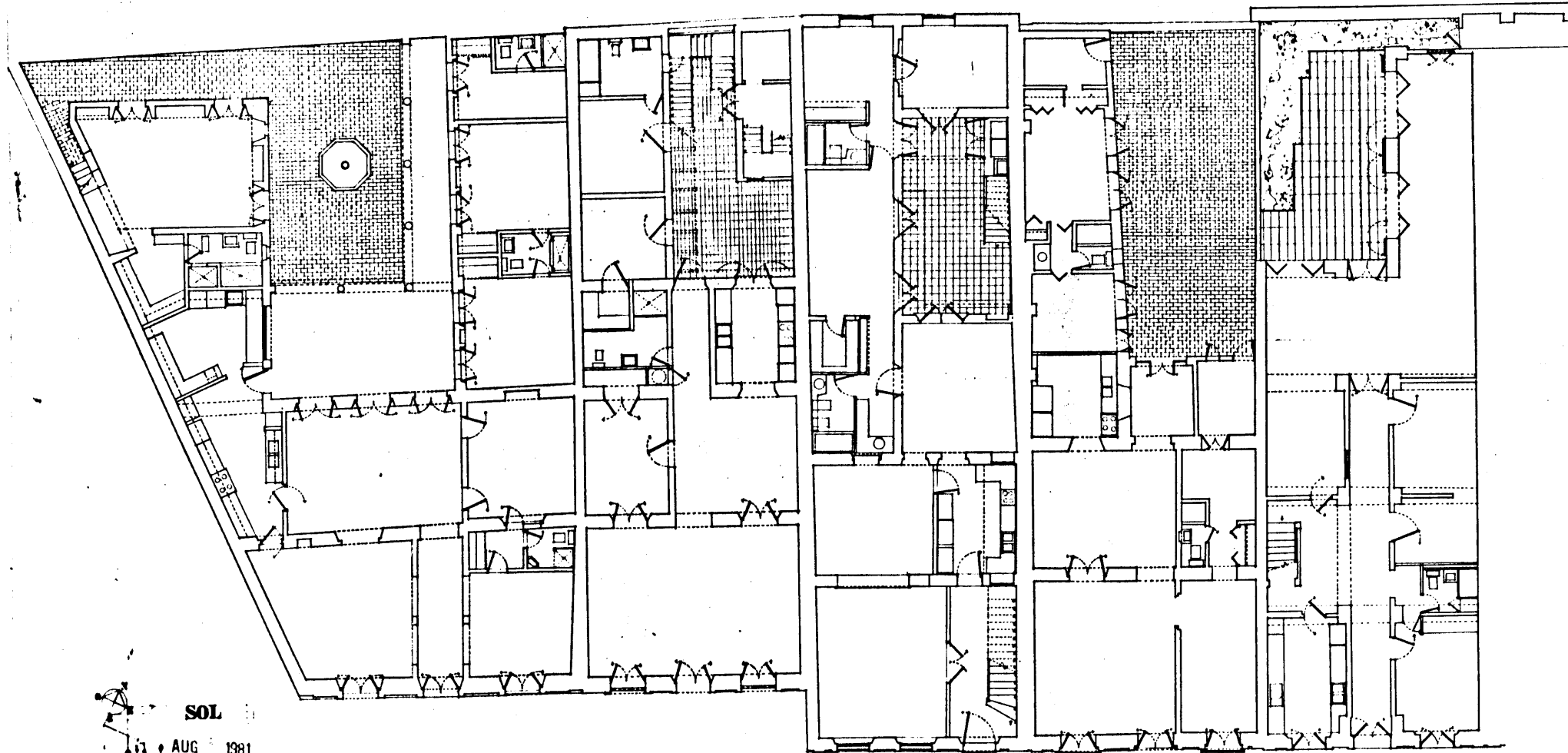
3 ANALYSIS OF STRUCTURE AND PROJECTION

The analysis of the structure of the context and the
projection in the site are mutually supportive, there-
fore, they are being presented together. These are
organized according to their particular level or size
of intervention, being divided into the following:

    level of the city (urban structure)

    level of the tissue (public collective and move-
                    ment)

    level of the support (building and unit aggrega-
                    tion)

    level of the unit (individual)

    level of the room (personal).

As mentioned in the last section, the analysis was
directed at the identification of the public and pri-
vate elements as well as the rules prevalent in the
context regarding their assemblage and generation.
These rules dealt basically with three aspects:

    position

    dimension and

    direction.

These were used to generate a reciprocal relation be-
tween the three major built-environment continuities:

                        building

                    access and

                    landscape.

THIRD INTRODUCTION

El Morro

La Perla

San Cristobal
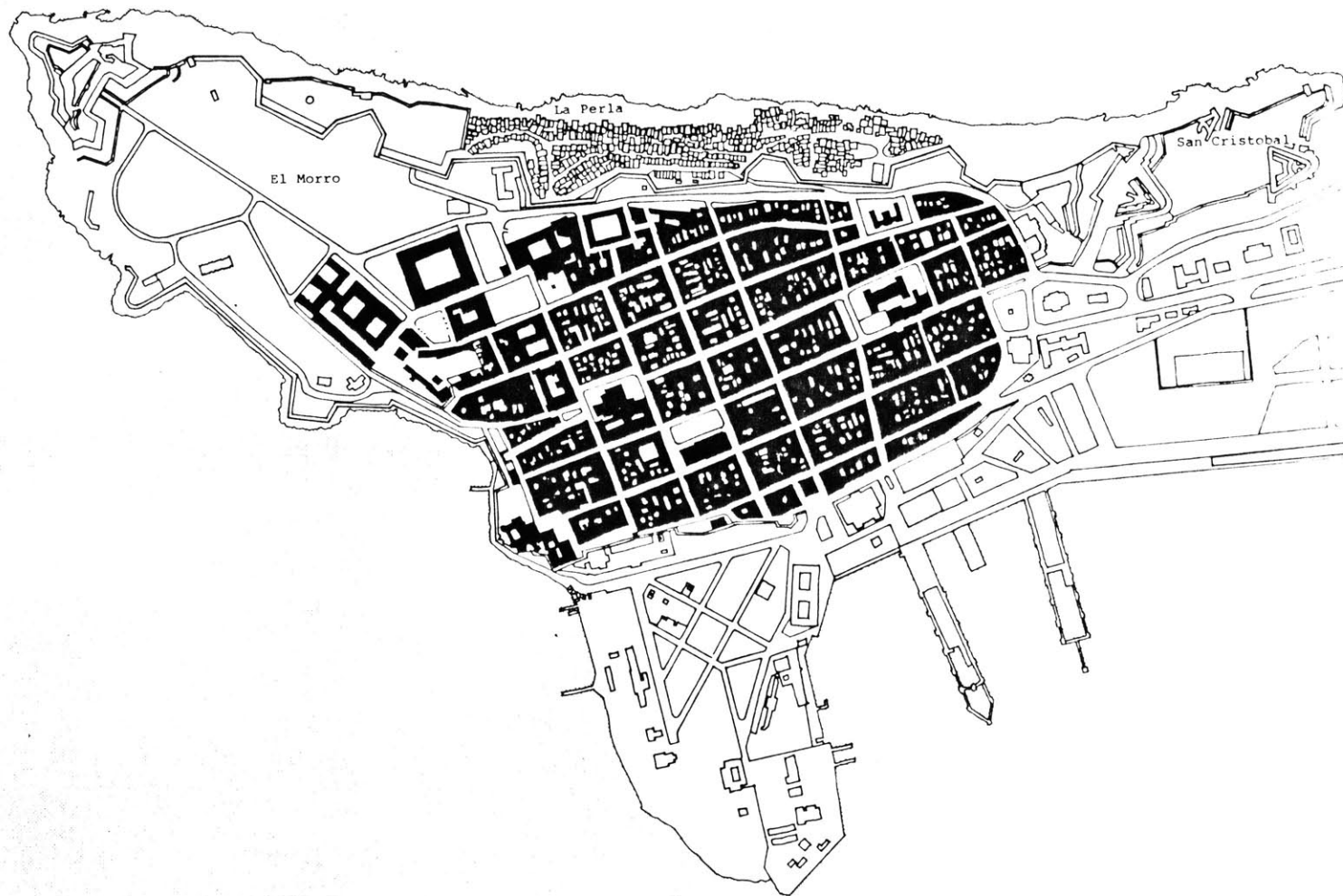
CITY

Naturally, it is impossible to understand the structure
and identity of the urban form of Old San Juan (or any
context) without a background understanding of the tech-
nological and economical basis, as well as the socio-
political forces from which it developed. What follows
is a preliminary background of these forces as related
to physical form.

The history of Old San Juan spans over four centuries,
starting with the removal in 1521 of the first permanent
colony in Puerto Rico - from Caparra to the islet of
San Juan.

As in other colonies in the Caribbean, the main concern
during the XVII century was to build defenses against
the Dutch, the English and other enemies at this time.
Building fortifications was then emphasized at the ex-
pense of domestic construction; religious and residen-
tial architecture exhibited only the simple techniques
of construction, similar to those practiced in small
Andalusian towns. The settlement followed the planning
policy of "Las Leyes de Indias" which provided the charac-
teristic layout for towns in Spanish colonies - the grid-
ded street pattern around a main plaza.

NOTES ON OLD SAN JUAN
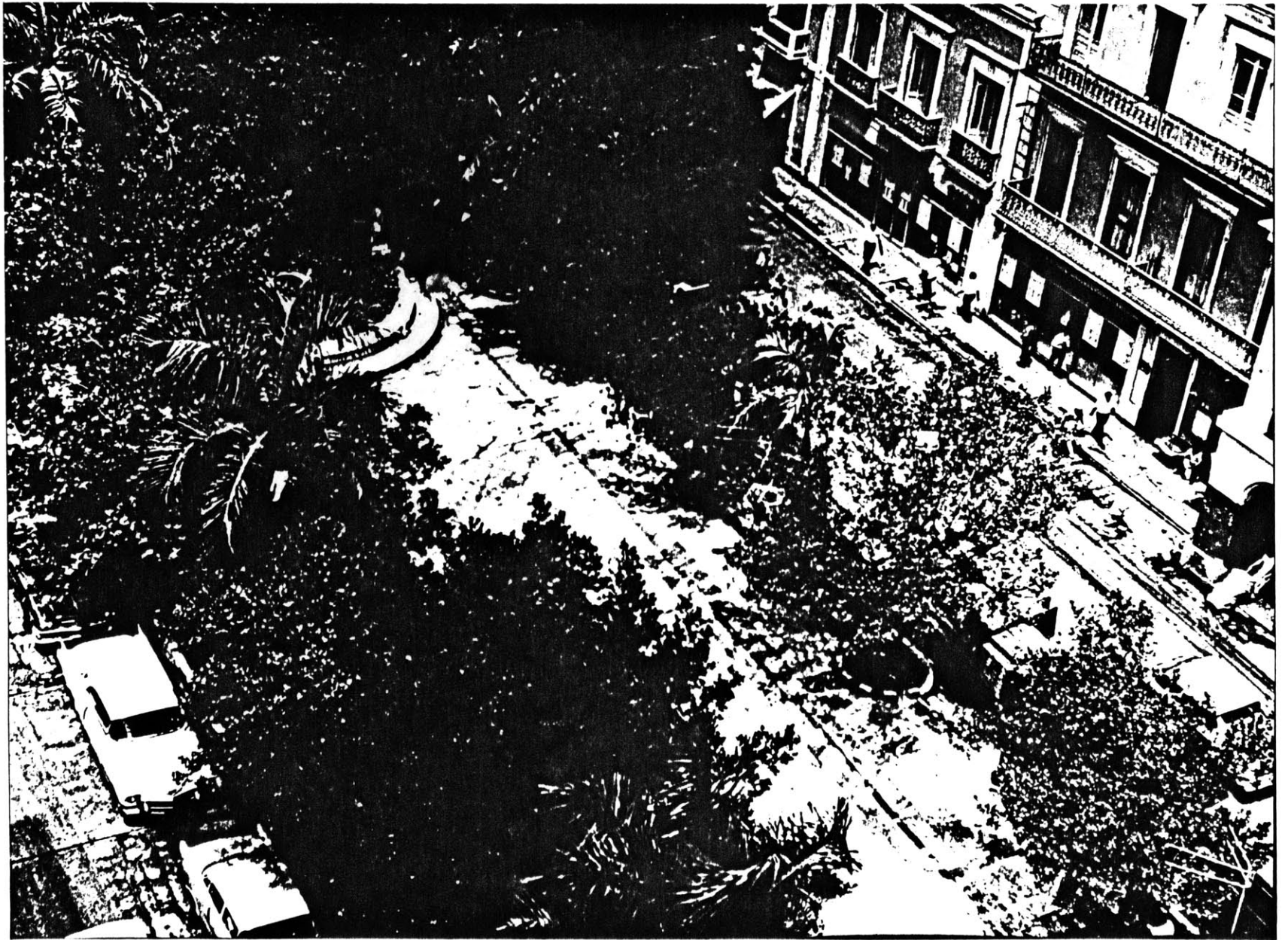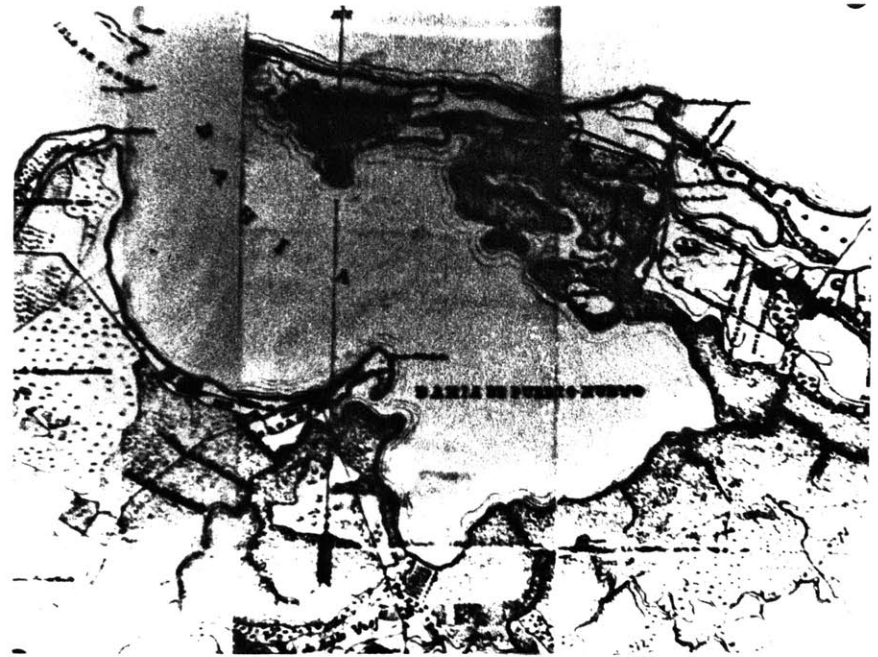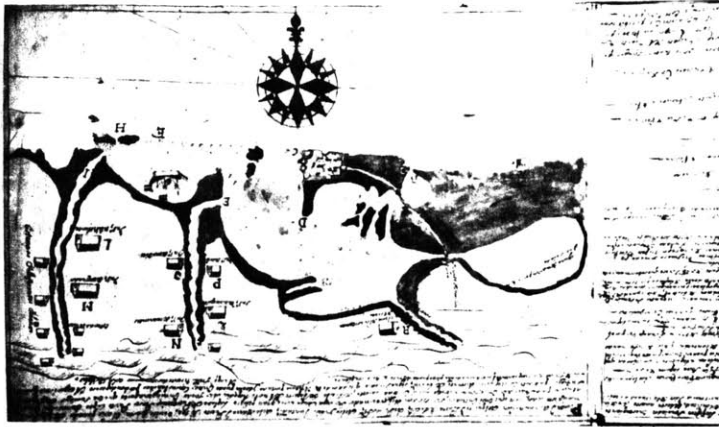
In San Juan, like other pre-industrial cities, the
land use scheme was the opposite of the present
scheme in industrial cities:

1: The shape of the city wasn't determined by
   the buildings of economical importance
   (as in our modern cities), but by the seats
   of power (church, state, etc).

2: The elite of society lived in the central
   nucleus, while the lower class groups lived
   in the outskirts of the city.

3: Frequently one area, or one building was
   used for different functions.

4: The public spaces prevailed over those of
   private use.

The urban structure was determined by the lack of
development in communication and transportation
systems. Since most of the resources were alloca-
ted in building defense fortifications, existing
resources were limited to satisfy only the basic
needs of the population.

This insufficiency justified the association between the
dwelling and the place of work, as well as for the narrow-
ness of the streets. Aside from the main vehicular roads,
the street network was formed by the spaces between houses.
The narrow streets then corresponded to their only function:
to provide access to the dwelling units. This narrowness
was also imposed by the fact that San Juan, being an islet
walled by defense fortifications, didn't permit the gradual
expansion of the city parallel to the growth in population.

The social elite lived in the center in order to have better
access to the principal social institutions (church, state,
market, etc.), and for better protection in case of a military
attack. The architectural emphasis was given to those build-
ings of idealogical importance.

The stress in design of public space, as opposed to private,
is also derived from the existing economical conditions. The
families were units of production more than of consumption.
The recreational activities were then transferred to the pub-
lic space, since the domestic environment was a place of work
more than one of recreation.

Todo lo que forma esta reya es peña tajada

Ysleta p.ª pueblo, hay della una legua

Otra ysleta mas...
vuelo otra

Rosa

Aqui ha de ser la ciudad

Paso

Paso

Laguna

Playa
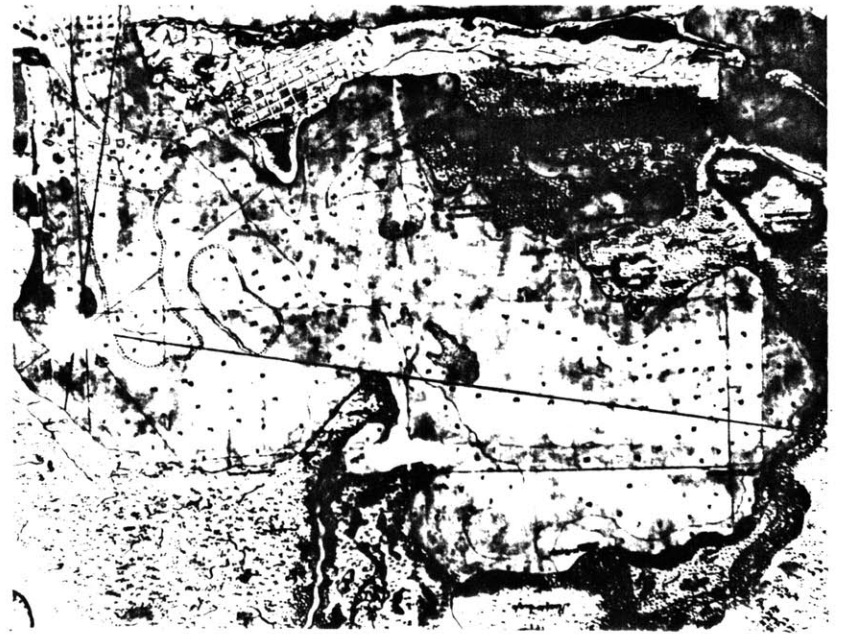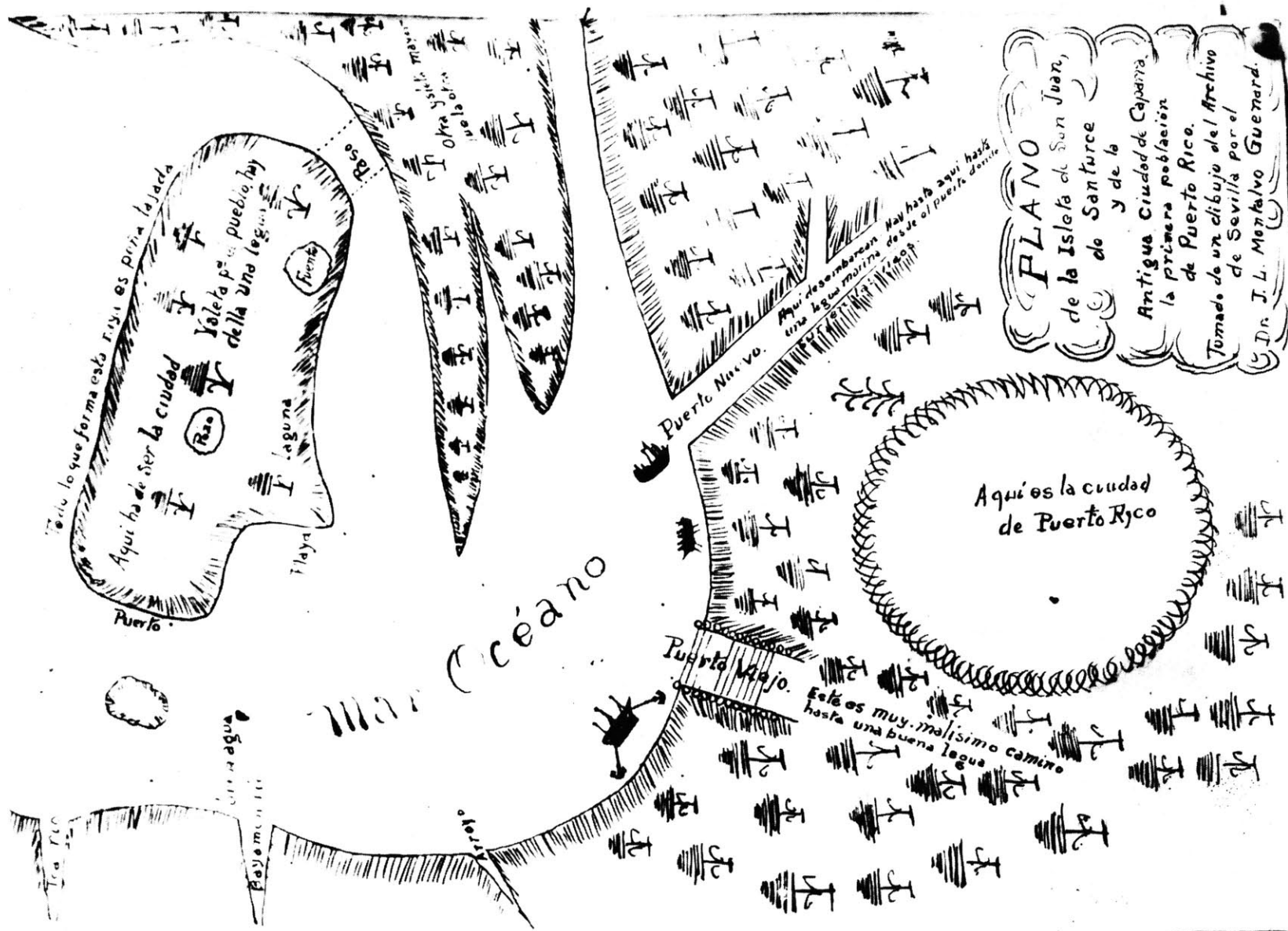
Puerto

PLANO de la Isleta de San Juan, de Santurce y de la Antigua Ciudad de Caparra la primera población de Puerto Rico. Tomado de un dibujo del Archivo de Sevilla Por el Dr. J. L. Montalvo Guenard.

Puerto Nuevo.

Aqui desembarcan. Hay hasta aqui hasta una legua marina desde el puerto donde...

Puerto Viejo.

Aqui es la ciudad de Puerto Ryco

Mar Océano

Este es muy malisimo camino hasta una buena legua

Arroyo

Payo monte

agua

Tra rio

PLANO DE
PUERTO-RICO:
DALE A LUZ
Don Tomas Lopez,
Geografo de los Dominios de S. M.
Madrid año de 178.

Explicacion de los nombres de este Puerto.

1. Punta del Morro.
2. Punta Sta Elena.
3. Punta Sn Agustin.
4. Puerta de Sn Juan.
5. Puntilla de Sn Justo.
6. Puerta y Muelle de Sn Justo.
7. Puerta de Tierra ó de Santiago.
8. Punta Manulio.
9. Isla de Manales.
10. Puente fortificado.
11. Castillo de Sn Geronimo.
12. Peñon de Barlas y Cerro Cabron.
13. Fuente donde se hace Aguada.
14. Bocas de Simon.
15. Puerta de Miraflores.
16. Puerta del Paso de Martin pena y Almazen de Polvora.
17. Puerto y Rio de Martin Pena.
18. Caño de la Renta.
19. Rio Pueblo nuevo.
20. Punta Pueblo viejo.
21. Rio Cataño.
22. Punta Cataño.
23. Rio Palo seco.
24. Castillo del Cañuelo.
25. Isla de Cabras.
26. Castillo de Sn Christobal.
27. Puerto de la Perla.

Nota.

Los Baxos A B C D G H con Piedras Afuera.

Los I L Y S con de Piedrezuelas menudas y Cascaxo, faciles de limpiar con Cañones.

Otra.

Este Puerto es capaz segun su extension de Canal de que se amarren en el una Esquadra de 10 Navios de Guerra y mas de 180 Fragatas abrigadas de todos vientos y mar.

El fondo de la Canal es limo predoso

der la agua en punto la es. H...

El fondo de la Playa es de arena y arcilla menuda tambien excelente tenedero.

Los Numeros de sonda son Brazas medidas en la Baxa Mar, cuyo aumento en las conjunciones y oposiciones es de 7 pies, y en las quadraturas es de 4.

Escala de 600 Varas Castellanas.

143

The construction of inward looking dwellings with interior patios insured personal privacy, while the balconies were the physical connection to the life that took place in the public space. This functional equilibrium between streets and dwellings made the plazas the most important element in the urban system. The basic elements of the town planning were not the streets or roads, but the dwelling units (the private realm) and the plazas (the public realm).

The city that was born from the organization of units around a square, then grew by squares in a biological way, by triggering off a process of splitting and duplicating each time an existing square had reached the fulfillment of its communal function. The urban form of San Juan developed then from a system of squares, and not one of streets like in our modern cities. The square provided the framework within which some of the most important political, cultural, and social relationships are embedded.

ponce

PLAZAS

146

san juan

149
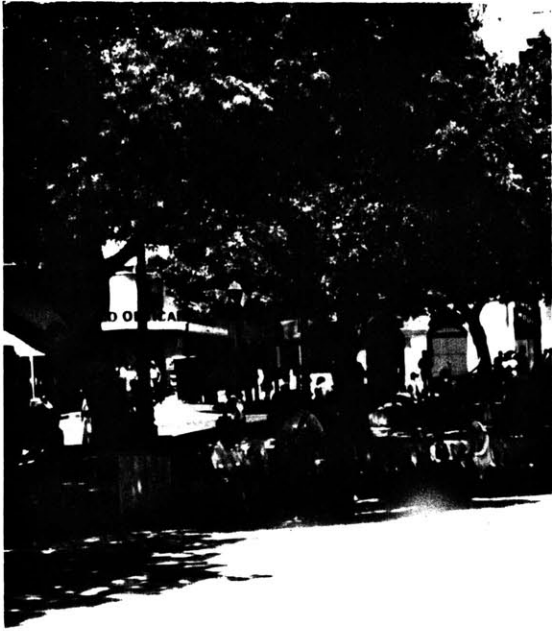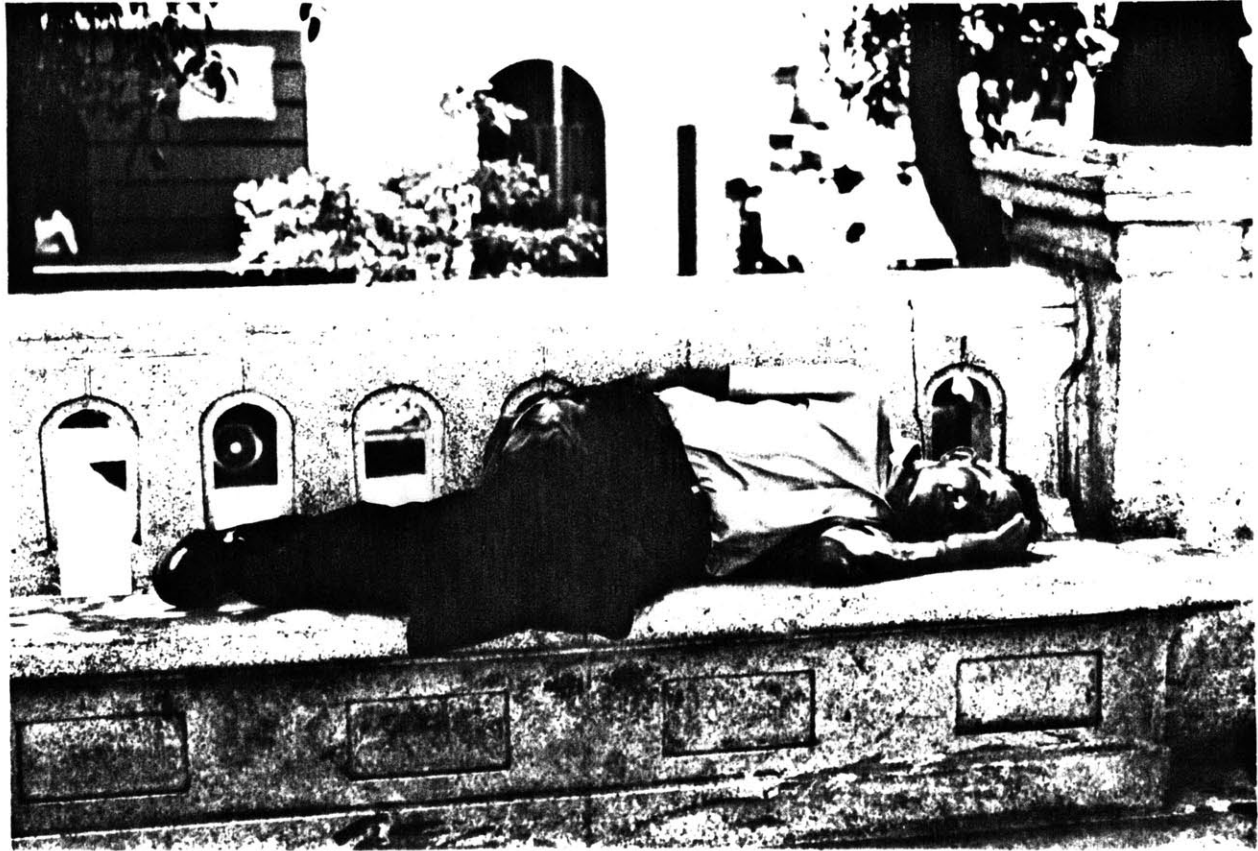
yauco

san juan

PEDESTRIAN STREETS
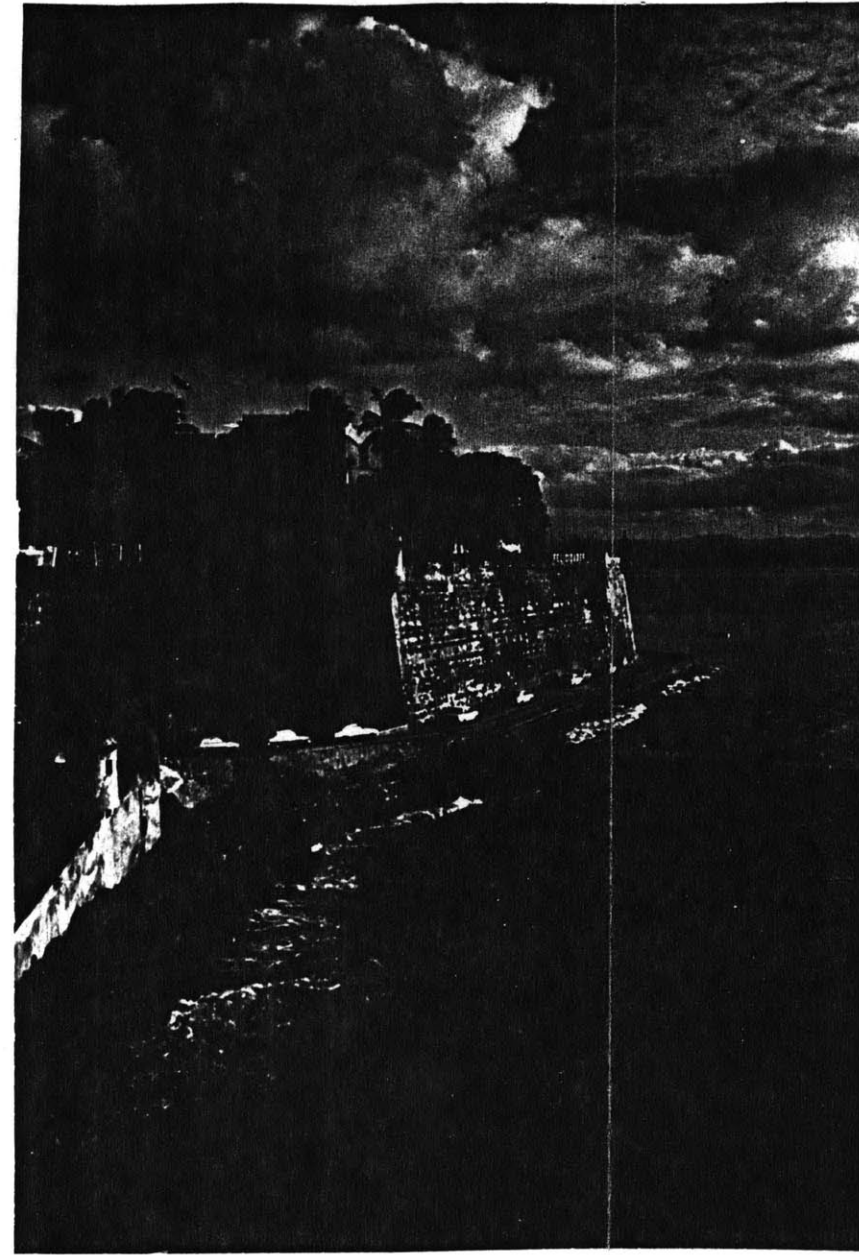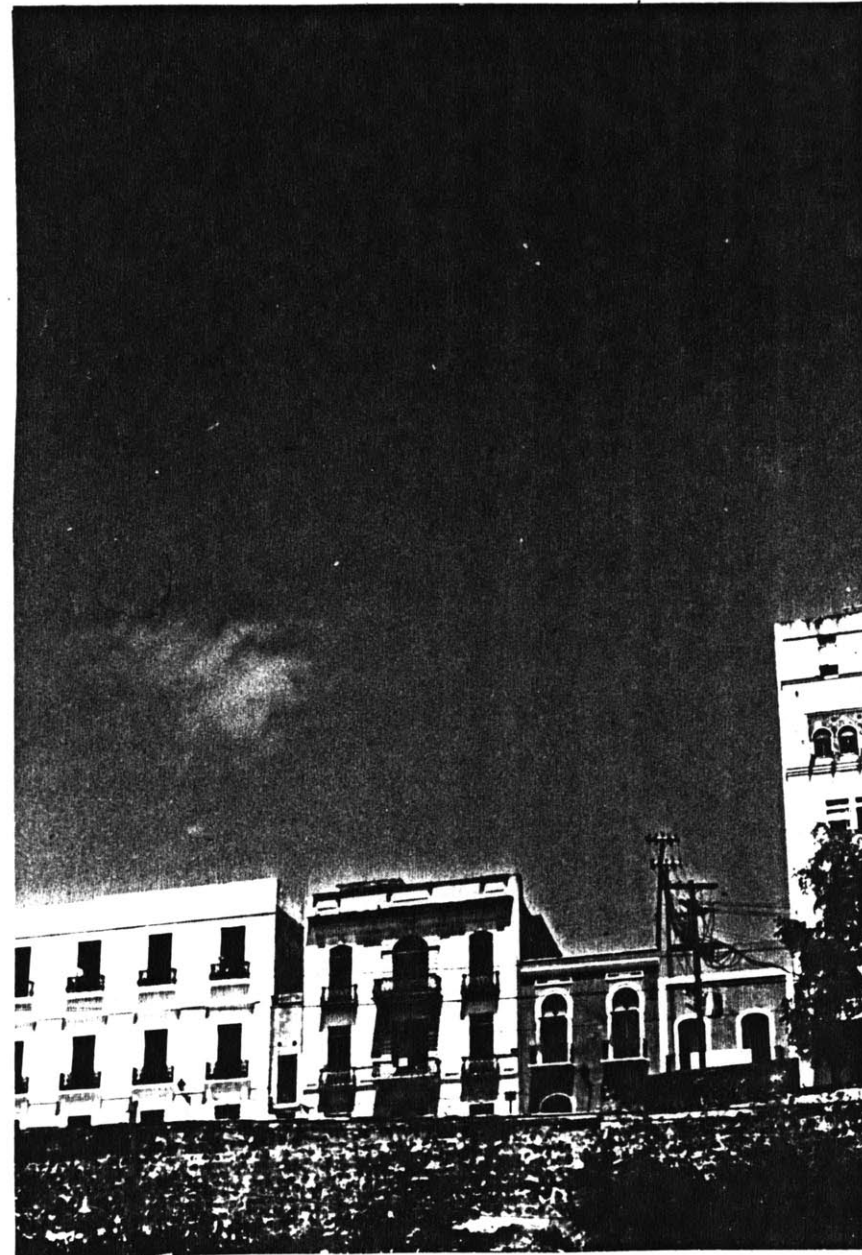
EDGE
WALL

Being based on "Las Leyes de Indias", the physical structure of San Juan was the product of an explicit system. The individual character of its buildings, however, was the product of an implicit system based on the building tradition, the culture, and the understanding of the tropics by the Spanish. These systems, explicit and implicit, determined the theme which each intervention, a variant on the theme, would have in common. This developed an environment in which public and private, built, and unbuilt, collective and individual, contributed positively in a process of mutual definition. The relation between place of living and workplace created a continuity of form which held a variety of uses, rather than segregated areas each containing different functions. The variants supported the individuality of the person while the theme maintained the integrity and coherence of the whole.

el morro

park

ballajá

site

plaza san josé

san sebastián

cristo

callejón del hospital

sol

luna

callejón de las monjas

plaza de armas

TISSUE

The level of the tissue embodies the scale of inter-
relations smaller than the urban structure and lar-
ger than the individual buildings. The urban struc-
ture includes major transportation arteries, major
public functions and facilities, and the global de-
signation of density and use of urban areas. The
single building usually has clear boundaries within
a specific site. The tissue level is that scale
where a large number of discrete architectural inter-
ventions come together into a larger whole and are
integrated with streets and public spaces to fill the
blank spots in the urban structure.

Interventions at the level of the tissue must be based
on intentions with respect to the urban structure.
These intentions establish the relationships between
the site, movement systems, and the major collective
nodes of the city.
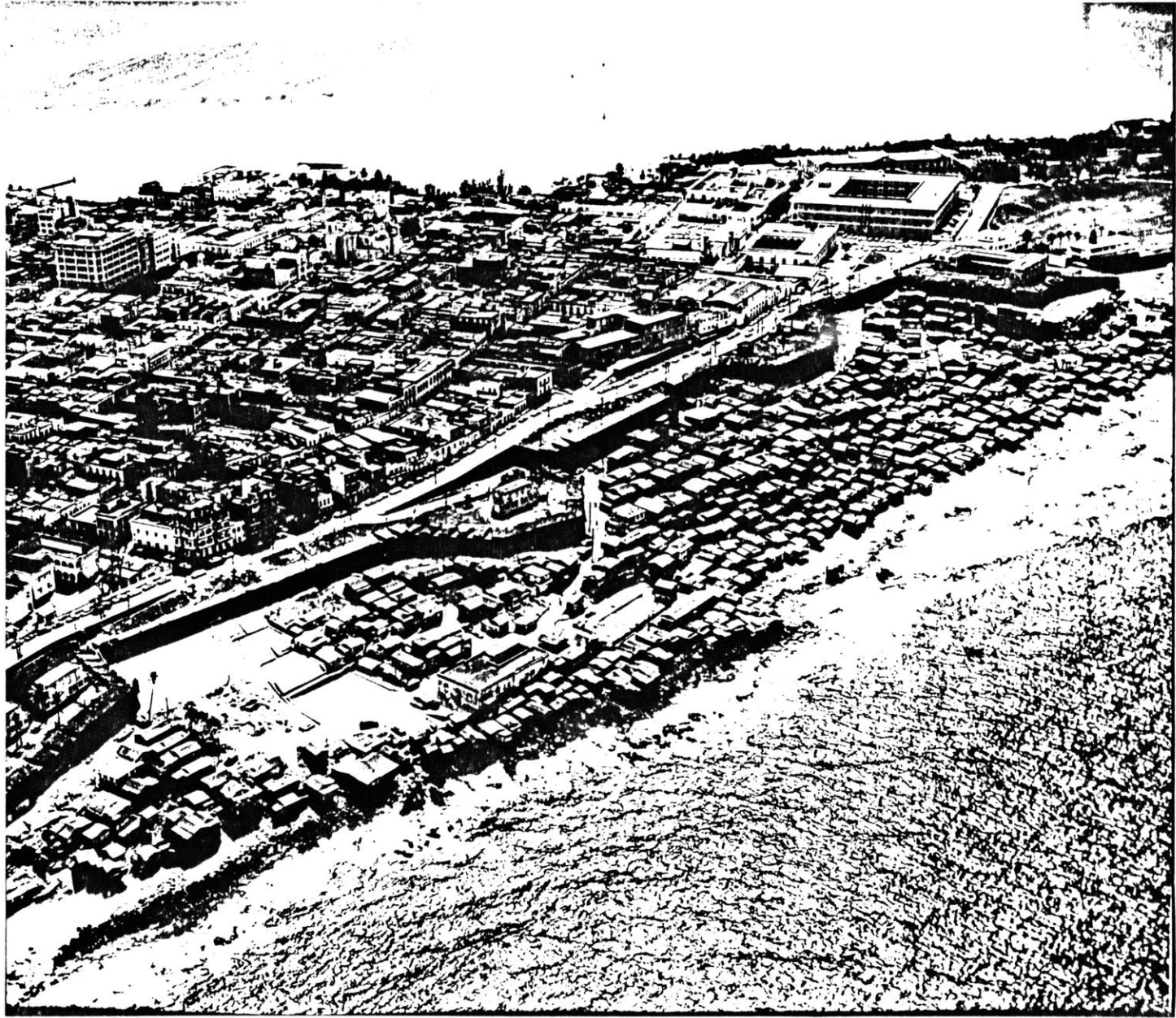
The basic intentions at the level of the tissue could
be outlined as follows:

1: To extend the north-south pedestrian network
defined by Callejon de las Monjas and Callejon
del Hospital. (illustration 1.)

2: To liberate the Ballajá Plaza, making it avail-
able as a positive urban element rather than an
abandoned, self-contained open space.
(illustration 2.)

3: To build the west edge of Plaza San José in order
to mend the urban vacuum created by the empty
parking lot(s); restoring it to its proper degree
of definition. (illustration 2.)

4: To create a public continuity between the land-
scape of El Morro and the city, using as a tool
the interpenetration of the 'green' and 'built'
landscapes. (illustration 3.)

5: To re-route the vehicular traffic to make these
public (pedestrian) continuities possible, allow-
ing the development of a public node at the be-
ginning of the promenade leading to El Morro.
(illustration 2.)

el morro

park

ballajá

site

plaza san josé

cristo

callejón del
hospital

callejón de las
monjas

el morro

park

p

c

b

ballaja

v

site

b

v

plaza san josé

san sebastián

2

158

el morro

park

l
p

ballajá

l
p

l
p

site

p

plaza san josé

p
l

callejón del
hospital

cristo

callejón de las
monjas
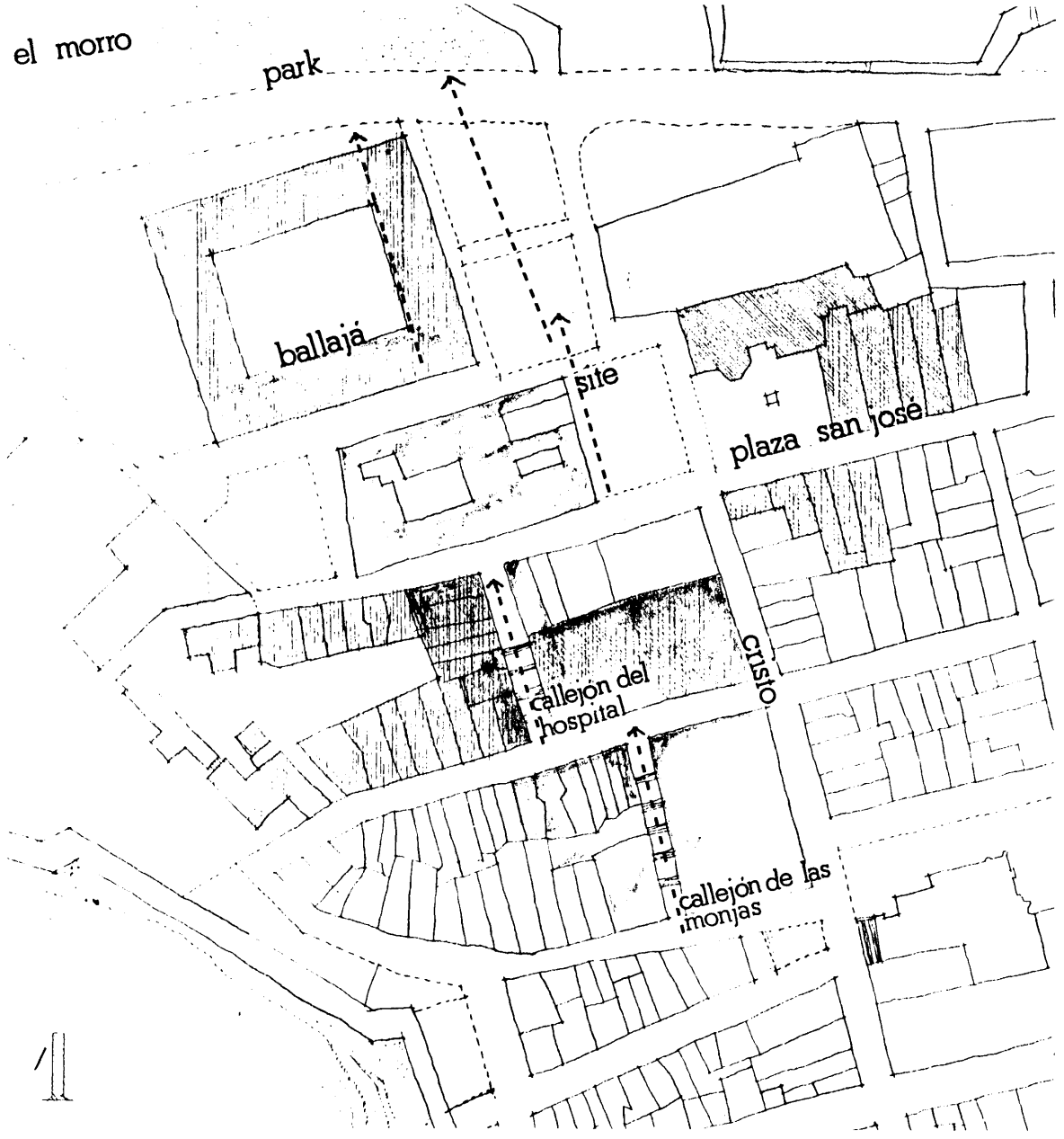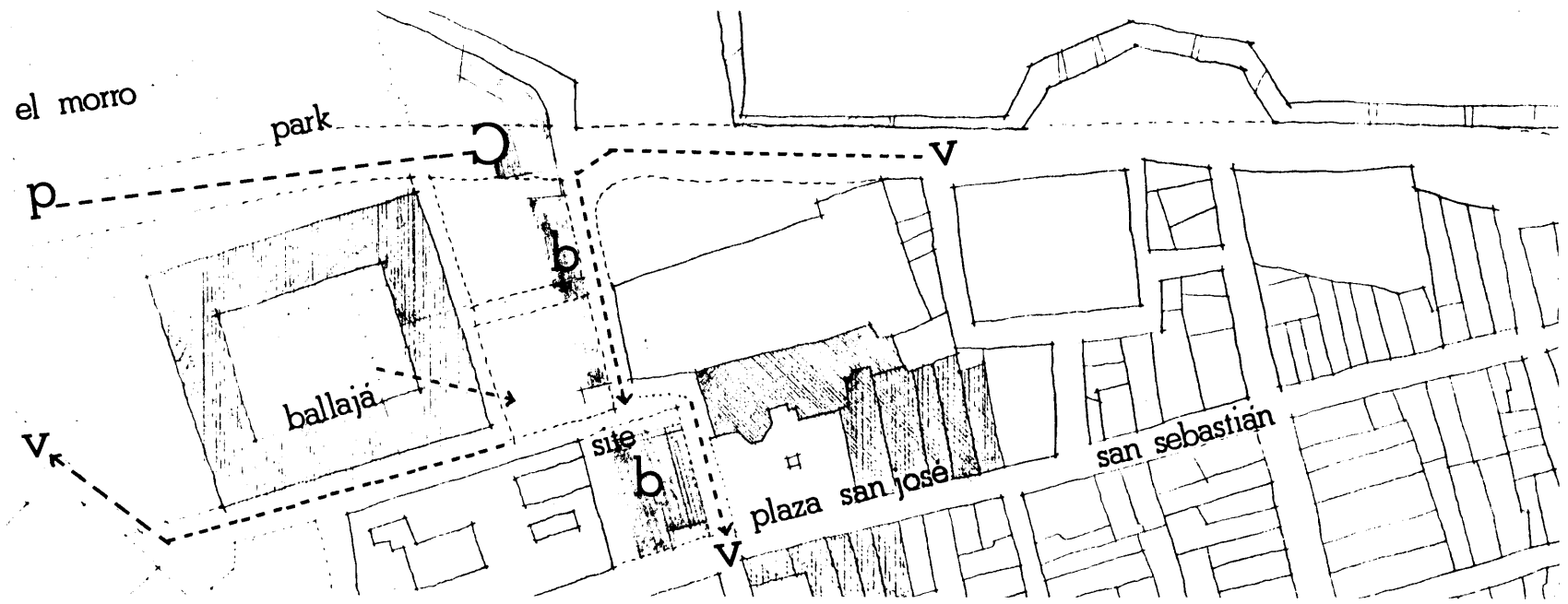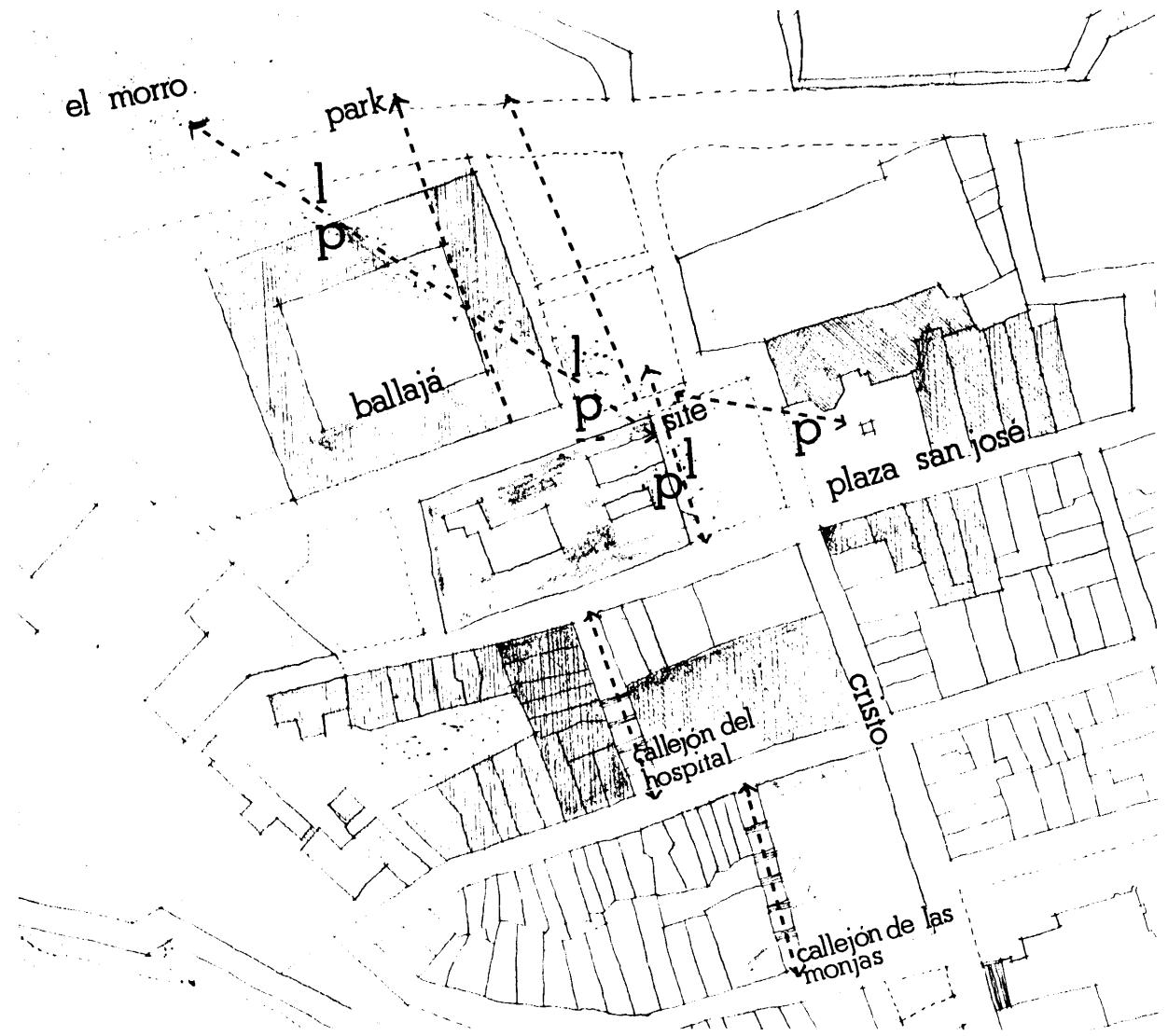
3
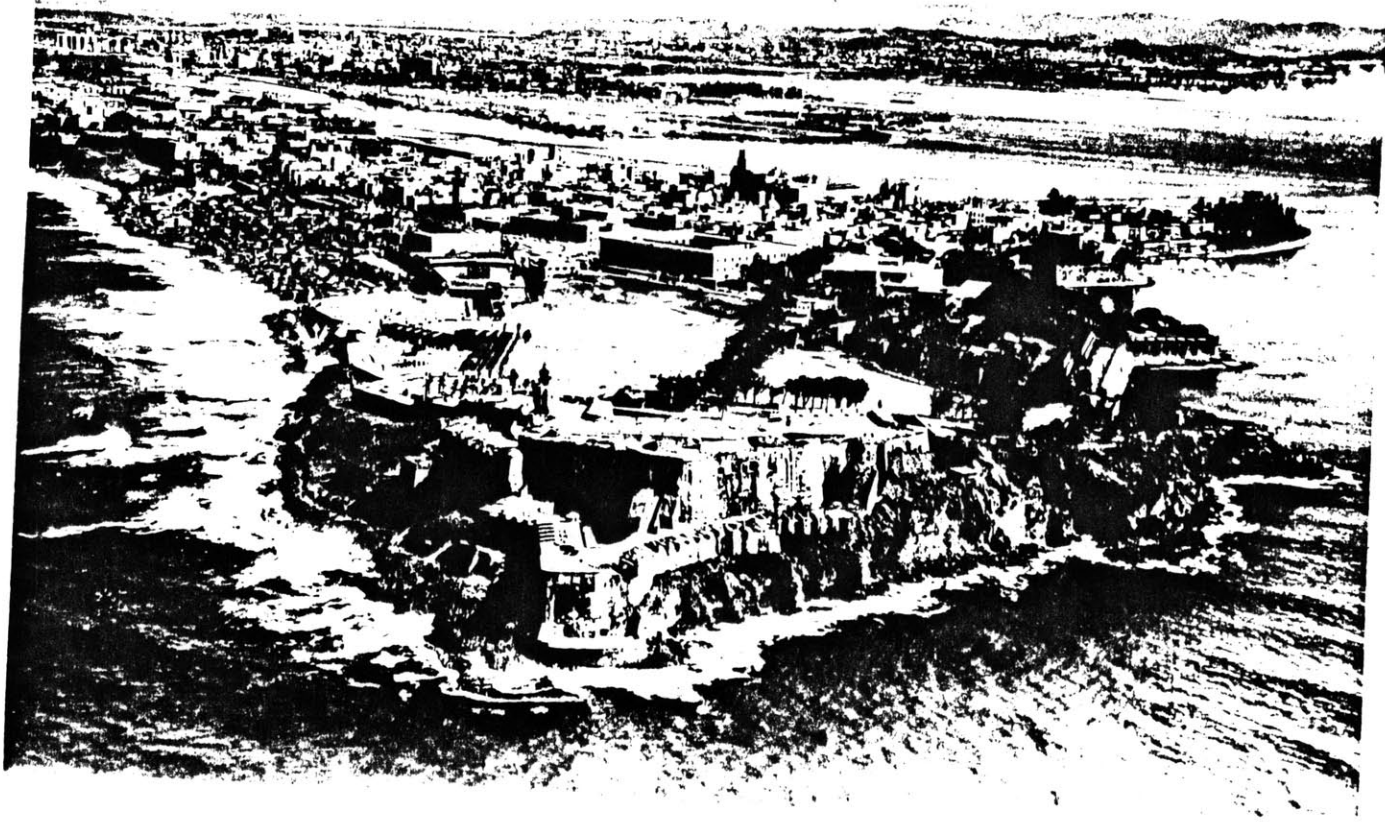
The site is located on the northwest edge of the city,
its boundaries being Boulevard del Valle on the north,
Cristo St. to the east, San Sebastian St. on the south,
and Morivivi St. on the west. Its southern section
lies on the crest of a hill - the highest point of the
city. From it one can see the ocean to both the north
and the south. The site then slopes down to Boulevard
del Valle which ends at the entrance to El Morro. The
city's walls lie beyond this park and fortress.

Major institutional, governmental, public, and recrea-
tional buildings adjoin as well as define the site.
These are: El Morro on the north,
            San Jose Church
            Plaza San Jose   and
            The Dominican Convent (now the Institute of
                                  culture)   on the east.
            Commercial buildings   and
            The Cardenal's residence on San Sebastian
                                          to the south,
        and,
            Ballaja (abandoned barracks and headquarters
                    of the Spanish and American military)
        and,
            Hospital Rodriguez (presently occupied by the
                                department of Public Edu-
                                cation)   on the   west.   SITE

The site has been used as a parking lot since the demolition
of previously existing residential buildings. This created
an urban vacuum in terms of physical definition as well as the
balance of urban functions. Ballaja is abandoned and in a
severe state of deterioration.

The projection proposes housing as the program for the site.
It would be accompanied by small-scale supportive functions
such as commerce, offices, work studios, etc.. Ballaja could
hold larger functions as well as those already mentioned. These
could range from a public market, a parador (inn), public ser-
vices such as day care for children, or government offices.
The intent, however, is that it will be pluralistic in use and
not controlled by a single function - a microcosm of the city.

Housing was selected as a principal use for a number of reasons:
   1: First and most obvious, is to propose a positive alterna-
      tive to the problem of housing shortage in the city.
   2: To restore the city to its proper degree of definition,
      integrating the studied area to the rest of the tissue.
   3: To restore the balance between functions (now dominated
      by institutional and governmental buildings which only
      yield day time activity, leaving the area desolate and
      unsafe at night).
The revitalization of the area at the level of the tissue is
crucial if the intentions at the level of the city are to be
realized.

164

San Francisco St.

Cristo St.

Fortaleza St.

166
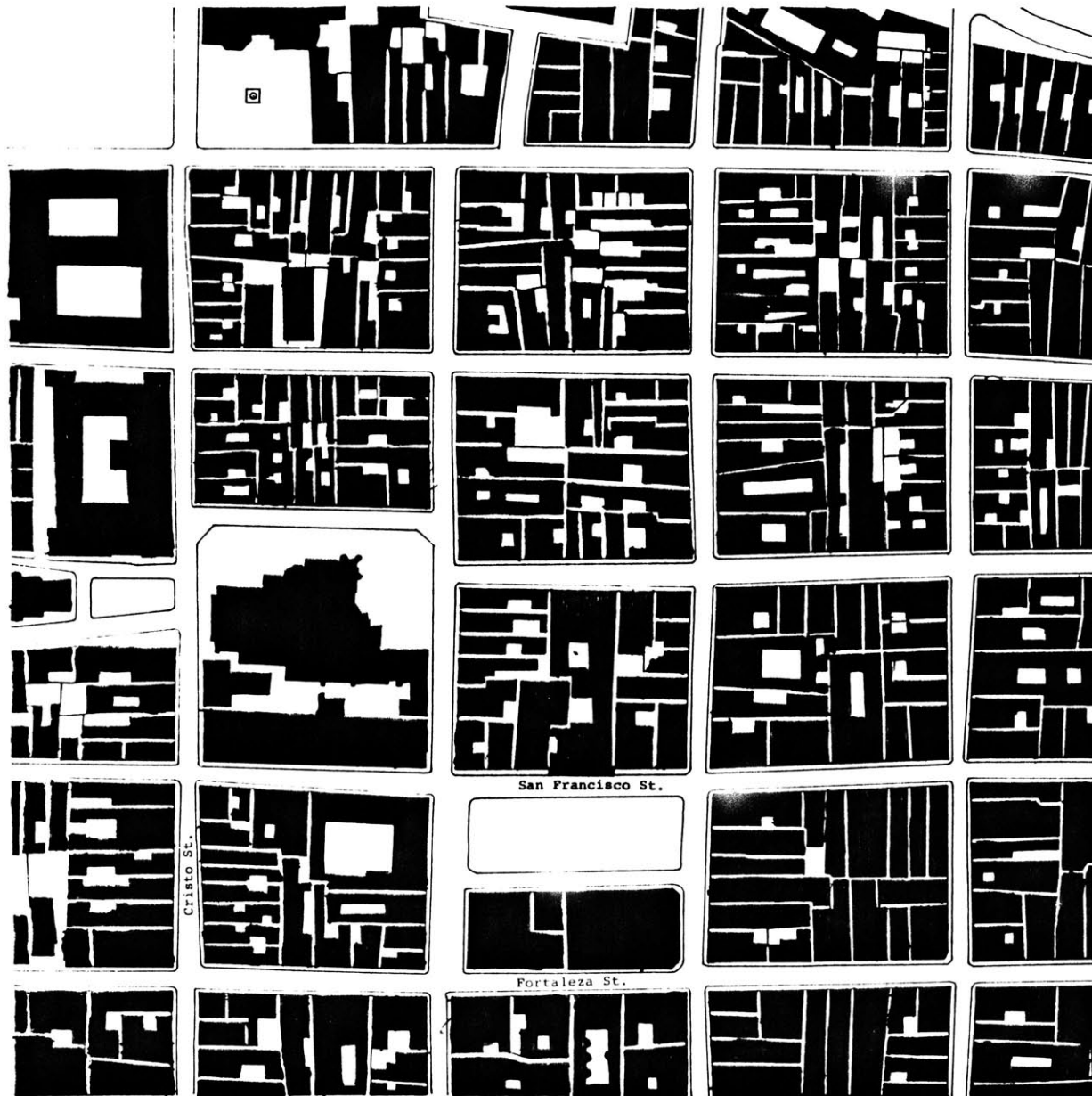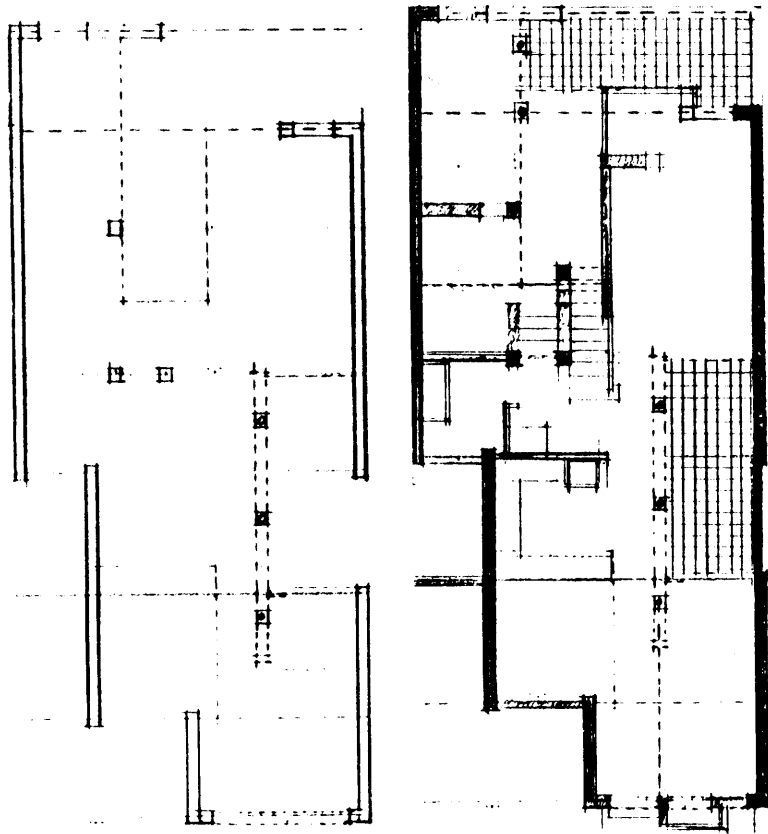
SUPPORT AND UNIT

The elements and their dimensions were determined by
the context as identified in the analysis:

      the zaguán = shared entry (vestibule)

      the patio = interior open space

      the collective quarters = salón (living), dining,
                                kitchen, working, etc.

      the private quarters   = bedrooms and bathrooms.

The relative position of these elements with respect
to each other (zaguán-patio, patio-salón, salón-gallery,
etc.) and with the exterior (salón-street, etc.) also
remained constant.

The design, however, involved a field organization in
the collective parts of the unit using the patio as a
'rock' (unbuilt) which defined the territories and move-
ment around it. This continuous flow between terri-
tories contrasted the subdivisive and compartmentalized
nature of the organization in the original structures
of the city.

The single-use boxes characteristic of classical
subdivision were done away with in favor of physical
continuity. This brought the opportunity for each
territory to be interpreted in a different way (use)
(pluralism vs. singularity). It also allowed visual
continuity, continuity of light and, perhaps more
crucial in the tropics, continuity of ventilation.
Having less barriers (full-height walls seperating
rooms) inside the unit, high ceilings, and patios,
air was able to flow through cross ventilation and
convection. (Ventilation then being based on natural
means rather than on artificial and mechanical sys-
tems such as air conditioning, which are not only dis-
continuous with natural processes, but unhealthy
(due to the extreme temperature changes between inside-
outside) and economically prohibitive and irresponsible
in times such as ours where energy is no longer a
commodity but a luxury).

The support allowed, through the manipulation of secon-
dary structure (unit masonry and wood), the more complete
containment of the private areas. These, however, were
able to accept changes in time due to the less permanent
nature of the secondary systems.

ZAGUÁN

SALÓN

ZAGUÁN

A.

SALÓN   SALÓN

B.   ZAGUÁN

C.

ENTRY SUPPORT SYSTEMS
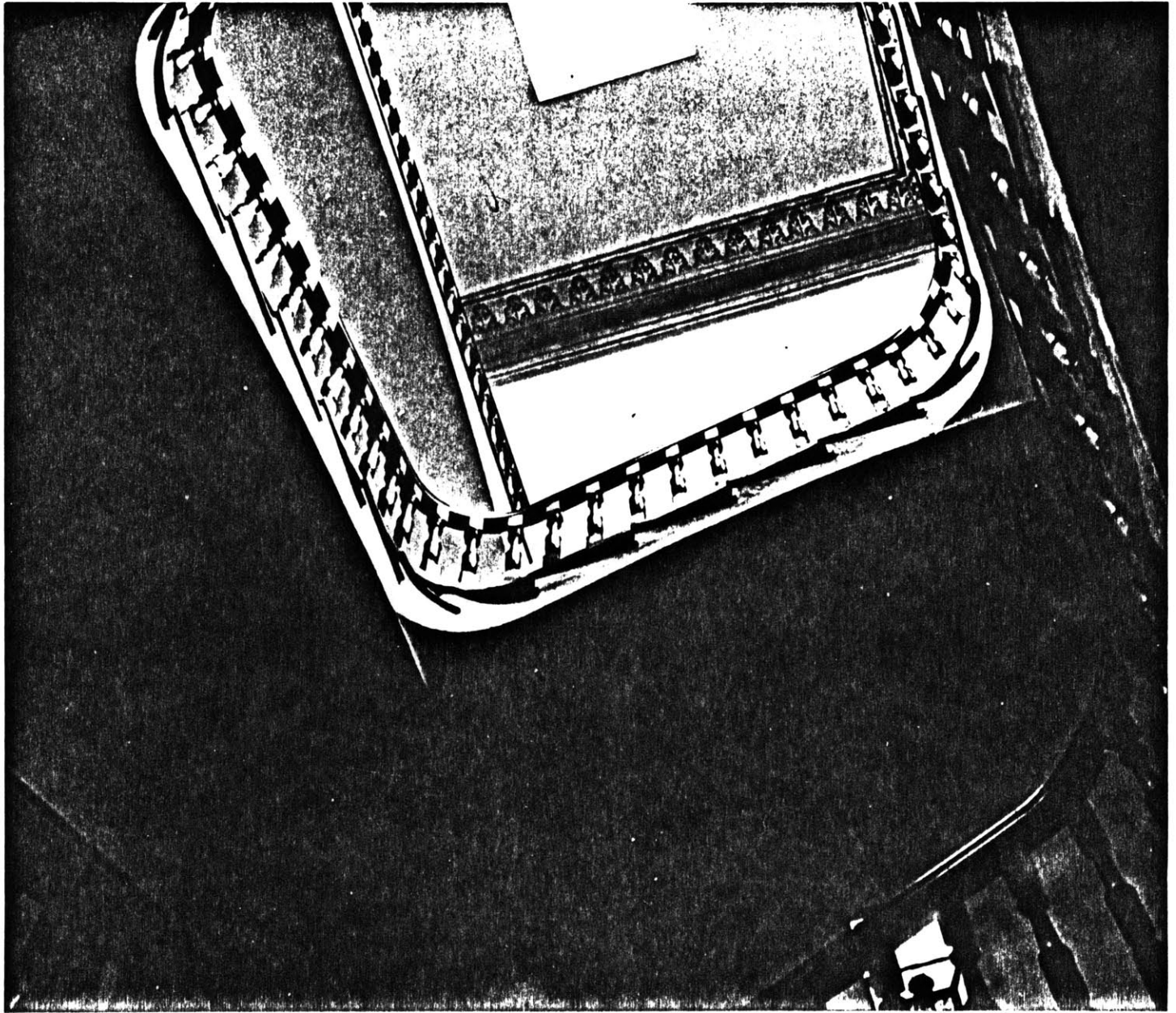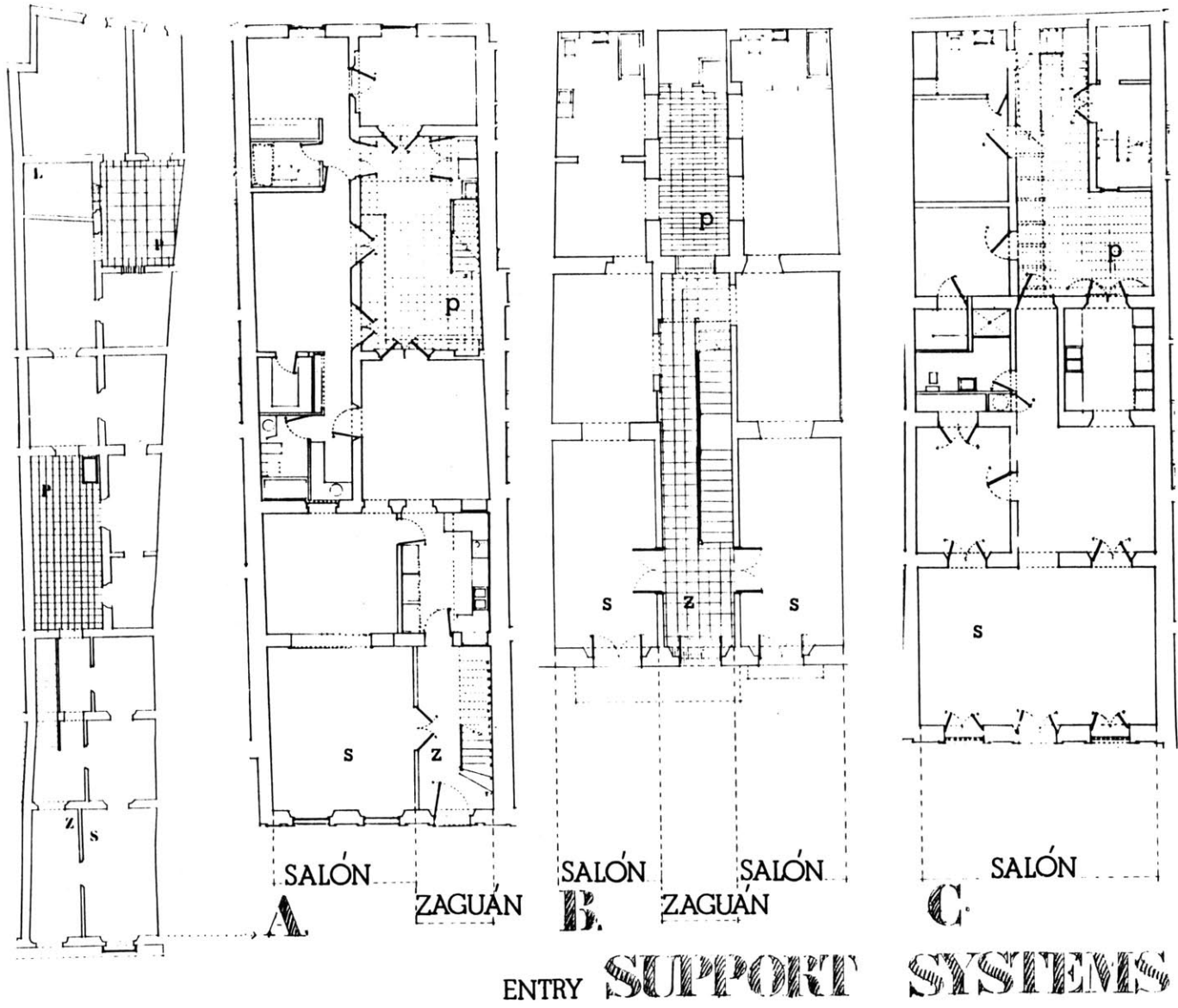
2nd floor

1st floor

GALLERY

PATIO

private

shared
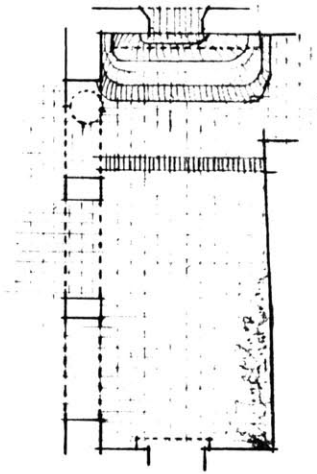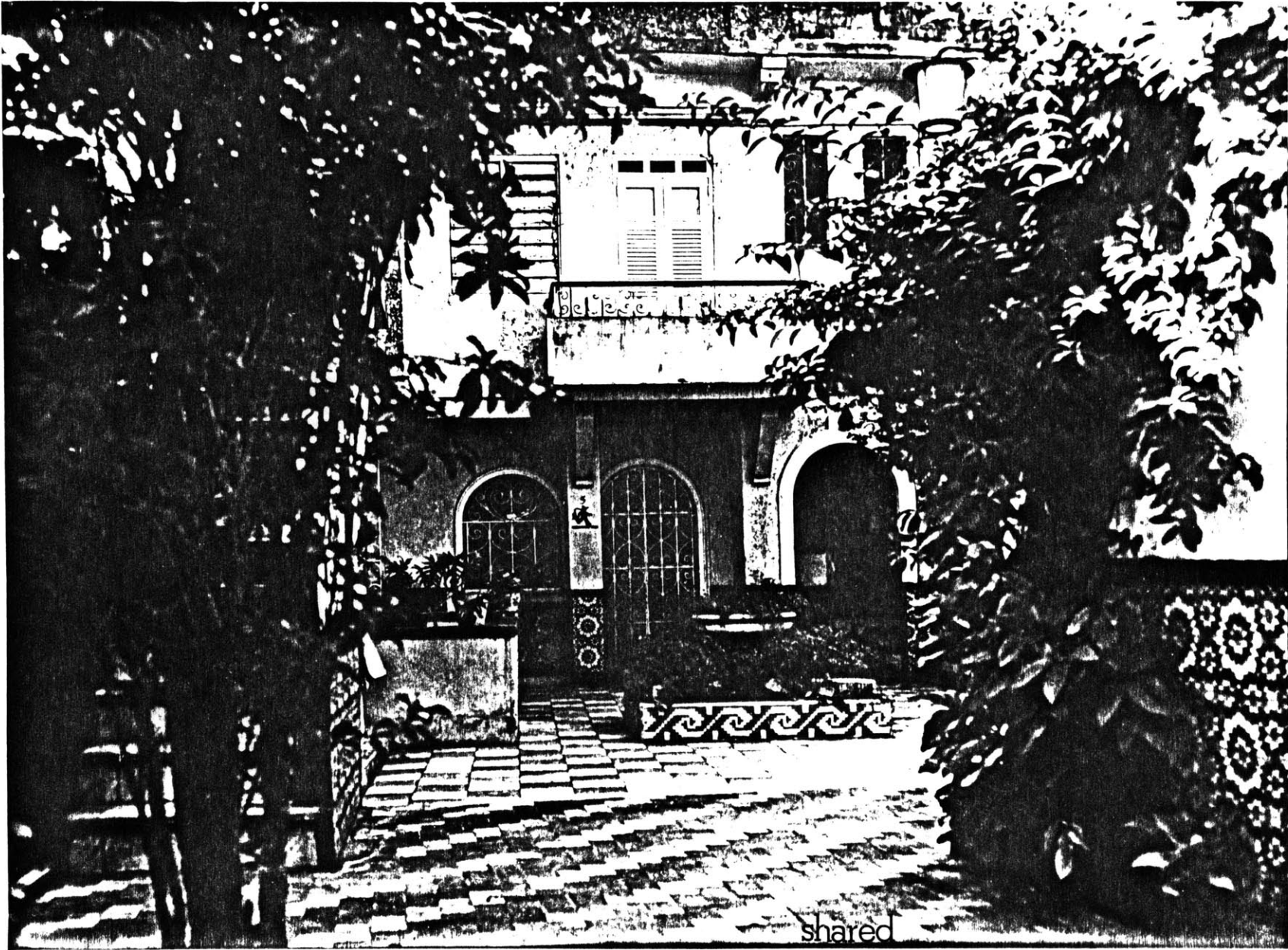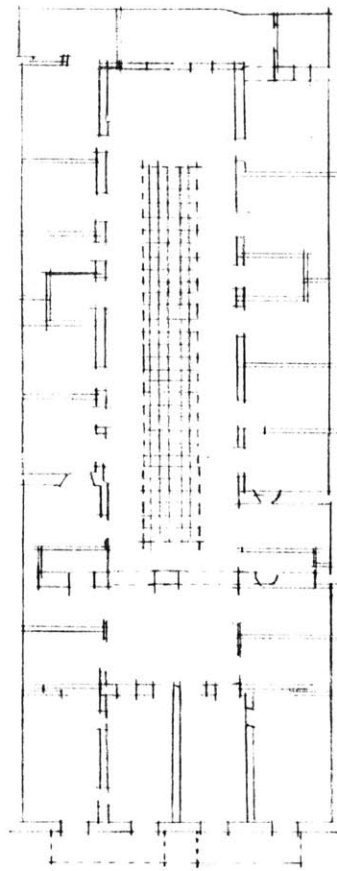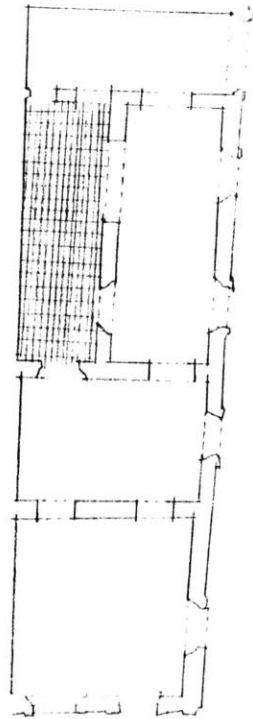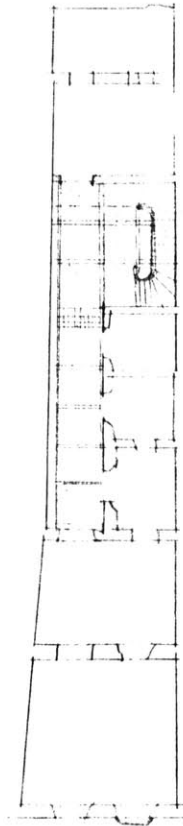
1 center - - - - - - - - - - - - - - 2 side - - - - - - - - - 3 side - - - - - - - - - - - - 4 side-back
extending to
focus
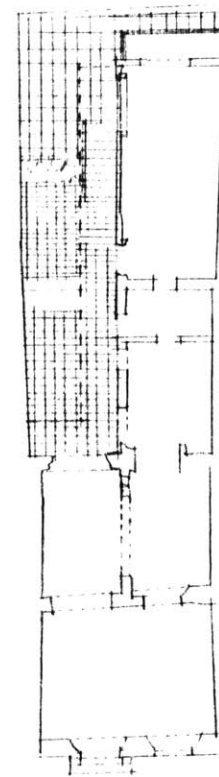
SUPPORT SYSTEMS: PATIOS - DIRECTIONAL
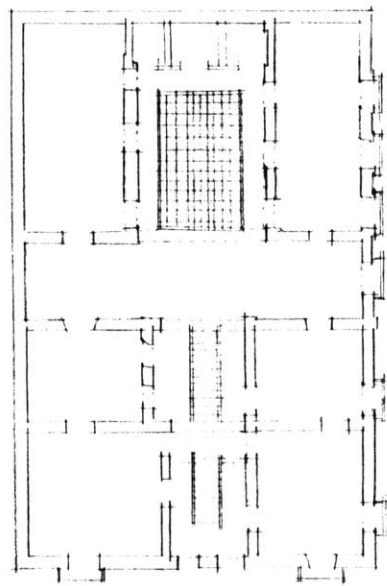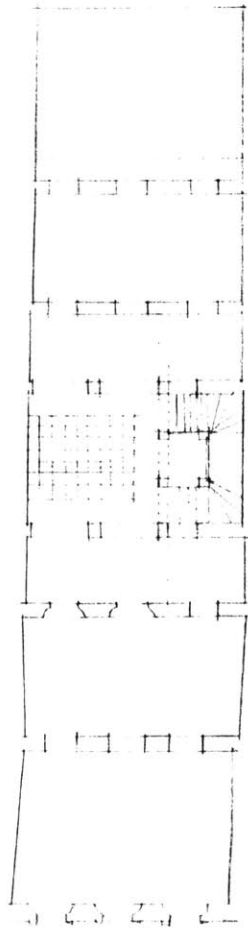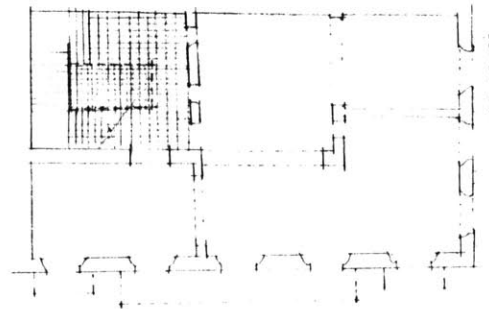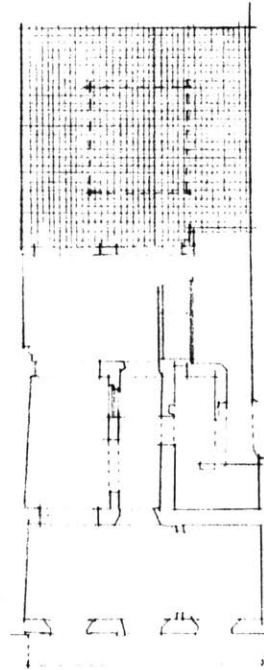
1 center - - - - - - - - - - - 2 side - - - - - - - 3 side-back - - - - - - - - - - - - 4 back

- FOCUSED
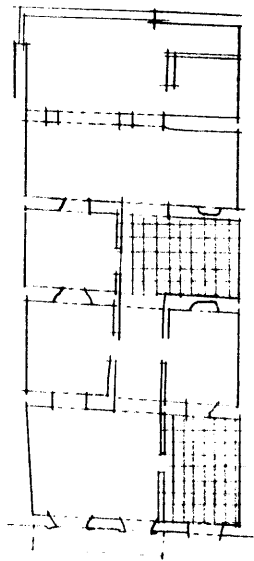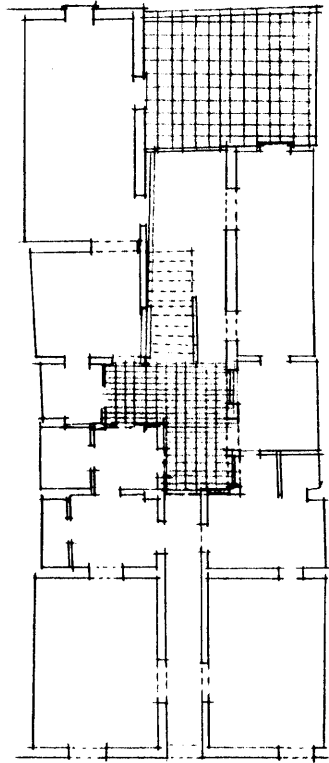
1 interior+ entry .... 2 interior+ back .... 3 aligned .... 4 alternated
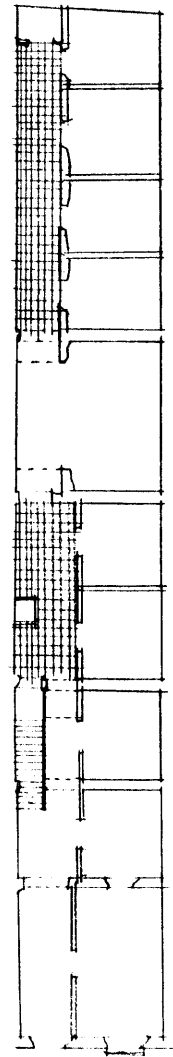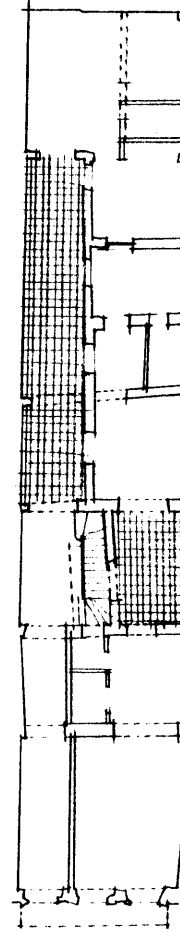
MULTIPLE

ENTRIES

S | Z   S Z S   S   S   Z   p

PATIOS

a -------------------------- b ----------------------

c -------------------- C
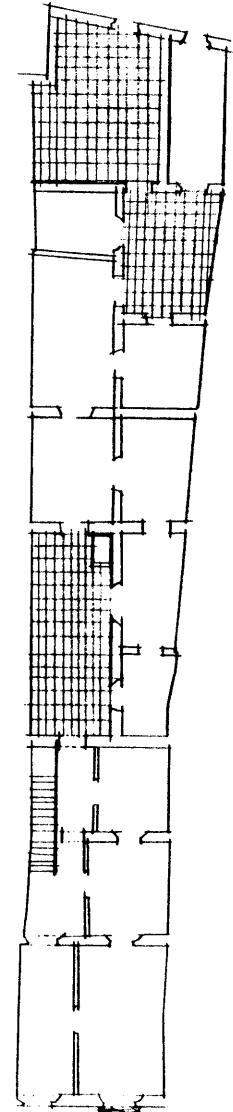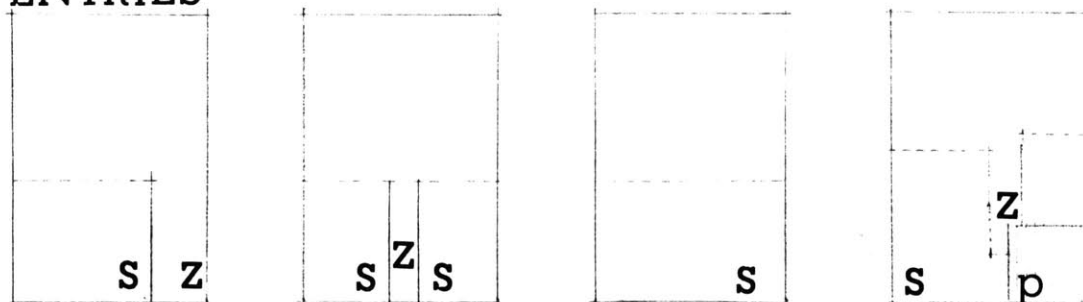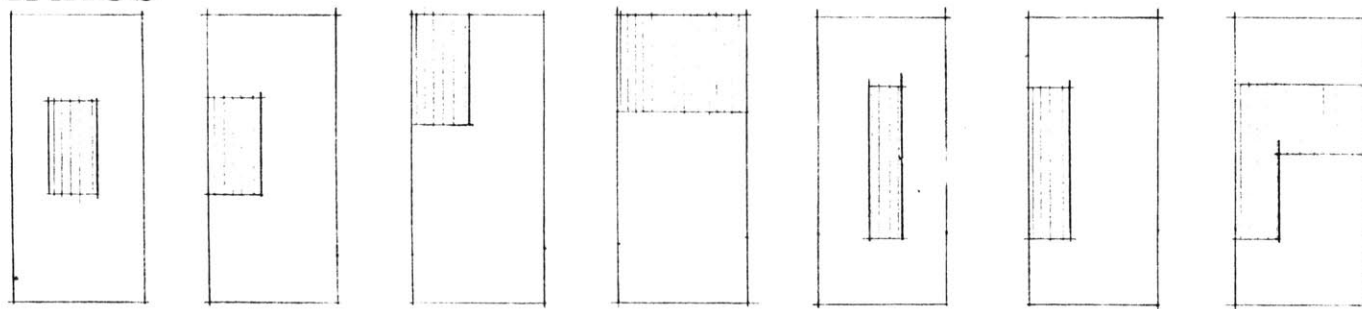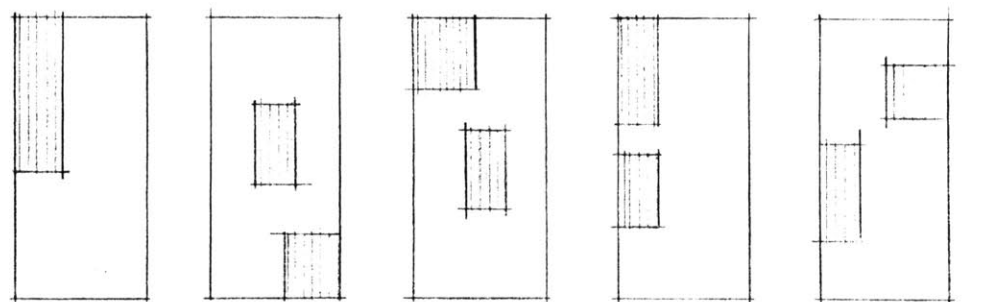
(plan) ------------------ DIAGRAMATIC SUMMARY of SUPPORT SYSTEMS

18'

original structure_____ transformation

3

2

1

CHANGE

180
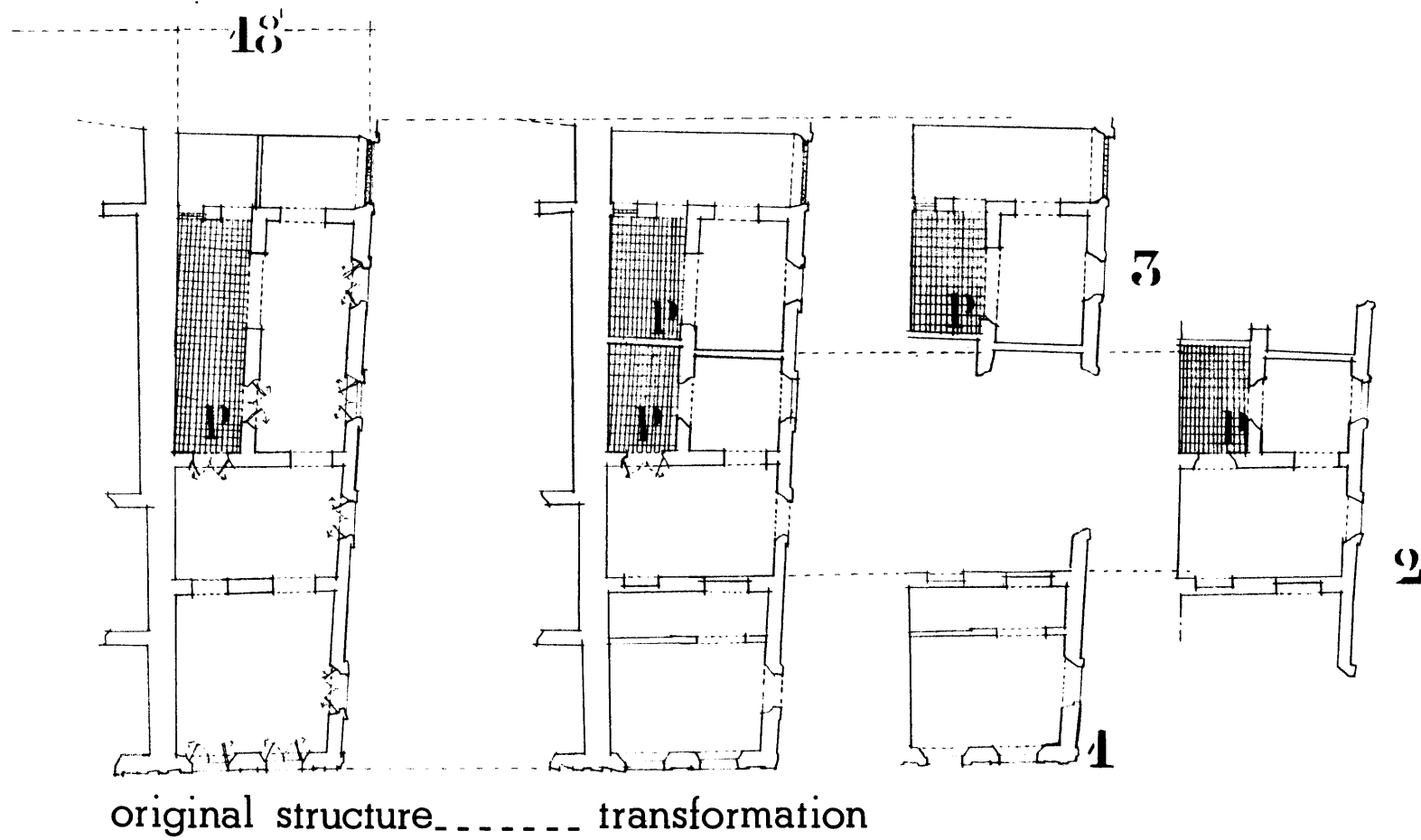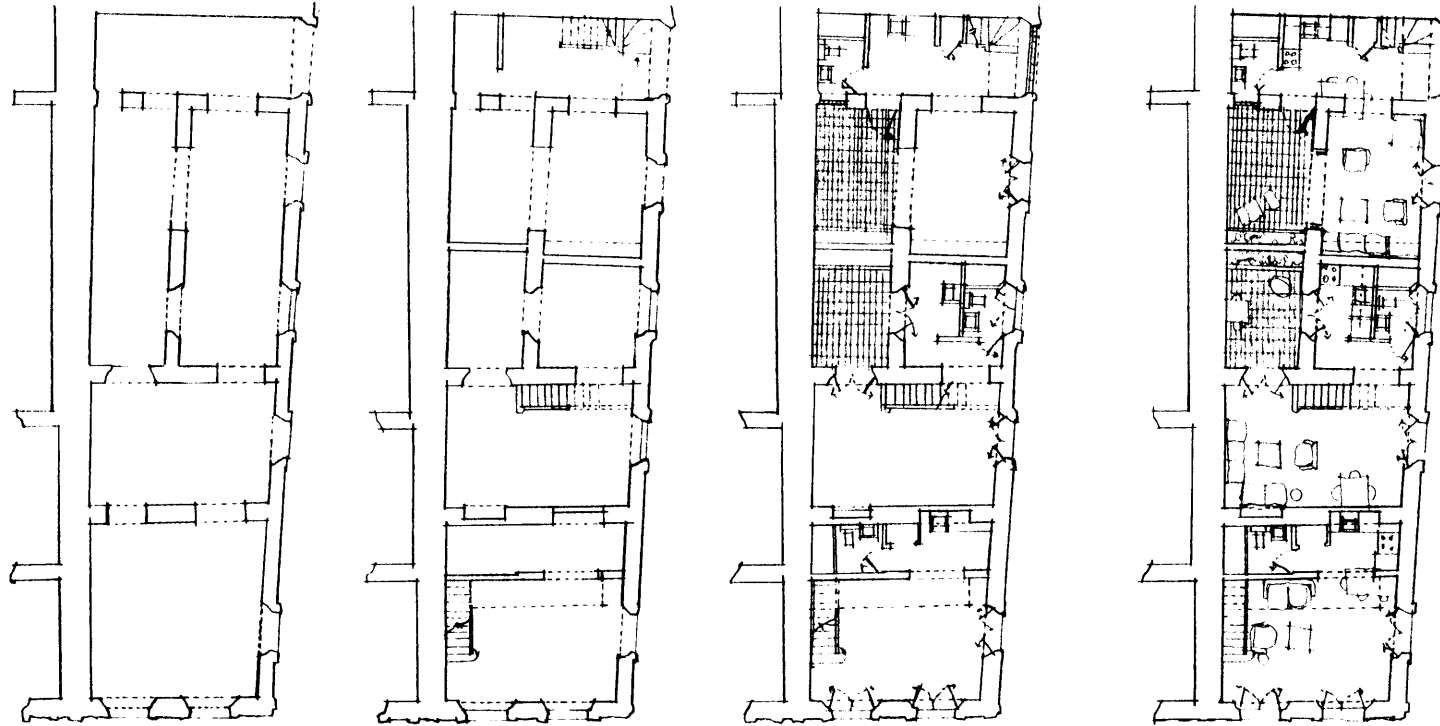
1: basic structure
concrete

2: secondary str.
mezzanines
unit masonry
wood

3: partial closures
screens
surfacing

4: inhabition
people
furniture
belongings

LEVELS OF PERMANENCY............from MOST to LEAST PERMANENT 181

These studies (done between September 1980 and May 1981)
concentrated on the generation of the patio as a conti-
nuity of internal use, which, organizationally took the
form of a 'negative (unbuilt) rock' (1), and as the third
component of the partial containment-continuity diagram (2).
The patio was first positioned against the direction of
movement of the unit so as to gain maximum definition at
either side, but it was subsequently changed to reinforce
such direction due to the width of the units.

The patio was seen as the 'lungs' of the support. It not
only allowed cross ventilation and convection but it was
also the light source and the major collective place at the
unit level.

EARLY STUDIES
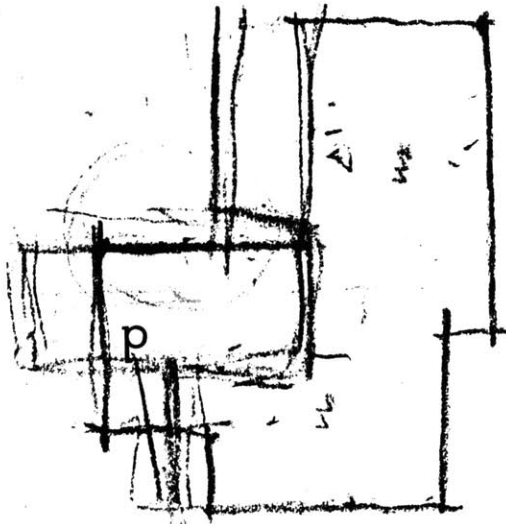
1: patio as a negative "rock"

2: three part continuity / Containment diagram

p

p

p

pedestrian
street

shop
or
shared
court

z

street

p

z

public place

unit

p

p

z

1

two units sharing a zaguán

185
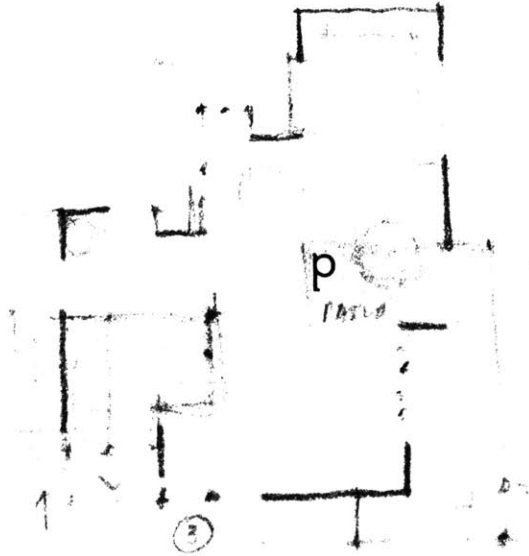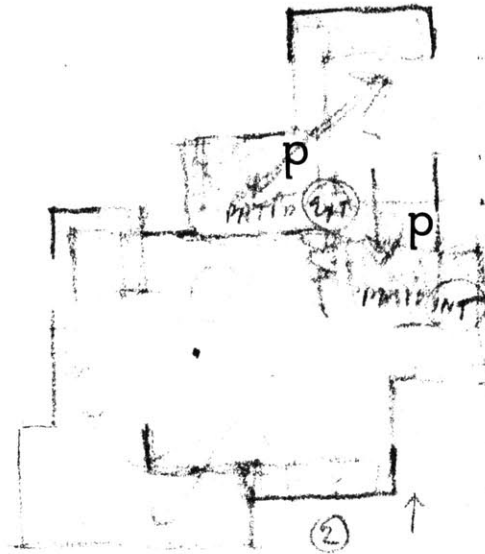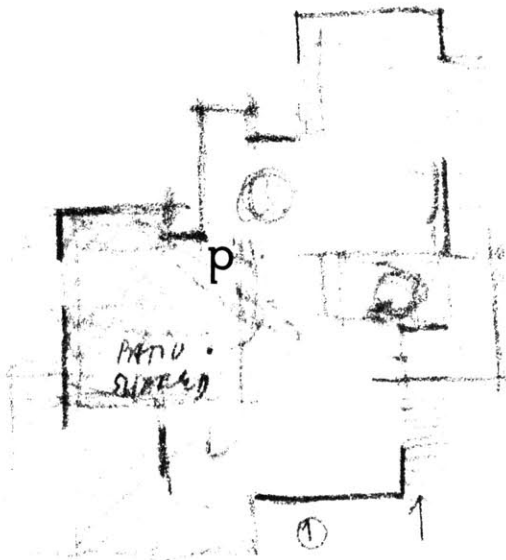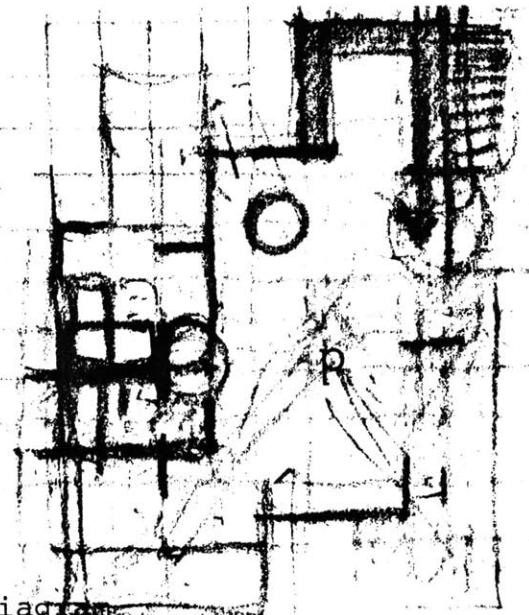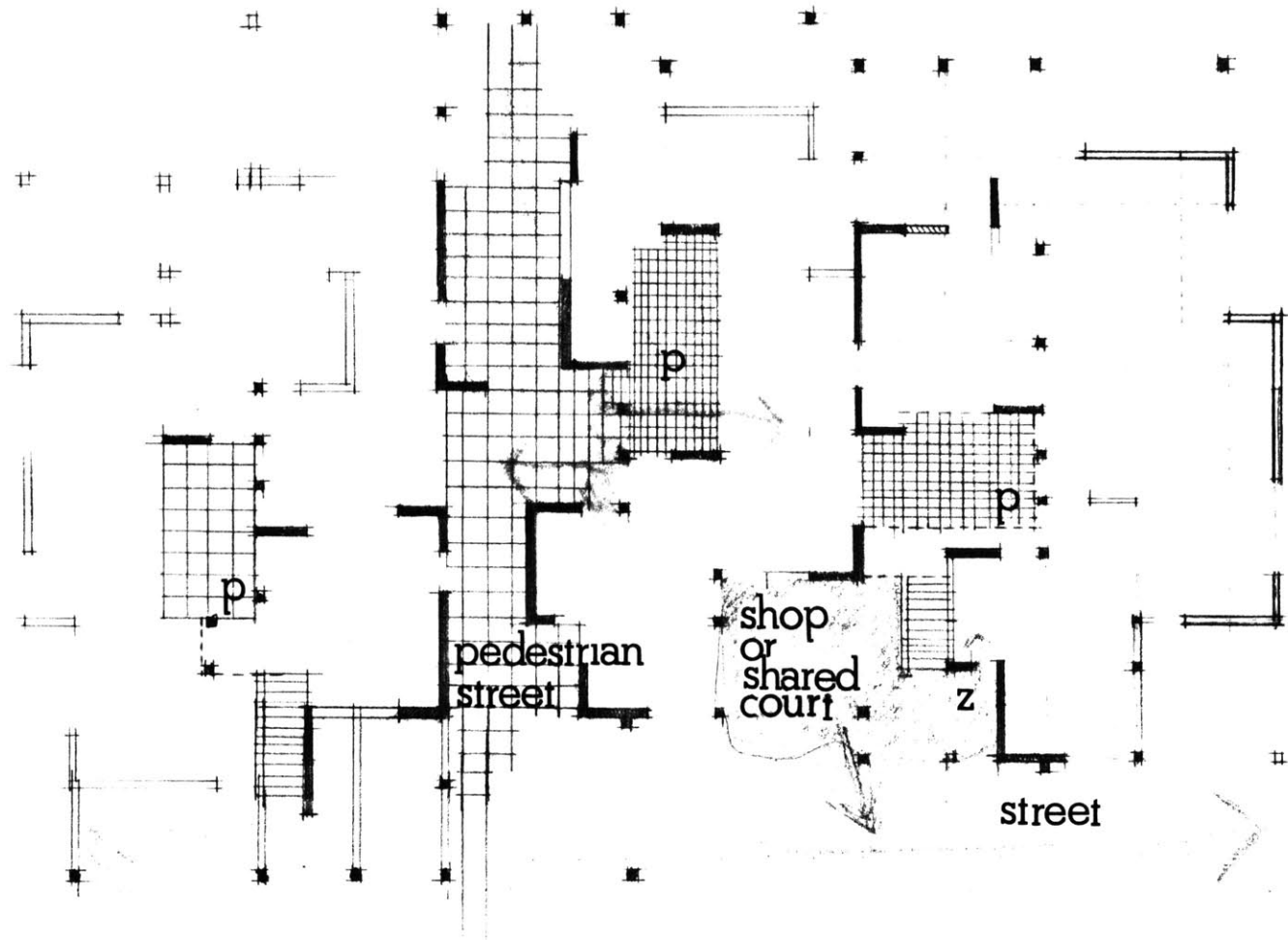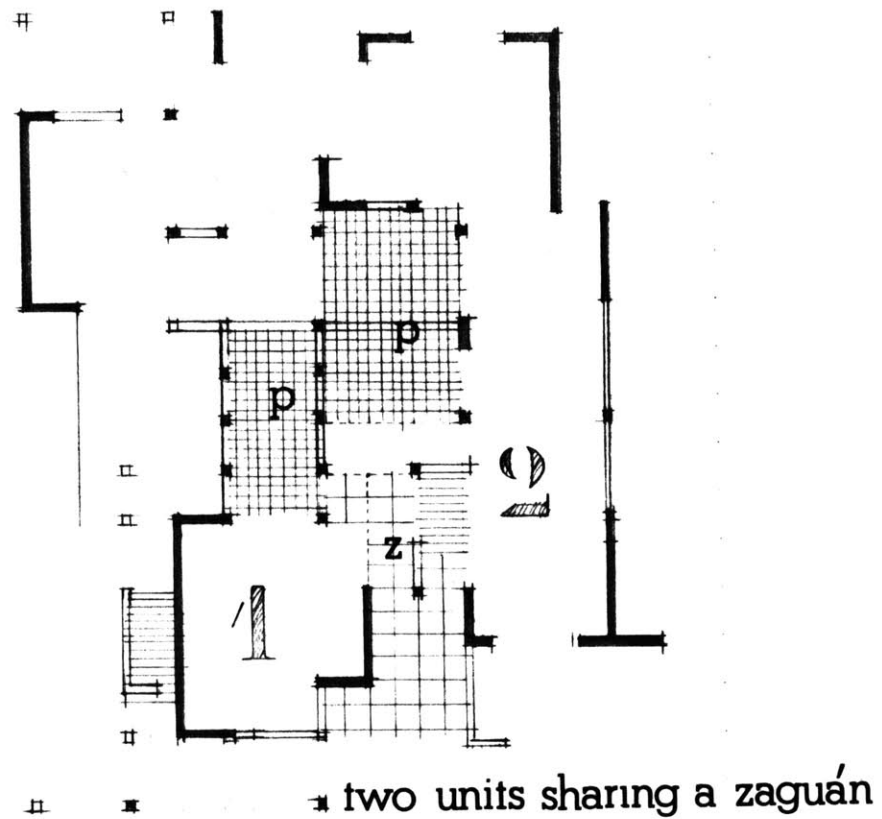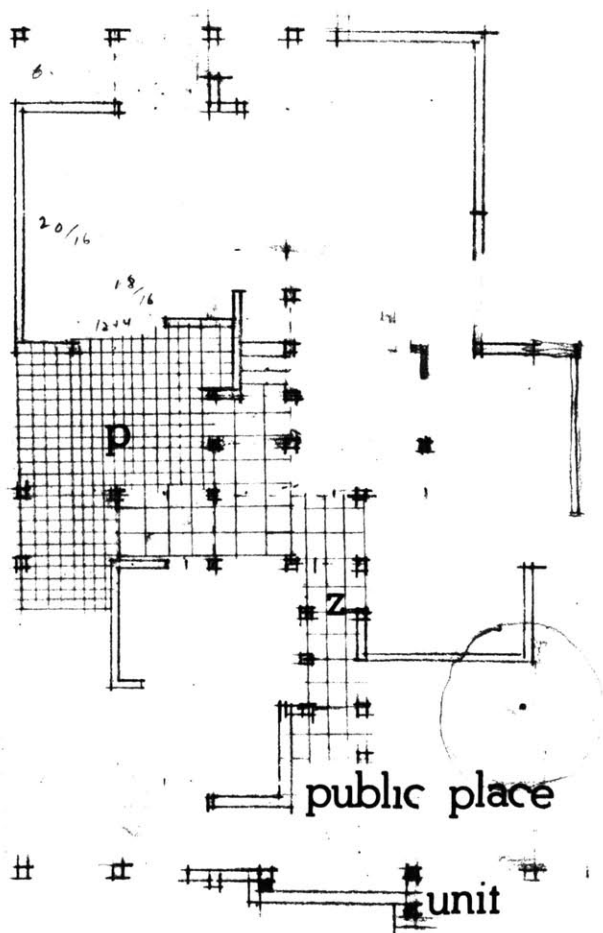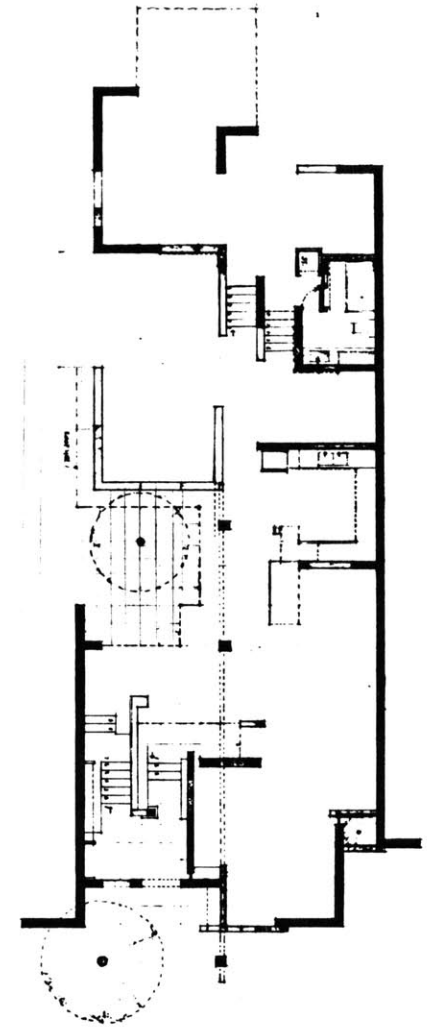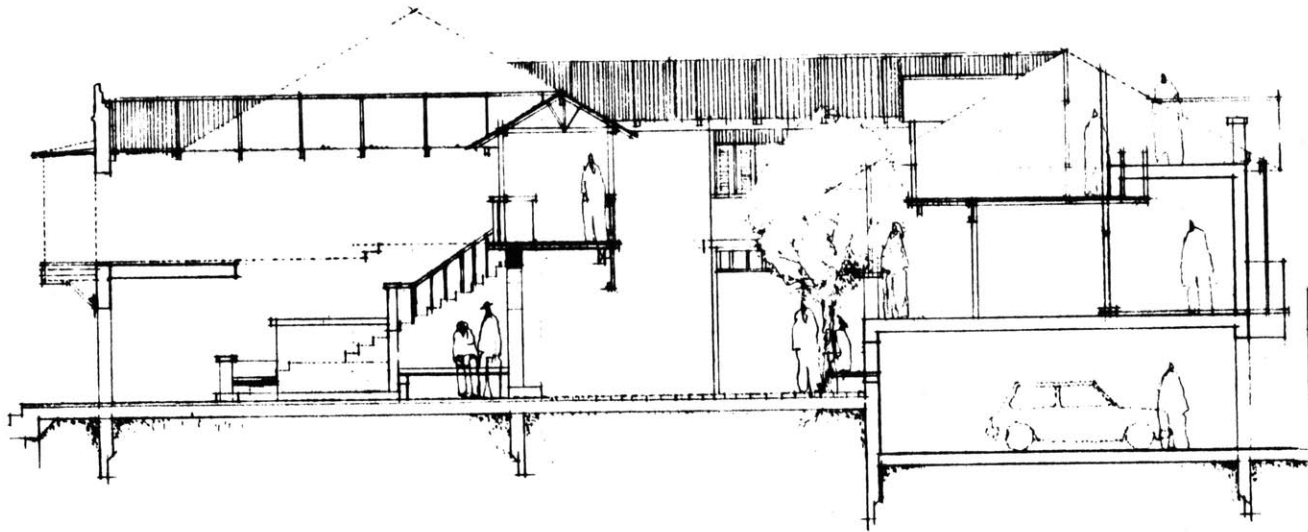
The illustration shows an exploration investigating
the possibility of a garage in the back part of the
unit through the use of a split level. It also
shows the basic position of the elements zaguan,
patio, salon, etc. as they were to remain in the
subsequent stages.

The identity and identification of the occupant with
their dwellings was the starting point of the projec-
tion at the level of the building. As well, of course,
as the notion of the project as an extension (both
physical and associative) of the context.

This generated a support structure,

A partial/incomplete physical framework which would
serve as both a concrete built reference and as the
context (site) for the intervention of those who, at
a later stage, would inhabit it. This implied a de-
sign which allowed for a wide range of possibilities
regarding use, not only for the immediate inhabita-
tion, but through time, as changes in needs, tenants,
taste, etc. would require.

A support is a structure in which a number of
dwellings can be built up, and which permits
construction, modification or demolition of
each dwelling separately, without involvement
of the other dwellings in the same support.

Habraken

In order to insure this range, the support had to
(dimensionally) accomodate a spectrum of conditions,
both in terms of sizes of units as well as in program.
Variations range from a studio (efficiency) unit to
one large enough for an extended family. A number of
options were also included regarding control (owner-
ship): two stories - single ownership
        two stories - separate (double) ownership,
and aside from housing, the possibility of small scale
non residential uses such as commercial, offices, work-
ing studios (ateliers), etc.

The framework system was composed of six support types:
two corner supports (numbers 1 and 6) and four which
belonged to the middle section of the block. Type 2
was a support with parallel bearing/party walls, and
was to be aggregated individually. Numbers 3 and 5 were
to be aggregated as a pair and they shared a displaced
bearing wall. This displacement allowed for the lateral
expansion of either 3 or 5 into the territory labeled 4.
This allowed the possibility of a tenant to own his dwel-
ling (3 or 5) and have his commerce, workshop or office
in unit type 4. This unit, product of the interaction
between types 3 and 5, served as sort of a slack in the
support system. It could hold a studio apartment, a com-
merce, an office, or serve as an outdoor place, claimed
by the street or by the two units as a shared courtyard.

The design accomodated the possibility of multiple patios
and two major positions for stairs. In the case of a sep-
erate control between the first and second story, the stairs
are in the front zone of the support taking the form of a
zaguan (zone A-1). When the first and second story have com-
mon ownership, the stairs are positioned in the interior of
the unit (zone A-2).

1　　　　　　2　　　　　　　　3　　　4　　　5　　　　　　6

A　　　　　　B　　　　　　　　C　　　　　　　　　　D

corner　　　　　　　　　　middle　　　　　　　　　　corner

BACK   8

M3   8

A_2 12

M2   8

B   10

M1   6

A_1 12

FRONT   4

24   28

30   22

14

24   16   22   14

①   ②   ③   ④

190

BACK

M3

A2

M2

B

M1

A1

FRONT

8

8

12

8

10

6

12

4

24

28

30

22

14

24

16

22

14

① ② ③ ④

191
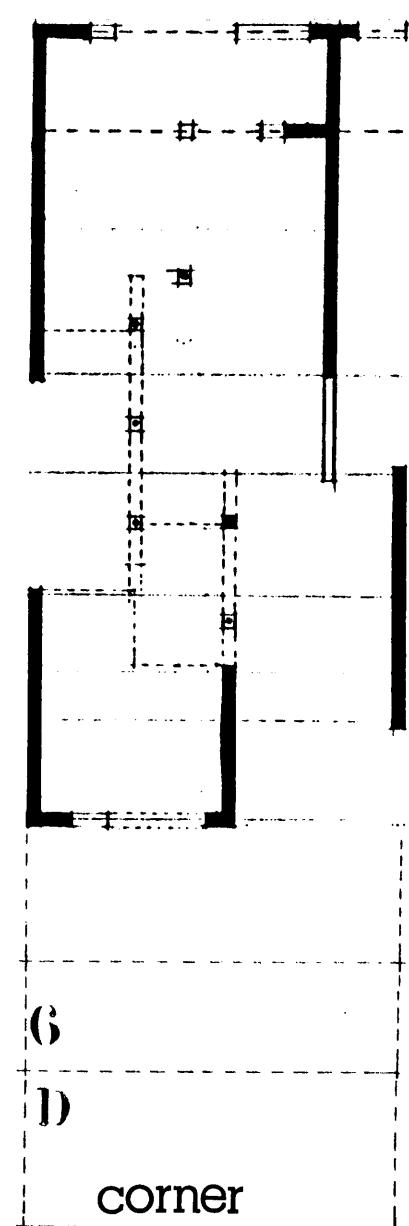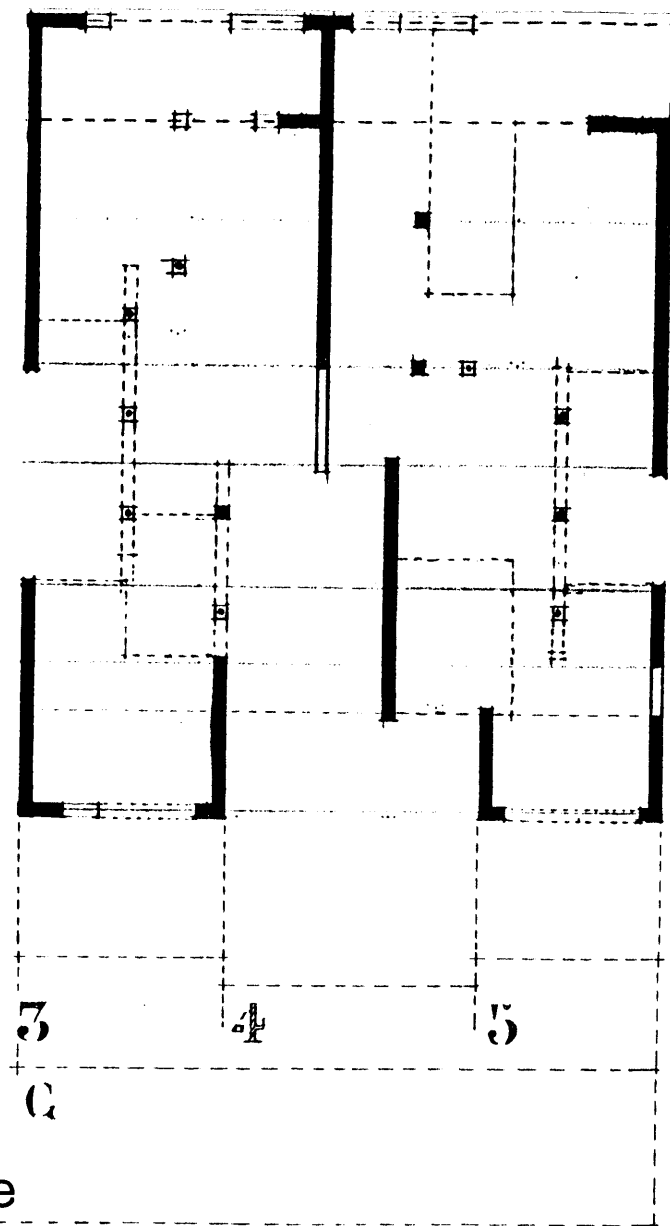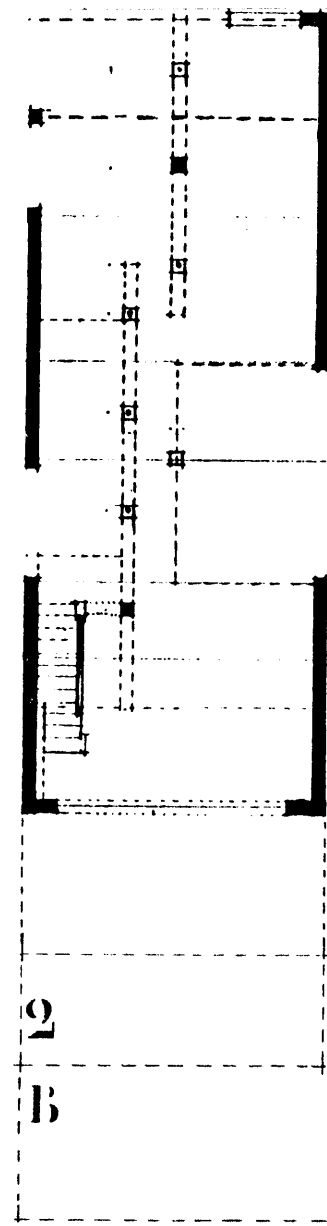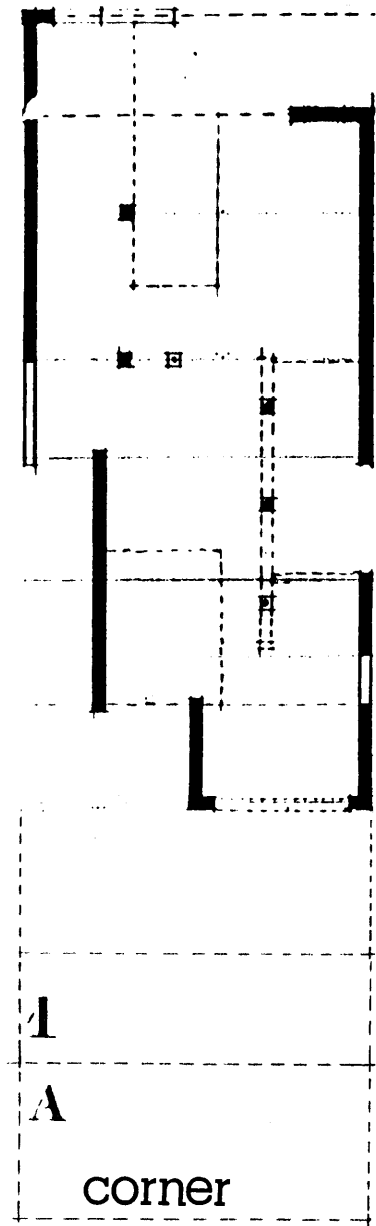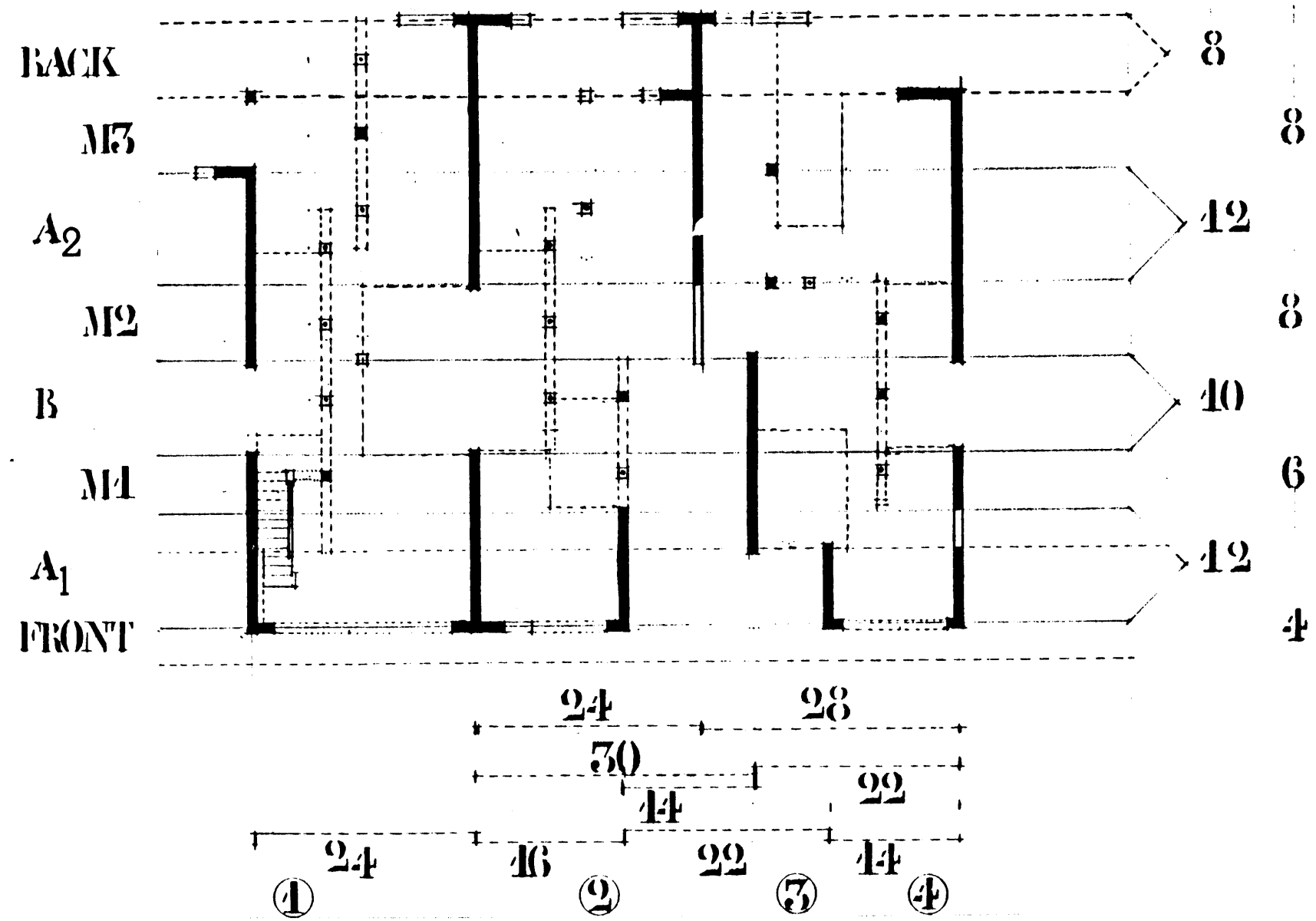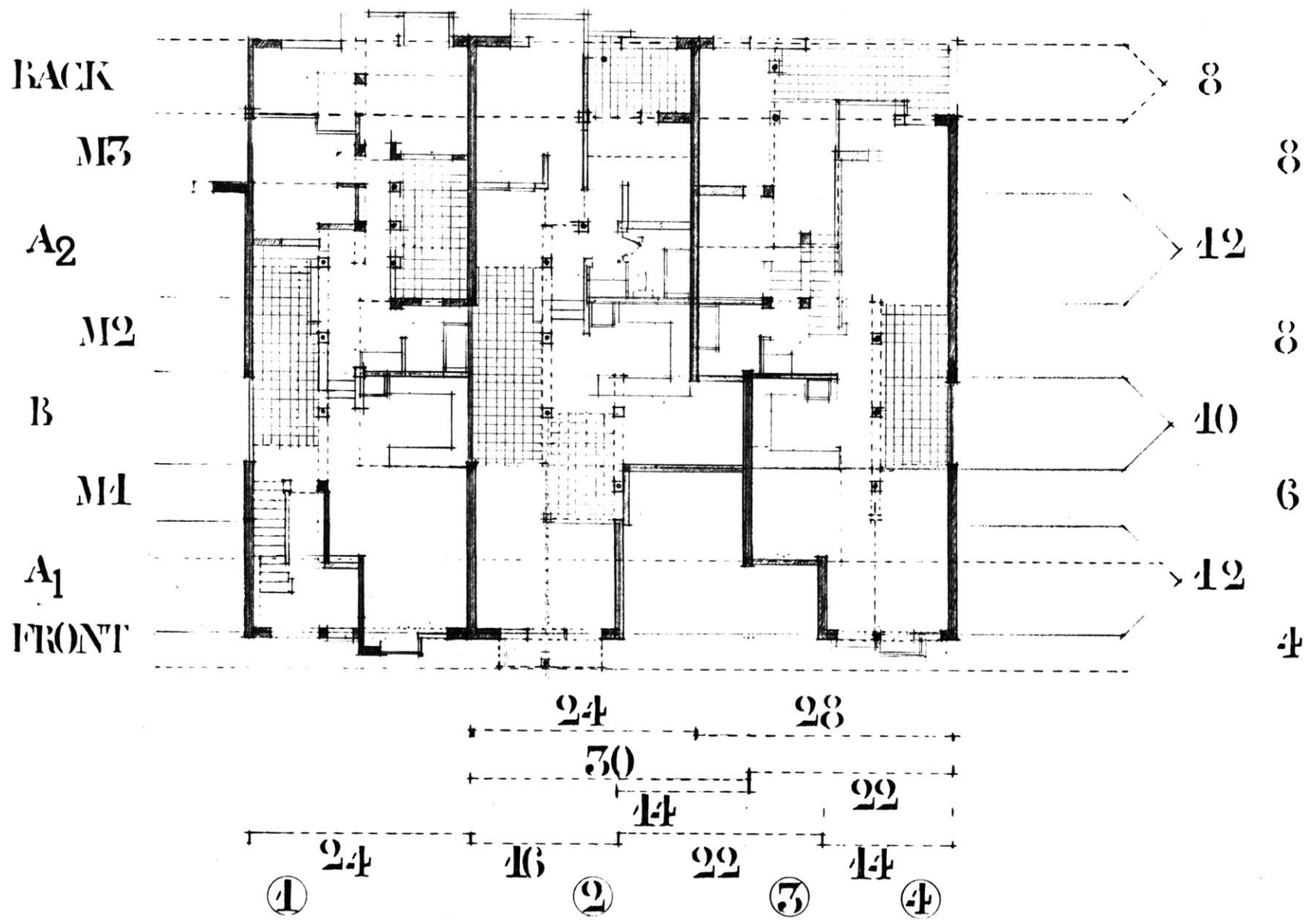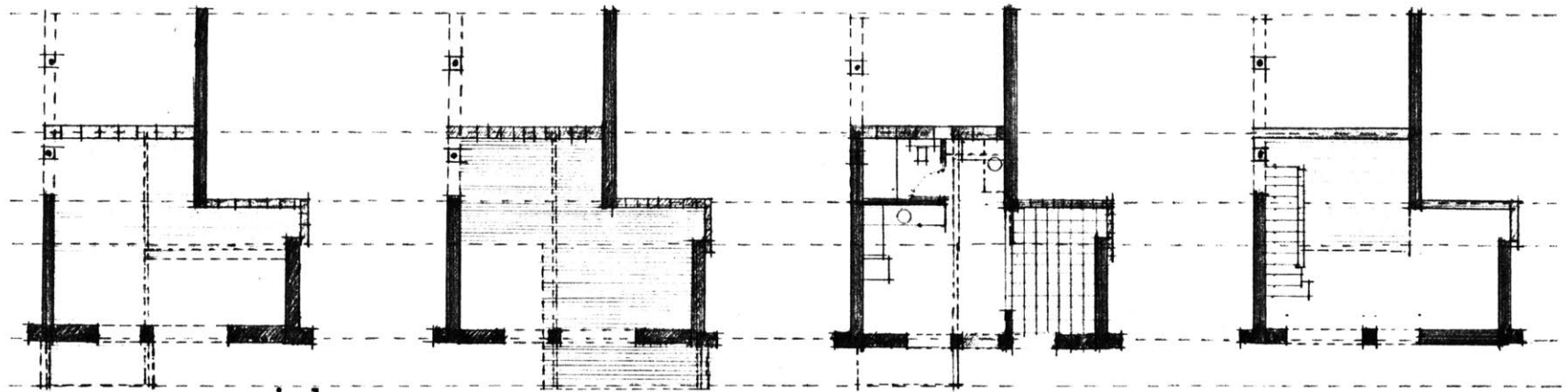
1 commercial
office
studio apartment

2

3

4
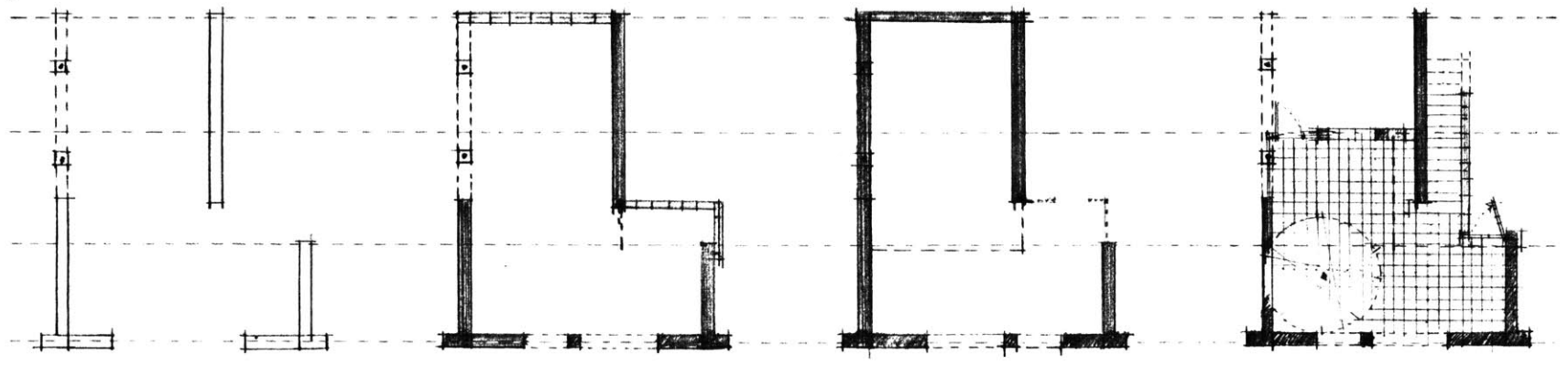
support

5

6

7 common
patio

techo con
terraza

mirador

2

1

soporte básico con patió

balcones

zaguán

3

2

l-u

[4]

comercial

cristo

commercial

comercial

Estacionamiento

parking

1

2

3

1

2 r

1.

1

c
r

4.

dueño

r

1

c

oficina / comercial.

5

1

r.

6
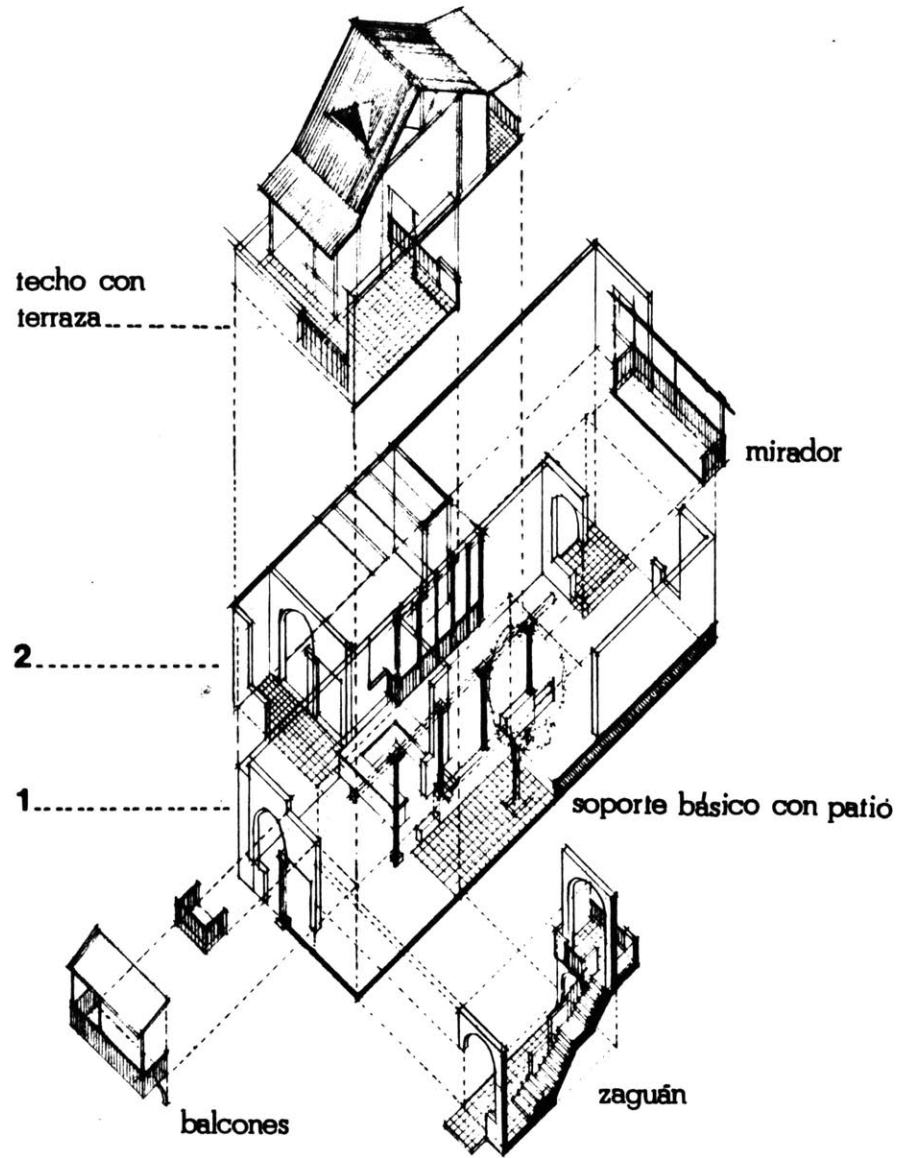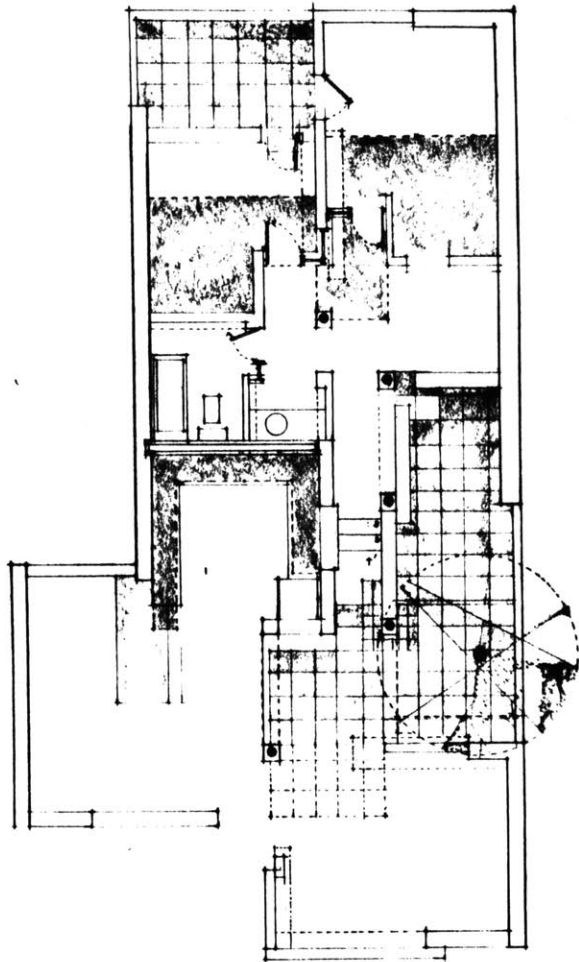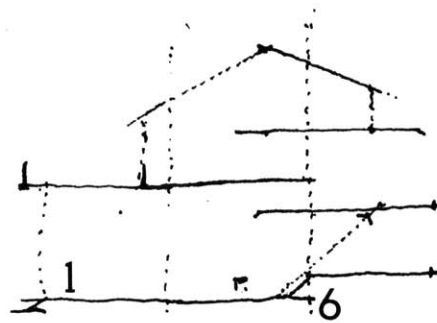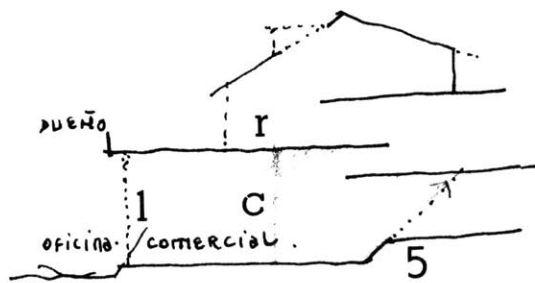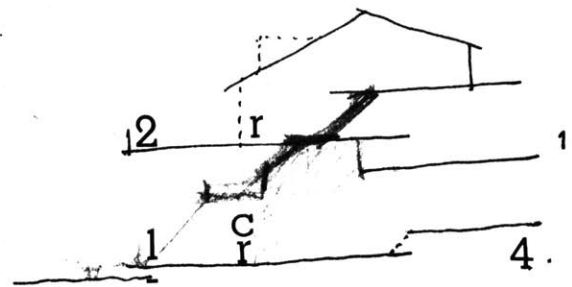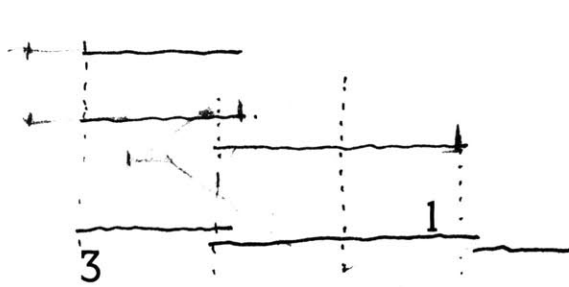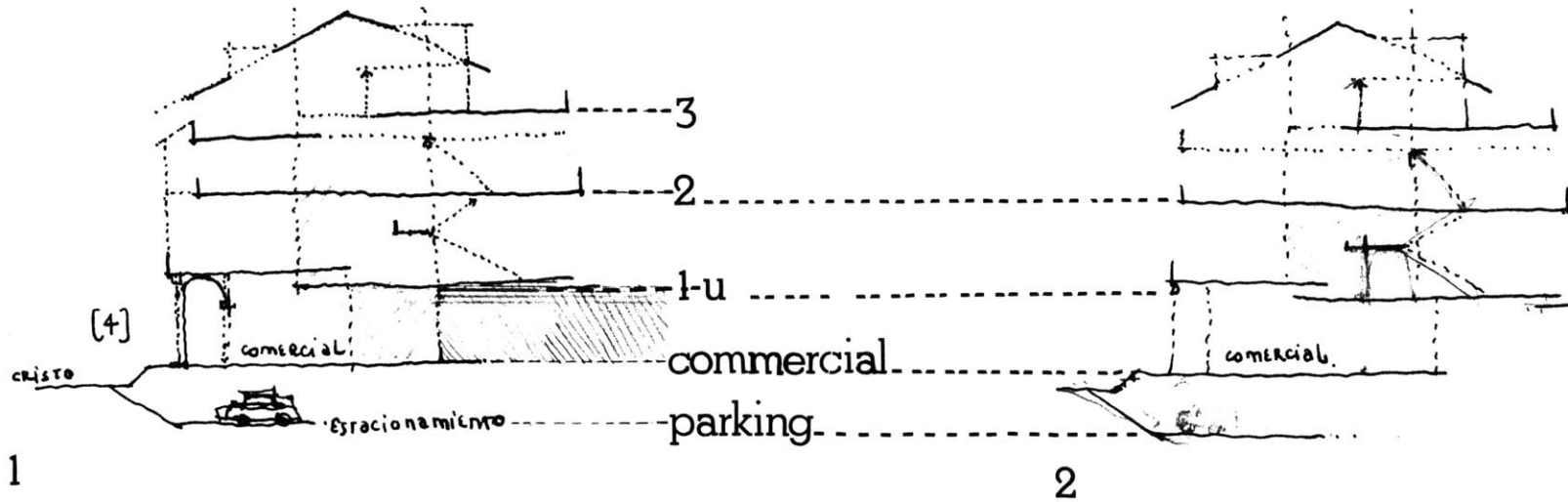
DIAGRAMMATIC SECTIONS

194

patio

zaguan

patio

OCT 1981
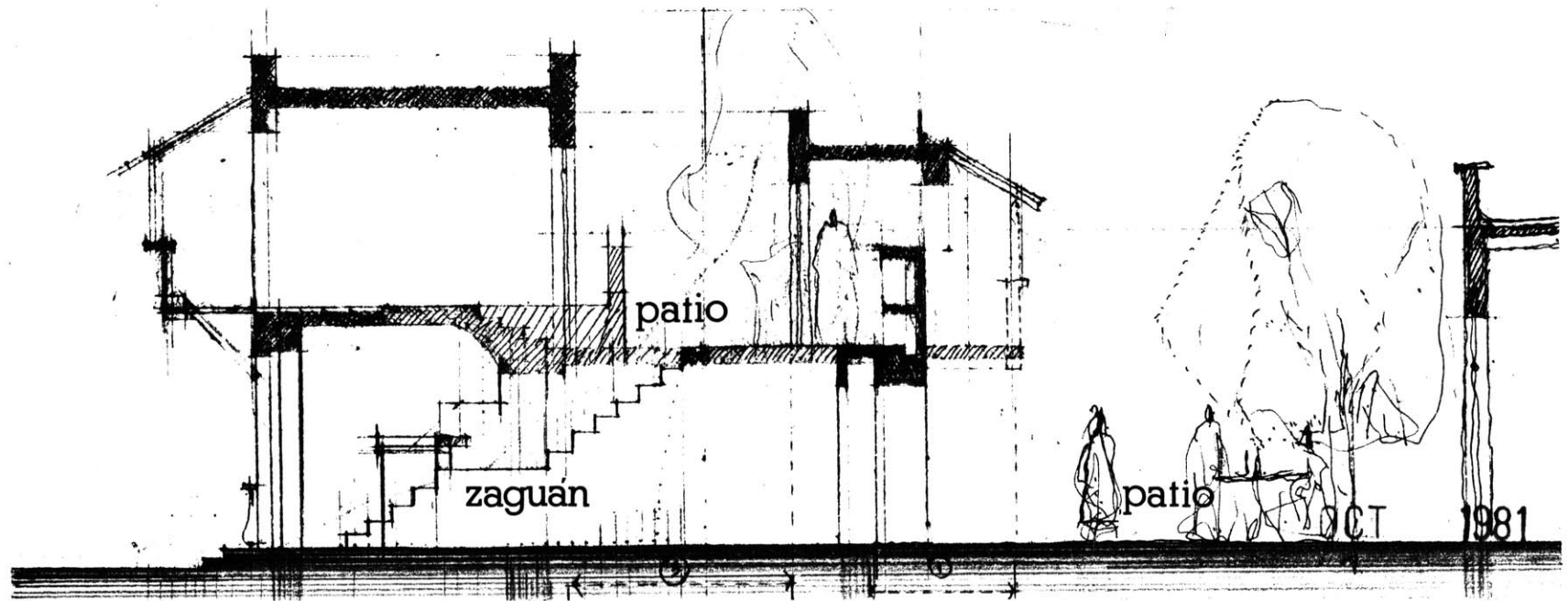
These sectional studies
explored the development
of a double patio, aiming
for a mechanism which
would allow the privacy
of the first story patio
with respect to the second
story, as well as the pro-
vision of an interior open
space for the second story.
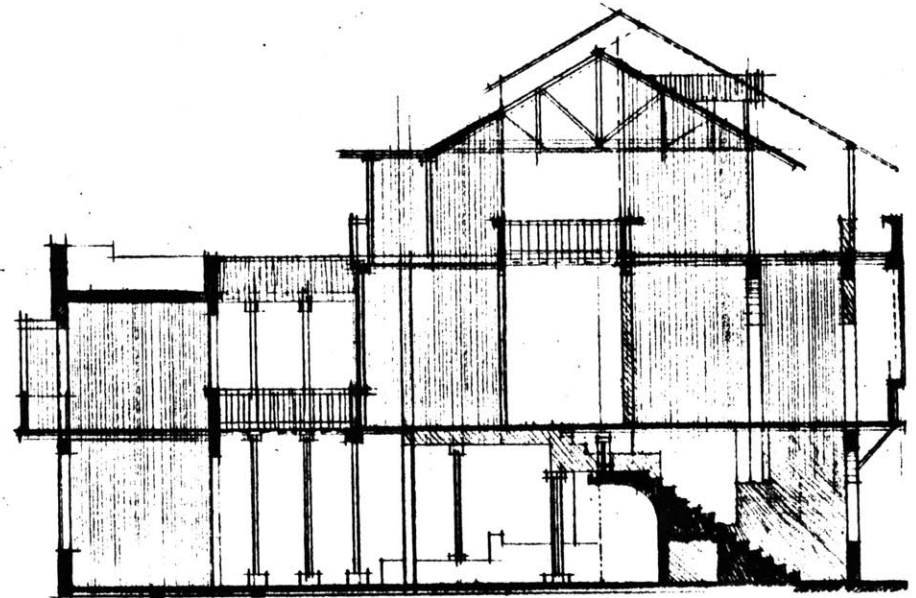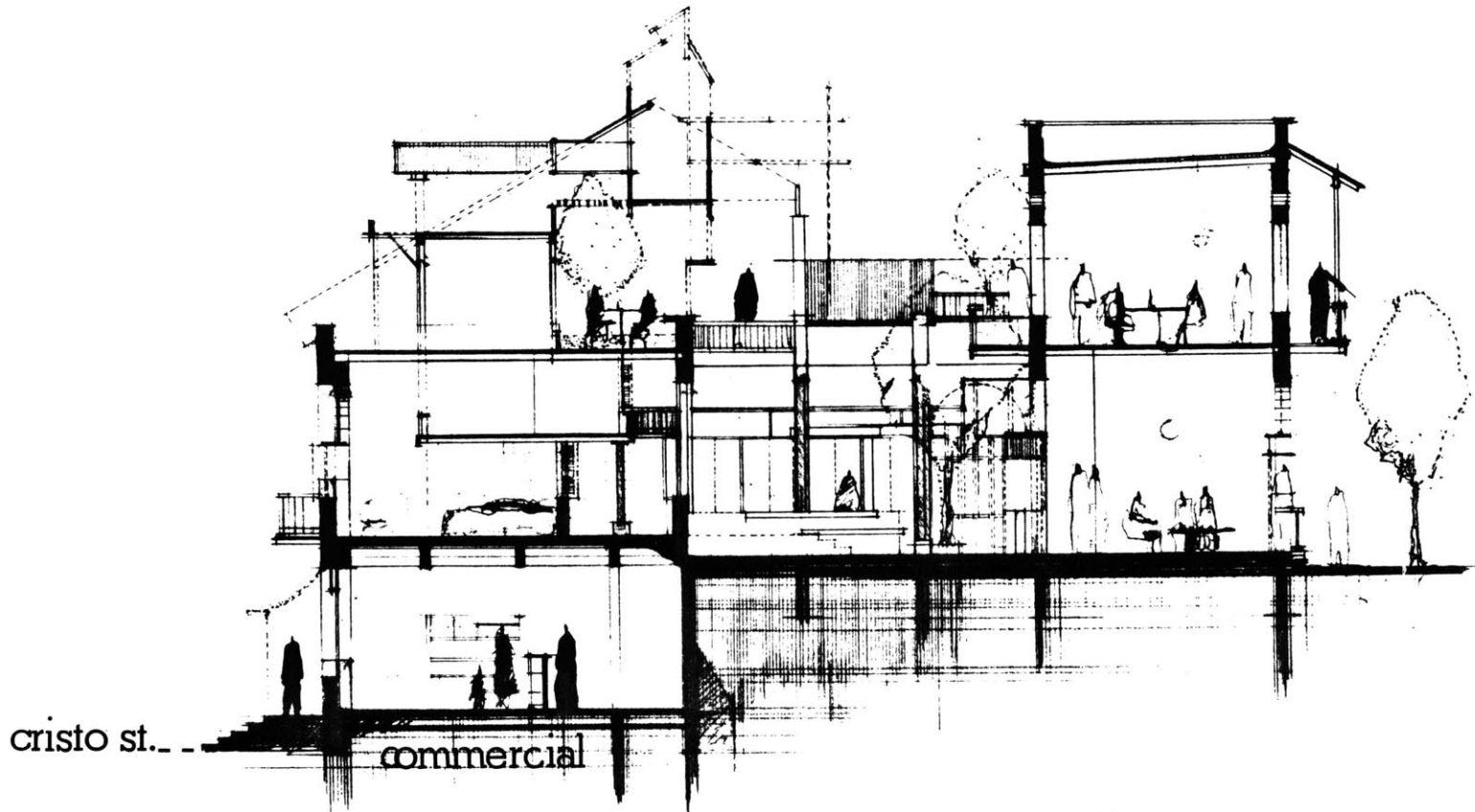
cristo st.

commercial

196
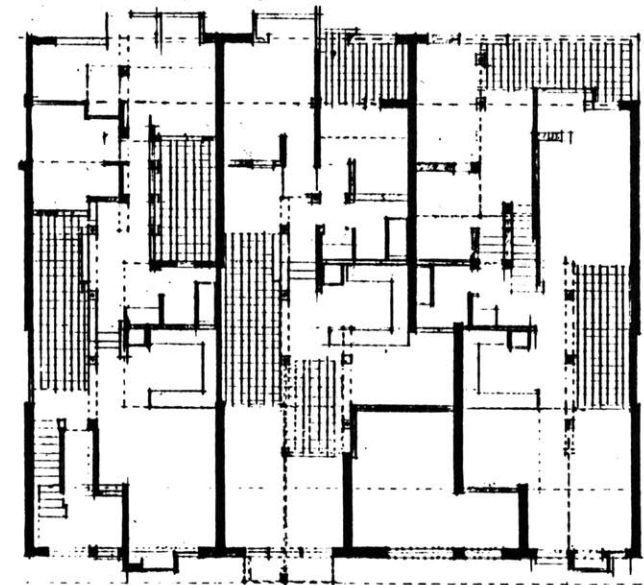
existing structure

Comparison between the grain of the
existing structure and that of the
projection. Note both the similar-
ities in dimension and position as
well as the difference between the
field and subdivisive organizations.

projection

197

Form elements have meaning, both in the physical (use) as
well as the psychological sense. What is the essence of a
door or a balcony? A door can be seen as the setting for
entering and leaving, arrival and departure. It can also
be seen as the echo of man moving through space. A balcony
is the extension of man's interior realm (house) into the
exterior (city) - a zone of exchange between public and pri-
vate. Isn't a patio a plaza at the level of the house, and
a plaza a patio at the level of the city? The facade or in-
terface zone embodies all of these associations, entering-
leaving, public-private, inside-outside, collective-individual.
It is the zone in which these polarities are negotiated. It
is not an inbetween zone, a line or a plane, but a place ter-
ritory in its own right and with an existance particular to
its nature.

The elements of the facade were determined by four types of
dimensions: those that came directly from the context, those
determined by the basic use of the element, those informed by
the materials and their processes, and those determined by human
scale. The analysis of the facade involved the identification
of the following process of generation: 1: the identification
of sub-elements and 2: their assemblage to form elements. 3: the
aggregation of elements into subsystems, and 4: the position of
these in the larger facade-site called system.

The family of elements common to each interpretation served
as a continuity (theme) while the different aggregations and
assemblages of these elements, the variants, supported the
identity and identification of the individual.

Use, body and context dimensions for floor heights determined
the supports vertical as well as the position of the elements
in the facade. Elements and openings were designed in relation
to the width of the support types, which were studied to test
their capacity to hold a range of variations in the assemblage
and aggregation of both elements and openings. Form elements,
openings, and their rules regarding position and dimension were
then used to generate the facade systems at the collective level.

OJO DE BUEY
DIMENSIONAL RANGE: $3"-6"$ **D**

MEDIOS PUNTOS
DIMENSIONAL RANGE: $48"-52"$ **H**
$16"-24"$ **V**

TRANSEM
DIMENSIONAL RANGE: $16"-24"$ **V**

DOOR
DIMENSIONAL RANGE: $6'-0"-7'-0"$ **V**

$20"$

$20"$

$14"$

$12"$

$48"$

DOOR
DIMENSIONAL RANGE: **A.** DOUBLE: $18"-22"$ **H**
B. SINGLE: $30"-36"$

OPENING
DIMENSIONAL RANGE: $36"-64"$ **H** $7'-0"-8'-0"$ **V**

D

C

B

A   B   C   D
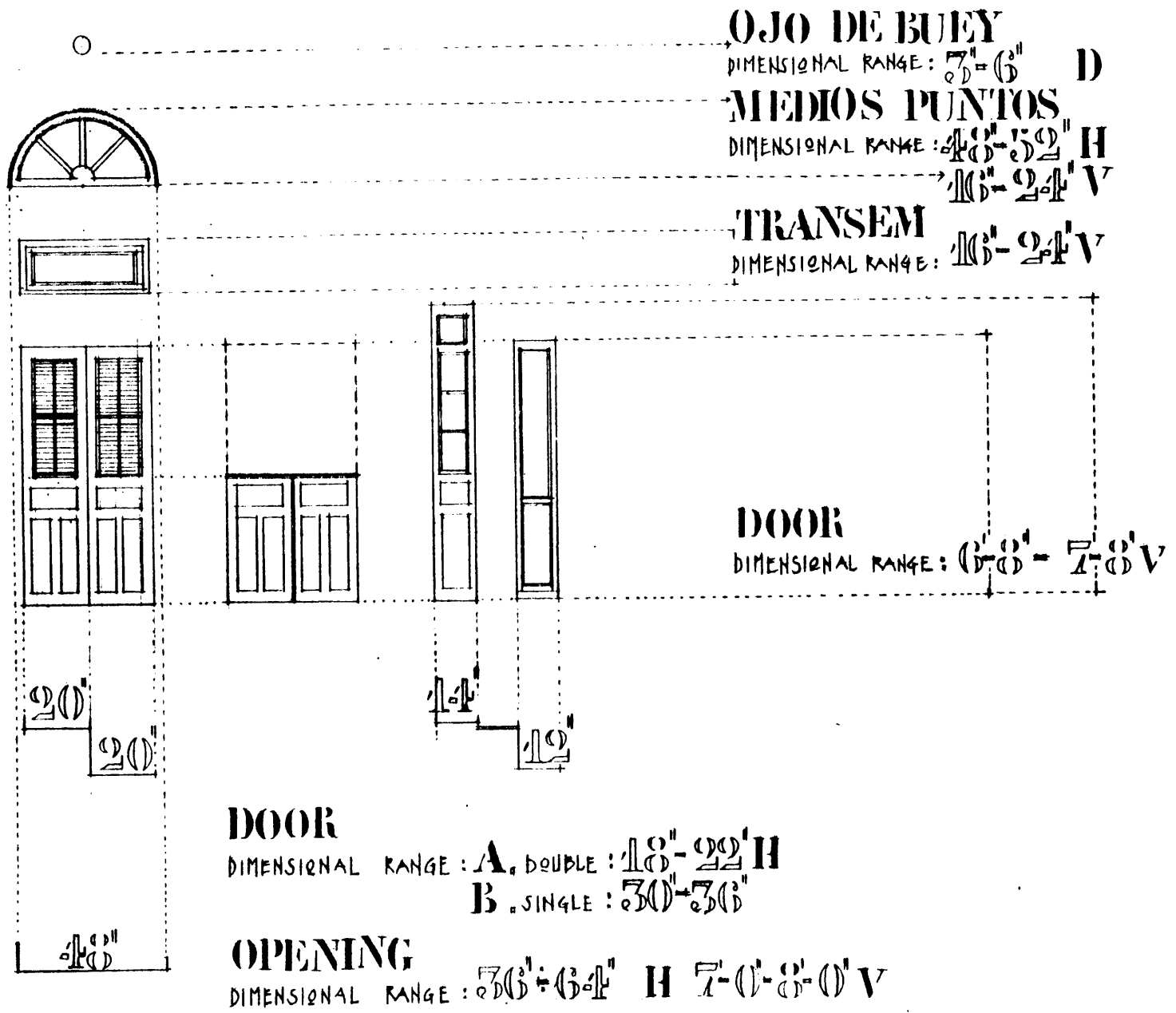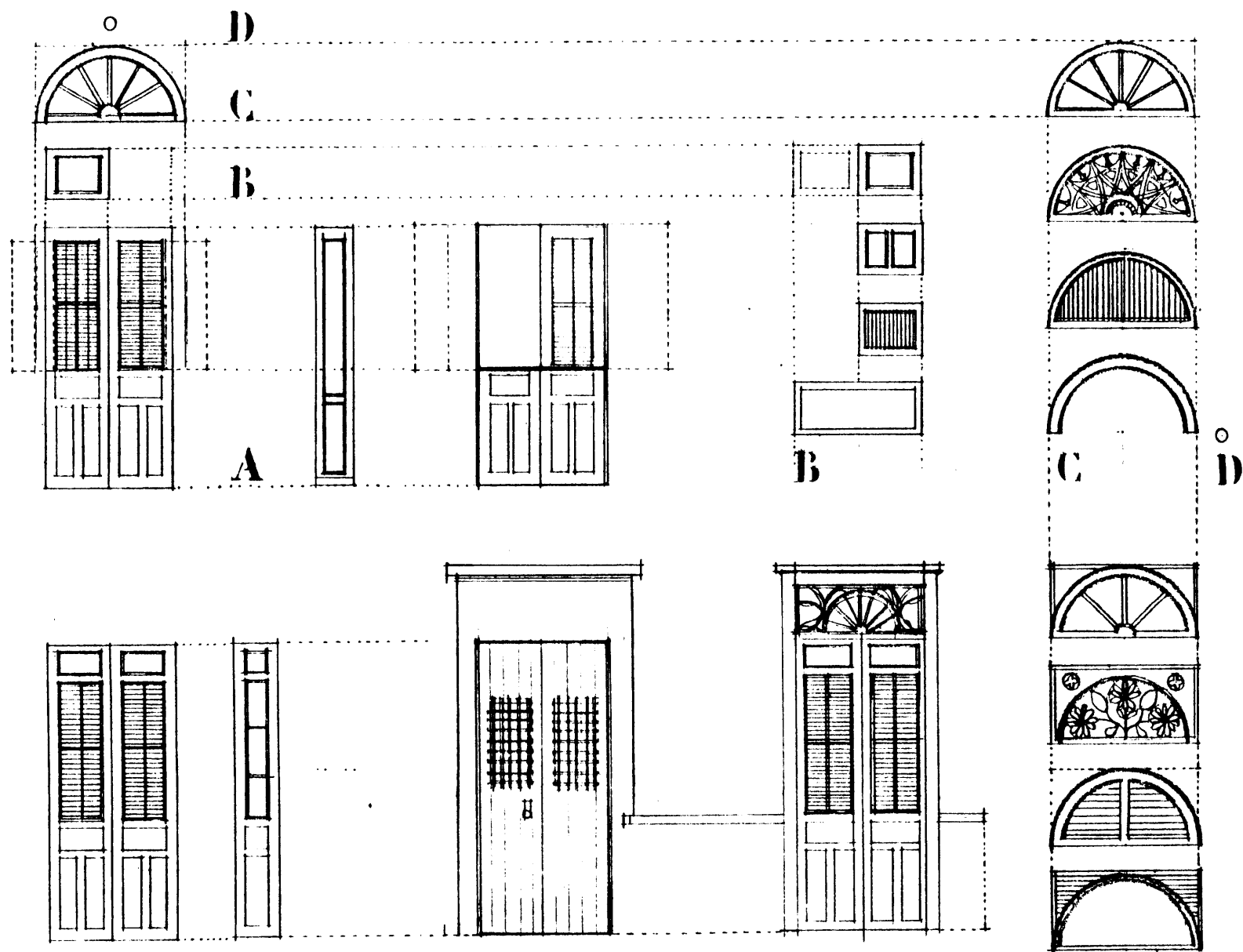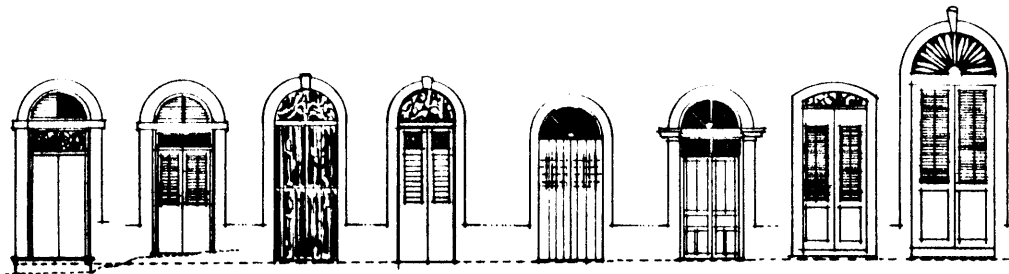
① DOORS:
    ARCHED
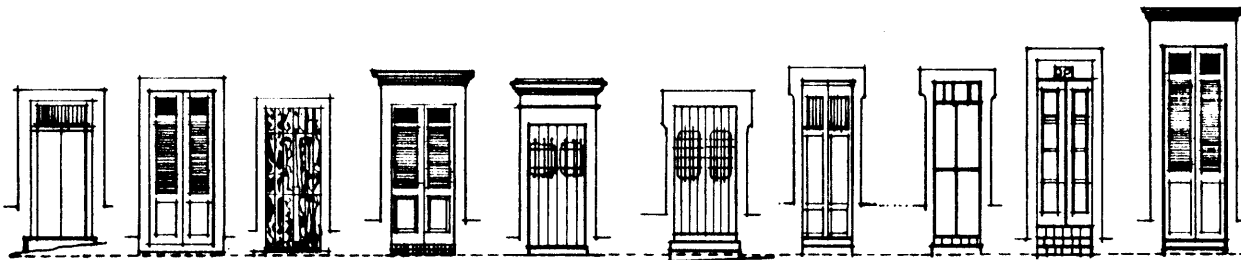
② W. LINTEL

④ WINDOWS

③ W. OJO DE BUEY
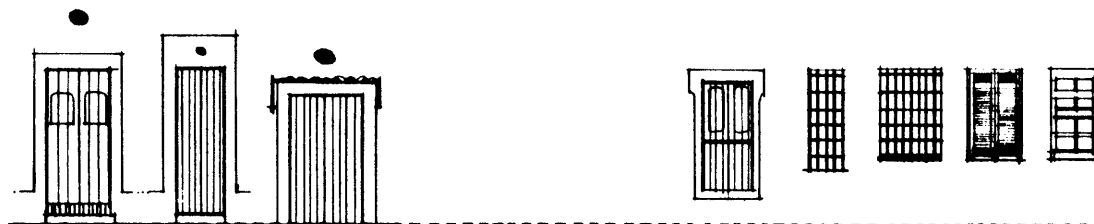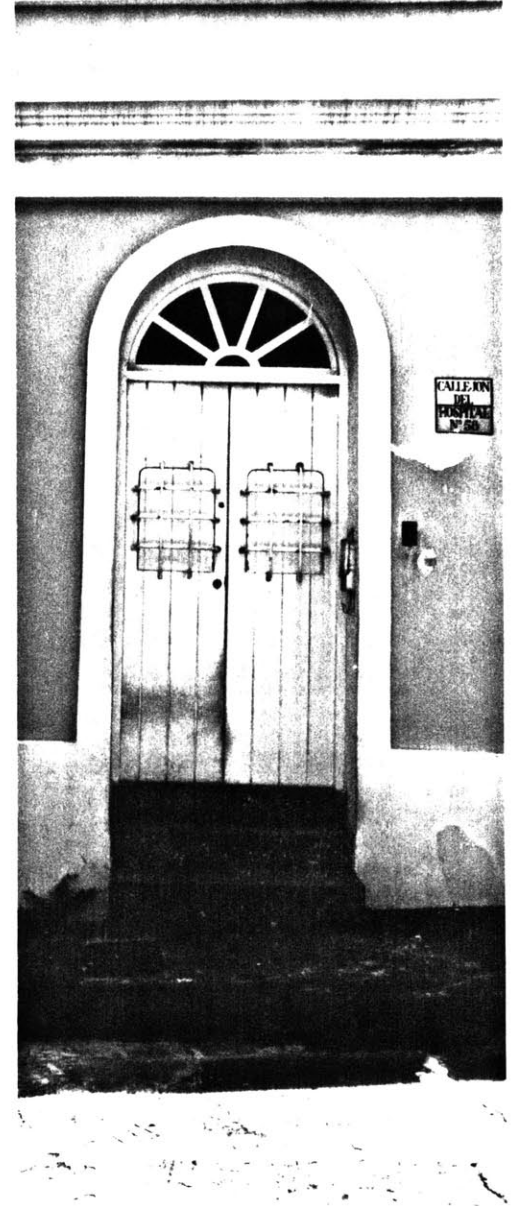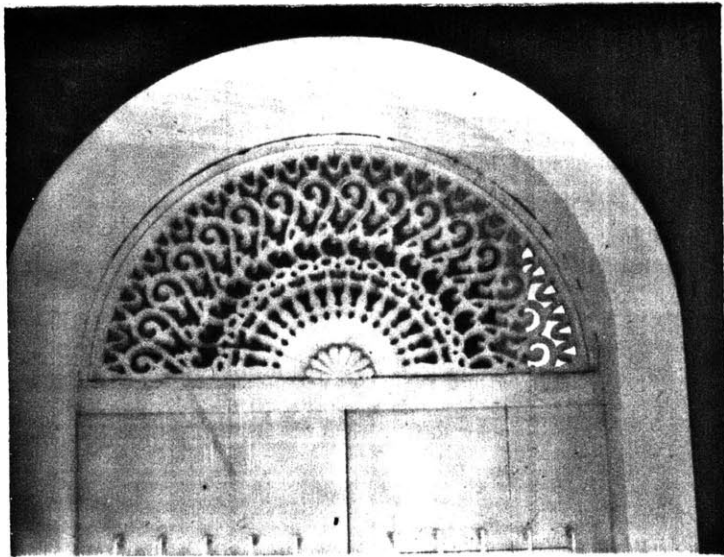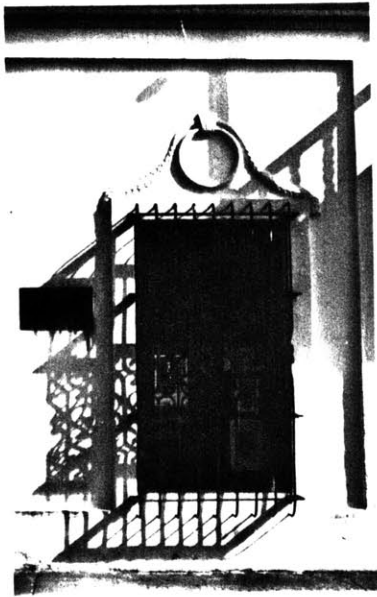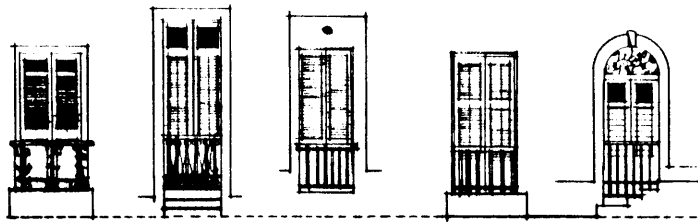
ELEMENTS

SINGLE
(ON GROUND)
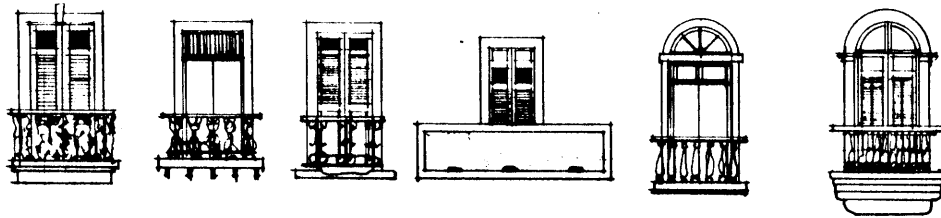
SINGLE
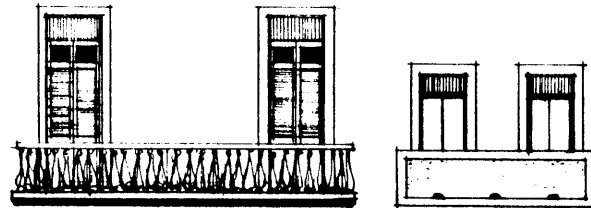
EXTENDED
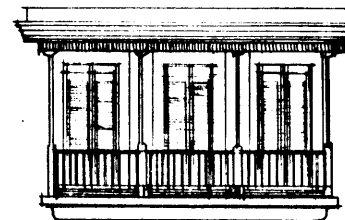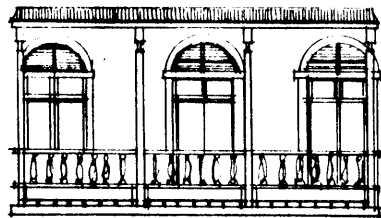
COVERED

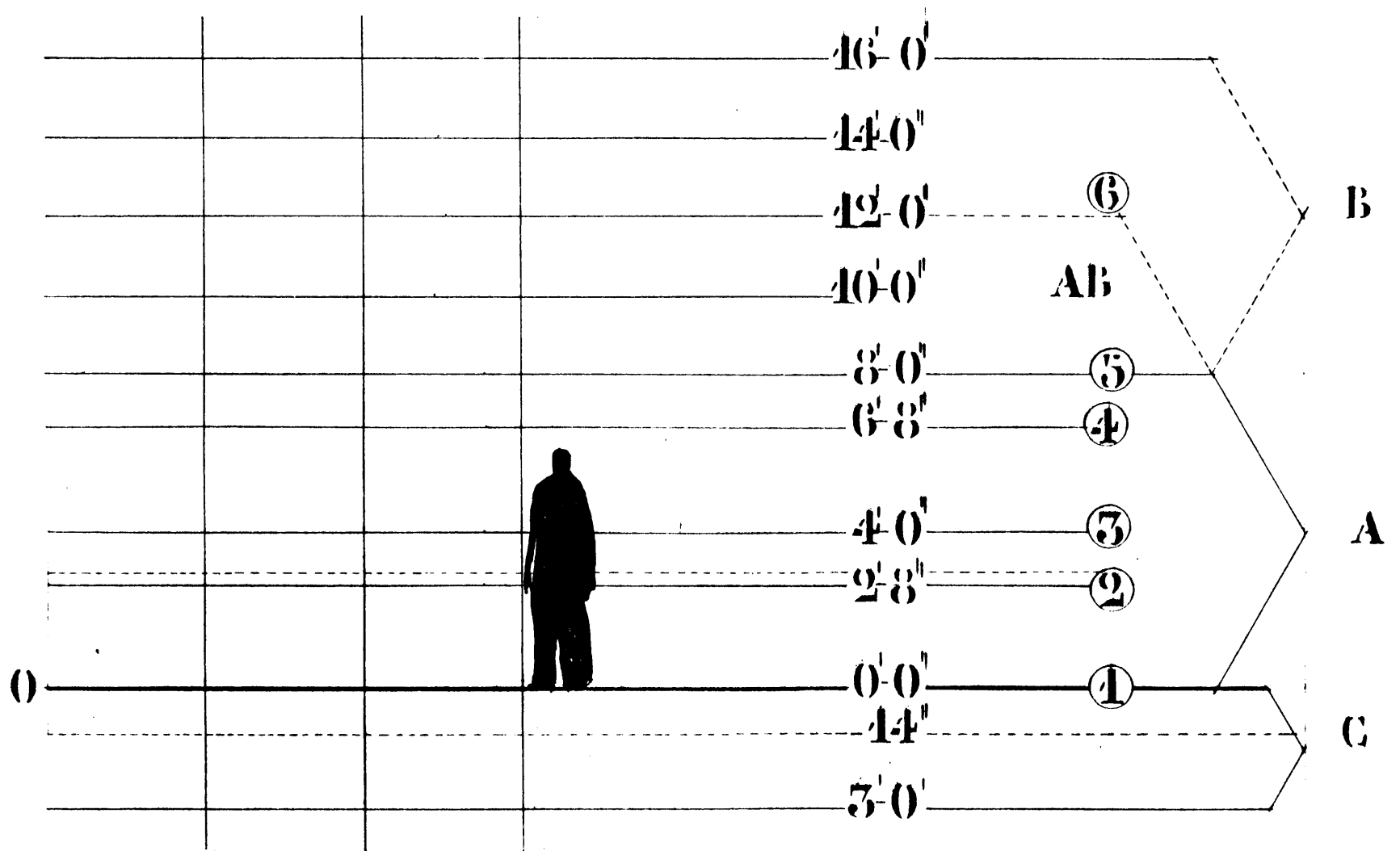FRENCH WINDOW_____Ⓐ
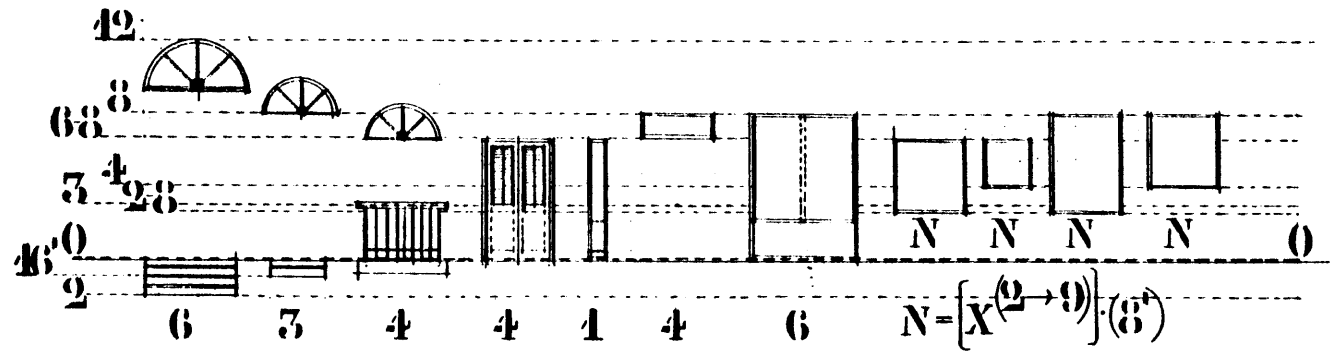BALCONY_____Ⓑ

SUB-SYSTEMS
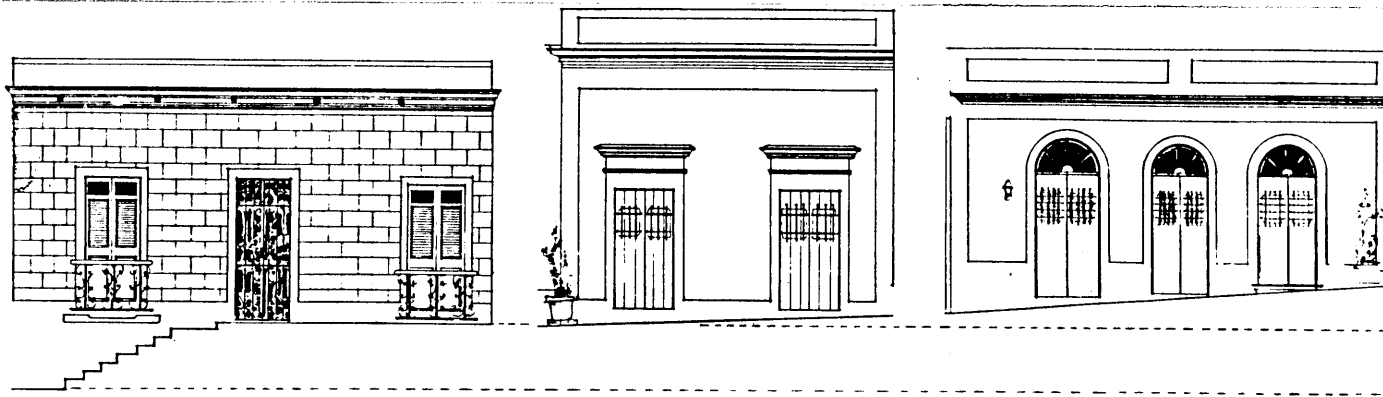
ONE STORY
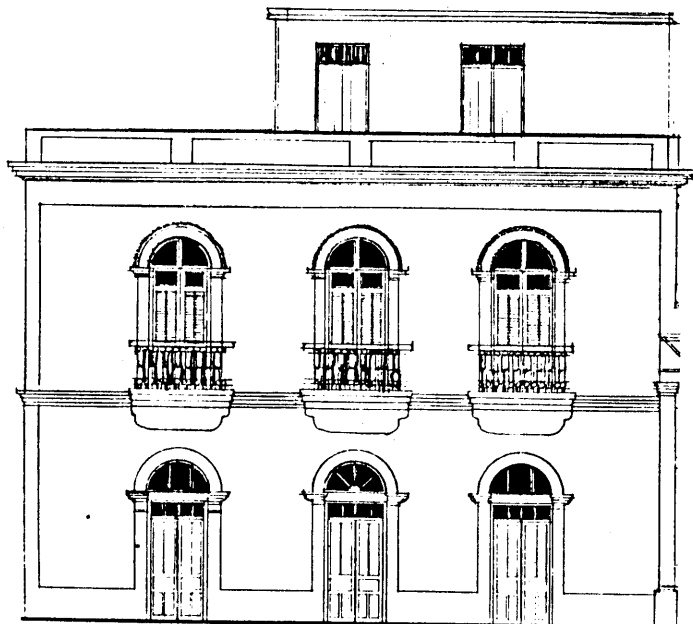
TWO STORY
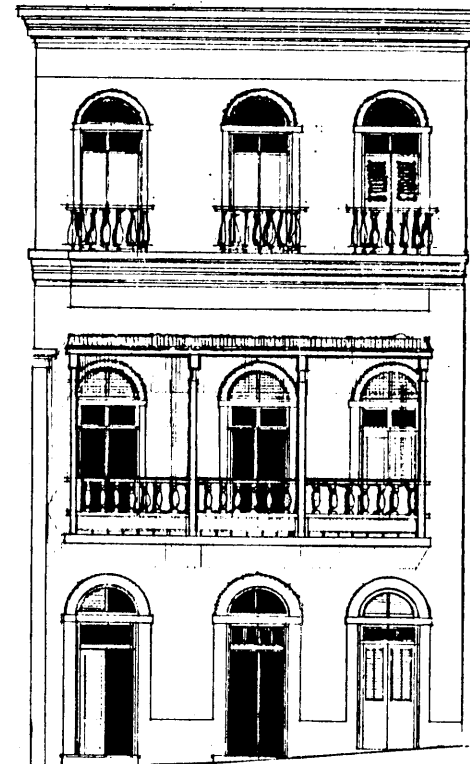
THREE STORY

SYSTEMS

205

SUB-SYSTEMS

SUB-ELEMENTS ELEMENTS BASIC SYSTEM
&→INTENSIFICATIONS ASSEMBLED SYSTEM

GENERATIVE FAÇADE

COMMUNITY — 12'-0" 16'-0" — 144" — 12'

SPACE — 10'-8" 124" — (-) 116 — 11 — 10

— +9

PRIVACY — 8'-0" 100 (+) — (-) 92 — 8

PLACE — 6'-8" 84 (+) — (-) 76 — +7 — +6

— +5

WORK — 4'-0" 52 (+) — (-) 44 — 4

USE — 2'-8" 36 (+) — (-) 28 — +3 — 2

SIT — 1'-4" 20 (+) — (-) 4 — 1

STEP — 7" 8 (+) — (-) 5 — 0'

0'

16'-0"

14'-0"

12'-0" ⑥

10'-0" AB

8'-0" ⑤

6'-8" ④

4'-0" ③

2'-8" ②

0 0'-0" ①

-1'-4"

-3'-0"

B

A

C

209

ELEMENTS

$$N = \left[X^{(2 \to 9)} \right] \cdot (8^4)$$

OPENINGS

14'-0"

SLAB
OPAQUE

1ST
FLOOR

① 16 ② 14 ③ 12

14'(0')

12'

8'
6'6"

4'
2'8"

0'
14'

3
4

6 4

8 4

211

① 14'   ② 12'   ③ 10'   14'-0"
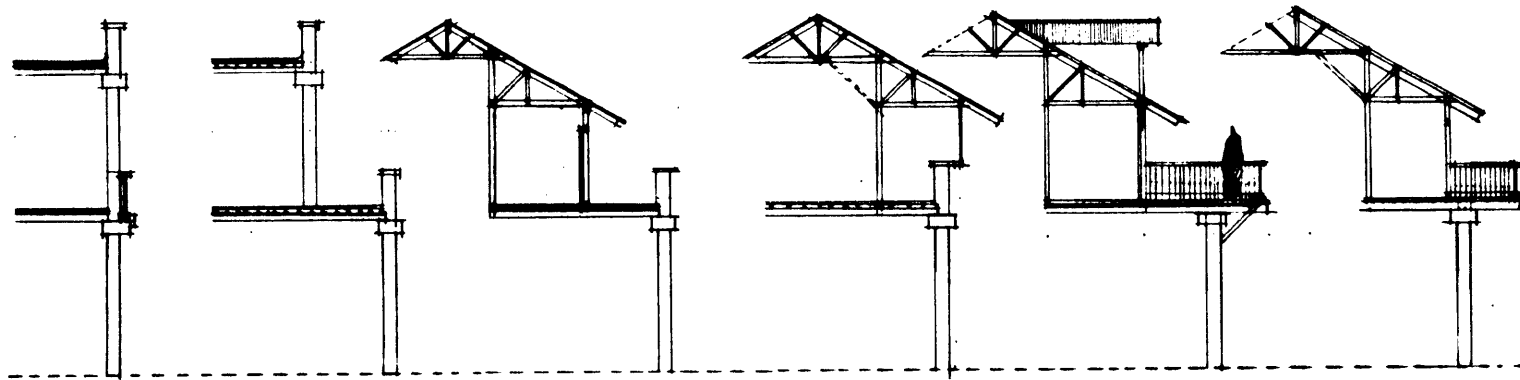
① 12'
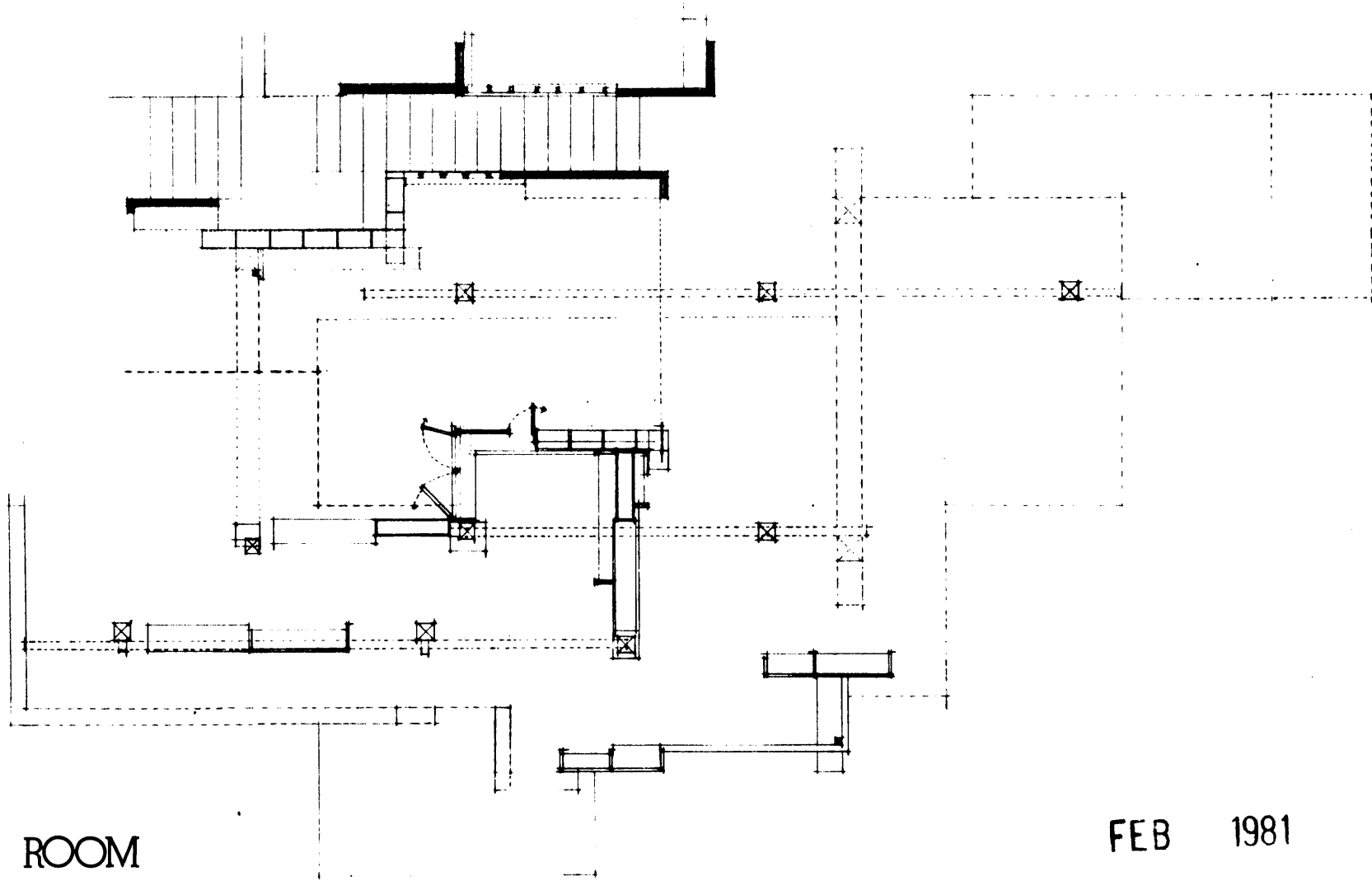
② 10'

③ 8'
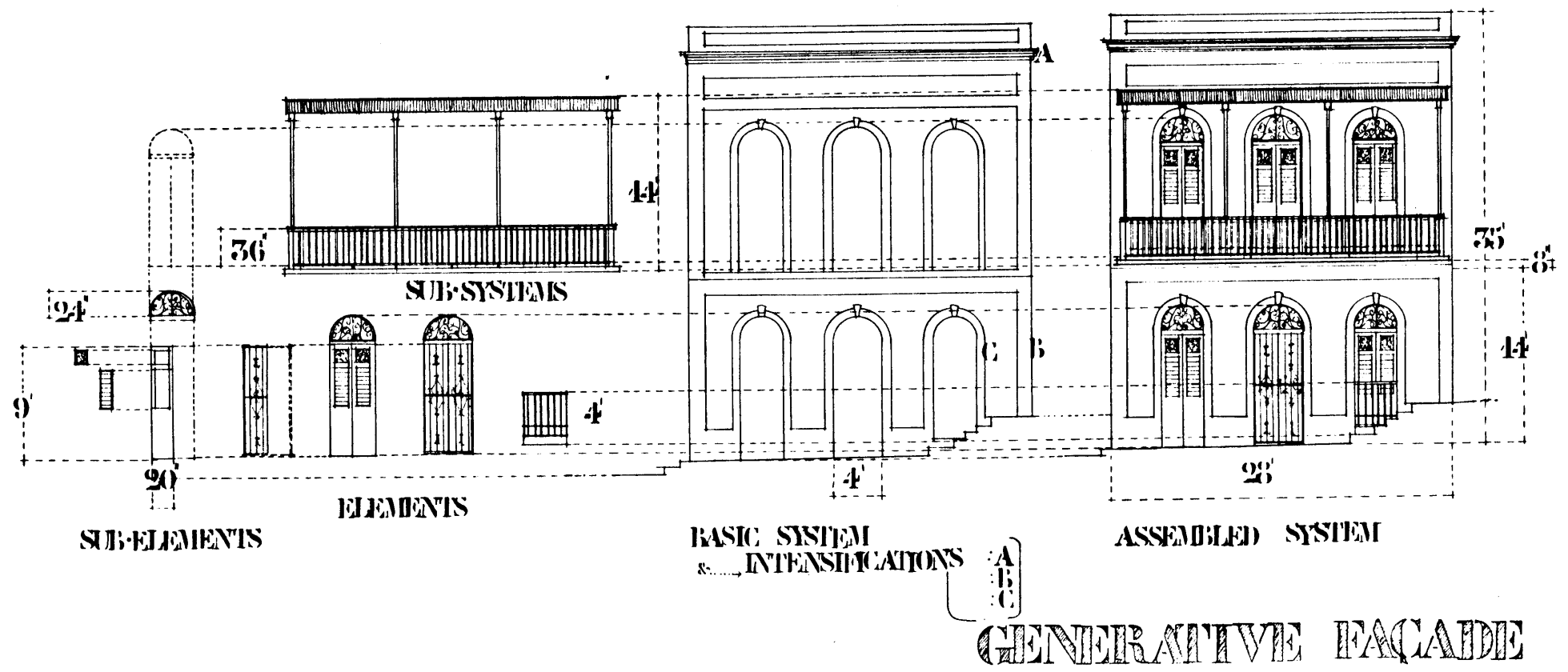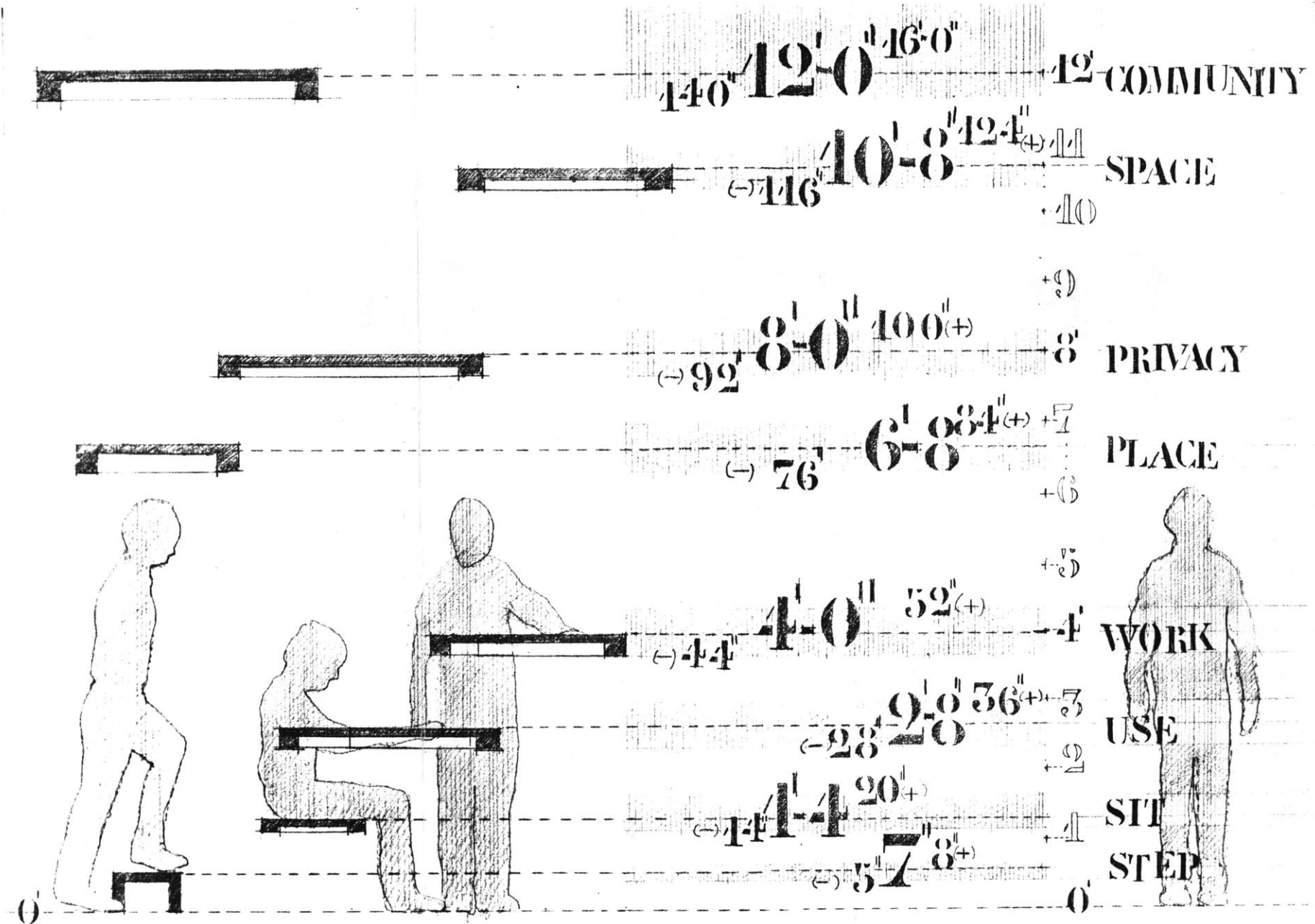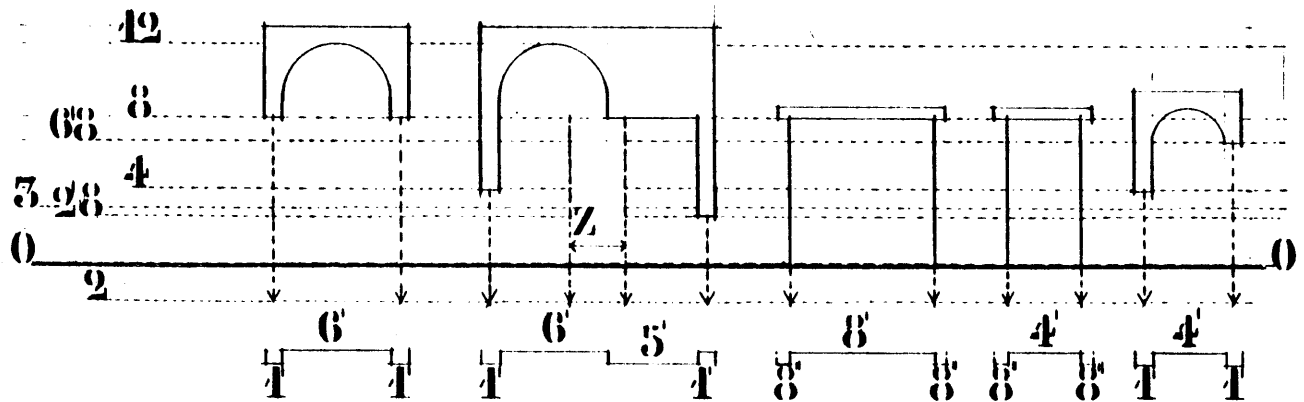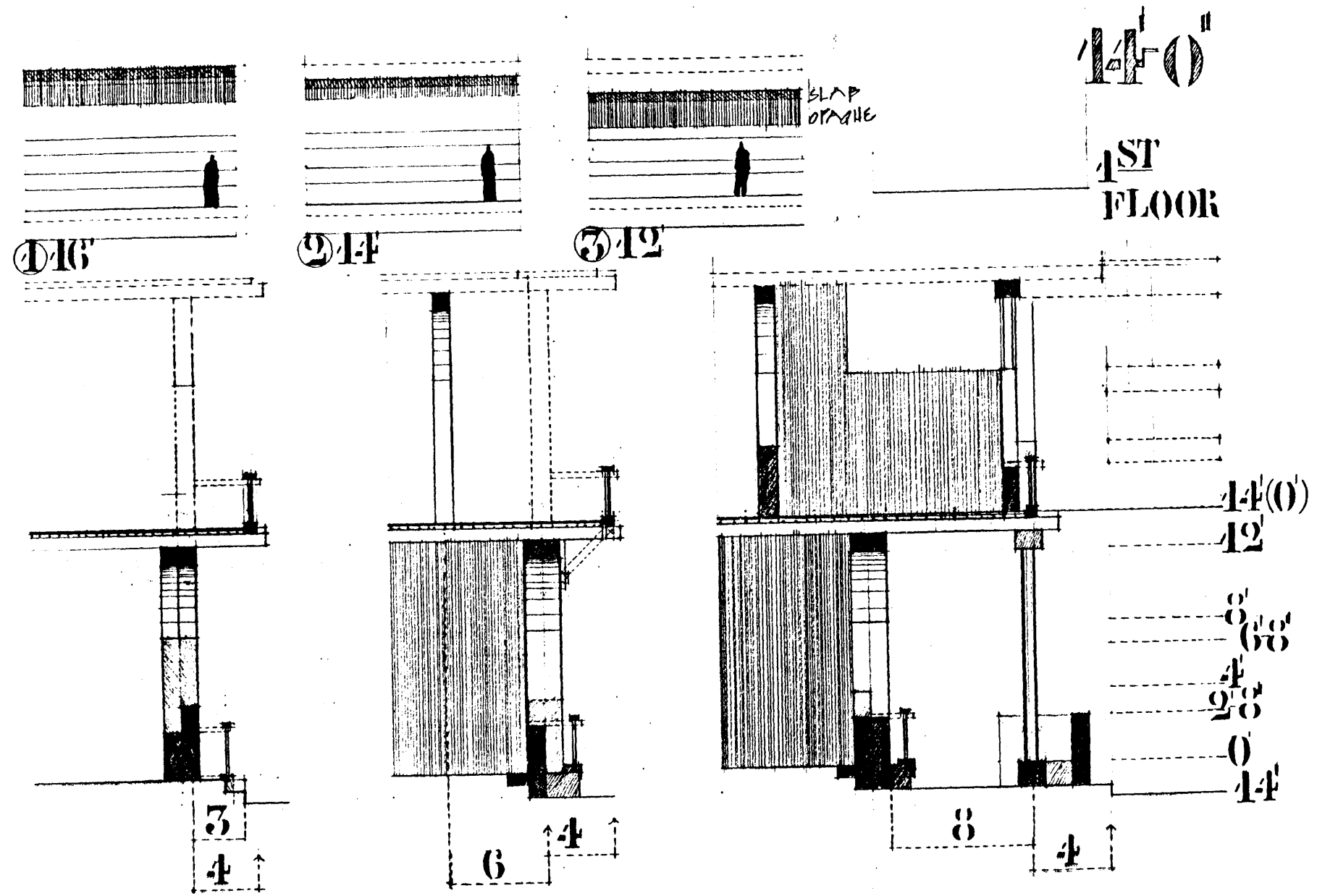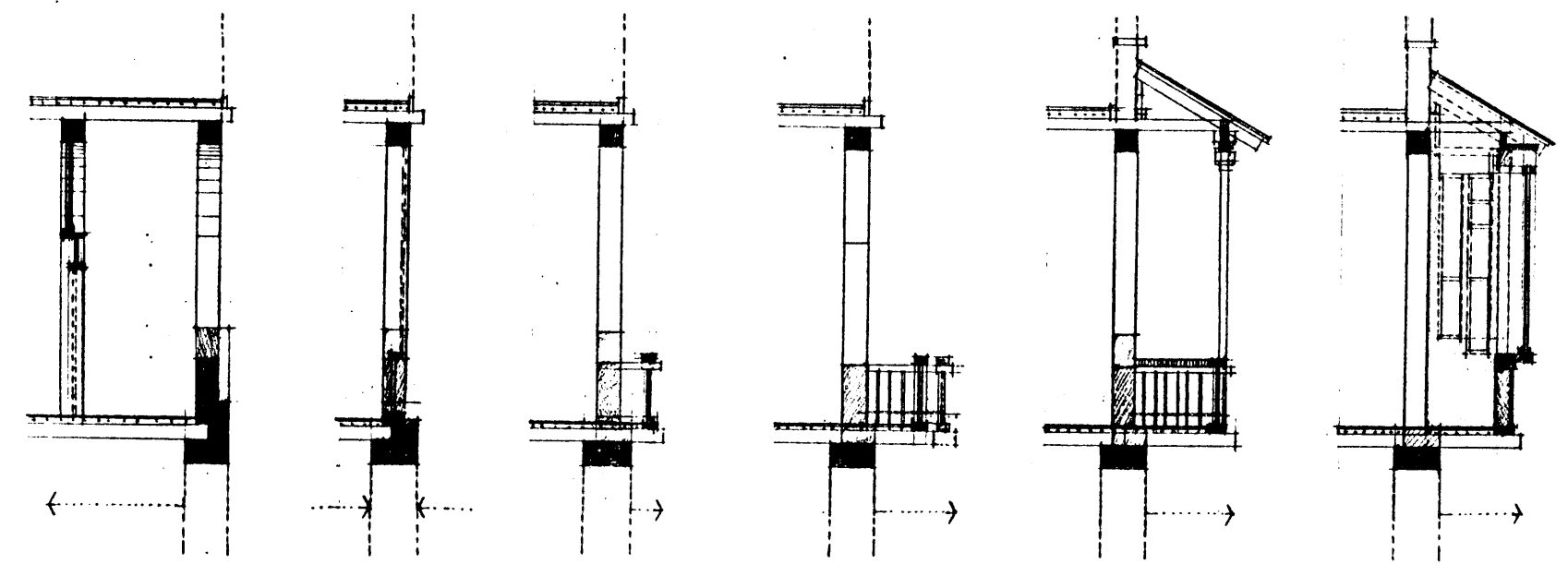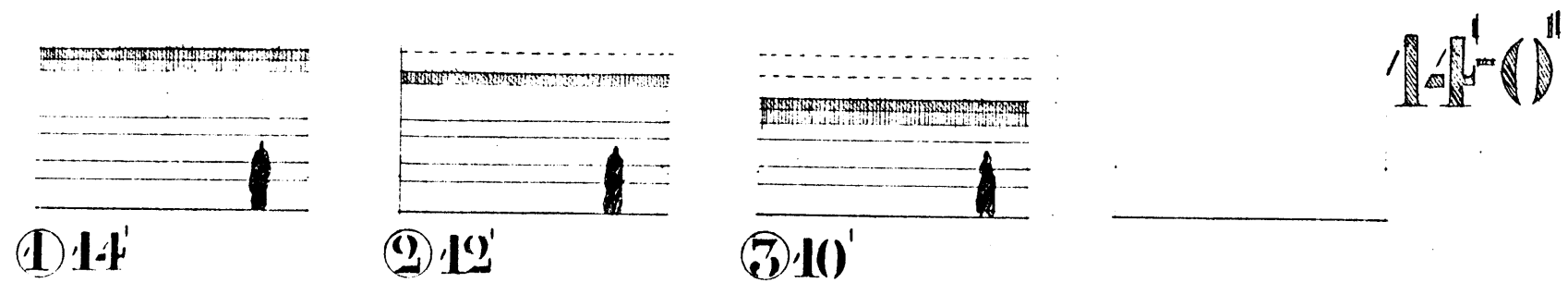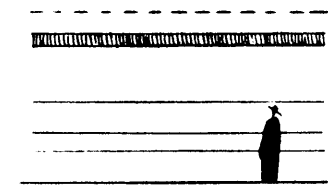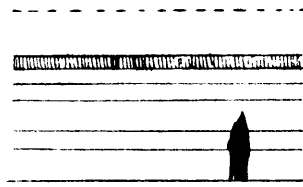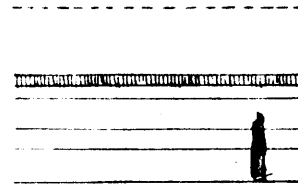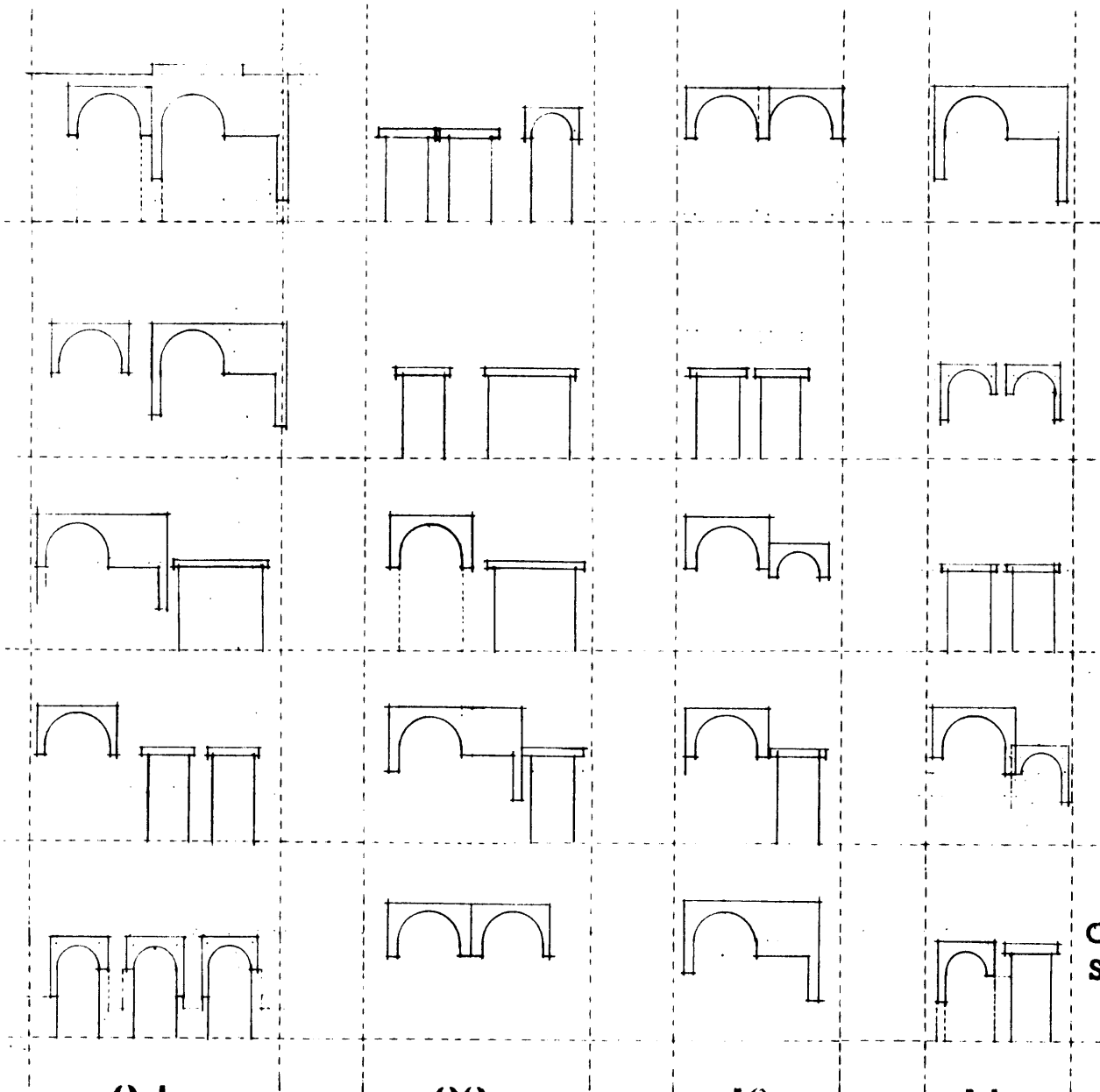
capacity of the
support·façade zone

24 22 16 14

216
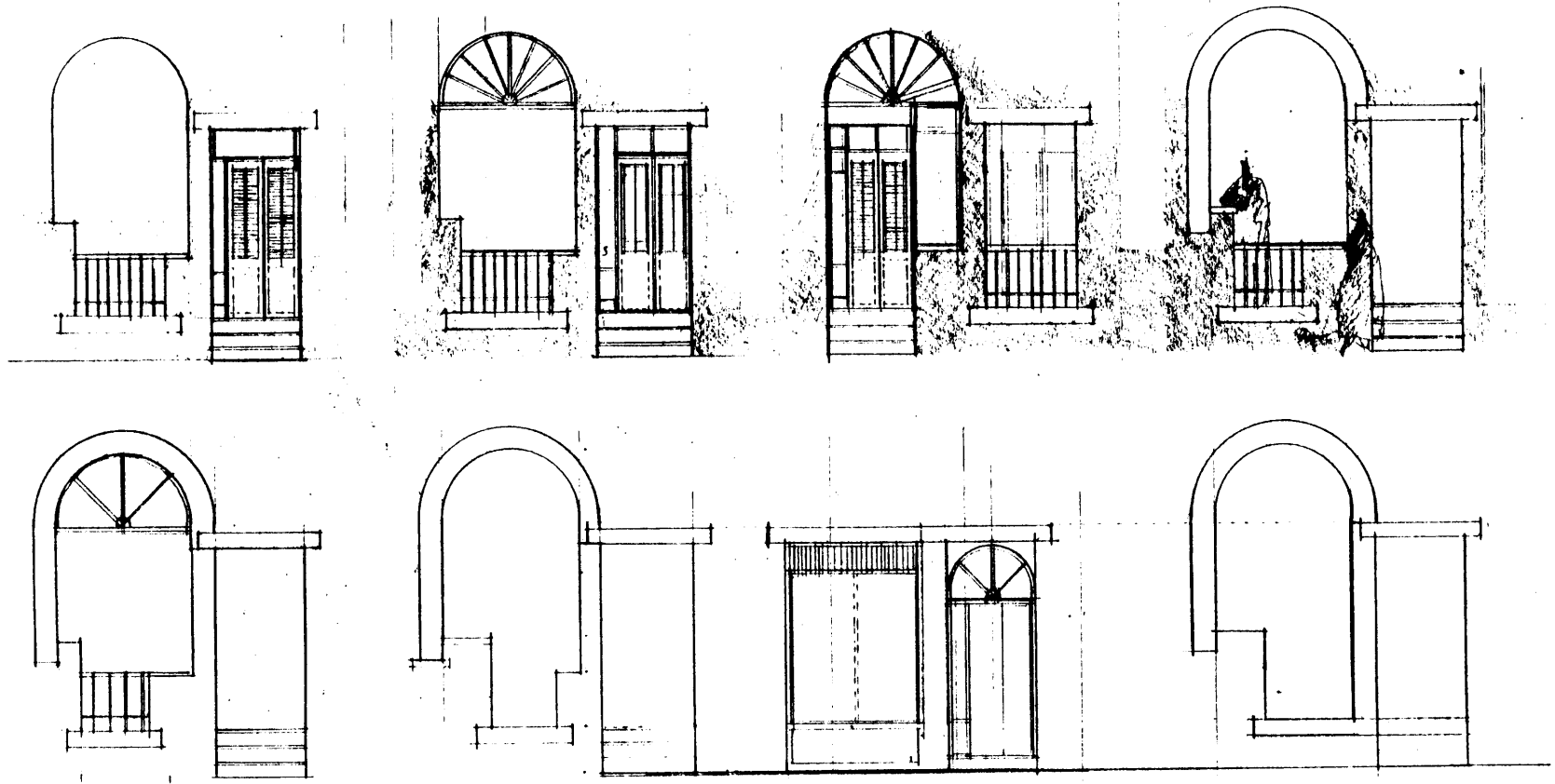
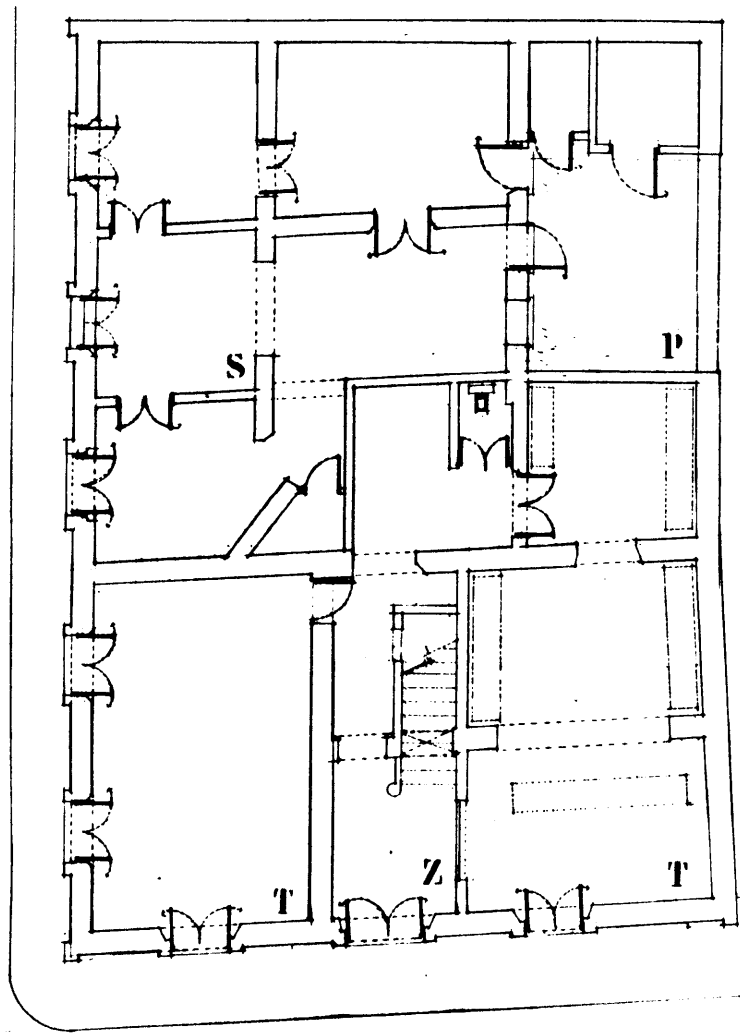ROOM

FEB   1981

inhabitation of rooms

A. SMALL
LESS HALL → MORE ROOM
INTERIOR CLAIMING EXTERIOR
3D SCREEN · UP TO BAY WINDOW SIZE

B. LARGE
MORE HALL → ADDITIONAL
TERRITORY
USE DIMENSION · UP TO ROOM SIZE.

openings

0 2 4 8'

NOV 16:1980

219

GROUND FLOOR PLAN
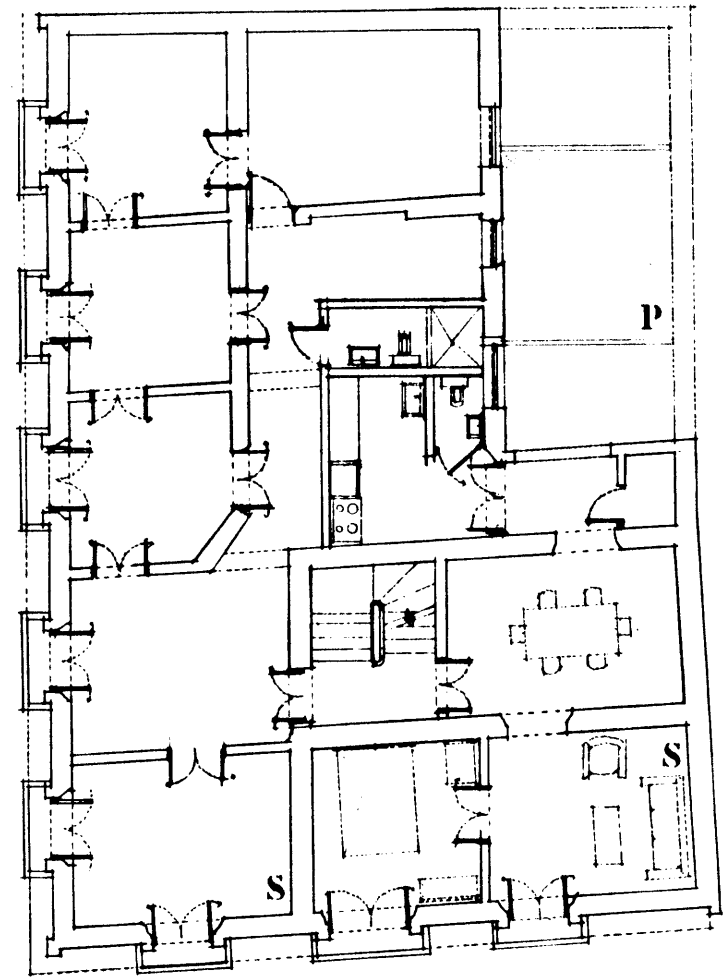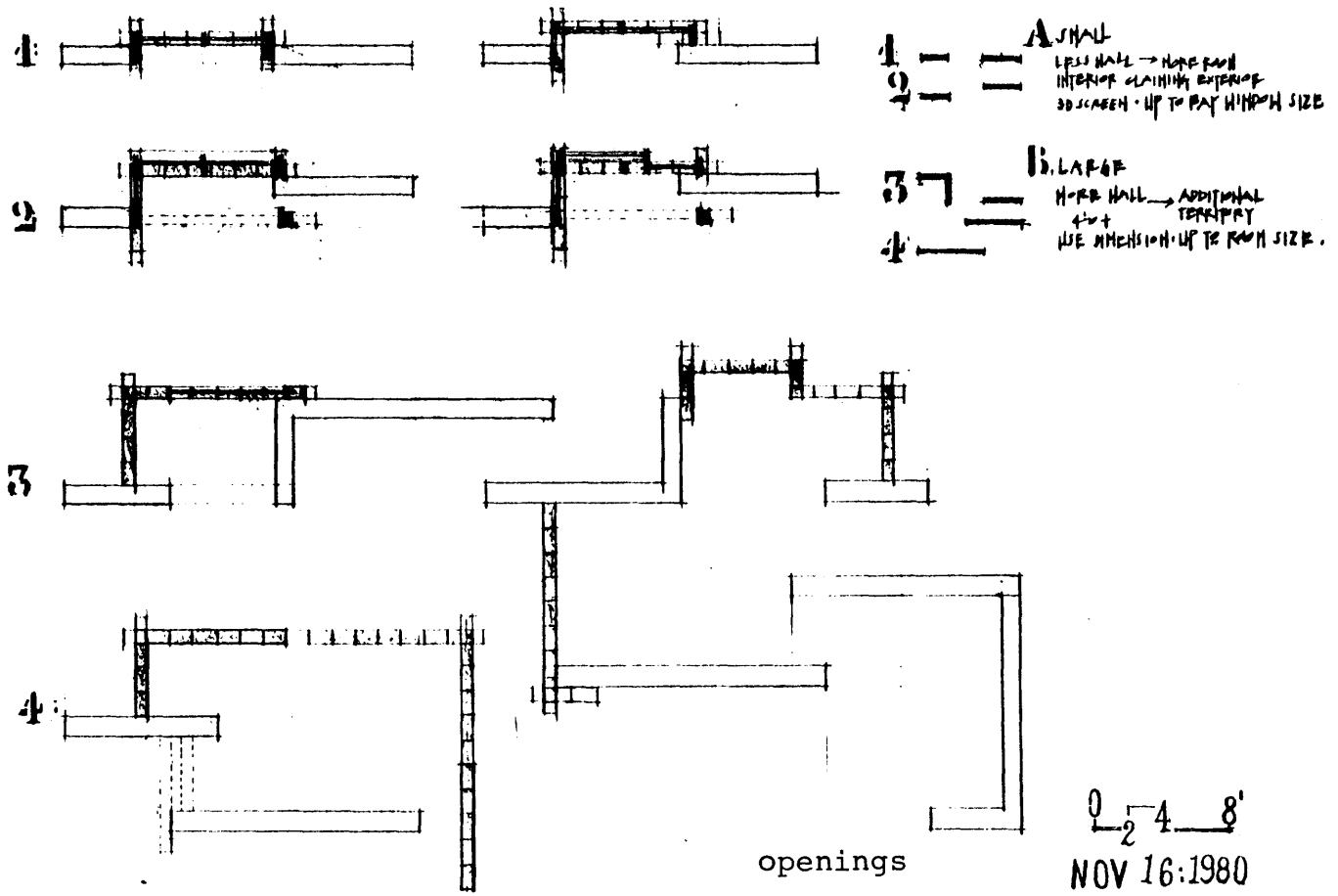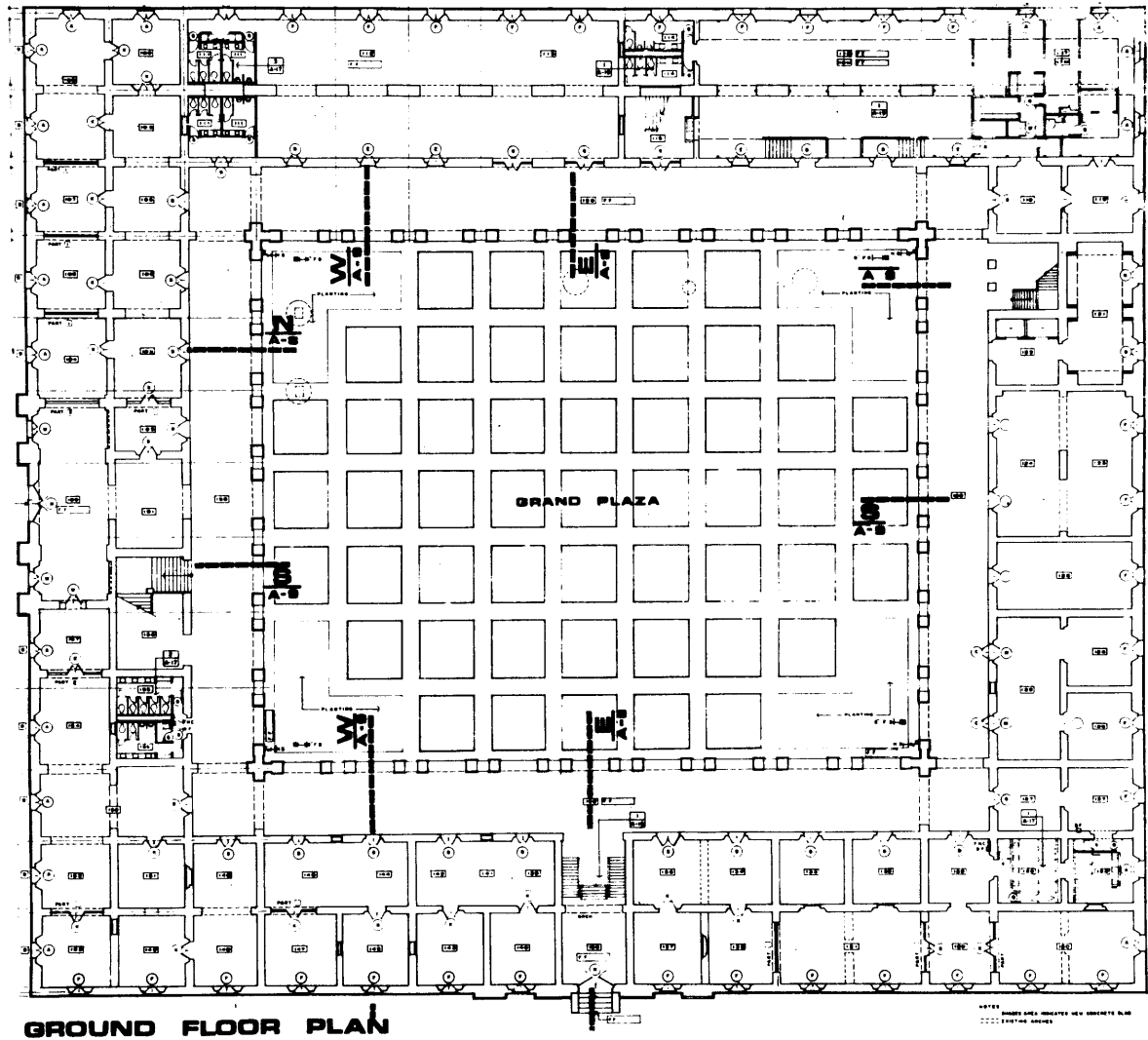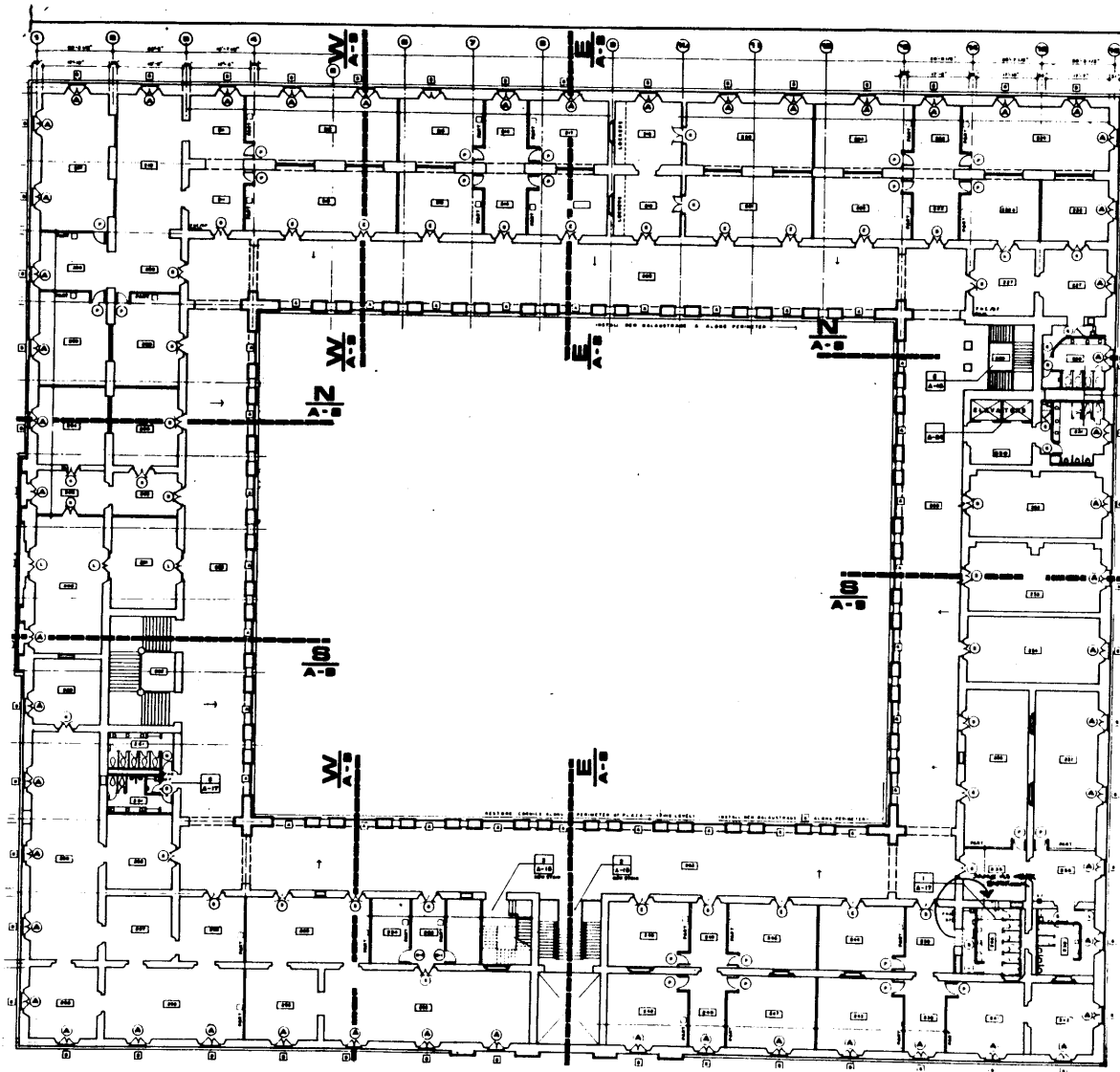
BALLAJÁ

second floor

Ballajá, the barracks of the Spanish military, is used as a
sketch problem exploring a projected generation through move-
ment. The three major goals were 1: to revive Ballajá, allow-
ing it to be part of the city (both in function as well as
definition), 2: to liberate its central plaza making it part
of the fabric of the city instead of a self-contained space,
and 3: to establish a link between El Morro, its grounds, and
the rest of the tissue, integrating them as well. The study
concentrated in designing a physical framework which would sup-
port and reinforce the goals stated above, and serve as a built
reference for the future inhabitation and re-use of the build-
ing.

The construction of Ballajá was begun in 1854, in attempt to
solve the housing problem of the Spanish army. After the Span-
ish-American war, the Americans used it as barracks, storage,
offices, and headquarters. It has been abandoned since the
Americans left Fort Brooke (American army base in the grounds
of El Morro). Subsequent projects to re-use the building have
not been realized. This might have to do with the enormous
size of the building (7,716 sq. mts.). It is a rectangular
building, three stories tall, with an (also enormous - 2,422
sq. mts.) interior patio in the center.

Using the existing as a reference, the design developed a
secondary system to articulate the public movement and to
bring down the scale of the building's arcade to more hu-
man dimensions. It also opened the southeast corner of the
building, making the plaza both visible and accessible.
Part of the fabric of the housing tissue was integrated as
a support replacing the compartmentalized cells of the bar-
racks.

Until now the intervention only involved the existing phy-
sical definitions and the orthogonal system of the building.
However, through movement, the link between El Morro (rein-
forced by the direction of the promenade leading to it) and
the city (Plaza San José representing the most immediate pub-
lic node) generated a diagonal directional system. This dia-
gonal was reinforced by a new support structure, different
from the housing support, which was to hold a larger public
function. This new support reduced the size of the patio to
more manageable dimensions. The landscape was then introduced
as a third continuity reinforcing this new direction and the
link between park and city. This diagonal direction first po-
sitioned in the northwest corner was then shifted to the right
to coincide in a node at the end of the existing arcade. This
node where the two directions - the existing orthogonal and the
new diagonal - meet, holds the major services, vertical circula-
tion (stairs and elevators), as well as the connection to the
projected housing fabric.

plaza

1
2
3
4
5
6
7
8
9
10
11

plaza

1
2
3
4
5
6
7
8
9
10
11

$\frac{1''}{32}=1'$

N
S
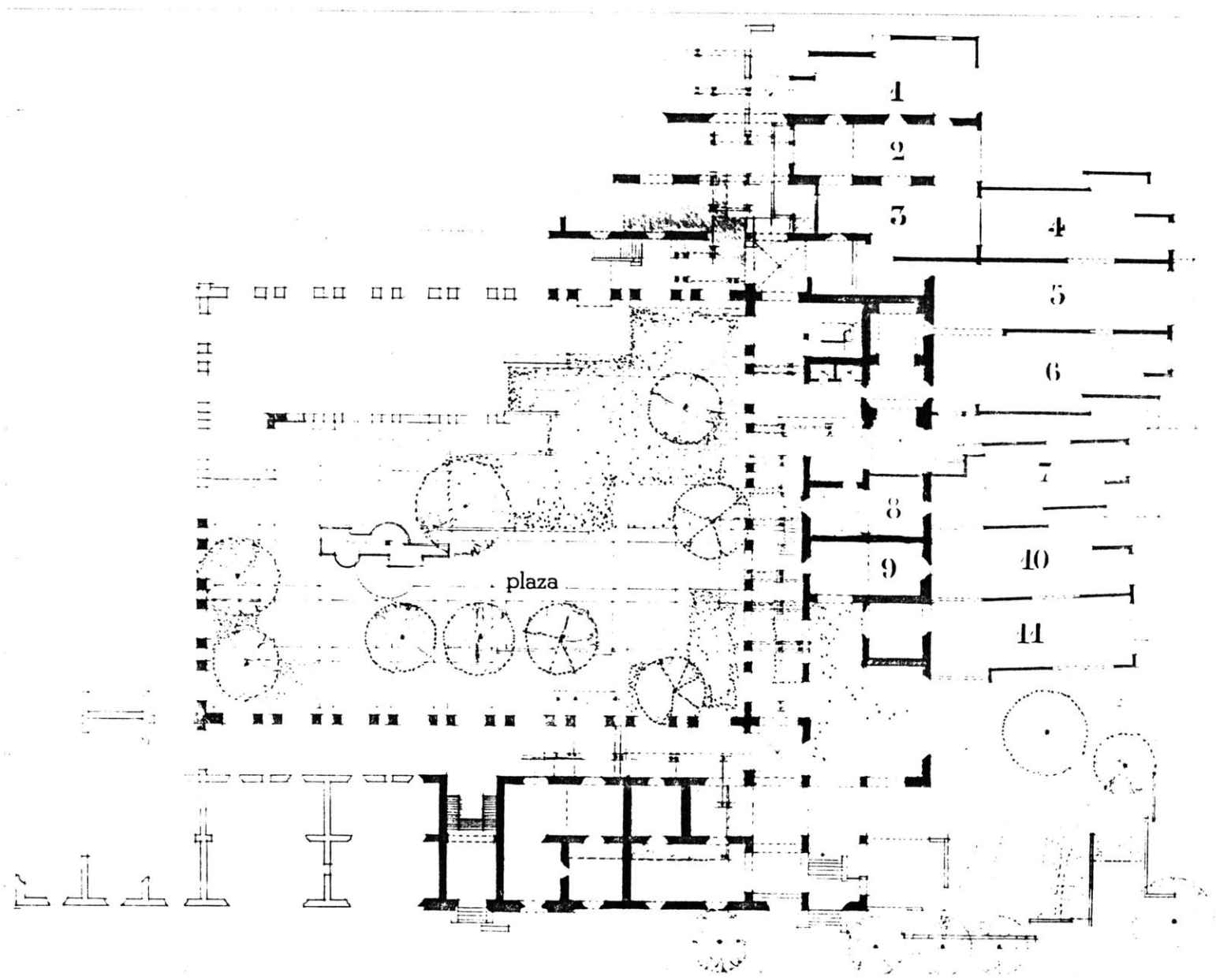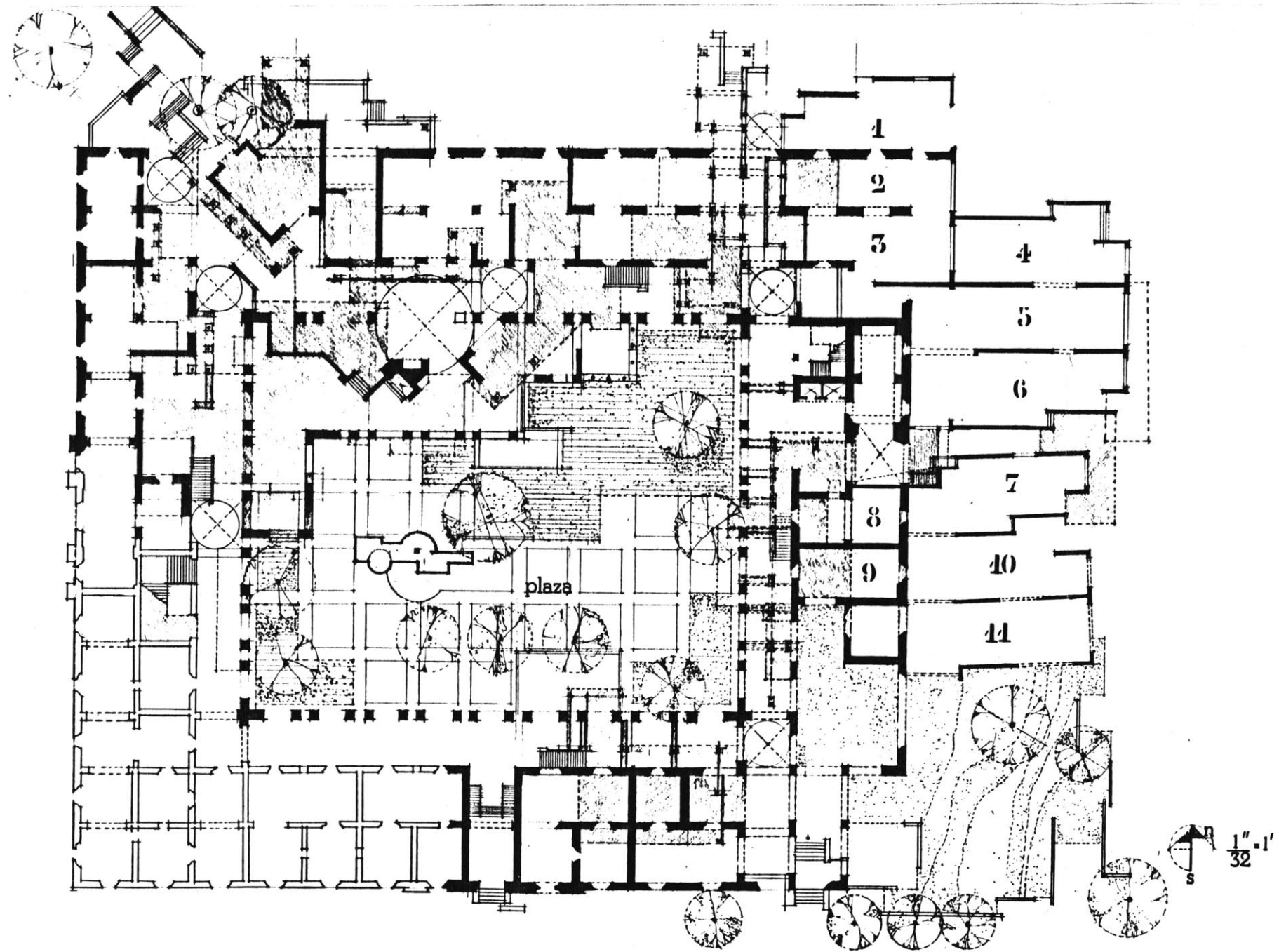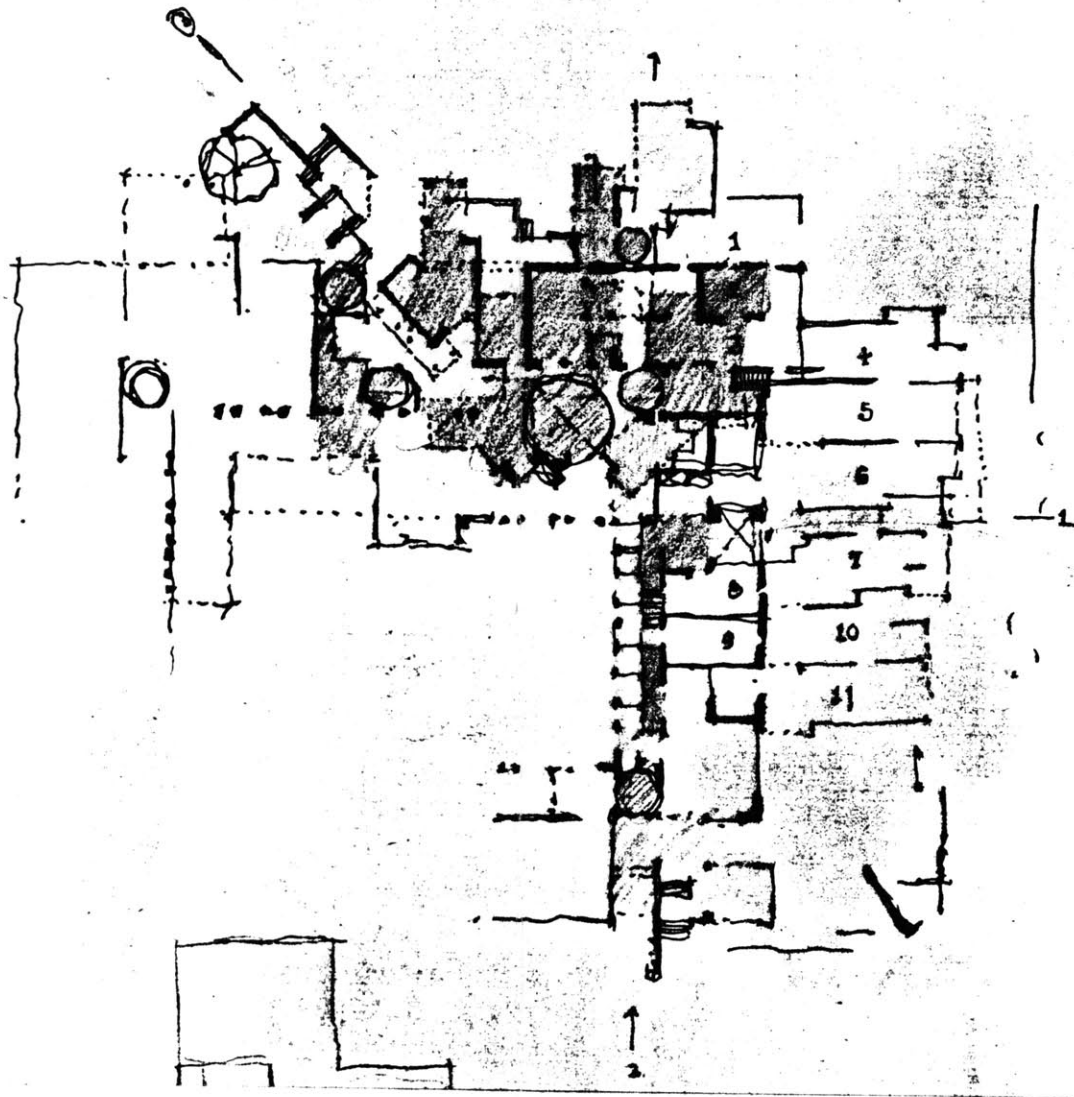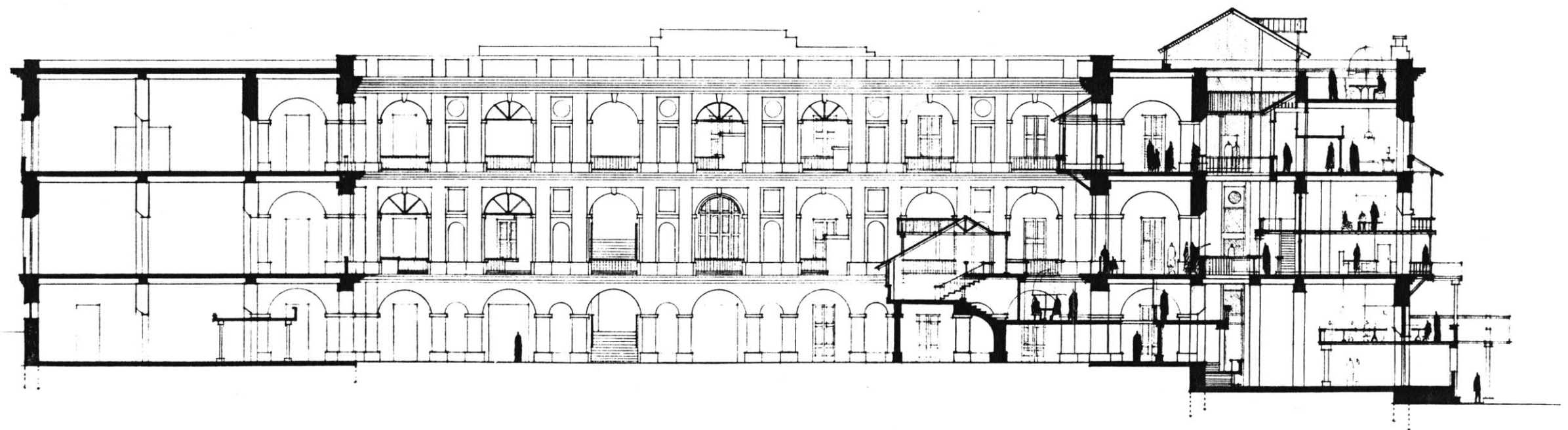
TISSUE

The projection at the collective size was generated
through movement as related to the intentions at the
level of the tissue as well as from the making of
collective places through the aggregation of support
structures. The study involving Ballajá was integra-
ted at this level not as an isolated object but as a
physical definition reinforcing the general intentions.

The collective size involved the manipulation of three
major continuities: landscape, movement (access) and
building. The design took a linear character as a re-
sult of the narrow dimensions of the site and as a re-
sponse to the intention of continuing the north-south
pedestrian link. This pedestrian street is, however,
a collection of places. It ends in a larger collective
place at which point the site opens to El Morro and the
sea, and the pedestrian network joins the entrance prome-
nade leading to the fort. What follows is a series of
drawings showing the development of the site at the col-
lective level.

234

A

ELEVATION STUDY

237

SITE PLAN

SITE PLAN

0 50
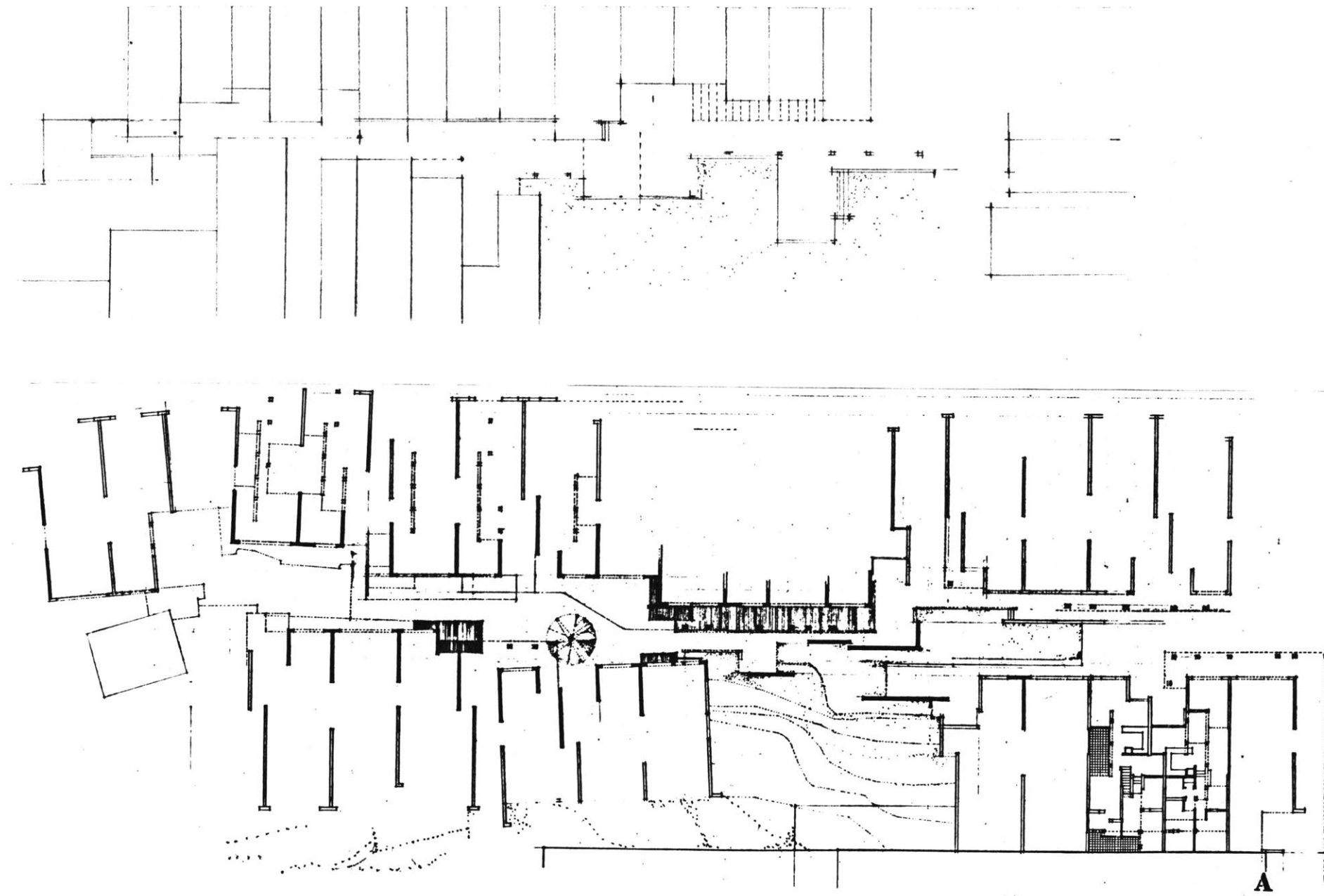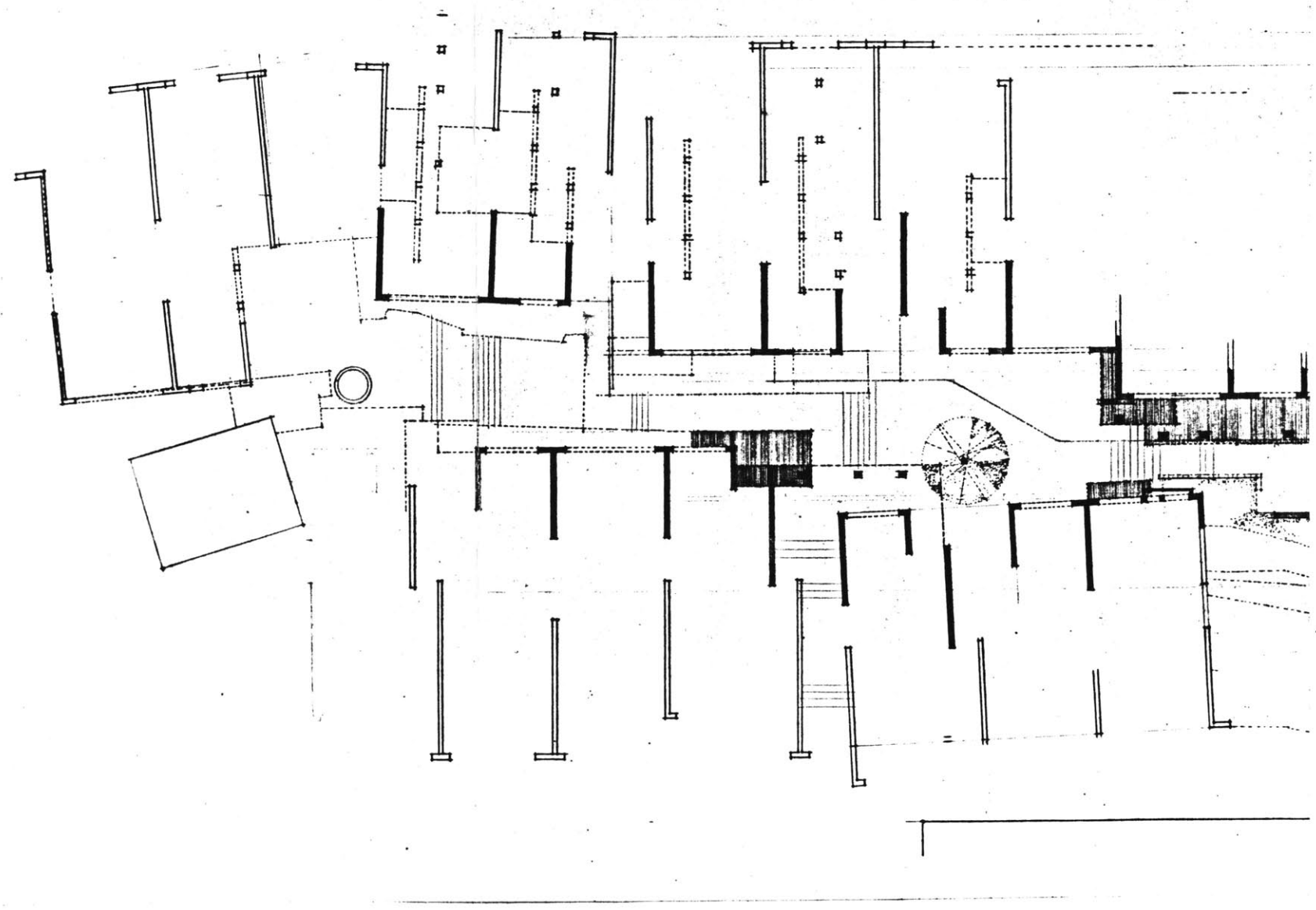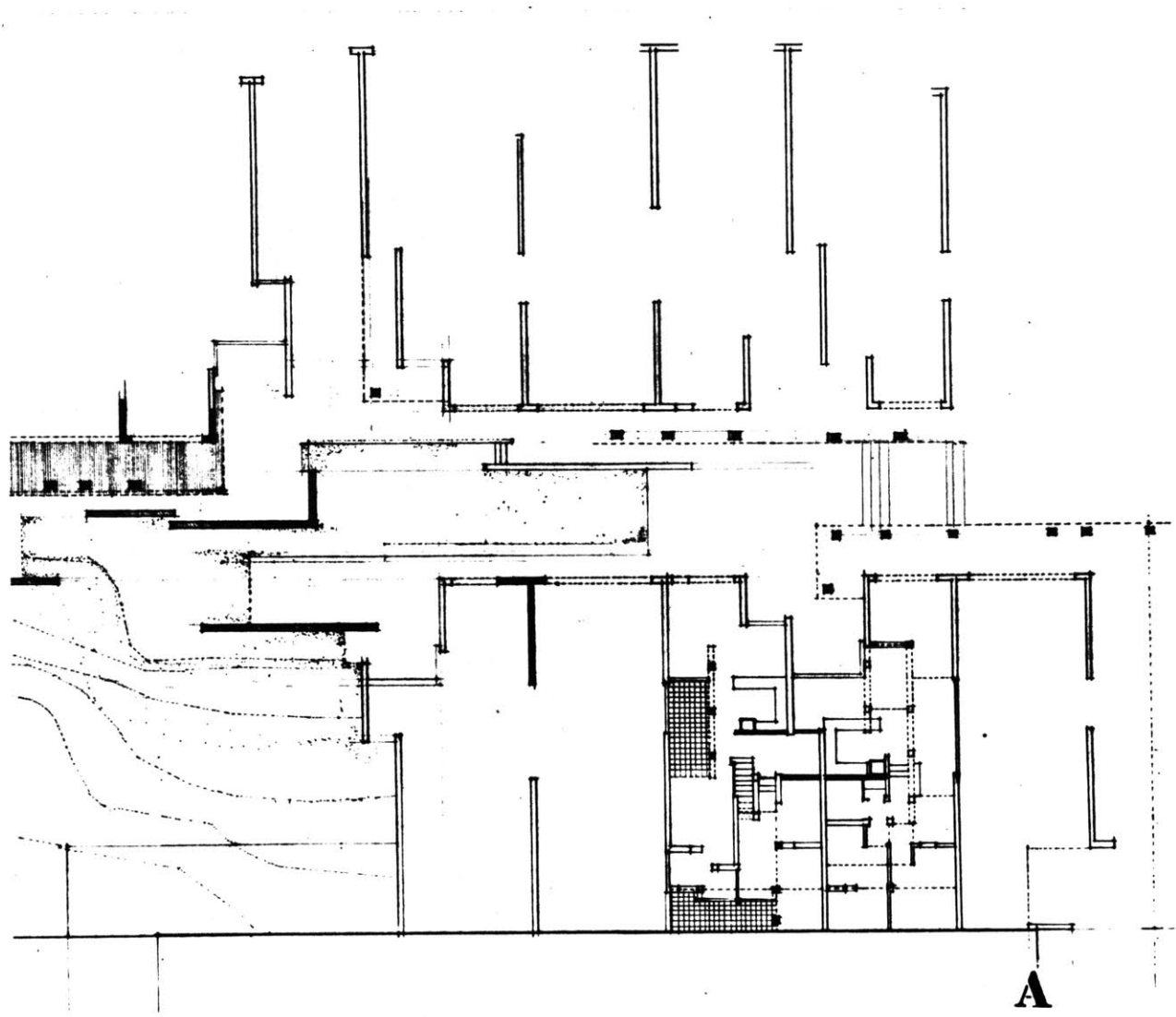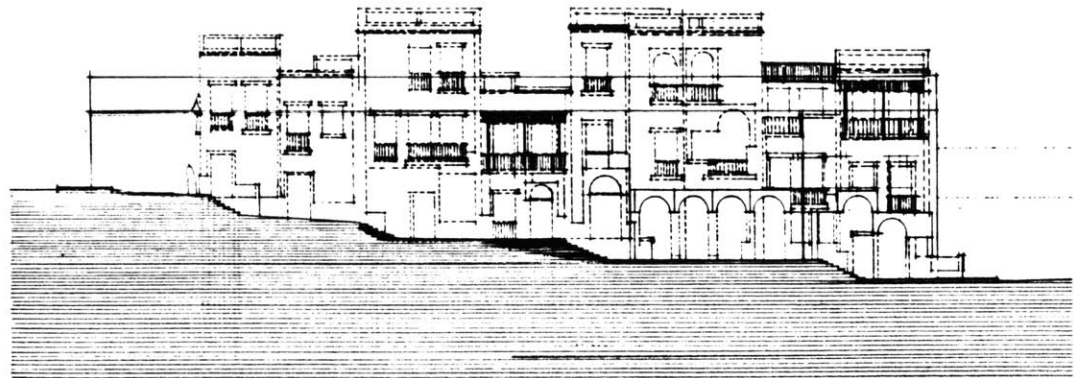
CITY

The work is not law, it is above the
law.
As projection, as phenomenon
it is forever starting.

Klee

4

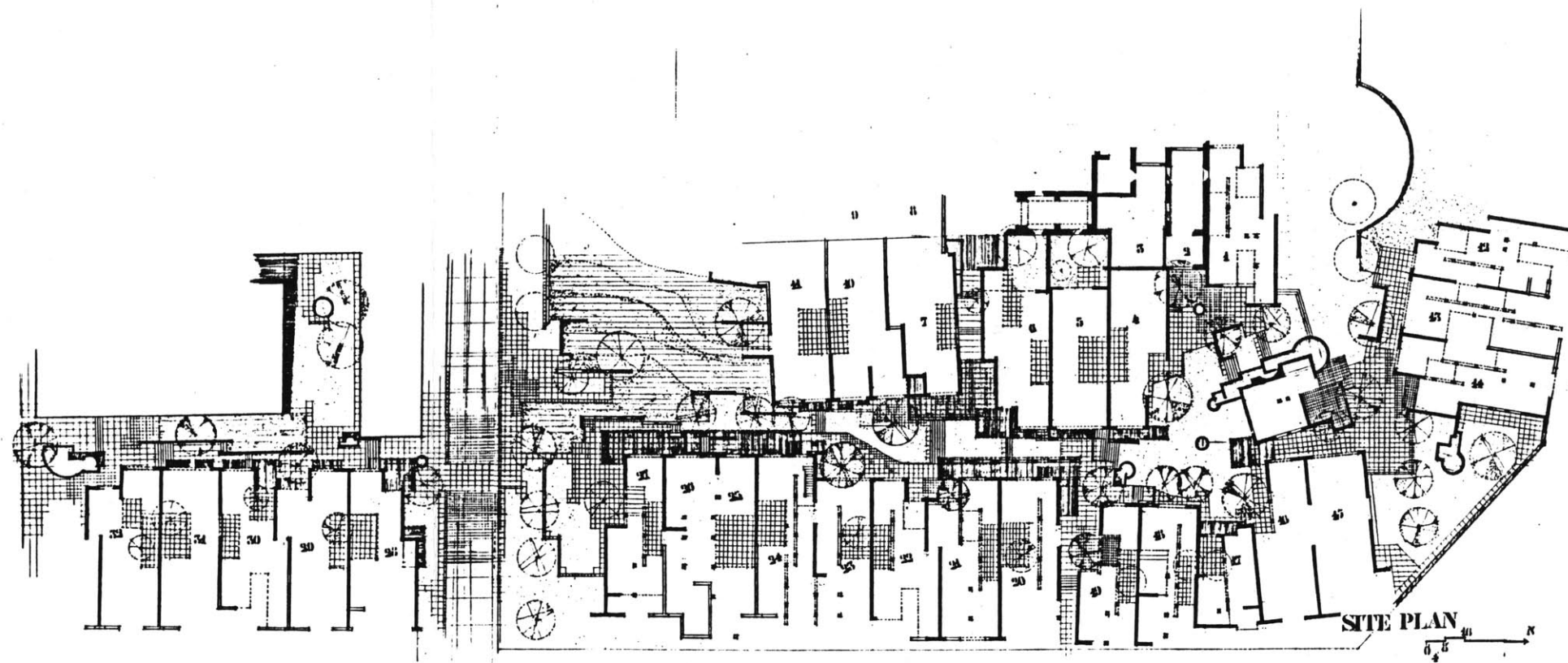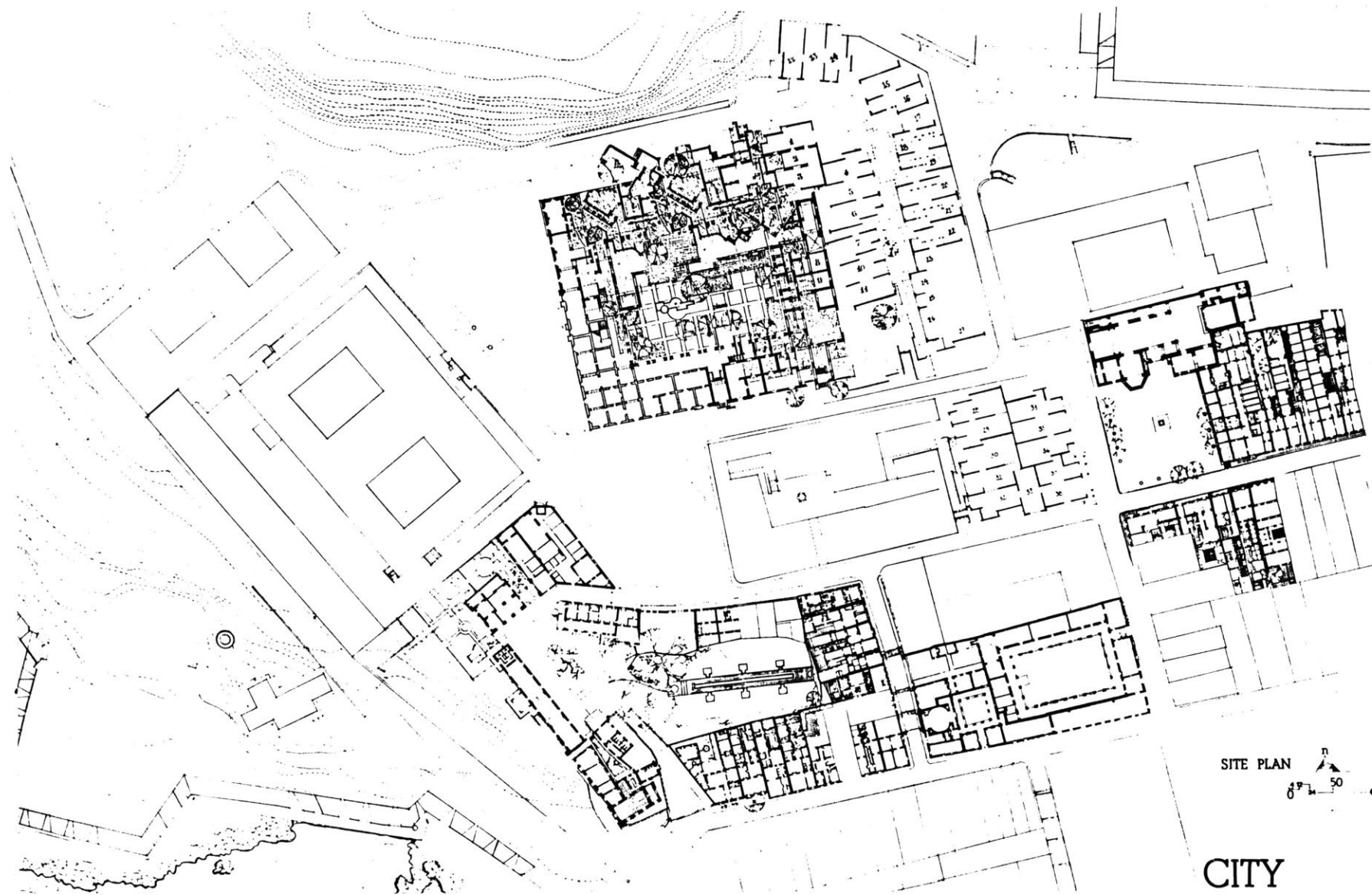- BEGINNING

Perhaps if we can lift the quality of our own
work, we can learn to be at ease with a greater
part of the entire time/place spectrum of the
built world without inappropriate plagiarizing
or sardonic dissecting from mock-theatrical
reassemblages. We can find principles that make
sense wherever in the continuity of whenever; we
do not need historical time divisions. We're
not concerned with pedigrees or authorships, but
with live associations which are field-like and
lateral rather than linear in perspective.
                                    Maurice Smith

This thesis is by no means a complete development of
a housing project. As a directed exposition of a
method, working process, and design attitude,
like support and physical frameworks,
        it becomes a reference for further study and work.
As a design generation, it presents what I hope will be
an initial step toward a positive and responsive alter-
native for the specific site and context studied.

Design projections, if intended to work with, from, and
not against the context at hand, will have to be based
on the very nature of the context (structure and relation-
ships), and not on sheer mimicking in the name of
'contextualism' (especially in historically sensitive con-
texts such as San Juan).

FOURTH INTRODUCTION

As time changes, needs conditions and realities change.
Built environments as physical expressions of these
realities must not be statically complete givens, but
rather directed settings for the associations,
collective and individual,
of society.

If we have learned anything over the past years it
is that buildings can no longer be thought of as
static monuments. They must be responsive to the
different and changing needs of people. We must
design highly articulated physical frameworks that
can provide a reference for growth, change and
dreams. What we do then is not the end but an ex-
citing beginning.

                                        Jan Wampler

ADJACENCY	: tangential organization. non-reciprocal
ASSOCIATION	: meaning. interpretation of form.
BUILT	: process of the generation of form. construction.
BUILT LIGHT	: light generated through a single opening in a continuous surface context.
COLLAGE	: simultaneous experience. layering. integration of elements.
CONTAINMENT	: partial or complete enclosure.
CONTINUITY	: relational response involving extension.
CONTINUOUS SURFACE	: of the single or double-sided family of form whose property is that of continuous extension of material (eg. concrete)
DICHOTOMY LIMITS	: polar opposites in a range of transformations.
FIELD	: context. medium in which certain forces act.
FIT	: pre-made element. standardly produced element.
FRAMEWORK	: of the three-dimensional linear family of form (frames, columns and lintels, steel, wood). an incomplete physical reference which serves as a site or context for a future intervention.
IDENTITY	: character of form.
PROJECTION	: intervention, design.
RECIPROCITY	: mutuality. mutual definition between and among elements, spaces, and movement. interpenetration, interlocking.
REGISTRATION	: comparative movement. every decision is made relative to an existing physical reference.
SCREEN	: planar framework. filter of light.
SCREENED LIGHT	: light generated through a linear framework or a screen.
SLACK	: dimensional tolerance. dimensional resultant of a series of decisions involving 'fit' elements, or from a passing connection. hand-made (crafted) element to infill such tolerances.

GLOSSARY

SPATIAL JUNCTION : passing of elements in an assemblage process, with a dimension or territory as a result of the exchange.

STRUCTURE : formal set of properties in a system of relationships.

SUBDIVISION : seperation. compartmentalization. segregation.

SUPPORT : physical reference for future intervention at the level of the building.

TERRACING : displacement of horizontal surfaces.

TERRITORY : unbuilt physical definition. place.

TISSUE : level of intervention smaller than that of the urban structure and larger than the individual building. collective level.

USE : interaction between man and form. activities.

LIST OF ILLUSTRATIONS

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    2: Colli Di Montebone (Carver)

    3: Patio Casa Prieto, San Juan (Diana)

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    5. Casa Batlló, Barcelona

    6. Palmas del Mar, Humacao, Puerto Rico

    7. Temple of Hera I, Paestum

66: Averbach House, Belmont

68: Strimling House, Weston

69: Strimling House, Weston

    Katsura Palace, Kyoto

70: 1. Puerta de Tierra

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    3. San Juan

    4. San Juan

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    6. San Juan

    7. San Juan

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    2. Santillana del Mar

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175: Collective Patio, Cruz St. (Cruv)

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207: Callejón del Hospital # 60 (Gómez)

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