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A NEW IDENTITY: SMELTER HILL REHABILITATION

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A N E W I D E N T I T Y

Smelter Hill Rehabilitation

by

David H. Before

An undergraduate thesis submitted in partial fulfillment
of the requirements of the degree

of

Bachelor of Architecture

in

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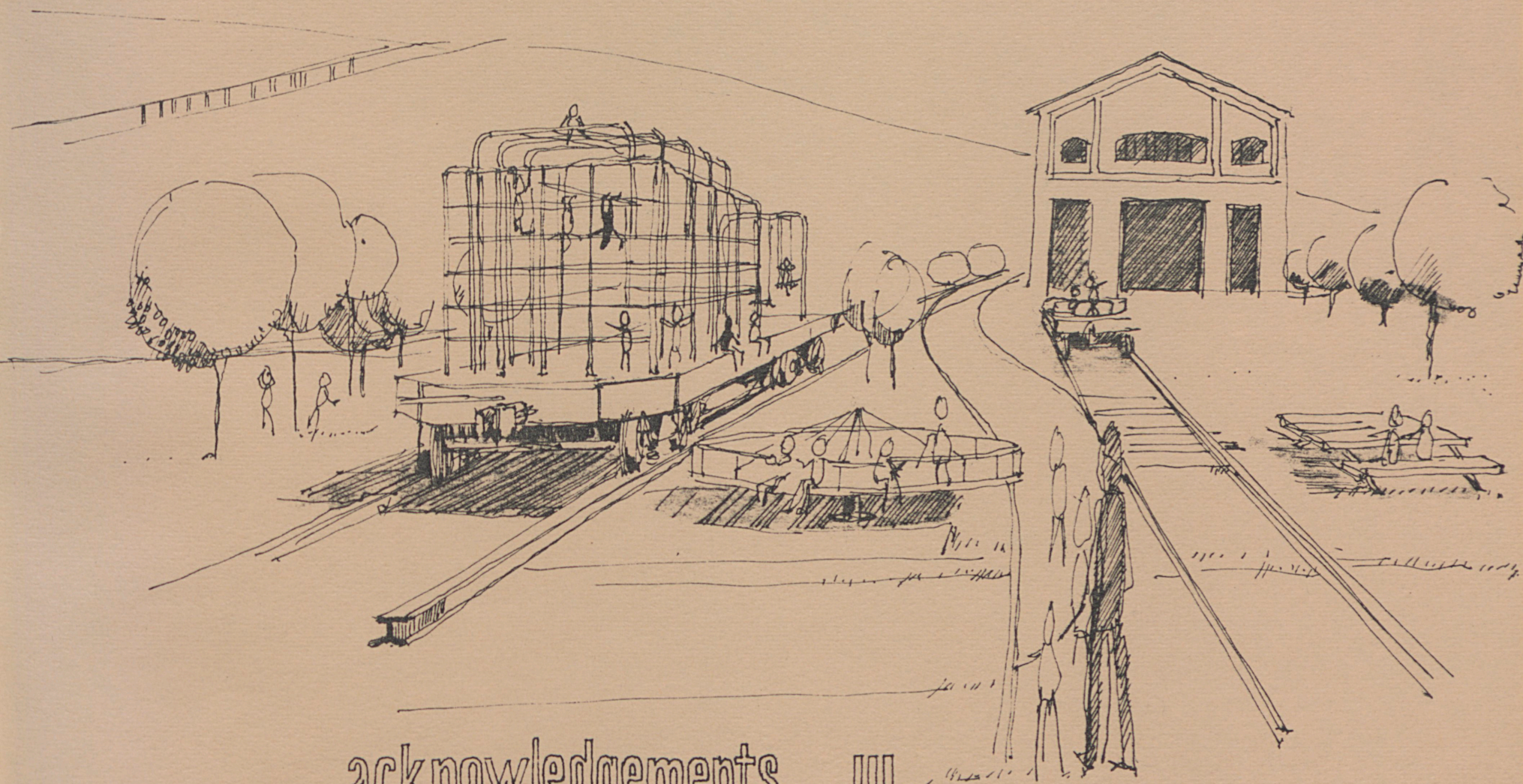
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David H. Before

June 9, 1978

"the inherent character and identity fostered by a by gone era can be conciously used as a base for creating a fuller and richer environment for urban man."



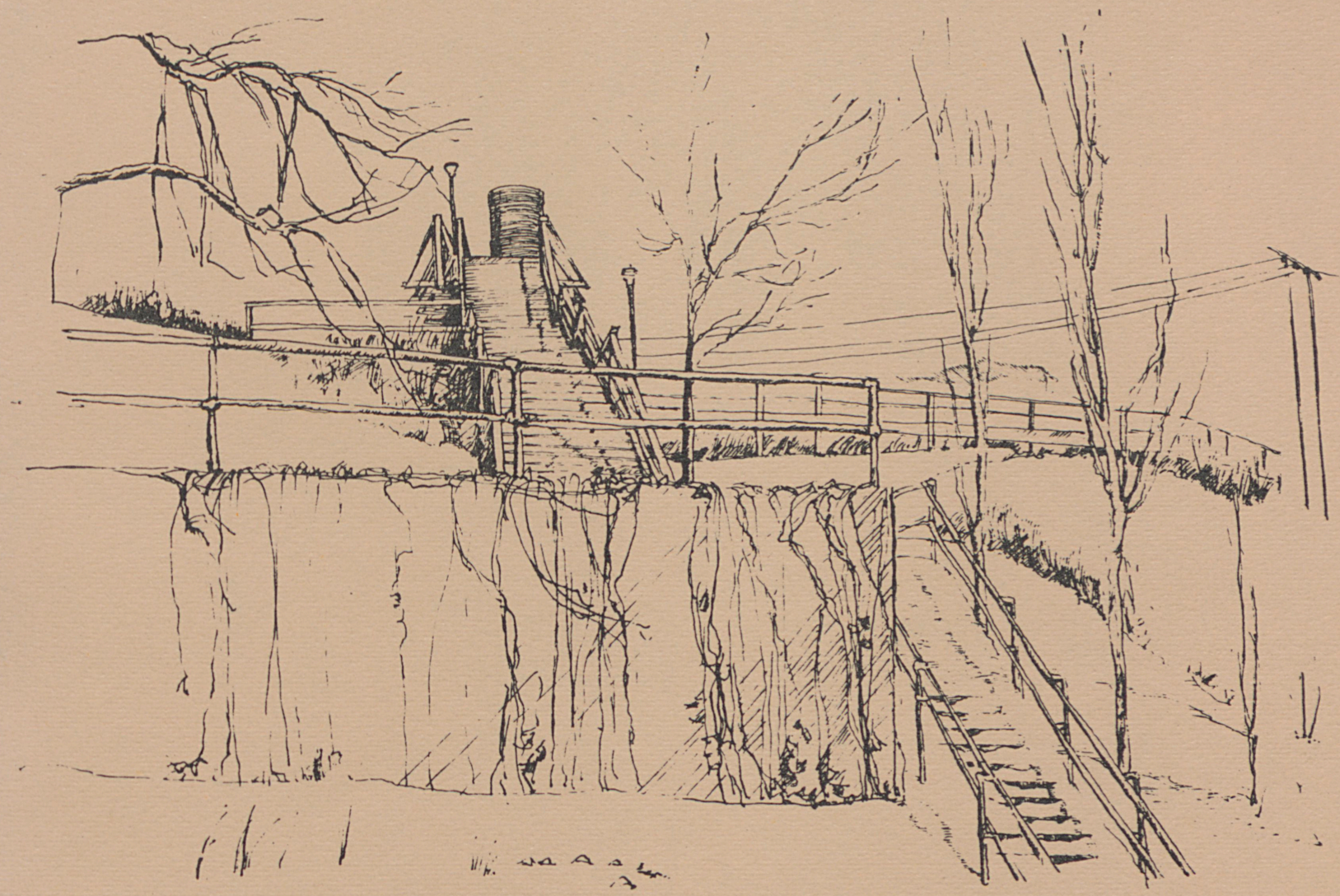
acknowledgements III

ACKNOWLEDGEMENTS

I dedicate this thesis to my mother and father for their support and motivation throughout these five years of school.

And I wish to thank Bill Semple, my advisor, and John DeHaas for their time and guidance in working with me.

Also, I wish to thank Jack Davis and those employees of the Anaconda plant in Great Falls for taking the time to supply me with the needed information for this thesis.



PREFACE

Because our cities are being restructured and adapted to the movements of population and to the continued erosion of buildings, it is time to give more attention to values other than those of destructive and wasteful new architecture.

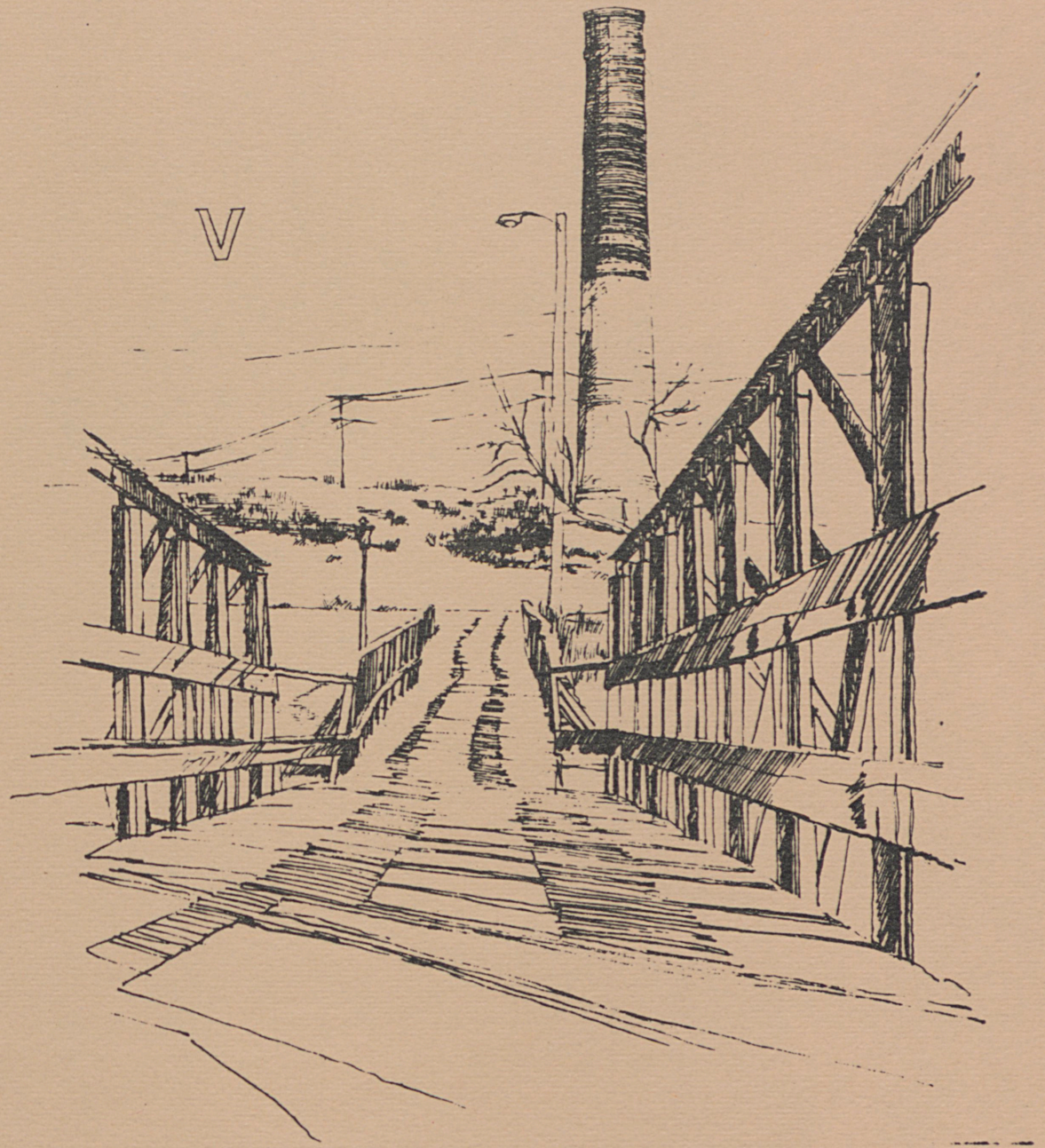
A question today is whether some of the effort being carried in our cities is leading towards improvement or deterioration of the quality of life.

People want no part of a rapidly growing city where nothing familiar is left. They are demanding the rescue of the essential elements in life such as fresh air, trees, and natural vistas. It is not so much that people are against change, but more that there are many desirable aspects to our present urban environment that we don't want to lose which make life so pleasant and enjoyable.

Our attitude toward the past and present influences our view of the future. Progressive changes, based on an orderly and preserved environment, can invite one to look toward continuing change with enthusiasm. Adaptive use can provide us with this enthusiasm for the future while recognizing the past.

introduction

V



INTRODUCTION

Concern for adaptive use is greater than it has ever been and it is reflected in the changes that have come about in a short period of time.

One of the most important causes can be traced to the environmental crisis of the 1960's. It concerned itself with the whole environment. The idea of reusing older buildings, rejuvinating old neighborhoods, and revitalizing older cities took on a new importance as a result. The energy crisis of the seventies was an added cause of concern that slowed down much new construction because of the high cost of fuels and materials.

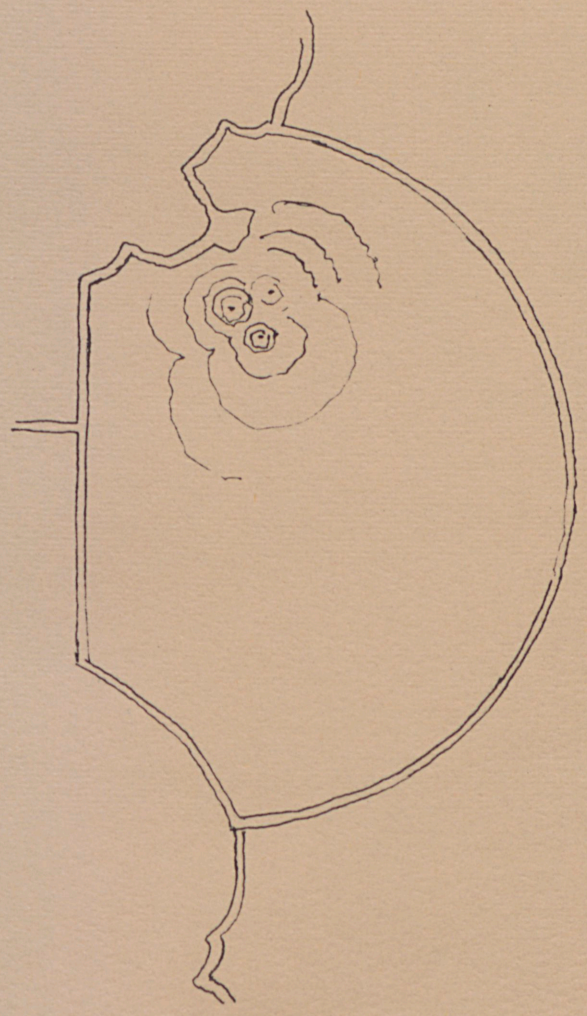
At about the same time, many urban schemes of the 1950's were being looked at as failures, causing us to re-evaluate what we already had. The Bicentennial has also generated new interest in adaptive use.

Today, people are realizing some of the benefits of adaptive use. The rejuvination of old buildings and neglected but viable neighborhoods is less expensive and less disorganizing socially.

In its emergence, acaptive use recognizes the city as a continually changing organism. And since a building is created for certain functions brought about by social and economic forces, it recognizes that any successful adaptive use must tie into both the present context of the surrounding community and its future growth patterns.

The area of Smelter Hill in Great Falls provides an opportunity for the exploration and experimentation in the new and growing field of adaptive use. This field, long neglected in Montana, should be considered as an alternative to the planning stages of any new development where application is feasible.

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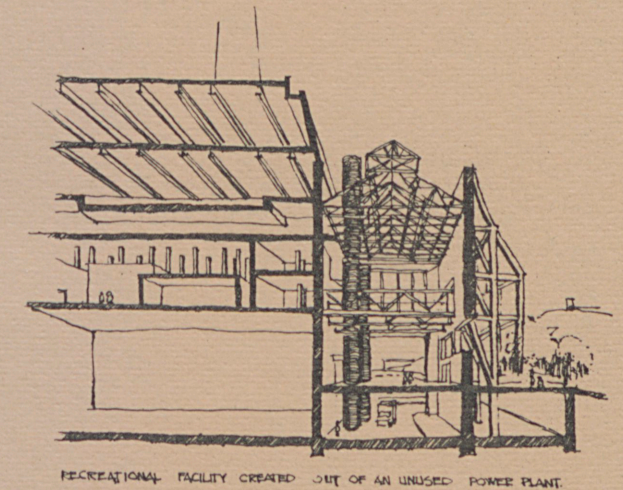
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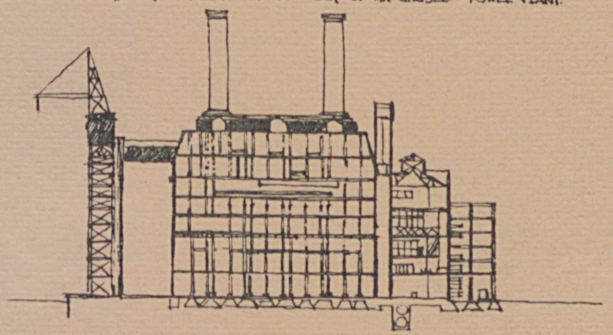
thesis statement

a

the inherant character and identity fostered by a bygone era can be conciously used as a base for creating a fuller and richer environment for urban man.



RECREATIONAL FACILITY CREATED OUT OF AN UNUSED POWER PLANT.



thesis subject

b

two vacant structures on smelter hill in great falls, montana

thesis objective

the objective of this thesis will be to study adaptive use in all its ramifications. assumptions of specific needs of the area will allow exploration of the problems and possibilities that encompass adaptive use. it presents a whole new set of design challenges to work with in arriving at an architectural solution.

thesis discussion



too often, as has happened in the past, an abandoned structure or complex becomes condemned and then torn down without any evaluation to its potential use. for many reasons it is wrong to ignore what is good and still useful as we build new. adaptive use can be a viable asset to a communities development at the same time it instills a sense of well being through its familiarity. well known examples of this enrichment are expressed in such places as ghiradelli square, the cannery and trolley square.

It is finally being realized that older buildings and neighborhoods are important ingredients of a town's special identity and character. Satisfying links to the past can be provided by structures in residential and industrial areas of a bygone day. As technology or a shift in a city's commercial district occurs, these old buildings or neighborhoods have become neglected and abandoned. But through thoughtful adaptive use, intermixed with skill and imagination, many areas can successfully be revitalized.

Since such buildings are frequently found in clusters in one section of a city, the renovation of one often leads to the revitalization of the whole area, with an added benefit in property value increase. A clear example of this is an old industrial site on South-of-Market in San Francisco. One of the first rehabilitation projects was with the Show Place in its conversion from an industrial to a commercial use. This spurred development across the block diagonally giving new life to the Design Center and then the China Basin building. A potentiality for business neighborhoods, with a built-in picturesqueness hard to achieve in other parts of the city became a reality. It became an enrichment not only in itself, but for that of the whole city.

Unfortunately, on the other end of the scale, an abandoned millyard in Manchester, New Hampshire, at the expense of unthinking planners, is being destroyed.

Instead of making the millyard an integral part of the commercial and business core of the city by creative re-use of buildings and solving access problems, Manchester has decided to become a metropolitan center with a visual identity for short-term improvement of conditions for a few selected industrial plants.

As cities and neighborhoods under pressures of growth and change have been enlarged, the existing scale and character of the urban environment has often been ignored. What is now thought of as good, is more than what was thought of as good in the past. Serviceable and familiar older buildings have acquired new value as new and less doctrinaire attitudes toward design and development are explored. In this thesis, I propose to use adaptive use--call it rehab, recycling, modernization, or remodeling, as a positive tool for preserving, within the context of growth and change, the eseential character and human values of an urban environment. As a positive aid, adaptive use can and should be worked together with development in the planning stages to provide the vitality and variety so much desired, but often lacking in a lot of cities and neighborhoods today.

In working with adaptive use, conservation becomes of concern. It has always been looked at as a competition to development, a hinderance to change and progress, when in effect it can work toward the goals of planning. In support of conservation and planning working together, Michael Seelig comments, "We should adopt a new attitude toward conservation, one which incorporates conservation into planning while not inhibiting development." [1/] It's central to planning, for a changing future, especially in today's concern to cope with a rapidly changing society.

Knowing that a community has a policy which specifies what must be conserved would help planners, architects, and developers to define their problems from the beginning which would detour expensive revisions

---

[1/] W. W., "Conservation in the Context of Change," Architectural Record, December 1974, p. 86.

in later stages of the development process.

The goal should be to leave something which can endure in the midst of rapidly changing times, and which can provide continuity to the growth of a community instead of contributing to the chaos which may eventually destroy it.

Dr. Seelig points out:

> by protecting and conserving the elements important to people, and by alleviating the fear that everything familiar is disappearing, a conservation policy can become a means for making some types of changes more acceptable. 2/

People fear an environment where all familiarity is removed.

The bulldozer is so often looked down upon because it does clear an areas of all familiarity. In a way, it is expressing an injury to one by wiping away those symbols that make life meaningful and an identity possible.

A place is a space with a sense of locality and identity. As the bulldozer clears an area to be replaced by a high rise or a parking lot, these replacements become modernized spaces and cease to be places.

In the long run, conservation is looked at on a much broader scale than pure historic preservation:

> It advocates the preservation of character of areas, social and cultural traditions, economic and social institutions, and above all, freedom of choice for the individual citizens who are diverse in their needs and desired, while permitting some physical changes to take place. 3/

2/ Michael Y. Seelig, "Area Conservation as an Asset to Planning--not a 'Necessary Evil'," Architectural Record, December 1974, p. 86.

3/ W. W., "Conservation in the Context of Change," Architectural Record, December 1974, p. 86.

Conservation lends itself towards change rather than stopping it.

It could work as a stabilizing element in that while its principles are based on planning of the future needing improvement, the results of planned actions often take an unexpected course. It could also work in keeping those elements that are desirable from being lost by a proposal of future change.

In summary, this positive approach to conservation would look for not that which is wrong and needs to be changed, but that which is good and worthy of being strengthened and maintained. At the same time it would imply a respect for the man-made environment, cultural and economic institutions, the natural environment and the values of an individual in maintaining stability, in a world where everyday is affected by a constantly changing society.

Until recently, the economics of real estate development always favored new construction over adaptive use. Tax laws, lending institutions, construction methods, and design philosophy, worked together to make the adaptive use of existing buildings appear more costly than demolition and replacement. In reality, adaptive use can save considerably over the cost of new construction.

One of the strongest arguments for it is the cost factor both in terms of construction and long-term investment potential. If it can be shown that working within the framework of a used building will save several dollars over the cost of new construction, a savings is made which makes a big difference in whether to adapt or start from scratch. "Financially, if you've got the will and can be flexible with a government administration, then you can be successful," who points out that reconstruction and adaptive use costs

"20 to 30 percent less than new construction."[4/] Also, adapting an existing building rather than building from scratch can save both energy and materials.

The Piano Craft Guild is one example of an abandoned structure adapted to 174 apartment/studios for artists. Not designed for housing, it was converted economically for such a use. "...costs were kept down to the budgeted $10.50 per square foot--about one-third the cost of similar new construction. Even with inflation, according to Bruner, the Piano Craft Guild could be done today for about $18.00 a square foot."[5/] It is proof that an old building can have a new life at a reasonable cost. At the same time, the project had a positive effect on a section downtown Boston that was having trouble remaining a residential area.

Concerning the economic reality of today, more and more clients who might have thought in terms of a new office or school are now exploring the alternative of rehabilitating either their existing space or older buildings in the desired neighborhoods.

For many architects, the economic strength that rehabilitation commissions offer is an added asset to the decline in other work in some parts of the country. An article in the Architectural Record, December 1971 issue on "New Life for Old Buildings", indicates:

- over 80 percent of architects have been involved in remodeling within the past two years.
- the median architectural firm has about 17 percent of its work in remodeling.

[4/] Charleton Knight. "Both Buildings Yielded a Variety of Dwelling Units at Bargain Costs," AIA Journal, p. 49.

[5/] Charleton Knight III. "Apartments from a Factory and Store," AIA Journal, November 1974, p. 40.

- about 90 percent of the firms are doing as much or more remodeling work than they did three years ago

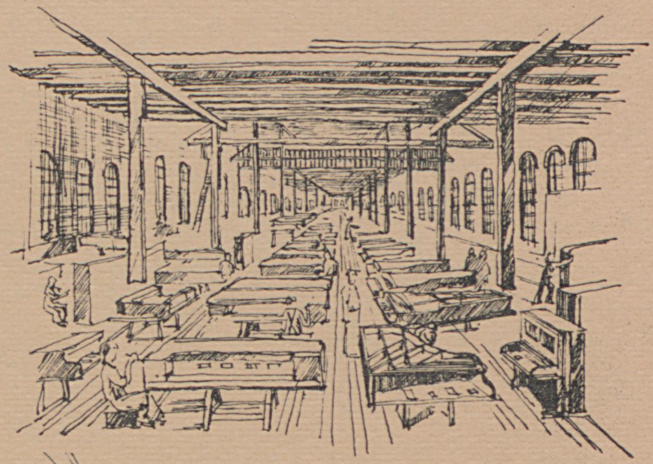
- 93 percent expect to be doing the same or more remodeling work in the future

Adaptive use might be considered the most rapidly expanding area of activity in the profession today.

AMERICAN BOND
MADE IN USA

adaptive use d

the boston chickering piano factory (1853).
the 250,000 sq ft. structure was
converted into 174 apartment/studios
for artists.



EXISTING



NEW USE

Until recently, most architects, critics, and theoreticians, previously use the past only as apologia for present concepts about new buildings. But now even such things as the fantasy of Disneyland are being looked at seriously as offering ideas for urban planning. Moldings and trellises are returning to architecture in varied projects. Old buildings are even being recognized in the award category. The AIA now has a national award category called "Honor Awards" for Extended Use.

Because of this consideration for the past in the course of architecture, architects are now forced into greater awareness of both the physical and social context within which buildings are built. It has created a new enrichment in the course of architecture.

Cavaglieri comments, "...the key to adaption is in retaining the spirit of the building, the volumetric relationships and choices of materials which blend harmoniously with the whole."[6/] But since it is a matter of individual judgment, perception and taste, it is dangerous because there are no rules, but only intelligent interpretations. Hugh Hardy discusses this inter-relationship with the architect:

> Architects, however, have the capacity to interpret and resolve conflicting demands. This is the life blood of what they do. Since the past represents a continuity of development, the re-use of old structures demands that attention be paid to the context within which they grew as much as to the specifics of their built reality. 7/

Thus, adaptive use presents a whole set of design challenges to the architect. It is much more difficult to integrate new development with old buildings or landscape than to knock everything down and start anew.

6/ Andy L. Harney. "Adaptive Use, Saving Energy (and Money) as Well as Costs", AIA Journal, November 1974, p. 51

7/ Hugh Hardy. "It is wrong to preserve old building academically and scientifically as yesterday's stage sets today's players; we must change them purposefully, yet respectfully, to meet modern needs," Architectural Record, August 1977, p. 92.

From a theoretical point of view, adaptive use as design has always been looked at as being minor in a neglected way. But in its own way, as a branch of architectural theory, it can be studied through the inter-relations and design operations that exist between old and new form.

This new and old form relationship is the basic activity in an adaptive use project, a critical power is present. The interrelationship of a different formal vocabularies creates an unnatural condition that leads one to think about the different vocabularies and their rules. This in itself can facilitate the criticism of architectural languages as cultural conventions.

This mixture of different vocabularies can create a richness for the design of complex buildings which forces one to view several different aspects as opposed to a building that forced one to see only one aspect.

As mentioned later under "juxtaposition of the old and new", type in architecture can increase the potential for criticism with the notion of type transformation, an activity through adaptive use can easily be conceived, especially when dealing with a clearly defined building type such as the stack and the copper rod mill.

The value of adaptive use as an educational value is a strong one. The concentration on the old and new relationship questions the arbitrary form and functional relationship. Also, one is forced to think of generating form from the complex three dimensionality of the building itself. The facades and vertical planes can be studied as opposed to the plan considerations which are the basis of the usual design process.

The past takes on a value far different from the usual design procedure in that form is not started from scratch. It is the material to be changed and reshaped. "...the past becomes a 'package of sense', of

built-up meaning to be accepted (maintained), transformed or suppressed (refused)."[8] Also, this experience with the already built world expands one's awareness of the multiplicity and availability of formal languages in architecture.

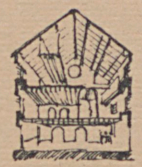
Much of this interest in the past might suggest something about approaches taken in the design of new buildings. In an article, "The World as a Candy Box," Gerald Allen suggests that architects relax their reliance on rules of modern architectural theory and that maybe looking backwards toward familiar images might suggest more than one correct way to arrive at an architectural solution.

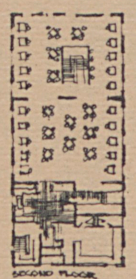
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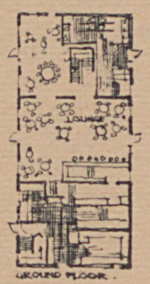
[8] Rodolfo Machado, "Old Buildings as Palimpsest", Progressive Architecture, November 11, 1976, p. 49.

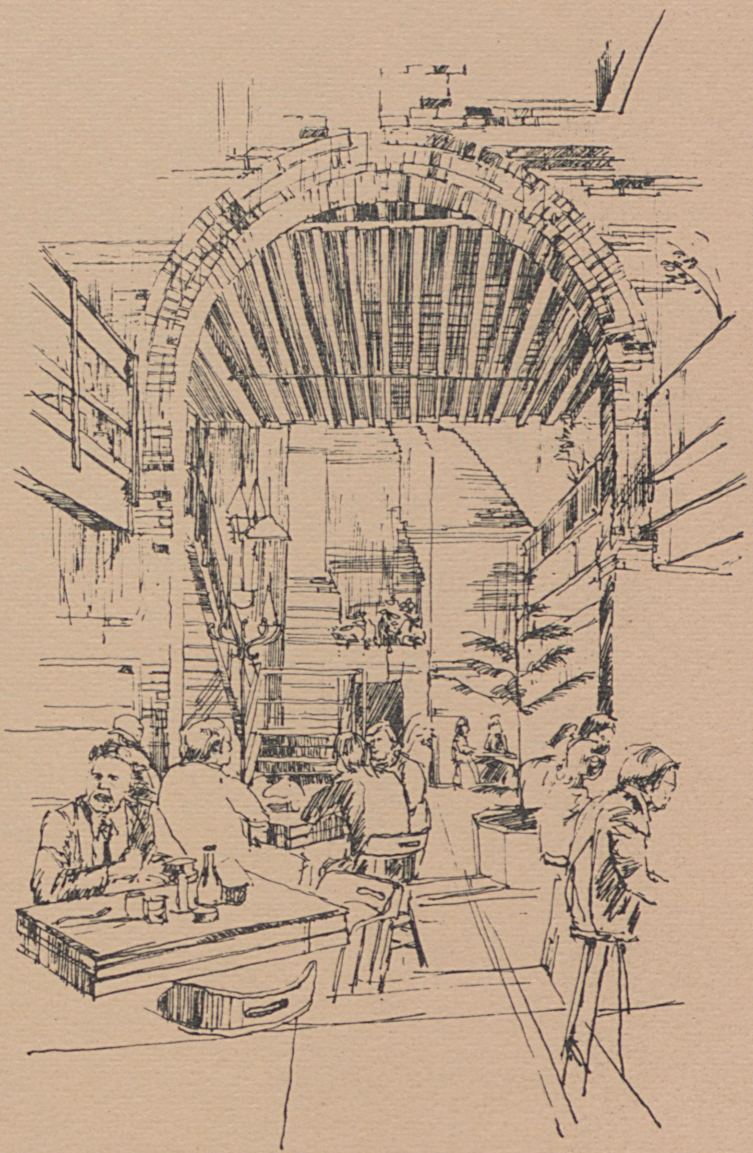
it is beginning to be understood that what is "good" is more than what we used to think was good - that more and more buildings not of landmark quality, but simply serviceable and familiar older buildings are "becoming good" as new attitudes towards design and development are developed.

boston's long wharf: restaurant and housing restore a vitality gone from this waterfront for several generations.



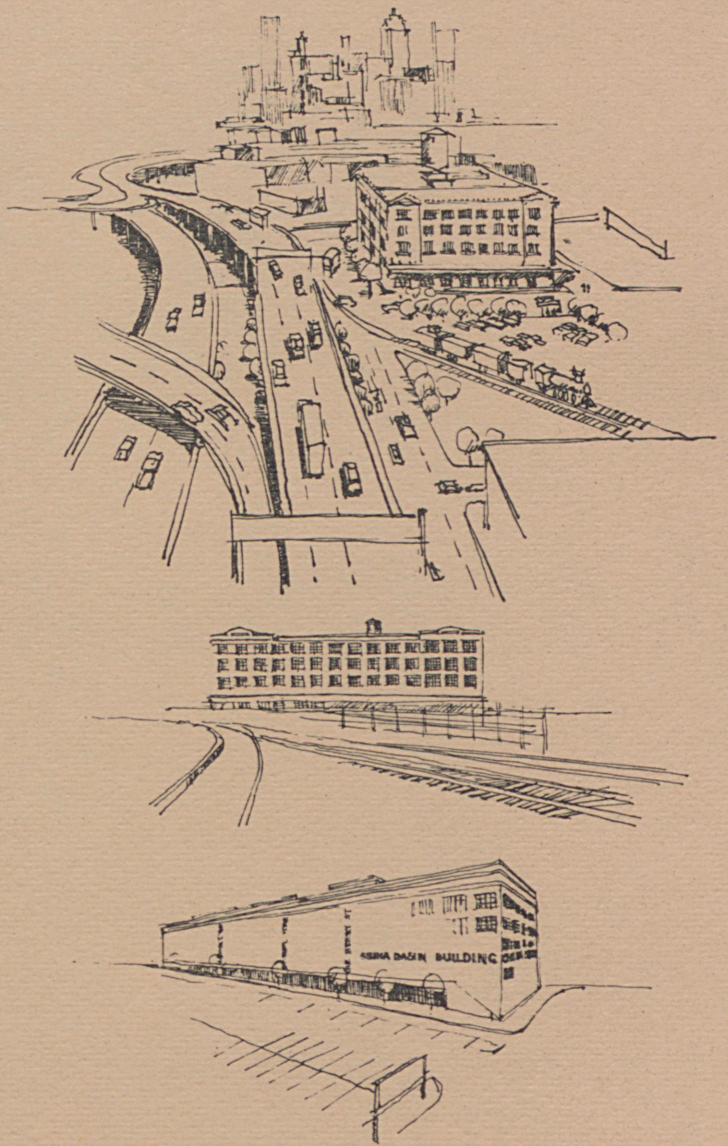




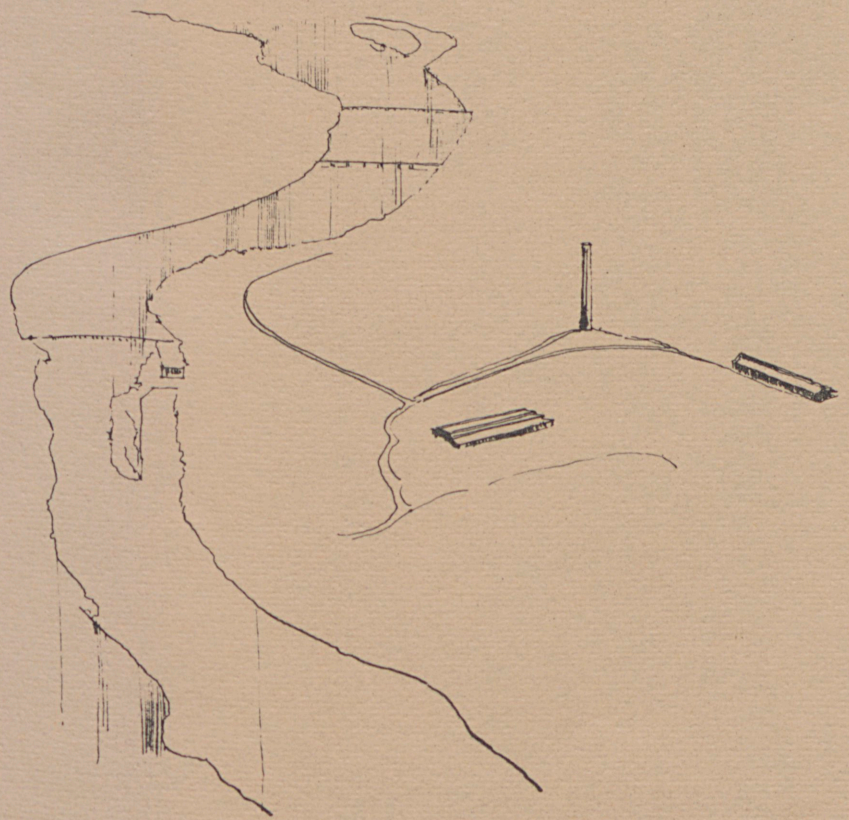


old buildings in an urban industrial area revive a decaying part of a city and provide new commercial locations.

the show place built in 1916 in san francisco's south-of-market street has been successful enough to spur additional development in the area with the show place and the design center at one end and an office building project called the china basin building as the other end, a new neighborhood has been created.



history



mike hickey doesn't mean much to great falls, but he touched off a chain of events that had its impact on the city throughout the course of its history. he found and filed the first copper claim in butte in 1875. the abundant water power and nearby coal fields formed the basis for a decision to build a plant in great falls. negotiations were started in 1887 with the great falls water power & townsite company for the furnishing of power. in 1891 ground was broken and the smelter began to rise.

The Great Falls area was originally part of a territory claimed by France. It was sold to the United States as part of the Louisiana Purchase in 1803 until it became the State of Montana in 1889. Through different periods of history, it had been part of the territories of Louisiana, Nebraska, the Dakotas and Idaho.

Following the Louisiana Purchase, President Jefferson appointed Captains Lewis and Clark to explore the new land. Trapping and trading with the Indians followed. A permanent post of the American Fur Trading Company was set up at Fort Benton, about 25 miles below the lower falls.

In 1881, Paris Gibson, an engineer, visited the site. The following May he began surveys of the Town of Great Falls, and with the backing of James Hill, the Great Falls Water, Power and Townsite was incorporated.

Early industrial development included a dam and a hydroelectric plant at Black Eagle Falls, a smelting plant, a meat packing plant and a flour mill built by Paris Gibson in 1855. The several hydroelectric dams have attributed much to the growth of the area.

The importance of agriculture to the growth of the area is reflected today in the large number of business houses and related facilities that are associated with agriculture and livestock raising.

Early development of the city was located in the area of the east of the river close to the business district. Early residential development occurred in this general area where employment centered in the commercial and industrial establishments. The later construction of railroad yards on the west side of the river and the smelter and mill in the vicinity of Black Eagle contributed to the expansion of these areas.

The area that concerns this thesis is the Anaconda Smelter Hill in Black Eagle. It encompasses an area

between forty to fifty acres. Within this industrial area there is a golf course, swimming pool, tennis courts and a housing complex.

The whole site will be dealt with on a conceptual level for future development while the main emphasis of study and development will be on the smokestack and the copper rod mill.

A history of the two structures will add a further insight into the areas. When the Anaconda Company's plant was first built on its present site, there was a smaller stack. This first one was 186 feet tall and 20 feet in diameter. As the plant grew, it became too small. So it was decided to build another.

The job was handled by the Custodius Construction Company of New York and work started on April 7, 1908. Benjamin B. Thayer, Vice President of the Anaconda Copper Mining Company, as it was known then, laid the first brick. The final brick was set in place on October 23, 1908. That final one was 506 feet up in the air. The copper rod mill was also completed in the year 1908.

Custodius discusses some of the calculations for the stack in an article for the Anaconda Company:

> Calculations were based on a theory that the chimney within the elastic limits of the materials acts as a cantilever beam. At any horizontal section, the dead weight of the superimposed brickwork creates a uniform loading. When a wind of a given velocity blows against the chimney it exerts a force which tends to push the shaft over in the direction of the wind...consequently when the wind pressure offsets the dead weight, the brickwork is put into tension. This chimney is so designed that when the wind exerts a force of 33 1/3 pounds per square foot, no tension exists at any point nor does the compressive stress on the lee side exceed 291 pounds per square inch.

Due to the movement of the earth, the stack sways in a rotary motion even on a calm day. It moves about 5inches at the most with 75 mile per hour winds. Due to these calculations, a chimney resulted made

up of an octagonal radial brick base 46 feet high above the surrounding grade and 460 feet of a round radial brick column. It has an inside diameter at the base of 66 1/2 feet, almost a fourth of a city block. The walls are 5 1/2 feet thick. At the top, the inside diameter is 50 feet and the wall tapers to 18 inches in thickness. Terra cotta tile is set around the very top of the structure in three tiers. Smoke poured from the stack for the first time on June 12, 1909.

The copper rod mill was begun in 1918 for the manufacture of copper rods, wire and cable, which are made from the refined copper produced by the furnace refinery. The completion of this mill brought the copper industry in Great Falls to the point of producing a product ready for the consumer.

Smelter operations which included the smokestack were shut down July 1, 1972. It will probably have to be torn down because the upkeep will be too great. The copper rod mill has presently shut down operation within the last year.

identity

f

identity: 1 the collective aspect of the sett of characteristics by which a person or thing is recognized or known.
the stack is a familiar landmark to thousands of people and has many meanings to them. to the weary traveler great falls is the next stop; to the vactioner living in this area, it means "we are home," at on time it was a weather vane and barometer; to the community it means economic growth and stability; and to the men and women who work in its shadow, it means job security.



LAYING THE FIRST BRICK FOR THE BIG STACK - SPRING OF 1908

In dealing with identity, definition of the word should form the beginning of the discussion. Webster's definition of identity reads as follows:

> the collective aspect of the set of characteristics by which a person of thing is recognized or known...sameness of character, quality or condition...personal individuality...an equality satisfied by all values of the variables for which the expressions involved are defined.

Today students are searching for an identity that can be reached through personal fulfillment. Almost everyone wants to live in a way that can provide a happy, successful, pleasurable belief in himself.

But even in today's convenience of a modern technological society, there is a new concern for identity. People are worrying about it. It is like wealth. When it is there, one doesn't need it, but when it is gone, one knows he does not have it. People feel that some things in life are missing, and they are groping for them not knowing exactly what they are looking for. There is a sense of being cheated. It may stem from a social system that is inadequate in feedback and symbolism which cannot give individuals an adequate sense of meaning of themselves and others.

The breaking of old traditions in connection with modernization and acculturation could be a cause where people may be looking for both an individual and collective self image.

Another cause could be the buildup of the fluid and mobile society that we live in. There is a great movement of people from one status, community, job, family, or association, to another. As a result, there is pressure to adjust one's identity with situations rather than holding fast to one image.

Attempting to recognize all the causes would take an involved and indepth study. In a general way,

identity disturbance can be related to some kind of defective symbolic responses.

It is ironic in a way that, as historical knowledge accumulates, a sense of familiarity with the past lessens. When one recognizes the obvious pride the English have taken in such battles as Waterloo, history becomes a series of events that can greatly intensify a people's sense of who they are. Yet, people are losing touch with the past. History, when it is not tradition, becomes a dead record of the ages. Our ancestors might as well be some other people. Today, there seems to be less reference to the past that can identify one with the past. There is so much objective knowledge being produced that no one can identify with it in a personal way.

The solution may be in the difference between knowledge as information and knowledge that identifies. The knowledge of today seems to be more information oriented than information that identifies, which creates a sense of oneness.

A "tear jerker" takes a person into an experience much in the same way that a letter from home does. The movie "Roots" created such a stir that people all over planned their evenings around the series. Further, most empathic experiences are with strangers with whom one can feel no personal bond.

Orin Klapp sums up the identity problem as being related to symbolic reference points:

> ...the question is one of symbolic reference points; whether our society if supplying enough reference points for people to identify themselves or whether it is erasing them to rapidly. Identity--the answer to the question, Who am I"--depends upon symbolic reference points which enable a person to remember who he is. For example, a diary--you go back to a diary to find out how you felt and how you thought in past days. It is a symbolic reference point for you. But what is happening to the symbolic reference points of modern life?

Are we losing them in our knowledge of the past and our relations with people? 9/ It would be difficult to envision a society without an identity.

In gaining the freedom that society has today, the mobile person loses some of those symbolic ties with life as opposed to the person who lives in one place all of his life.

In a special way, that person derives pleasure from each day of his life. A tree brings back memories of its planting forty years ago. A stretch of creekland crossed every morning is a constant reminder of the old homestead.

He knows many secrets. He knows, for instance, who lived in what is now a funeral parlor or where the old road went before the new one was built. He can also tell you when it is going to rain. Considered apart from each other, they don't have that much meaning, but taken as a whole, they form a complete life enrichment. A train whistle, a church bell, or children's voices as they are let out of school, can bring to mind a relived life in an instant.

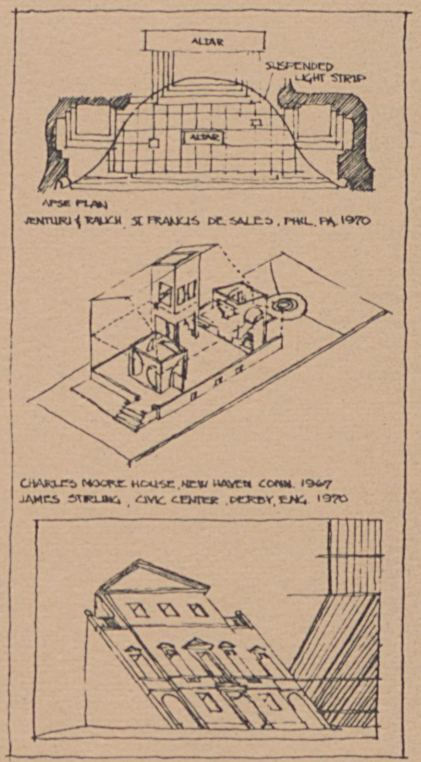
In working with adaptive use, identity seems to have a relation of importance in that an old building has a character and quality unique to a different time period. In one's perception of it through the years, feelings, attitudes, memories, and meaning, develop and become imprinted on the mind. An identity is established as a result.

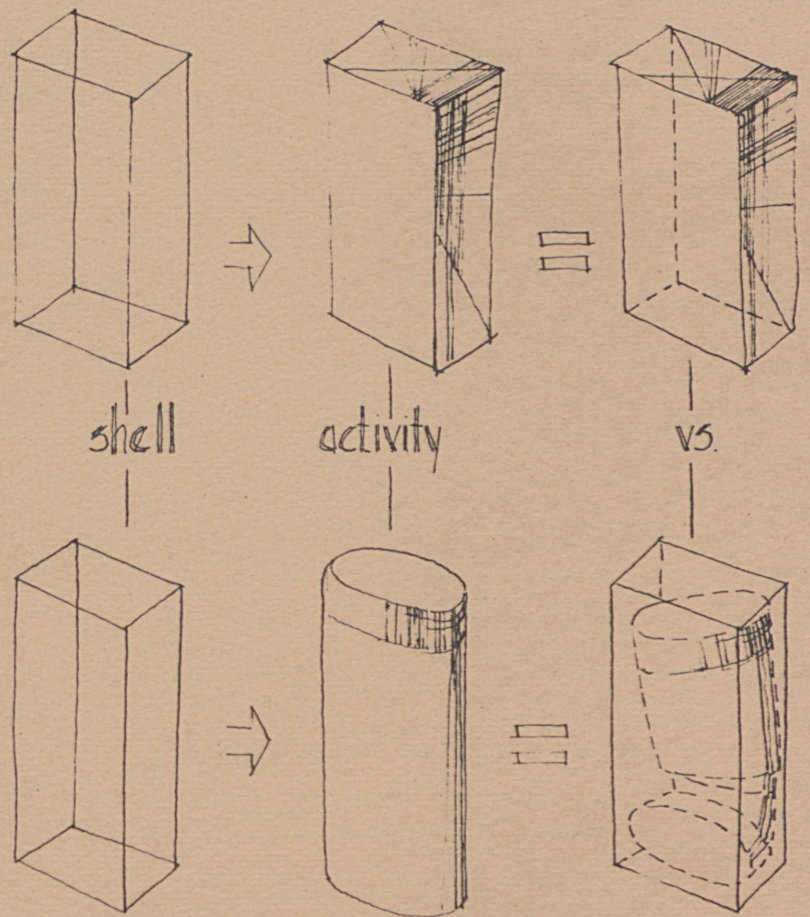
9/ Orin Klapp. Collective Search for Identity, Holt, Rinehart and Winston, Inc., N. Y., 1969, p. 23.

The adaptive use of the Kaiser Wilhelm Memorial Church in West Berlin, establishes an identity for the town people in the formation of the remembrance of the fatal effects that war can have on an area. The smokestack on Smelter Hill in Great Falls is an identity symbol. There would be a considerable loss to the city as a whole in the event of its destruction. Through adaptive use, the stack could instil a sense of fresh revitalization into the area by its physical contributions. At the same time, it would offer a continuing identity in the way of cultural heritage, psychological well being, social and economic well being.

WAR BOND MADE IN USA

concept g

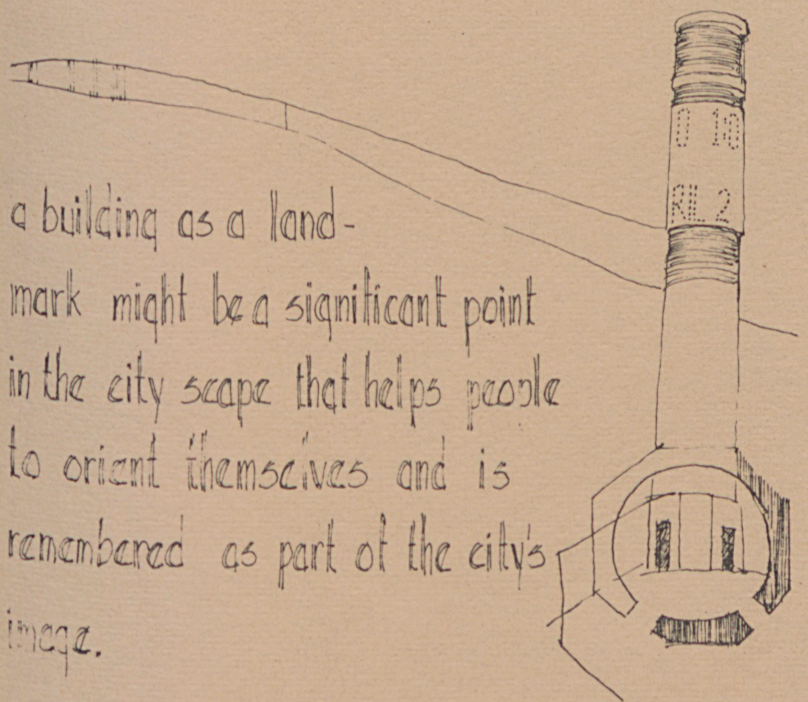

ALTAR
SUSPENDED LIGHT STRIP
ALTAR
APSE PLAN
VENTURI & RAUCH, ST FRANCIS DE SALES, PHIL, PA, 1970
CHARLES MOORE HOUSE, NEW HAVEN CONN. 1967
JAMES STIRLING, CIVIC CENTER, DERBY, ENG. 1970

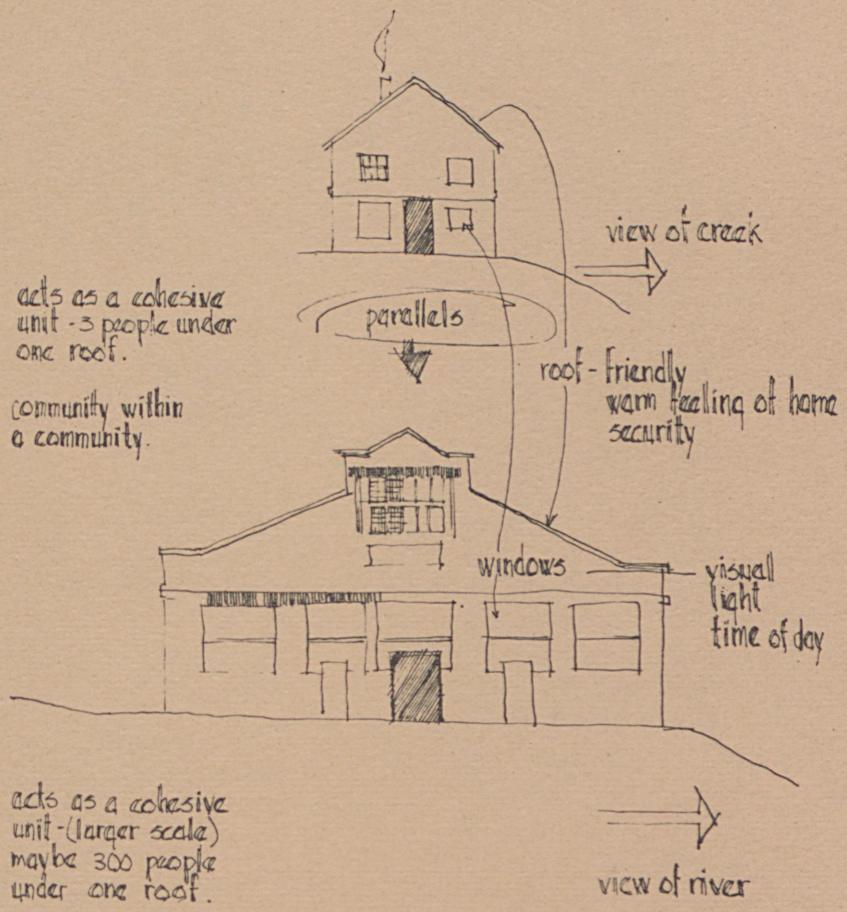

shell
activity
vs.

imagery

h

a building as a land-mark might be a significant point in the city scape that helps people to orient themselves and is remembered as part of the city's image.





juxtaposition i of the old and new

the coexistene of vocabularies provides very rich grounds for the design of complex buildings that allow a multiplicity of levels of reading, as opposed to buildings where the only sense can easily be consumed at first glance. through 'type' in architecture one can easily conceive of an activity that deals with type transformation.

it is possible to consider the already-built, the building to be re-used, as a script upon which each designer will draw his or her own interpretations. but just as in theater, for instance where the interpretive markings are clearly detailed, a wide range of interpretations is still possible. re-use thus becomes a technique for which very little prescriptive information has been established. and that which is interpreted is always a product of the past.

Because of the new and old form relationship, juxtaposition becomes a strong part of adaptive use. In one way, the juxtaposition of the old and new might be better than either. Again, the Kaiser-Welhelm Memorial Church can be used as an example. Built by Schwecten in 1895, it was an over-bearing mass unsubtlely placed in the center of half a dozen major vistas. It became a bombed out ruin during the war. A competition was held to decide what to do with the ruined structure. Eiermann won the competition by incorporating five new buildings around the old.

If the old ruin was to stand alone, it might remain weak. The same might apply to the five new buildings if they stood alone with the ruin. But together with contrasting vocabularies, they combine to form a strenghtening harmonious whole.

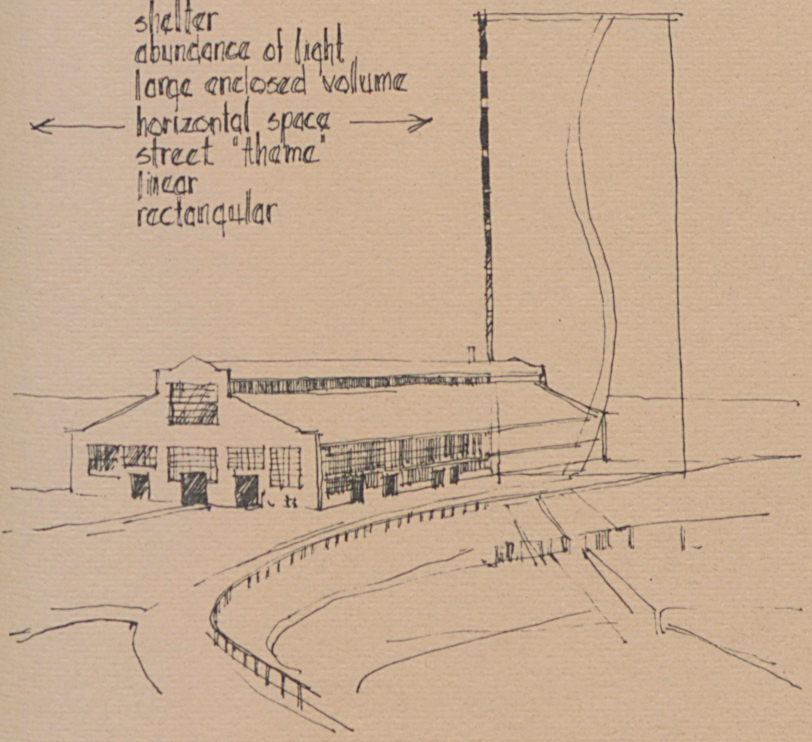
The Madison Civic Center is another example of a coming together of the old and new. Two buildings, a movie theatre and a Wards store are being transformed into an art gallery and a media center. The voids between the two existing buildings have been replaced with a new construction designed to weave separate parts into one so that the interior becomes a mixture.

At the same time, this device signifies that something new lies within. Even though neither of the existing facades is particularly noteworthy, weaving them into a new design results in a streetscape special to Madison. It is the deliberate contrasts between then, not some overall order, which created character. It is intended to encourage community participation. As a result, this mixture represents one architectural approach which lies between science and scenery and accepts the juxtaposition of old and new as an asset.

building analysis

j

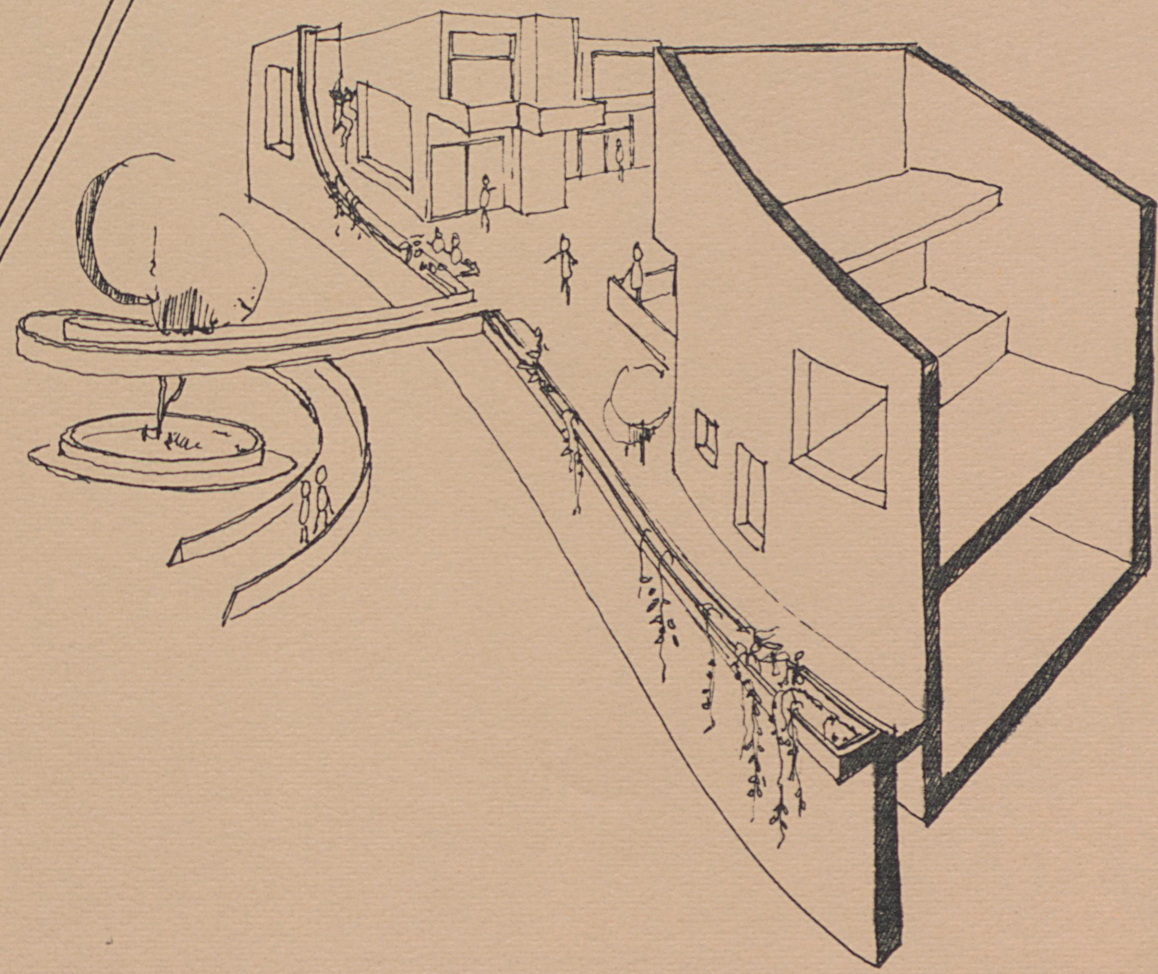
shelter
abundance of light
large enclosed volume
horizontal space
street "theme"
linear
rectangular



monument
identity
landmark
sign
vertical space
symmetry
dark interior (lightless)
artifact
circular
octagonal
limited access



design k



Design development began with a conceptual scheme of the Smelter Hill complex to insure that functions of the two structure of concern would not be alienated in themselves, but would work with the site in its present context and its future growth potential.

The total development scheme consists of four phases. The first phase provides a concentrated development of the stack and the copper rod mill. These two structures and a third, the electrolytic mill, form ends to a triangle semi enclosing an open area. A pond for summer and winter use with linking paths to the buildings would be a unifying element in tying the three buildings together. Also, in this area, a park setting would be cut into the hill for use by residents of the copper mill.

Phase two would consist of transforming many of the clustered buildings down by the river into condominiums. A pleasant interplay of open space opening and closing between the different buildings lends itself to landscape in tying the various buildings together. Old walkways would be redone in conjunction with new ones. The general laboratory above this area offers potential for a branch library. The aluminum mill behind the copper rod mill would be explored as to its possibilities of becoming an art workshop for painting, sculpture, printmaking, weaving, theatre, and offer activities as such. Also, the electrolytic mill, the third building of the triangle, would be looked at as to possible conversion into a multi-purpose center for various activities such as sports, meetings, animal shows, and indoor and outdoor fair activities.

The third phase would consist of an area with an existing golf course, residential housing, tennis courts, and a swimming pool. An existing scale station next to the pool would be turned into dressing rooms and showers.

An existing track stop with four train ends would be ideal for a picnic area. Some of the flatbed trains could be converted into playground equipment for the children. This area lies in a protective and comfortable alcove down a short distance from the base of the stack.

Along side this area, an existing railroad bed winds its way from one end of the site to the other. It could be used as enjoyment or for transporting residents to the copper rod mill for shopping or visiting. Residents in the mall could also use it for transportation to other parts of the site such as picnic, golf and other areas.

The fourth phase would consist of a decayed and eroded area on the east end of the site. A proposal for this area would take the form of an expanded residential development with park development fronting the river. Together, phase two, three and four would strive to work with and reinforce the strength of phase one.

Under phase one, the stack is the first building to be considered. The main flue to the stack now damaged and in ruin would be removed save for the base which would be used for the walkway to and from the stack. Rail and ties standing on end to form the new function of the handrail would also act as an added strength for retaining some of the character and spirit of the area. On a different level, the flue which at one time was a path for expelling gaseous waste up into the stack, is now a path for bringing people up into the stack.

The stack is symmetrical in the vertical dimension and it would be out of character to completely ignore this fact. As a result, the various functions of the interior are careful in working within this framework.

Originally, the stack had four flue openings around the base of the stack, each 15 feet wide by 40 feet

high. These have been bricked in , but would be reopened to allow for a gallery on the main floor to consist of a history and relics of the Anaconda Mining Company. Above this would be an exhibit space of individual work by different artists open all around to the gallery below.

Above this, a restaurant would reside. The location in a structure such as this could make for a most unique eating experience. This level in the stack also takes advantage of light through the flue openings. Aside from an elevator and a fire corridor, an open stair well is located on this floor to further express the verticality of the space.

The elevator, at the core of the stack, is an echoed expression of the stacks verticality. As one entered the elevator to travel to the top of the stack, he would experience lights along the encircling fire corridor all the way up. These lights would expose the winding stairway in its color variation from dark blue at the bottom to a light blue near the middle to a white towards the top.

The elevators would be of glass for one to experience the stack in movement. The elevators would not rise all the way to the top, but would stop 40 feet from the top at the first bar level where a stair would be taken to reach the remainder of the distance. This would increase one's anxiety and expectations as to what exists at the top.

The bar would consist of three main levels. The first floor would consist of different games for entertainment. In turn, this floor would open up onto another floor with a suspended dance floor above a circular bar. The suspended floor would allow a clear visual passage across the space at any point. The third floor would consist of an eight foot ring around the interior of the stack for continued lounging. One could

either look out across the city or down at the bar and dance floor. This area would be covered by a 50 foot glass dome.

A 150 foot digital a readout sign for time, temperature and events would encircle the upper portion of the stack shaft. The stack would take on a new identity for the community and the city of Great Falls.

The copper rod mill is the second building to be considered under phase one. The mill is opposite the stack in that the relationship is of a horizontal and vertical contrast. It lends itself to the street "theme" as opposed to the monumental type.

From an exterior parking lot, one would first enter a plaza which would take the form of a folded down reflection of the front facade. At the same time, the old and new form a harmonious relationship, strengthening and reinforcing the chracter of the existing structure. A reflecting pool with seating would take the place of the main window. The smaller windows would become planters for fruit trees and shrubs.

A railroad track for transporting people to and from other areas of the site would enter and exit through existing doors flanking the main entrance. Upon entering the large volume of space, one would proceed up a circular ramp that emptied out on an interior street with shops on one side and apartments on the other. The space at the base of the ramp would consist of an area for children to play, a ticket booth for the trains, and storage for the trains. The backwall of the entry space would form a sweeping serpentine curve that would encourage one to move into the space and up the ramp onto the street above. The curve as a transitional element lies between a regimented form, such as a square, and a free form in shape. In this

respect, the serpentine curve becomes a unifying element for the old and new.

A second entrance would consist of parking all along the main floor of the building where people could enter the mall above through three openings in the street. The two end openings would consist of elevators and rest rooms. Escalators would provide entry and exit for the center opening. Numerous garage doors presently run the length of both sides of the structure which advocated use for the automobile. Three openings would be used to break up the conjection of traffic. The length of this parking level would be divided by a two-foot wall to separate the commercial from the residential parking. At the same time it divides the total space without creating a visual barrier. A free span truss presently allows freedom of any parking arrangement. Storage for the apartments above would also be on this level against the south wall. This would work well within the structure in that the windows are seven feet from the ground.

An existing building close to this structure could be used for an office for a shop manager and an apartment manager, while the remainder of the building could be used for shop storage. A gas station would be located in a protruding structure off the main building.

The second floor would consist of two-story apartments and shops. Apartments would allocate the south side of the complex because of the southern exposure and a view of the site and the river below.

The apartments on the first floor of the second level would be bi-level in elevation to take advantage of the windows and to allow the apartments above window light. They would be arranged in a number of combinations to create a flow of interest and movement down the street. Colored pastel facades would further

emphasize the stepping in or out of the apartments from the street. Each apartment would consist of a 25 foot dimension in the length of the building to insure a clearance between the trusses in the top apartment. Apartments would vary in the number of rooms contained in each. There could be efficiencies and one and two bedrooms on the first floor of the second level. The second floor could consist of one bedrooms with a loft, two bedrooms, with a studio or three bedrooms.

The separation of circulation between the apartment owners and the shoppers presented somewhat of a problem. A raised boardwalk along the length of the apartments next to the street provided the solution. It would tend to keep shoppers directed down the street and provide the residents their private extension of the street.

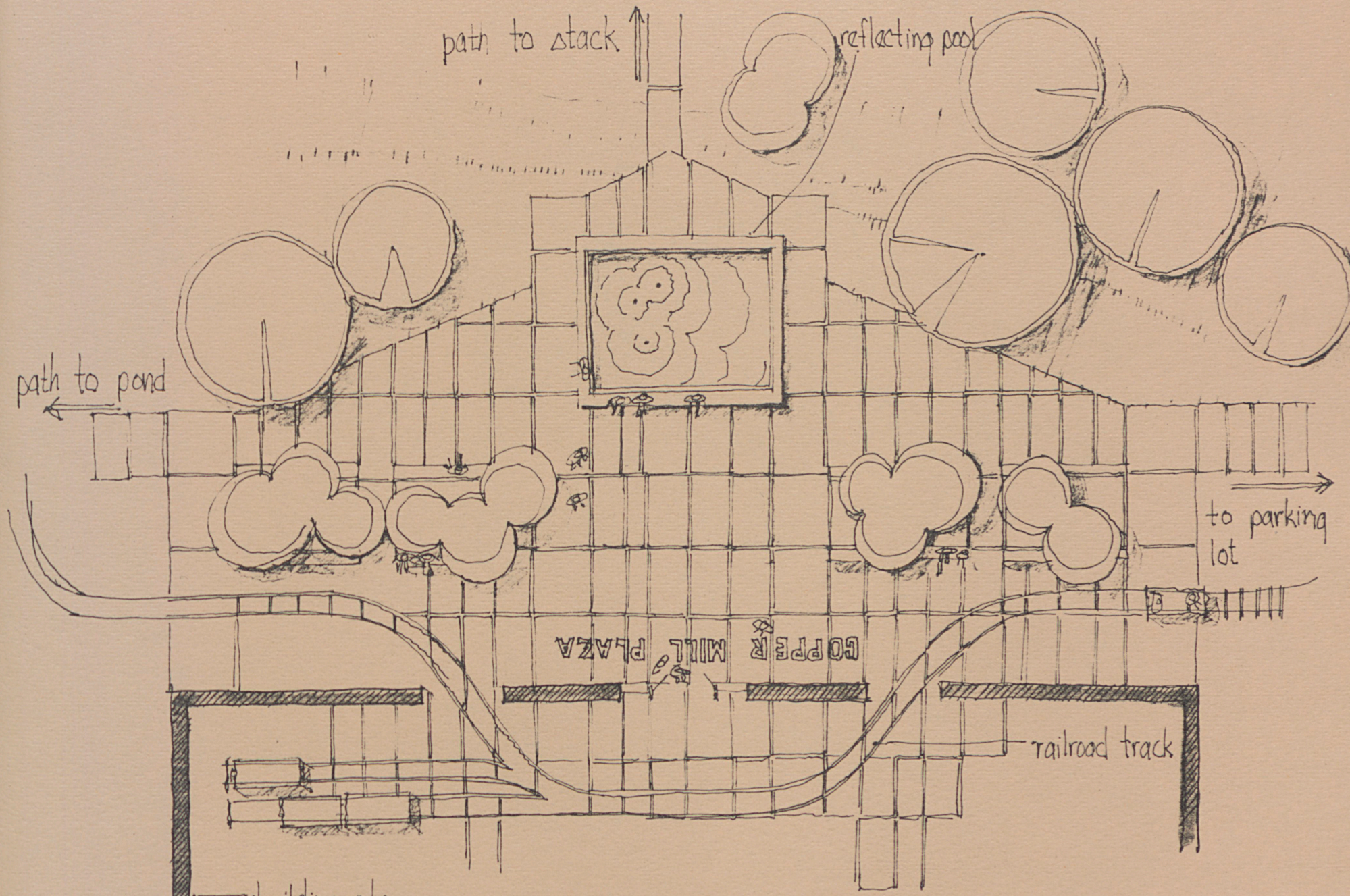
The shops would also vary in size and shape with level changes to conform to the windows. A large shop towards the beginning of the building with a large one on the end would tend to encourage people to move from one end to the other experiencing other stores and the total space.

The second level of shops would also provide facilities such as hair styling and clothes washing for the apartment users. An insurance adjuster might walk only as far as across the street to his office.

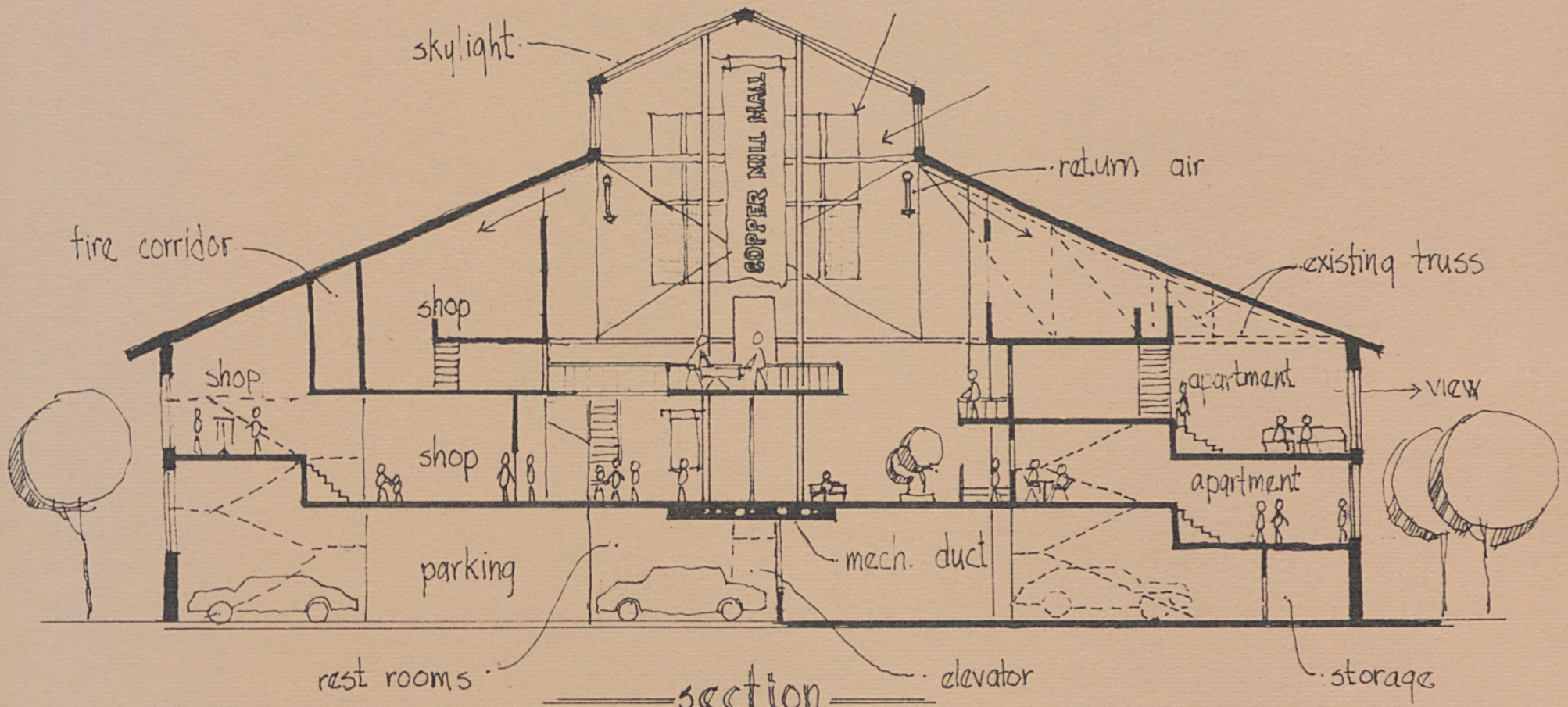
Lounges and game rooms would be located above the two elevator openings. They could be used by both the shoppers and the residents.

A catwalk would be provided on both sides of the skylight for mechanical duct maintenance and plant watering.

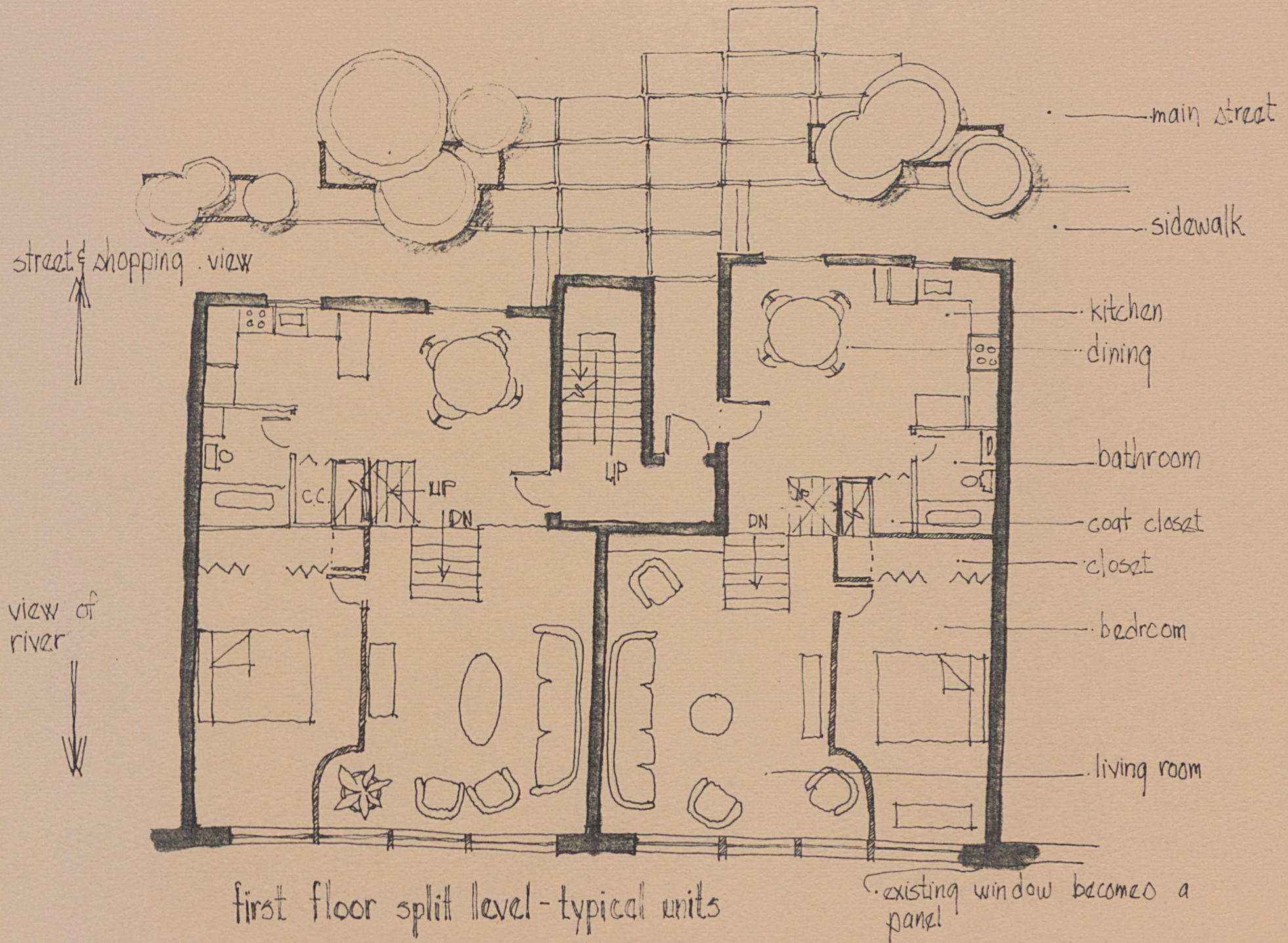
A containing structure, such as this, could offer the advantage of climate control when the weather outside is uncomfortable six months out of a year. Another advantage could be the incorporation of parking into the structure. Parking can be an ugly problem, but its presence cannot be ignored in any architectural decision.



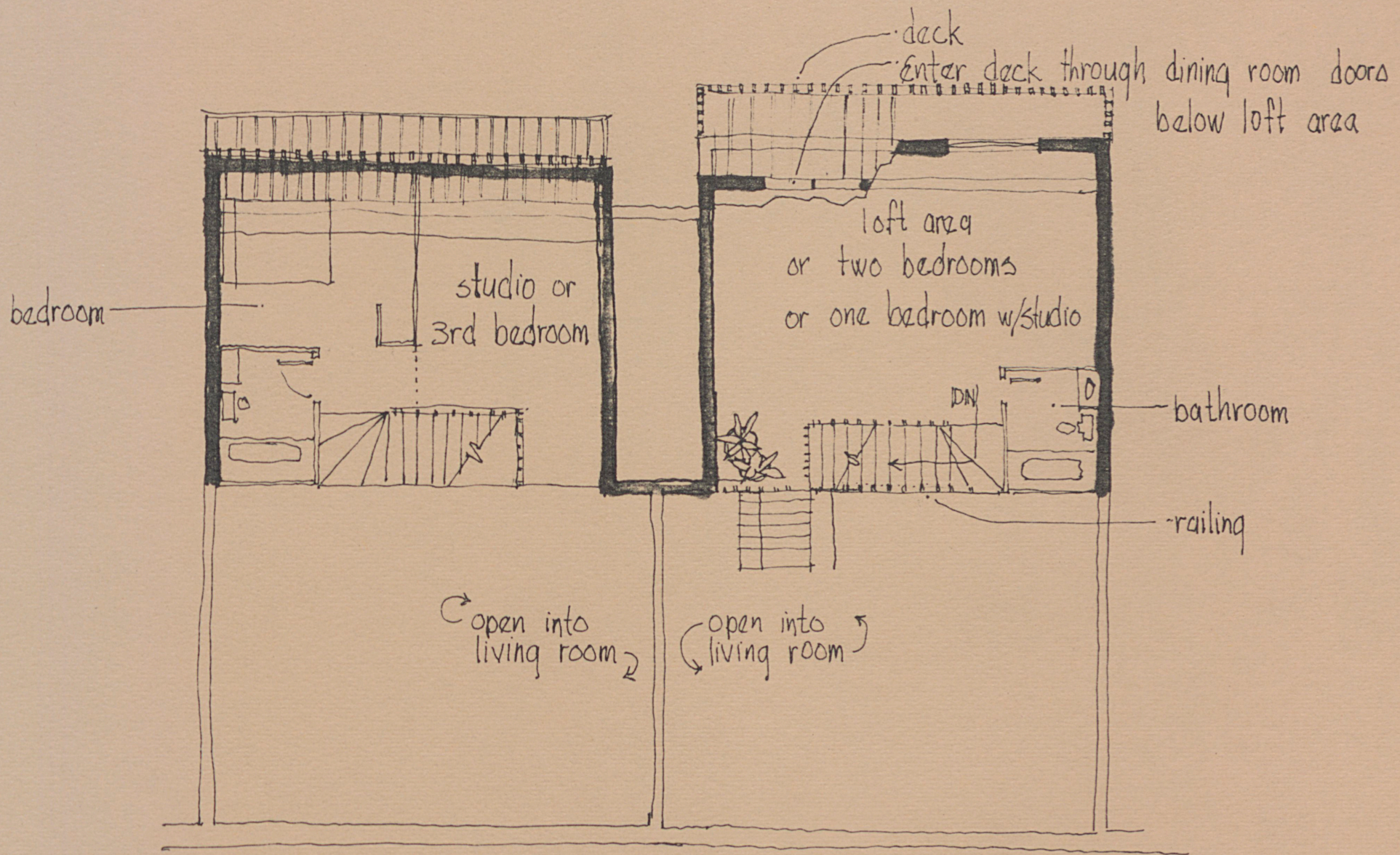
copper mill plaza - reflection of facade


skylight
COPPER MILL MALL
return air
fire corridor
existing truss
shop
shop
shop
apartment
view
apartment
parking
mech. duct
rest rooms
elevator
storage

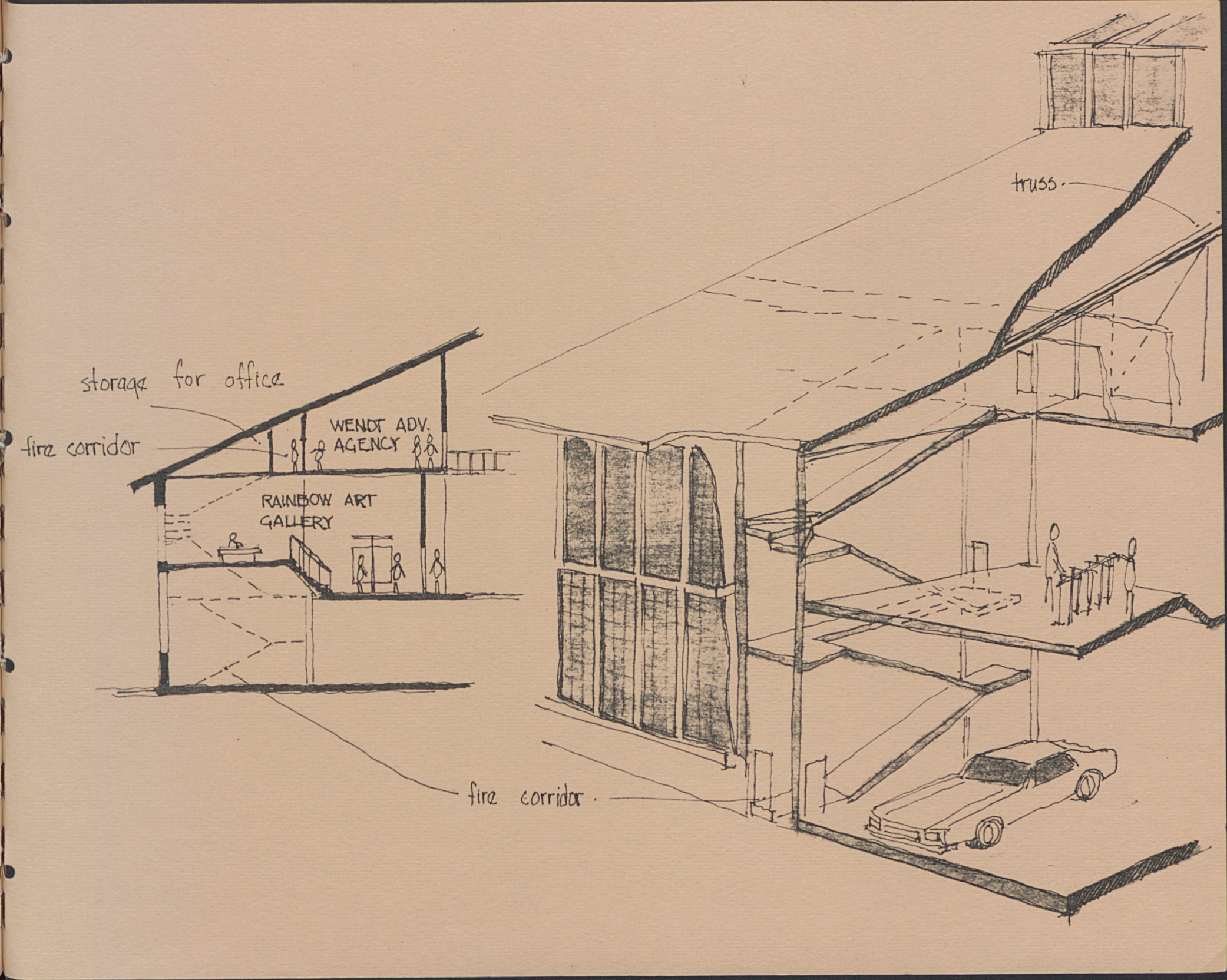
section

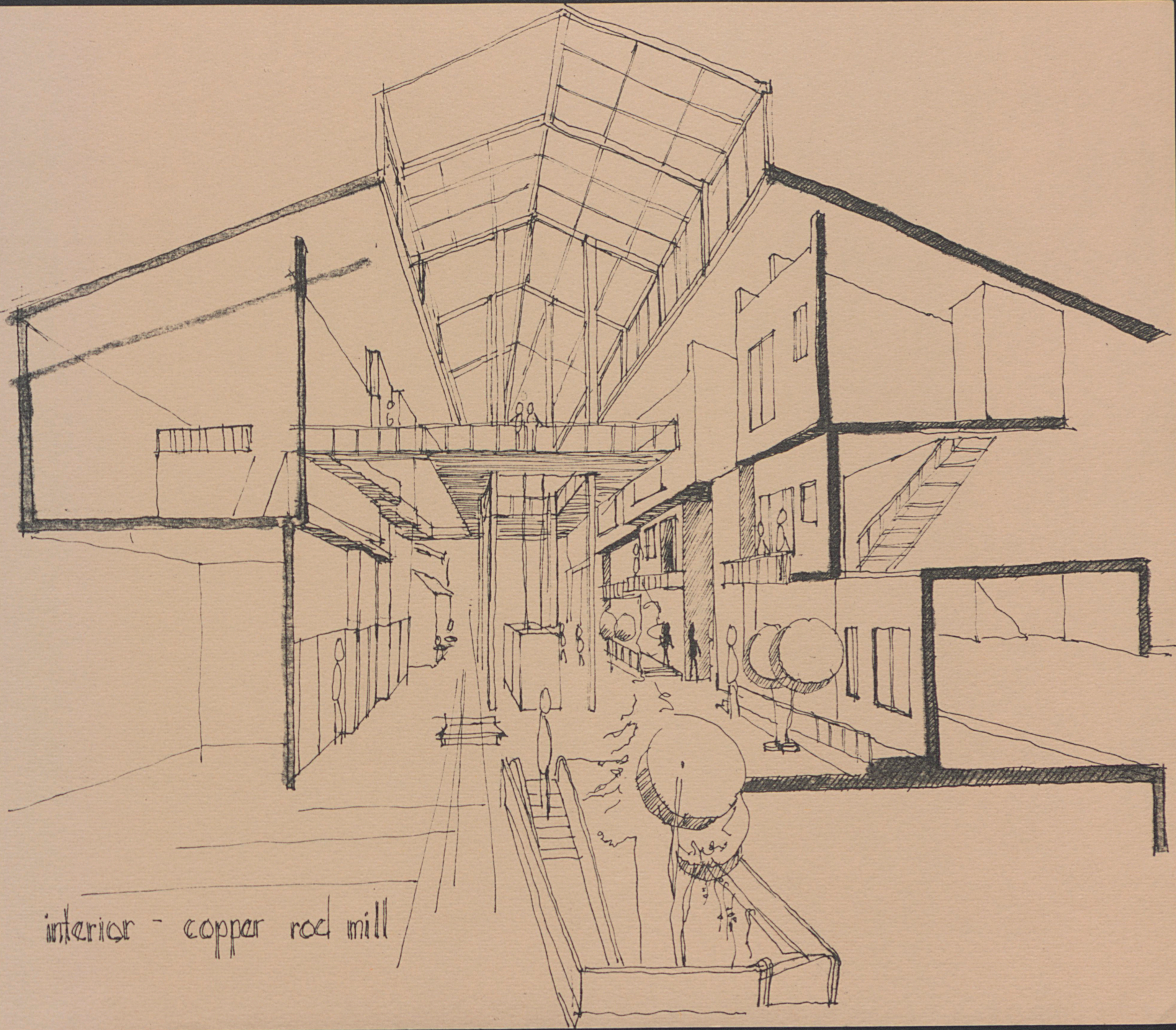


first floor split level - typical units



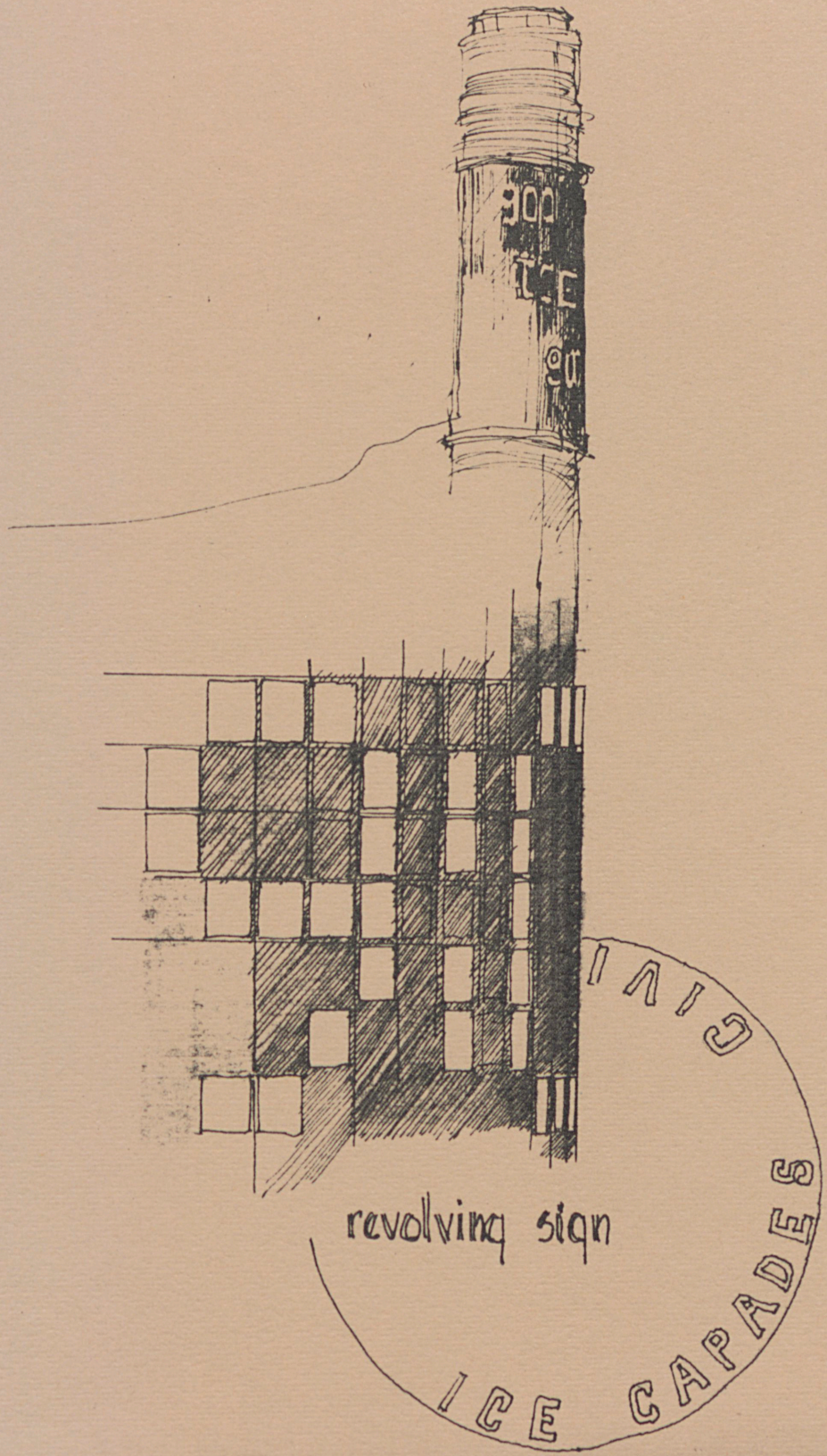
loft areas above second floor split level

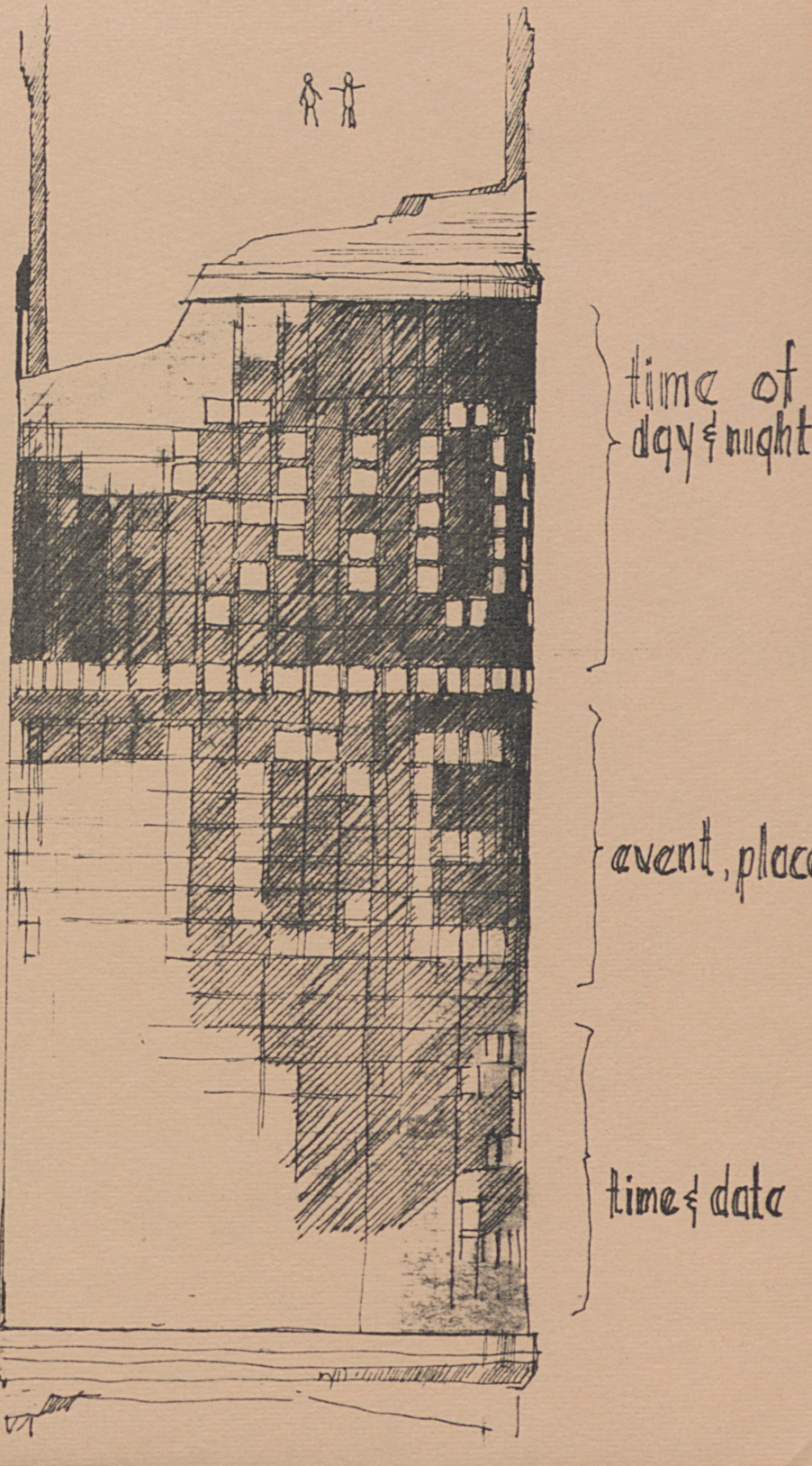

storage for office
fire corridor
WENDT ADV. AGENCY
RAINBOW ART GALLERY
fire corridor
truss

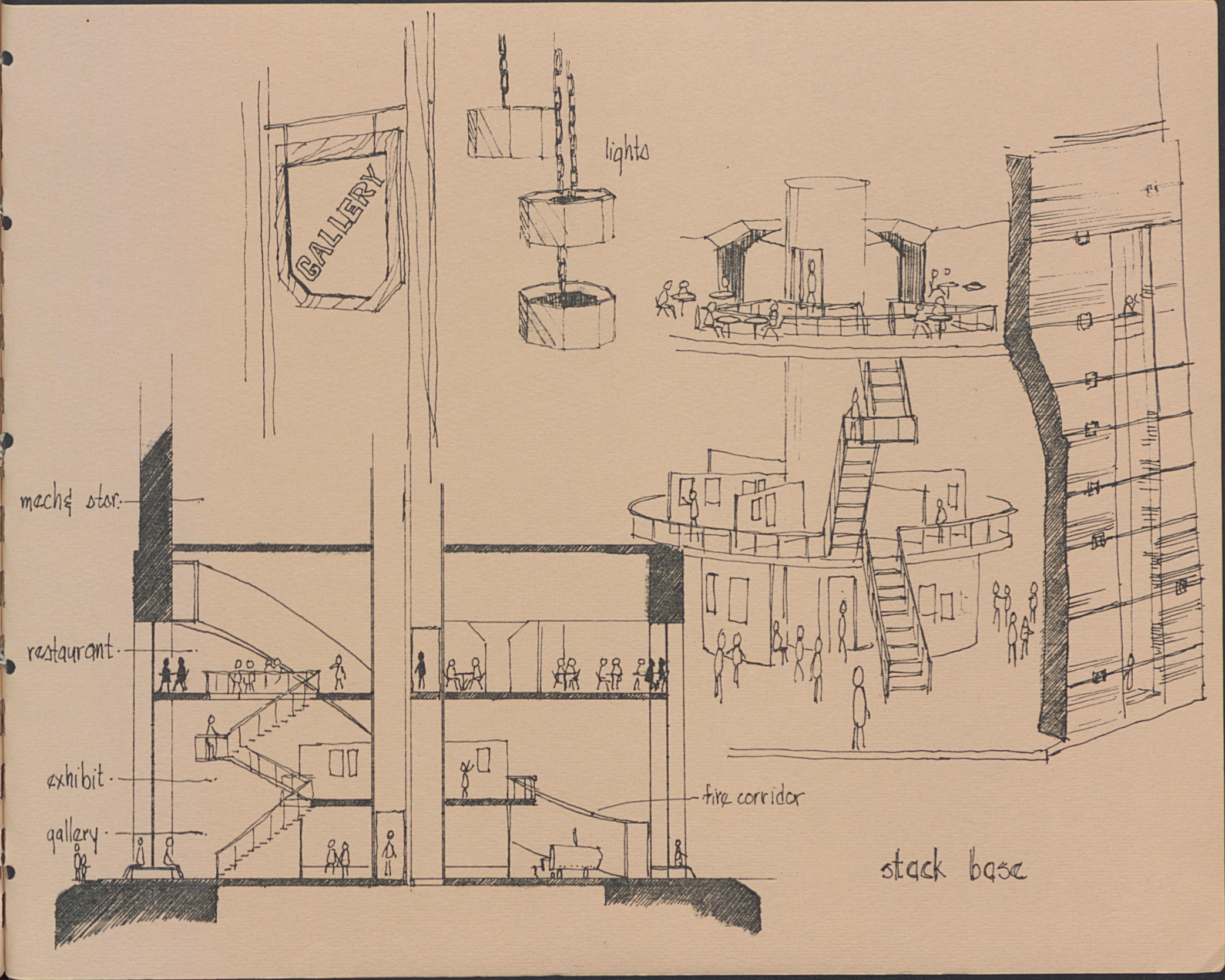


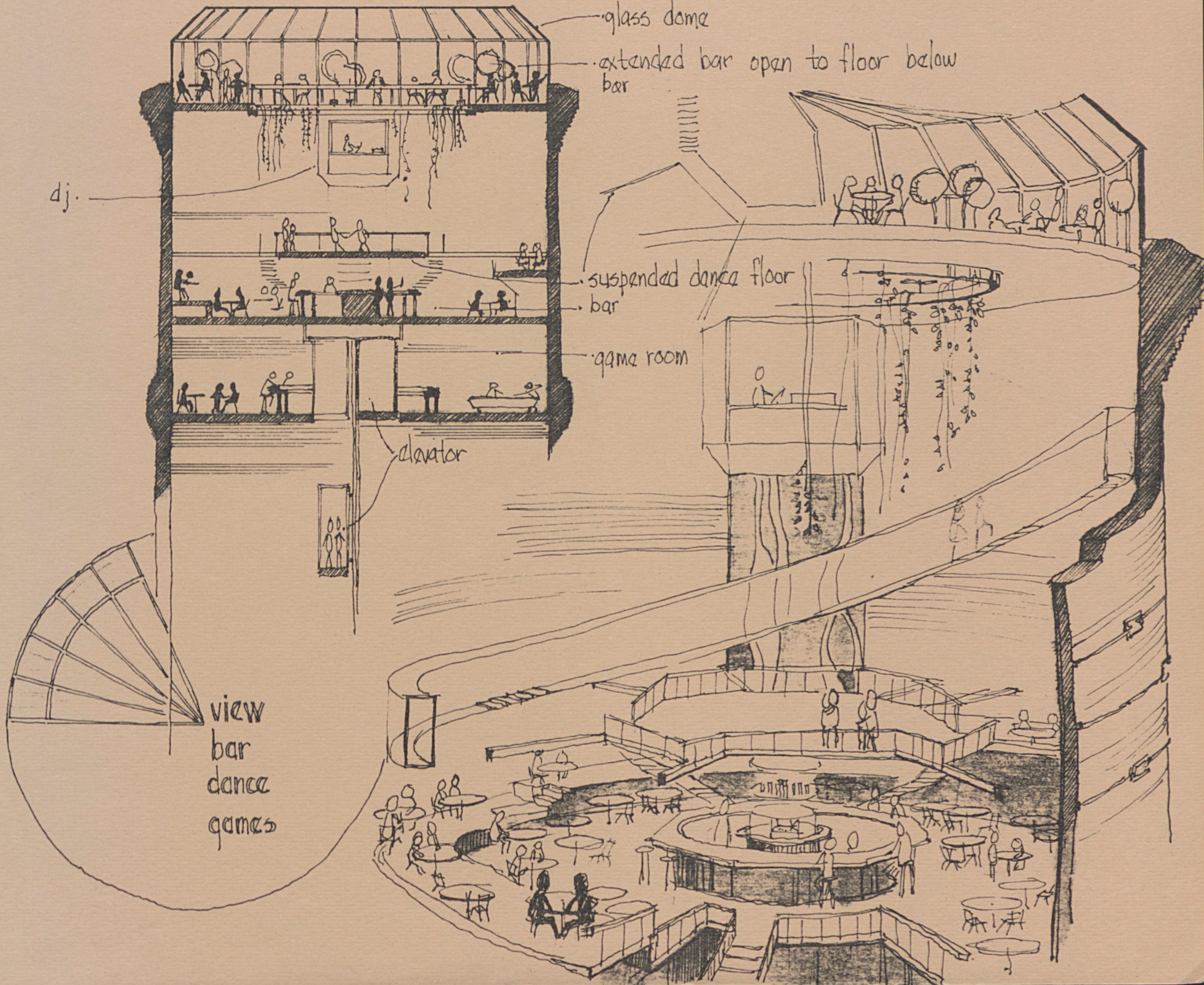
interior - copper rod mill


awnings on water tanks
railroad track
existing flue base
SMELTER HILL
LOUNGE
BAR
DANCE
RESTAURANT
GALLERY
RESTAURANT
LOUNGE
DANCE
SMELTER HILL
BAR
GALLERY
rail
trac
entry road


revolving sign
ICE CAPADES


time of day & night
event, place
time & date


GALLERY
lights
mech & stor.
restaurant
exhibit
gallery
fire corridor
stack base


glass dome
extended bar open to floor below
bar
dj.
suspended dance floor
bar
game room
elevator
view
bar
dance
games

conclusion I

In bringing this collection of material together, a brief summary of the process involved seemed necessary. The thesis statement provided a place of beginning.

During the past two years, adaptive use as a branch of design has spurred a growing interest for me. Formation of a thesis statement based on this use allowed me to work with the idea. And a partially abandoned industrial site in Great Falls, Montana, further allowed a continuation expansion of the idea into a tangible exploration of the many directions possible through such a use.

From here, the library in Great Falls proved to be strong from a researcher's point of view for the site and the surrounding area. A history of the town offered a setting for the site. Sanborn Maps out of Helena proved helpful in supplying maps which showed building replacements and changes from the beginning dvelopment, each year, up through the present.

The next step involved a visit to the site itself. A past student who had done his thesis on this particular site helped in providing names of those who I might contact to find out more information. My neighbor happened to be a retired employee of the plant; and he referred me to Jack Davis, the plant manager.

Mr. Davis was most helpful in supplying me with plans of the buildings I intended to work with and allowing me to take pictures of the site. Continued visits for more pictures and information provided opportunities to further experience and explore the site. Several times, an employee took time off to answer some of my questions as we traveled around the site.

Sketches of the site and building further enhanced an awareness of the potentiality of the area and its surroundings. For the first time, from a walk bridge to the stack, a view of the site, the river, and the

dam below, created a sense of prolonged awe as oppossed to the casual glance. Remains of the zinc plant resembled ancient Greek ruins.

Also, early in the study, an understanding of identity seemed necessary in its relation to people and buildings that have acquired time throughout the years. For a person, identity provides strength, assurance, and belonging. For a building, it might offer meaning, understanding and appreciation to someone looking at it.

Research of existing adaptive uses provided another stage in the development of the thesis. The successful treatment of several buildings were looked at in several buildings. San Francisco's Guiradelli Square, the Cannery, and the Show Place included some of the buildings. I sent a letter to the Chamber of Commerce in Salt Lake City for some information on Trolley Square but received no reply.

Research on the growth of Great Falls revealed no plans for continued residential and commercial growth in the vicinity of the Smelter Hill area, but since my main direction of emphasis for this thesis dealt with the exploration of adaptive use in all its famifications, I continued to explore the copper mill's street theme in its adaptability to both commercial and residential development. For the stack, a gallery, restaurant, and bar seemed to be workable solutions for this form of monumental structure. Continued research involved looking at adaptive use in theory, principle, and educational value.

As mentioned before under "design", the alienation of the buildings in relation to the context of whole site became of concern. From this discussion, development of the four phases entered into the study.

February 7, 1978

Ex. V. P. Fred F. Ball
Salt Lake Area
Chamber of Commerce
19 E. 2nd Street
Salt Lake City, Utah

Dear Mr. Ball:

I am a student studying architecture and am presently working on my thesis. My project encompasses the rehabilitation of an old industrial site. I am seeking some information on Trolley Square in the way of pamphlets or brochures that would show different uses of the buildings.

I know there are several Chambers of Commerce in the area so I wasn't sure of which one to contact. If you don't have any information I would appreciate your cooperation if you could forward this letter to a developer or planner or someone who does.

I would be grateful for your prompt response.

Professionally yours,

David H. Before

David H. Before
Student of Architecture

Development of the phases and building design continued. Through design experimentation, I proceeded to create a spirited richness for the area through variety, interjuxtaposition, and new meaning.

In arriving at an architectural solution, I believe that my thesis statement has been addressed in a way that stands as a valid statement. The past two quarters have allotted the needed time to experiment with various expressions of ideas vital to bringing a decaying area back to a fresh and viable way of life through adaptive practices.

The two buildings in this study show how their spatial characteristics and inherent adaptability to new uses could be used so that the complex, once a strong generative force in the community, might again find a useful purpose in the growth of the town of Great Falls.

For 64 years, the stack functioned as an expellant of gaseous waste. It stands silent and monumental now against a vast skyline. With a new use, it would remain, symbolizing a continuance of identity, with lighted signage visible from nearly anywhere in the city. New functions held within this dynamic structure could draw people from the outlying area to participate in this new and vital experience that the stack would offer.

The mill in itself is a massive structure that once housed workers and machines for the production of copper. It now has the potential to cradle a new community in all its activities. The apartment/shopping relationship would not be for everyone, but for some, the mill could be unique in offering an invigorating experience, interweaving the new and the old, to express itself as a special place, a place to participate, grow, live, and be a part of.

The mill's southern exposure up on a hill offers a view of the site and river below. It would be difficult to create such a setting in another section of the city.

In a sense, the mill would be a community within a community, one, within still another community. The three communities are the mill, the Smelter Hill site, and the town of Great Falls.

Across the river, just before dusk, one notices a powerful band of golden glow from the sun through the 850 feet long clerestory that tops the structure. If the need arose, as he travelled down the river road, a visitor would not be at a loss in locating the mill.

These and other buildings on the site have left behind a story which encompasses a total human experience. They are important for their design and their combination of social, economic, and technological characteristics now as in a by-gone era. And in them can be captured some of the meaning of the lives of those who once worked there. This added insight further enriches life in the area in a way that a new building might not. At the same time, these structures in their permanence can take on the role that prevents any undesirable, new environment from taking its place. The built environment that finds itself in our wasteful age, merits use in many respects and not destruction.

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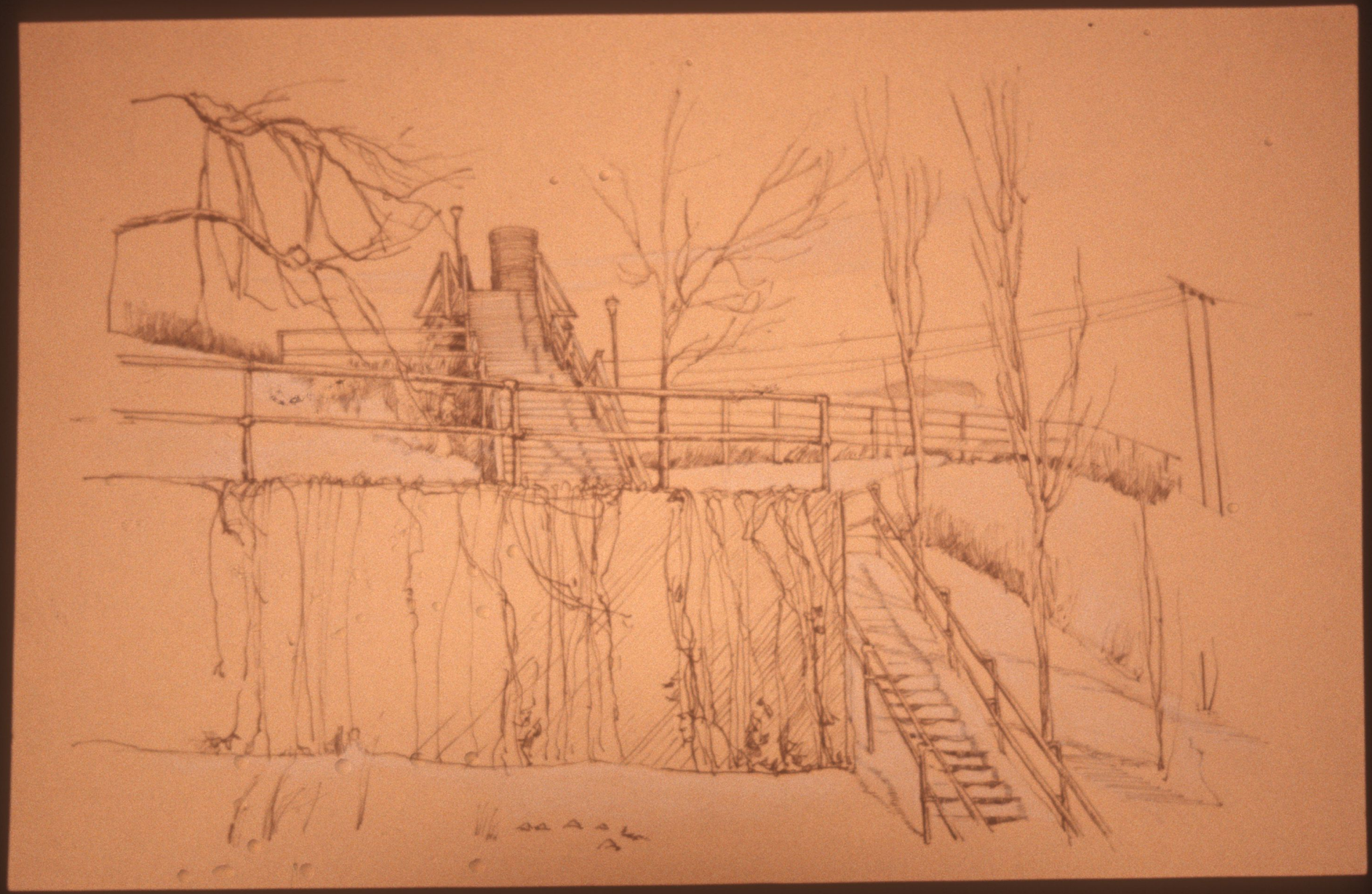
Great Falls, Montana. Built by Custodis in 1908 for Anaconda Copper Mining Co., Dec 14, 1956.

Guidelines for Rehabilitating Old Buildings. U. S. Dept. of Housing and Urban Development, Washington, D.C., 1977, p. 22.

a new identity

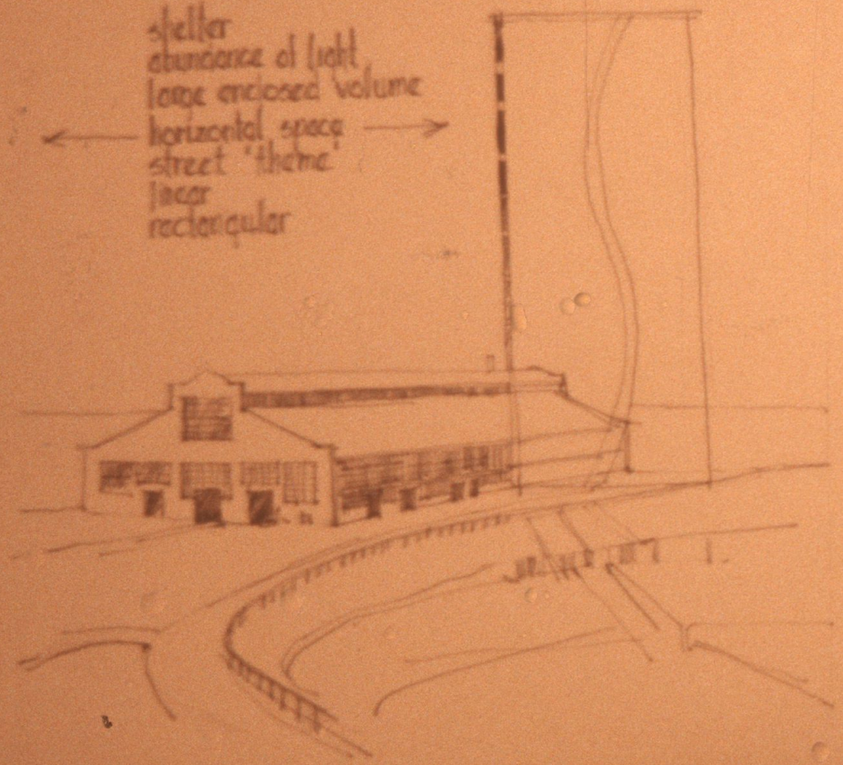
smelter hill rehabilitation



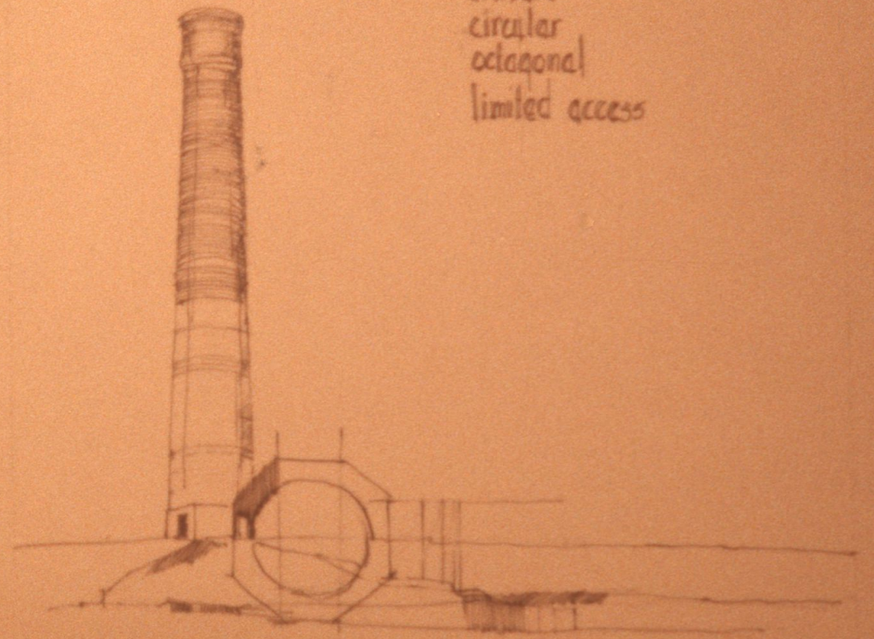


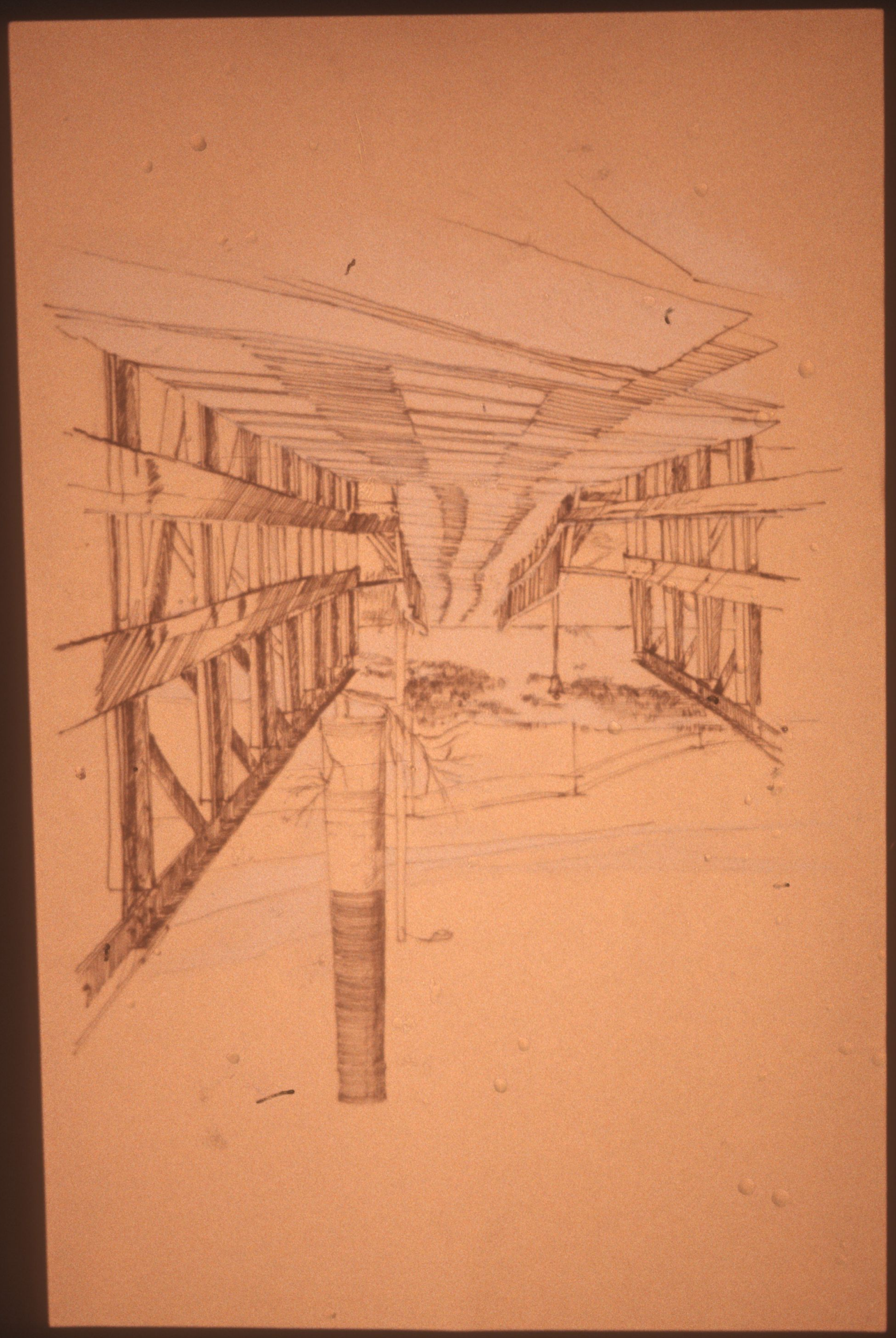
building analysis

shelter
abundance of light
large enclosed volume
horizontal space
street 'theme'
linear
rectangular

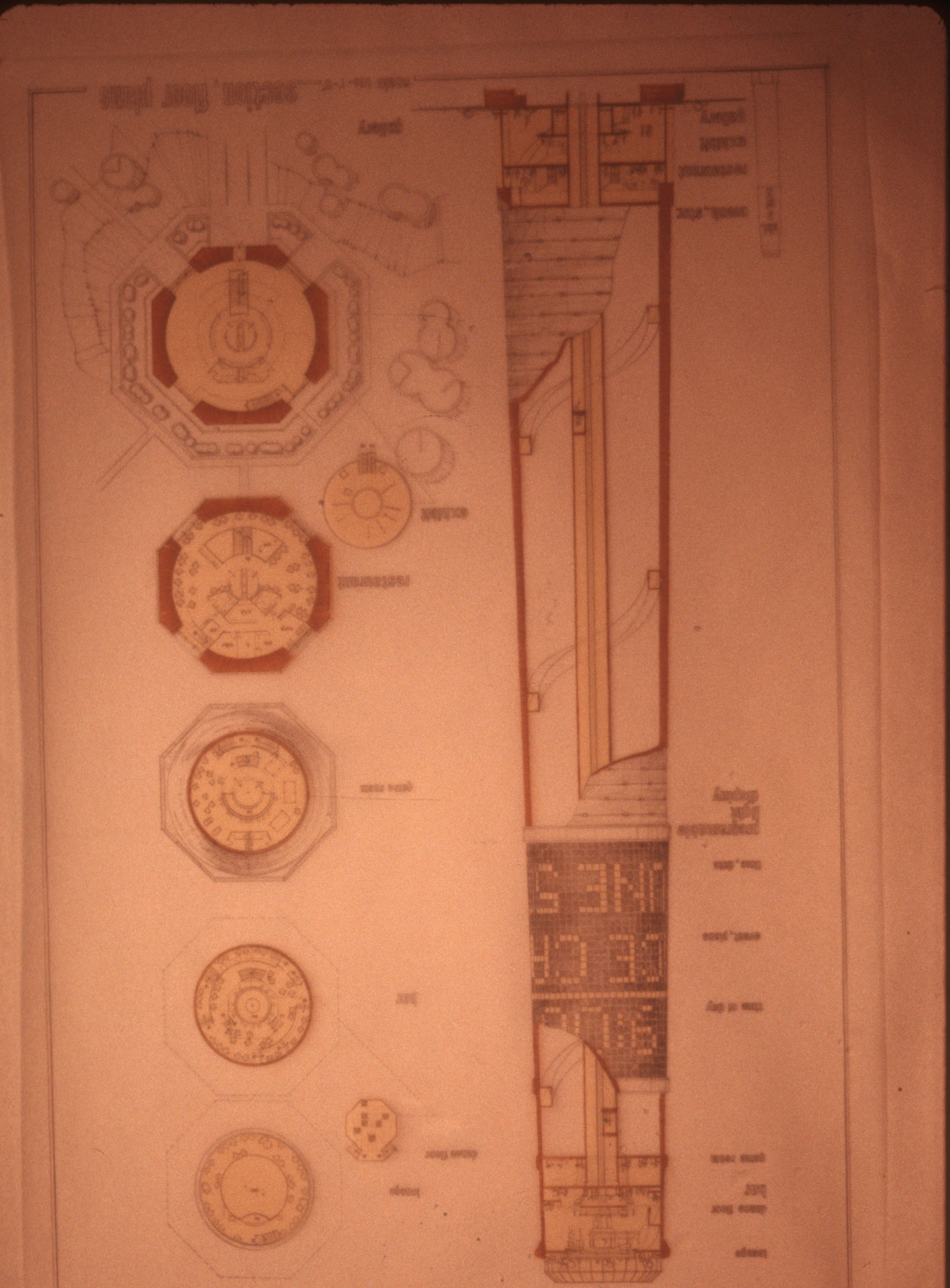


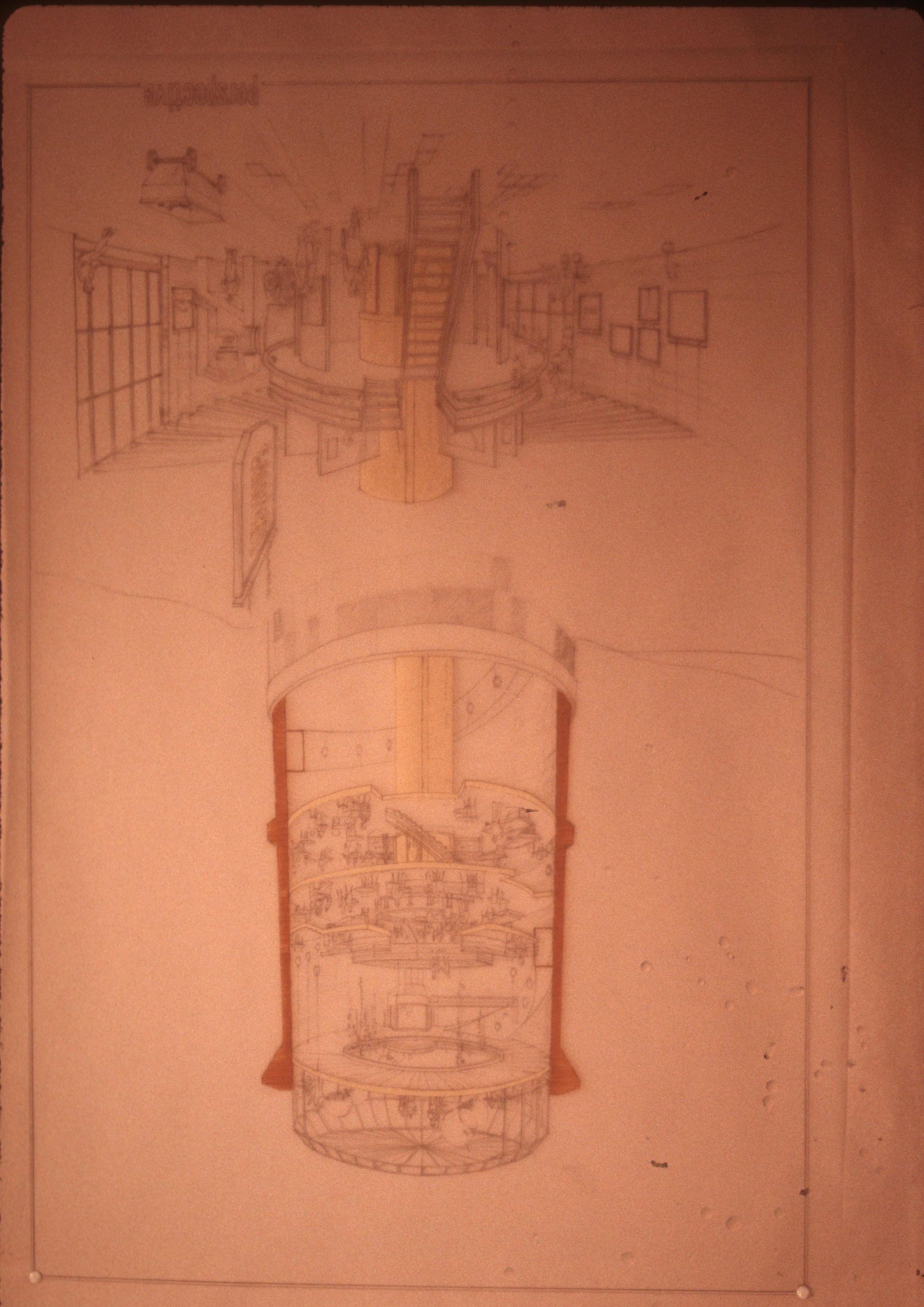
monument
identity
landmark
sign
vertical space
symmetry
dark interior (lightless)
artifact
circular
octagonal
limited access

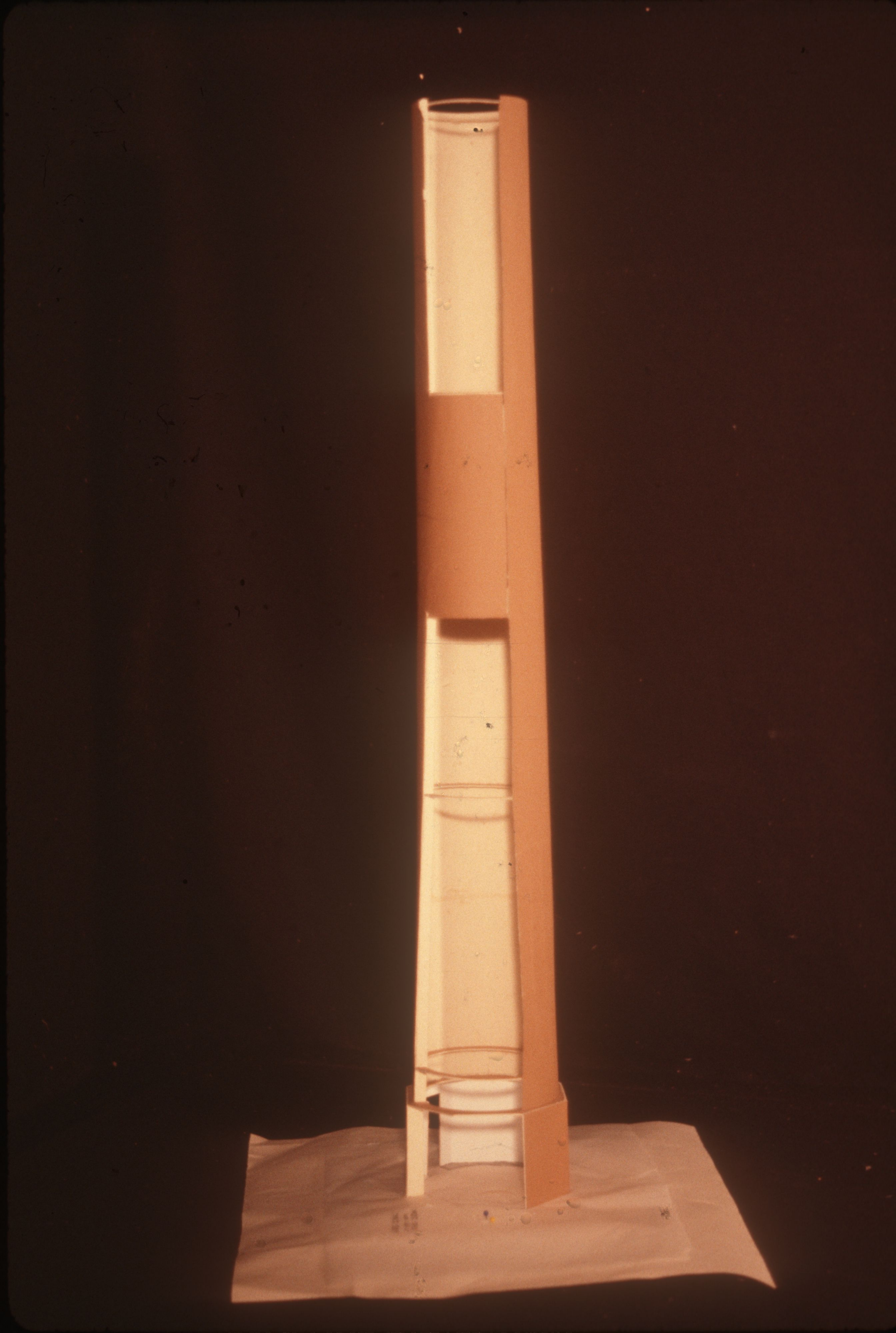












south elevation

center section

west elevation

alley section

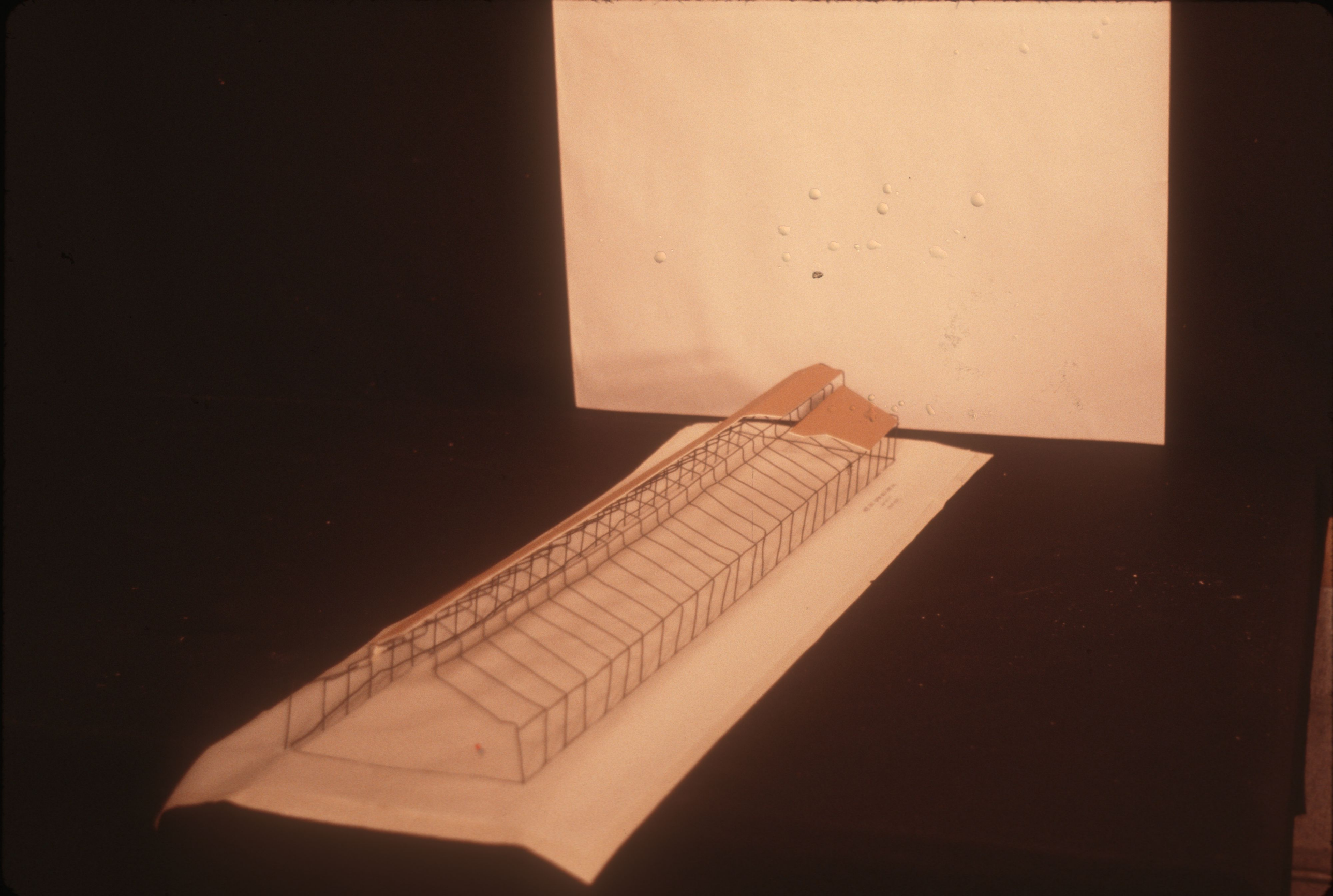
north elevation - baxter street

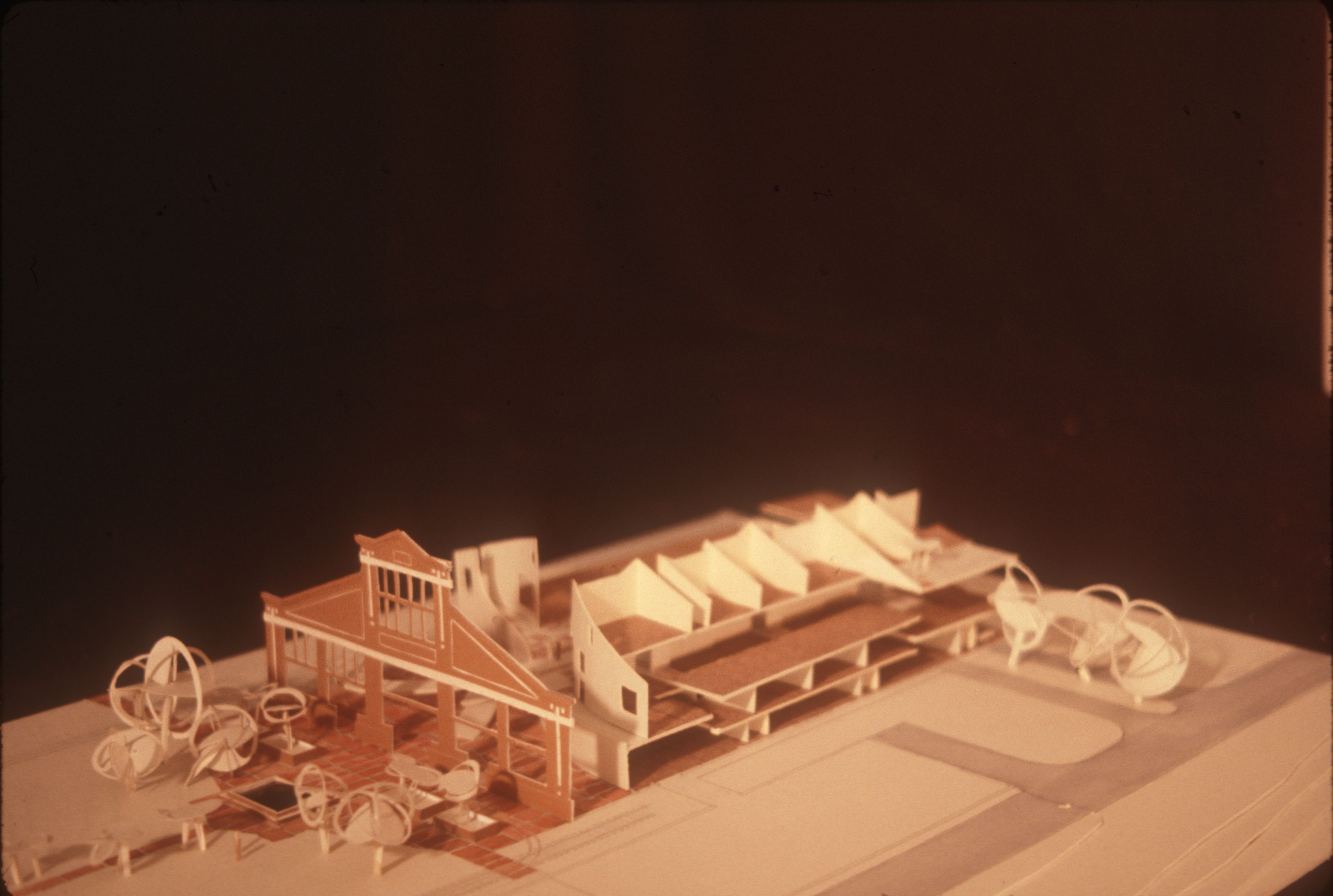
steps

north elevation - baxter street

1/8" = 1'-0"

elevations, sections





potential grocery
shop
shop
shop
shop
shop
shop
shop
potential department store
apartments
second floor - interior street
residential
residential
commercial parking
residential parking
apartment storage
first floor - parking

floor plans

perspectiva

basement level apartments

looking out of apartment

looking into apartment

street level apartments

floor plans

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