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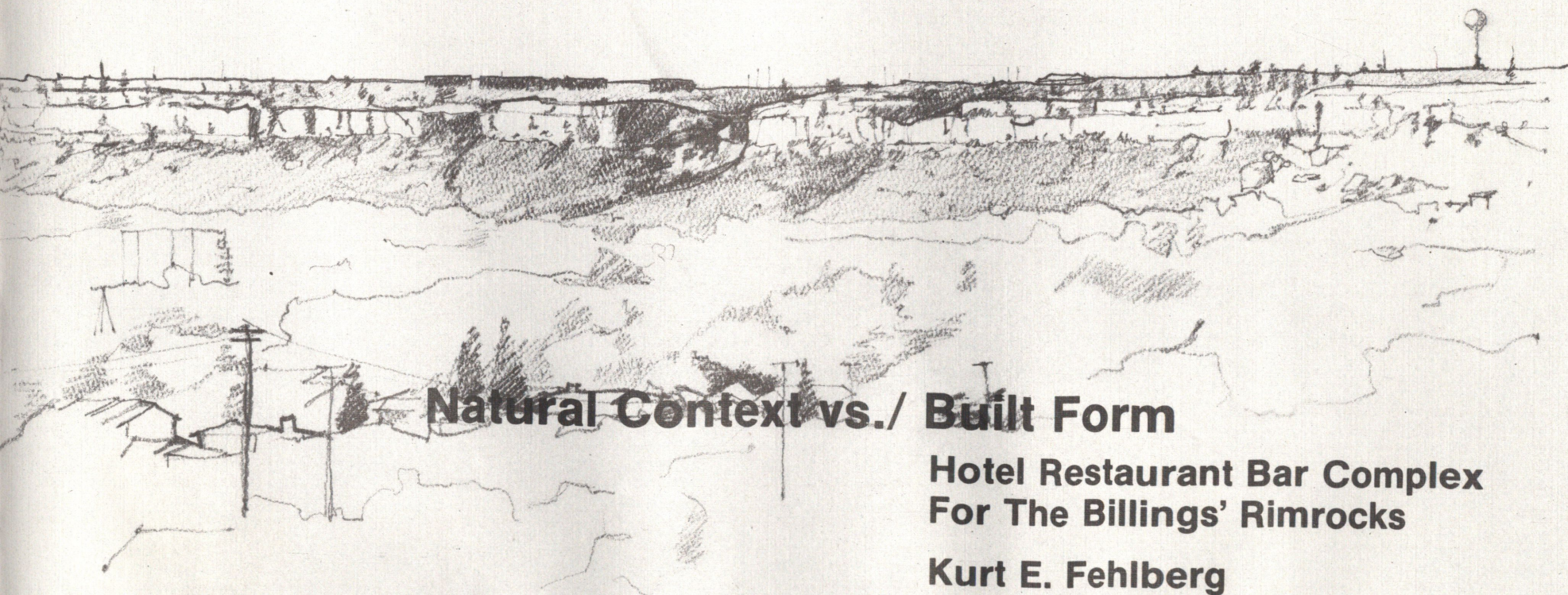
Natural Context vs./ Built Form

**Hotel Restaurant Bar Complex
For The Billings' Rimrocks**

Kurt E. Fehlberg

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Natural Context VS. Built Form

by

Kurt Erick Fehlberg

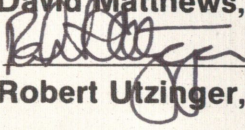
**An undergraduate thesis submitted in partial fulfillment of the
requirements for the degree**

of

Bachelor of Architecture

Approved By:

David Matthews, Thesis Advisor



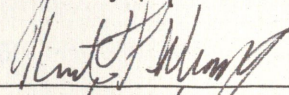
Robert Utzinger, Director

**Montana State University
Bozeman, Montana**

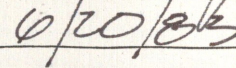
June, 1983

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Introduction

Being a native of Billings, I have always revered the Rimrocks that rise magestically out of the valley floor as a place of natural splendor. The power and dominance of the Rimrocks, as their name suggests, creates a dramatic backdrop for the city of Billings. From the top of the shear sandstone cliffs, one acquires a commanding view of the city three hundred feet below. The view is not one of empty abandon, but is one of great intimacy and identity on a personal level. The meaning and identity of the entire valley comes from identifying points of personal meaning such as one's home, school, office or church, and defining their relationship to the city, and the city's relationship to its environmental forces such as the Yellowstone River, Pryor Mountains and the Rimrocks themselves. The inherent spirit and magestic splendor are the basic elements that instill my reverence for the Billings Rimrocks.

The strong contrast between the plateau and the sandstone cliffs with their talus slopes below creates a dramatic natural land form. Presently the land area on the Rimrocks is being developed by industry and private home builders. The newly constructed structures do little to attempt to respond sensitively to the natural skyline, context of the area, or the quality and character of the Rimrocks.

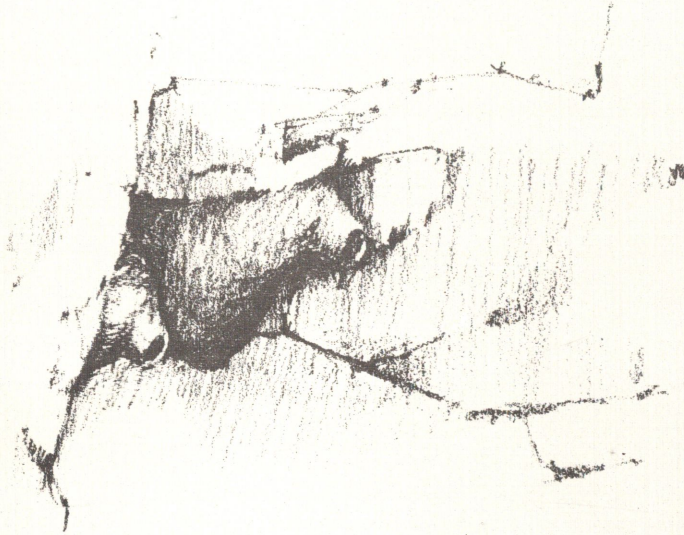


Intent

The intent of this thesis is to explore the delicacy of the interaction between the natural context inherent in the region and more specifically the site, and architectural form. The site I have chosen for this study is an undeveloped portion of the Billings Rimrocks located approximately one and one half miles west of the Logan International Airport. The site was chosen in part for its intrinsic drama, natural beauty and its relationship to the city and the rest of the Rimrocks. The building type I have chosen to place on the site is a hotel, restaurant and bar complex. My intent of selecting this building type for the site is an alternative to the typical hotel restaurant off the highway interchange. This complex would involve the residents of Billings and visitors to the area in a place where they can experience the sense of drama of the Rimrocks and instill in them a sense of meaning and identity with the city of Billings, Montana. I will be approaching this project from the standpoint of an economics of nature rather than an economics of dollars. The program will be derived from aesthetics paired with the site rather than from the land use efficiency ratios or the adoption of an existing program.

The Client

The client for this project is a group of four young business executives. They are looking for a long term financial investment in the Billings area. With backgrounds in management, they have decided to build a hotel, restaurant-bar complex. Having grown up in the Billings area, they each have developed a respect for the natural sandstone cliffs of the Rimrocks, yet they also recognize the great potential for placing their complex on the Rimrocks above the city. Realizing the importance of maintaining the Rimrocks' quality, spirit and identity of place, the clients are willing to go to the extra expense to maintain those qualities. The clients want a high quality hotel that harmonizes and enhances the Rimrocks in form and scale.



Swallows' mud nests harmonizing with the natural context of the sandstone cliffs.

Market Review

Billings, Montana is one of the fastest growing commercial centers in the region. This growth leads to an increase in the tourist and traveling business trades. To accommodate the increase, Security Bank of Billings is proposing the construction of 150 guest rooms in the downtown area. The Homestead, a light industrial park, has projected a need for a new hotel along Interstate 90. Other projects include an upgrade remodeling of the Northern Hotel, located in the city center, and the expansion of the Westward Ho Lodge near the airport. This development in the hotel industry substantiates the need for more guest room spaces in the Billings, Montana area.

In the past there have been several proposals for hotels located on top of the Rimrocks. These proposals have included a Sheraton to be built across from the Logan International Airport and a 190 unit convention center hotel located on the site of the Skyline Club, a restaurant bar that was lost to fire in 1969. Since the Skyline Club, no one has capitalized on the tremendous views, dramatic setting potential and access to the airport and city by building a commercial structure such as the hotel, restaurant-bar that I am proposing on the Rimrocks.

Definitions

Spirit

Spirit in architecture is not a definable entity in the sense that it is measurable or documentable, but spirit is more of an intuitive feeling that evokes a positive emotional response. That response is triggered by symbols found in nature or in architecture that have personal meaning to the participant. The spirit can be a nurturing of the participant's intuitive feelings for his culture, heritage, and personal experience. Spirit in architecture does not pertain to the novelty of new experiences, for spirit is the emotional responses that reoccur time and time again.

Meaning

In architecture meaning is the personal identification with a space or area. This is achieved through first perceiving elements or artifacts that trigger cognitive relationships of the elements which in turn give them personal meaning. This meaning is not universal but is an accumulation of one's personal set of experiences.

Existential Place

This goes far beyond the definition of place being simply a location. Without an intuitive feeling of spirit and meaning for the individual, all that exists is a location. If the location is given some meaningful artifacts, symbols or relationships to other places, a dialogue between the location and the viewer, evoking meaning and spirit, defines it as a place. Norberg Shultz suggests that dwelling in a space cannot exist until one recognizes the subliminal association of the spirit and meaning of a space, to oneself.¹ To do this is to identify the space as an existential place.

These three concepts are inseparable and essential in one degree or another to the creation of quality architecture that is responsive to the humanistic needs of man, both emotionally and psychologically. Spirit, meaning and place are responsible for the quality of life we experience. To consciously recognize these intuitive ideas while designing space, both interior and exterior, is to include the human factor with functional design to create quality of place.

Context, Culture and Built Form

In my exposure to the field of architecture, there appears to be a universal goal to achieve unity between architecture, the physical context, and the cultural environment into which it has been interjected. Through the understanding of the context and culture, and a conscious effort to work with that context and culture comes an appropriate spirit to the architecture. The goal of understanding the context is not to formulate a vocabulary of appropriate architectural details but to understand the reasoning behind the use of the details and what symbolic meanings are attached to the style by the culture in which it has evolved. The situation is one where anyone can survey an area to attain the predominate style, but it takes a higher level of understanding to translate the spirit of an area into comprehensive architecture rather than applied architecture.

In searching for what might constitute context and culture in Billings, Montana, one is quick to conclude that there is not a dominate cultural influence. Billings seems to have developed into the typical 20th century American mindset. The culture is based on a conglomeration of cultures, once very rich with symbols and spirit. This cultural melting pot has in effect diluted the vitality of the diverse cultures. The lifestyle of Billings is fast paced with a strong emphasis on independence. The city has no prevailing spirit or context in which to respond to architecturally. This lack of architectural style, appears to be a self perpetuating syndrome.

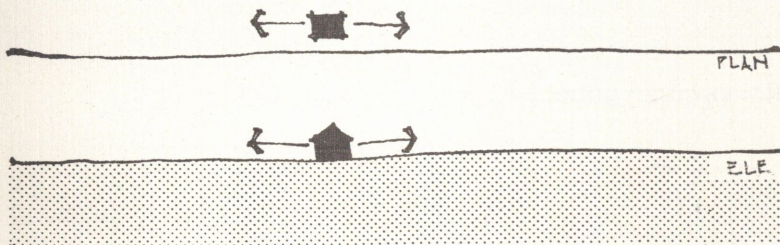
Without the cultural influences the spirit in architecture has to develop out of other sources if it is to exist at all. In the case of this thesis the spirit for the architecture has to be developed out of the site of the Rimrocks itself. Without the existence of architecture that seems to translate the spirit of the Rimrocks, I will have to search intuitively to derive the appropriate response to accentuate the existing spirit, meaning and place. Capturing the essence of this site and translating that information into responsive architectural form is the basis of my thesis.



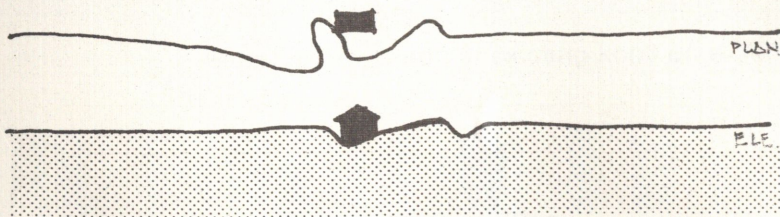
Context of the Billings Rimrocks

Natural Placement for Built Form on Skyline

While analyzing some of the existing structures that have been constructed along the Rimrocks, it is easy to see the inappropriate visual placement of those structures in relation to the Rimrock skyline. The structures, such as the new Air West hanger at the Airport, were built along a very uniform horizontal section of the Rimrocks. As viewed from the city the Air West hanger appears as an object in movement along that line seeking a place to become visually anchored to the Rimrocks. In this structure, the builders were not concerned with architecture in relation to the natural land forms. They were only concerned with the building's functional aspects. In my hotel, the kinship of built form and the natural land form is eminent in my concerns. This concern leads to a desire to achieve the visual stability that the airport buildings lack. The site I have selected, I feel, provides this stability. The site is located at the first point where the horizontal skyline is broken by a rise in the natural sandstone. This break is further accentuated by the modeling of the vertical cliff face due to the shadows produced by the deep ravines. The visual interest created by the change in terrain and the contrast of the shadow areas creates a natural identity of place. The site becomes the visual anchoring device for the built form on the skyline while the built form is further enhancing the change in the natural form.



Built form without a sense of place

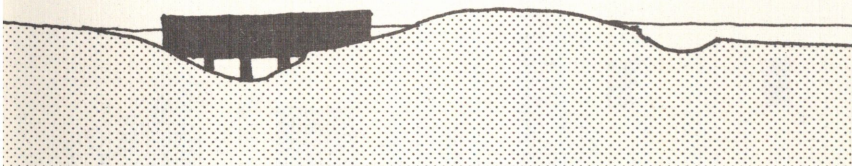


Built form with a sense of place

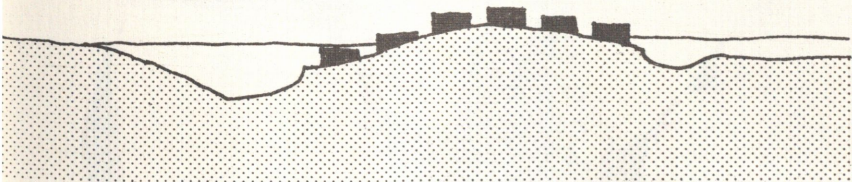
Skyline Sensitivity

The skyline of the Rimrocks is a combination of natural and man made forms. The natural sandstone was deposited in horizontal sedimentary layers. The sandstone was eroded away over thousands of years by the Yellowstone River, leaving the eighty foot cliff faces present today. Repeated freeze-thaw periods and further erosion by wind and water have cut deeply into the uppermost layer of sandstone leaving ravines and gullies. In the pursuit of progress, man took the natural skyline with its undulations and filled in the ravines to build State Highway #3. The skyline, because of this highway, appears as a straight horizontal line from most of the city.

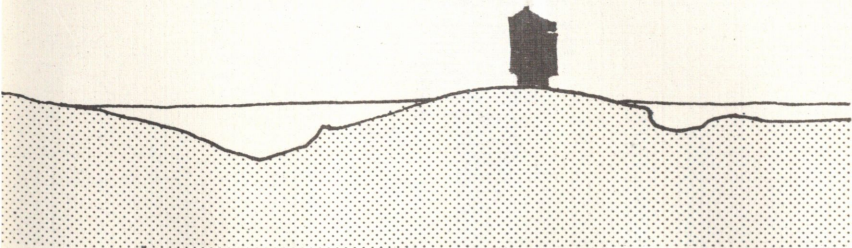
My site is the first place the natural land form breaks the highway horizontal. The highway infill in the ravine is approximately forty feet deep and creates a permanent scar on the landscape. There are several ways to treat the skyline. One solution would be to obscure the highway scar by placing the built form in the ravine and not breaking the skyline. A second solution would be to build on top of the knoll with low profile buildings to gently excentuate the change in the horizontal as is suggested in San Francisco's master plan.² A third solution would be to avoid melding with the skyline and keep the natural form separate from the built form. Each of the three schemes has merits and drawbacks. The final solution will have to weigh the impact on the skyline against other aesthetic and functional concerns.



Low profile scheme obscuring highway infill



Slight excentuation of existing knoll on skyline



Separation of built form from natural land form

Billings Vernacular

Vernacular architecture, as I define the term, is not a style of architecture imposed on a society or area, but an architecture that has developed in response to climatic, environmental, cultural and functional requirements of an area and its people. The vernacular form combines all these aspects into personal spaces rich with appropriateness. Norman F. Carver's study on Italian hill towns prompted him to write,

"In our increasingly vulnerable world the ways in which environment, culture and form interact are critical, if not to our survival, then to our quality of Life."³

A study into the vernacular form has the potential, at least in theory, to open doors of understanding into an area's culture and its meaning.

Lack of a strong vernacular identity as in the built form does not rule out the need for appropriate responses to the needs of climate, environment, context and cultural forces. What is necessary is to become aware of the focus and distill out what an appropriate response would be. Again I quote Norman F. Carver.

"An important lesson of vernacular architecture, then; is that picturesque qualities of architectural form need not be contrived; they can logically derive, for example, from a sensitive adaptation to the site or from a forthright use of materials and building techniques."⁴

This leads us around to whether or not Billings, or more specifically the Billings Rimrocks, has a vernacular built form. Historically Billings was an agricultural and commercial based community chartered in 1882. The area's rapid growth led to the inheritance of building types, for the most part, with only scattered examples that respond to the area. Examples responding to indigenous materials are found in the sandstone buildings of Rocky Mountain College and a handful of other private and public structures in Billings. In more recent times escalating land prices and relative height being a status symbol has brought the built form in closer contact with the Rimrocks. As this interaction with the



Vernacular architecture of Vitorciano, Italy

Rimrocks becomes more intimate, the cost of construction prohibits developer speculation. With a more affluent status quo comes the ability to respond to the contextual requirements. In this sense the "emerging Rimrocks vernacular" is one based on affluent cultural status and derives the form from the sensitive adaptation of the site. The use of indigenous materials, appropriate scale, texture and color complimenting the environment is not yet the rule. Deriving a vernacular for architectural endeavors from a conscious affection for the spirit of the Rimrocks is still the exception. In my estimation the test of time will only emphasize the inappropriateness of architecture that fails to acknowledge the contextual forces.

Code Review

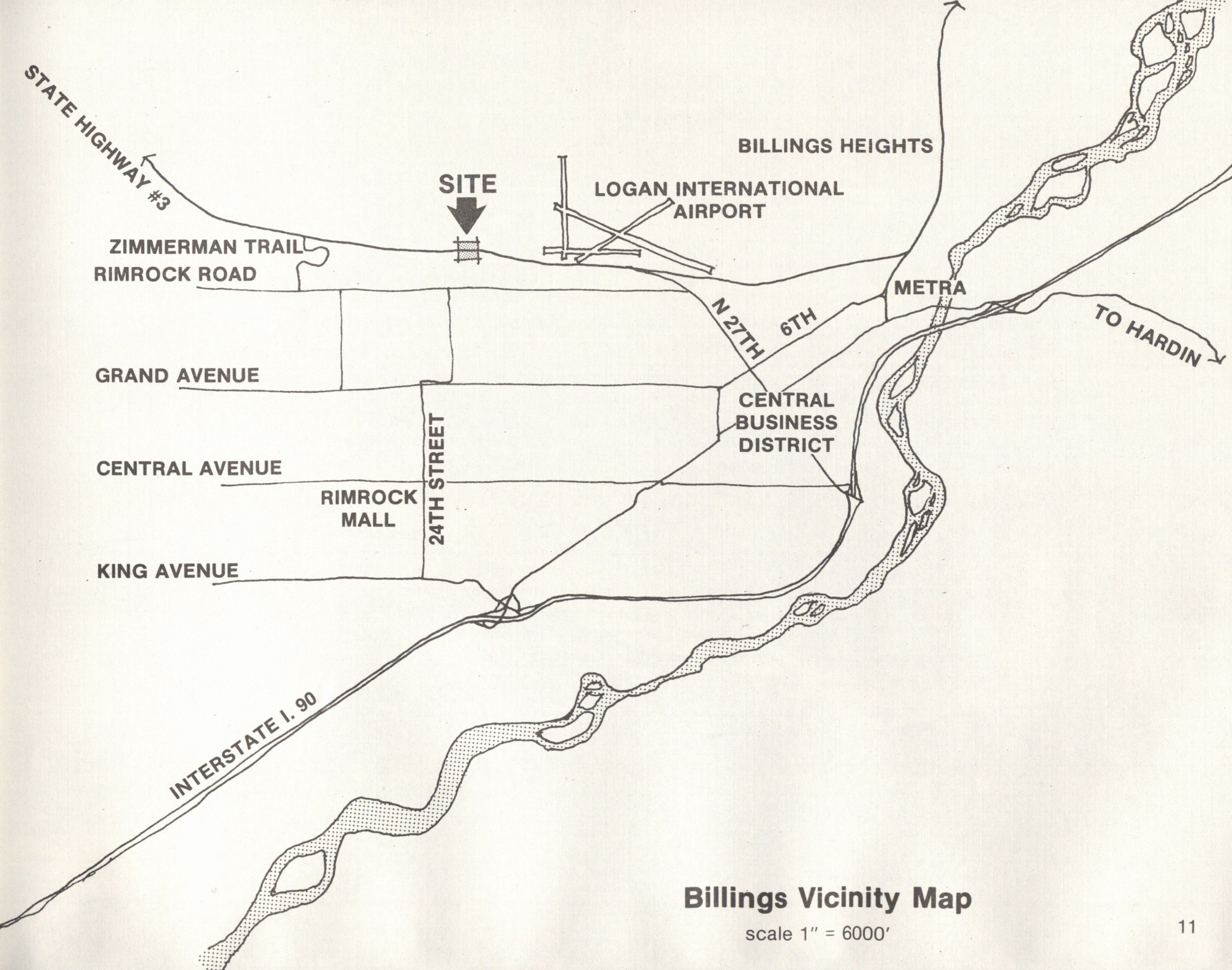
The Uniform Building Code categorizes the hotel portion of this project as a Group R, Division 1 occupancy. This occupancy definition pertains to "hotels and apartment houses, convents and monasteries (each accommodating more than ten persons)"⁵. The restaurant, as defined by U.B.C. is an assembly building. The occupancy category is Group A, Division 3; this occupancy pertains to "Any building having an assembly room with an occupant load of less than 300 without a stage, including such buildings used for educational purposes and not classed as a Group E or Group B, Division 2 occupancy"⁶.

The project will be in compliance with the requirements given in the Uniform Building Code pertaining to the respective occupancies. The site will be treated as if it has received a zoning code variance from its present residential status to a Hc Highway Commercial classification. The site development will comply with the City Zoning Ordinance for Billings, Montana no. 3797 and amendment no. 4102. under the highway commercial classification.

Impact of Climate on the Site and Built Form

In the intent of this thesis, solar application is not one of the main objectives, however, studying the climatological data for Billings, Montana yields some general information that will be of concern in this project.⁷ The wind generally blows out of the southwest at an average velocity of eleven miles per hour. The severe wind activity is associated with storm fronts that approach from the northwest. In order to use the winds for natural cooling and ventilation one would want to orient operable window areas to the southwest. Building facades and entries should be protected from the storm front winds out of the northwest. The topography of the site creates a natural wind shadow zone with markedly slower winds in the ravine areas; on the other hand, the knolls on the site create a ventury effect. The wind's volume is compressed as it comes over the Rimrocks' edge from the valley. Drifting snow is not an apparent problem in this area, for the snow seldom accumulates due to the frequent thawing periods. Areas should, however, be provided for snow removal from parking and sidewalks. The area is semi-arid with precipitation occuring primarily in the form of spring showers. Due to the impermeability of the soil, the majority of the rain water runs over the sandstone face in the two ravines. New construction, therefore, would not produce an undue strain on the natural drainage systems below.

In a hotel complex the most favorable solar orientation would be east to west which minimizes the heating and cooling loads along with eliminating the problem of shading the west windows. The summer temperatures suggest the use of shading devices on the southern exposure windows. The rise to the west creates a shadow in the ravine area with low evening sun angles. This may limit the useability of the ravine area for outdoor use. Otherwise, the site has uninterrupted solar heat gain potential.



Billings Vicinity Map

scale 1" = 6000'

NATIONAL GUARD ARMORY

500

480

480

STATE HIGHWAY #3

480

460

500

440

420

400

380

360

340

320

300

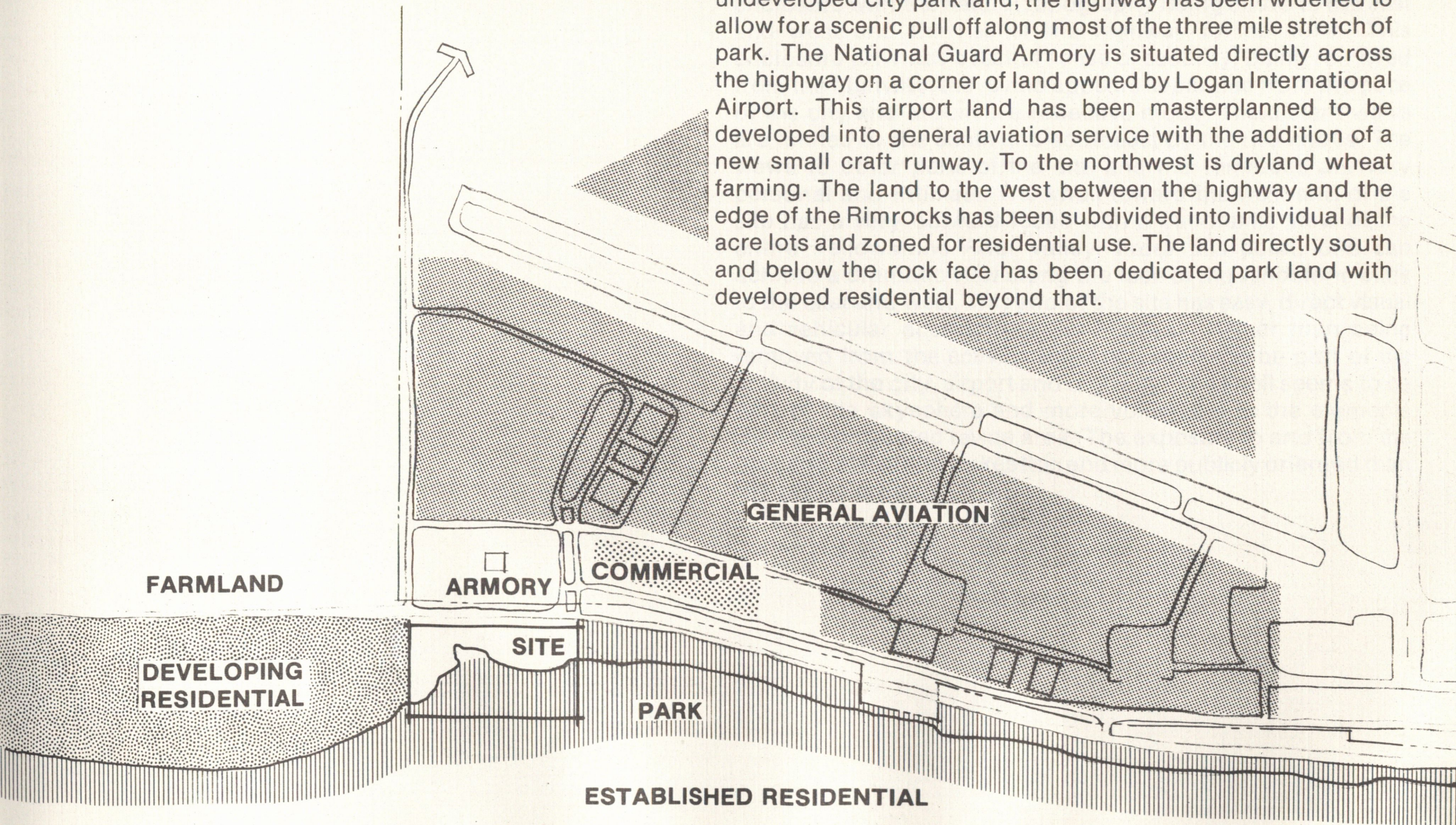
LINE CONDOMINIUMS

Existing Contour Study

Contour Interval = 20 feet
scale 1" = 100'

Site Zoning

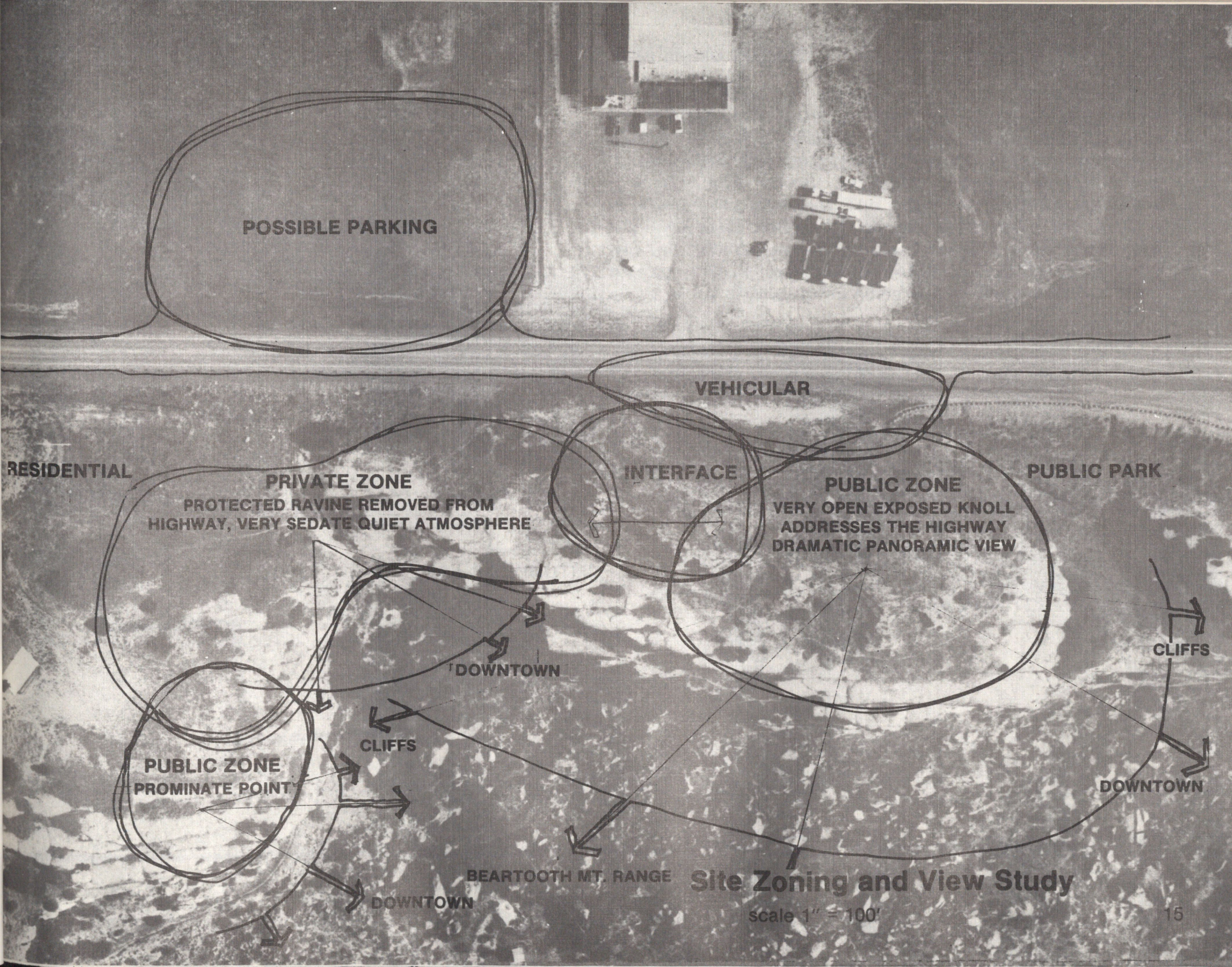
The building site on the Rimrocks that I have chosen for this thesis is one that makes a transition between the public park and private residential areas. The land to the east is undeveloped city park land; the highway has been widened to allow for a scenic pull off along most of the three mile stretch of park. The National Guard Armory is situated directly across the highway on a corner of land owned by Logan International Airport. This airport land has been masterplanned to be developed into general aviation service with the addition of a new small craft runway. To the northwest is dryland wheat farming. The land to the west between the highway and the edge of the Rimrocks has been subdivided into individual half acre lots and zoned for residential use. The land directly south and below the rock face has been dedicated park land with developed residential beyond that.



Land Use Study

Present and projected land use.
scale 1" = 800"

On the micro scale the site responds to the public and private interface by having the most publicly oriented area towards the west end adjacent to the public park and the most private residential areas to the west. The private area of the site consists mainly of the ravine. This area has a good sense of enclosure with the natural topography rising above to the east and west and the rise of the highway to the north. This enclosure provides a restful sense of security. Being removed from the highway, the ravine appears separated from the pace of the city and assumes a reflective mood. The distant views are limited to the south and southeast by the two knolls. The views to other parts of the site and the Rimrocks are very personal and intimate. The knoll toward the west end of the site has a very outward focus with a panoramic view of the entire Yellowstone River valley. From this point, one can achieve a dramatic view along the face of the sandstone cliffs to the east and west. This end of the site has easy, direct visual and vehicular access from the highway. Rather than being removed from the activity, this knoll seems to be part of the activity of the city, airport and highway. The knoll seems to be part of the skysphere and more vulnerable to the elements than the protected ravine area. The exposure to and from the east end of the site makes this end more publicly oriented than the ravine area.



POSSIBLE PARKING

VEHICULAR

RESIDENTIAL

PRIVATE ZONE

PROTECTED RAVINE REMOVED FROM
HIGHWAY, VERY SEDATE QUIET ATMOSPHERE

INTERFACE

PUBLIC ZONE

VERY OPEN EXPOSED KNOLL
ADDRESSES THE HIGHWAY
DRAMATIC PANORAMIC VIEW

PUBLIC PARK

DOWNTOWN

CLIFFS

**PUBLIC ZONE
PROMINATE POINT**

CLIFFS

DOWNTOWN

BEARTOOTH MT. RANGE

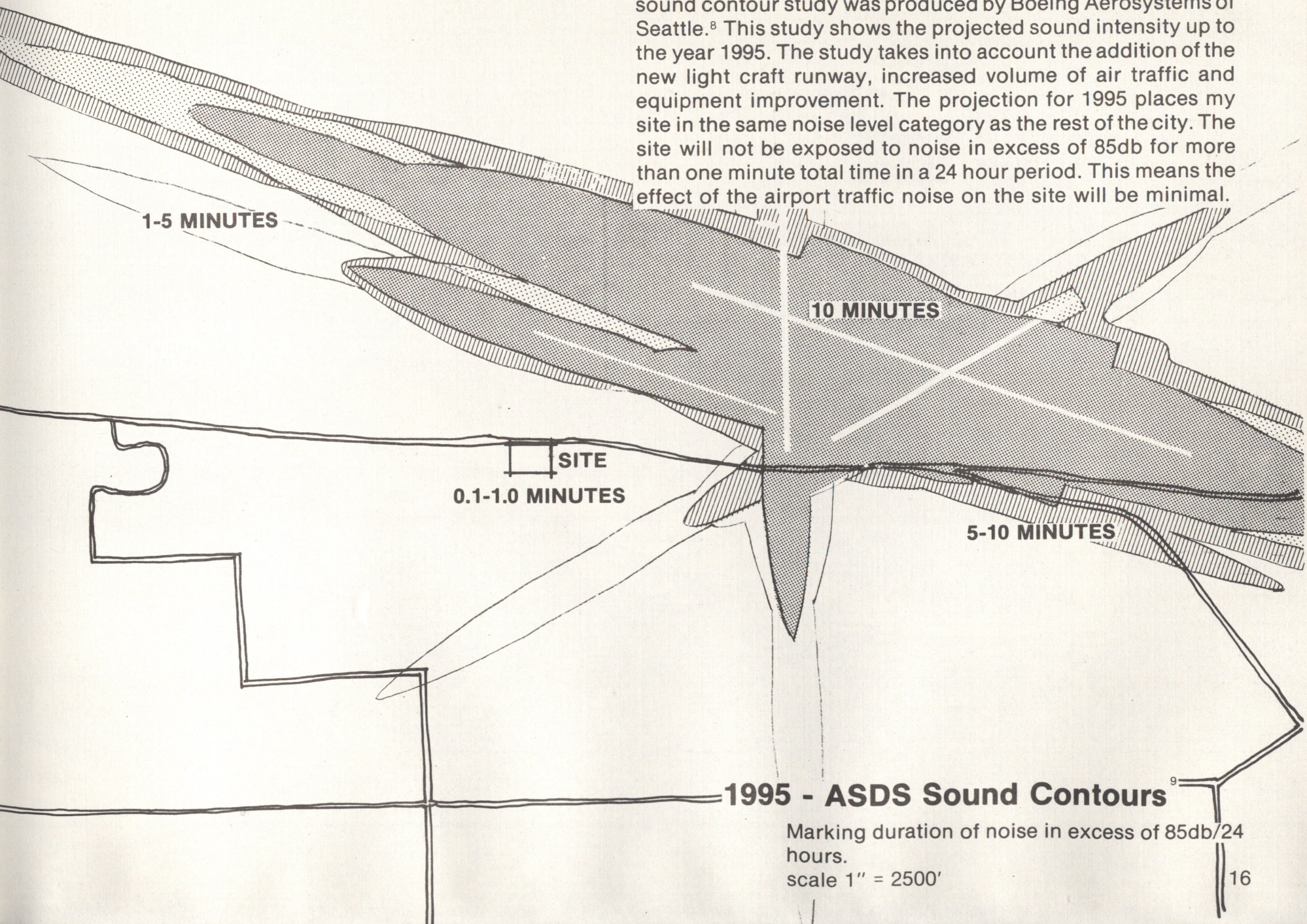
DOWNTOWN

Site Zoning and View Study

scale 1" = 100'

Airport Noise Impact

As part of the airport masterplanning completed in 1975, a sound contour study was produced by Boeing Aerosystems of Seattle.⁸ This study shows the projected sound intensity up to the year 1995. The study takes into account the addition of the new light craft runway, increased volume of air traffic and equipment improvement. The projection for 1995 places my site in the same noise level category as the rest of the city. The site will not be exposed to noise in excess of 85db for more than one minute total time in a 24 hour period. This means the effect of the airport traffic noise on the site will be minimal.



1995 - ASDS Sound Contours

Marking duration of noise in excess of 85db/24 hours.

scale 1" = 2500'

TWO INCH NATURAL GAS

HIGHWAY RIGHT-A-WAY 110'-0"

POWER LINE OVERHEAD

UNDERGROUND

TP

TP

TP

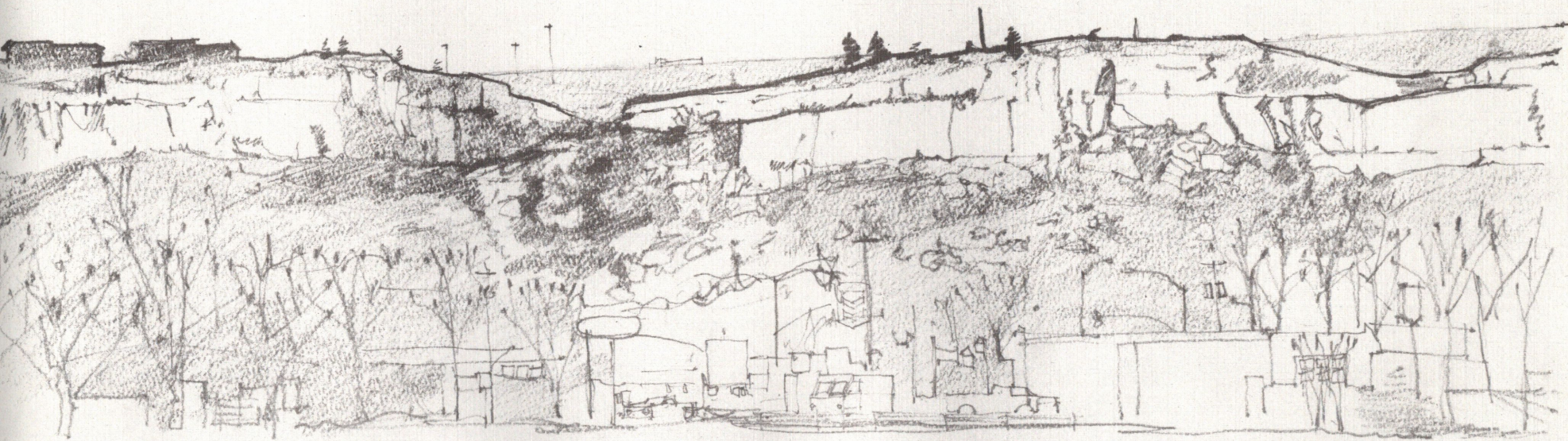
SEWER AND FRESH
WATER ACCESS
1600' TO THE WEST.

PP

TELEPHONE LINES

Existing Utility Service

scale 1" = 100'



Programming Process

Programming the Overall Scale of the Project to fit the Site.

The sensitive nature of placing a built form into the natural setting of the Billings' Rimrocks has dramatized the importance of arriving at a harmonic unity between the site and volume of built form. Due to the uniqueness of the site, I feel that it is highly inappropriate to start with an adopted program and apply it to the site. The program, if it is going to be sympathetic to the site, should be a product of the site. The building should be responsive to the scale, massing, visual impact on the city and its neighbors, and intricacy of the site itself.

In order to achieve this unity, I went through two studies. The first study is an analysis of the approximate area needed to house a guest space of the desired quality. The second study is an analysis of what volume of building is appropriate for the site. It will incorporate the results of the first study, to turn the volume of the building into the number of guest rooms for the program.

Programming, Guest Room Area Study

Goal

To develop the approximate area required to house a comfortable, quality guest room.

The importance of determining the area of the guest room is to determine how many units can fit within a set volume and dictate the size and number of support spaces required. For example, if the room area is decreased, the more units can be placed into a set volume. With more units, the space requirements for support functions such as lobby, linen and mechanical increases.

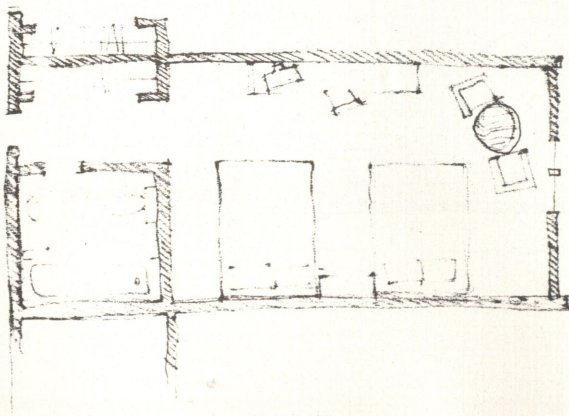
To arrive at what I feel is the approximate area required for the guest units, I have produced a series of room layouts. The first starts with a very basic layout for a guest room with two double beds. The basic layout subsequent studies add floor area and amenities that begin to show the range of possibilities from a basic room to a deluxe suite.

As a result of the following studies, I feel the desired quality of space can be achieved for a two queen bed unit in about 350 square feet, a single queen bed unit in about 290 square feet and a suite would require in the range of 640-680 square feet. These studies are not trying to dictate what the final spatial arrangement will be, but they give a general feel for what may go into the final guest space.

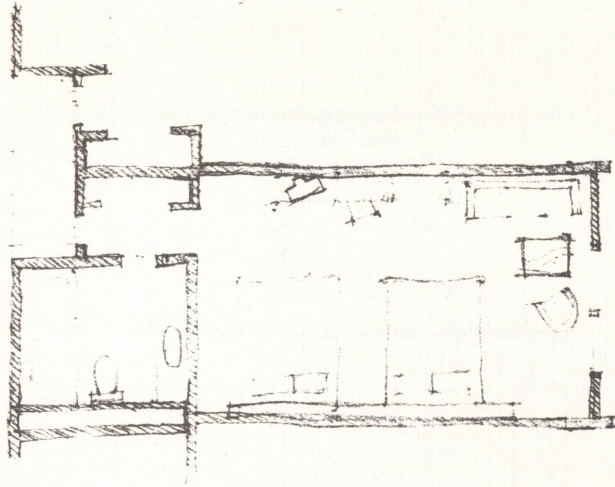
Guest Room Study #1

260 square feet

- combined sleeping and living space
- bathroom is small with no separate space for dressing
- single storage closet in entry
- small window area probably with a view to the parking lot
- no entry space out off corridor traffic
- minimum ceiling height



#1

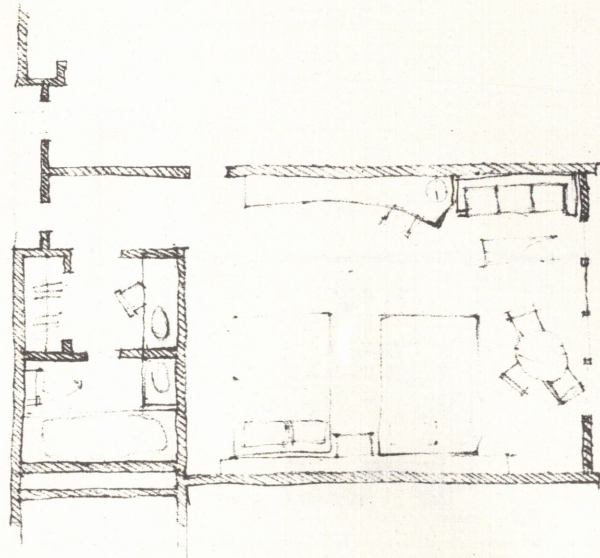


#2

Guest Room Study #2

300 square feet

- combined sleeping and living space
- expanded living/sleeping space
- larger bathroom, still no separate dressing space
- looser furniture arrangement
- entry door pulled off corridor
- head board for beds
- arrangement becoming looser but still does not allow any flexibility or separation of area

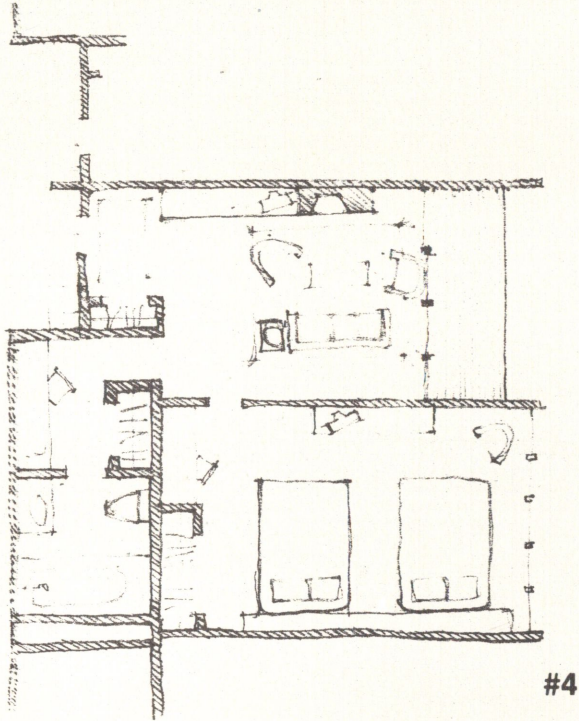


#3

Guest Room Study #3

364 square feet

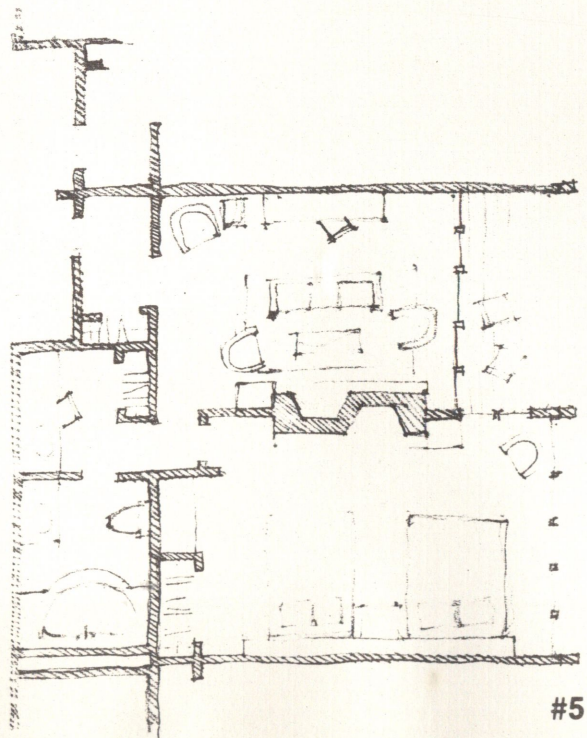
- combined sleeping and living space
- expanded space allowing more freedom of movement
- more casual seating arrangements possible
- bathroom separated into bath area and dressing area
- extra vanity and basin easing load on bathroom
- larger window area
- higher ceiling height
- this arrangement becomes more versatile and begins to approach the limit of volume of space without going into separate living and sleeping areas



Guest Room Study #4

560 square feet, Suite

- living space separated from sleeping space
- entry area both off corridor and inside guest spaces
- separate closets for coats and clothing
- the addition of a fireplace
- separate living area provides for more diverse use
- extension of space to the exterior with a balcony
- more of a home like environment
- larger bathroom with separate dressing area



Guest Room Study #5

680 square feet, Suite

- living space separated from sleeping space
- spaces enlarged
- dual fireplaces
- area rugs
- entry to bathroom and sleeping space removed from living
- more furniture for a variety of sitting relationships
- separate bathroom and dressing areas
- jacuzzi bath tub
- entry area with coat closet
- more window area with a variety of views
- built in televisions, stereo and wet bar
- this suite would probably have the highest ceiling heights and a variety of ceiling heights
- the scale of this space seems adequate to provide very luxurious accommodations for the guests

Programming, Building Volume Study

Goal

To achieve a harmonic unity between the amount of building volume and the environment into which it will be placed.

The process of determining the gross volume of building for this site is primarily an intuitive process. There is no patterned answer of land to building ratio. I tried to deal with the problem by combining rational thought and intuitive feeling to develop gross building volume.

The first phase was to determine where the natural and man-made boundaries of the site exist. The edges are defined by things like cliff face, property lines, and Highway #3. These boundaries are well defined, but in other areas the edges are not legally sanctioned or physically implied. These edges, as in the ravine and on the east end, become transition zones between my site and the public park. This analysis defines the overall site area.

The next step was to reanalyze some of the site analysis material on public and private zones, topography, set backs and degree of construction difficulty. I combined this with some intuitive responses to aesthetics and areas of visual sensitivity. As a result, zones of net buildable area begin to evolve.

After documenting the net buildable areas two-dimensionally the need to explore massing and building arrangements within those areas became apparent. For this part of the analysis, I completed a series of generic three-dimensional studies. By constructing a series of masses approximately the depth of a guest room and corridor, with a two-story height, along with masses for lobby, restaurant-bar and administration, I was quickly able to go through a series of exploratory exercises. In these, I first loaded the buildable area to the point of over saturation, then in each successive study changed the arrangements, the amount of building volume, or both. Each study was recorded and analyzed in respect to the site and in respect to the massing effects from the viewpoint of the city.

POSSIBLE PARKING AREA
OUTER LIMITS UNDEFINED.

NATIONAL GUARD ARMORY
EDGES DEFINED BY SITE LINES.

POSSIBLE PARKING AREA
OUTER LIMITS UNDEFINED.

110'

HIGHWAY EASEMENT
NONBUILDABLE ZONE.

820'

MAN IMPOSED SITE LINE
NO NATURAL EDGE.

5.5 ACRES OF SITE AREA

AT THIS POINT THERE IS
NOT A HARD LINE TO
DEFINE THE EDGE BUT
RATHER A ZONE OF
TRANSITION BETWEEN
THE TWO DOMAINS.

DRASTIC 50'-60' DROPS AT THE
CLIFF EDGE FORM VERY HARD
BOUNDARY EDGES.

Edge Study

Defining site boundaries
scale 1" = 100'

POSSIBLE PARKING

HIGHWAY SETBACK 110 FEET UNBUILDABLE

VEHICULAR INTERFACE

MIDDLE BUILDABLE AREA
MORE DIFFICULT FOUNDATION
DETAILING, ACCESS MORE DIFFICULT

UPPER BUILDABLE AREA
STANDARD CONSTRUCTION, EASY ACCESS

LOWER BUILDABLE AREA
MOST DIFFICULT CONSTRUCTION,
ACCESS DIFFICULT

**RAVINE FORMS
VISUAL BUFFER
BETWEEN PARK
AND SITE.**

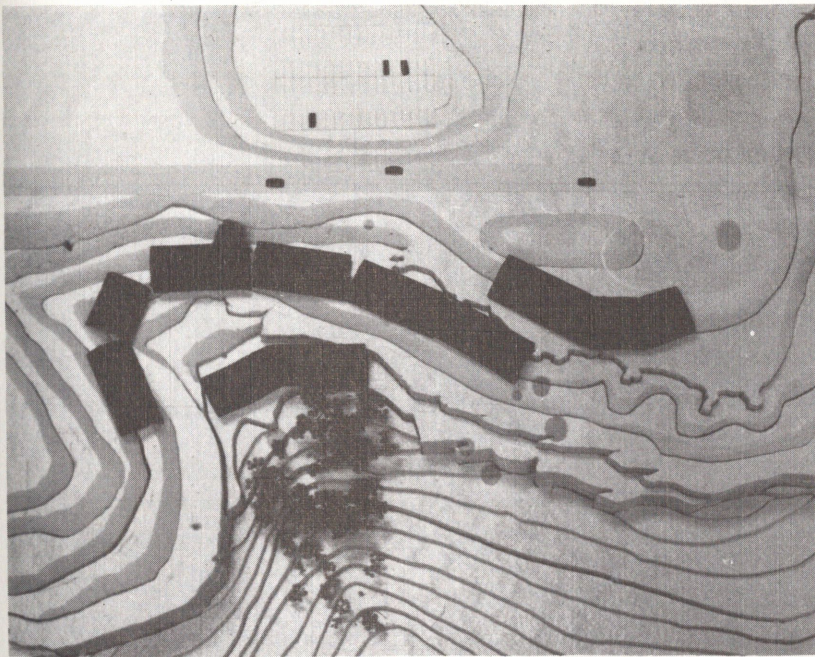
**BUFFER ZONE TO REDUCE IMPACT
ON SKYLINE AND MAINTAIN
ROCK FACE.**

**VISUAL BUFFER ZONE
BETWEEN PRIVATE
RESIDENCES AND
HOTEL COMPLEX.**

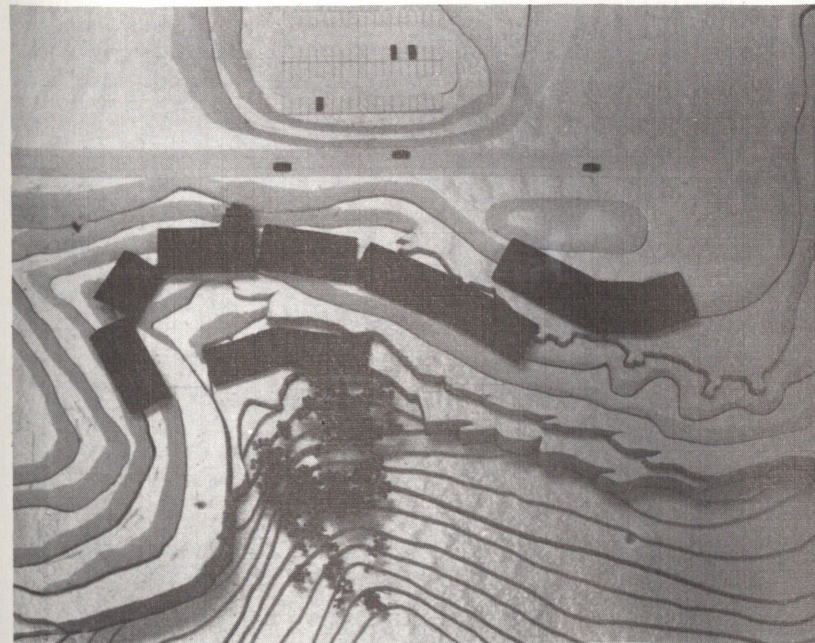
Net Buildable Area

Compilation of public and private zones, topography, difficulty of construction and visual buffer zones to develop a net buildable area.

scale 1" = 100'



#1



#2

By using general room sizing and ratios of the different types of guest room accommodations previously developed, I was able to assign an approximate number of guest room units to each study. The studies ranged from 75 down to 37 units as shown and analyzed on the next few pages. The studies do not attempt to show concepts but merely building volume compatible with the site.

Realizing that the majority of the analysis is left up to intuition and is subject to personal interpretation, I feel that this site can accommodate approximately fifty guest units and their auxiliary spaces in a three tier layout. The fifty units seem to develop a comfortable massing, good building to open area spatial relationship, a good scale to the Rimrocks and other buildings in the area and are not insensitive to the skyline.

Building Volume Study #1

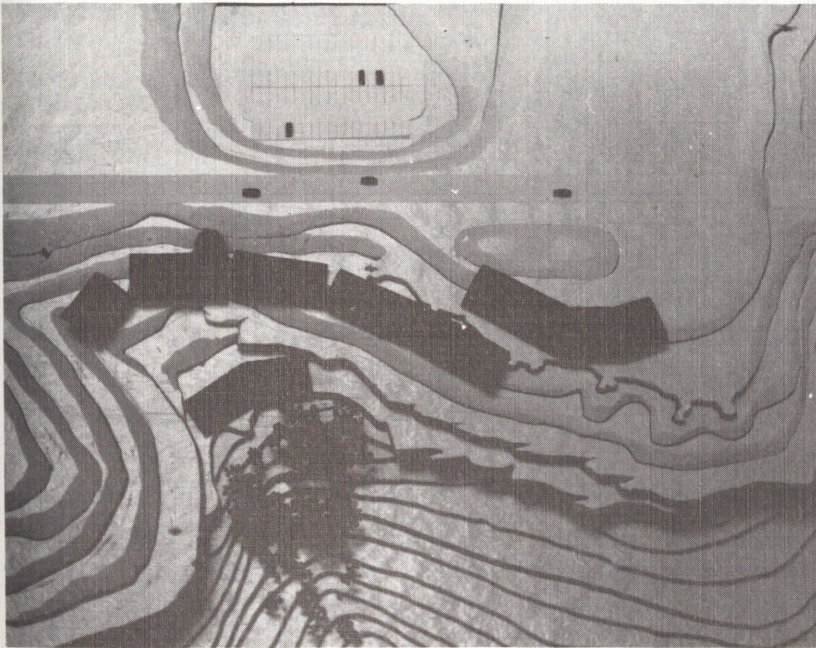
75 Units

- three tier plan with two story, single loaded corridors throughout guest accommodations
- tightly packed layout separates site into front and back sides creating a visual barrier
- lowest tier being two levels tall interrupts view from units above
- view back into other units reduces privacy
- hook layout creates inward focus
- excessive distance from one end to the other
- excessive site coverage in this study

Building Volume Study #2

65 Units

- lowest tier reduced to one level eliminating ten units
- view over lowest tier of units is easier
- plan still has a front and back not allowing a view through the structure to the Rimrocks' edge
- view back into other units reduces privacy
- hook layout creates inward focus
- better scale from below
- excessive site coverage in this study



#3

Building Volume Study #3

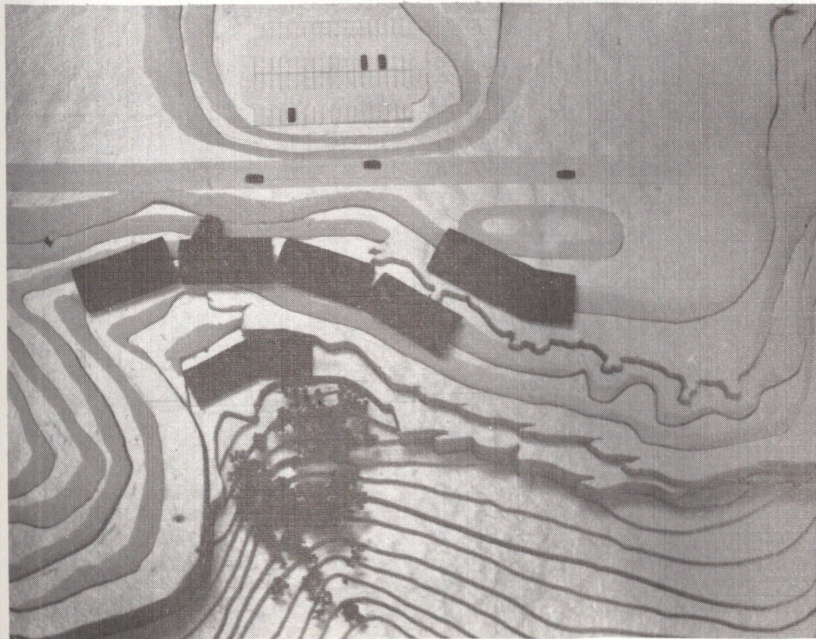
53 Units

- west end block of units in center tier and lower tier is reduced, eliminating 12 units
- lowest tier of units fits onto its shelf better
- views back into other units eliminated
- reducing hook decentralizes the focus
- reduced volume in skyline
- reduced overall length
- units still have a front and back
- less interruption of view of the residents to the west of my site

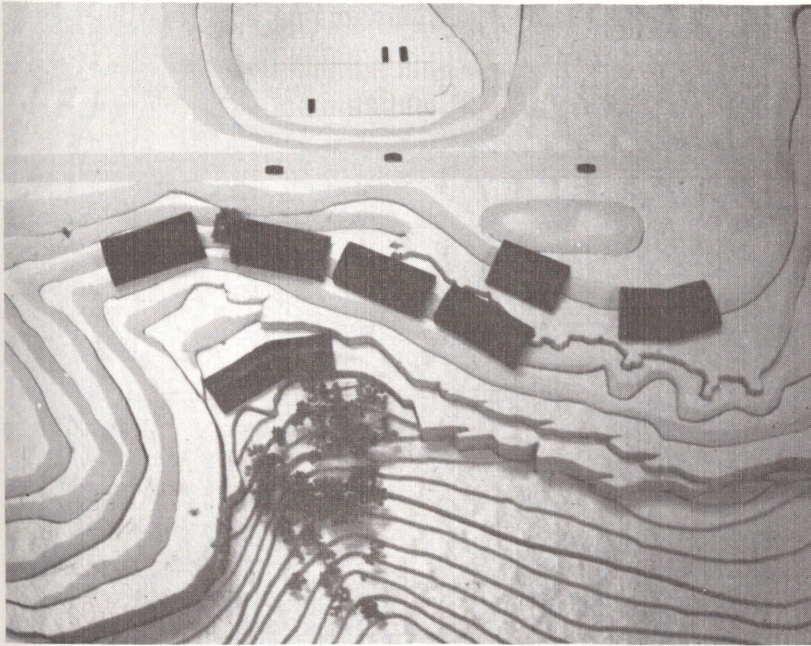
Building Volume Study #4

47 Units

- six units removed, restaurant and lobby volume reduced
- complex shifted to the west
- tighter more compact arrangement leaving larger open spaces
- restaurant loses its relationship to downtown
- volumes moved into the ravine reduces the impact of building on skyline
- reduced view to and from residences below



#4



#5

Building Volume Study #5

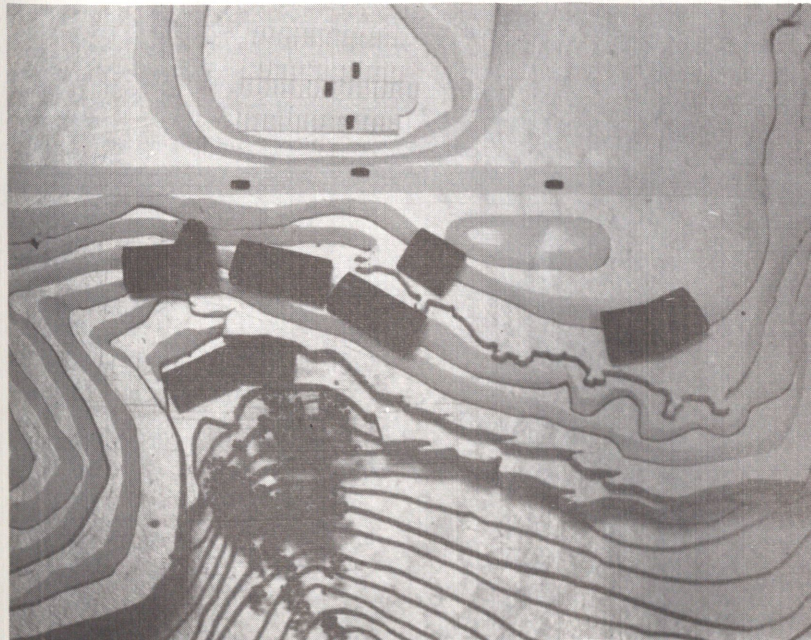
47 Units

- blocks of units are broken apart and spread across the site
- overall mass is broken down
- views of Rimrocks allowed to penetrate through the building to involve front with back sides
- restaurant-bar is oriented toward city center
- restaurant-bar becomes its own entity
- connections difficult for guests
- this scheme takes up too much of the site

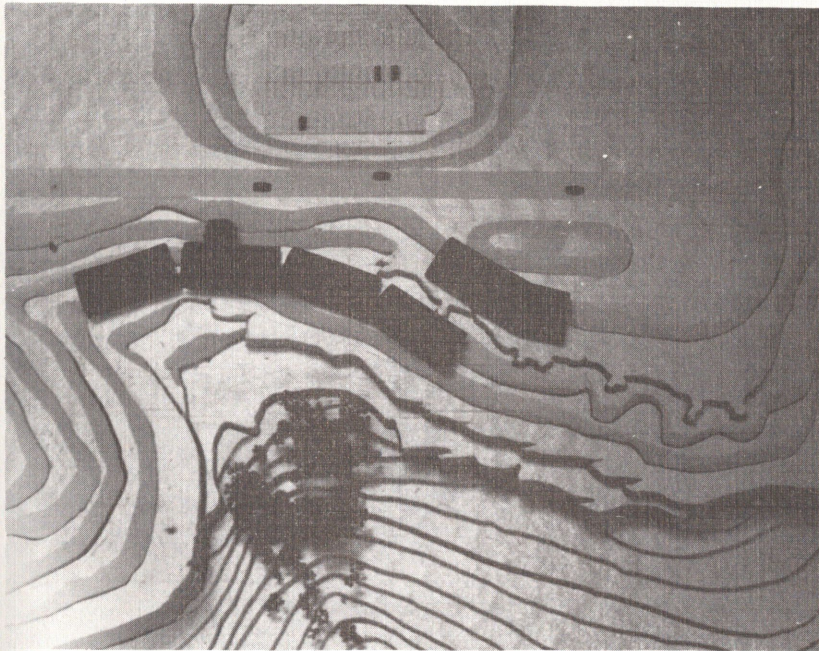
Building Volume Study #6

43 Units

- restaurant-bar is further separated and number of units is reduced by four
- less tension between hotel and restaurant-bar
- creates a good vista between the buildings
- smaller number of guest units on middle tier loses some ability to express the natural curve of the site



#6



#7

Building Volume Study #7

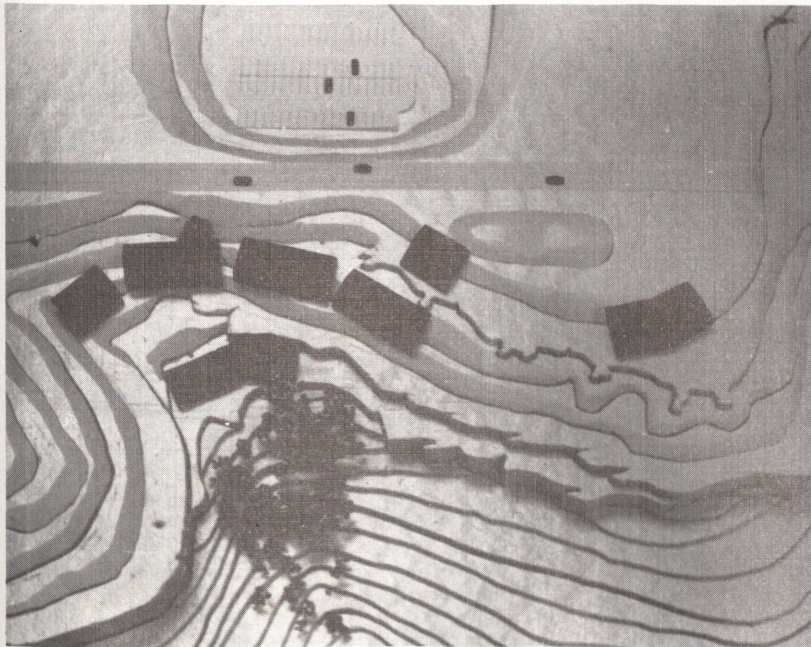
40 Units

- the same tightly packed arrangement of units as in study #4, but the lowest tier has been removed
- eliminates a difficult connection to the lowest tier
- view over lowest tier is eliminated
- building does not flow down into the site
- lower tier added interest and broke down the more static linear arrangement
- complex is losing its scale with the rock faces and other buildings in the vicinity

Building Volume Study #8

37 Units

- reduction of volume down to 37 guest units
- too few guest units to achieve unity in this layout
- this layout can not reflect the natural lines of curvature on the site
- out scaled by condominiums and National Guard Armory



#8

Concept Schematics

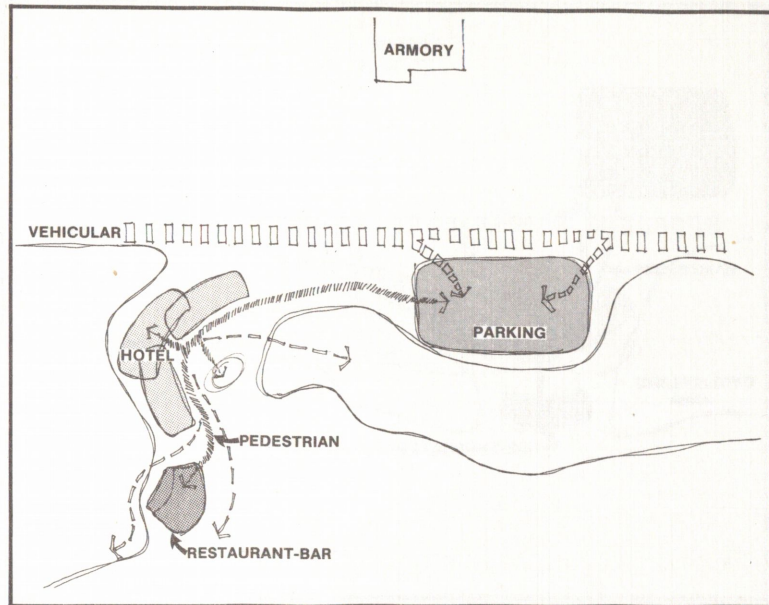
The preceding process was useful in that it narrowed the number of guest units down to a feasible range for the site of 40-50 units. The study also opened up avenues for further exploration at the schematic stage. By trying to limit the building volume study to generic masses I effectively eliminated some of the basic issues that could effect the final scale of the project. Some of the issues that were left out and then later addressed graphically in the concept schematics are the following:

- Site circulation of cars and pedestrians.
- Open exterior spaces.
- The studies only work with one area of the site.
- They are limited to exploring only a very linear layout.
- Parking relationships are not expressed.

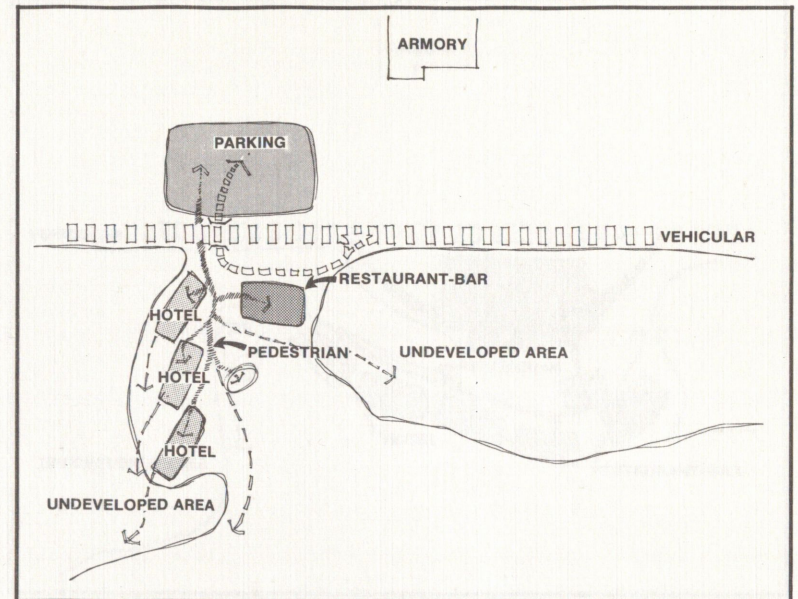
The concept schematics then pick up where the building volume studies leave off. The following schemes range in their placement on the site from one extreme end to the other, from very linear to very tight and compact layout. With this variability the program also varies. Spaces like hotel lobby and the dining space can fluctuate in their size, character, address to the city and orientation to the complex as a whole. By designing out of a concern for this site many of these programatic issues develop out of the concept schematics and then can be programmed to work with a particular scheme.

The Concept Schematics #1-4 show schemes developing in the western ravine area. Scheme #1 shows the restaurant/bar pulled out onto the point area with all of the hotel functions happening on the western side of the ravine. Schemes #2 and #3 show the ravine dividing the two functional halves with restaurant/bar on the east and hotel to the west. Parking is now on the farside of the highway. The fourth scheme allows the hotel to span across and link the two sides of the ravine. The restaurant/bar in this case is dropped down into the ravine itself.

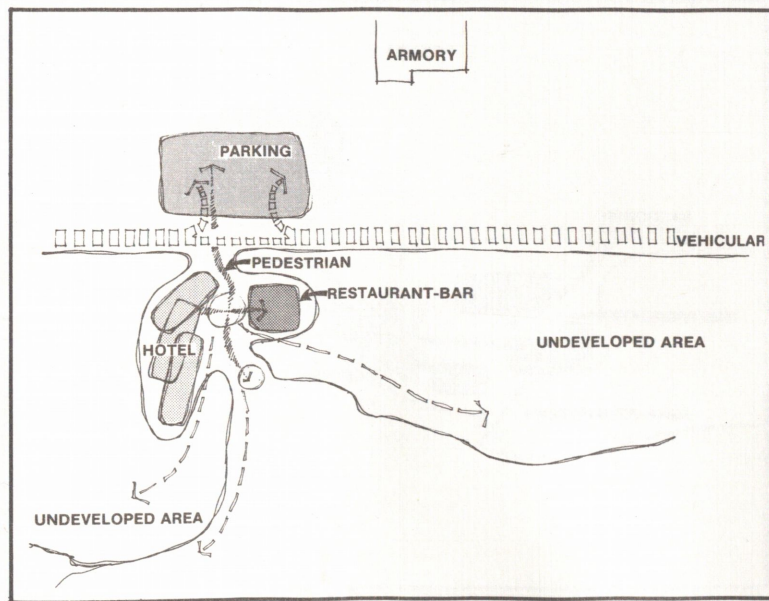
The Concept Schematics #5-8 try to explore possibilities in the knoll area. Scheme #5 develops the hotel spaces on the upper tier of the site and drops the restaurant/bar down onto the



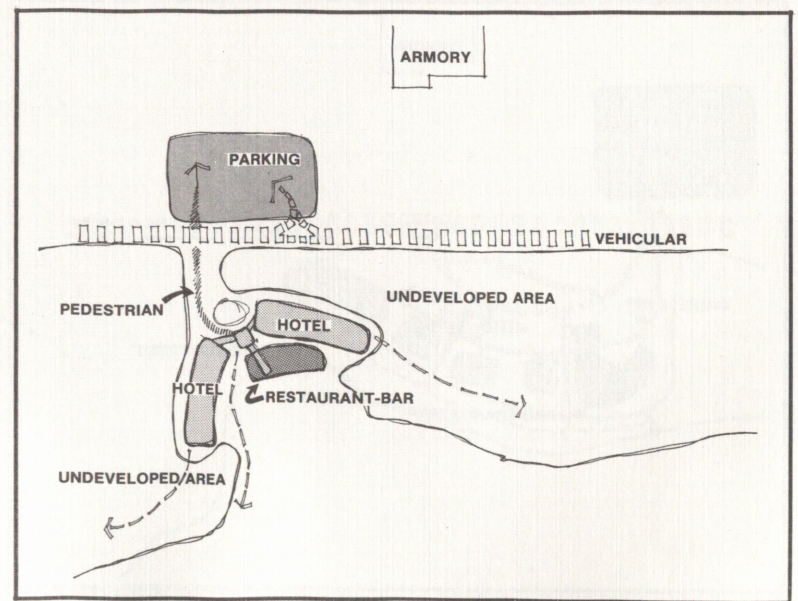
#1



#2



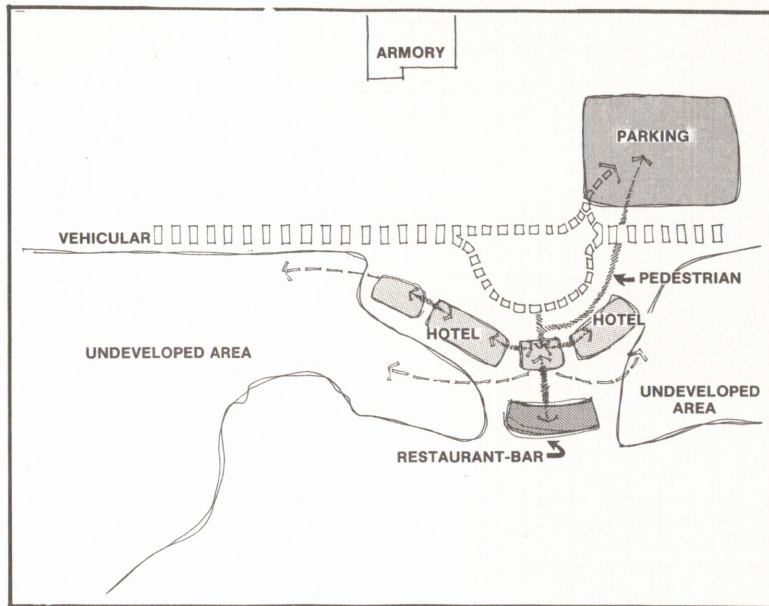
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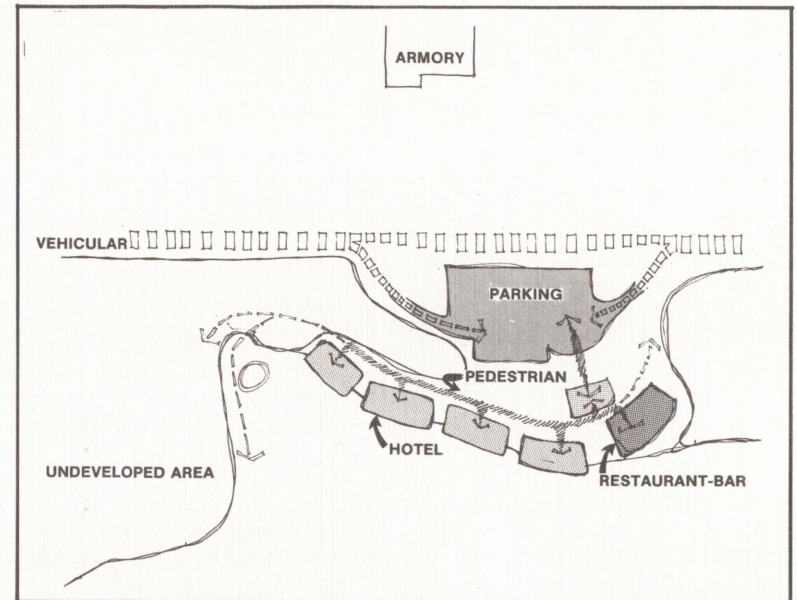
#4

Concept Schematics 1-4

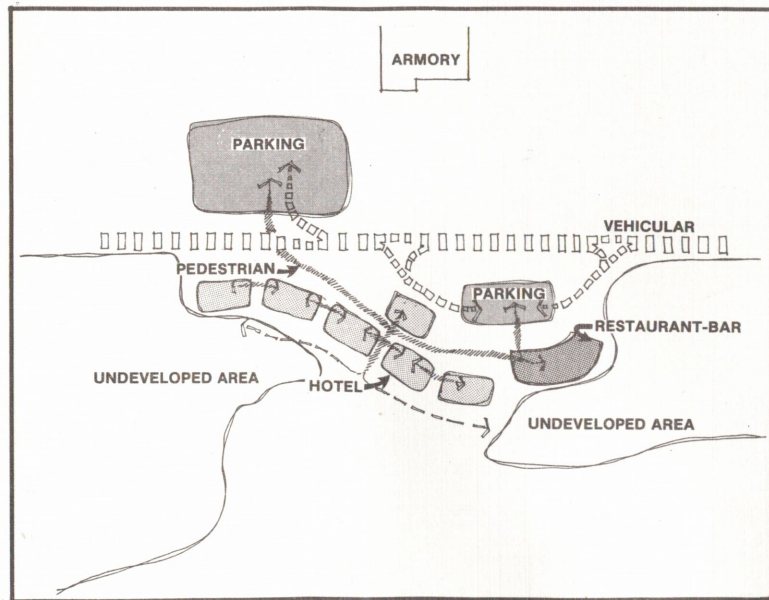
Developing site area around western ravine.
scale 1" = 200'



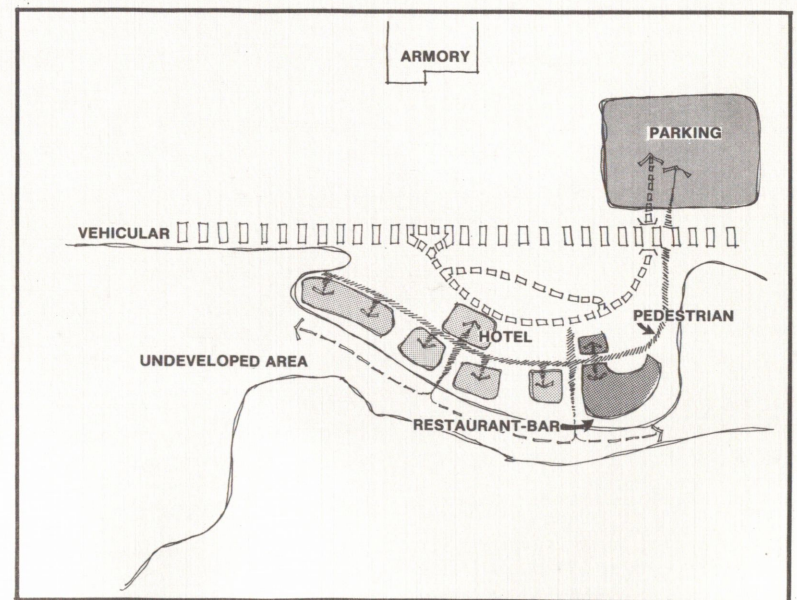
#5



#6



#7



#8

Concept Schematics 5-8

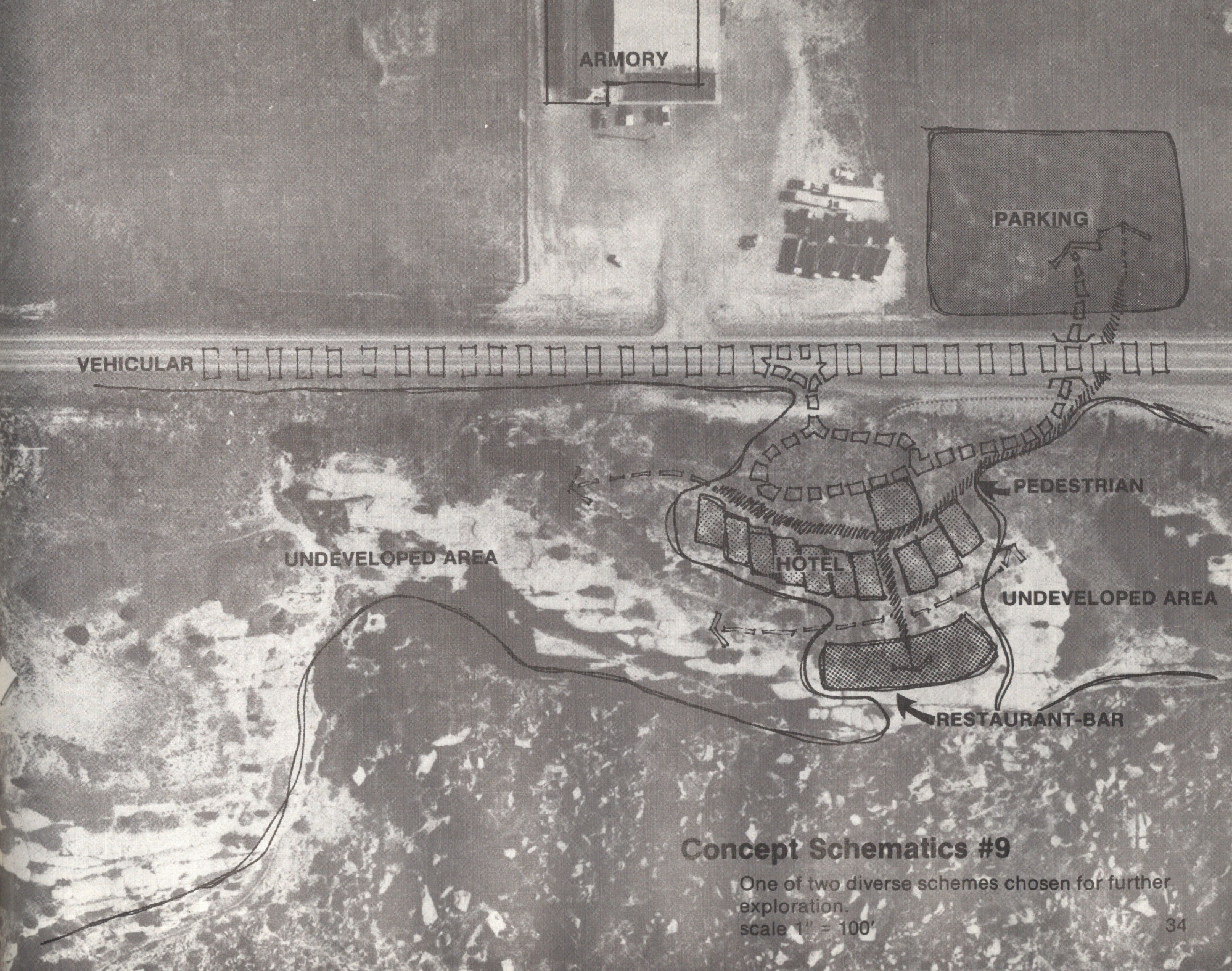
Developing eastern knoll portion of the site.
scale 1" = 200'

second tier for a prominent position on the skyline. In scheme #6 the restaurant/bar and hotel are pushed out and overhang the cliff face. Parking is pulled back onto the site causing the building to be approached through the parking. Both schemes #7 and #8 take a long, linear layout on the two levels of the site. Parking in both cases becomes a long distance away from the central lobby area.

Concept Schematics #9 and #10 were selected for further development because they represent two diverse conceptual directions. Scheme #9 develops the land area out on the crest of the knoll. This scheme is the most condensed of all and exhibits centralized circulation system. The concept would be to build on the land with a three-to-four story structure breaking above the skyline. The complex would become very visible from the city and the approach. This high visibility leads to a very forceful statement on the landscape. The complex in this case may want to work towards a separation of the site and the built form.

Concept Schematic #10. This scheme develops the ravine area of the site. The concept behind this scheme is to bridge the ravine linking the two sides. The ravine itself would be extended through the highway with a pedestrian and vehicular access. This tunnel passage would symbolically reconnect the ravine with its other half that was separated by the highway infill. The restaurant/bar would flow down into the ravine echoing the flow of natural land forms. This design would allow the building to nestle into the contours to harmonize with the land form and reduce its impact visually on the Rimrocks. The highway infill and two knolls to the east and west help to surround the complex and create a more tranquil setting in comparison to the active knoll area.

Concept Schematic #10 appears to have achieved more of a harmonic unity with the Billings' Rimrocks than any of the other schemes developed at this point. Since the intent of this thesis is to achieve a harmonic unity between the natural context and the built form, I will develop this final concept schematic into a finished architectural design.



ARMORY

PARKING

VEHICULAR

PEDESTRIAN

UNDEVELOPED AREA

HOTEL

UNDEVELOPED AREA

RESTAURANT-BAR

Concept Schematics #9

One of two diverse schemes chosen for further exploration.

scale 1" = 100'



Program

Sandcliff Hotel

In programming, it is my ambition to concentrate on the quality of public space. The reason the guests will select this establishment over all the others is the quality of the environment and the quality of the service available to them. The quality is not found in excessively extravagant spaces but in the way the spaces work by themselves and as part of the entire complex. Therefore, logical fluid movement throughout is highly important. The complex should offer the visitor a variety of experiences as he moves through the spaces. The most important ideal to maintain in programming and design is that the site has a tremendous built-in quality, spirit and sense of place and every effort must be taken to maintain and enhance those qualities.

Main Entry

Function

Access from drive into the building.

Goal

Create an inviting entry statement that provides access into the lobby area of the complex. This access should be negotiable by the physically impaired.

Needs

Covered entry walk, signage, vestibule, massive entry doors.

Location

Unmistakable from entry drive and must enter into an area with direct visual access to the front desk.

Front Desk

340 square feet

Function

Registration and check-out, information, mail and message service for the guests, storage of valuables, confirmation of reservations and telephone switch board.

Goal

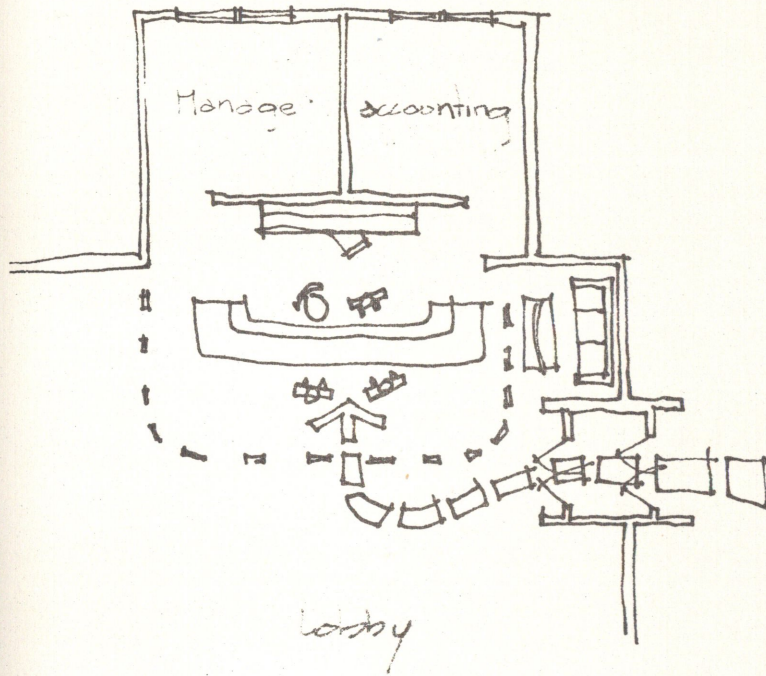
Since this is one of the first areas to address the guest it is very important that it establish the quality of service and quality of accommodations to be expected in the complex. It must be able to function smoothly under all conditions.

Needs

Walk up counter space, cash drawer, mail rack, safety deposit boxes, key rack, storage, room rack, house phone, switch board, work table, computer terminal, and easy movement behind and in front of counter, public telephone.

Location

Direct visual and physical access from front entry, possible location of the administration offices directly behind front desk.



Lobby Space

Function

To provide a space off of the main entry circulation and front desk area for waiting, meeting with others and relaxation of the hotel guests out of side their rooms.

Goals

Whether used or not, this space becomes very important to the guest as a reflection of the quality of the establishment. The space should be inviting and relaxing. The space should incorporate a good view to the city for orientation.

Needs

Comfortable seating, coffee tables, reading lamps, possible fireplace.

Location

Located off main circulation areas, yet directly accessible from main circulation and visual access from the front desk area.

Manager's Office

160 square feet

Function

Office space for sales promotion, consultation with guests, employee conferences and hotel management.

Goals

To create a space that is comfortable for the employees and is a reflection of the same quality of space as in the lobby area.

Needs

Work space, file storage, two guest chairs, desk and manager's chair.

Location

Direct access from lobby, close association to front desk and accounting office.

Accounting Office Space

140 square feet

Function

Office space for day-to-day bookkeeping, annual reports and file storage.

Goals

To create a functional, comfortable working environment for the accountant.

Needs

Work desk and chair, abundant file storage, small computer and guest chair.

Location

Close association with front desk and manager's office.

Public Rest Rooms

2 @ 100 square feet

Function

To handle the rest room needs in the public lobby areas of the hotel.

Needs

- Male - one water closet, handicapped equipped, one urinal, two sinks.
- Female - two water closets, one standard, one handicapped equipped, two sinks.
- Both require easy access for wheelchairs. Mirrors and hand dryers.

Location

Easily located off main lobby.

Guest Room Corridors

Function

Access to guest rooms for guests and service, fire exits.

Goal

The corridors link the public spaces to the private guest spaces so this should be a sequential movement from space to space marked by changes in scale, light, texture and change in direction. The corridors should have easy fluid movement and a sense of direction.

Needs

Carpet, fire controlled doors, space to pull maid cart out of the traffic while servicing the room, individualized entries to guest spaces, emergency lighting.

Location

Logical relationships to public spaces.

General Storage Areas

Function

Storage areas for extra furnishings and equipment.

Goal

Provide convenient storage adjacent to rooms that it would serve.

Need

Large doorway and an interior space large enough to accommodate extra beds, chairs, etc.

Location

Preferably out of the sight of guests possibly combined with maid closets.

Mechanical Space

350 square feet

Function

Housing heating, cooling, electrical and telephone equipment.

Goal

To make mechanical space centrally located without using prime habitable space. The mechanical space should be unnoticed by the guest, i.e. sound, vibration.

Needs

Cooling tower for ventilating, direct access to the exterior through oversized exterior openings to service equipment.

Location

Centrally located along exterior wall and away from guest rooms.

Guest Room

The quality of the space will be a result of an intuitive response to spirit, meaning, and place. Some of the things through which one might achieve humanistic quality in the guest spaces are the following:

- Fireplace - symbolic center of home warm and intimate.
- Set Back Entries - break down complex into more personal units.
- Controllable Lighting - allows for personal refinement of atmosphere.
- Original Art Work - personalizes each room.
- Paraphernalia - loose artifacts that represent those one might find in a place of dwelling.
- Separate Living Spaces - can be identified with the separate spaces found in the more relaxed setting of a home.
- View Out - should show a relationship of guest space to the rest of the complex and city to aid in identifying this as place through relative relationship to other places.
- Changes in Vertical Scale - enhance movement through space.

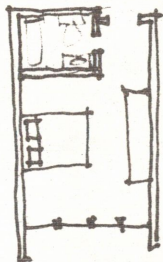
Function

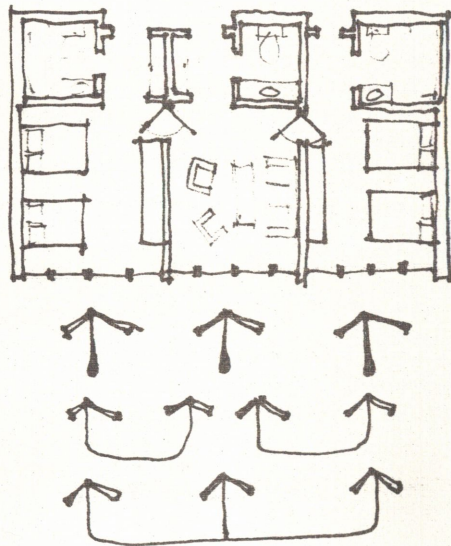
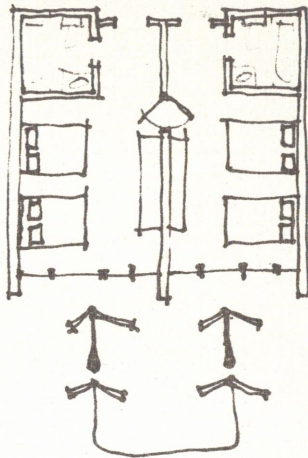
To provide a space for the temporary housing of the transient guest. To include areas for sleeping, personal hygiene, temporary storage, and leisure space.

The Single Room

12 @ 280 square feet

This room would serve the single business person or a couple. The single person would be more comfortable in a smaller room, a larger room or two beds would be out of place for the user. The space may have to function as mobile office requiring work space. This single person may be more apt to use the public areas of the hotel for interaction with others.





The Double Bedroom

26 @ 360 square feet

This room would serve up to four guests in two queen sized beds. This space would be most likely rented to a family or possibly to business people traveling together but not wanting to share beds. For a larger group traveling together, this space could be connected with another double or a suite room combination.

The Suite Room

6 @ 360 square feet

This room rented in combination with sleeping room(s) would make a comfortable area for gathering, entertaining, small meetings, or product display by traveling sales people. The suite room would have a living room atmosphere and its own private half bath. Thus, allowing the space to be rented as a bedroom/living room set, 2 bedrooms, and a living room, or the suite room could be rented by itself for meetings, displays or social gatherings.

Goals

Since the guest room is the fundamental unit in the hotel complex it is highly important that this space becomes responsive to the humanistic needs of the guest. This space is the guests' home away from home, if only for a short time. The space should provide the basic elements of quality, sense of place, personal identity, and orientation to the complex and the city.

Main Linen and Supply Storage

300 square feet

Function

Storage of clean and soiled linen, supplies and cleaning aids. Space used by maids for recharging service carts and casual gathering, pick up and delivery of linen. Linen to be contracted out.

Goal

To create a functional but hospitable space for the worker.

Needs

Table space for folding and sorting linen, storage for clean and soiled linen. Supply storage, slop sink, area for parking up to five maid service carts, small seating area.

Location

Should be removed from guest areas, easy access to maid closets and hotel service entries.

Maid Closets

70 sq. ft. min. required, 1/floor and 1/ 13 rooms

Function

Remote base out of which the maid services the rooms, storage space for the service cart supplies and equipment.

Goal

To provide adequate functional space close to rooms to be serviced for the routine maid duties.

Needs

Cart storage area, slop sink, storage for supplies and equipment.

Location

Easily accessed from main linen and supply storage close to rooms to be serviced, preferably out of the general corridor flow.

Grounds Equipment Storage

150 square feet

Function

Storage area for grounds maintenance equipment and supplies.

Goal

Easy access for grounds personnel.

Needs

Large access door for equipment, shelving and workbench.

Location

Out of view of hotel guests, best located adjacent to mechanical space, easy access to grounds.

Sandcliff Restaurant and Lounge.

The restaurant and lounge establishment will cater to the hotel guests and residents of Billings. The restaurant will offer a breakfast, lunch and dinner menu. The breakfast service will be directed toward the hotel guest. The volume of breakfast traffic will require only partial use of the dining area suggesting zones that can be open or closed as determined by demand. Lunch will be directed primarily towards the businessman offering soups, hot sandwiches and limited steak and seafood entrees. Dinner will feature entrees of seafood and beef. The dining area will have a full salad bar and an exhibition cooking area for final food preparation which will include flame broiling, steamers, griddles and holding. The restaurant's focus will be out to the views of the Rimrocks and the city below. The decor of the restaurant and lounge will be visually rich deriving its flavor from the context of the Rimrocks in contrast to applying a theme such as a western saloon or a fishing harbor. The dining experience should be one that acknowledges the context and enhances the experience of dining on the Rimrocks to the fullest.

Restaurant Entry

Function

To bring guests into the restaurant, transition between the outside and inside environments.

Goal

To provide for an easily locatable, inviting entry statement that is expressive of the quality of the environment to be expected inside the restaurant.

Needs

Entry statement, signage, menu display board, public telephone..

Location

Easy visual reference from hotel lobby, possible direct connection to exterior circulation, immediate relation to restaurant reception area.

Reception Area

Function

A gathering space for reception, orientation, waiting, transition from the outside to inside and the reverse, transitional space for internal functions.

Goal

To express within this space the organization for the public functions of dining, drinking and rest rooms. Exhibit an overall flare or character of the establishment, define zones of circulation for the incoming and outgoing traffic without confusion.

Needs

Control point for confirmation of reservations, counter stool, coat storage, comfortable seating for people waiting to be seated for dining.

Location

Directly inside entry, close access to lounge, dining and rest room areas. This access should be immediately apparent.

Rest Rooms

2 @ 130 square feet each

Function

Rest rooms for use by bar and restaurant patrons.

Goal

Provide clean rest room facilities that are easily locatable without direct visual access into rest rooms from public areas. handicapped accessible.

Need

- Male - Two water closets, one handicapped equipped, one standard, one urinal, two wash basins, mirror and hand dryer.
- Female - two water closets, one handicapped equipped, one standard, two wash basins, mirror and hand dryer.

Location

Easily locatable off main entry/reception area.

Function

Receiving, storage, preparation and distribution of food items. The process of preparing a raw product into a finished dish on the table is broken into four phases:

- **Receiving/storage:** This phase involves the delivery of the supplies, inspection and cleaning of goods and putting those goods into appropriate storage, i.e. dry, refrigerator, freezer.
- **Preparation:** In this phase the goods are prepared for use in the final cooking phase or for preparing foods that can be made during slow periods and stored in holding for later use. The preparation phase would include butchering meat, baking breads and desserts and preparing cold dishes.
- **Final preparation:** in this phase the food is given its final cooking and preparation. The food plate is then garnished and ready for distribution. This phase will be done in an exposed cooking area.
- **Distribution:** In this phase of the kitchen layout the waiter combines the food plate with breads, salads, drinks, desserts, etc. out of holding so that the circulation of this phase and the rest of the kitchen are separated. In this phase of the layout all the amenities needed to meet the needs of the guests are stored, i.e. silverware, butter, napkins. From this space the meals will be distributed to the guests.

Goals

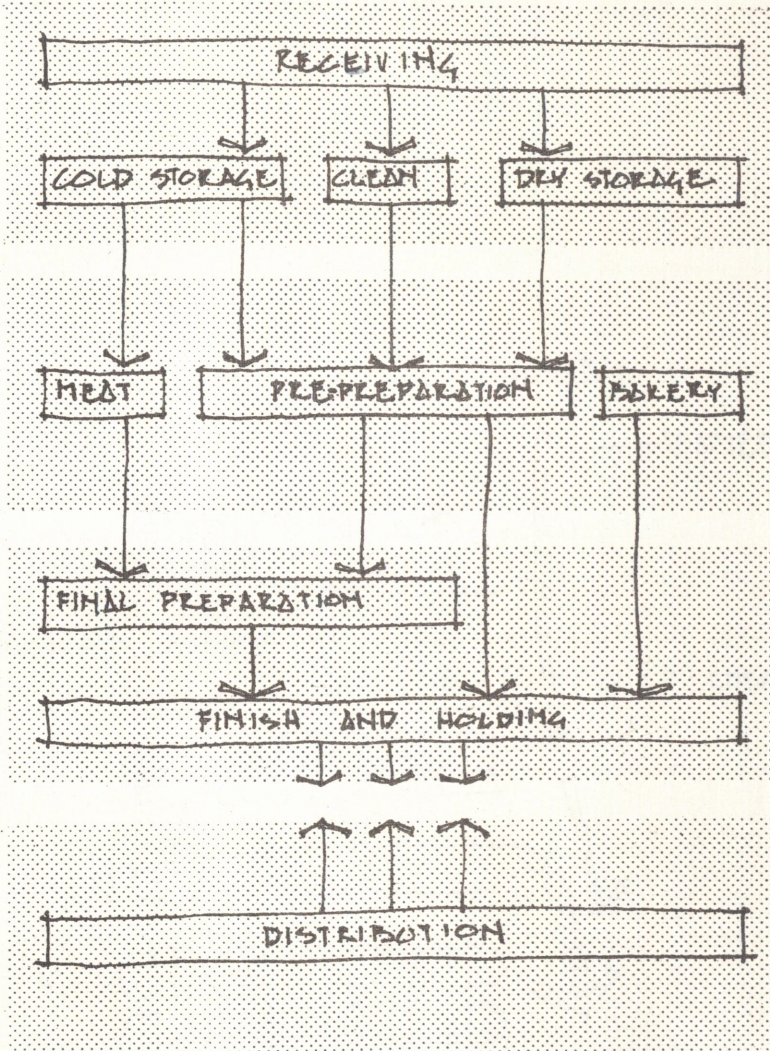
To provide clean functional work space with easy access to storage and serving area. The workers should be able to perform their tasks without interruption by others.

Needs

Dishwashing area, dry storage, cold storage, counter space, pot scullery, pot storage, food cleaning area, meat cutting area, baking area, holding for prepared foods.

Location

Easy service access, easy short access to dining spaces and final food preparation.



Food flow from delivery to distribution.

Exhibition Cooking Area, Salad Bar 195 square feet

Function

Final food preparation area to cook main entrees. All food will have been pre-processed, cleaned and placed into holding coolers prior to leaving preparation kitchen area.

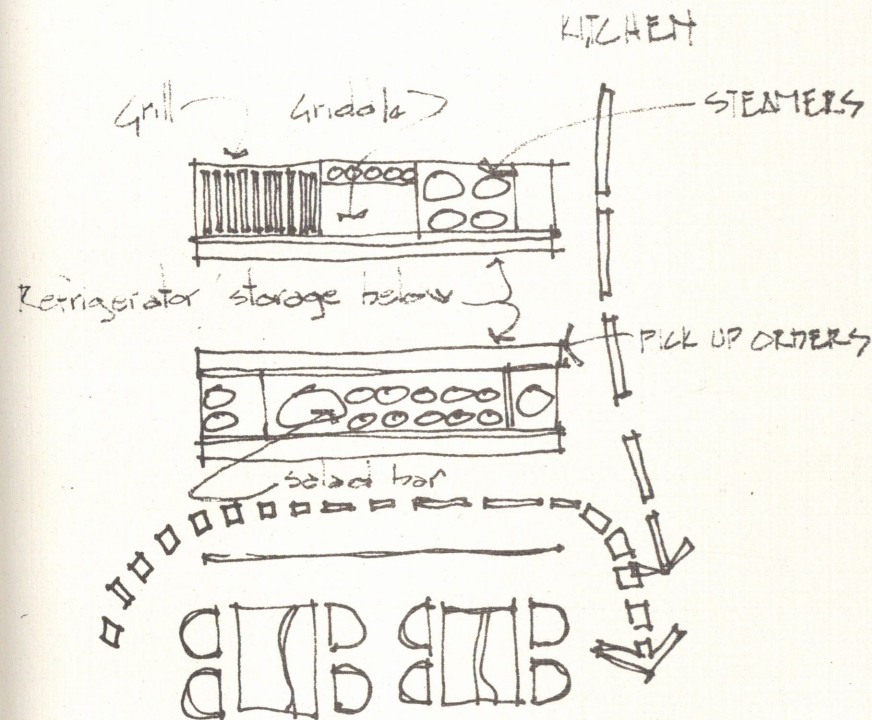
Self service salad and soup bar holds plates, bowls, salad, soup and garnishes for individual salad preparation by patron. Goal: to provide an area of activity within the dining area by displaying the final preparation process. This area must operate very cleanly and with a minimum of clatter. The idea is to enhance the dining experience through the senses of sight, sound and smell.

Needs

Grill, griddle, garnish, steamers, warmers, coolers, counter space for entree preparation and salad preparation, storage, dish storage, salad and garnish table with glass sneeze guard, exhaust hoods and fire control over cooking area, circulation for two cooks, patron circulation and line up area for salad bar.

Location

Direct access to preparation kitchen, easy access from all dining areas to salad bar.



Dining Area

90 people/1170 square feet total

Function

To provide an area for the comfortable seating and circulation for the diners while eating.

Goal

To create a relaxing atmosphere for dining. To create an atmosphere that changes during the day. Breakdown volume with changes in elevation, provide a decor that reflects the Rimrock context and takes advantage of the natural vantage point of the Rimrocks, provide easy circulation for diners and waiters. provide wall space for displaying original local artwork.

Needs

Tables, chairs, waiters stations, drop lighting, level changes, easy circulation for diners and waiters, fire exit.

Location

Oriented towards view of city, access to bar and entry, easy service from kitchen area, easy flow to and from salad bar.

Bar/Lounge

40 people/640 square feet total

Function

This area will be used for the distribution of beverages for bar patrons and also a service bar for dining patrons, Area to be used as a waiting area for the dining room and a social gathering area.

Goal

To create a comfortable relaxing atmosphere for entertainment. The goal is to create a lounge that is open and airy. The space should orient towards the view and be decorated in a way that reflects the context of the Rimrocks.

Needs

Bar counter, back bar, coolers, storage, bar stools, tables, chairs, couch seating, view, possible separation of restaurant service bar depending on arrangement.

Location

Direct access from reception area to bar. Access from bar to dining area, easy access for waiter to service bar.

Restaurant Manager's Office

120 square feet

Function

A space in which the manager can oversee all restaurant management, personnel, ordering, inventory, quality control.

Goal

To provide a comfortable office space with visual access to food preparation areas.

Needs

Work desks, chairs, files, vision panel.

Location

Direct physical and visual connection to the kitchen and access to service area.

Restaurant Employees' Lockers

160 square feet

Function

Lounge space for restaurant employees' breaks, changing and rest rooms.

Goal

Create a comfortable space for the employees as a benefit to their job.

Needs

Dining table with five chairs, twelve lockers, small rest room with sink, water closet, mirror and hand dryer.

Located

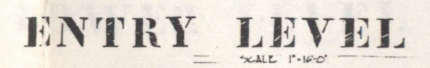
In kitchen area with possible view out.

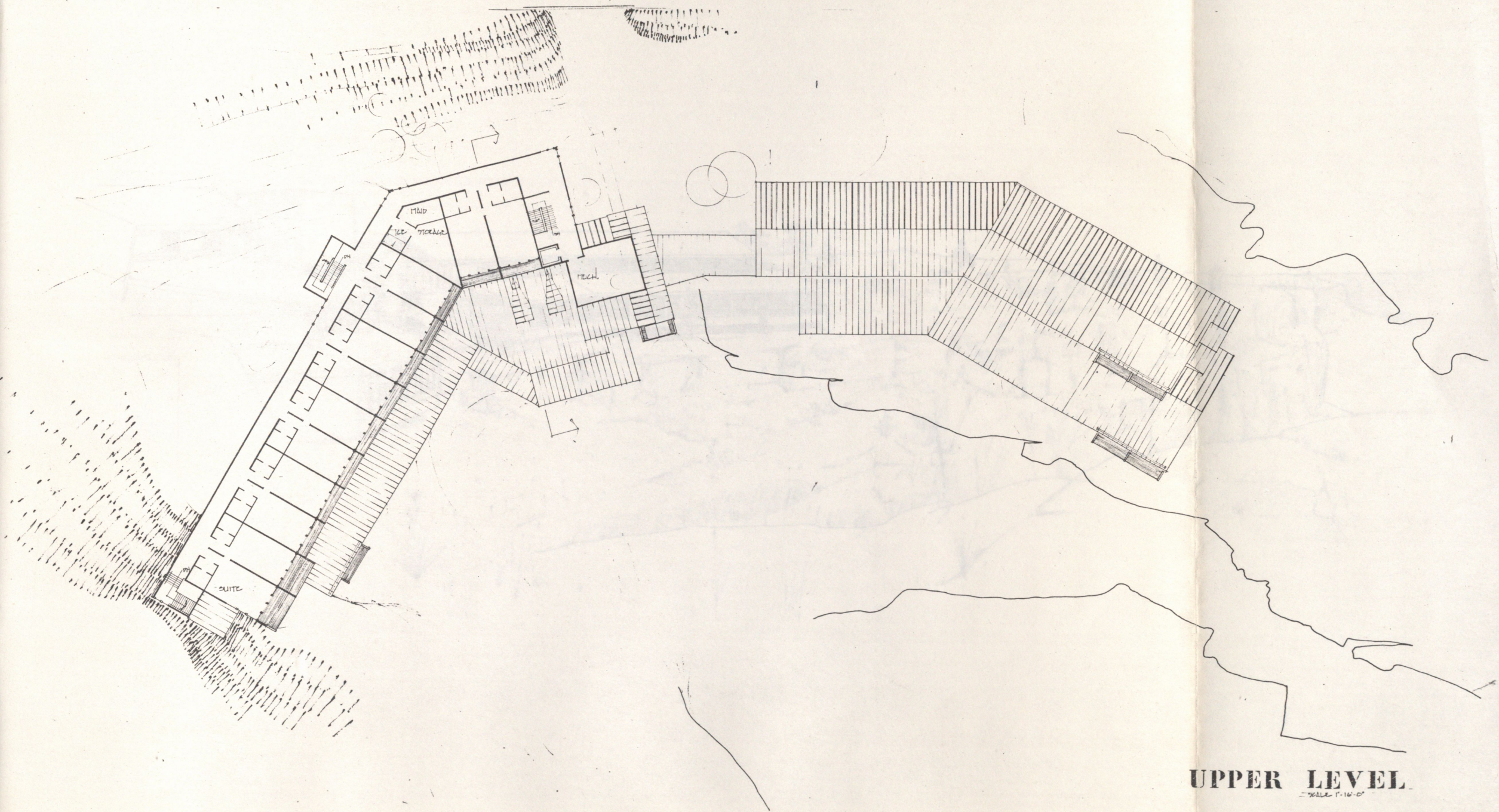
Footnotes

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3. Norman F. Carver, Jr., *Italian Hilltowns*. (Kalamazoo, Michigan: Documan Press, Ltd., 1980), page 8.
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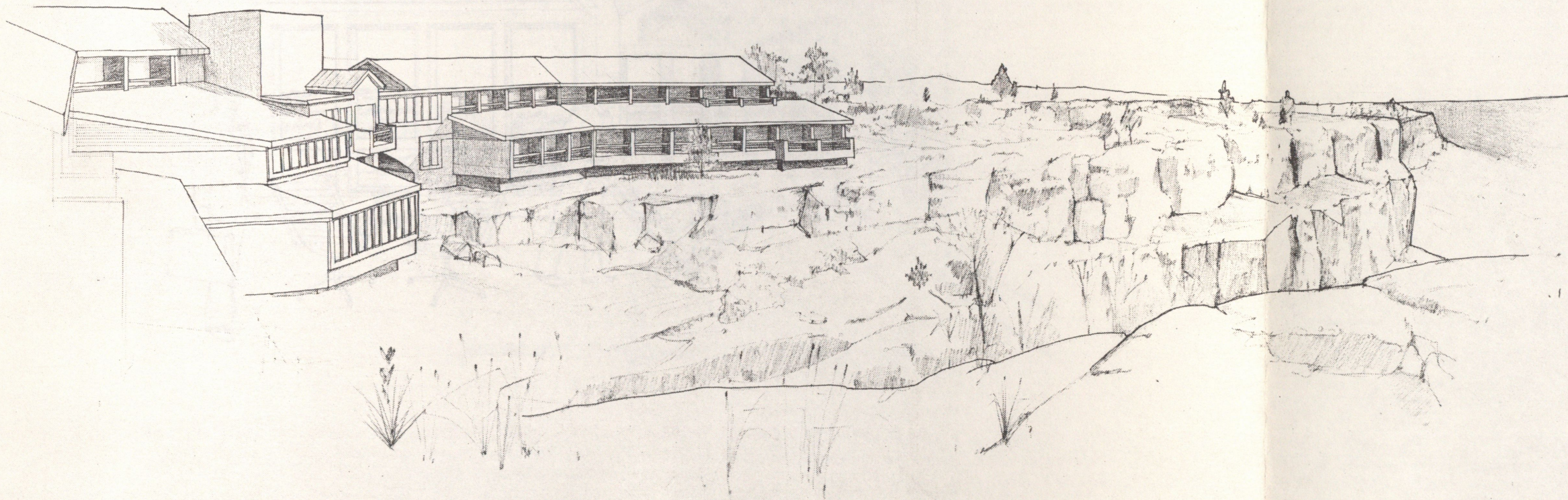
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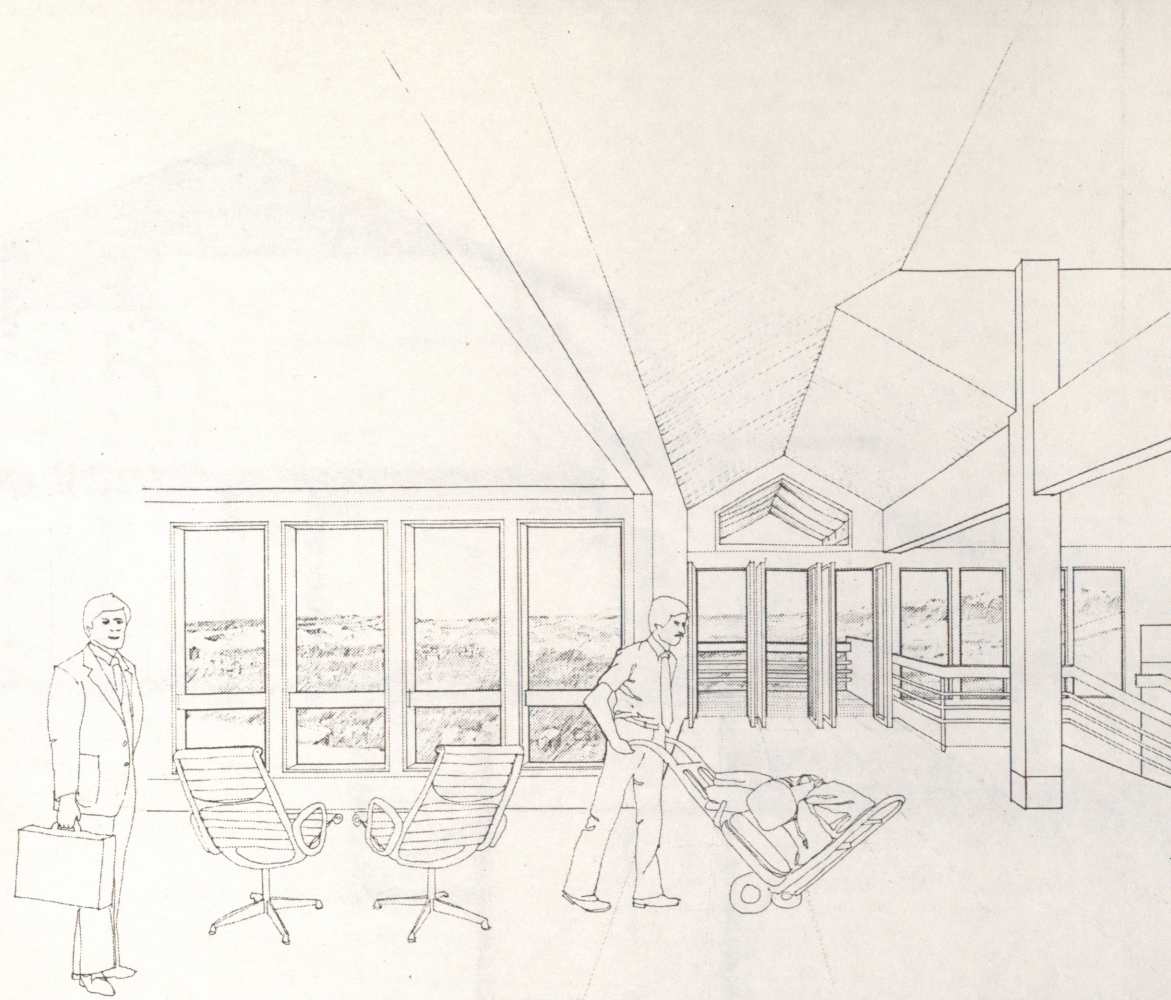
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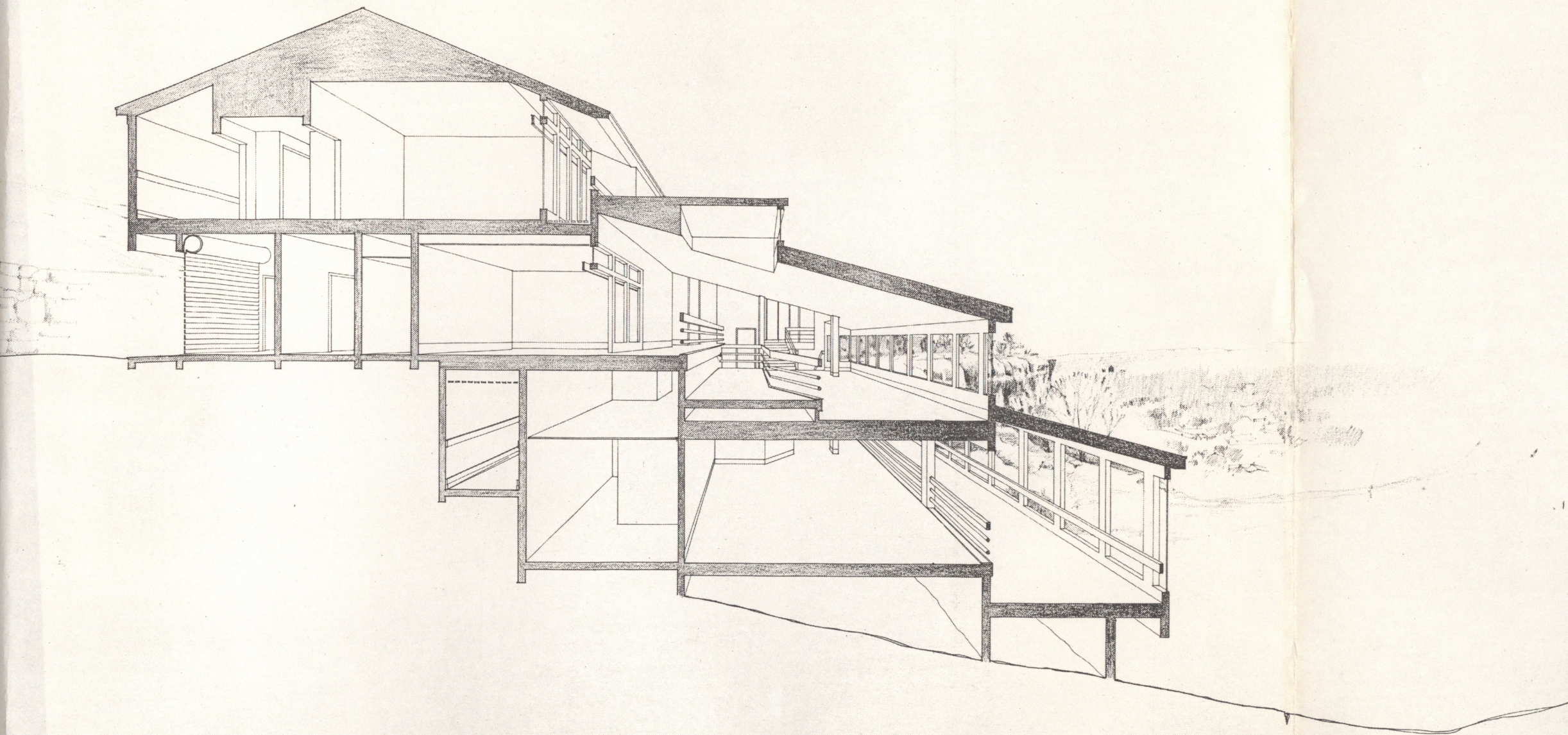


UPPER LEVEL
SCALE 1"=10'-0"





ENTRY LOBBY



SECTION
SCALE 1/16" = 1'-0"

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