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A SKI LODGE FOR SNOW BOWL

at

Missoula, Montana

Part I

Undergraduate Thesis in Architectural Design

By

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TABLE OF CONTENTS

Page

Introduction 1

Conditions Creating a Need 3

Local Conditions 8

Site Conditions. 12

Winds 13

Views 13

Soil Analysis 16

Vegetation. 21

Snow. 21

Utilities 22

Access. 22

Function 24

Introduction. 25

Resting and Eating. 25

Kitchen 26

Ski Patrol Station. 28

Rest Rooms. 28

Storage 29

Areas 29

Mechanical. 30

Aesthetics 31

Economics. 39

Cost Estimate 40

Considerations 40

Estimate 44

Page

Economics

Financing 46

Summary 48

References 55

TABLE OF ILLUSTRATIONS

		Page
Figure 1.	Pictorial Map of Snow Bowl	4
Figure 2.	View of Existing Lodge	6
Figure 3.	Highway Orientation.	9
Figure 4.	Vicinity Map	11
Figure 5.	View of High Park Looking Southwest. . . .	14
Figure 6.	Map of High Park Area.	15
Figure 7.	View Looking South from Site	17
Figure 8.	View Looking West from Site.	18
Figure 9.	View Looking North from Site	19
Figure 10.	View Looking East from Site.	20
Figure 11.	Soil Profile	21
Table 1.	Snow Depths at T.V. Mountain	22
Table 2.	Building Types and Costs	42

"In a Far and Beautiful Place"

"The skier is never in a sense where he is: he is in a far and beautiful country, much farther away than two or three or five hundred miles from his home town. He is out on the snow in an entirely different country, even though it may be a stone's throw from where he lives. He is experiencing the freshness of the wind off the snow, the undulating blue shadows of the terrain, the starkness of a black overhanging limb . . ., or he is registering the evanescent sensation of motion and sun moving over the face. He is as far from buildings and cities and duties and work as he can get, in his mind. This is perhaps why skiing has been pointed out as 'a dream,' and 'a myth.' But it is the kind of dreaming and the kind of myth that man needs." (6:90)


need

CONDITIONS CREATING A NEED

People in rapidly increasing numbers are being drawn to the sport of skiing. United States Forest Service surveys indicate that the numbers of skiiers in the Northwest Region has increased at a rate of approximately 20 per cent annually for the past five years. (13) To keep up with this demand, not only are new areas being developed every year, but also existing areas are constantly being improved. Besides alleviating crowded conditions, improvements to an area are also made with the intent of drawing more business. It is in conjunction with just such improvements that this thesis is involved.

The Snow Bowl ski area near Missoula, Montana, has two particular conditions which create a need for the further development of an area, near the top of the chair lift, called "High Park." (Fig. 1.) The first of these conditions is a need for more slopes for intermediate skiers, since the highest percentage of a ski area's income comes from the intermediate skier. The second condition is the fact that there is a critical snow line at Snow Bowl. This means that there are usually good snow conditions above the 5,000 to 6,000 foot level early and late in the skiing season. Since High Park lies above this elevation, it is essential that it be fully developed to attract the skier to Snow Bowl at those times.

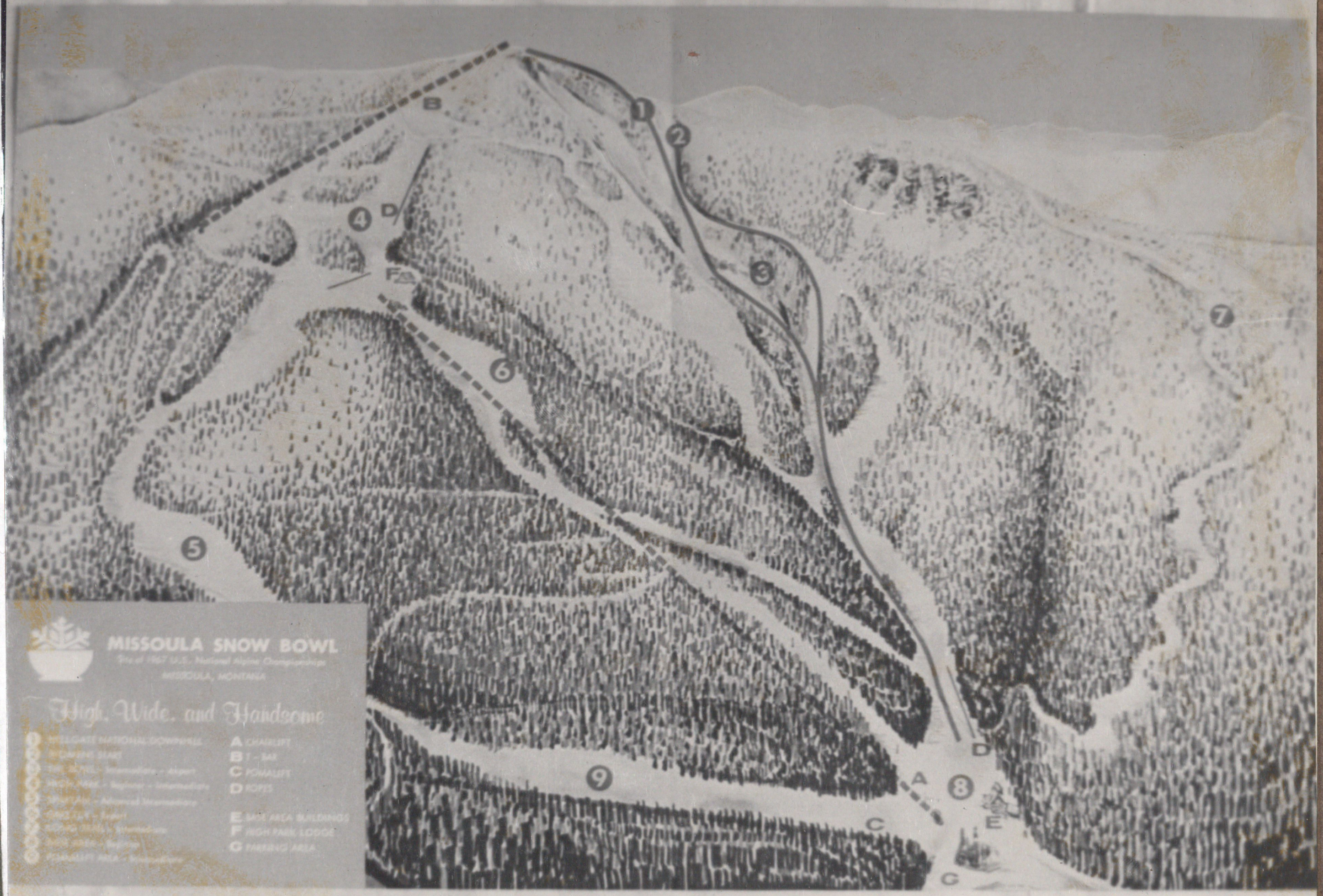

Figure 1. Pictorial Map of Snow Bowl

In light of these conditions certain improvements have already been made. During the summer of 1966 more slopes were cleared, and a T-bar lift was installed. (Fig. 1.) Besides the clearing of runs and installation of lifts, the other major improvement to High Park will be the building of a new lodge. The purpose of this report is to develop a program for such a lodge.

As mentioned earlier, one of the major reasons for developing High Park is to make available more early and late skiing. During these times (Thanksgiving to mid-December and mid-April to mid-May) it is particularly necessary to have a lodge at High Park, because the only way to get to the main lodge at the base of the mountain is to ride the chair lift down. This is understandably a good deal of trouble to go through simply to get a bite to eat or to go to the restroom. For this reason, a small building was built at High Park in 1962 to serve as a warming hut and food facility. (See Fig. 2.) Also, two outhouses were put in next to this small lodge. Although these provisions partially serve the need, the lodge has already proven to be inadequate in size.

Although not as immediate a necessity, a better lodge at High Park is also desirable for the months when all runs are open (mid-December through mid-April). Because of the present building's minimal facilities, the skier often waits until he is at the bottom before eating or using the restrooms.



Figure 2. Existing Lodge

A more adequate building at High Park would not only be more convenient to the person skiing in this area, but would also help to lighten the load on the main lodge at the base of the chair lift.

All in all, the development of runs and lodge facilities in High Park will serve to make Snow Bowl a more attractive place to the skiing public.

local conditions

LOCAL CONDITIONS

Missoula, at a present population of 46,000, is not only the home of many avid skiers and skiers-to-be, but is also particularly well suited to accommodate the out-of-town skier. The University of Montana in Missoula, with an enrollment of about 6,000, also is the source of a great many skiers who patronize Snow Bowl.

"Missoula is located in Western Montana on the main through routes to the Pacific northwest." (14) This accessibility is important to attracting the out-of-town and out-of-state skier. It is located on the main line of the Northern Pacific Railroad, with two trains going both east and west stopping in Missoula daily. Air service is provided by Northwest Airlines with four flights a day. The airport also has excellent facilities available for private planes. Bus service is via Greyhound Bus Lines. Missoula's location at the intersection of three main highway routes is particularly convenient for the automobile traveler. (See Fig. 3.)

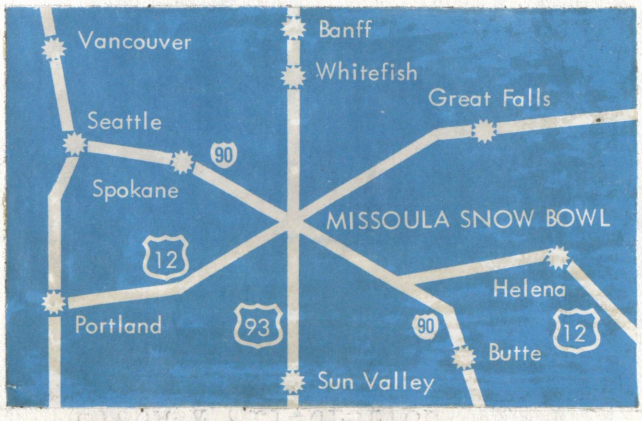

Figure 3 -- Highway Orientation

Because of its position as a summer tourist center, Missoula has many accommodations suitable to serving the visiting skier. These include 52 hotels and motels and 61 eating establishments. (14) Included in some of these, and elsewhere, there are many fine entertainment spots providing a varied après ski life.

Snow Bowl is located 12 miles northwest of Missoula in the Rattlesnake Mountains. (See Fig. 4.) It is easily accessible by means of a well-maintained road. The area is at an elevation between 5,000 and 8,000 feet. As its name indicates, Snow Bowl is situated in a large bowl which is over three miles around at the top. Its slopes have a variety of exposures ranging from northeast through south to northwest. "The maximum snow depth normally occurs in early March and averages around four feet at the bottom and over eight feet on the upper slopes above High Park." (14) More specific information about the snowfall and other climatic conditions is included in the "Site Conditions" section.

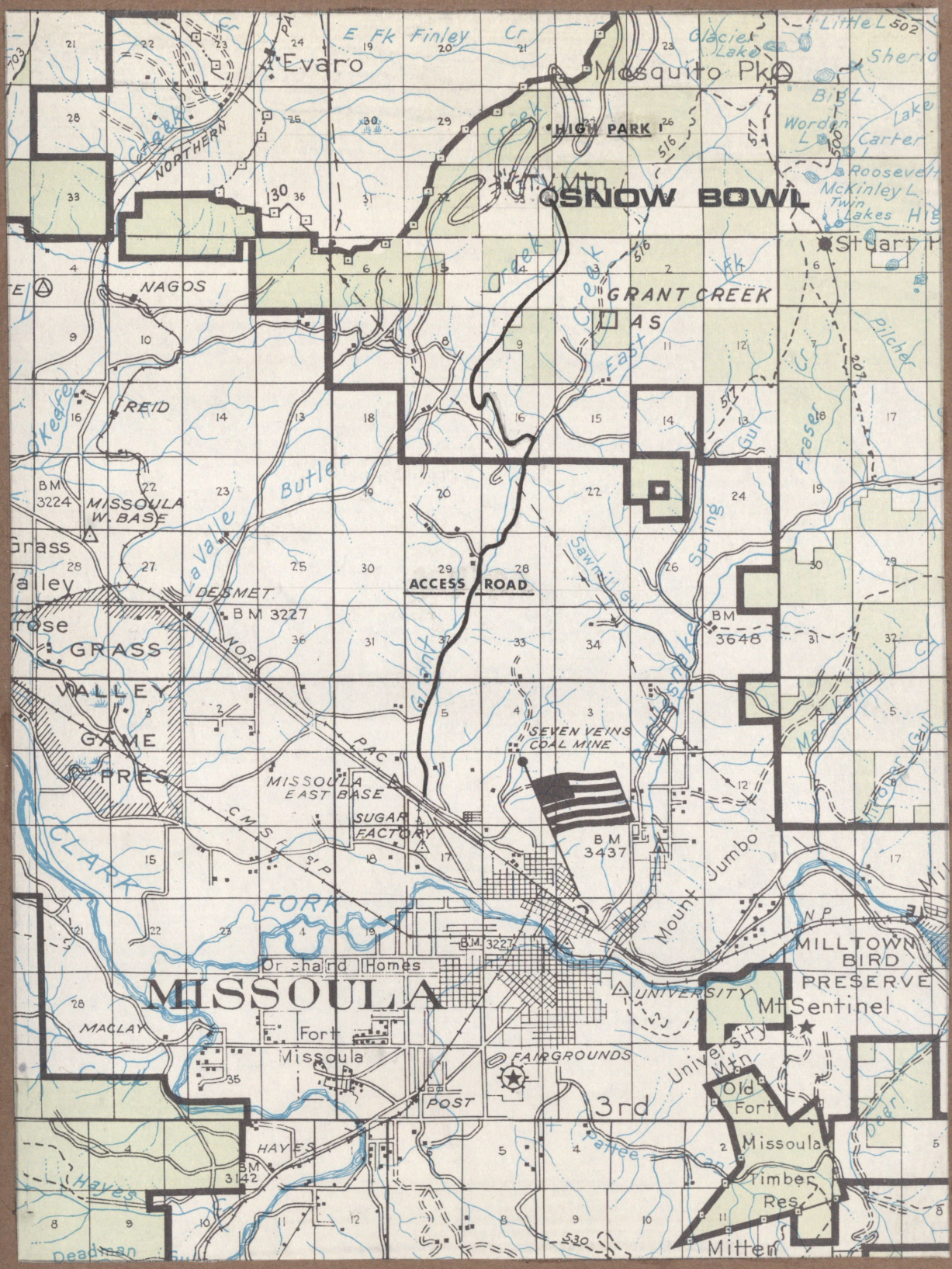

Figure 4. Vicinity Map

site conditions

SITE CONDITIONS

High Park takes in an area lying between 6,600 feet and 7,600 feet in elevation. Skiiers ride up to the High Park area on the chair lift. The upper terminal of this lift is at 6,957 feet. From this point the skier can descend to the North to the lower terminal of the T-bar (elevation 6,580). The T-bar runs to the top of Big Sky Mountain (7,600). The point at which the chair lift ends is at the edge of one of two saddles between T.V. Mountain and Big Sky Mountain. This area extends in a Northeasternly direction to the slope served by the T-bar. Figure 5 is a view of High Park looking towards the Southwest. The existing lodge is near the end of thechair lift. The new lodge would use the same site. The elevation at this site is 6,940 feet. For orientation concerning all of these locations, see Figure 6.

The conditions related to this site are as follows:

WINDS: The prevailing wind is from the West and Southwest. However, the saddle is protected from any major force of these winds by two ridges to the West. These ridges deflect the winds so that the only part of High Park which is significantly windy is the top of Big Sky Mountain.

VIEWS: The major distant views are to the South toward Missoula Valley. Portions of the ski slopes in the bowl area can



Figure 5. View of High Park Looking Southwest

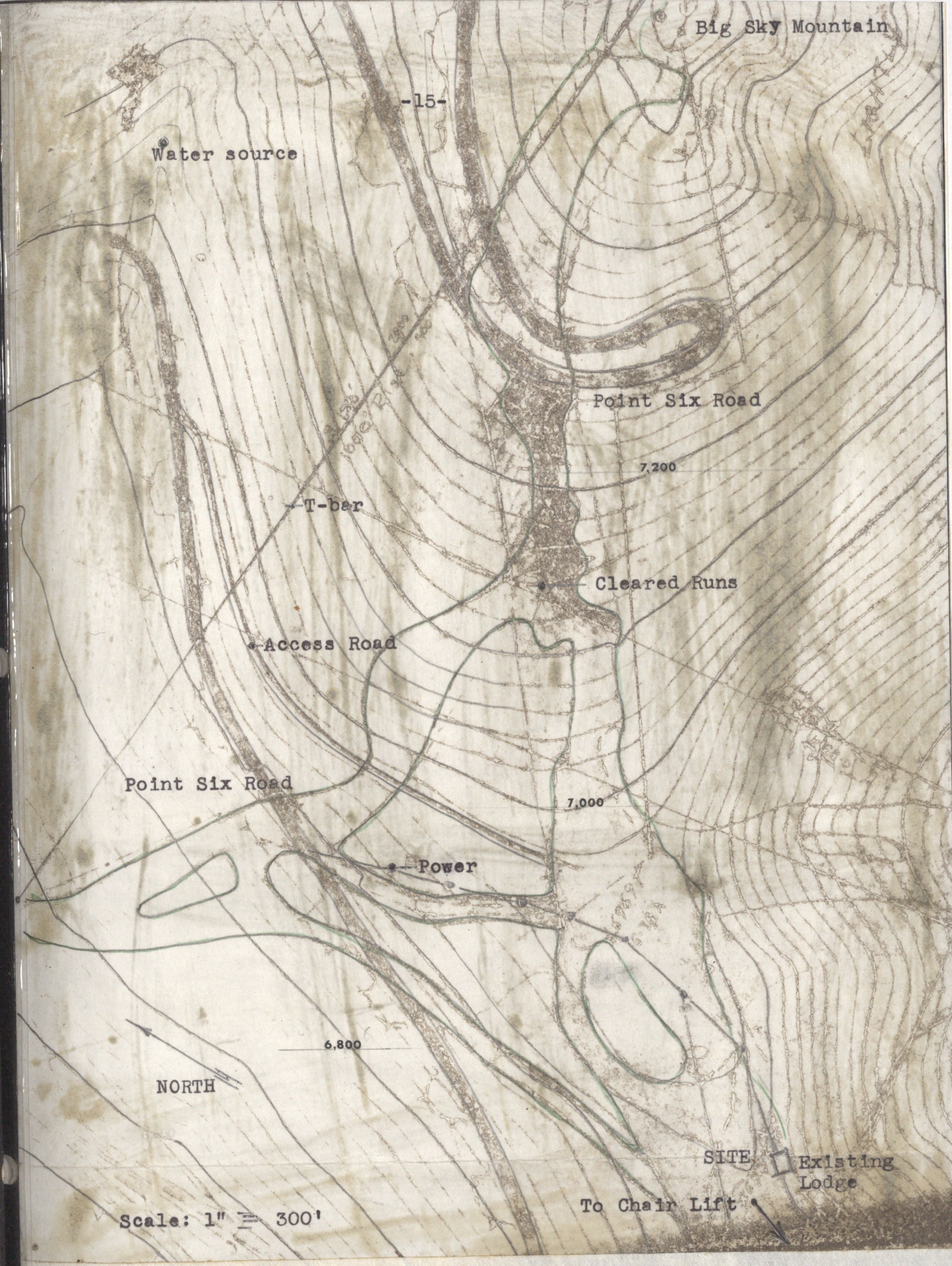

Figure 6. High Park Area

also be seen to the South. Located as it is in a saddle, the view to the West is of T.V. Mountain and to the East is Big Sky Mountain and the T-bar slope. (As can be seen in Figure 9, the view to the North is across a fairly narrow snow field to a line of trees.) See Figures 7 - 10.

SOIL ANALYSIS: The general soil conditions in the area of the site are excellent for building. Although test borings have never been made at the site, a reasonably accurate description of the profile was given by a Forest Service soil scientist (7). Technically, the top soil belongs to the Holloway series. Basically, it is gravel mixed in with silt and sandy loam. The bed rock is generally about four to five feet below the surface. This bed rock belongs to the Missoula Group of pre-Cambrian formations and is described as follows: "Chiefly red, maroon, or purple argillite; sandy or quartzitic argillite, and generally impure quartzite and limestone." (7) Because of the excellent bearing properties of the top soil, there is a good chance that the foundations for the lodge will not have to go down to the bedrock. The other important property of the top soil which makes it excellent for building is: it provides excellent drainage. Figure 11 shows a profile of this top soil.

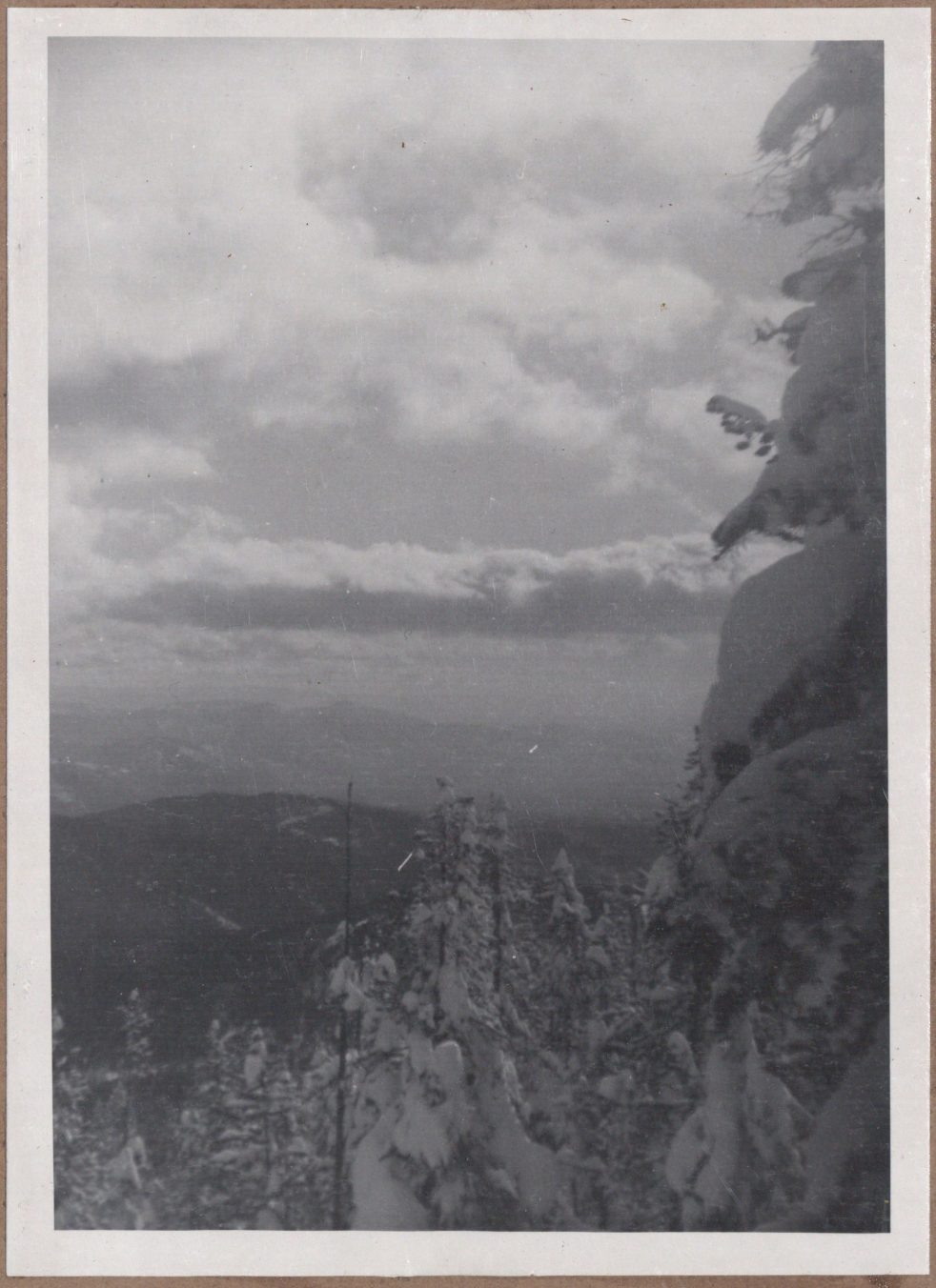

Figure 7. View Looking South from Site



Figure 8. View Looking West from Site



Figure 9. View Looking North from Site



Figure 10. View Looking East from Site

B_2ir - Silt loam - 15-35% gravel

A_2 - Sandy loam - 50-75% gravel

A_2B_2 - Texture could vary from very gravelly sandy loam to very gravelly clay loam

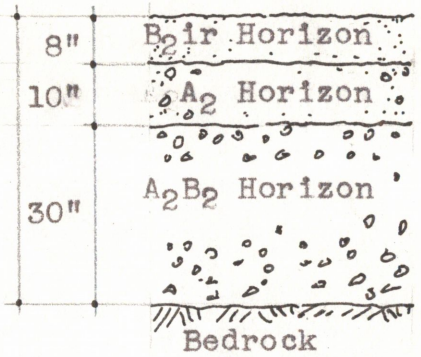

Figure 11

Soil Profile

VEGETATION: Although there are various types of bushes and mountain grasses on the site during the summer, the type of vegetation evident during the ski season is limited to lodge-pole pine.

SNOW: There have been no regular snow depth readings taken at the site. However, there have been records kept from a location close enough to the site to give a reasonably accurate picture of the conditions which exist at the site itself. This location is on T.V. Mountain where the United States Soil Conservation Service has a station at 6,800 feet. Their readings for the past six years are listed in Table 1. From these readings it can be assumed that the maximum snow depth at the lodge site should be near 70 inches.

	Jan 1	Feb 1	March 1	April 1	May 1
1960	31	34	41	44	36
1961	25	26	42	52	57
1962	45	51	56	62	39
1963	18	48	52	52	47
1964	26	47	47	70	66
1965	44	64	NA	69	53
1966	27	40	49	48	NA

Table 1

Snow Depths at T.V. Mountain in Inches (15)

UTILITIES: From Figure 6 it can be seen that the access to power is very good. One of the major reasons for the choice of site, however, is the location of the water source. This is also shown in Figure 6. By keeping the site below the elevation of the water source, a gravity system may be utilized in providing water for the lodge.

ACCESS: Two points involving access are important to the location of the site. The first of these is the matter of bringing in materials during construction. The second involves supplying food and other items necessary to its operation once the lodge is in use.

Snow Bowl is fortunate to have very good road access into the High Park area. When the weather radar station was built on Point Six, a road was built which passes through portions

of High Park. These portions can be seen in Figure 6. Also shown in Figure 6 is the road which Snow Bowl Incorporated built to connect the saddle with the road to Point Six. Thus, in the summer (these roads are not maintained during the winter) materials can be brought to the site without any additional road construction costs.

During the winter provisions for the operation of the lodge would have to be brought up on the chair lift. For this reason the site was kept within a reasonable distance from the upper end of the chair lift. Also with respect to this distance, ski areas with chair lifts get quite a bit of foot traffic from sightseers. Placing the lodge near the end of the chair lift allows these people to use it in addition to the skiers. If it were located at the top of the T-bar, for instance, this could not be possible.

The above conditions are during the winter months. I do not feel that any other seasons of the year need to be considered, for the lodge would only be used during the ski season.

By way of summary, I think that it can be said that the site is a reasonable one. Of particular importance are the points mentioned above concerning wind protection, utilities and access.

function

FUNCTION

INTRODUCTION

As mentioned earlier, the purpose of this project is to provide a building which would better serve the skier than does the existing structure. This existing structure consists of a single space, approximately 30 ft. by 30 ft., in which there are a few tables and benches, a wood-burning stove, and a small area for the food service. As an improvement on this, the new building will have separate areas for each of the functions. These areas are: a resting and eating area, a kithcen, a ski patrol station, restrooms, and storage. These areas will be treated individually in the sections to follow.

RESTING AND EATING

In any ski lodge of this type, this area is the largest and most important in the building. As seen above, it is in effect the only area in the existing lodge. The activities which would take place in this area are indicated by its name. The resting simply means taking a break from skiing. This might include eating or just warming up.

In conjunction with this interior space, the resting and eating function would also be served by an outdoor porch or veranda. During pleasant weather such outdoor decks are very popular for basking in the sun. This is especially true during spring skiing.

Activities involving changing boots would not occur in this lodge. This takes place at the main base lodge.

Someplace in the resting and eating area the activity of purchasing food would occur. Although occurring in this general area, this activity would be more closely related to the kitchen facility. Therefore, it shall be discussed in the following section.

To accommodate the above activities the following furnishings would be necessary: tables (approximately eight), benches (two per table), trash cans (approximately three), a fireplace, and baseboard electrical heating units.

KITCHEN

The kitchen would serve about 500 people a day. (14) It needn't be very big, for all items on the menu would be of the short-order type. However, it does need to be efficiently planned and well located with respect to the eating area.

Included in the kitchen would be the following equipment:

1. Grill and french fryer
2. Coffee machine
3. Milk machine
4. Steam table
5. Soft drink machine
6. Refrigerator
7. Dish washing sink or machine
8. Candy machine

9. Hot drink machine

In the kitchen, or in conjunction with it, would also be a food preparation area, storage shelves, service counter, and cashier's stand.

As much as possible of the above equipment should be portable. During the off-skiing season this equipment could then be taken down to Missoula and stored. This would be for protection against vandalism during the months when the building would not be in use.

The link between the kitchen and the eating area would be the service counter. Over the counter there would be doors to close off the kitchen when it would not be in use. This would generally be at night. However, there would also be times during the season when the number of skiers would not merit keeping the kitchen open. During these times, which would most likely be on week days, the machines for hot drinks and candy would be used by the skiers. This would be handled by making it possible to open one section of the counter where these machines would be, and leaving the rest closed off.

The times when the kitchen would be open, the food would be served cafeteria style. After getting his food, the customer would pay a cashier at the end of the counter, or at a separate cashier's stand near the end of the counter.

In addition to the kitchen space itself, there would be a small storage room adjacent to the kitchen. This would serve as additional storage to what would be provided by the shelves

and refrigerator in the kitchen proper.

SKI PATROL STATION

As the lodge itself would serve in a secondary capacity to the main base lodge, the ski patrol station would also be a sub-station (10), the main one being in the main lodge. This station would be divided into two separate areas. One would be the first-aid room, and the other for storage of the ski patrol's equipment. These rooms would be approximately equal in area. (See section on areas below.)

The first-aid room would contain three or four beds and a first-aid cabinet. Access to this room would be provided directly from the outside by means of double doors. These double doors are desirable so that it would be easy to bring in and out stretchers. Also, there would be a single door between this room and the storage area.

The storage area would make it possible to keep all equipment out of the first-aid room. This equipment would include: toboggan baskets, ropes, blankets, splints, skiis and poles. Besides the door into the first-aid room, there should also be a door to provide access into the storage area without going through the first-aid room.

REST ROOMS

The rest rooms would be fairly small. They would include the following fixtures:

Men's - -	1 water closet
	1 urinal
	1 lavatory
	1 paper towel dispenser
	1 waste paper basket
	1 mirror
Women's - -	2 water closets
	1 lavatory
	1 paper towel dispenser
	1 waste paper basket
	1 mirror

STORAGE

The storage area would be for the general storage of the ski area maintenance equipment. It would be similar to a garage in that a snow cat could be kept in it. Also stored here would be such equipment as: shovels, ropes, and tools for repairing snow cats and tows. This storage area would have a typical residential roll-up garage door for access from the outside.

AREAS

The following areas are approximate. Final decisions will have to come during the design stage. Also, the necessary amount of hall and stair space to link these major areas will be determined later.

Functions (as in above sections)	Areas In square feet
Resting and eating	1800
Kitchen	380
Kitchen storage	50
First-aid room	470
First-aid storage	470
Rest rooms	90 each
Maintenance storage	250
Total	3600

MECHANICAL

As mentioned in the "Site Conditions" section, water for the plumbing would be provided by a gravity flow system from an existing spring. This well is approximately 100 feet in elevation above the lodge site. This should provide for adequate flow and pressure build up.

aesthetics

AESTHETICS

The fact that the bulk of this report deals with the finite problems surrounding this project is by no means indicative of the relative importance of this section. By reason of their finiteness they are easier to consider; and thus through involvement with them, the designer may lose sight of the vastly more important considerations which fall within the term "aesthetics." The importance of the latter is testified to by the fact that the activity of building has ever been considered to be within the realm of art. Because the term "aesthetics" is an expression used when talking about art, the crucial importance of the aesthetic considerations in designing a building can be seen. For without the aesthetic element you have no art, and without art you have no architecture in the true meaning of the word.

Because of the vagueness of the term "aesthetics," I feel that before dealing with the specifics of the aesthetics of a ski lodge, the term must be dealt with in its application or meaning within the realm of art in general.

The term "aesthetics" is usually defined as "beauty." Therefore, to ask what is "aesthetics" in art is to ask what is "beauty" in art. Furthermore, to ask what is "beauty" in art is to ask what is the essence of art. Throughout the history of western thought philosophers and artists have debated the meaning of aesthetics in art. Statements by a few

of these philosophers and artists will be used to show what this author believes aesthetics in art, and thus architecture, to be. In doing so, the question, "How is architecture an art?" should be answered. Although there are probably many more such statements, the following quotes represent a recognition of the essence of art, in the opinion of this author.

> The structure has the ease and pleasant naturalness as if it had grown there and had sought to span the river itself. (1:104)

> Not magnitude, not lavishness
> But form, the site,
> Not innovating willfullness
> But reverence for the Archtype.
> Melville on Greek architecture (9)

> Good poetry could not have been otherwise written than it is. The first time you hear it, it sounds rather as if copied out of some invisible tablet in the Eternal mind than as if arbitrarily composed by the poet. (3:153)

To indicate only, by these quotes, that there is the infinite in art, would not be accomplishing much. One must go further and ask what this infiniteness is. This author feels that the infiniteness can be expressed by the words "inevitability of form," or with respect to the above quotes, inevitability of the bridge, Greek temple, or poem.

As expressed in the statement of Melville, this form is not forced by the designer or artist, but is developed through reverence. The willfullness does not lie within the artist,

but is intrinsic to the work itself. It is the artist's place through reverence to discover this willfullness, rather than to suppress it through disregard. This reference to the existing will within the work itself is also expressed in the above statement, "sought to span the river itself." Further examples of this can be found:

> The poet should throw out the perfect line if the poem does not want it. (5)

> Thus Pheidias wrought the Zeus upon no model among things of sense but by apprehending what form Zeus must take if he chose to become manifest to sight. (12:36)

Examples of precise reference to or use of the term "reverence" can also be found:

> For great art is not work alone -- it is a God-given miracle. In the words of Franz Liszt, Chopin has a "reverential worship for art." Throughout his life he remained faithful to himself, and "he died adoring art in its mystic greatness, its highest revelations." (2)

The term "form," as used above, does not exclusively mean the actual physical shape the work may take. More importantly, "form" means the expression of the existing will of the work of art. Therefore, in the ultimate sense, "form" is the existing will. It is in the light of this ultimate sense that the words "inevitability of form" take on their greatest significance. If the form is realized in the physical shape of

the work, then they too become one and the same. When this union is achieved, in a particular design, the result seems inevitable.-- inevitable in the sense of rightness. It is this rightness that is recognized by the observers in the first three quotes above.

When these elements are all present, namely, rightness, inevitableness, and "form" as existing will and as actual physical shape, then the products of man's effort enter the realm of art. These are not isolated elements but are actually different expressions of the same inherent character. Therefore, the single word "form" shall be used to mean all of the above terminology.

The use of "the products of man's effort," above, has a definite significance. Without this reference, the elements listed above describe Nature equally well. The significance lies in the fact that the only difference is the presence of man. In the product of man, the existence of form is a requisite to art, while in Nature form simply exists -- or, in other words, is inevitable. The art product becomes inevitable. Nature is inevitable. Once the product enters the realm of art it transcends man's activity of producing or designing and becomes one with nature. Reference can once again be taken to the above quotes, particularly the first one.

The conclusion of the above discussion is what this author feels to be the essence of art. More explicity, the essence of art is the realization of form. Furthermore, this is what is

beautiful in art. Therefore, aesthetics is the realization of form.

Aesthetics in architecture is therefore the realization of form as expressed in a building. The means of achieving this end is the activity of design. The process of design should consider every condition of the program with this aesthetic goal in mind. The importance of this is emphasized in the following quote: "Yet beauty in an aggregate demands beauty in details; it cannot be constructed out of ugliness; its law must run throughout." (12:26) Therefore, not only must there exist a rightness about a building as a whole, but in every detail there must also exist a rightness, both unto itself and to the building as a whole.

In consideration of the program, the most important thing is the understanding of the activity or institution which the building is to house. The "existing will" of the spaces will depend on their purposes, which in most cases will be to house an activity. Thus an origin for the "form" of the building can be established.

To truly understand the nature of the activities is very difficult, however. Therefore, it will sometimes be necessary to search for the form which will express the essence of the activity while in the process of design -- or in other words, while working out area requirements, relationships of activities, floor plans, masses, etc. This search should continue until ideally the right form is discovered. This constant

interaction between design and form, or the means and the ideal, is the fascination of architecture as an art. The degree of success aesthetically is how well everything goes together to realize the form.

Therefore, in the making of a ski lodge the realization of form is the aesthetic goal.

Although the building would house the various activities of eating, resting, food preparation, etc., it also serves the greater activity -- skiing. It is as an expression of this activity that the building should take its form. As such an expression the building should be "sport" or "challenge," as opposed to, say, the connotations of the word "recreation."

These are the aesthetic goals of this designer for this ski lodge. Because of the importance of aesthetics, they are the ultimate goals upon which the success of the structure as architecture will depend.

The above discussion is oriented towards the essence of aesthetics and as such is an end or goal to be strived for. At the same time, all of the material represents only a beginning. However, it is a necessary one without which it could not become an end. The understanding of the above material as a beginning is the reason for its inclusion in this report. Admittedly, everything is still very general. The specifics mentioned at the beginning have not been dealt with more than to go from art in general, to architecture, and then to the ski lodge. The actual design specifics of the ski lodge will

have to come with ensuing development and understanding during the design phase of this project. If any specifics could be mentioned at this time, it is the hope of this author that they would make sense to the reader with respect to the foregoing material. In final analysis, they will have to.

economics

ECONOMICS

COST ESTIMATE -- CONSIDERATIONS

To arrive at an estimate on probable construction costs, the "Marshall Valuation Service" (8) was used. Because ski lodges are not listed in the "Service," three different types were chosen as being varyingly applicable. After these three were averaged, a few additional considerations were noted to arrive at an estimate of costs which considers as much detail as possible at this early stage in the design process.

Following is a description of the three occupancy types as listed in the "calculator method" section of the "Service:"

1. Restaurants -- "Restaurants are constructed for the purpose of preparation and sale of food and beverages. The costs include all necessary plumbing and electrical connections to provide for these services but do not include the restaurant and bar fixtures or equipment, which many times are owned by the tenant."
2. Clubhouses -- "Clubhouses are general purpose buildings usually with light kitchen facilities, large general use room, and multiple rest rooms."
3. Resort Hotels -- "Resort Hotels have a greater proportion of common use area to bedroom area than ordinary hotels.

   Rustic Resorts are resort hotels constructed of local materials such as logs and rubble."

Table 2 lists typical construction and costs per square foot for the above occupancies. Class "D" construction was used throughout. "Class "D" buildings have wood or light steel frame and roof structures."

The following additional considerations will be used to adjust the average cost per square foot from Table 2:

1. The ski patrol station would probably be plain enough to fit into the restaurant-storage-basement category.

   "Storage basement -- Painted interior -- Painted ceiling structure, unfinished slab, Exposed incandescent lighting, few drains -- Space heaters.

   $4.25 per square foot"

2. For the maintenance storage:

   "Residential garages

   D -- Good -- Good stucco or siding, good roof, shakes, tile, etc., reinforced slab, good overhead doors, good windows, pedestrian door, good electrical.

Cost/sq. ft.	Wall Cost/lin. ft.	Roof Cost/sq.ft."
$5.51	$11.00	$1.51

   The cost breakdown above is to be used in case the garage shares common wall(s) or ceiling (floor above) with the rest of the structure. If this occurs, the respective elements should be subtracted from the over-all cost of the garage.

3. Fireplace:

   "Cost per fireplace. Double fireplaces with one

Type	Exterior Walls	Interior	Lighting Plumbing Mechnical	Heat	Cost per sq ft
Good Restaurant	Stucco or siding, metal & glass, some ornamentation	Typical good chain restaurant or coffee shop, vinyl asbestos floors	Good lighting and service outlets, small rest rooms	Central AC	$14.80
Low Cost Clubhouse	Siding or stucco	Gypsum board, concrete slab	Very plain	Wall furnace	7.54
Rustic Resort	Logs & rubble masonry	Wood, softwood flooring	Generally below average	Heaters	9.59
			Total		$31.93
			Average		$10.64

Table 1

Building Types and Cost (8)

chimney will cost 25% to 50% more than a single fireplace of like quality."

Type	Excellent
One story	$700

4. Plumbing:

The square footage costs from Table 1 include plumbing requirements within the building. For the supply and disposal system the following costs will be applied to a very rough estimate of what will be needed:

Septic Tank:

1500 gal. $500

Pipe:

Galvanized Iron

4 in. $3.00 per lin. ft.

Plastic (PVC) (Threaded)

2 in. $1.15 per lin. ft.

Tile

4 in. $2.70 per lin. ft.

5. Labor and Material Delivery:

Adjustment would necessarily have to be made in these two areas because of the site location. To compensate for this, 5% of the over-all cost on the above considerations will be added to give a final cost estimate. This is felt to be a reasonable amount by this author having talked to two building contractors in Missoula and

to Professor Carlo Di Cicco of the architecture department.

6. Excavation and Landscaping:

Excavation and landscaping costs would be very low. With the exception of cutting down a few trees, there would be no landscaping. The amount of excavation would be small because the footings for the building can be on the surface or very near. The footings for the existing building are on top of the ground.

7. Local and Current Cost Multipliers:

The use of the "Marshall Valuation Service" involves these multipliers. Together they give the general figures offered by the "Service" an accuracy of geographic location and bring them up to date.

ESTIMATE

Based on the above considerations, the following is a rough estimate of construction cost for this project:

		Quantities	Unit Costs	Actual Costs
1.	Major Areas			
	a. Resting & eating, kitchen, kitchen storage, restrooms. Table 2.	2,410 sq ft	$10.64	$25,642.40
	Current cost mult (1.025)			$26,283.46
	b. Ski patrol station (Item 1, pp.)	940 sq ft	4.25	3,995.00
	Current cost mult (1.03)			4,114.85
	c. Maintenance storage (Item 2, p.)			
	(1) Over-all	250	5.51	826.50
	(2) Less ceiling	250	1.51	377.50
	(3) Less one wall	20 lin ft	11.00	220.00
	(4) Balance			229.00
	Current cost mult (1.03)			235.87
2.	Fireplace (Item 4, p.)			
	40% addition for double			
	Current cost mult (1.03)			1,000.00
3.	Plumbing			
	a. Septic tank	1500 gal		500.00
	Current cost mult (1.00)			500.00
	b. Sewer piping (4 in.)	25 ft	3.00	75.00
	Current cost mult (1.03)			77.25
	c. Drainage field (4 in.)	300 ft	2.70	810.00
	Current cost mult (1.03)			834.30
	d. Supply (2 in.)	3500 ft	1.15	4,025.00
	Current cost mult (1.03)			4,145.75
4.	Total			37,191.48
5.	Local cost mult (1.03)			38,307.22
6.	Labor and material delivery mult (1.05) (Item 5, p.)			40,222.58
7.	Contingencies - 10%			4,022.26
8.	FINAL COST			$44,244.84

FINANCING

At the present, the development of any facility at Snow Bowl could be realized in one of three ways. These are:

1. Private investment
2. Security sales
3. Government loan (4)

For a project as small as this ski lodge a government loan would probably not be feasible. Therefore, only the first two will be discussed further.

Private Investment

Missoula Snow Bowl, Inc. encourages private investment in the development of the area. Naturally any facility improvements would enhance the area and thus draw more skiers. At the present there is a bar and a ski shop at the base area which belong to private investors. The corporation rents the right of business to the investor. In doing so they control such factors as building location and design. As incentive toward private investors, the corporation charges fairly low rental fees at first. This gives the private business a chance to become established.

Merely as speculation, the ski lodge under consideration in this report could be built by the man who runs the restaurant concession at the main lodge. As such he would own the building and the business. If he did build the building as established in this program, he would probably receive rent compensation for the maintenance storage and ski patrol station areas.

Security Sales

If the corporation wished to own the building themselves and simply rent the food concession, the financing could be handled by stock or debenture sales.

In September of 1961, Missoula Snow Bowl was established as a Montana Corporation. If the above decision was made, a sales drive would be enacted to sell a sufficient amount of the securities offered by the corporation. These securities are in the form of Common and Preferred Stock, and Income Debentures.

Although this method of financing is available, the complications of it to finance a small venture might make it undesirable. Therefore, unless the lodge were built in conjunction with other substantial improvements, the idea of interesting a private investor seems the most feasible.

summary

SUMMARY

The major force which influenced my design decisions grew out of the aesthetic goal outlined in the previous section on aesthetics. In consideration of what would be "challenge" rather than "recreation," I thought that a ski touring or hiking chalet contained the feeling I desired for this project. In attempting to define this feeling, I decided that a large part of it was due to their isolation. It is through a desire for this feeling of isolation or separation from man's routine surroundings that the design developed. The site itself is located conveniently to the skiing circulation, but once inside the lodge, it is hoped that this closeness to even the routine of recreational skiing would be deemphasized. Instead the orientation is towards the distant view to the southeast and the distant skiing in the bowl area.

The plan of the lodge was developed so that the service areas to both the lodge itself and the ski area in general serve as a buffer or break between the skiing circulation and the public areas of the lodge. In this category are the first-aid station, the maintenance storage and the kitchen. Besides serving as such a buffer they were also located in this way for ease of service, as they serve the ski area in general, such as the first-aid station and maintenance storage areas do.

Two other deciding factors in the development of the design were the snow depth and the fireplace. Since the major portion, in size, of the areas in the program (kitchen and eating area) needed to be on the same level, difficulties immediately arose. To put these on a second level meant the fireplace would be off the ground. This was felt undesireable, not only because of the idea that a masonry fireplace should be at ground level but also to put so much upon stilts or a pedestal, so to speak, would be calling too much attention to something I wanted to have a feeling of isolation. Schemes that were worked with which put these areas at ground level created too many problems of entrance because of the snow depth. In the final scheme relief from these difficulties was achieved by placing the fireplace in an area at ground level, yet open to the main food service area which is at the second level. In this way access to both the public area and the kitchen was not hampered because of varying snow depths, while at the same time the fireplace remained a part of the general lodge area.

From this scheme of the fireplace being in a sunken area surrounded by the kitchen and eating area on the next level, the design was developed. In keeping with the desire for a feeling of challenge and isolation, all exposed materials were chosen to further this atmosphere. This includes the use of limestone masonry piers

and fireplace, cedar shake roofing, timber trusses for roof structure over eating and fireplace area, rough sawn board and gap interior and exterior siding, and wood windows.

The final solution follows the functional program quite closely as outlined during the first phase of the project. The major change is in the total square footage. The solution is approximately 5,000 sq. ft. as opposed to the original 3,600 sq. ft. The major portion of this increase is in the eating area. Part of it is accountable to necessary circulation space which could not be included in the original estimate. The area also needed to be enlarged to make the spaces work together and individually. For example, the upper level eating area in the front had to be big enough to accomodate the tables and aisle and also be an individual area and not just a balcony around the fireplace area, as the sides are. Additional square footage came from the necessity to make the fireplace area uncramped and give circulation space for traffic to the rest rooms behind the fireplace.

The only function addition to the program is the racer's area. This is an item which had originally been discussed when establishing the program but had not been included. The reasons for this decision were somewhat border line; therefore, I feel its inclusion in the final solution is justifiable. The racers in the area, both

university and high school, certainly spend enough time practicing and have enough pairs of skies that they could use accomodations at the ski hill to keep their equipment in. At the present time there are no such accomodations at the main lodge. Being at this upper lodge the accomodation would be close to good practice slopes. Also, in the early season, when the racer does his most concentrated practicing, this is the only area where he could practice. (Refer to Conditions Creating a Need section and critical snow line) Besides ski storage this area would also be used forski waxing and other equipment storage such as poles and flags.

With the above additions and the development of the aesthetic goal I feel the solution is one which accomodates the needs of the High Park Area and would provide an appropriate atmosphere for the challenge of skiing.

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