

ARTHUR A. NORDLING
REDEVELOPMENT OF THE BRIDGER BOWL

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REDEVELOPMENT OF THE
BRIDGER BOWL AREA
INTO A WINTER AND SUMMER RESORT

Preliminary Research
Architectural Thesis 490
Winter Quarter, 1962

Arthur A. Nordling
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NOTE: Superscripts refer to reference numbers at the
end of each section.

THESIS PROPOSAL

In reference to the thesis outline handed to me previously, I respectfully submit a proposal for Architectural Thesis, 490.

The subject of the thesis is to be: "The Development of the Bridger Bowl Ski Area into a Summer and Winter Resort."

This would include the development of a nine-hole golf course, located on the valley floor and a clubhouse that could serve as a ski lodge during the winter. Located in this surrounding area will be housing units to serve tourists for both winter and summer use. The overall master plan for new ski lifts will be conceived which will expand the present ski area into a vast area of varied skiing. The main design emphasis will be on the clubhouse and the housing units for accommodating the public.

Research information will be available from: Herb Hasch, greenskeeper at the Riverside Country Club; the Forest Service; Bozeman Ski Club and Chamber of Commerce; and possibly other resort areas.

The program for presentation of the thesis will be as follows:

Mid-winter Quarter, 1962--Research in written form and the probable building program.

End of Winter Quarter--Submission of preliminary research as well as preliminary designs of buildings, lifts, and golf course.

Mid-spring Quarter--A complete list of all drawings, models and written research to be used for the final presentation. Towards the end of the quarters, about two weeks before end, the submission of all written portions of the thesis shall be handed in.

End of Spring Quarter--The final presentation of all work to be submitted to the faculty.

I believe the development of this area would increase the economy of Bozeman from the tourist trade that it would receive during the summer. As we know now, the

existence of night clubs or supper clubs is very limited in the Bozeman area, and this would provide an additional enjoyment to the residents of Bozeman and surrounding areas. The road that exists now between Bozeman and Wilsall may become a main artery linking Glacier Park and Yellowstone Park, or a main thoroughfare for north-south traffic -- Canada to Mexico.

From these considerations, I feel that the development of this project is justified, and it could become one of the nation's most elaborate winter and summer resorts.

Respectfully submitted,

Arthur A. Nordling

Arthur A. Nordling

CONDITIONS CREATING A NEED

The largest attractions of a resort area are the natural recreational facilities that the area offers; the resorts themselves, which may offer additional recreational facilities; and the accommodations that these resorts have, so that tourists may comfortably enjoy the recreational facilities.

Southwestern Montana has many attractions for tourists and visitors and has for many years been a popular vacation land. Besides its proximity to world renowned Yellowstone National Park, southwestern Montana has spectacular scenery, wonderful hunting, fishing, and skiing, interesting historical background and all the attractions that make a vacation pleasant and a memorable one. In 1959 an estimated total of 2,734,573 out-of-staters visited Montana.¹.

Naturally, there must be accommodations provided in the state so that visitors will have a comfortable place to stay. Also, there must be accommodations provided for Montanans who are traveling within the state, either on business or pleasure trips.

At the present time the Bridger Bowl Ski Area is one of the most popular ski hills in Montana. Because of its popularity, the existing facilities of the area have become inadequate to provide for its large weekend

crowds. Dale Prutzman, Bridger Bowl ski hill operator, informed me that a good crowd on a Saturday or Sunday is about 400 to 450 skiers, with about 75 to 100 per day during the week. For the large weekend crowds there is a parking problem, as the parking lot's capacity is 150 cars. If a redevelopment of this area were to take place, it could remedy the problem of being overcrowded and provide adequate facilities for future expansion.

A few of the remedies that could take place are: the addition of (1) new ski lifts, (2) new warming huts, (3) housing facilities for tourists near the area, (4) expanded parking area, and (5) new access roads. These remedies could expand the Bridger Bowl into an area with several new runs and slopes for the novice as well as the experienced skier.

One of the major inadequacies of the area is the access road leading to it from the Bridger highway. It is a narrow, winding, one-way road that can be very dangerous in bad weather or during heavy weekend traffic. This road could be eliminated, except as a service road, in the redevelopment program.

The Bridger highway in the future may become a main link between Glacier Park and Yellowstone Park or a main

thoroughfare from Canada to Mexico, thus creating an excellent "stopping off place" for tourists. At the present time the road from Bozeman to the Bridger Bowl is paved for about 10 miles.

The climate in the Bridger Bowl area is mild, dry and invigorating with clean, pure mountain air. The average mean temperature is 42.8°F. February average minimum is 14.4°F; average maximum is 34.1°F; and the mean temperature is 24.3°F. In July the average minimum is 41.4°F; average maximum is 81.5°F; and the mean temperature is 66.5°F. Average rainfall in the area is 17.64 inches and the average snowfall is about 63 inches. The first killing frost comes about September 20 and the last killing frost about May 20-30.

Nature's own mountains and scenic slopes present the perfect setting for a winter and summer resort in this area. From the valley floor to the top of the Bridger Range, there is a rise of almost 3000 feet in a distance of about two and one half miles. Weather conditions in the Bridger Bowl area permit skiing from about the first of November until the first part of April, while golfing and other summer sports are played from April through October. There have been instances when skiing was reportedly good on the upper slopes

during the month of May.

The residents of Bozeman, as well as the surrounding area, would welcome a summer and winter resort in this location. The tourist trade from the motel and resort potential would definitely contribute to the economy of Bozeman. At the present time, the existence of night clubs or supper clubs is very limited in the Bozeman area. A resort of this type would provide additional enjoyment to the residents of the surrounding area.

An analogous situation of this type of resort would be Sun Valley, Idaho. It is one of the most well-known summer and winter resorts in the world. During the winter Sun Valley has capacity crowds for skiing and, in order to keep up with the increasing crowds, new trails and lifts are being developed constantly. In the summer, Sun Valley offers the tourists fishing, riding, skating, golfing, swimming, and other summer sports.

If the development of the Bridger Bowl is carried out, it could be comparable to Sun Valley and become one of the nation's most elaborate summer and winter resorts.

* * *

Reference:

1. TRAVEL REPORT FOR 1959, Montana Highway Commission, State Advertising Department, Helena, Montana, Page 3

CORRESPONDENCE

Information pertaining to research for the Bridger Bowl area and other recreational areas was obtained from the list below and correspondence on the following pages:

Bozeman Chamber of Commerce
Bozeman, Montana

Montana Highway Commission
Advertising Department
Helena, Montana

South Dakota Highway Commission
Advertising Department
Pierre, South Dakota

Winter Sports Committee
Capitol Building
Denver, Colorado

Mr. Herb Hasch, Greenskeeper
Riverside Country Club
Bozeman, Montana

Mr. Dale Prutzman, Ski Hill Operator
Bridger Bowl
Bozeman, Montana

Mr. Gib Widmer, first known person to ski at the
Bridger Bowl area
Bozeman, Montana

404 West College
Bozeman, Montana
January 5, 1962

Mr. Winston McCrea, Manager
Sun Valley,
Idaho

Dear Mr. McCrea:

I am a Senior in Architecture at Montana State College, and for my thesis, I have chosen the Development of the Bridger Bowl Ski Area near Bozeman. I would like to work this into a summer and winter resort.

Would you be good enough to send me any information that you have pertaining to Sun Valley as this type of resort. I am primarily interested in the layout of Sun Valley during the winter and summer months as far as recreational facilities and accommodations are concerned.

Thank you very much for whatever help you can give me.

Yours truly,

Arthur A. Nordling
Arthur A. Nordling

404 West College
Bozeman, Montana
January 31, 1962

Mr. C. A. Gunn
Cooperative Extension Service
Michigan State University
East Lansing, Michigan

Dear Mr. Gunn:

I am a Senior in Architecture at Montana State College, and for my thesis, I have chosen the Development of the Bridger Bowl Ski Area near Bozeman. I would like to work this into a summer and winter resort.

The School of Architecture library has a copy of your circular R-307, "Motels and Resorts." In this circular, I found that you have information about "Planning Winter Sports Areas", circular R-306. Would you be good enough to send me this information and anything else pertaining to summer and winter resorts.

Thank you very much for whatever help you can give me.

Yours truly,

Arthur A. Nordling

Arthur A. Nordling

Cooperative Extension Service

MICHIGAN STATE UNIVERSITY

East Lansing-----Tourist & Resort Program

February 19, 1962

Mr. Arthur A. Nordling
404 West College
Bozeman, Montana

Dear Mr. Nordling:

In my absence, my good secretary has forwarded to you the information you requested in your recent letter. I trust this will be of help to you in the research you are doing. I hasten to comment, however, that these publications are of a very general nature and prepared for popular use.

Because of my interest in this subject, I would very much appreciate receiving any of your findings on this research. There is so little material available on these subjects that it is important that we learn all we can.

Best regards to you and let us know if we can be of further service.

Sincerely,

(Signed)

C. A. Gunn
Extension Specialist
School of Hotel, Restaurant
and Institutional Management

CAG/bks

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RESEARCH ON GOLF COURSES

I. Site

- A. Make fullest use of land available.
- B. The use of nature for effect and economy.
- C. Area used should be 100 to 150 acres for 18 holes.

II. Layout

- A. Length--In excess of 6000 yards. Championship length is from 6700 to 7000 yards (18 holes). A good length is 6300 yards.
- B. An 18-hole course would comprise:
 - 1. 4 or 5 holes--120 to 200 yards, Par 3
 - 2. 9 or 10 holes--340 to 450 yards, Par 4
 - 3. 3 or 4 holes--460 to 550 yards, Par 5

Holes between 230 and 330 yards are to be avoided if possible. Long Par 5 holes need feature and careful treatment to avoid monotony. The ideal course will vary so as to test shotmaking with every club in the player's bag. There should be as few closely parallel holes as possible, avoiding an east to west direction, especially later in the round, and approach to higher ground should be made obliquely, rather than by direct climbs. The first and tenth tees (also when possible the seventh or thirteenth) and the ninth and eighteenth greens should be in front of or close to the clubhouse.

III. Construction

A good layout will incorporate as many natural green sites, approaches and interesting contours as are consistent with overriding requirements of the plan. Modifications will be needed to complete greens, bunkers, and where necessary, approaches or areas of fairway. All slopes should be amenable to machine mowing. Abrupt ones, besides being objectionable in play and appearance, are expensive in upkeep. Formality of any sort is to be avoided, and the finest work will be in harmony with the original work of nature itself.

IV. Greens

Greens, where possible, should be visible from the approach shot (essential at short holes) and have a prepared putting area of between 450 and 850 square yards. The long axis of the green will generally be aligned to favor approach from one particular area of the fairway. "Slopes in any direction, undulations and hollows may be introduced, but should be related to the scheme of play just as is the general outline. They should never be so extensive that there are insufficient fairly level areas to cut holes to distribute wear, nor so acute that the progress of a ball correctly putted could, under average conditions, be unpredictable, or that special problems of maintaining an even

turf are produced. There should be at least one special target area to present the strategy of the hole at its best." The construction and maintenance of greens are next in importance to the general design of the course, and no effort should be spared to provide at the beginning adequate fertile top-soil, of suitable texture, and to sow it with the correct strains of grass.

V. Tees

Tees should be sited as close as possible to the preceding green. They are normally elevated, rectangular and approximately level. External slopes should be gradual, to reduce formality and to assist maintenance. Tees should be of adequate area, and number, to distribute wear especially at short holes, and to suit the length of the hole to conditions and type of use. On nine-hole courses, alternative tees should be provided to vary the holes on the second time around.

VI. Bunkers

A well-sited bunker causes thought before a shot is played. No bunker should assist judgment of line or distance, and size, shape and relative location should vary constantly. Wing bunkers guarding the green entrance are generally fundamental in the strategy of the hole. Strategy, broadly speaking, reduces the advantage of the safest line of play from the tee or second shot and rewards, by an easier approach to the green, the

possibility of finishing closer to the hole, or by better visibility for the approach, those who have earlier risked carrying or skirting one or more hazards. On these lines the player is stimulated to take stock of his ability and to play his best. Bunkers should not be excessive where maintenance costs will have to be watched, and gorse, trees, water or abrupt slopes may all be used with discretion to produce interest in play.

VII. General Landscape

The width of fairways will vary from 35 to 50 yards, with the outline related to the scheme of play, irregular, and merging imperceptibly with the rough. The rough close to fairways is kept short to avoid lost balls and delay. Planting of trees and shrubs in the outer rough and as a background to greens will improve the aspect of open sites and the safety of restricted sites. Separation of holes is desirable but avenues down each hole should be avoided. The objections to leaves on the greens, and the poisonous effect of pine needles, should be remembered. Shelters distributed round the course will encourage play in showery weather, and there must be adequate storage under cover for course equipment, machinery, fertilizers and the preparation of compost. A water supply to each green is essential if a high standard of maintenance is expected. Fairway

watering is still exceptional. Seats, drinking fountains, bright flags and well-painted flag sticks and tee markers, adequate direction arrows and litter baskets all contribute to the general impression of the course. A practice putting green near the clubhouse should be provided, with tees for tuition, a practice bunker and distance markers. Practice nets under cover for use in wet weather could be useful.

In summary, the ideal course of 18 holes will be not too closely planned, but all the good natural contours and features of the site should be brought into and contributing to the golfing interest. There will be two or three starting points, a wide variety of good-length holes, with greens of different character and about 75 sand bunkers, at least half of which will be related to strategic sense of play. Artificial construction will be indistinguishable from natural slopes and all will be amenable to machine mowing. Teeing grounds will be adequate, close to the preceding green, and will give variety of line and length. There will be no blind approach shots, and preferably no blind drives. Marginal rough will all be used to effect in play or in appearance. There will be adequate provision for practice, tuition and course maintenance. The player should leave with the impression

of a well-tended course, set in beautiful surroundings, not presenting exceptional difficulty, but inspiring a desire to renew acquaintance and achieve more.

VIII. The Clubhouse

The reputation of a golf club will depend mainly and finally on the quality of the course. A good starting and finishing, possibly two or more starting points, views of play, especially the 18th green and first tee, should receive consideration, together with consideration of such questions as access and services.

General requirements of a golf club house are:

- (1) A large central lounge with good window area overlooking the course, capable of use, also for banquets and dances. A protected or covered terrace for summer use, reached from lounge and easily served with food or drinks is an economical extension for fine days when there will be the most players. It is an advantage if the dining room, when provided, can be combined into one with the lounge.
- (2) Adequate, well-lit locker rooms and changing accommodations, with shower, washing and lavatory accommodations adjoining, a drying room, and separate entrance for movement to and from the course. Storage for members' golf carts should be near this entrance.
- (3) Central secretary's office to control all activities.

(4) Kitchen, staff and steward's accommodations, dependent on scope of scheme, rooms for cards, committees and ladies' rooms with small lounge and locker and washing accommodations in proportion. One or two bedrooms for use by members may be advisable in the larger club house.

(5) Professional's shop, if incorporated in club house should provide for display, storage of clubs and other stock, cleaning and repair of members' clubs, golf carts for hire, seating and office space.

(6) The bar, or bars, should be scaled to the importance it is likely to have in the club's affairs and finances; normally this is quite large. Service to lounge, dining room and men's bar from one position simplifies staffing requirements at slack times. Locker room service may also be considered. Cool storage should be close at hand, and conveniently replenished.

(7) The club house area will include adequate parking spaces, practice putting green, small flower gardens (easily maintained), caddy-master's or starter's hut, and any additional amenities such as tennis courts or swimming pool that may be considered desirable. Some clubs fence off a children's play area to help young married players. The importance of an attractive, well laid out entrance, and adequate signposting to the club is sometimes overlooked.

For future expansion, phased development of the club house should be considered, so that finances are not over burdened at the start, but are able to cope with needs of members and general maintenance of club house and links.

* * *

Reference:

Sudell, Richard and Waters, D. Tennyson, SPORTS BUILDINGS AND PLAYING FIELDS, "Landscape and Architecture for Golf", B. T. Batsford, Ltd., London, 1957.

HISTORY OF THE BRIDGER BOWL

In 1946 Gib Widmer and other enthusiastic skiers felt a need for a new and improved ski area. At that time the only ski area in the Bozeman area was the Bear Canyon Hill, which is located 10 miles southeast of Bozeman.

The Bear Canyon area is located at a much lower elevation in comparison to the present Bridger Bowl, and because of this, the ski season is usually delayed, sometimes as long as a month, due to lack of snow.

One big disadvantage of Bear Canyon is its possibilities of expansion. In order to develop new ski trails, the hill required a lot of tree cutting and stump removal. "Every square foot of trail meant the removal of one tree."

So, in early May, 1946, Gib Widmer and a pilot friend flew along the Bridger range scouting for a suitable ski area. They were looking for a natural site or bowl, one that required very little tree removal and an area that would hold the snow for a long ski season. They spotted the existing Bridger Bowl, took pictures of the entire area and returned to Bozeman with the idea of developing this natural bowl into a new ski area.

In late May, 1946, Gib Widmer and his wife hiked up to the area and were the first known people to ski in the Bridger Bowl. From 1946 until 1954 no developments took place at the area, but there were a few enthusiastic skiers who would hike up to Bridger Bowl and camp over night to get in more than one day's skiing.

Finally, through the combined efforts of interested citizens who formed a non-profit corporation, contributions toward the development of the Bowl attributed to its beginning. The first phase of the development consisted of building a road. A caterpillar and driver were hired and the road that exists today was carved into the hillside. This began in September, 1954, and the first tow or lower lift was started and completed during the winter months. The construction of the tow line required the removal of only about three trees in its line. In the following years extra towers were added to the tow and it now stretches out to a length of 2400 feet with about an 800 foot vertical rise.

Then, in 1957, again during the winter months, the construction of the upper lift began. This tow was completed in 1957 during the ski season, and it now exists as a 1900 foot lift with a vertical rise of

about 900 feet.

At the present time, there exists a rope tow of about 600 feet in length for beginners which is adjacent to the parking lot. There is also a 40 meter jump hill near the parking area and it was completed about four years ago.

Up until 1959 the facilities for a warming hut and lunch counter were very inadequate for large crowds. Just north of the start of the bottom lift, a lodge was built and completed in 1959 for the ski season. This lodge was a huge A-frame structure of wood beams, glass, and stone and was built on private land by the owner, J. F. Neuffer. The ski association, or the non-profit corporation bought the land and the lodge in 1961. Although the lodge is relatively new, weekend crowds are almost cramped within its spaces. But, it is a far cry from what existed three years ago.

The interested citizens who formed the Bozeman Ski Association wanted a non-profit corporation and contributions from the people in and around Bozeman helped build the Bridger Bowl into one of the best ski areas in Montana.

The original Board of Directors included people well known to the citizens of Bozeman. The persons

involved were: Carl Lehrkind, Jr., President of the Corporation and owner of the local Coca-Cola bottling; Homer Anderson, now a faculty member at Montana State University; Dr. R. R. Renne, President of Montana State College; Tom Haggerty, local contractor; Marlyn Hauseman, ski shop owner; Harold Zier, local carpenter; Joe Hansford, food store operator; Dorothy Sabo, wife of a Bozeman physician; and, of course, Gib Widmer.

* * *

Reference:

The preceding information was obtained from a personal interview with Gib Widmer, January 24, 1962.

SITE

The following photographs show the site of the Bridger Bowl area:

Photo 1 shows the existing facilities, contour intervals, and the proposed areas for the lodge, golf course, and new ski lifts.

Photo 2 shows an aerial view of the proposed site, tree cover and possible routes of the golf course and new ski lifts.

Reference:

Photo 1--U. S. Forest Service, Bozeman, Montana

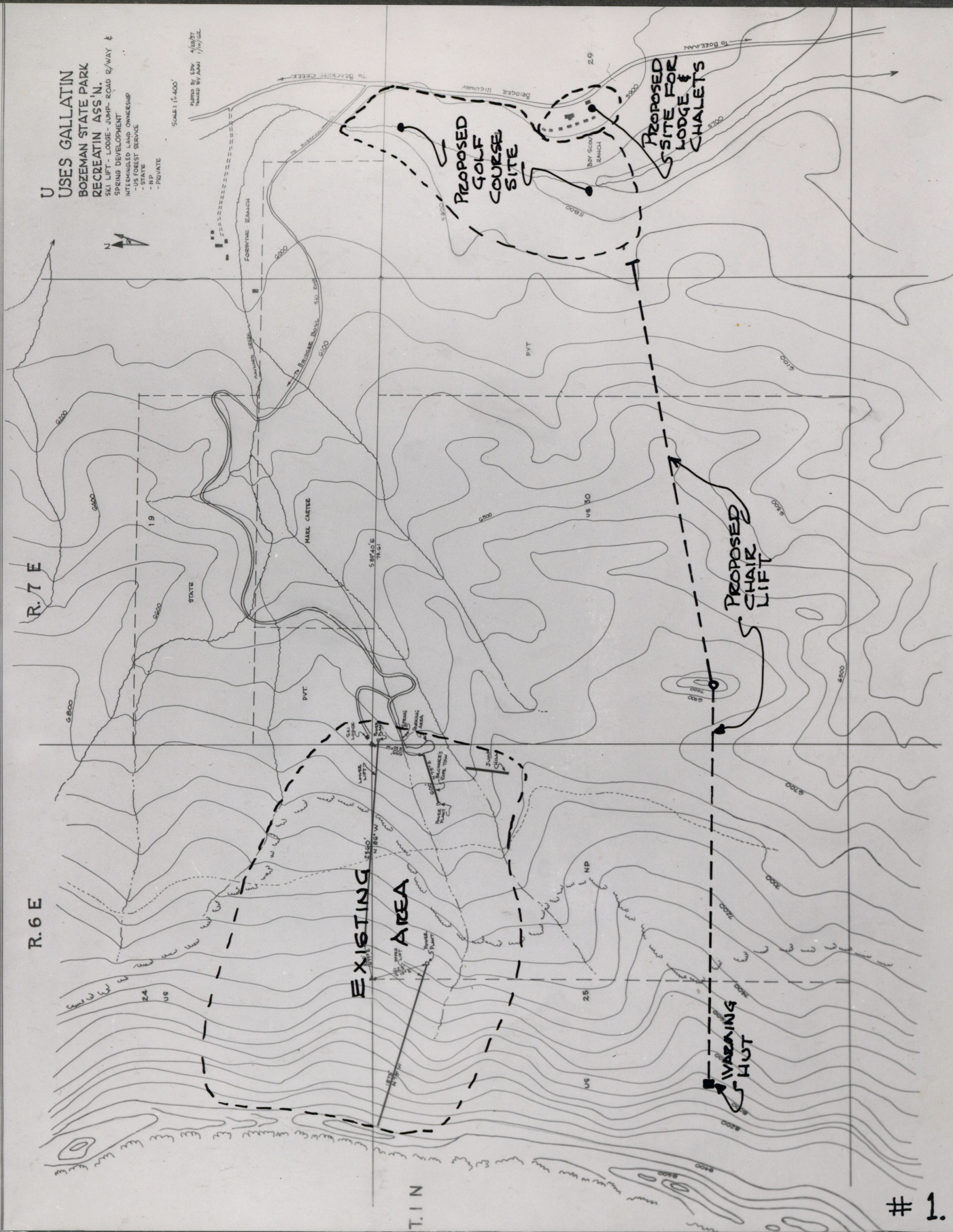
Photo 2--U. S. Department of Agriculture, ASCS, Compliance
and Aerial Photography Division, Salt Lake City,
Utah

U
 USES GALLATIN
 BOZEMAN STATE PARK
 RECREATION ASS'N.

SKI LIFT - LODGE - ROAD 2/MAY 4
 SPRING DEVELOPMENT
 INTERPRETIVE AND OWNERSHIP
 - NP
 - STATE
 - PRIVATE

SCALE: 1"=400'

PAID BY US 4/16/79
 TRACED BY AAM 1/10/72





TO WILSALL

TO BOZEMAN

#2.

EXISTING
AREA

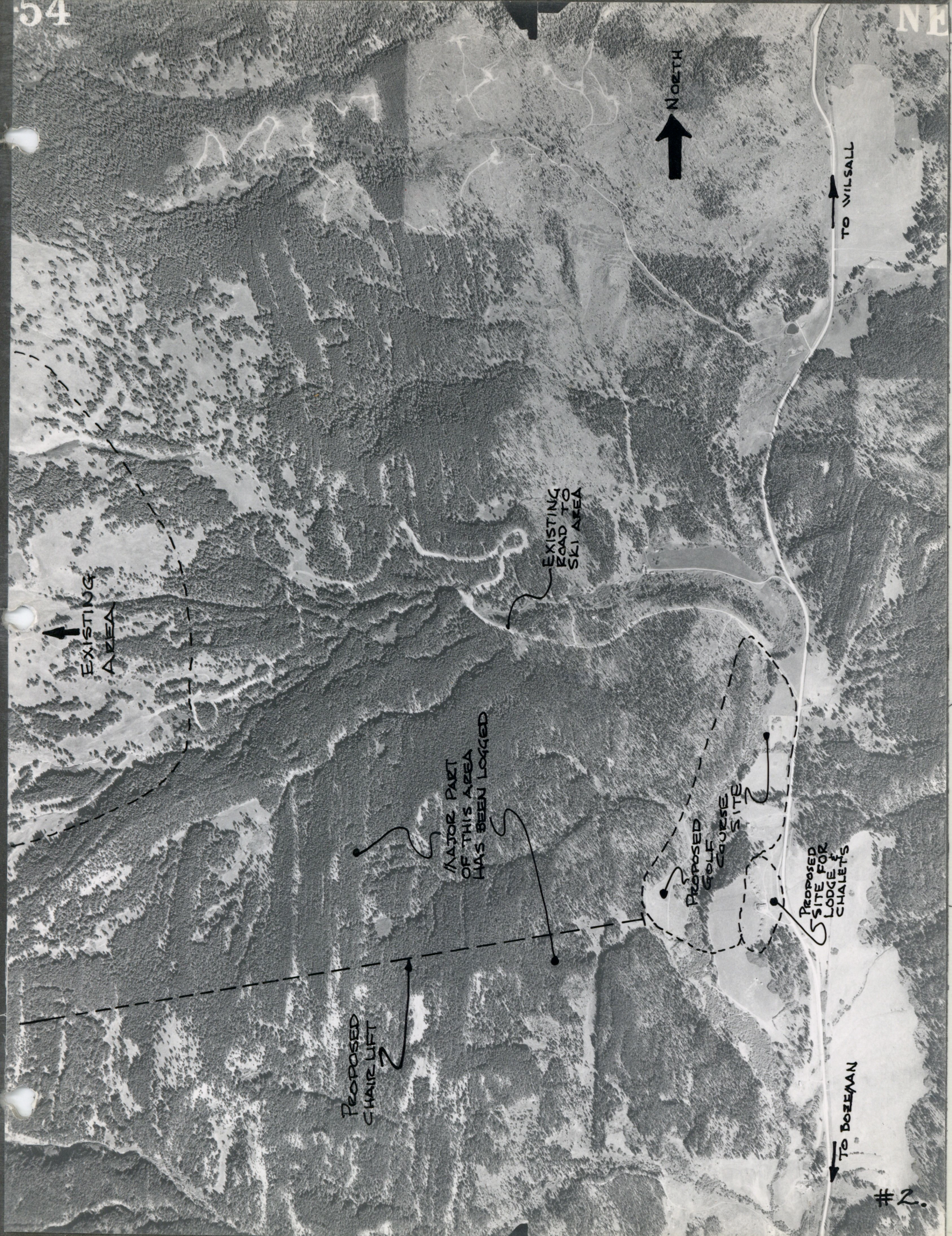
EXISTING
ROAD TO
SKI AREA

MAJOR PART
OF THIS AREA
HAS BEEN LOGGED

PROPOSED
CHAIR LIFT

PROPOSED
GOLF
COURSE
SITE

PROPOSED
SITE FOR
LODGE &
CHALET'S



PRELIMINARY PROGRAM

Besides the existing lodge and ski lifts at Bridger Bowl, the redevelopment or overall plan will include the following:

I. Clubhouse or Ski Lodge

- A. Dining Area--indoor and outdoor (Fireplace)
- B. Food preparation area
- C. Storage--perishable and non-perishable items
- D. Counter service--short order
- E. Dance Floor--could be same as dining area
- F. Cocktail Lounge--fireplace
- G. Pro Shop--for skiing and golfing
 - 1. Sale of clubs, skis and equipment
 - 2. Storage for clubs and skis
- H. Recreation area--cards, shuffleboard, etc.
- I. Locker rooms--shower facilities (men and women)
- J. Lobby
 - 1. Registration of guests
 - 2. Reading
 - 3. TV viewing
- K. Apartments - manager, employees, instructors.
- L. Miscellaneous spaces--janitor's closets, linen, and storage.
- M. Heating and mechanical rooms
- N. Small Laundry
- O. Rest Rooms--accessible from all major areas
- P. First Aid room

II. Guest Chalets

A. Typical motel accommodations

1. Indefinite number
2. Combination of single, double, family and dorm facilities
3. Approximately 4 to 6 rooms per unit
4. Summer and winter use

III. Nine-hole Golf Course

- A. Watering system layout
- B. Garages for maintenance equipment and electric golf carts
- C. Shelters
- D. Benches, ball washers
- E. Drinking fountains

IV. New Ski Lifts

- A. Two-section double chair lift up to existing area
- B. Cutting of new trails and runs
- C. Warming hut at end of top tow
- D. Chair lift used for sightseers during summer months
- E. Toboggan runs near lodge

V. Swimming Pool

- A. Glass enclosed--summer and winter use

VI. Children's Playground Area

- A. General playground equipment
- B. Wading pool

VI. Other Possible Features

- A. Stables for horseback riding

- B. Fishing and hunting
- C. Tennis courts
- D. Archery
- E. Skeet shooting
- F. Ice skating (summer and winter)

* * *

FUNCTIONS OF BUILDING "A"

In the development of the Bridger Bowl area, there will be a nine-hole golf course, located on the valley floor, and a clubhouse or lodge that will serve skiers and golfers. Located in the area of the lodge will be housing units to serve tourists in both summer and winter. Included in the surrounding area will be less prominent buildings, such as a central heating plant and garages for electric golf carts, snow plows, and maintenance vehicles.

The main design emphasis will be given to the lodge. For skiers as well as golfers, the clubhouse or lodge becomes the "meeting place" before, during, and after indulging in each sport.

The clubhouse will have several functions that serve both winter and summer. The main part of the lodge will be the dining room. It is to be suitable for indoor and outdoor dining and it should afford a beautiful view for the guests to enjoy while eating or relaxing. In order to make the dining room function properly, the food preparation area must be adequate to handle large crowds and be easily accessible to and from the dining room. In order to dissolve a large crowd in a hurry, a short-

order counter should be included adjacent to the food preparation area. Also included in this area should be sufficient storage space for perishable and non-perishable items. For evening relaxation, the dining room could be cleared of tables and converted into a dance floor.

A cocktail lounge will be included in the main lodge and will probably be located adjacent to the dining room. The lounge should also have a panoramic view of the surrounding terrain. Rest rooms should be readily accessible from the lounge, the dining area, as well as outdoor recreations.

A "Pro-Shop" will be included in the overall design for the purposes of selling skiing and golfing equipment, storing skis and golf clubs, and housing a ticket office for buying tow passes, paying green fees, or hiring professional instructors. The pro-shop should be situated so it is easily accessible from outdoors or indoors.

Another part in the building will have a recreation area. This should include space for pool, ping-pong, playing cards, shuffle board or just relaxing. This area should be isolated from other public spaces but readily accessible from all major areas.

Locker rooms for men and women play another important part in the building. Golfers will use these more often than skiers, so it also should be situated near the pro-shop. If a swimming pool is included in the overall design, easy access from the locker rooms should be made.

From present estimations, a good weekend of skiing at Bridger Bowl has from 300 to 400 skiers, the majority being from Bozeman. During the summer, there are approximately 300 enthusiastic golfers in the Bozeman area. Although the golf course would not serve many townspeople, tourists would dominate the premises. Therefore, the main lodge should be designed to accommodate at least 300 people.

* * *

BUILDING PROGRAM OUTLINE

After the research of a project has been compiled, a building program is devised and is a necessity when designing or planning a building of any type. This program will tell the designer what areas or spaces are required and the approximate square footage. In general, the building program should tell the designer the following: the spaces or areas required, public or private, general information, such as the function of a space, equipment in the space, specific details related to a particular space, the number of persons the space is to serve, as well as number of employees, and the approximate square footage, which can vary five to ten per cent either way. The building program is not the final word, as every designer has his own interpretation of how the spaces should be designed.

The tables on the following pages show this information for the main building of the project--the lodge or clubhouse.

PRELIMINARY BUILDING PROGRAM

MAIN LODGE--BUILDING "A"

SPACE: A-1 LOBBY (public)

GENERAL:

Function--The registration and check out of guests.

A place to read, relax, or watch television.

Equipment--Six or eight lounge chairs, about three sofas with small tables dispersed evenly. Good lighting for reading as well as for the lobby entrance. Proper lighting for T.V. viewing with good acoustical treatment.

SPECIFIC:

Near main entrance. A gift shop incorporated with the main desk. Provisions for night-clerk, room keys, and mail. Telephone booths, at least two.

NUMBER OF PERSONS:

15 to 20(maximum of three employees).

AREA:

800 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-2 MANAGER'S APARTMENT (private)

GENERAL:

Function--Complete living quarters for manager and his wife.

Equipment--Necessary items for living room, bedroom, kitchen and bath. Good lighting and ventilation.

SPECIFIC:

This could be upstairs in the lodge, or adjacent to the main desk, or a separate guest chalet could be provided. A good view of surrounding area.

NUMBER OF PERSONS:

6 to 8, which would include visitors

AREA:

800 to 900 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-3 MANAGER'S OFFICE (private)

GENERAL:

Function--To keep records of financial matters for the lodge, chalets, and recreational facilities.

Equipment--Office desk, adding machine, typewriter, thermo-fax machine, secretarial desk and filing cabinets. Good lighting and ventilation.

SPECIFIC:

Adjacent to main desk in lobby. Foldaway bunk for night clerk.

NUMBER OF PERSONS:

3 to 4 employees

AREA:

250 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-4 DINING AREA (public)

GENERAL:

Function--To provide food service for guests, three meals per day.

Equipment--About 50 to 55 tables, 3'-0" by 8'-0", and 400 to 425 chairs. A large fireplace, good lighting and ventilation and acoustical treatment. A very durable floor material.

SPECIFIC:

A short-order counter adjacent to dining and kitchen areas. Main dining is served in cafeteria style except for special banquets. A panoramic view of the area should be provided for outdoor dining to be included.

NUMBER OF PERSONS:

300 to 400 (400 maximum at one time)

AREA:

6500 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-4-1 DANCE FLOOR (public)

GENERAL:

Function--To provide evening entertainment for guests.

Equipment--An elevated bandstand, portable or permanent. Fireplace, same as dining room. Good ventilation.

SPECIFIC:

Could be same area as dining room. Storage should be provided for extra chairs and tables when clearing floor for dancing. Easy access to bar and lounge.

NUMBER OF PERSONS:

150 to 200

AREA:

3000 feet of dining room area

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-5 FOOD PREPARATION (private)

GENERAL:

Function--To prepare food for guests in the dining room and short-order counter.

Equipment--Necessary items for an efficient kitchen such as: ranges, fryers, broilers, roasters, steamers, cook's table, sinks, steam table, etc.

SPECIFIC:

Adjacent to dining area and short-order counter.
Storage should be provided for perishable and non-perishable items.

NUMBER OF PERSONS:

12 to 15 employees

AREA:

2000 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-6 COCKTAIL LOUNGE (public)

GENERAL:

Function--To provide enjoyment for those persons who indulge in alcoholic beverages.

Equipment--About 15 tables, to seat 4 at a table, 40 lounge chairs, and about 15 to 20 bar stools. Good lighting for atmosphere and good acoustical materials. Refrigerator for storage, and glass washers, disposals, bottle racks, beer and soft drink dispensers. Fireplace, same as dining room, and vending machines.

SPECIFIC:

Adjacent to dining area and dance floor, but not visibly. If possible, easy access from locker rooms and outdoors. A good view of golf course and ski hill, with possible sundeck adjoining lounge.

NUMBER OF PERSONS:

60 to 75 (4 to 6 employees)

AREA:

1200 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-7 RECREATION AREA (public)

GENERAL:

Function--To provide evening entertainment for guests, or during inclement weather, or during the day.

Equipment--2 pool tables, 2 ping-pong tables, fireplace, area for 3 or 4 card tables, and equipment for shuffleboard. Permanent seating around fireplace for conversationalists. Good lighting and acoustical treatment, and a durable flooring material.

SPECIFIC:

Adjacent to locker rooms, easily accessible from lobby, but away from other public spaces. Storage for card tables, chairs, pool balls, and ping-pong equipment.

NUMBER OF PERSONS:

20 to 30

AREA:

1200 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-8 PRO-SHOP (public)

GENERAL:

Function--To sell skiing and golfing equipment, repair clubs, skis, boots, etc., and take care of lift tickets and green fees.

Equipment--Special racks for display of skis and clubs, and showcases for smaller items. Display area for clothing and shoes or boots. Good lighting with view towards golf course and ski hill.

SPECIFIC:

Easily accessible from golf course or ski hill. Storage for guest's clubs or skis should be provided. Also, accessible from main lobby of clubhouse. A small change room should be provided.

NUMBER OF PERSONS:

25 to 30 (2 to 3 employees)

AREA:

750 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-9 LOCKER ROOMS -- MEN AND WOMEN (public)

GENERAL:

Function--For guests to shower and change after a day of activities.

Equipment--About 80 lockers for both rooms, with benches, storage for towels and a gang shower for about 8 at a time. Good durable materials and well ventilated.

SPECIFIC:

This area could be kept to a minimum as the facilities in the guest chalets would be adequate. This space should be near the Pro-Shop and easily accessible to the bar.

NUMBER OF PERSONS:

60 to 80

AREA:

1000 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-10 REST ROOMS --- MEN AND WOMEN (public and private)

GENERAL:

Function--To provide facilities for toilet needs.

Equipment--3 lavatories, 3 urinals, 3 water closets in mens', and 4 water closets in womens'. Towel and soap dispensers. Good ventilation and good, durable floor and wall material, such as ceramic tile.

SPECIFIC:

Adjacent to public spaces as necessary. If rest rooms are on different levels, place one above the other for economy of piping.

NUMBER OF PERSONS:

10 to 12

AREA:

200 square feet per room

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-11 SMALL LAUNDRY (private)

GENERAL:

Function--To clean laundry used by dining room,
bar, locker rooms, kitchen and guest chalets.

Equipment--A 20-minute cycle washer, a dryer, an
ironer and shelves for linen storage. A table for
folding sheets, towels, etc. Good ventilation and
lighting.

SPECIFIC:

Adjacent to locker rooms with easy access from
guest chalets for employees.

NUMBER OF PERSONS:

2 to 3 employees

AREA:

250 square feet

MAIN LODGE--BUILDING "A"--(con't)

SPACE: A-12 FIRST AID ROOM (public)

GENERAL:

Function--To administer first aid to injured skiers, golfers, or anyone using the facilities of the surrounding area.

Equipment--3 or 4 stretchers, large first aid kit, bed or table for injured person to lie on. Plenty of splints and triangular bandages available. Good lighting and ventilation is necessary.

SPECIFIC:

Easily accessible from ski hill, golf course, and main lobby. Transfer of injured person to a car or ambulance must be adequately provided for.

NUMBER OF PERSONS:

Maintained by ski patrol or employees in the lodge.

AREA:

200 square feet

MAIN LODGE--BUILDING "A"-- (con't)

Total square footage (approximate)

items A-1 through A-12	15,850
------------------------	--------

Plus approximately 25% of the total
square footage for miscellaneous
spaces such as: corridors, janitor's
closets, misc. storage, ductwork, and
stairwells

3,900

TOTAL	19, 750
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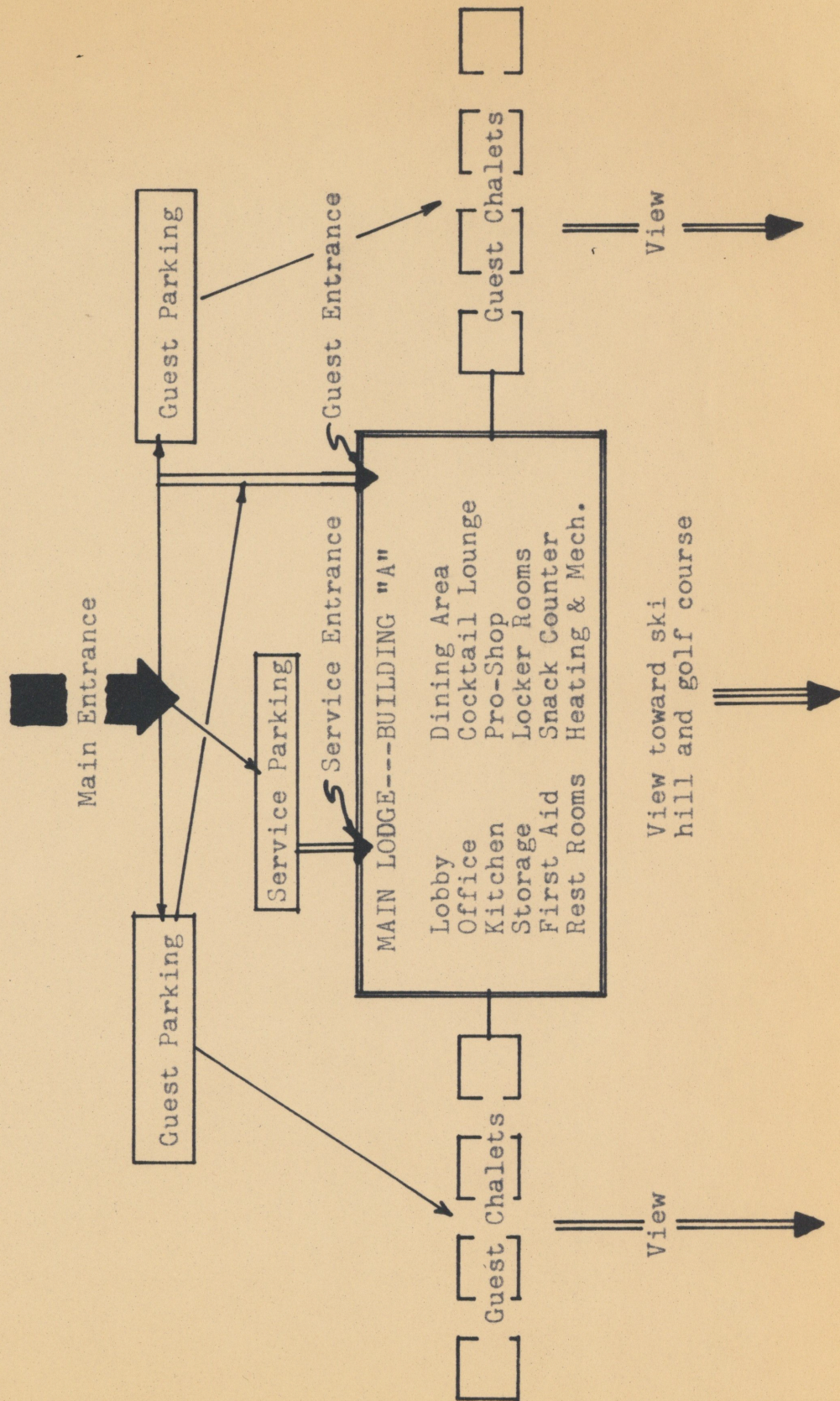
PRELIMINARY FLOW DIAGRAMS

Flow diagrams are an essential start for any design project. The diagrams will show the designer the space relationships and the circulation patterns that the varied functions will take. The designer should sketch several flow diagrams until he feels he has the problem of circulation worked out successfully.

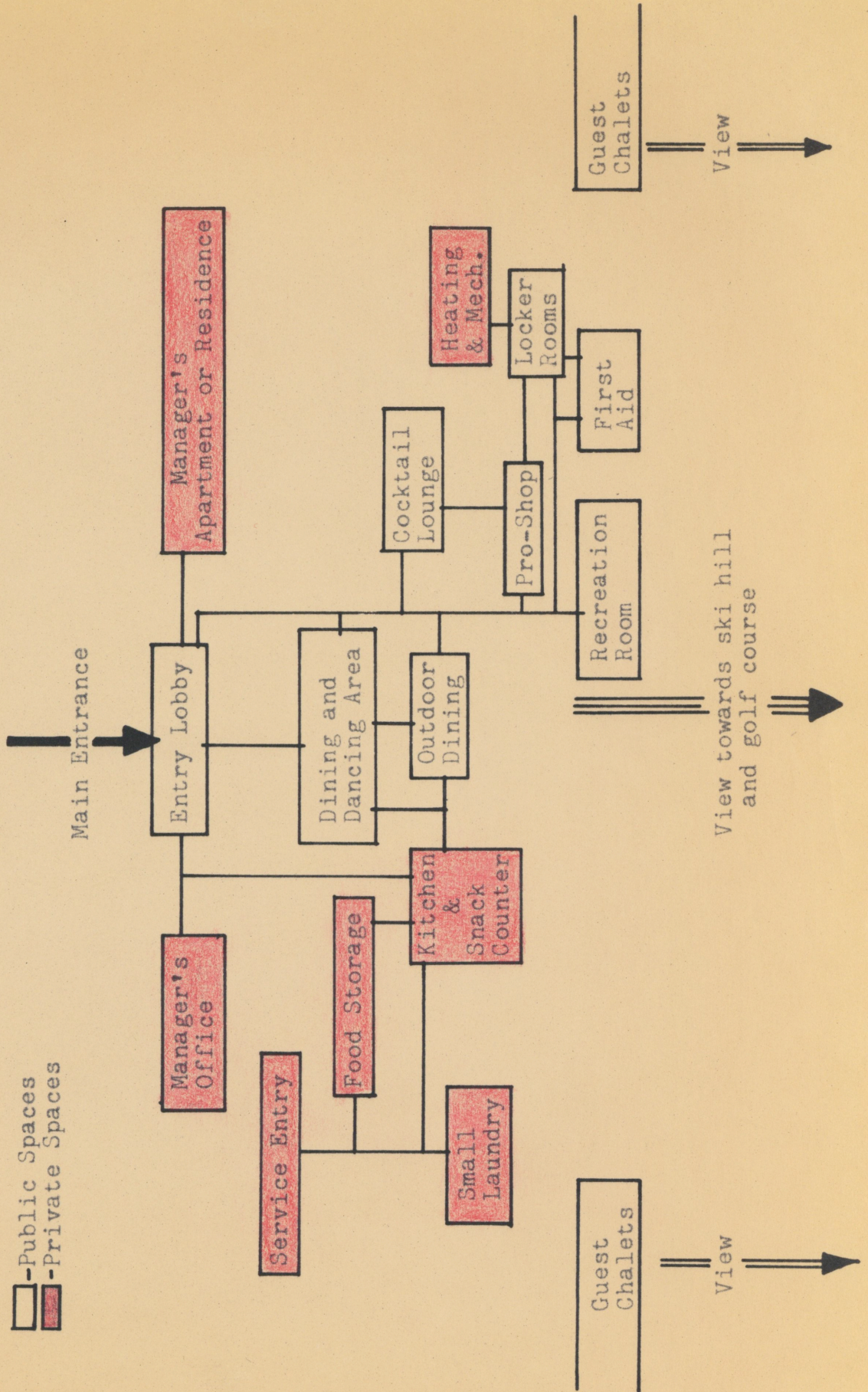
The first flow diagram shows the general circulation of traffic of the overall layout. The second diagram shows a proposed circulation pattern within the central lodge.

Small spaces, such as rest rooms and janitor's closets, are not shown because they will be located for the convenience of the particular areas when preliminary design begins. Also, the functions may vary as to their placement if the building is designed with split-levels or multi-stories.

FLOW DIAGRAM - OVERALL LAYOUT



FLOW DIAGRAM--MAIN BUILDING "A"



AESTHETIC CONSIDERATIONS

The site for this project is located 16 miles north-east of Bozeman on the Bridger highway. At the present time, the site chosen for the lodge and housing units is occupied by the Flaming Arrow Boy Scout Ranch. It will be assumed that the land could be made available.

Directly west of the site, the Bridger Range rises almost 3000 feet from the valley floor to its top in a distance of about two and one-half miles. Nature's mountains, trees, and slopes have presented the perfect setting for a winter and summer resort.

The design of the ski lodge or clubhouse should have a definite character that would be aesthetically pleasing to the surrounding terrain. From the lodge, the general view will be toward the Bridger Range, the existing ski area, the redeveloped ski area, and the view will also overlook the golf course in the valley below. From this consideration, the lodge should have a large expanse of glass area to afford the guests a view of the majestic mountains and surrounding countryside.

Because of the heavy snowfall in this area, the buildings should have steep pitched roofs to reduce the snow load. In order to maintain a definite character, the buildings could be A-frame structures or a Swiss

Chalet type structure. By doing this, the buildings would have a relationship to the steep mountains and slopes in the area and would lend themselves nicely to the environment.

The choice of materials must be carefully selected to harmonize with the surroundings. For instance, the A-frame structures should be constructed of heavy timbers or laminated beams and the natural wood color should be maintained. In order to give the buildings a rustic look, the roofing material could be hand-split cedar shake shingles. This would definitely give the building exteriors an approach to organic architecture, or the effect that the buildings have almost grown out of the site.

To preserve harmony throughout the design of the buildings, the interior materials should be consistent with the exterior. Other materials such as native stone or wood paneling would add to the rustic look and give a natural setting for a summer and winter resort on this site.

In the development of the project, natural foilage and tree removal should be kept to a minimum. Possible landscaping around the lodge, guest chalets, and the golf course should be planted to integrate with the surrounding area.

* * *

ECONOMIC CONSIDERATIONS

"Physically, design starts with site selection and development. Each site has inherent values to exploit and drawbacks to be countered; in the city, convenience to the things the city has to offer; on the highway, scenic values, convenience regarding traffic and proximity to major attractions. Some of the items to be checked are: (1) Recognition or advertising value, (2) Quality and nature of surroundings, (3) Ease of access by car, (4) Soil conditions for construction, and (5) Possibilities for expansion."^{1.}

Among the basic planning factors, the type of clientele using the accommodations must first be determined. Overnight guests require, as a minimum, sleeping rooms with baths. For weekenders, the minimum is living-sleeping rooms with baths. Vacationers, couples or families, need larger, more flexible space. Clientele may be transient or use the motel as their terminal resort. Provision should be made for a range of accommodations, with varying prices tailored to the requirements of the clientele.

Motels or resorts cost a lot to build, but hotels cost even more per unit. Figures are hard to arrive at because estimates of averages differ and because

available valuations include establishments built during the depression and pre-war years when costs were much lower. The national average is now about 22 rooms per motel, considered about the minimum feasible number for a reasonable return on the investment. But, the trend today is toward larger installations; and the most efficient and profitable size is thought to be about 100 units.^{1.}

The average capital investment in motels ranges from \$72,000 to \$80,000; the average per room about \$4,000. Actually, motel cost per room to build now varies from \$6,000 to \$8,000 (before the war it was about \$2,500) and the usual motel has 20 or more rooms. Motels have made money on a 70 per cent occupancy average throughout a given year. Closely related to these costs, and of importance to anyone considering an investment in this field, is the fact that well located, efficiently planned motels ordinarily enjoy higher percentages of occupancy and make greater net returns of their investments.^{1.}

Unlike most businesses, the motel or resort makes its money from a building. It operates on a small profit margin, selling its product daily. The tourist demands three things: (1) Food, (2) Lodging, and

(3) Entertainment. A new resort in the Bridger Bowl area would furnish them. The average profit on an individual sale, runs about as follows: on rooms, 70 per cent of income is profit; on liquor, 50 per cent is profit; on commercial rentals, 15 per cent is profit; on food, nothing. But, when one builds a motel or resort, 65 per cent of the cost goes into public and service areas and 35 per cent into rooms. This seems to be economically out of balance, but the non-profit areas must be there in order to rent the rooms, for rooms alone fail to meet the three demands.^{1.}

Architect William B. Tabler, well-known hotel designer has derived some rules of thumb from extensive studies. "First, room construction cost (the finished, unfurnished shell) should not exceed \$1,000 per \$1.00 average room rate. Second, the cost of the land should not exceed 10 per cent of the cost of the building. Third, the number of necessary employees should not exceed the number of rentable units. Fourth, bedroom areas should be at least slightly larger than public and service areas; and the more the better."^{1.} These rules of thumb are predicted on a 65 per cent occupancy break-even point.

When speaking of per-room cost, as mentioned above, it is normally arrived at by taking the cost of the whole

building, including furnishings, equipment, etc., and all public spaces, and then dividing this total by the number of rooms.

There are several economic advantages of building a motel or resort and some of these are: (1) The resort motel is built on less expensive land than the city motel or hotel, and usually with less expensive labor; (2) It is usually outside the city limits, so that it can employ less expensive construction methods by not having city building codes forced upon it; (3) Taxes will be lower outside the city limits; (4) The cost of maintenance labor will be much lower if the motel is owner-managed. These savings could add up to a very low break-even point, often as low as 30-40 per cent occupancy.^{2.}

The following examples show how different ratings of a motel or resort compare costwise. These costs are given per cubic foot and square foot and are an approximate figure:^{3.}

Class "D", Good Resort

Exterior Walls--Brick or Stone Veneer

Interior Finish--good paneling, carpeted rooms

Lighting, Plumbing & Mechanical--Excellent

Heat--Hot Water

Cost-- \$1.40/cu. ft. \$13.97/sq. ft

Class "D", Rustic Resort

Exterior Walls--Logs and Rubble Masonry

Interior Finish--Wood, softwood flooring

Lighting, Plumbing & Mechanical--Generally below average

Heat--Heaters

Cost-- \$.97/cu. ft. \$9.69/sq. ft.

Class "D", Good Motel

Exterior Walls--Brick Veneer, good frame, large
windows, decorative

Interior Finish--Plaster, paint, carpet on subfloor,
good bath and wardrobes.

Lighting, Plumbing & Mechanical--Good fixtures, good
plumbing, TV and FM circuits

Heat--Forced Air

Cost-- \$1.37/cu. ft. \$12.30/sq. ft.

Class "D", Excellent Motel

Exterior Walls--Face brick and Stone Veneer, heavy
frame, highly decorative

Interior Finish--Plaster, Paint, good carpet on sub-
floor, good bath and wardrobes.

Lighting, Plumbing, & Mechanical--Excellent fixtures,
good plumbing, TV and FM circuits

Heat--Complete A.C.

Cost-- \$1.75/cu. ft. \$15.76/sq. ft.

The following "Rules of Thumb" should not be used for
actual appraisals, but should be considered budgeting

guides only:³.

Miscellaneous Costs--Motels

For units with kitchens, add:

<u>Excellent</u> (stove, refrigerator, sink and cabinet unit)	\$675
--	-------

<u>Good</u>	\$500
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Average cost per unit including lobbies, lounges,
coffee shops, pools, landscape, paving, etc:

<u>Excellent</u>	\$6,600
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<u>Good</u>	\$5,400
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Therefore, according to the above estimated costs,
using a class "D", Good Resort cost, the main lodge at
the Bridger Bowl area would cost approximately: \$13.97/sq. ft.
X 19,750 sq. ft. = \$276,000.

The motel or chalets would cost approximately \$6,600 per
unit for an excellent motel. Estimating a minimum number
of units at 30, it would cost about \$6,600/unit X 30 units =
\$198,000.

Finally, there is the factor which is probably more
important than any other in considering the business of
hospitality: personnel. The most successful motels or
resorts depend greatly upon the owner's friendly manner,
his willingness to work long hours, and taking infinite
pains to satisfy the needs of each guest. "When it is
considered that 40 per cent of vacationers return to the

place they visited last year, and 25 per cent of vacationers visit places recommended by friends, the solid values of the personal touch become of striking economic importance." 2.

* * *

Reference:

1. MOTELS, HOTELS, RESTAURANTS AND BARS, an Architectural Record Book, F. W. Dodge Corporation, 1960
2. Baker, Geoffrey and Funaro, Bruno, MOTELS, Progressive Architecture Library, Reinhold Publishing Corporation, New York, 1957
3. MARSHALL VALUATION SERVICE, compiled by Marshall and Stevens Company Valuation Research, Los Angeles, Calif.

APPENDIX

RESEARCH ON MOTELS AND RESORTS

I. Facts Pertaining to Site Selection

A. Location

1. Convenient to highway
2. Close proximity to major recreation facilities

B. Accessibility

1. Ease of access by auto
2. Visibility of site from highway
3. Driving time to various local attractions
4. Parking on or off site

C. Driveways and Parking

1. Stabilized, hard surfaced or black topped driveways
2. Driveways should have easy access and egress, gentle grades and curves
3. Road lights should be kept low to avoid glare in guest rooms.
4. Service drives should be separated from guest traffic
5. Sheltered parking is ordinarily preferred

D. Landscaping

1. Used as background for buildings, wind-breaks, shade, and for screening undesirable views
2. Paved walks are appreciated by guests and reduces the dirt carried inside the buildings

II. Promotional Features

A. Services and Amneties

1. Laundry Service
2. Baby Sitter Service
3. Vending Machines
4. Gift Shop
5. Public Telephone Booths
6. First Aid Facilities

B. Guest Complaints

1. Noise--buildings too close to the highway, lack of landscaping, and flimsy construction
2. Inefficient furnishing--often reflects a lack of understanding of the needs of the guest.
3. Inadequate hot water supply--due to poor engineering and false economies in equipment
4. Poor lighting--due to conception a lamp is a piece of decor, not a source of light for the guest who likes to read in bed.

C. Guest Preferences

1. Parking close to guest unit for unloading and early morning starts.
2. Covered walkways between restaurant and rental unit.
3. Privacy--noise protection from fellow guests
4. A private view of the surrounding area undisturbed of passers-by looking in.

D. Boost Year-Around Occupancy

1. An increasing tendency to vacation during the winter as well as in the summer.

III. Employees and Maintenance

A. Employees

1. One maid for each ten rooms--minimum operation
2. A motel with facilities of a downtown motel, one employee per room (includes administration maintenance and housekeeping)
3. Complete operation efficiently run can be done with one employee for each two rooms.

B. Maintenance (larger installations)

1. Shops for maintenance and repair of plumbing, heating, air conditioning and electrical equipment
2. Painting and glazing are year-round occupations in most motels
3. In spread-out motels, maintenance is accomplished by scooters, jeeps, or small trucks

C. Employee Facilities

1. If site is isolated, quarters for employees should be provided for employees who will live on the premises.
2. Lockers, toilet rooms, and other facilities for employees must be provided.

IV. Miscellaneous

A. Laundry

1. If monthly laundry bill is more than \$100, it usually pays to install a laundry.
2. A 20-minute cycle is sufficient for most linen and an occasional 30 minute cycle for more heavily soiled material.
3. Average installation will cost \$2,000 and up, depending on size of equipment installed.
4. One attendant should be able to turn out 30 pounds dry weight (15-20 sheets) of clean linen per hour.
5. A typical small motel laundry has a washer, a dryer, an ironer, and shelves for linen storage, all within a space of 12 X 15 feet.

* * *

Reference:

1. MOTELS, HOTELS, RESTURANTS AND BARS, an Architectural Record Book, F. W. Dodge Corporation, 1960
2. Baker, Geoffrey and Funaro, Bruno, MOTELS, Progressive Architecture Library, Reinhold Publishing Corporation, New York, 1957
3. Gunn, C. A., MOTELS AND RESORTS, Circular R-307, Cooperative Extension Service, Michigan State University, East Lansing, Michigan, January, 1960

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