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A PHOTOGRAPHIC ESTABLISHMENT FOR BOZEMAN, MONTANA

Part I

Undergraduate Thesis in Architectural Design

By

441

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at

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CONDITIONS CREATING A NEED

Competition is the basic condition creating a need for a new photographic establishment for Mr. Steve Hadnagy in Bozeman, Montana. To operate competitively Mr. Hadnagy plans eventually to establish a chain of photo studios throughout the country with a central photographic establishment in Bozeman. His present studio is not large enough or equipped fully enough to function as a central photographic establishment. His present studio is, in fact, inadequate for his present work load in the Bozeman area.

On July 5, 1963, Mr. Hadnagy and his wife began business in a photo studio at 1210 West Main. This studio, previously operated by an elderly couple, had been grossing \$7,000 annually. Even though Mr. Hadnagy's gross income for the following year was \$24,700, his overhead limited the profit to several hundred dollars. After this first year's operation as a man and wife team, Mr. and Mrs. Hadnagy analyzed their business to determine how to eliminate unnecessary overhead. Since they had more business than they could handle in the existing studio and still were not realizing a justifiable profit, it was apparent to them that changes were in order.

Some of the unnecessary overhead was attributed to the fact that equipment and processes used in the darkroom required too many man hours. More time was spent developing film and working with negatives and prints than was spent taking pictures. Since income depended on the number of photographs taken and sold, it was necessary for Mr. Hadnagy to consider revising processing procedures, purchasing new equipment, and hiring employees.

Mr. Hadnagy's output of finished pictures was limited by his production and processing procedures, the size of his studio, and the size of his work force. He realized that reduction of overhead was necessary in order to realize a profit. However, in order for him to make the changes necessary to reduce overhead it was also necessary to increase production capabilities of the studio so that the business available could be handled efficiently and within deadlines.

In order to be competitive, Mr. Hadnagy also considered introducing color photography into his studio's operations. Previously oil-tinted black and white photographs were the common form of color pictures available in the studio. These required considerable time and expense to produce.

To date, the studio has been remodeled, new equipment has been installed which will process color or black

and white film and prints, automation has been introduced into processing procedures, employees have been hired, and the area of the studio has been more than doubled since 1963. The above changes in the photo studio have increased its output capabilities and have converted most of the studio's entire operation to color.

Although Mr. Hadnagy estimates this year's gross income at approximately \$80,000, the present studio cannot handle the available business effectively. The reason for this is due to inadequate space, lack of more automatic equipment for processing film and paper, and poor circulation in working areas. Many time-consuming jobs such as drying prints, pressing prints, and cutting prints could be done automatically by machines in a fraction of the time it now takes. The present studio does not have the room for such equipment. One automatic printmachine can reduce the time in the darkroom from three hours to twenty minutes and also eliminate unnecessary waste of chemicals experienced in previous operations. The use of roll paper instead of sheet paper could increase print output tremendously. To make the changes necessary to increase output and reduce unnecessary overhead, Mr. Hadnagy needs a new photographic establishment.

Since the future plans of Mr. Hadnagy include a chain of studios which would send all work to the Bozeman

establishment to be processed, a larger and better equipped laboratory would be justified. Mr. Hadnagy has already opened one studio in Livingston; thus, plans for the future are in progress.

Much of the business in the greater Bozeman area is attributed to the university population as well as to the local population. Growth in both populations indicates that more business will be potentially available in years to come.

Competition makes it necessary for Mr. Hadnagy to have an efficient establishment capable of handling future work loads as well as existing work. This structure necessarily should be designed and constructed so as to be aesthetically pleasing to the public since much business is attributed to the impression a building makes on the public. If Mr. Hadnagy had such an establishment, it would be possible for him and his employees to produce quality work at a competitive price--a must in the business world.

LOCAL CONDITIONS

Geographic

The site for the photo studio is located in Bozeman, Montana. The city of Bozeman is located at the base of the western slope of the Bridger Mountain Range at 45 degrees 40 minutes north latitude and 111 degrees 3 minutes west longitude at an elevation of 4,793 feet. This location on the east slope of the continental divide in south central Montana is 90 miles from the Yellowstone National Park and near the Montana-Wyoming border.

Two major highways intersect at Bozeman--Interstate 90 or U.S. 10 and U.S. 191. Interstate 90 is a major artery running east and west while U.S. 191 is a major entrance to Yellowstone National Park.

Bozeman, covering an area of 4.2 square miles, is provided travel connections by the Northern Pacific Railroad, Northwest Orient Airlines, and Greyhound Bus Lines. Freight service is provided by the Milwaukee Railroad; Northwest Freight Lines, Inc.; Consolidated Freightways; Northern Pacific Transport Company; and the Butte-Bozeman Delivery Service.

Climatic

Bozeman experiences essentially a mountain valley climate, being neither excessively cold nor hot. The growing season is approximately 100 days long. The last killing frost usually comes around May 20-30, with the first killing frost occurring about September 20th.

Summers in the Bozeman area are generally pleasant. They are characterized by warm days, cool nights, and a frequent number of clear days. Periods of extremely warm weather or humid days are infrequent. Temperatures may exceed 90 degrees for periods usually lasting about a week once or twice during the summer. In the summer, the average temperature is 66.5°F.

Winters are relatively cold with a week or more of severely cold temperatures. Although these temperatures may drop to a -35°F, the average winter temperature is about 25°F.

Precipitation

Bozeman's average annual rainfall is 17.65 inches, with more than fifty per cent falling during May and July. Most of the summer rainfall occurs in showers or thunder-showers. Thunder and lightning sometimes accompany the showers, and hail is occasionally experienced.

Precipitation during the winter months usually occurs as snow. Snowfall varies from 20 to 50 inches during the year. The first snowfall usually comes in late September, with the last snowfall occurring in April.

Sun Angles

The angle of the sun is low in the south during December. This should be considered when fenestration is established in the structure.

Population

At the present time the population for greater Bozeman is 23,500 people. Of this population 5,935 are students at Montana State University. Inhabitants of Bozeman proper comprise 15,500 of the population of greater Bozeman. The remaining people are in new housing developments not yet incorporated into the city.

Increases in population will also cause an increase in potential photography business. From 1909 to 1950, the population increased an average of 27.5 per cent for each ten years. From 1950 to 1959, the population increased 28.4 per cent. Bozeman proper, then, could conceivably have an increase of 30 per cent in population in the next ten years.

The student population is estimated to exceed 10,000 students in ten years according to the Registrar's office of Montana State University. See Figure 1 for a graph of the population growth at Montana State University and in Bozeman.

See Figure 2 for a graph of the increase of gross income for Mr. Hadnagy's existing studio.

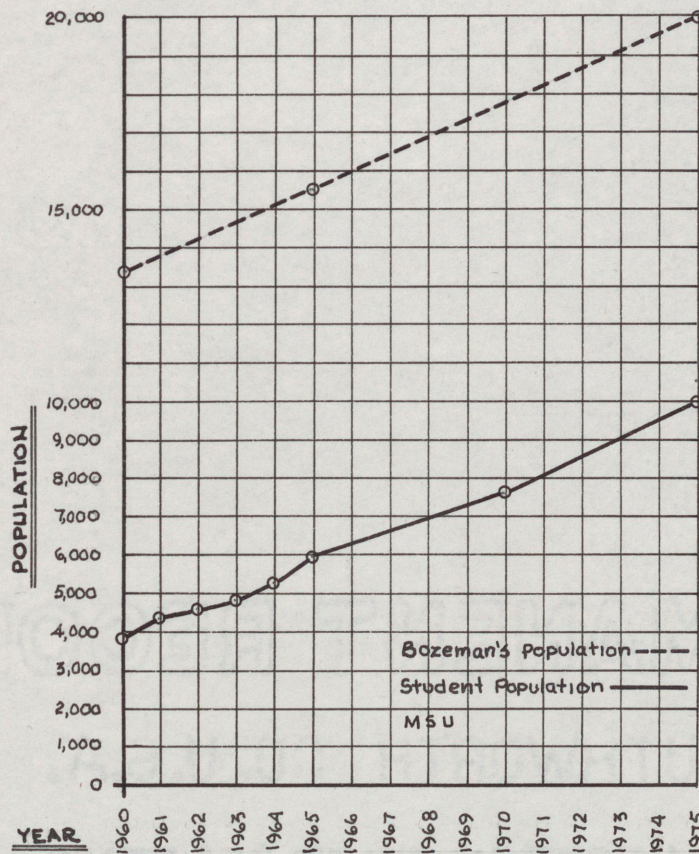


FIGURE 1
GRAPH OF POPULATION GROWTH

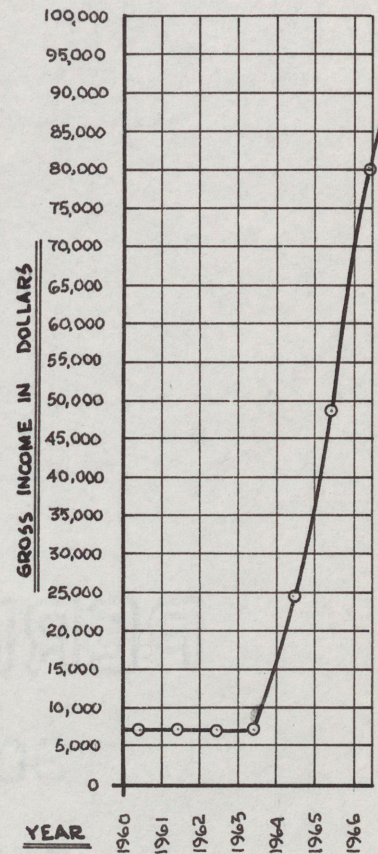


FIGURE 2
GRAPH OF INCOME

SITE CONDITIONS

Location

The proposed site is located on the southwest corner of the intersection of North Eleventh Avenue and West Main Street. The site consists of 120 feet of frontage on West Main Street and 130 feet of frontage on North Eleventh Avenue. See Figure 3, a map of the city, for the location of the site.

Water, sewage, gas, and electricity are accessible from the alley to the north.

Topography, Vegetation, and Natural Features

The proposed site, a portion of a city block, is relatively flat with only minor changes in elevation. There are no trees or other vegetation of significance existing on the site. Although some site preparation will be necessary, the earthwork will be very minor.

Soil Analysis

In an interview with the architect, Mr. Paul Schofield, who is associated with the architectural firm

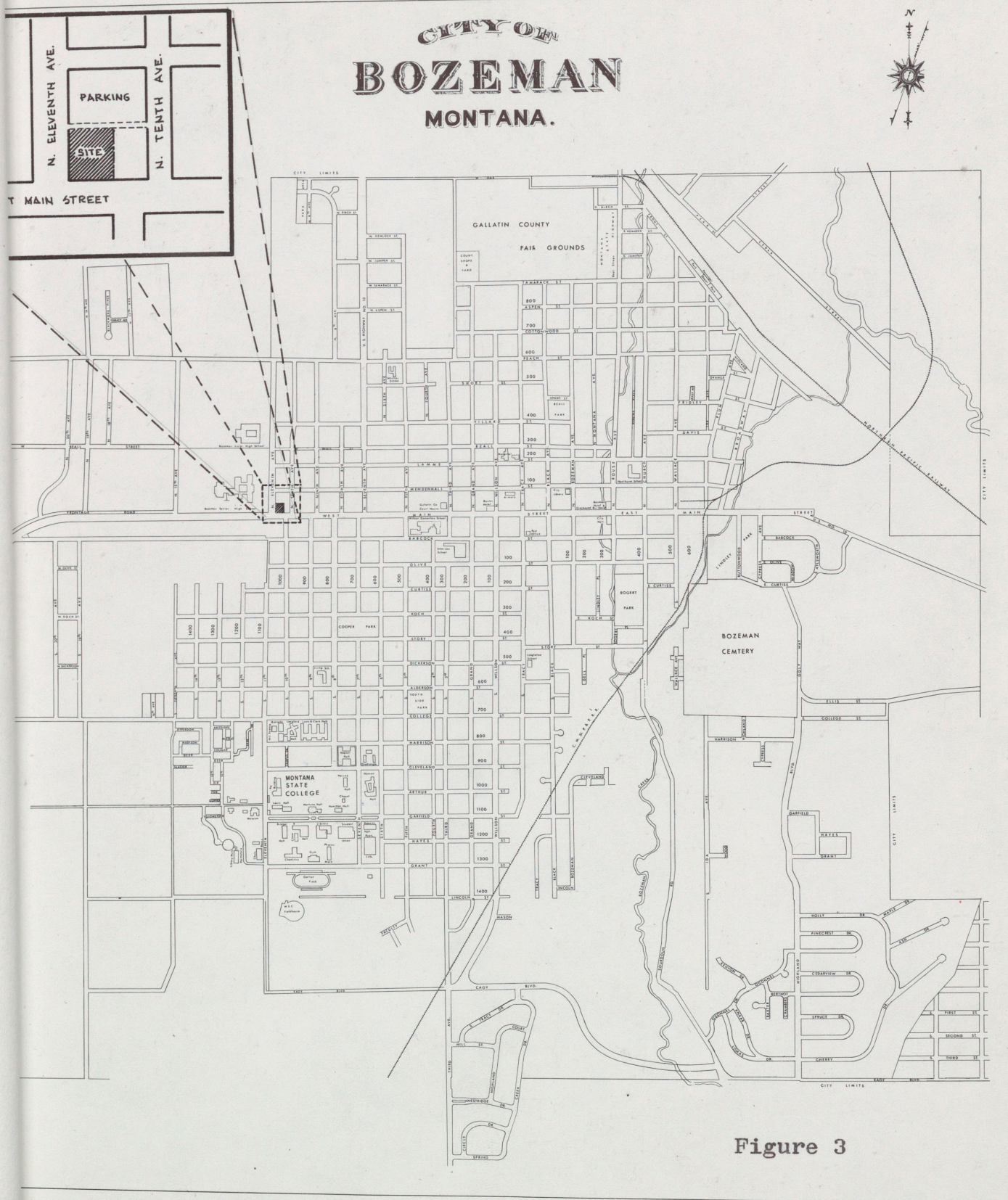


Figure 3

of Oswald Berg, Jr. & Associates, I was informed that the soil on the proposed site is composed mainly of gravel with some clay. Mr. Schofield obtained this information when the firm he is associated with designed and supervised construction of Don Fletcher's General Electric Appliance Store which is located on property adjacent to the proposed site in the same city block. The soil on Mr. Fletcher's site had adequate bearing and stability properties for construction.

The exact level of the water table on the site is not known. Mr. Schofield said that if drainage of water was necessary, it would be feasible since the sewer line is deep enough to make this possible.

With these conditions construction below grade is possible.

Adjacent Environment

The site, located within the city limits, is afforded an excellent view of the mountains in three directions. Don Fletcher's General Electric Appliance Store is located on the east property line; the Montana Power Co. building is situated to the south directly across West Main Street; Bozeman Senior High School is to the west across North Eleventh Avenue. Residences are

located to the north across Mendenhall Street. See photographs, Figures 4, 5, 6, and 7 for views of the proposed site.

Traffic Patterns

The proposed site is an especially good location for business since one of the main arteries of traffic in Bozeman is West Main Street. Although South Tenth Avenue is one of the main traffic routes from the university at the present time, it is planned that Eleventh Avenue will be extended to West Main Street, thus locating the proposed site at a major arterial intersection. This exposure to traffic is good for advertising and business.

The site's location near the senior and junior high schools is significant since students walking by the studio will be exposed to the studio window displays and will possibly do business with the establishment.

Zoning Regulations

The property is located in an MB zone. The following regulations from the Bozeman Zone Requirement Chart will affect the property:

1. Minimum Floor Area Required - 700 square feet on the main floor above grade

2. Minimum Distance Between Main Buildings and/or Wings - 16 feet
3. Minimum Front Yard - 25 feet
4. Minimum Side Yard - 8 feet
5. Minimum Rear Yard - 10 feet
6. Minimum Street Side Yard - 15 feet

Other provisions from the Bozeman Zone Requirement

Chart read as follows:

A maximum of 40% of the total floor area provided may be in industry or storage use incidental to the primary use.

75% of required front yard areas to be in landscape.



Figure 4

View of the site looking north
from the Montana Power Co. building



Figure 5

View of the site looking
south from West Mendenhall Street



Figure 6

View of the site looking
northeast from the Montana Power Co. building



Figure 7

View of the site looking northwest from
the corner of South Tenth Avenue and West Main Street

FUNCTION OF THE BUILDING

The functions within the photographic establishment can be divided into four parts: 1) studio, 2) commercial sales, 3) laboratory, and 4) central accounting.

The main function of the studio is primarily that of taking photographs. The studio would also include areas for making appointments, areas for exposing the public to photographic displays, and areas for the selling of photographic work.

The commercial sales area would be a retail selling area for photographic equipment and supplies.

The laboratory's function would be to process color or black and white film and prints for the studio as well as for other studios.

The central accounting area would be responsible for keeping the books for the entire operation within the establishment.

The functions of the individual areas within the various parts of the establishment will be discussed in the building program section.

BUILDING PROGRAM

It is necessary that this building program be general in scope in order to allow for changes which might be desirable during the design process.

The building program is divided into two sections. The first of these gives a brief description of each of the rooms, the functions or activities that are carried on within the rooms, the equipment contained in each room, and the approximate area required for each of the rooms. The second section of the building program will consist of two flow diagrams showing the relationship between the various areas. One diagram includes the studio, commercial sales, and central accounting sections of the photographic establishment. The second is the laboratory flow diagram.

Reception and Waiting Room

The reception room is the space that the public will first be exposed to upon entering the studio. It is necessary that this space create a first impression which is appealing to the public. The finish materials, furniture, lighting, temperature, humidity, acoustics, and color scheme should create an atmosphere expressing the character and quality of the studio. The success of the establishment will depend very much upon the impression a prospective customer has of the space upon entering. If the space is inviting and reflects a character complimentary to the studio, chances of receiving business will be greatly improved.

This area should be provided with couches and chairs to allow customers to be seated while waiting for scheduled appointments with the photographer. It lends itself to displays of photography which enable the customers to form opinions of the quality of the studio's work.

A receptionist in this area will make appointments, take phone calls, and direct customers to areas for commercial sales, camera rooms, private sales offices, and areas for picking up finished work.

This space should be large enough to accommodate

ten to fifteen people comfortably.

The reception room should be located in proximity of private sales areas, commercial sales area, pickup area, office, camera rooms, restrooms, and the main studio entry.

The furnishings within the reception area should include a receptionist's desk and counter. Furnishings should also include chairs, couches, coffee tables, end tables, ash trays, etc. for the customers.

An example of an undesirable situation in the reception area can be seen in Figure 8. Furnishings and displays do not compliment the work of the establishment. A portion of the existing reception room can be viewed in Figure 9.

Display Areas

Space for displays of photography to pedestrian traffic outside the studio as well as display areas within the studio should be provided. Incandescent lighting with adequate illumination levels will be necessary for proper display of photographs.

It is the desire of Mr. Hadnagy to have as much display area as it is possible to achieve within the limits of the design. These areas should be flexible



Figure 8 - Photo of undesirable reception area



Figure 9 - Photo of existing reception area

enough to allow for various arrangements of photographic work as well as to accommodate the various sizes of individual photographs. Easy access to these areas is required to allow for frequent changes in displays.

Figure 10 shows an example of the display areas of Mr. Hadnagy's existing studio.

Private Selling Rooms

There will be two private selling rooms. These areas will be devoted to selling work such as pictures of weddings, conventions, or functions of similar scale. They will also be used to show proofs and then to take orders for prints, books, etc.

In order to help sell photographic work which is relatively expensive, it is desirable that the spaces be private. The temperature and humidity of the rooms should be comfortable, outside noises should be eliminated so as to avoid annoying distractions, and lighting must be adequate and complimentary to photographic material.

The private selling rooms must be adjacent to the reception room with visual contact. Some visual contact with the reception room or a pleasing space by means of a glassed area will help eliminate any feelings of pressure or uneasiness associated with a completely enclosed space.



Figure 10
Photo of display areas

These spaces should generate an atmosphere similar to that of the reception area. These sales areas should also be close to the office so that control and contact is easy from the office.

The furnishings of the two private selling rooms should include a large desk, a chair for the salesman, files and storage areas, and accommodations to seat three or four customers comfortably.

General Sales Area

There must be an area or areas in which sales of individual pictures and photographs can take place. It is desirable that some privacy in these areas be afforded. Room for desks and chairs to accommodate the salesman and two customers is necessary. A storage area should be provided within this space.

Light, temperature, and humidity should be treated as in the private selling rooms. The general sales area should be located near the office and also near the reception room.

Office Area

This room will be used by Mr. Hadnagy as a private business office. Space for a large desk, four chairs,

and for the circulation of Mr. Hadnagy, clients, and business associates in the room is necessary.

This room should be adjacent to the reception room, the central accounting area, the private sales areas, and the general sales area.

Approximately 150 square feet should be adequate for this office. Room conditions such as temperature, lighting, and humidity should be treated in the same manner as in the private selling rooms. Finish materials should be of a high quality.

This room should have access to a private lavatory containing sink, water closet, and shower facilities.

Main Camera Room

The main camera room is used for taking pictures of individuals and of groups as large as twenty-five people. Due to the focal lengths of the lenses and the size of groups, a minimum depth of 25 feet is required. This room should be large and should be designed to allow for maximum flexibility of equipment, lighting, and backdrop arrangements. A ceiling height of ten to twelve feet is required for suspended backgrounds. Wall finishes should have enough reflectivity to allow for adequate light for photographing. Shelves and general storage areas should

be provided for storage of equipment and supplies. Some extra seating should be provided in this room for those not being photographed but accompanying children or groups.

Due to the large amount of equipment used in the camera room, congestion and poor circulation will result if the room is inadequate in size. An example of this can be seen in Figure 11.

Figure 12 represents a more desirable space for a camera room.

The camera room should be located near a film loading room and near the dressing rooms.

Children's Camera Room

The primary function of this room is for photographing children. This room can be smaller than the main camera room, but it still must have storage areas for cameras, backdrops, and miscellaneous items. Storage should include shelves and general areas for equipment.

A minimum depth of 15 feet is required in this room. It is necessary that it be located near a film loading room and near the dressing rooms.

This room should allow for flexibility of equipment, lighting, and backdrop arrangements. A ceiling height of from ten to twelve feet is required for suspended back-

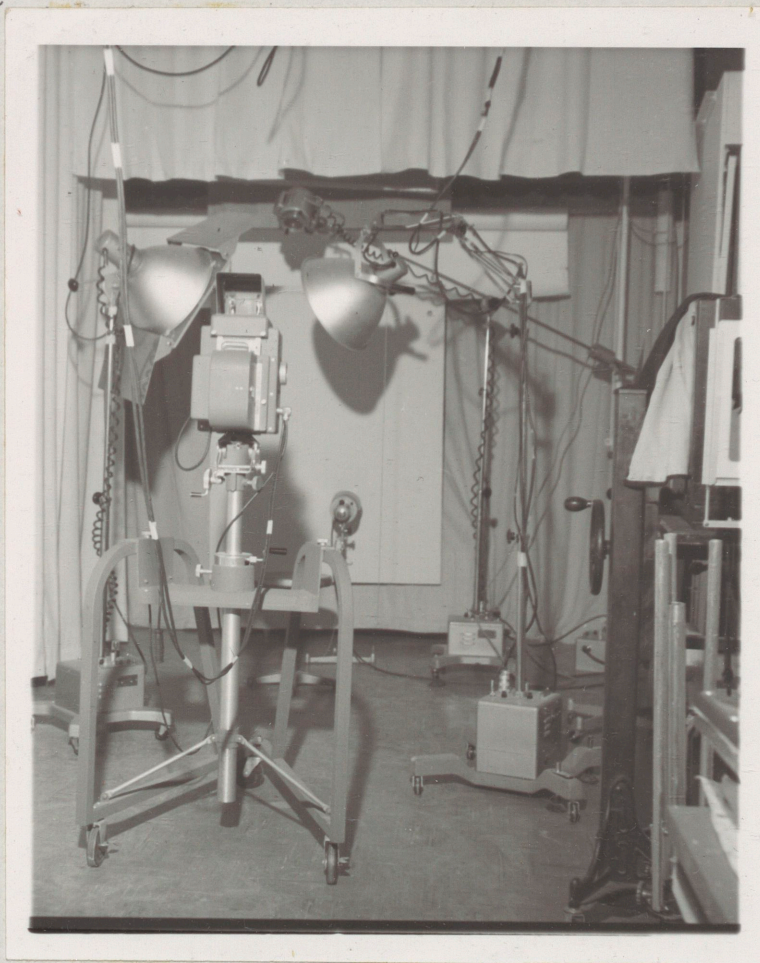


Figure 11

Photo of congestion in camera room

PERMANENT RECORD

SOUTHWORTH CO. U.S.A.



Figure 12

Photo of existing camera room

grounds. Reflectivity of the wall surfaces should be sufficient to allow for adequate light for photographing.

Commercial Camera Room

This room is used for photographing commercial products varying in size from a saddle to an automobile. Access by a garage door from the outside is necessary. This room must have adequate storage areas for equipment and supplies.

A ceiling height of from ten to twelve feet is required in this room to accommodate props. Equipment and storage would be similar to that of the main camera room.

It is necessary that this room be located adjacent to a film loading room. This room would also have access to an office for the commercial photographer. It should also have access to the reception room.

Commercial Camera Room Office

Enough space for a desk, three chairs, storage and circulation of photographer and clients in the room is necessary. This room should be located adjacent to the commercial camera room. Approximately 120 square feet would be required for this office.

Film Loading Rooms

Adjacent to the camera rooms a film loading room is required for reloading of film in the cameras. This room must be completely dark when film is reloaded. A counter space is necessary for the reloading procedure. An area of about 16 square feet would be adequate for this room.

Dressing Rooms

There should be one large dressing room with a large vanity, closets, floor to ceiling mirrors, and lighting which will be most natural for colors. This room should be large enough to accommodate five people getting ready to be photographed.

A smaller dressing room is also necessary. This room should have the same basic facilities as the above larger room.

Both of the dressing rooms should have at least one built-in lavatory.

The dressing rooms should be located adjacent to the camera rooms and near the public restrooms and the reception room.

Public Restrooms

It is desirable that the restrooms be located so that people in the reception room as well as in the dressing rooms can locate them easily. They should be adequate in size to accommodate two adults or one adult and several children. Finish materials should be relatively maintenance free.

Central Accounting Office

The central accounting office would be responsible for keeping the books for the entire establishment. Four employees would be working in this area. Each person would be provided with a desk. Space should be allowed for filing cabinets and for general storage of office supplies. Typical office equipment used in this room would be typewriters, adding machines, posting and billing machines, and other miscellaneous office equipment.

It is necessary that this area be located centrally within the establishment so as to provide easy access to the laboratory, studio, and commercial sales area.

Commercial Sales Area

The commercial sales area will be used for retail sales of camera equipment and photographic supplies. The operation will be small and will be limited primarily to catalog orders. Some popular items will be in stock for immediate sales. The use of this sales area will allow the photographic establishment to receive maximum discount rates on supplies used in the studio and laboratory.

Approximately 300 square feet will be required for this operation. Storage areas should be provided. Display counters and shelving will also be necessary. Access to the outside will be required for receiving stock.

The commercial sales area should be near the central accounting area and a public entry.

Commercial Sales Office

The commercial sales office would be used by the individual in charge of the commercial sales area. This office space would require room for a desk, three chairs, file cabinets, and closet space. Approximately 100 square feet should be sufficient for this room.

Light Trap

A light trap is a U-shaped passage of nonreflective walls designed to keep light from the darkrooms. This passage allows access from lighted areas into a darkroom without the use of doors.

See Figure 13 for a schematic diagram of a light trap.

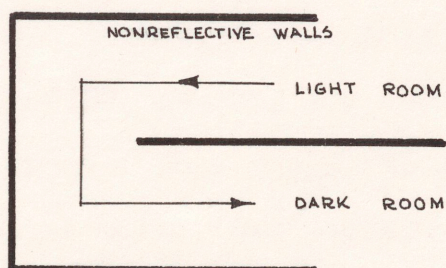


Figure 13

Black and White Film Processing Darkroom

A Pako Film Processor will be used in this room to automatically process film. The machine is three feet wide, five feet long, and three and one-half feet high. Access at the front and back of the machine for feeding and take up of film is necessary. Circulation on either side is required for maintenance and control of the machine. Electrical, water, and sewage connections are mandatory for the machine's operation.

Access to this room should be through a light trap. The room should be located near the black and white print darkroom, negative storage area, and the Blue Ray Proofer.

Area for Blue Ray Proofer

The Blue Ray Proofer is used to print and expose rolls of print paper. The machine requires an area in the front for the operator to feed the machine and an area in the rear for receiving exposed rolls of paper. The dimensions of the proofer are two feet wide, one foot deep, and eight inches high. It is important that the air in the area in which this machine is located be free of dust. Dust on negatives causes poor proofs.

The machine requires an area of 60 square feet for efficient operation. It may be located in a separate room or as a component in the production room.

Black and White Print Darkroom

This room should contain two enlargers. They require a space of two feet by two feet. The operator needs additional space on either side for working room and for storage of paper and negatives.

A Pako Printmachine will also be located in this room. This machine replaces the old-fashioned darkroom

and wash sinks. The Printmachine handles all of the wet processes of fixing and washing from the developing tray to the dryer in a completely automatic series of operations.

The Printmachine protrudes through the wall so that the dry prints can be unloaded in the light while the exposed paper can be placed into the machine on the dark-room side. Access to motor and working elements should be provided for maintenance purposes. Sewer, water, and electrical connections are required for the machine's operation. The Printmachine is 98 inches long, 36 inches wide, 34 inches high, weighs 900 pounds, and will pass through a 28-inch door with its legs removed.

A Kodak Ektamatic Processor will also be located in the black and white print darkroom. Exposed rolls of paper from the Blue Ray Proofer are run through this machine. In 20 seconds black and white prints are ready to distribute.

Access to this darkroom should be through a light trap. The room should be located near the black and white film processing room, the negative storage area, and near the area where the Blue Ray Proofer is located.

Color Film Processing Room

This room is used to process color film. The process

is semi-automatic. The room contains a sink in which seven containers of various chemicals are located. The sink should be two and one-half feet wide and one foot deep. The containers are two feet in diameter and three feet high. The film must be transferred from container to container at determined intervals so a working area is required for one person. Chemicals for this process cannot be mixed in this room due to possible contamination of the chemicals by fumes.

An area of 100 square feet is required for this operation. Water, sewer, and electrical hookups are also required in this room. Storage for chemicals is necessary on shelves above the sink.

Access to this room should be through a light trap. The room should be located near the color film drying room and the automatic print rooms.

Color Film Drying Room

The color film is dried in this room. An area of about 64 square feet is needed. The dryer will be designed by the owner.

Central Deposit Area

This area is used for the deposit of exposed roll

paper in sealed containers. This exposed paper must age for four to five hours before being processed. Grocery carts could be used to collect the rolls of exposed paper in this area. The area could be a part of another room provided it is located near the automatic print rooms and the automatic color processor.

Five Print Rooms

Each print room would contain equipment for enlarging and printing color or black and white film on roll paper. The equipment in each room occupies a space two feet by five feet. One person sitting in a chair operates the equipment.

The equipment in these rooms would consist of two production printers and enlargers, two Chromega Enlargers with roll easels, and one Elwood 5 x 7.

Access to the rooms should be through a light trap. The print rooms should be located near the central deposit area and print processing areas.

Automatic Color Print Processing Area

The automatic processor for color paper requires an area of 40 square feet. Half of the processor must be contained in darkness while the other half can be exposed

to light. Room at either end of the processor is required for a person to feed or empty the machine. Access to working parts must be allowed for maintenance purposes. Electrical, sewer, and water connections are necessary. The processor will handle up to 11-inch rolls of paper.

The room should be accessible through a light trap. Adjacent rooms should be the central deposit area and automatic print rooms.

Negative Storage Room

All color and black and white negatives will be filed in this room. Since the number of negatives will be accumulating from year to year, provisions for future expansion of negative storage areas should be considered.

Elimination of dust in this area is very important. Storage of negatives should be in dust-proof, moisture-proof, fire-resistant files.

Negatives belong to the studio so this area must be centrally located to the studio and to the laboratory. It must also be in close relationship to the production room.

The Production or Work Room

There are a multitude of jobs which are done in the

production room, such as spotting pictures, texturizing prints, pressing prints, putting pictures in folders or frames, assembling orders, packaging orders for mailing, cutting pictures, etc. There will be times when five or six people may be working in this room with large quantities of pictures. For this reason it is necessary that adequate space be provided for work areas and circulation without disruption of any one operation. Work areas can generally be located on a two to three foot deep counter or table depth.

This room also requires a large amount of storage for items such as frames, folders, packets, and other miscellaneous items. An area of about 900 square feet would be desirable for this space.

The work room in Mr. Hadnagy's existing studio can be viewed in Figures 14 and 15. There is inadequate space for circulation, storage, and work areas. This type of situation must be avoided since much overhead results from confusion in this room.

The production room should be located near the negative storage area, spray room, trash storage area, and the retouching room.



Figure 14 - Photo of production room in existing studio



Figure 15 - Photo of production room in existing studio

Retouching Room

This room would be used for retouching negatives. Space is required for four or five retouch machines and operators for each machine. Each retouch machine requires a space two feet by two feet and is operated electrically.

Dust control is very important in this room and must be considered. Storage areas are also necessary for equipment, hand tools, etc. This room should be located near the negative storage area and the production room.

Spray Room

The spray room is used for spraying various finishes on final prints. Space for a compressor, tanks, and attachments is required. Room for placing prints and spraying them is also required. An area of 100 square feet should be sufficient for this room.

Adequate ventilation must be provided as fumes from the various sprays are toxic. The spray room should be near the production room.

Chemical Storage and Mixing Room

Two people will be in the room when chemicals are mixed. A sink three feet wide, one foot deep, and eight

feet long is required. This sink should be of stainless steel. Water, sewage, and electrical connections will be necessary in this room. Shelves for chemical storage are necessary.

An area of approximately 80 square feet is required. The room should be near the processing darkrooms.

Trash Storage Area

A trash storage area is necessary for the vast amounts of paper, old cartons, and debris from the establishment. This should be near an outside entry and near the production room. The trash would be picked up by the trash collector.

Freight Storage Area

A temporary storage area for freight near the service entry should be provided. Freight would include supplies for the establishment which would eventually be distributed to and stored in the areas in which they were to be used.

Employees' Lounge

This room should be large enough to accommodate

twenty people. The area will be used for coffee breaks and for the enjoyment and relaxation of the employees. Couches, chairs, coffee tables, ash trays, a refrigerator, and a coffee maker are required in this room.

The employees' restrooms should be adjacent to this area. The lounge should be accessible to employees from the entire establishment.

Employees' Restrooms

Men's and women's restrooms should be provided. Each area should include one water closet and lavatory. The restrooms should be located adjacent to the lounge.

Mechanical Area

This area should include necessary equipment for air conditioning, heating, dust control, and hot water supply. The laboratory needs a large supply of hot water for the processing machines. The machines in the present establishment can consume 100 gallons of water in less than an hour from the hot water heaters. A system for providing a continuous supply of hot water should be used.

The mechanical equipment may be in one general area or may be separated, depending upon the design solution and the choice of equipment.

General

The entire establishment should be provided with air conditioning, a built-in radio inter-com, and dust control.

Parking

Mr. Steve Hadnagy and Mr. Don Fletcher will purchase the north half of the block on which they will be located and will use this for parking. The parking lot should be paved and landscaped. This area should provide adequate parking space for employees and customers of both places of business.



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AESTHETIC CONSIDERATIONS

In order to determine the aesthetic considerations of the establishment's construction, which will be influenced by the existing environment and the desired character or mood of the studio, it will be necessary to analyze the existing surroundings.

The site, located on the southwest corner of the intersection of North Eleventh Avenue and West Main Street, is relatively flat and free of any vegetation. From the proposed site looking north one can observe the new junior high school, several residences, and in the distance the Bridger Mountains. To the east a major portion of the property line is marked by a masonry wall forming the west side of Don Fletcher's General Electric Appliance Store. North or south of this concrete block structure one can see the city of Bozeman, older residences, gas stations, traffic-filled streets, and rising above the city in the distance the Bridger Mountains. Looking south one can see the traffic-filled four-lane highway U.S. 191. Across the highway is the new Montana Power Co. building constructed of a dark brown brick, trimmed with a white aggregate panel, and accentuated by large areas of glass.

This well composed structure is set so that the tall evergreens and mountains to the south are all visible from the proposed location of the photographic establishment. To the west, Bozeman Senior High School, a structure of brick, glass, and wood beams topped by tar and gravel covered roofs, spreads over acres of grass and asphalt. It is impossible to say how a photographic establishment should look. However, it is necessary that the design of this building express a definite character and mood which can be associated only with the establishment.

In establishing the identity of the establishment it is necessary that a warm, inviting feeling be created. It is also necessary to convey the feeling that the establishment deals with quality work and service. Finally, it is compulsory to insure that the building design will fit into the existing surroundings.

The choice of materials and their use within the design solution will help determine the mood or character of the establishment. The choice of materials will also help integrate the solution into the existing environment.

A material choice for construction of the building is not made until the design stage. However, wood is an example of a material which might be used. It is warm in color, soft to the touch, and indigenous to the locale. Brick could be another choice of materials since many

colors and textures can be attained with it. Also brick might be used to integrate the structure into the existing environment since brick is used in many of the surrounding structures.

Sunlight on the building should be used to advantage since it can affect the design by creating shadows and by complimenting the colors of the materials used.

The important consideration to be made when dealing with aesthetics is that the identity of the building be established without disregarding the character of the surrounding structures.

ECONOMIC CONSIDERATIONS

General

The estimate of the cost of construction is based on a figure of \$14 per square foot. The building program was used to estimate the required square footage. Cost of the equipment was furnished by Mr. Hadnagy. The actual price of the site was furnished by Waite & Company. Cost of the parking area will be shared by Mr. Steve Hadnagy and Mr. Don Fletcher and is not considered in this estimate.

Cost of Building Construction	\$102,000
Equipment Cost	100,000
Site Cost	<u>36,000</u>
Total Estimated Cost	<u>\$238,000</u>

Funds

Funds for construction, the purchase of equipment, and the site will be obtained by selling stocks to employees and investors. Mr. Hadnagy will retain the controlling shares.

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Mrs. Mary Delin, receptionist, Hadnagy Photography, Bozeman, Montana.

Mr. Ted Erdahl, photo studio employee, Hadnagy Photography, Bozeman, Montana.

Miss Helen Fechter, Registrar, Montana State University, Bozeman, Montana.

Mr. Don Fletcher, Proprietor, Don Fletcher's General Electric Appliance Store, Bozeman, Montana.

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