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A Clinic For Havre, Montana

Part I

Undergraduate Thesis in Architectural Design

By

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"We are here not to get all we can out of
life ourselves, but to try to make the
lives of others happier."

...Sir William Osler

INTRODUCTION

Havre, Montana is to be the site of a large medical center serving the three-county area of which Havre is already the natural center by location and the commercial center by trade. The construction of the complex involves several services, one of which is an outpatient facility coordinated with the hospital services.

The clinic described in the following study is one solution to that problem. In the paper I will try to arrive at the essence of what a clinic is, how it functions, and what will make it function most successfully.

What is the Clinic?

To be able to design anything the architect must come to a very basic understanding of what it is. It follows naturally then that he must answer some basic questions about the medical clinic, its relationship to the profession, and its relationship to patients and doctors as individuals.

By derivation, the word clinic comes from the Greek "Klinikos" meaning a bed-patient. Its original meaning in the English language was, according to Webster's Unabridged Dictionary, that of a "bedridden patient, especially in a hospital." As time has gone by, the word has gathered to itself a number of other meanings. First, as a method of medical education, it came to mean the "instruction of a class of medical students by the examination and treatment of patients in the presence of pupils" Then, "the gathering of students at a clinical lecture," Later, with the development of the great teaching hospitals as a major element of medical education, the word clinic came to have a spatial connotation, becoming "an institution or station, often for outpatients." In more recent years, this conception of the word clinic has been applied to "an institution connected with a school, court, or settlement, in which concrete cases or problems of a special type are studied, and expert advice or treatment given: as a vocational, child guidance or psychiatric clinic." (7, 1958, p. 15)

In a purely medical context, the spatial connotation of the word "clinic" has caused it to be used in a new sense to designate buildings designed specifically to house facilities for a group of doctors to practice together.

In the particular case of the clinic in Havre, the clinic is primarily a complementary facility to the Northern Montana Hospital to be built there. It will be a center for diagnosis and treatment of outpatients and will be in conjunction with a medical center of such a scale that few cases of whatever nature would be referred outside of Havre. This in turn means patients will be carried through the whole program of treatment, and, therefore, the outpatient service through the clinic will increase. I merely mention this to strengthen the definition. Since there will be such a direct relationship of the clinic to the hospital, there will be also be a strong relationship between the doctors (of the hospital) and the clinic. This seems to encourage the implication that a central office and consultation area will be of benefit and advantage.

What is the role of the Clinic?

With all the changes that have occurred in the medical profession in recent years, a new type of medical facility has evolved into something from somewhere between the doctor's office and the general hospital. The medical clinic has come to be a significant part of the medical profession.

The time of the congenial country doctor who practiced medicine from the little black bag and operated on the kitchen table have long since passed. Doctors today must have access to the most sophisticated facilities possible whether they are general practitioner or one of the many specialists.

In many cases it would be impossible for an individual doctor to have access to such facilities, but by pooling the use of these types of medical "tools", doctors can use such a set-up to the advantage of all.

The general hospital provides these same arrangements for confined patient services and some hospitals even provide for a limited amount of outpatient service. But in most cases the outpatient area of diagnosis and detection is sadly lacking.

The role of the clinic then is to serve as a go-between from the would-be patient to the general hospital. It is a place where the doctor can consult with patients just as he would in a private office, but he has the security of immediate access to facilities and consultation and conference with his peers.

Havre, Montana is a town of 11,911 people in extreme northcentral Montana. It serves as commercial center for the area of Hill, Blain, and Liberty counties. It is the natural center of the area by geographic determinants and actual physical distance. It also serves some parts of southern Alberta and Saskatchewan to the north and Cascade county south as far as Big Sandy.

It was founded in 1887, when James J. Hill, for whom Hill County was named, sent his railroad construction gang westward to this point. Finding plenty of good water, Hill decided to build a branch to Great Falls. The intersection of railroads and the Milk River gave the town a natural site for development. It was named by the Great Northern after the French city of Le Havre, but it came to be known as Havre (hav-ver).

"It is popularly known as the coldest place in the nation, but inhabitants say that is only because of the publicity that the United States Weather Bureau Station there brings from its readings. The climatic extremes of the region, coupled with the distances between towns make it easy to understand the development of tradition of hospitality. In early days neighborly cooperation was essential to survival." (8, 1970) The city is a typical northwestern town in a typical northwestern agricultural area. The people are basically conservative as is also quite typical of the state in general. The town is one of tradition as is illustrated by the yearly

events that go back as far as the town itself. The best example of traditional participation by the town as a whole is the annual music festival in which more than 50 bands and 1500 musicians from around this state and Canada participate and compete.

Havre is the site of Northern Montana College and has seen that unit of the Montana State University System grow from a junior college to an accredited college with four year degrees in education. Originally established in March of 1913, it has grown to an enrollment of about 1100 students and Northern now offers curriculum in Pre-professional, Elementary and Secondary Education and Vocational-Technical Training.

The campus of Northern is extremely important in the long-range plans of the clinic since the possibility of the clinic serving also as a part of the medical center facilities that a large campus might need. It has also been discussed and with mostly receptive attitudes, that since Northern already carries a pre-medical program the entire complex of the hospital and the clinic might help to facilitate a full fledged Medical School as part of the College. (6, 1970)

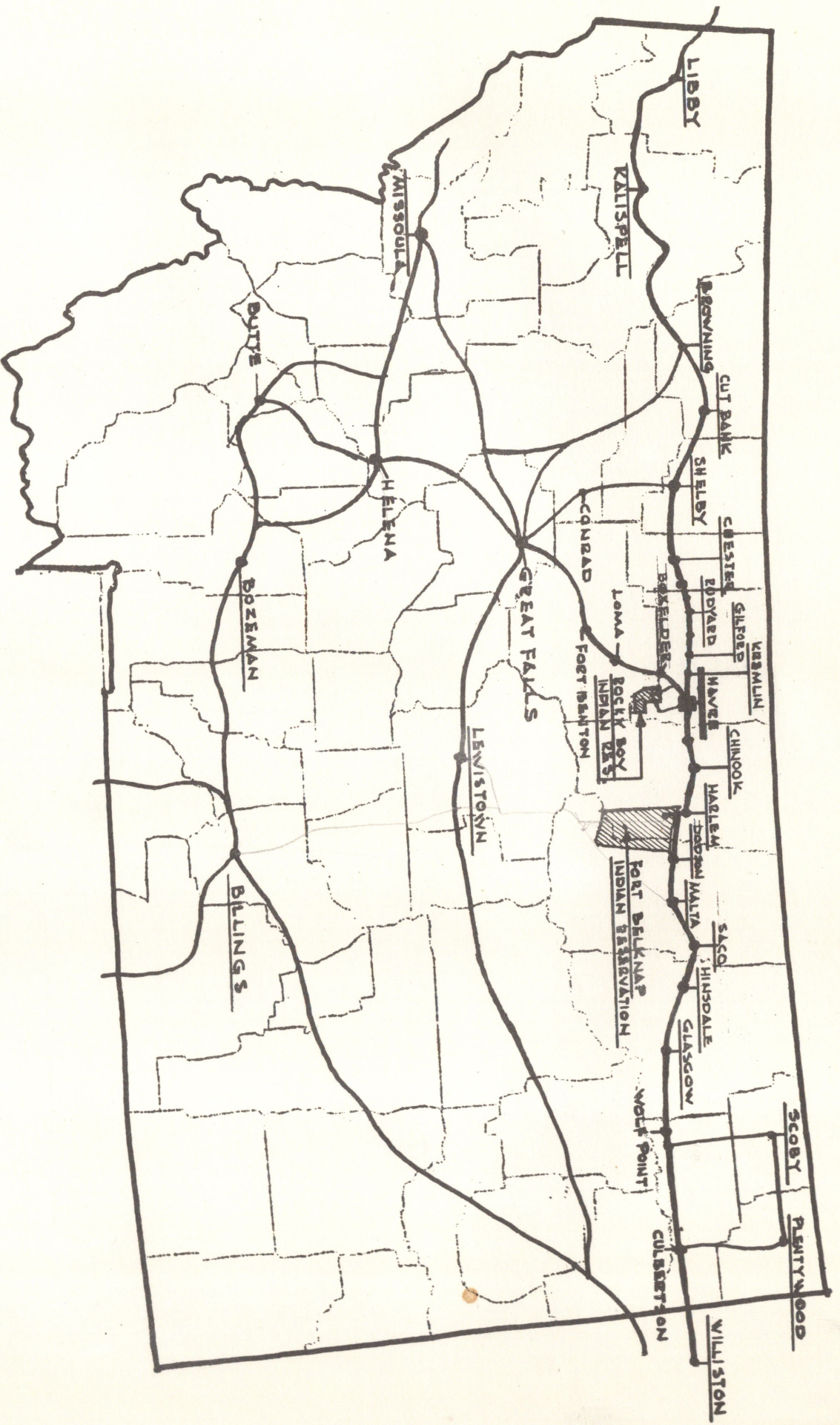
Historical background of the area around Havre is rich with stories of the days when the Indian Battles were still being fought out of Fort Assinaboine. The Fort, one of the largest posts in the country, was manned by the 18th and the 20th United States Infantries from 1879 until the early 1900's.

The only large scale recreation areas around Havre are

Fresno Dam to the West about 11 miles, and Beaver Creek State Park, about 17 Miles to the South, at the edge of the Bear Paw Mountains, which offer fishing, hunting, boating, and picnic areas.

Havre is the county seat and is the site of the County Fair which is held in August of each year at the Hill County Fair Grounds on the western edge of the city.

The main industries of the area are farming, ranching, Great Northern Railroad, and the Northern Montana College. Although most of the farmers and ranchers live in rural areas, many of the inhabitants of the city itself are farmers and ranchers who commute to their fields and ranges. (8, 1970)



The City of HAVRE is the natural location for a medical center for Montana's Hi-Line

LOCAL POPULATION FIGURES*

	1960 U.S. Census	Local Est. 1970	No. Households	Farms
Hill	18,653	17,851	5,000	776
Havre	10,740	11,911	3,562	
Blaine	8,091	7,387	2,080	618

*Taken from the 1970 Editor & Publisher Market Guide.

"The Hospital must accept as its community responsibility the provision of or arrangement for, comprehensive health services in which professional personnel and equipment for prevention, diagnosis, and treatment are made available to the whole community."

...Lowell Springer

The present medical facilities in Havre consist of one hospital system of two units, and a number of individual offices in the downtown area. The hospital, which is a split operation dividing its functions between two completely separate facilities, is all under the administration of the Northern Montana Hospital. This situation arose out of an attempt to make one successful operation out of two failing operations. It has been realized for some time that this would only be a temporary situation and plans for a new hospital on a scale large enough to handle the needs of the entire area are already in process. In fact the building is now in the preliminary design stages and all prerequisites to the design have been fulfilled.

The problem of inadequate diagnostic and preventive facilities, however, has not been so well dealt with as yet. Some provision for clinical consultation has been provided for in the planning the new hospital but much more is still needed to put the clinical and hospital operations of the area on the same scale.

The present Havre Clinic was built and designed to facilitate a population of approximately 19,000 people which was the population of the county. The population of the area has not changed significantly since that time, but the area for which Havre must now provide clinical facilities has changed a great deal. The population now to be served is approximately 32,700 people. This change is due to the

fact that proposed Northern Montana Hospital will serve the area of not only Hill County, but Blaine and Liberty Counties as well. John R. McGibony, the Chief of Intramural Research in the forward to the "Hospital Outpatient Services" summed up the responsibility that exists in a situation like this. "In terms of diagnostic, preventive, and restorative health programs, good outpatient services help the hospital to fulfill its role as the true focal point of community health, professional education, and service to humanity.

It is imperative that these services be so planned and organized as to insure adequate patient care to complement the pattern of medical practice in the community and to utilize available health resources most efficiently."

(4, 1963, p. 3)

The clinic even at the time of its construction was, by present standards, inadequate for the area it served, but now the inadequacy is of such a magnitude as to become a great barrier to the medical profession in the area. The clinic now has nine doctors, and the floor area is still only approximately 4,800 square feet which according to all standards is inadequate. In addition the laboratory is not up to date and does not have the space to make the necessary changes without cutting into other areas.

In such a case there are two alternatives. The first is to expand the present facility. This has been considered and declined for reasons of lack of space for either addition

to the building or the additional parking necessary. These space limitations are a result of building in a downtown area without provisions for future expansions. The second alternative, of course, is to build a new clinic on a different site. That is the only acceptable answer.

Another point to consider is the need for more competent medical personnel. Right now in Havre, there are fifteen practicing doctors in almost as many different specialties. The ratio of doctors to people is about 2,000 to one in the three-county area of Hill, Blaine, and Liberty right now. This is approximately twice the national norm. (6, 1970)

The new hospital will definitely attract the attention of many new doctors and related professional people but without adequate diagnostic and preventive facilities few will ever actually choose Havre to "hang their shingle".

As it is now there is very little good communication between the hospital and the clinic. This is a very important aspect of a successful coordination of the doctor's activities. Consider the clinic in its context of an office for a moment. As it is right now the office is downtown and the hospital is on the northwestern fringe of the town. This means that if an emergency should arise that calls for the attention of a specific doctor, it is essential that he be there in as short a time as possible. The time wasted between the two could often be ill-afforded. A new clinic on a site adjacent to the hospital would not only be advantageous to the doctors

who must communicate between the two, but could very well be the factor responsible for the saving of lives.

The Rocky Boy Indian Reservation 25 miles south of Havre has no medical facilities within 47 miles. The Northern Montana Hospital is making arrangements for confined cases but nothing has been done to give them some means of periodical examinations or office calls or minor injury service. All it would entail is a governmental contract to be reimbursed for all services extended to any member of the tribe. The Indian people would then feel less hesitant about getting necessary treatment because of a lack of money to pay medical bills.

Still another advantage of the clinic lies in its possible secondary function as a medical center for the campus of Northern Montana College. The campus presently has no such facility and at the rate Northern is growing it will soon be essential to provide these services.

The hospital to be built has been discussed in terms of its relation to the College and the possibility of a medical school some time in the future. If this should occur, the clinic because of proximate location, would be able to serve in the education of technicians and nurses through a program of parttime work study and other practice oriented training.

(6, 70)

There are many arguments for a new clinic in Havre and all are very real and important. None of these conditions is

unique to Havre, but the sum total of all these conditions confronts the profession with the decision of turning its back on responsibility or providing better, more modern facilities utilizing the ultimate available equipment for diagnosis, treatment, and prevention.

The most essential part of the program is to have an understanding of what the space is and how it functions. This means through observation, research or experience, that the architect must develop an awareness of the essence of what is to happen within a given space.

At this point in the paper I will try to define the various spaces in terms of their function. I feel that this is the program and is much more pertinent to the development of the design than setting down minimum spaces without consideration to the real problem; which is finding what the space really is.

The spaces that I am dealing with are in eight basic categories: (13, 1963, p. 34-47)

1. Receptionist - Control Station - Business
2. Waiting Room
3. Consultation Room
4. Examining and Treatment Rooms
5. Laboratory
6. Diagnostic and X-ray
7. Toilets
8. Utility and Storage

Receptionist - Control Station - Business Office and Waiting

The receptionist is the hub around which the whole clinic revolves. She should see and acknowledge all arrivals and must be able to follow the progress of the doctor. The business office should have access to the receptionist area because of the direct relationship to the patient that it also has. The discussions of bills and appointments should have some privacy and yet while doing so the receptionist must have sight of the waiting area and entrance. A private area is needed for record keeping etc... The exit from this office should permit patients to leave without backtracking, or going back through the waiting room.

Patients get their first impression from the waiting room. There will be up to 25 persons waiting in this area at some times and provision should be made so that they can feel relatively at ease. As the patient sits there, he out of necessity must look at something, therefore the view within and without must have prime consideration.

The waiting room should be separate from the office activity, but persons in the waiting room should be able to flow naturally and inconspicuously into other areas of the clinic.

Consultation Room

Every patient coming through the clinic eventually arrives at a consultation room. The patient comes here by direction to discuss symptoms and receive simple examinations, from here he is usually referred to some examination and treatment room. He can in some cases, return then to the consultation room for a further discussion and prescription. Sometimes the patient will be directed directly to the examination and treatment room for the entire process, and sometimes the whole procedure all takes place in the consultation room.

The consultation room is the area most synonymous with the doctor's office. He uses it as a place to relax at times, to do all private transactions within the clinic and it is the area where he can be isolated to study and read. Making this area as comfortable as possible is beneficial to both the doctor and the patient's frame of mind. The area must not be so small as to feel closed in or dismal.

Examining and Treatment

The examining and treatment area is where the doctor has the closest and most intimate contact with the patient. This is where his actual work takes place, so it is essential that circulation from the doctor's consultation room have direct access to each of the examination and treatment areas he will utilize. The number of treatment rooms he will use is dependent upon the type of practice he is in, but for most of the specialties and the general practice it has been shown through studies that two rooms will more than double the doctor's capacity. Some specialties have utilized as many as eight.

The doctor does some notation and discussion in this area so those activities must be provided for.

The patient will be the main concern, however, since he often spends a good deal of time in this area waiting for the doctor to enter. He must often undress here while waiting for the doctor so provisions must be made for dressing and hanging clothing. Some means of pleasantly passing the time spent alone should be considered.

The nature of the activities that will happen in the examination and treatment room is private. The doctor, upon entering should not put the patient in any exposed position, physically, visually from outside the room, or audibly. There must be a feeling of spatial and accoustical isolation.

Laboratory

The laboratory is vital to almost every examination and treatment that occurs through the clinic. Circulation from the laboratory is critical to all functions of the clinic. An ideal situation gives direct access to all doctors, nurses, and technicians to the laboratory from their individual work area. All specimens and samples from the patient in the examination and treatment rooms must pass through the lab and back to the doctor for observation. Since this area is so closely related to the other functions of the clinic, it will probably be the center of the circulation network. It must not become an excuse for creating a labyrinth. Circulation must be convenient and natural.

Within the laboratory itself, the use of technical equipment must be planned for a minimum of wasted steps for the nurses and technicians. Spare examination rooms and a recovery room might be located in such a way that the nurses work area has access to both these areas and the laboratory simultaneous. (2,1963, pp. 1-5)

X-Ray

The X-ray laboratory is very similar in nature to the general laboratory except for the fact that only the X-ray technician carries on his work in this area. There are very defined restrictions for designing the room due to the precautions that must be taken to prevent over exposure to the radiation. Circulation considerations are also very similar to the main laboratory except for the amount of traffic flowing in and out. (I4, 1963, p. 2)

The X-ray room should be located so that the patient can inconspicuously traverse from the examination and treatment room to X-ray without having to redress etc.

The use of this area could possibly be relieved somewhat by providing the doctor's offices with fluoroscopes to be used for upper body internal examination. This would be advantageous to both the doctor by added convenience and the X-ray laboratory because the number of patients to be X-rayed would be reduced giving the technician more time per patient. (I2, 1969)

Utility - Storage Areas - Toilets

The clinic must have space for storage and utilitarian services that are not related to medicine but required for maintenance of the building. Location of these areas must be so as not to hinder either the work of the clinic or the function for which they are provided. Primary consideration is to allow the area to function as if they were not there until they are needed.

With these areas we have the obvious economic problem of unproductive space so a balance must be found between economic factors and convenience of operation.

"Although many physicians may consider it desirable to include at least one toilet room within the limits of every suite, toilet facilities have been used only in those offices in which they are mandatory for the medical procedures of the respective specialty. It is, of course, assumed that public washrooms are available on the same floor for the convenience of waiting patients and staff." (12, 1969, p. 5)

SPECIALTIES

Surgery

The surgeon's work areas are basically those of examination and treatment, and operating. For the purposes of this thesis I will consider only minor operations since the easy availability of the hospital would make any provisions for surgery in the clinic itself unnecessary. Any patient needing major surgery could be conducted from the clinic to the hospital surgical suite by means of an underground transit system that would connect the two facilities.

As far as the clinic itself is concerned, the surgeon will be mainly involved in examination and consultation. Provisions must be made, however, for the patient who comes in with a broken arm, lacerations etc, to eliminate use of hospital facilities for minor injuries. The minor surgery room must be close and conveniently located in relationship to the surgeon's consultation room. The possibility of the examination and treatment rooms being on either side of the minor surgery should be considered, but that might cause inconvenience for other doctors wishing to use this area on occasion. (I2, 1969, pp. 12)

Obstetrics and Gynecology

Although these two specialties are often practiced separately, and will be separate in this clinic, they have been grouped together for the purpose of this study because of the similar physical requirements. Some of these requirements are a comfortable dressing area, a toilet, and a multi-purpose recovery room. Most doctors in these areas prefer that the dressing room have a dressing table and mirror. The patient should be provided with a simple and discreet means of such things as depositing urine samples. The nurse takes the patient before the doctor sees her and records her weight, specimen results, and prepares her medical records for the doctor. These functions of the nurse should be carried on without disturbing the doctor or other patients and still should provide some privacy for the patient with whom she is working and herself.

Some means of allowing the doctor to enter and exit the examination rooms that does not affect the privacy of the patient must be provided. The patient must be able to feel as at ease and comfortable as possible. (12, 1969, pp. 9)

Radiology

The radiologist differs from other medical specialties in a number of ways. "First of all, it assumes primarily the form of a consulting service for diagnosis and interpretation, and is therefore entirely dependent on the referral of patients from other physicians. In the second place, many practicing radiologists have parttime connections with X-ray departments of hospitals, clinics and other institutions where they have additional facilities and equipment at their disposal." (12, 1969, pp. 24, 25)

The diagnostic room should not be too restricted in size so as to allow referring physicians and even relatives to be present while the examination of a patient is in progress. The use of barium enemas in connection with certain X-ray examinations makes the inclusion of toilet facilities, accessible from the diagnostic room, mandatory. The consultation room which will also serve as the area for viewing and interpreting X-ray plates, should contain the usual furniture and film viewing equipment and filing cabinets with the capacity for one year's (minimum) accumulation of plates. Storage must be provided for older plates and records.

The amounts and types of shielding required will be determined by the amount and type of X-ray equipment in the adjacent X-ray laboratory and fluoroscopic laboratory. (2, 1963)

Pediatrics

There are two main schools of thought about the method of examining babies: the cubicle school, which insists on open stalls with an open area with the scales and examining counter, and their opposition who contend that they must have full-fledged examination rooms which, in addition, embody all the functions of the consultation room. Both sides have valid arguments in support of their theories, and no comparative merit evaluation is intended here. On the contrary, an attempt has been made to compromise between the two factions by combining certain features of both.

The consultation area should be an area where the doctor can have quiet interviews with the parents, undisturbed by crying babies and the noise of the children's waiting room.

The children's waiting room is also an area that must get special consideration. Some pediatricians feel that each age group should have a designated area for waiting, but others feel that precautions should be taken to prevent the children's areas from becoming rumpus rooms causing disruptions and distractions. (12, 1969, p. 10) It remains to be mentioned that the rest room must be provided within fast, and easy access from both waiting and examining rooms.

Otorhinolaryngology and Ophthalmology

An efficient practice of otorhinolaryngology can generally be carried out in a space somewhat smaller than the average occupied by some of the other specialties. The reasons for this economy may be found in the fact that treatment chairs are used in place of tables, all patients' rooms are combination examining and treatment rooms, no dressing rooms nor X-ray and other space-consuming facilities are required. The examining and treatment rooms can be quite limited in area, but it should be stressed that the relative position of furniture and equipment is of utmost importance. Mandatory special equipment includes such items as cuspidors connected to water supply and drain next to each treatment chair, suction and compressed air in each room (either piped from central location or built into individual treatment cabinets), electrocautery apparatus, etc. One room should be soundproof and isolated from street noises for audiometry, and at least one of the rooms should have only artificial light for transillumination. In this suite, too, the recovery room, which contains a couch and a lavatory can be used to advantage for certain tests and procedures only performable on patients in a reclining position. Like several other suites, all utility and laboratory functions are combined into one compact unit which serves as a general workroom for the nurse. It includes refrigerator, work counter, supply cupboards, sink and pressure sterilizer, all centrally available from the treatment rooms

and eliminating the need for duplication. (I2, 1969, p. 14)

The ophthalmologist, like the ear-nose-throat specialist, being concerned primarily with examinations performed on the head and usually with the patient in a sitting position, substitutes the less space-consuming barber type chair for the customary examining table used by other specialist. This advantage is however, offset by his request for a 20' distance between patient's chair and vision chart.

Although mirrors and special charts designed for shorter distances are frequently used to conserve space, ophthalmologists agree that these substitutes are at best only compromises which should be avoided wherever possible. Here again office consultation and examination are ordinarily combined in one single space by reserving one corner of the examining room for desk, chairs, and bookcase. (I2, 1969, p. 18)

CIRCULATION

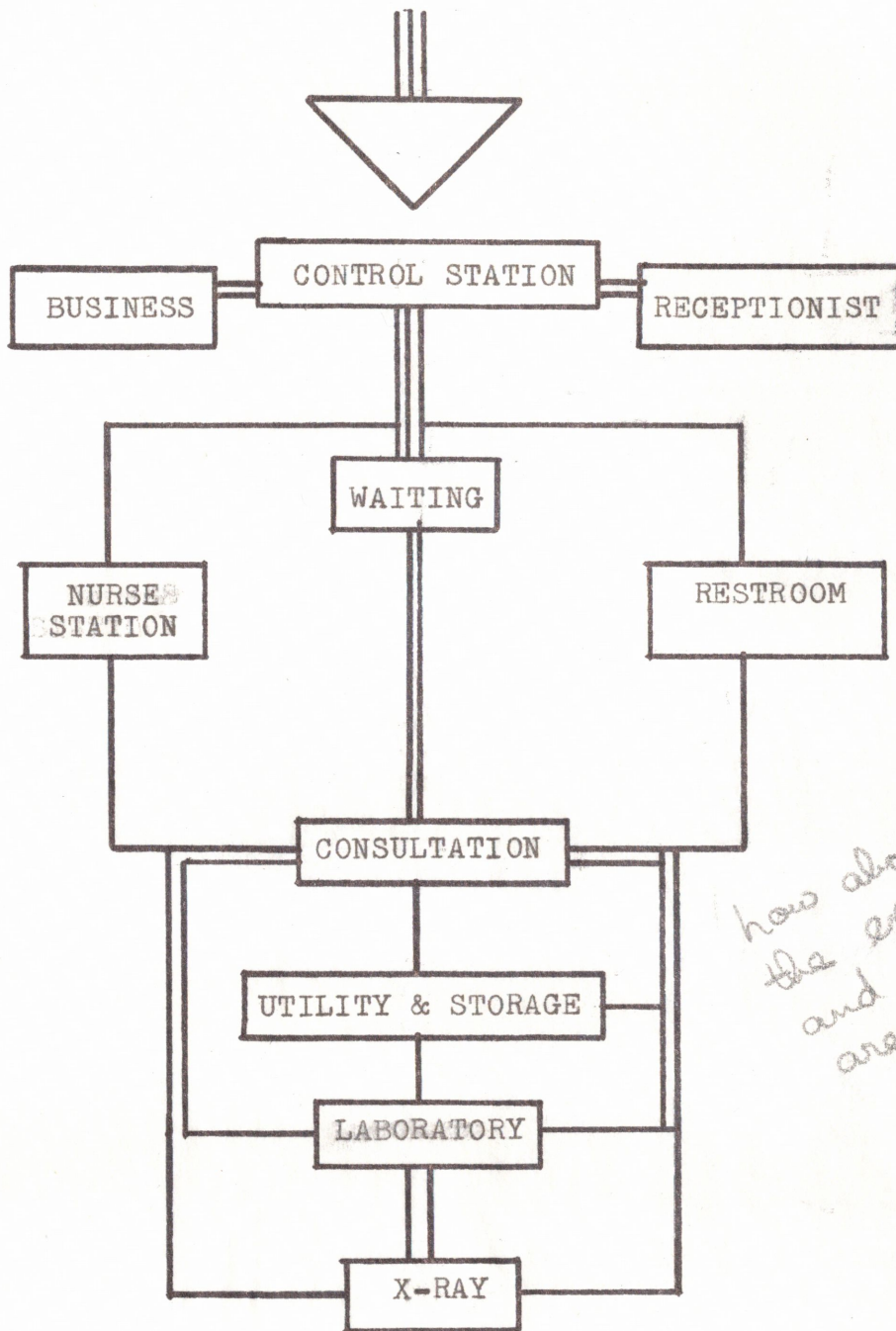
The circulation within the clinic is the blood stream of all activities. The doctor must be able to easily and naturally flow in and out of all areas without causing any interruptions or nuisance. The efficiency of the area allotted for circulation must be high for any well working medical facility.

A separate entrance, allowing the physician to come and go without passing through the waiting area or other patient oriented areas, just as the patient should not pass through the doctor's office on his way to the waiting area. The patient should get as much consideration, in terms of convenience and ease of circulation, as the doctor or the medical staff.

The second entrance could be used by patients wishing to avoid the waiting area, as in the case of an emergency, and it will make deliveries of drugs, supplies, and specimens easier and more convenient as well.

The extra space utilized for halls and corridor is sometimes criticized because of its unproductive nature, but at the same time it seems hardly reasonable to sacrifice efficiency, convenience and comfort, not to mention privacy, for a relatively small saving in over-all cost.

The following page is a diagram of the circulation patterns that should exist for an efficient and well-running clinic.



Desired Circulation patterns of the eight basic elements.

THE SPACES

Space Requirements

Space is one of the most crucial considerations when designing a medical facility. But the space alone is certainly not the end in itself...it must be properly arranged. The average amount of space for a doctor's "office" is about 1,000 square feet, but as few as 200 square feet and as much as 2,500 square feet per doctor have been used. The minimum size for a good, workable office is about 600 square feet. When two or more doctors are in practice together in one facility, the amount of space per doctor is considerably decreased, but the practical lower limit is 600 square feet per doctor. (13, 1963, p. 26)

In the past there has been a tendency to squeeze too many people and functions in too small an area. The rooms must have enough room for all the necessary equipment, and still there must be ample room for the circulation that is an inherent part of the working procedure. Unquestionably, the right amount of space, and its arrangement are the most important physical considerations in an efficient, comfortable office that is satisfactory to both the doctor and his patients. (7, 1958, p. 24)

The following pages are a space requirement program for the proposed thirteen-doctor clinic.

*PROGRAM FOR THIRTEEN DOCTOR CLINIC

Administration

Sq. Ft. for
13 doctors

Billings, punch carding, bookkeeping

Personnel would include:

I Receptionist, I cashier, I switch-
board operator

150

I Reception

300

2 Record clerks

Business office large enough
for two desks (central location)

150

I Manager or administrator

Private office

120

Secretary's office

100

Toilets and vestibule

I Women

90

I Men

80

Corridors throughout building

2,000

Medical Offices

Doctors to be grouped as follows with
separate waiting rooms or combinations:

4 General medicine

Waiting for 60 patients per day
or 150 people including friends
Maximum waiting at one time, 25

408

8 Examinations and treatment rooms

1,064

4 Consultation (office)

532

2 Pediatrics (separate department)

Waiting room for 30 patients or 90
per day

Maximum waiting at one time, 16

Outdoor play area

I Well child waiting area

195

5 Consultation-examination rooms

665

Medical Offices (cont'd)

Sq. Ft.

Examining rooms to be used as sick children waiting rooms		
I	Nurses station and work room	80
I	Toilet	30
	Storage	30
I	Internal Medicine	
I	Obstetrician	
I	Gynecelologist	
I	Surgeon	
	Waiting room for 60 patients or 120 per day	
	Maximum waiting at one time 20	408
8	Examination-treatment rooms	1,064
4	Consultation (office)	532
I	Otolaryngologist	
I	Ophthalmologist	
	Waiting room for 30 patients or 60 per day	
	Maximum waiting at one time 16	360
2	Examination-treatment rooms	400
2	Consultation (office)	260
I	Radiologist	
	Location adjacent to lab which in- cludes his examination and treatment	
I	Consultation (office)	120
Pharmacy		
	sales area and prep room	400
Physiotherapy		
3	Treatment rooms	180
	Exercise and desk space	120

Laboratory

Laboratory technician to handle EKG, BMR, and possible X-ray	400
---	-----

Recovery and EKG and BMR

Adjoining laboratory	140
----------------------	-----

2 General Toilets

One to adjoin laboratory and X-ray and be convenient to recovery rooms	80
---	----

Medical Offices (cont'd)	Sq. Ft.
Recovery and Bloodletting and Injections	
Adjoining laboratory	I40
X-Ray	
Near or convenient to laboratory, emergency, surgery; toilet convenient for bariums; 250 K.V. unit; fluoroscope, GI's, bone; no therapy	
I X-ray	I80
I Dark room	48
I Storage room control and viewing	I20
2 Dressing alcoves	48
Surgery	
Convenient to X-ray, surgeon	
Anesthetics	
Minor surgery, bone setting, etc.	
Sparkproof outlets by keeping 5 feet above floor	
I Surgery	I30
Scrub sink	
I Cast and injection room	I30
I Central supply	
Storage for sterilized supplies, central sterilizers, and autoclave; deep sink for scrubbing	I20
Staff and Personnel Rooms	
Women Personnel	
10 Nurses and 6 office workers	
I lounge with 16 rockers, couch, table for lunches	I92
I toilet rooms	50
Kitchen	
To serve milk shakes coffee, etc. to recovery rooms and to be used by personnel for light lunches	
Small refridgerator	
2-unit range top	
Small sink	
Cupboards	64
Library	
Private medical library; folding door to conference room	I40
Conference room	I40

Medical Offices (cont'd)

Sq. Ft.

Utility Rooms

I	Mechanical Room
I	Janitor
I	General storage
I	Linen storage

252
140
140
140

Total Space Required 12,122 sq. ft.

*Taken from figures provided in Doctors Offices and Clinics.

The site of the clinic is a portion of the land appropriated by the Northern Montana Hospital Administration. It lies on the southern boundary of the Northern Montana College. The site is almost ideal in that it has a slight slope from east to west. The site is almost the very top of a gradually climbing plateau giving a commanding view of the city to the north and the Bear Paw Mountains to the south.

The location of this site is equally as good from the criteria of proximity to the hospital and Northern Montana College. The predicted growth of the city shows residential expansion to the south making the centrality of the site more and more advantageous as time passes.

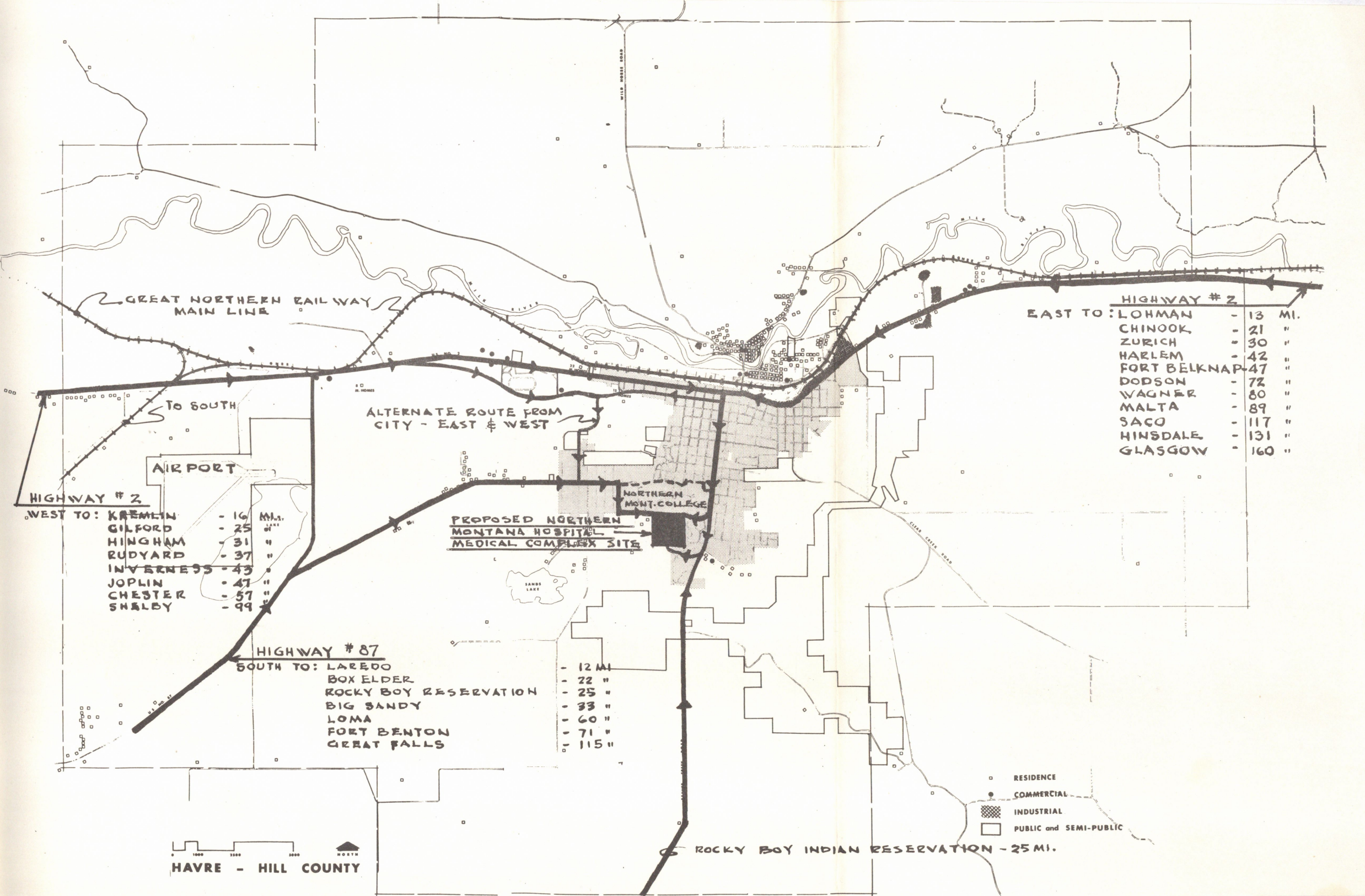
Accessibility is extremely good to the site from all parts of the area. The county road now running between the site and Northern Montana college campus is going to become a major highway connecting the Great Falls Highway (87) to the Beaver Creek Highway.

Since the time of the proposal for the hospital, this area has been rezoned to make medical facilities possible so this will offer no problem. Utilities are already laid out for the hospital and will be available for any other facilities in the area.

Orientation on the site will be extremely important from the criteria of view, access, and ultimate heating considerations.

The size of the lot is ample for parking and building

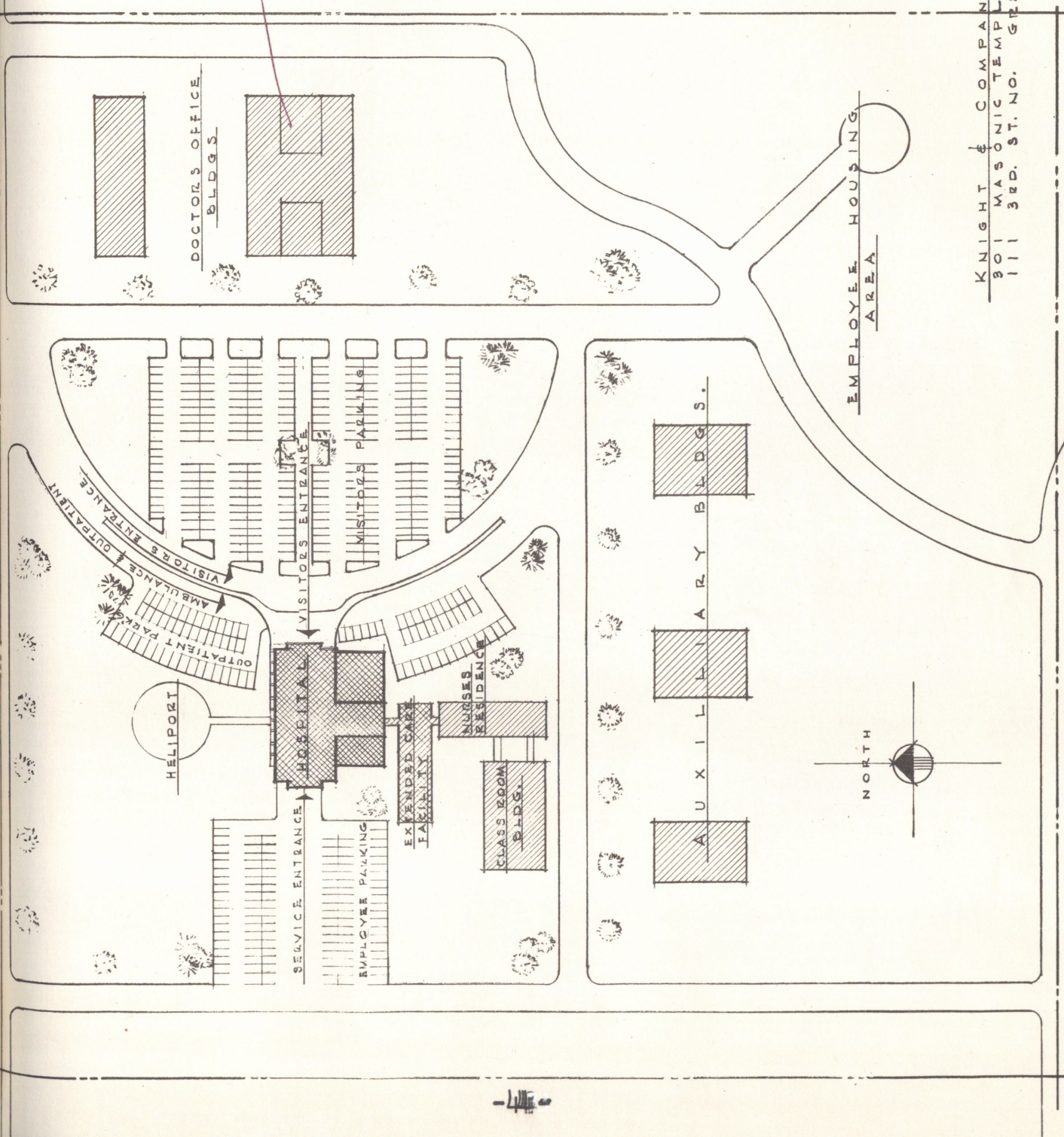
space with much open area for landscaping and allowance for expansion.



See project 2

PROPOSED

NORTHERN MONTANA
HOSPITAL
MEDICAL COMPLEX
HAYDEN, MONTANA



NORTH

KNIGHT & COMPANY - ARCHITECTS & ENGINEERS
301 MASONIC TEMPLE - HAYDEN, MONTANA.
111 3RD. ST. NO. GREAT FALLS, MONTANA.

FUTURE SITE OF
NORTHERN
MONTANA
HOSPITAL





• APR • 70

LOCAL CONDITIONS

Havre, Montana is located in a level valley formed by the Milk River, which courses through the city from west to east. Most of the city lies on the south side of the river. On the north side, hills rise abruptly to about 200 feet above the valley floor. The landmass north increases slightly in elevation to the Canadian Border and is gently rolling to flat. During winter months, frequent invasions of cold polar continental air move down across these rolling plains, bringing snow and subzero temperatures.

The Bearpaw Mountains extend from Havre to 15 to 30 miles south of Havre. Most of the peaks are from 4,000 to 5,000 feet above sea level, and several are above 6,000 feet. The highest is Old Baldy which is 6,906 feet above sea level.

Winters are cold in the Havre area, but snow cover is seldom more than a few inches, and usually some ground is bare. Spells of mild weather to occur at least a few times each winter, arriving with sometimes fresh to strong southwest to west Foehn winds, locally referred to as "Chinook". During winter months, rain rarely falls; such winter precipitation as does occur is almost always in the form of snow. The transition from winter to spring conditions is fairly rapid in the usual year, but cold snaps and snow can occur as late as early May or as early as September.

Summers are characterized by warm, but seldom hot (95° or warmer) weather. Daytime warmest readings usually run from the eighties to the mid-nineties most of July and August,

but summer relative humidities are seldom as high as 50 percent during afternoon hours. Summertime night temperatures are rarely oppressively warm. Most spring and summer precipitation falls as showers, but occasionally steady rains lasting several hours are observed in May and June, and again in September. Thunderstorms occur on an average of about 1 day in 6, June through August. Fall seasons are characterized by much clear weather, although cold snaps of a day or more, with some snow, can occur as early mid-September. The first wintry weather each year generally arrives several weeks before the date of the winter solstice.

About half of the total annual rainfall falls during May, June, and July, when it is needed most. When rainfall is short during these months, crops may be poor and may average only 4 to 5 bushels of grain per acre.

The average date of the last 32° minimum temperature in the spring is May 9; of the first in the fall is September 23. The average length of the season between 32° freezes is 138 days. (1968 Narrative Climatological Survey)

AVERAGE TEMPERATURE

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1931	28.6	35.6	31.6	46.2	56.4	67.4	69.4	68.7	58.7	47.5	26.4	23.4	46.7
1932	18.4	20.6	22.0	47.7	57.2	64.8	70.2	68.6	57.4	42.6	31.6	19.8	43.4
1933	21.6	16.0	35.0	42.0	54.4	68.7	72.7	68.7	57.2	44.4	36.4	16.3	44.4
1934	27.7	30.6	32.6	42.6	52.4	62.3	71.6	67.8	51.4	49.2	38.0	23.1	47.2
1935	8.3	28.2	26.2	38.2	51.6	61.8	73.2	65.8	57.6	45.6	25.2	25.0	42.2
1936	9.6	-12.8	30.4	40.9	63.4	66.8	79.9	70.4	58.4	47.9	34.8	18.0	42.3
1937	-2.8	12.0	30.8	47.2	57.6	64.7	72.6	67.5	58.4	49.2	29.8	19.6	42.2
1938	24.3	7.6	32.2	44.6	53.0	64.5	70.8	67.3	65.6	50.1	30.4	26.4	44.7
1939	28.0	10.4	31.6	46.8	59.2	58.4	73.0	68.8	59.2	43.6	40.8	32.2	46.1
1940	7.0	15.8	32.9	40.6	59.3	65.3	71.9	70.3	64.2	52.0	21.3	27.0	44.0
1941	20.2	23.4	33.2	46.5	57.8	64.8	73.4	68.9	52.7	46.2	36.6	24.0	45.6
1942	24.3	19.6	32.8	47.6	52.5	59.4	69.6	67.4	57.6	48.0	28.7	20.4	43.7
1943	3.8	25.6	22.9	50.3	51.8	58.9	70.4	68.8	57.4	50.0	36.0	28.2	43.7
1944	27.9	22.8	23.2	48.3	59.3	62.2	68.6	65.6	59.0	50.2	25.2	19.9	44.3
1945	18.3	19.4	35.2	39.6	52.0	59.1	72.8	70.0	54.1	46.9	26.8	15.8	42.7
1946	25.5	24.0	41.0	50.6	52.0	62.4	72.6	66.6	56.2	41.2	23.2	19.8	44.6
1947	22.4	15.5	21.6	43.8	57.0	60.4	75.0	69.3	70.2	60.2	47.4	26.0	43.8
1948	27.4	16.0	24.8	43.8	57.0	63.3	69.3	70.2	60.2	47.4	26.0	10.4	43.7
1949	3.2	7.4	28.9	41.8	52.9	63.9	70.3	72.5	58.0	42.8	10.9	42.7	39.5
1950	-11.6	18.4	24.3	41.0	59.6	60.9	67.8	65.7	56.9	47.7	26.1	24.1	39.5
1951	11.0	16.6	16.6	41.4	56.2	57.0	70.3	65.0	53.2	41.3	30.9	10.2	39.1
1952	7.9	21.7	20.5	51.3	57.2	63.3	66.9	67.0	61.4	46.6	30.9	23.2	43.2
1953	23.8	28.6	34.0	38.7	51.5	63.3	69.7	70.0	60.2	53.1	39.4	29.0	46.6
1954	3.3	37.3	23.9	37.3	54.1	59.2	72.0	67.2	57.0	46.6	42.3	31.9	44.4
1955	17.6	17.7	23.5	41.1	52.9	62.0	68.7	69.6	54.7	43.7	13.7	13.1	40.3
1956	10.7	15.3	32.3	40.9	56.0	66.0	70.1	66.5	58.1	47.4	35.3	25.5	43.7
1957	3.0	17.8	32.2	43.8	57.8	63.0	73.2	67.9	58.5	40.5	33.9	33.9	43.8
1958	30.6	15.4	25.2	45.5	62.0	61.5	66.5	72.4	58.6	48.4	30.9	22.5	45.0
1959	10.5	8.0	38.6	43.9	51.6	65.0	71.3	66.1	54.5	42.9	27.0	31.8	42.6
1960	16.0	19.0	28.1	44.3	54.4	62.9	75.8	66.9	59.3	49.8	30.3	21.2	44.0
1961	27.5	29.8	37.3	39.4	56.2	69.9	70.9	72.9	50.8	45.4	26.2	11.0	44.8
1962	16.0	16.3	20.5	47.2	53.2	64.0	65.7	67.7	55.6	48.9	38.9	26.6	43.4
1963	6.7	28.7	38.3	43.8	54.0	63.3	70.4	69.9	63.8	52.6	31.9	16.2	45.0
1964	22.3	31.8	27.1	42.8	54.7	61.7	71.7	65.1	52.5	48.1	27.1	0.8	42.1
1965	8.8	16.2	14.9	41.2	51.7	60.4	68.4	67.4	46.2	50.5	24.8	21.4	39.3
1966	1.0	14.0	33.2	39.1	56.6	60.7	70.8	65.7	61.4	45.6	22.3	18.3	40.8
1967	17.1	23.2	24.3	33.6	51.4	59.7	71.5	71.1	62.6	48.1	32.2	18.8	42.8
1968	11.9	24.3	39.1	41.8	51.1	60.3	68.6	64.4	55.9	44.7	32.2	8.8	41.9
RECORD MEAN MAX MIN	13.9 24.0 3.7	17.1 27.6 6.6	28.5 39.4 17.6	44.0 56.5 31.5	54.4 67.0 41.7	62.3 74.6 49.9	69.6 84.0 55.1	67.2 81.8 52.5	56.4 70.1 42.7	45.9 58.7 33.0	30.4 41.2 19.6	20.4 30.3 10.5	42.5 54.6 30.4

TOTAL PRECIPITATION

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1931	0.57	0.02	0.82	0.68	0.21	1.33	3.25	0.22	0.47	0.02	0.57	0.34	8.50
1932	0.20	0.62	0.80	1.69	2.08	5.24	1.07	1.75	0.38	0.66	0.71	0.11	15.31
1933	0.35	0.27	0.39	1.44	2.26	2.47	0.37	3.90	0.45	0.84	0.53	0.92	14.19
1934	0.22	0.07	1.05	0.83	0.58	3.12	0.21	0.98	1.74	0.67	0.13	0.66	10.46
1935	0.81	0.30	0.92	1.15	1.46	0.67	1.64	0.33	0.17	0.56	0.33	0.19	8.53
1936	0.51	0.78	0.59	0.44	0.44	1.55	0.11	1.50	0.14	0.73	0.23	1.50	8.52
1937	0.99	0.24	0.34	0.31	0.51	3.73	2.19	0.82	1.07	0.50	0.28	0.14	11.12
1938	0.38	0.62	1.40	0.29	2.46	3.59	2.43	1.40	1.34	1.80	0.61	0.78	17.10
1939	0.30	0.53	0.24	0.36	1.28	3.60	0.21	0.58	0.90	0.37	0.18	0.99	9.54
1940	0.27	0.95	1.04	1.95	1.67	3.57	1.11	0.31	1.47	2.30	0.48	0.04	15.16
1941	0.37	0.18	0.27	1.08	1.82	2.72	1.11	0.84	3.53	0.19	0.97	0.48	13.56
1942	0.04	0.68	1.14	0.36	1.68	3.70	2.08	0.78	0.95	1.36	0.73	0.02	13.52
1943	1.32	0.33	0.39	1.20	1.02	5.17	0.39	0.16	0.14	1.10	0.04	0.03	11.29
1944	0.02	0.41	0.63	0.46	1.37	3.68	1.09	1.60	0.27	0.05	0.54	0.16	10.28
1945	0.82	0.45	0.73	0.98	0.72	2.12	0.46	1.21	3.17	1.28	0.08	0.91	12.93
1946	0.37	0.13	0.26	0.43	1.16	1.51	1.25	0.35	1.64	1.26	0.66	0.56	9.58
1947	0.23	0.37	0.98	0.85	0.15	2.95	1.13	1.41	1.74	0.48	0.38	0.27	10.94
1948	0.38	0.47	1.11	0.87	2.56	1.99	0.28	0.14	0.09	0.26	0.52	0.94	9.14
1949	0.44	0.47	0.41	0.05	2.71	0.73	1.39	0.23	0.14	1.41	0.03	0.86	8.87
1950	0.92	0.24	1.51	0.61	1.18	3.90	2.08	1.15	0.93	0.24	0.41	0.32	13.49
1951	0.39	0.42	0.54	0.73	3.06	4.11	0.99	3.17	1.36	1.00	0.25	1.02	17.04
1952	0.60	0.81	0.47	0.16	1.98	1.02	0.85	0.62	0.28	0.01	0.42	0.12	7.34
1953	0.26	0.58	0.45	1.53	4.50	3.38	1.02	0.26	0.75	0.01	1.17	1.47	14.02
1954	0.82	0.15	1.05	1.25	1.10	2.07	0.54	3.03	3.28	0.48	0.13	0.04	13.94
1955	0.40	0.35	0.12	3.72	3.54	1.29	4.99	0.10	0.18	0.11	0.89	0.32	16.01
1956	0.16	0.13	0.14	0.30	1.57	1.75	1.41	1.63	1.19	0.41	0.18	0.46	9.33
1957	0.92	0.66	0.32	0.68	1.20	2.63	0.90	1.29	0.98	1.78	0.25	0.04	11.65
1958	0.25	1.06	0.39	0.23	0.52	1.81	1.71	0.43	0.54	1.22	2.42	0.57	11.15
1959	0.77	0.34	0.08	1.34	1.50	4.37	0.07	0.58	0.66	2.24	1.27	0.13	13.35
1960	0.67	0.32	0.11	2.82	1.19	1.44	0.10	1.98	0.19	0.52	0.99	0.33	10.66
1961	0.18	0.16	0.18	1.32	1.31	0.70	0.89	0.19	1.26	0.73	0.22	0.29	7.43
1962	0.18	0.36	0.41	0.57	2.15	3.36	1.66	0.93	0.74	1.09	0.09	0.05	11.59
1963	0.54	0.78	0.10	0.80	1.01	1.88	2.13	0.70	0.36	0.64	0.07	0.52	9.53
1964	0.34	0.11	0.20	1.18	2.28	1.88	1.18	1.84	1.49	0.13	0.45	1.06	12.14
1965	0.56	0.51	0.31	1.12	1.01	4.72	3.77	2.77	2.45	0.06	0.64	0.19	18.11
1966	0.68	0.11	0.48	0.41	0.53	2.04	1.69	0.50	0.17	0.83	0.65	0.14	8.23
1967	0.35	0.46	1.28	0.59	0.28	0.69	0.01	1.77	0.37	0.18	0.29	0.87	8.27
1968	0.27	0.35	0.77	0.93	1.17	2.53	0.49	3.03	2.47	0.17	0.06	0.77	13.01
RECORD MEAN	0.62	0.46	0.55	0.96	1.71	2.74	1.60	1.18	1.20	0.68	0.55	0.54	12.79

Record mean values above (not adjusted for instrument location changes listed in the Station Location table) are means for the period beginning in 1880.

A horizontal line drawn on the above tables indicates a break in the data sequence due to a change in instrument exposure or a station move (see Station Location table).

TOTAL DEGREE DAYS

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1930-31	6	22	322	783	1030	1111	1128	824	1038	563	290	46	7073
1931-32	48	30	233	547	1160	1287	1422	1286	1334	520	254	90	8231
1932-33	20	34	240	694	1002	1402	1344	1371	932	690	341	34	8104
1933-34	8	62	244	639	858	1150	1156	964	1004	461	148	107	7161
1934-35	10	65	414	490	811	1299	1757	1028	1202	806	416	129	8427
1935-36	0	82	232	600	1196	1242	1718	2258	1072	722	146	90	9358
1936-37	0	18	229	536	904	1458	2101	1482	1063	534	233	102	8660
1937-38	4	46	220	495	1056	1408	1262	1606	1016	612	384	60	8189
1938-39	7	34	42	463	1037	1196	1121	1529	1033	556	221	211	7450
1939-40	9	54	194	662	728	1020	1796	1425	996	734	190	70	7878
1940-41	8	10	94	409	1312	1177	1388	1166	988	554	242	90	7438
1941-42	0	55	369	584	853	1276	1260	1374	999	525	395	180	7870
1942-43	22	56	245	526	1090	1386	1089	1101	1302	440	410	187	8671
1943-44	22	18	321	469	874	1139	1159	1226	1310	498	222	171	7339
1944-45	36	52	197	408	1195	1396	1445	1275	925	764	405	214	8312
1945-46	15	10	353	498	1144	1528	1226	1146	742	434	409	121	7626
1946-47	0	67	278	741	1255	1400	1319	1385	1348	552	324	146	8815
1947-48	0	38	286	423	1129	1213	1165	1421	1246	638	276	112	7948
1948-49	16	2	177	547	915	1190	1511	1612	1119	398	202	82	7673
1949-50	14	17	211	688	662	1262	2379	1298	1256	712	371	164	9450
1950-51	35	36	282	531	1160	1262	1677	1253	1498	701	275	251	9056
1951-52	28	90	349	727	1014	1699	1769	1253	1376	413	236	89	9043
1952-53	45	54	122	564	1014	1288	1273	1011	951	783	420	147	7672
1953-54	19	6	168	365	760	1112	1915	774	1269	825	341	190	7744
1954-55	20	28	239	566	676	1018	1466	1318	1279	711	370	120	7811
1955-56	56	6	327	498	1539	1605	1681	1436	1008	716	299	55	9226
1956-57	20	56	210	538	885	1218	1924	1319	1006	628	220	86	8110
1957-58	3	35	204	753	925	965	1062	1385	1227	579	123	128	7394
1958-59	60	11	226	512	1017	1312	1686	1596	815	628	407	78	8348
1959-60	9	48	320	677	1136	1025	1512	1329	1139	612	334	58	8239
1960-61	5	47	208	467	1036	1351	1517	982	857	759	297	7	7173
1961-62	4	7	432	602	1158	1635	1153	1360	1373	529	360	86	9096
1962-63	41	49	281	495	779	1185	1808	1010	819	632	345	119	7560
1963-64	16	19	110	383	988	1508	1318	958	1169	658	322	116	7668
1964-65	4	85	370	518	1129	1992	1740	1361	1551	706	405	179	90040
1965-66	17	57	553	443	1202	1348	1986	1425	978	768	295	161	9232
1966-67	3	72	140	599	1278	1468	1164	1195	1253	935	418	178	8955
1967-68	7	11	125	519	980	1428	1647	1171	797	688	421	166	7960
1968-69	42	69	273	620	975	1741							

TOTAL SNOWFALL													
Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1930-31	0.0	0.0	T	0.5	6.6	2.1	5.0	T	9.4	0.1	T	0.0	23.7
1931-32	0.0	0.0	0.0	T	9.5	7.1	3.9	5.1	9.1	T	0.0	0.0	34.7
1932-33	0.0	0.0	0.0	0.0	9.6	1.6	4.6	3.9	5.4	14.2	0.0	0.0	42.7
1933-34	0.0	0.0	0.0	2.2	4.5	14.1	3.1	0.4	19.3	1.8	0.0	0.0	41.4
1934-35	0.0	0.0	8.7	1.5	1.0	7.3	12.4	4.4	8.8	4.4	0.4	0.0	48.9
1935-36	0.0	0.0	0.0	2.6	3.2	5.1	8.1	12.6	9.0	1.8	0.0	0.0	42.4
1936-37	0.0	0.0	0.0	2.0	3.2	27.0	12.9	3.0	1.5	3.1	0.0	0.0	52.7
1937-38	0.0	0.0	T	0.0	3.6	2.1	7.5	8.9	17.7	0.1	1.0	0.0	40.9
1938-39	0.0	0.0	0.0	T	5.2	12.7	3.0	9.0	4.2	1.7	0.0	0.0	35.7
1939-40	0.0	0.0	T	2.3	0.0	8.1	5.6	17.1	10.8	7.0	0.0	0.0	50.5
1940-41	0.0	0.0	0.0	0.7	8.4	1.4	5.8	3.0	3.3	1.4	0.0	0.0	24.0
1941-42	0.0	0.0	T	0.6	5.0	7.4	0.6	10.2	11.1	1.4	0.0	0.0	36.3
1942-43	0.0	0.0	T	2.3	14.2	0.7	17.1	6.0	7.8	0.0	T	0.0	48.1
1943-44	0.0	0.0	0.0	1.2	0.5	0.3	0.2	6.5	7.4	T	0.0	0.0	16.1
1944-45	0.0	0.0	1.4	0.0	5.6	3.1	11.4	7.2	6.5	3.6	T	0.0	38.9
1945-46	0.0	0.0	1.6	T	0.5	8.5	5.6	1.7	T	T	T	0.0	17.9
1946-47	0.0	0.0	0.0	3.3	9.8	7.9	2.4	3.0	15.4	3.1	0.0	0.0	44.9
1947-48	0.0	0.0	0.0	0.0	4.9	4.4	4.6	5.4	7.2	5.8	T	0.0	32.3
1948-49	0.0	0.0	0.0	T	1.8	7.3	8.3	5.9	5.1	0.0	T	0.0	28.4
1949-50	0.0	0.0	T	5.8	T	11.5	10.1	2.4	9.9	4.1	T	2.0	45.8
1950-51	0.0	0.0	T	0.7	8.9	5.5	6.2	9.0	6.9	4.1	0.0	0.0	41.3
1951-52	0.0	0.0	1.6	7.7	3.0	14.4	11.8	12.1	6.8	T	0.0	0.0	57.4
1952-53	0.0	0.0	0.0	0.0	7.6	2.8	6.2	8.9	4.9	5.2	2.4	0.0	38.0
1953-54	0.0	0.0	0.0	0.0	T	8.4	14.0	1.5	15.9	8.3	0.6	0.0	48.7
1954-55	0.0	0.0	2.4	0.3	0.3	1.5	6.6	7.8	2.8	32.9	0.0	0.0	54.6
1955-56	0.0	0.0	T	0.4	14.9	5.4	4.7	3.3	2.5	2.8	2.5	0.0	36.5
1956-57	0.0	0.0	0.0	0.4	1.8	9.2	14.8	9.7	1.8	4.1	0.0	0.0	41.8
1957-58	0.0	0.0	0.7	7.6	2.6	T	3.0	16.8	2.1	T	0.0	0.0	32.8
1958-59	0.0	0.0	0.0	T	26.4	8.3	10.9	4.0	0.1	T	T	0.0	49.7
1959-60	0.0	0.0	T	10.3	9.6	2.8	9.8	6.3	3.3	9.6	T	0.0	51.7
1960-61	0.0	0.0	0.0	0.7	9.0	3.7	2.0	0.4	1.4	1.4	0.0	0.0	18.6
1961-62	0.0	0.0	0.0	1.7	4.0	4.5	3.1	5.3	3.1	T	0.0	0.0	21.1
1962-63	0.0	0.0	T	0.0	T	T	6.8	6.1	T	5.2	0.0	0.0	18.1
1963-64	0.0	0.0	0.0	0.0	1.4	8.4	4.2	1.4	3.5	5.3	0.0	0.0	24.2
1964-65	0.0	0.0	T	T	5.4	14.1	7.1	7.2	5.6	6.4	T	0.0	45.6
1965-66	0.0	0.0	2.8	0.0	9.5	3.7	11.6	2.4	5.8	5.9	0.0	0.0	41.1
1966-67	0.0	0.0	T	T	9.3	2.8	8.3	6.1	14.4	31.1	1.7	0.0	70.7
1967-68	0.0	0.0	0.0	T	1.8	2.1	4.8	5.8	6.6	7.0	T	0.0	29.1
1968-69	0.0	0.0	T	T	1.1	11.3							

STATION LOCATION

HAVRE, MONTANA
CITY-COUNTY AIRPORT

Location	Occupied from	Occupied to	Airline distance and direction from previous location	Latitude North	Longitude West	Elevation above										Remarks
						Sea level	Ground									
							Ground at temperature site	Wind instruments	Extreme thermometers	Psychrometer	Telepsychrometer	Tipping bucket rain gage	Weighing rain gage	8" rain gage	Hygrothermometer	
Fort Assinniboine 7 mi. SW of Havre	10- 6-79	3-12-84		48° 30'	109° 48'	2687	#25	15					21			# - 42 feet from 3-8-84 to 3-12-84
Fort Assinniboine <u>CITY OFFICE</u>	3-12-84	5-15-92	20 ft. NW	48° 30'	109° 48'	2687	42	15					4			
First St. between 2nd & 3rd Avenues, Havre	5-16-92	1-12-97	7 mi. NE	48° 34'	109° 40'	2486	33	15					2			
First St. between 3rd & 4th Avenues Gussenhoven Building	1-12-97	1- 1-04	300 ft. E	48° 34'	109° 40'	2486	52	46					38			
210 Second Street E <u>AIRPORT STATION</u>	1- 1-04	1-25-61	700 ft. SW	48° 34'	109° 40'	2488	a67	11	11		3	5	3			a - 44 feet to 9-30-30.
Administration Building City-County Airport	1-25-61	7-21-67	5 mi. W	48° 33'	109° 46'	2582	20	5	5		3 X4	4	b3		6	b - Stand by equipment. Removed in 1965. Reinstalled 2-1-66. X - Amos gage.
Administration Building City-County Airport	7-21-67	Present	(A)	48° 33'	109° 46'	d2584	20	s5	s5			4	3	c5		(A) Office not moved. Changes in instrumentation and minor relocations. c - Commissioned 1281 feet SSW of thermometer site 7-13-68. d - 2582 feet to 7-13-68. s - Standby status after 7-13-68.

Requests for additional information should be directed to the Weather Bureau Office for which this summary was issued.

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Any successful design, whether it is architectural or not, must provide for variety and interest as well as satisfy functional needs. A computer can turn out a workable floor plan, but to create a space or series of spaces that gives the observer an experience or sensation that is desired takes a deep and thorough concern for aesthetics.

All the clinic must do from a purely functional standpoint is provide basic protection from the elements, allow the doctor to carry on his business and allow the flow of people and equipment. It would be very successful by this definition and still never really be a clinic. A clinic is a place of many emotions all of which must be considered and dealt with. Apprehension, sadness, pain, frustration, and insecurity all must be dealt with and can be dealt with as long as the architect is aware of their existence.

A doctor's office can be very dismal or relatively pleasant and the psychological experience of the space does much to contribute to the over-all impression of a visit to that office.

The different spaces in the clinic call for different types of spaces and different treatment of those spaces. The individual office would certainly not have the same feeling as the waiting room or a bathroom.

Interiors are certainly not the only place for aesthetic considerations in the design. The exterior of any building is directly related to the site and the site, in turn to the

entire area. The whole composition then, must be organic. The design of anything must come from an analysis of everything it relates to.

The arrangement of the site and the relationships of the landscaping to the structure must be as if were a natural feature of the location. The structure should reflect the area and the area should reflect the structure.

The mountains, the rolling plains, the valley, and the Northern Montana Campus must be considered in context of their relationship to the site and the structure.

The design of the hospital which will be adjacent to the clinic site is very important to the aesthetics of the whole and design of the clinic must be with respect to that fact. A good relationship between the two can help to create a harmony or unity of the complex. The converse is also true.

Construction Costs

To arrive at the total investment involved in the construction, all of the following costs must be included: site acquisition, site improvement, building cost plus state sales tax, financing charges, architects fee, and furnishings and equipment. To arrive at the construction cost (or building cost), I found the cost per square foot for the clinic to be \$36.61 (II, 1969, pg. 10) for the type of construction that I expect to use. Using the total square footage that I arrived at in the space requirement program (pg.42) I concluded the tabulated figures on the following page.

Financing costs are not very stable but 8% - 9% is the present rate, so I shall assume a rate of 8.5% for calculating financing charges. The architect's fee, based on the cost of construction and site improvement is normally 6% to 8%.

(7, p. 28) The cost for site was approximated by a square footage method at \$.35 per square foot for the site. (7, p. 28)

CONSTRUCTION COSTS

Cost of Building	12,122 sq. ft. @ \$36.61	\$443,786
*Cost of Property		5,000
Site Improvements	Lot size 300 X 400 120,000 sq. ft. less 12,122 sq. ft. @ \$.35	41,646
Financing	8.5% of \$443,786	37,723
State Sales Tax	3% of \$443,786	<u>13,314</u>
Total Investment		\$541,469

*Cost of site not available at time of report. Estimate \$5,000.

Maintenance and Operation

In addition to the original investment, the cost of keeping the facility in use must be considered when the client is concerned about the over all expenses he will be confronted with. Typically, the amount of the maintenance and operations costs will have a great deal of influence of how much of the total investment can be allotted for the building itself which in turn will undoubtedly have an effect on the quality of materials etc. (7, p. 29)

The following table is an approximation of the costs incurred from maintenance and operation of clinics in north-western areas, on a square foot basis.

MAINTENANCE AND OPERATION COSTS
(Annual cost per square foot)

Heating and Cooling	\$.08
Lighting	.13
Water	.01
Janitor, Yardwork, Cleaning, and Supplies	.70
Maintenance	.10
Taxes	.26
Insurance	.10
Annual Total (per sq. ft.)	<u>\$1.38</u>

Assuming a ten percent increase since 1958, \$1.50 per square foot annually should amply cover maintenance and operation.

TOTAL COST PER YEAR

12,122 square feet @ \$1.50 per sq. ft. \$18,183

*Marshal Valuation Service Publication

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The clinic that I have described on the preceding pages was an analysis of the function of the building and the areas of the various spaces that would be required to provide for the respective functions. As I started into the actual design stages of the problem, I found that there is much more to be considered as basic design criteria than I had originally anticipated. For instance, I found in trying to manipulate spaces in the manner of the relationships I had defined earlier, that without going to a multiple story structure I could not achieve the relationships as prescribed. The alternative was to decide which relationships from a functional standpoint were most important to the overall operation of the building.

To make the process as simple as possible, I assigned numerical values to the relationship of one space to another. This is the method that resulted in the breaking down of the specialties into the two basic groups or wings of the structure. The general practitioner composing most of the wing to one side of the laboratory, and the more specialized practices on the other wing. The Ostetrics became a part of the general practitioner wing because of the necessity for it to be separated to a degree from the pediatrics wing. This is simply to protect the mothers from the exposure of childrens diseases that are so easily communicable to expectant mothers. The general laboratory must be located in or near the center of the two wings because of the functional relationships to

each wing. The waiting room, as I have designed it, has some characteristics that make it fairly unique. I feel that it is the most successful way it could be handled in the situation that I have created. I have concluded that a large waiting area divided into two smaller areas is a natural result from designing to the ease of the patient and staff simultaneously.

The aesthetic feeling of the building, I felt, should be one that reflects its surroundings. The area is basically flat and barren land, interrupted only by vertical masses or voids that continue again into the flatness of the prairie. I felt that the building must express the horizontal as strongly as possible. The verticle breakup of the major masses should not be dominant but at the same time a strong statement of opposition to the horizontal.

The building, as I have designed it, is not the only answer or even the best answer, but I feel it is a successful solution to the problem. It gives a feeling of concern for the people who work in the clinic, the people who must come to the clinic for treatment, and natural environment of the Havre area. It is not a finished design, but an attempt or start in the right direction toward a true work of architecture rather than a mere building.

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