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54
A HOTEL - CONVENTION CENTER

FOR

GREAT FALLS, MONTANA

UNDERGRADUATE THESIS IN ARCHITECTURAL DESIGN

by 441

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EXISTING CONDITIONS

EXISTING CONDITIONS

The City of Great Falls, Montana is beginning to experience a new period of downtown redevelopment through private enterprise. The past decade has seen a gradual shift of retail trade from the downtown area to the newer, and more convenient shopping centers in the outer subdivisions of the city. As a consequence, expansion in downtown building has been limited to major remodelings. Recently, however, there has been a shift toward construction of new buildings for commercial use, especially in office space. The coming construction of the First National Bank Building, and the D.A. Davidson building offer prime examples.

Despite the drawing of the shopping centers, the downtown area is still an attraction. Its specialty stores, banks, offices, movie theaters, cultural centers, and city and county offices still offer magnetism to the area. The large hotels have remained in this area. The hotel offers combined facilities for the service of meetings and guests, and their relation to the entire downtown offer unique service to their guests. The proximity to ^{these} ~~the~~ mentioned facilities, offers related service to the visitor which can't be offered by the outlying shopping centers or motels.

The existing hotels are able to handle meetings and conventions relatively well, but the expansion of the convention trade to Great Falls in the future, and facilities

to offer complete service for these conventions, present an opportunity for new and expanded convention facilities in the downtown area. First there appears to be a need, although not immediate, for convention, hotel, parking and supporting facilities. Second, that because of the city and the number of conventions, a convention center would have to be orientated toward the Central Business District in order to receive additional service trade. Third, to build a convention center to handle the largest conventions, say 1,000-3,000 people, would be economically unfeasible. However, a location to handle convention spillovers, yet be near the convention facilities, points toward the Central Business District. Fourth, the projected need for off-street parking in the future shows a need for high density parking on prime commercial land in the Central Business District. Fifth, a shortage of adequate luncheon space in the downtown area merits consideration. Sixth, the Great Falls Development Corporation is currently purchasing land in the Central Business District for commercial development. Seventh, the need for further facilities in the Central Business District to maintain the attraction of the city is evident.

HISTORY

Incorporated in 1892 by Paris Gibson, Great Falls has been the trading and commercial center for Northcentral Montana. Its early role was that of a manufacturing center for silver, copper, and smelting due to its location

along the Missouri River. The falls of the Missouri provided sites for hydro-electric dams and thus supplied the cheap and abundant electric power necessary for smelting operations. (12,5,1966)

The need for rail transportation was immediately present for the shipment of ore from Helena and Butte. As a result the city emerged as an important industrial-trade-service community. Early developments also included flour milling and meat packing, and supported a population of 4,000 people at the time of incorporation. (12,5,1966)

The fertile land around the community established agriculture as a main contributor to the economy. The shipping of grain to the east and west brought in this additional revenue. (12,6,1966)

The discovery of oil and natural gas fields to the north of Great Falls established new industry in the area and as a consequence Great Falls was in the position of providing services and goods while expanding its economic base. These fields are still producing and number about 20, with about 3,000 productive wells giving a total of 184,000,000 barrels of oil. (12,6,1966)

GEOGRAPHY

Great Falls is located in the Northcentral area of the

State and is landmarked by the junction of the Sun and Missouri Rivers.

The Sun River has its headwaters along the Continental Divide and flows in an easterly direction until its entry into the Missouri River.

The Missouri River flows diagonally through Cascade County in a southeast to northeast direction and as it passes through Great Falls, drops in elevation more than 500 feet in 10 miles, over a series of falls and rapids.

The valley in which Great Falls lies is encircled by the Big and Little Belt Mountain Ranges to the south and east, and the Continental Divide to the west. (12,7,1966)

CLIMATE

Great Falls is characterized in the summertime by generally pleasant weather, with cool nights and moderately warm, sunny days. Humidity is low in the valley. Thunder-showers characterize the midsummer months while steady rains are prevalent in late spring and early summer. High temperatures for the months of July and August usually reach 100°F, while temperatures in May, June, and September are milder. Frost occurs in April and October and is observed more often in the valleys rather than on the surrounding hills.

The "chinook" winds resulting from the channeling of southwesterly breezes by the mountain ranges, temper the sub-zero weather which is normally experienced during the winters. The cold weather seldom lasts for more than a few days and is terminated by the "chinook" winds from the southwest which can produce temperature rises of 40°F or more in 24 hours.

The annual precipitation would classify the area as semi-arid, but about 70% of the total falls during the April-September growing season.

Heavy fog seldom occurs and is usually minimized by the relatively strong winds. Wind velocities over 70 miles per hour are seldom experienced and visability for the area is normally excellent, 15 miles or more.

The combinations of weather in Great Falls give rise to sudden storms as a result of large temperature drops and gusty winds. In winter months, blowing snow and blizzard conditions are observed, while during the dry months, the erratic winds create dust storms. (12,7,1966)

Include provision for 100 m.p.h. winds, expansion and contraction for a 150-degree temperature range, extra care in weathertightness, orientation of buildings and entrances to reduce the undesirable effects of wind, pro-

visions for automobile storage away from the elements, and insulation considerations to combat the effects of wind and cold.

THE ECONOMY

The Great Falls Metropolitan Area has historically derived its income from agriculture, manufacturing, and retail trade and services. In more recent years, Malmstrom Air Force Base has become a chief contributor to this income. The economic base can be defined as the sum total of the income opportunities located in the area which balance the outgoing revenue to other areas. (12,19,1966)

AGRICULTURE

Agriculture in Cascade County has followed the State and National trends toward fewer and larger farms. The County has remained a stable producer of grains while livestock has shown a greater increase in percentage of the total market. Livestock marketings have been around the \$7,000,000 level each year since 1958.

Agricultural employment has been on a steady decline in Cascade County since 1940. By 1981 it is projected by recent studies, that employment in this area will range from 1330 to 1400 persons. This is a decline ranging from 5% to 10%.

Reasons for this slowdown are attributed to increased efficiency of agricultural production and trends in Federal Agricultural Policy resulting in curtailment of production, particularly in grain production.

Agriculture serves as not only a contributor to the economic base, but Great Falls is in the position of attracting stockgrowers conventions and meetings, especially during the State Fair held annually. (12,40,1966)

INDUSTRY

Great Falls is not a large manufacturing center, but this activity does play a major role in the city's economy. The Anaconda Company is the largest firm in number of employees and amount of payroll.

Manufacturing employment has been declining since 1950 and the cause is attributed to the increased efficiency of production techniques. This decline is found in the primary metals industries while food and kindred products, and printing and publishing industries have shown 25% and 18% employment increases, respectively.

From a survey of employers in Cascade County it is projected that overall employment in manufacturing will increase from 3,260 in 1960 to 4,300-4,400 in 1981, al-

though the total percentage will decrease with respect to total employment for Cascade County for the 1981 date.

In general it is expected that no major new industries will locate in the Metropolitan Area, although the possibility is not ruled out. Instead, the area will experience a steady expansion of existing industries.

The industrial contribution to Great Falls then, will be its continued place in the economy and its demand for goods and services, many of these services coming from the Central Business District. (12,38,1966)

An industry of ever-increasing importance to Great Falls, is that of tourism. The expansion of automobile and air travel will expand the visitor trade to Montana and its urban centers. In the United States, the amount spent annually by tourists has been about twice the retail value of all the automobile manufactured. In fact, tourism has just about equalled the annual gross income of ten of the nations leading corporations. Table 1-1 demonstrates the value of tourist expenditures to a sampling of various communities. (1,1,1965)

TABLE 1-1

Tourist affect on Community Economy

<u>ITEM</u>	<u>PERCENTAGE</u>
Groceries	29%
Lodging	24%
Clothing and apparel	11%
Amusements	10%
Gasoline, oil, and auto maintenance	10%

(1,1,1965)

Great Falls is located in an area which affords proximity to a wide range of summer and winter sports as well as scenic beauty, all of which combine to attract tourists to the city. To serve this clientele will require a complete range of retail services.

WHOLESALE AND RETAIL TRADE

Trade area growth trends indicate that population in the trade area has not been increasing as fast as the population in Cascade County and Great Falls. In terms of future employment, this means that wholesale and retail trade will depend on local growth to maintain a steady increase. This is not to deny the importance of the trade area, but it does point out its relative position to the County area. Employment for 1981 is projected to range from 8,600 to 8,800 people.

Current trends show a certain amount of decentral-

ization of retail establishments in the Central Business District toward the outlying shopping centers. It has been stated in studies that in the future it is important to prevent the deterioration of the Central Business District as this will affect its attraction for outlying trade areas. Prevention of this would include modernization of stores, ease of access, and adequate supply of off-street parking. (12,34,1966)

The trends in service areas show that people have been shifting their spending away from the purchase of goods toward services. This trend is expected to continue and services should increase in relative importance. A projected employment range is 9,000 to 9,200 people by 1981. This indicates not only a market for the future services of a convention center but the employment of personnel to provide these services.

Between 1958 and 1963, Great Falls showed an overall retail sales increase of 21%. This growth is comparable to that of Cascade County and was well above the 12% increase experienced by the State for the same period. Cascade County and Great Falls ranked above the State in sales from general merchandise stores, food stores, automobile dealers, apparel and accessory stores, eating and drinking places, and drug and propriety stores. However, State increases outranked the City-County area in non-store retailers, gasoline service

stations, and furniture home furnishings and equipment stores. There was also lower City-County sales in lumber, building materials, and hardware and farm equipment dealers.

During this period, despite a 21% sales increase, there was a per capita sales increase of only 5% for Great Falls, indicating that retail sales have not grown as fast as the population. (12,35,1966)

The selected services, including hotel and motel facilities, showed a 26% increase for the 1958-1963 period. The number of facilities in the area grew from 304 to 362 establishments. Increases were noted in hotels, motels, tourist courts and camps, personal services, business services, auto repair and service, and amusement and recreation services. The lone decrease was in the motion picture services.

During the same 1958-1963 period, the wholesaling trade for Great Falls increased by 71% as compared to 11% by the State as a whole. It is difficult to pinpoint the reason for this increase although indications are that wholesalers have increased their retail trade area penetration.

The trade areas for the City of Great Falls are illustrated by the Figures 1-1, 1-2, 1-3, 1-4. They indicate the position of Great Falls with respect to its

trade areas and also indicate somewhat that, because of the large amount of rural land in the trade areas, the city will depend more on expansion of existing rather than new industry for future retail growth. The rural areas simply are not growing enough to provide the population to attract new industries. (12,34,1966)

Good highway access from the trade areas to Great Falls is provided by U.S. Highway 87 entering from the northeast, U.S. Highway 89 entering from the southeast and northwest, and U.S. Highway 91 (Interstate 15) entering from the southwest.

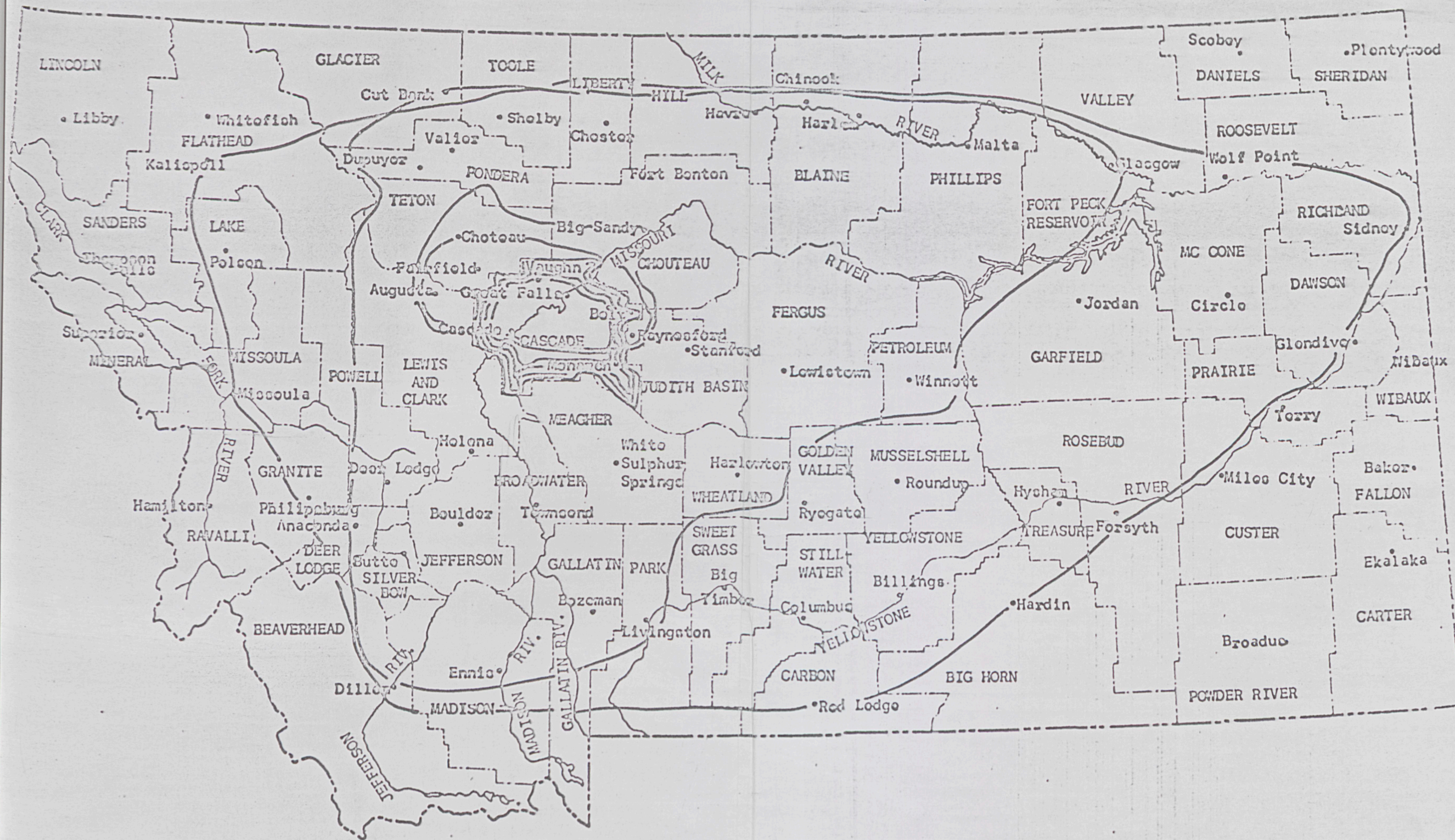
LAND USE

The summary of land use totals for the last recorded study give breakdowns as to retail, commercial, and industrial floor areas. These statistics are shown in the appendix.

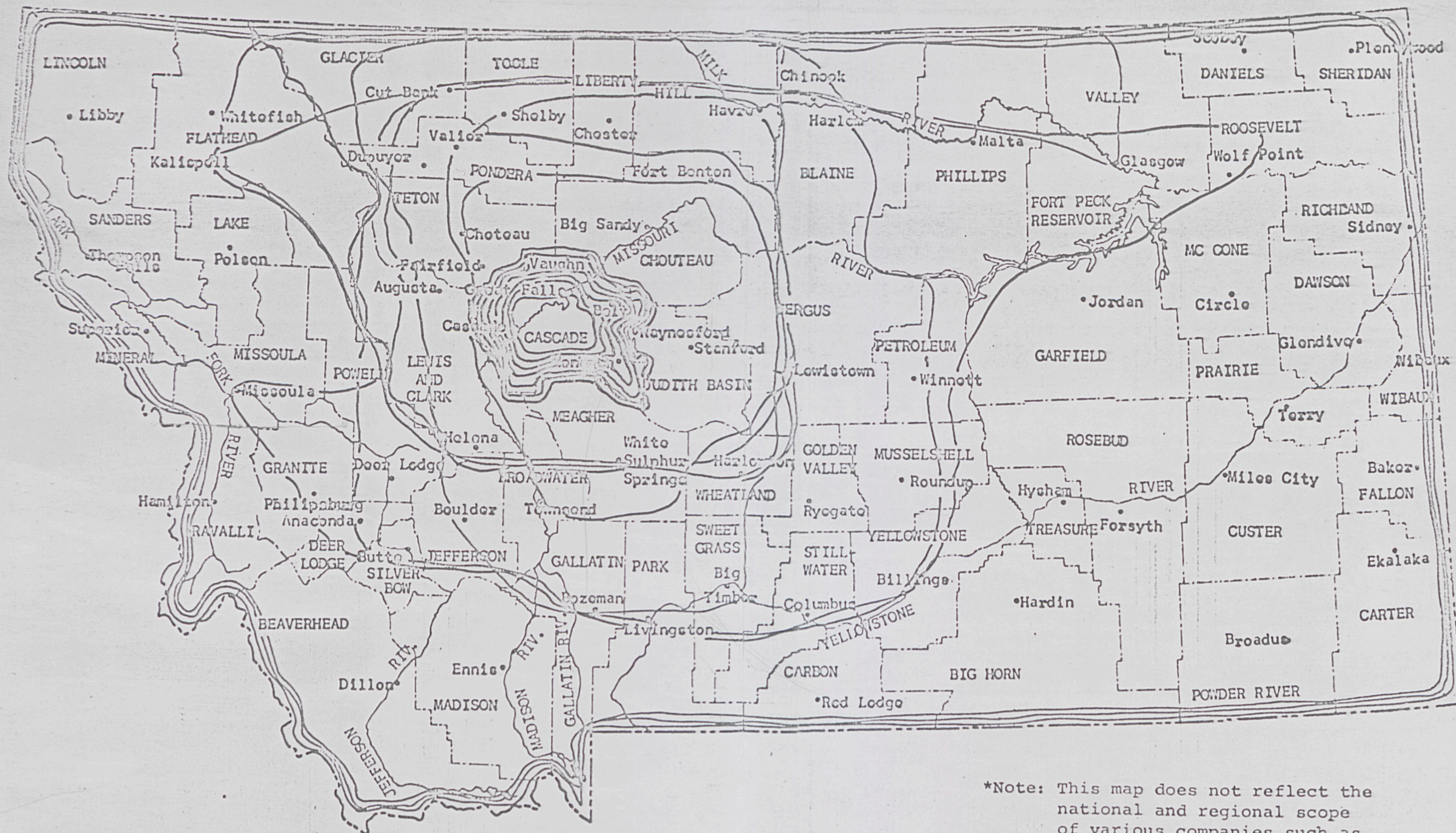
POPULATION

According to studies performed for the Great Falls area, the city and Cascade County are expected to increase total employment from 24,184 in 1960, to a range of 38,000 to 39,200 by 1981. With this range of employment as a base, the population of the County is forecast to increase from 73,000 in 1960 to a range of from 118,750 to 122,500. This represents 64% increase in population in 21 years. (12,65,1966)

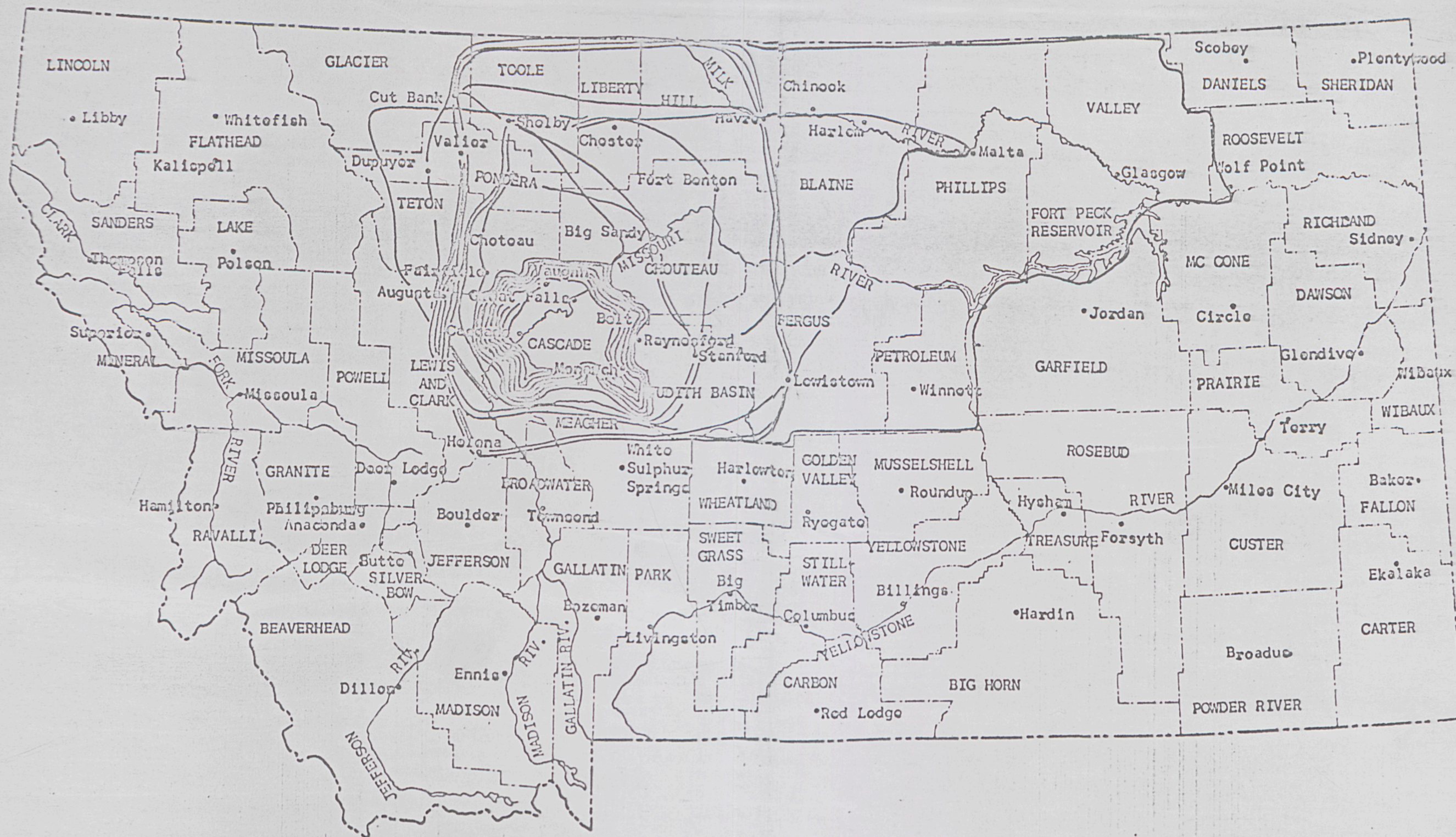
Although a current breakdown of population characteristics is not available, the most recent published data, from the 1960 Census, is included in the appendix.

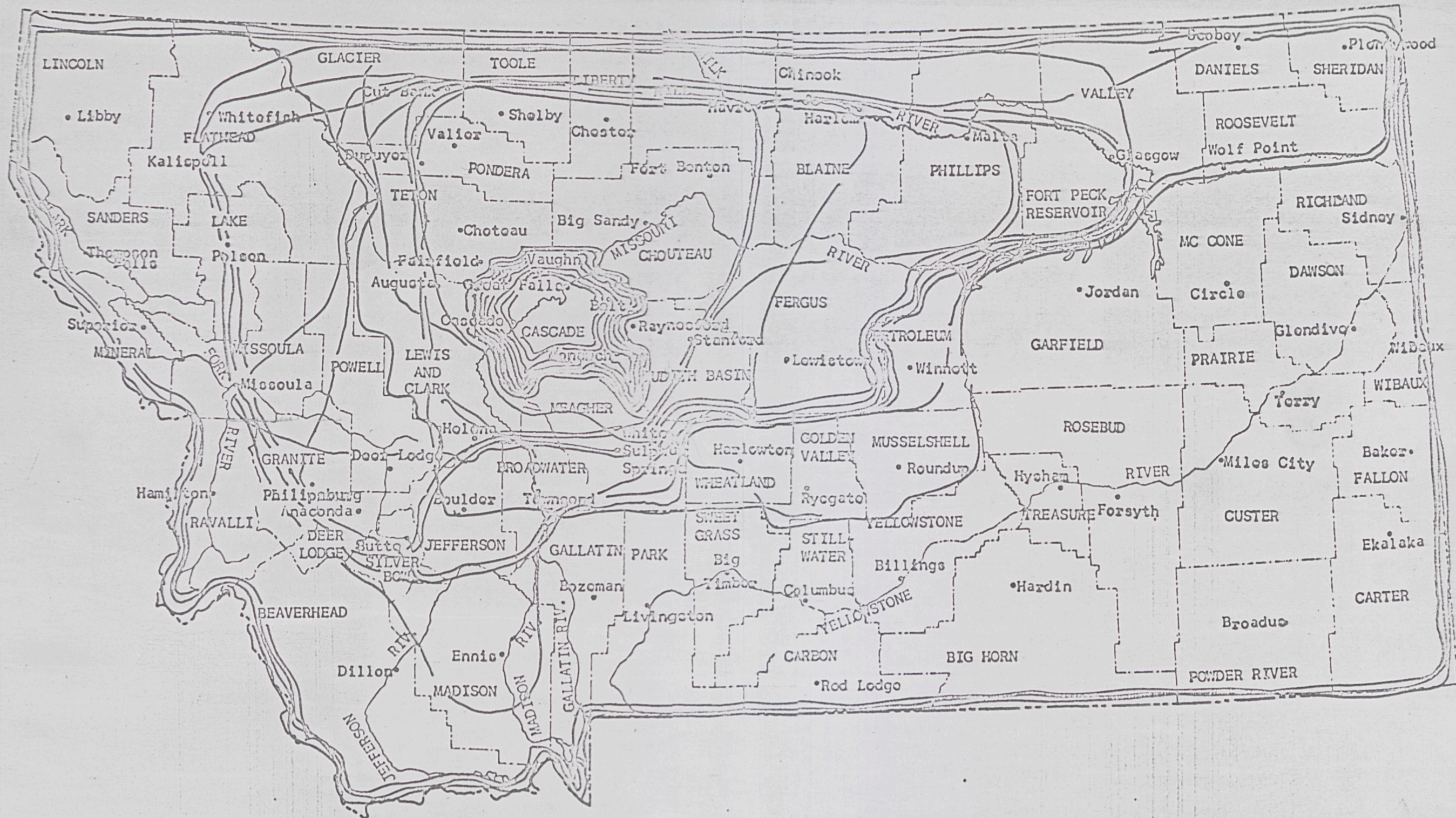


(12, 69, 1966)



*Note: This map does not reflect the national and regional scope of various companies such as Anaconda, Montana Vegel. Oil & Feed, General Mills, Montana Flour Mills, Needham Packing, and Gt. Falls Brewery.





T H E S I T E

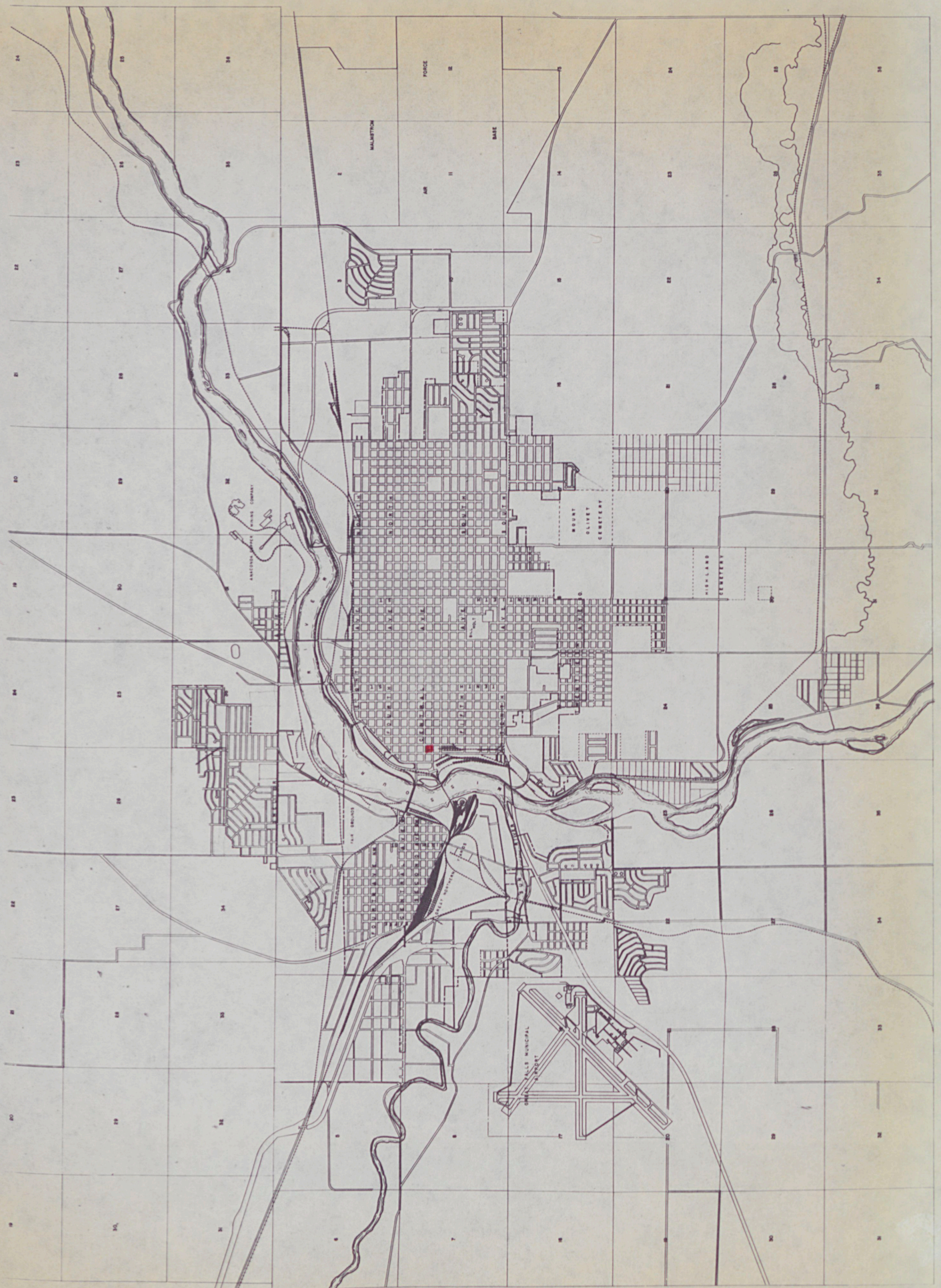
THE SITE

The site under consideration for the hotel-convention center is block number 366 of the Original Townsite Addition to the City of Great Falls. The block is located between Central Avenue and First Avenue South, running east and west, and between Second and Third Streets South, running north and south. (See Figures 2-1, 2-2, 2-3)

Central Avenue, First Avenue South, and Second Street South are major arterials in the downtown area. They handle a majority of the traffic entering and leaving the district. 1981 predictions indicate that they will continue to do so at an expanded rate.

The site is near the center of the Central Business District and contains some of the early business establishments of Great Falls. It is near the deteriorated section of the downtown area. The block is commonly called the "Mint Block" because the Mint Bar, frequented by the western painter Charles M. Russell was located there.

Because of the high purchase price, development of the land will require a high density use involving retail sales or services.



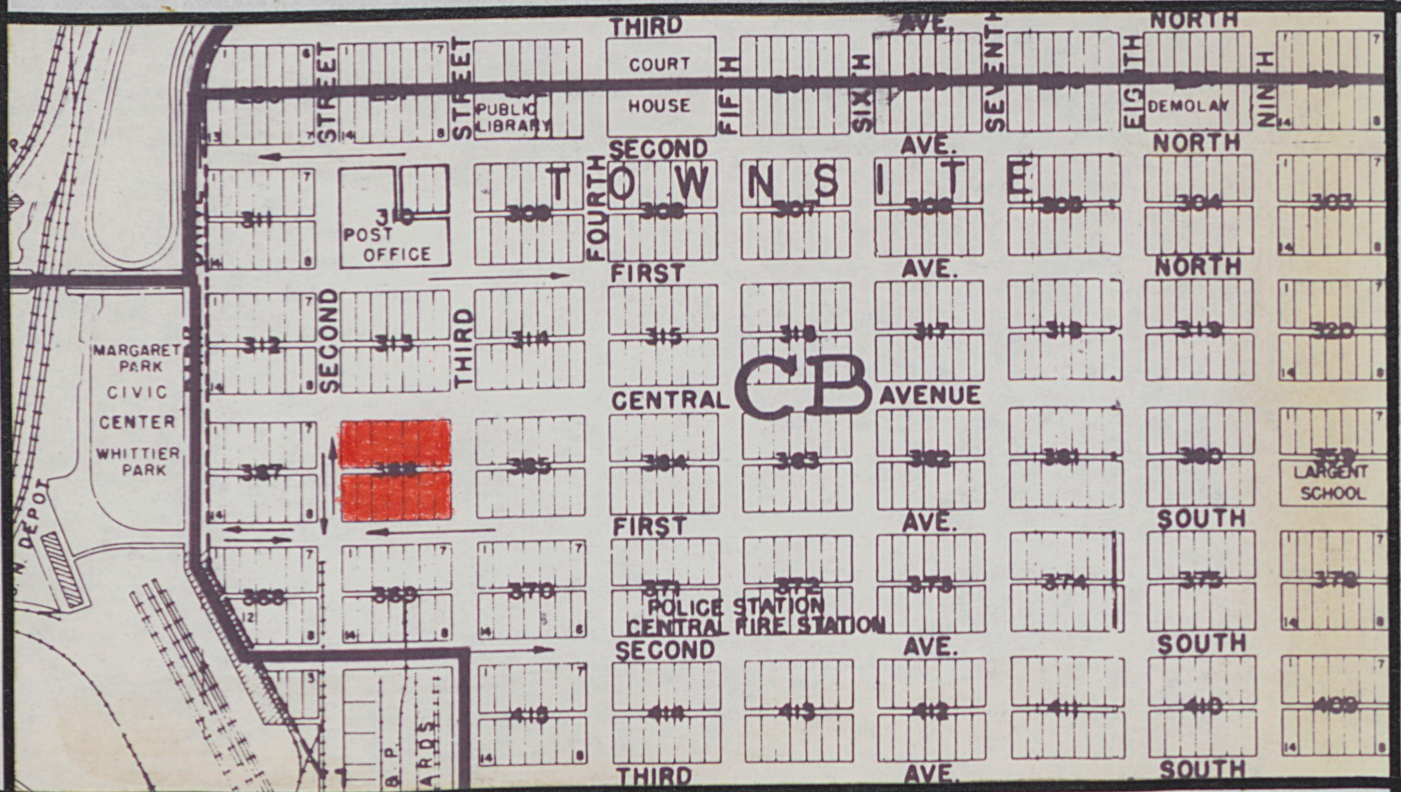


FIGURE 2-2: THE SITE IN RELATION TO THE CBD

The soil sections of the area reveal layers of clay and gravel which are characteristic of the entire area near the Missouri River. This type of soil is responsible for water problems in excavation and construction.

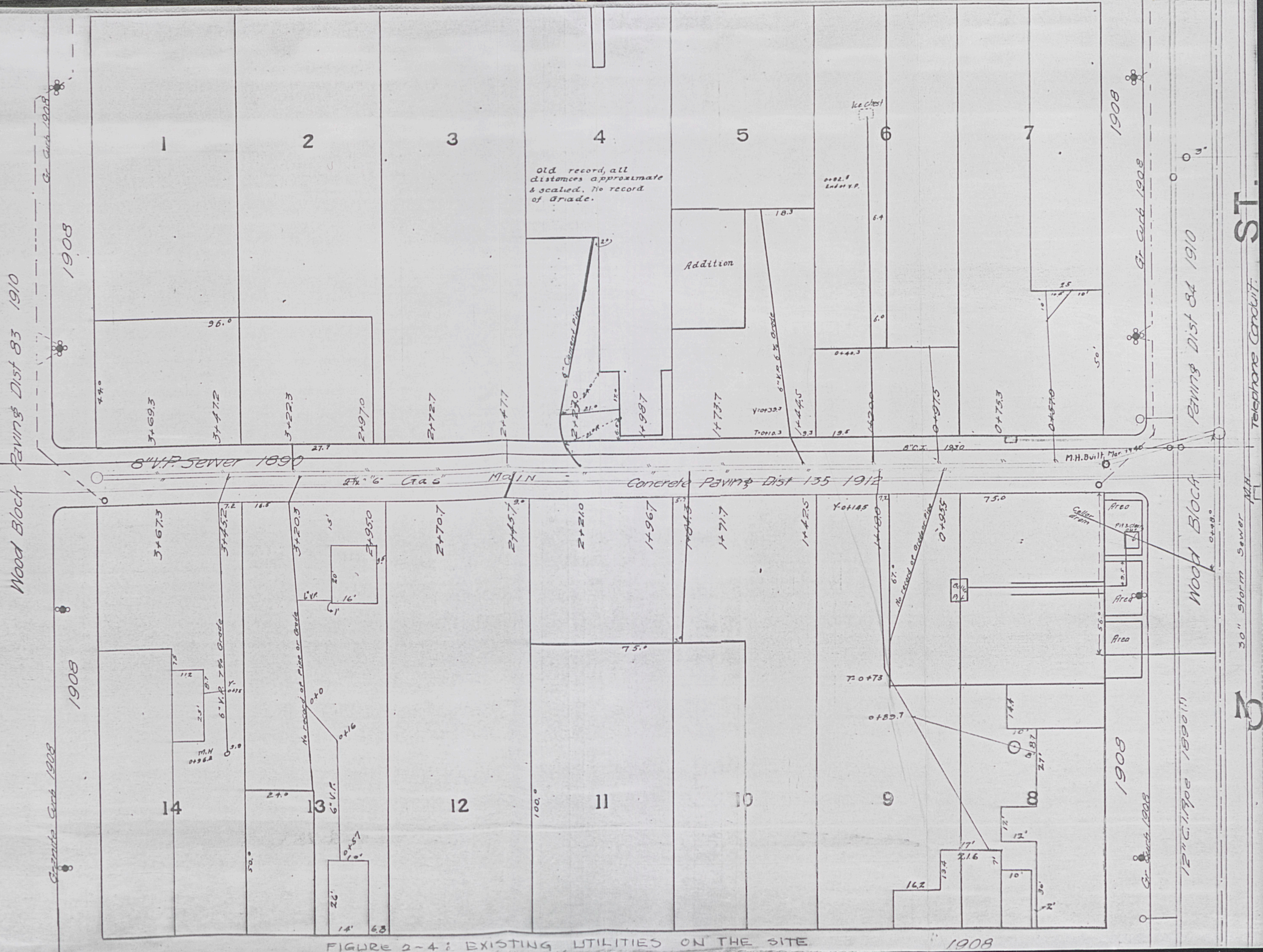
The site is currently zoned for commercial business and will undoubtedly remain so in the future. The site governed by all Codes and Regulations of the City of Great Falls, which include several adopted national codes.

Prevailing winds are from the southwest and at times are extremely harsh due to the currents caused by buildings in the downtown area.

Utilities are readily available, as is indicated by Figure 2-4.

Views of the entire city exist at a height of from four or more stories above the street. Otherwise, views are restricted to the immediate downtown area, which isn't particularly attractive in many respects.

The addition of a new development on this site, for example the convention center, would provide an extremely beneficial stimulus to the Downtown area. It would not only provide new revenue, it would draw people to the area and would undoubtedly influence the remodeling of existing structures in the district.





Views of the site
from the northeast.





Views of the site
from the southeast.





Views of the site
from the southwest.

View of the site
showing existing
alley and utilities.



Views of the site
from the northwest.





Views from the site
looking north and
northwest.





Views from the site
looking northeast.





View from the site
looking to the
east.

View from the site
looking southeast





View from the site
looking northwest

View from the site
looking southwest



ECONOMIC CONSIDERATIONS

Great Falls lies in a trade area of about 500 miles radius and has for 50 years been the center of conventions and travel for the northcentral portion of the State.

According to the Chamber of Commerce, in 1960 Great Falls entertained 103 conventions with a total of 266 convention days and a total patronage 27,485 people. At this writing there are 52 conventions booked through September 1969.

To handle this influx of conventions there exists a total of 780 motel units and 401 hotel units. A comparison of the largest and second largest facilities shows the following capacities:

	<u>MEETING ROOMS</u>	<u>EATING</u>	<u>GUEST ROOMS</u>
1st	1394	805	228
2nd	760	640	173

(Meeting rooms also include part of the eating space)

The average 1968 convention in Great Falls, then, contained 270 people who stayed 2.5 days in convention facilities. If the 1958-1963 hotel sales and service increase of 11% is projected for 20 years, to result in a 44% overall increase, the average convention in 1983 will be approximately 400 people. To allow for larger conventions at that projected time, plus the regular transient trade handled by the hotel, the room number will be set at 400. The straight-line projection for this figure is used as an estimate to arrive at a reasonable increase of guest rooms for the downtown area, while still remaining within the bounds of practicality for a hotel for a city the size of Great Falls.

To the owner of the new building, there are several areas which appear to stand out with respect to initial and total investment in the building.

Initially there is the purchase of the land upon which the building will stand. Secondly there is the cost of the construction of the building. Thirdly there are the continual cost involved in the operation of the business.

The proposed hotel-convention center for Great Falls has been scheduled for location in a block called the "Mint" block in the downtown center of Great Falls.

Due to property options and dealings with each individual lot owner, the acquisition process is going slowly, but 200 feet of avenue frontage has been acquired and cleared at a cost of about \$1,000 a linear avenue foot. At this rate the acquisition of the entire block would be about \$700,000. Under "rules of thumb" for hotel planning, this would mean that the new structure of structures which will occupy the site would have a total cost of about \$7,000,000. While this cost seems excessive, it must be remembered that hotel location must be in prime commercial areas, and high cost is to be expected.

Prime commercial land would be that land which because of its location in a business district, and its resultant

demand, is able to command a relatively high cost per square foot. This high cost would be offset by the attraction of clientele from conventions, from the downtown, and from the city.

CONSTRUCTION COSTS

Since costs of a building are an integral part of the design, it is too early to give exact figures for total building cost. However, for current hotel building costs per square foot, the Marshall-Stevens Cost Index offers several figures, per type of construction, which give an indication of cost.

The types of construction and costs are categorized as follows:

- Class A: Structural Steel framing, with reinforced concrete or masonry floors and roofs.
Excellent quality construction -- \$24.05/s.f.
- Class B: Reinforced concrete frames and concrete or masonry floors and roofs.
Excellent quality construction -- \$22.17/s.f.
- Class C: Masonry exterior walls, and wood or steel roof and floor structure.
Good quality construction -- \$17.62/s.f.
- Class D: Wood or light steel frame and roof structures.
Good quality construction -- \$15.70/s.f.

These costs are only rough estimates at this time and would vary as the design becomes more detailed. The cost of construction will also vary as different or new types of

construction systems are used, labor costs, material availability, and building layout itself changes. As the building progresses in design these and more considerations are to be taken into account.

RATE STRUCTURES OF HOTEL ROOMS

"Under prevailing economic conditions, it is imperative for successful operation that rates be adequate to cover operating cost and to provide a reasonable return on the fair value of the property". (1,16,1965)

An operating formula has been derived by the firms of Horwath and Horwath, and Harris, Kerr, Forster and Company to help establish room rates on a sound basis. It is suggested that computations be made regularly, with this formula, to continually evaluate the room rate position and chart its trends. An illustration of Schedule I and Schedule II, which make up the formula is shown in Figure 3-1. (1,15,1965)

FIGURE 3-1

(1,14,1965)

Room Rate Formula for Transient and Residential Hotels

Schedule 1. To Determine the Amount Needed from Room Sales to Cover Costs and a Reasonable Return on the Present Fair Value of Property.

Operating Expenses	Your Hotel	Example
Rooms department	\$ _____	\$44,273.00
Telephone department - net loss		1,499.00
Administrative and general		27,162.00
Payroll taxes and employee relations		3,685.00
Advertising and Business promotion		4,625.00
Heat, Light and Power		16,757.00
Repairs and Maintenance		<u>15,803.00</u>
Total operating expenses \$ _____		\$113,804.00
Taxes, Insurance, etc.		
Real Estate and personal property taxes	\$ 9,624.00	
Franchise taxes	300.00	
Insurance on building and contents	<u>922.00</u>	
Total taxes, insurance, etc.		\$ 10,846.00
Depreciation (standard rates on present fair value)		
Building \$ _____ at _____ %	\$ 9,240.00	
Furniture, Fixtures and equipment \$ _____ at _____ %	<u>6,160.00</u>	
Total depreciation -	\$ _____	\$ 15,400.00
Reasonable Return on Present Fair Value of Property		
Land \$ _____		
Building \$ _____		
Furniture, fixtures and equipment \$ _____		
Total fair. return \$ _____ at _____ %		\$ 45,000.00
		<u>\$185,050.00</u>
Total	\$ _____	
Deduct (credits from sources other than rooms)		
Income from store rentals \$ _____	\$ 5,259.00	
Credit from food and beverage operations (if loss subtract from this group)	\$24,864.00	

Net income from other operated departments and miscellaneous income	<u>\$ 7,524.00</u>	
Total credits from sources other than rooms		\$ 37,647.00
Amount to be Realized from Guest Room Sales to Cover Costs and a Reasonable Return of Present Fair Value of Property	\$ _____	\$147,403.00

FIGURE 3-1
(1,16,1965)

SCHEDULE II. - Computation to Determine Average Daily Rate
Required per Occupied Room.

	Your Hotel	Example
1. Amount to be realized from guest room sales to cover costs and a reasonable return on present fair value of pro- perty (from Schedule 1)	\$ _____	\$147,403.00
2. Number of guest rooms available for rental		100
3. Number of available rooms on annual basis (Item 2 multiplied by 365)	100%	36,500
4. Less: allowance for average vacancies _____%	_____25%	<u>9,125</u>
5. Number of rooms to be occupied at estimated average occupancy _____%	75%	27,375
6. Average daily rate per occupied room required to cover costs and a reasonable return on present fair value (Item 1 divided by Item 5)	\$ _____	\$5.38
7. Actual average rate per occupied room at pre- vailing occupancy	\$ _____79%	\$4.95

Schedule I is to be used to determine the total room sales volume needed to cover costs and a reasonable return on the present fair value of the property. The figures used in the example, which is given for illustration purposes, are on the basis of averages applicable to 100 rooms. Although the figures will vary with each hotel, the same principles

will be applicable to hotels of different types and sizes.

(1,18,1965)

Schedule II is a computation to determine the average daily rate per occupied room required to produce the amount to cover costs and a reasonable return on the present fair value of property. (1,19,1965)

PROFIT

Profit is the eventual end of all rate structuring. Although the return is determined by each manager in view of his own circumstances, a rule of thumb rate of 10% profit is a reasonable expectation. Table 3-1 shows a cost-profit relationship of areas of hotel operation which have been computed from standard practice. This table shows by percentage the breakdown of operating expenses and the reasonable profit percentage to expect. (1,20,1965)

TABLE 3-1

(1,18,1965)

Total Sales and Income

	Your Hotel	All Resorts
Rooms		49.4%
Food (including sundry income)		35.3
Beverages (including sundry income)		10.9
Telephone		1.4
Other departmental profits		1.5
Other income		<u>1.5</u>
Total		100.0%

Cost of Goods Sold and Departmental Wages and Expenses

	Your Hotel	All Resorts
Rooms		14.9%
Food and beverages		38.8
Telephone		<u>2.4</u>
Total		56.1%

All Resorts

Gross Operating Income	
Deductions From Income	
Administrative and general expenses	10.6%
Advertising and business promotion	5.4
Heat, light and power	4.2
Repairs, and maintenance	<u>7.0</u>
Total	27.2%
House Profit	16.7%
Store Rentals	<u>1.3</u>
Gross Operating Profit	18.0%
Fire Insurance and Franchise Taxes	<u>.7</u>
Profit before Real Estate Taxes and Other	
Capital Expenses	17.3%
Real Estate Taxes	<u>3.0</u>
Profit After Real Estate Taxes but Before Other	
Capital Expenses*	<u>14.3%</u>
Percentage of Occupancy	56.5%
Average Rate per Room per Day	\$16.57
Average Daily Room Rate per Guest	\$ 9.87
Number of Guests per Occupied Room	1.68
Times Real Estate Taxes Earned	5.8
Average Size	w 252

*Profit before deducting depreciation, rent, interest, amortization and income taxes.

Note: Payroll taxes and employee relations distributed to each department.

Rooms	
Net sales	
Guests' rooms	99.9%
Public rooms	<u>.1</u>
Total sales	100.0%
Departmental expenses	
Salaries and wages including vacation	15.8%
Employees' meals	1.4
Payroll taxes and employee relations	1.8
Laundry	2.6
Linen, china and glass	1.0
Other expenses	<u>7.5</u>
Total expenses	<u>30.1%</u>
Departmental profit	69.9%
Food and Beverages	
Food sales	<u>100.0%</u>

Cost of food consumed	45.6%
less: employees' meals	<u>9.3</u>
Cost of food sold	36.3%
Food gross profit	<u>63.7%</u>
Beverage sales	100.0%
Cost of beverages sold	<u>32.4</u>
Beverage gross profit	<u>67.6%</u>
Total food and beverage sales	100.0%
Cost of food and beverages sold	<u>35.4</u>
Food and beverage gross profit	<u>64.6%</u>
Cover charges and sundry income	<u>.5</u>
Total revenue	65.1%
Departmental Expenses	
Salaries and wages including vacation	30.2%
Employees' meals	4.1
Payroll taxes and employee relations	3.4
Music and entertainment	2.9
Laundry	1.5
Kitchen fuel	.5
Linen	.4
China and glass	1.2
Silver	.3
Menus and drink lists	.4
Licenses and taxes	.2
Other expenses	<u>4.0</u>
Total expenses	49.1%
Department profit	<u>16.0%</u>
Average receipt per food cover	\$2.70
Average Size (rooms)	262
Percentage of Occupancy	56.5%
Average Rate per Room per Day	\$16.57
Times Real Estate Taxes Earned	5.8
Variation - 1960 Based on 1959	
Room sales	-.4%
Food sales (including sundry income)	+.2
Beverage sales (including sundry income)	-.1
Total sales and income, plus store rentals	-
Total cash payrolls including vacations	+3.4
Profit after real estate taxes	-12.5
Percentage of occupancy	-3.7
Rate per room per day	+3.1
Ratios to Room Sales	
Food sales (including sundry income)	71.5%
Beverage sales (including sundry income)	<u>21.9</u>
Combined food and beverage sales	93.4%

Ratios to Total Sales and Income
(except store rentals)

House profit	16.7%
Gross operating profit	18.0
Profit after real estate taxes	14.3
Rooms department wages and expenses	14.9
Telephone - net cost	1.0
Administrative and general expenses	10.6
Advertising and business promotion	5.4
Heat, light and power	4.2
Repairs and maintenance	7.0
Fire insurance and franchise taxes	.7
Real estate taxes	3.0
Total cash payrolls including vacations	35.9

Ratios to Rooms Sales

Rooms Department wages and expenses	30.1%
Telephone - net cost	1.9
Administrative and general expenses	21.5
Advertising and business promotion	10.9
Heat, light and power	8.4
Repairs and maintenance	14.3
Fire insurance and franchise taxes	1.5
Real estate taxes	6.0

Sub-total 94.6%

Deduct

Food and beverage profit	14.8%
Store rentals	2.7
Other profits and income	6.1

Sub-total of deductions 23.6%

Net operating cost 71.0%

Profit after real estate taxes but before capital expenses 29.0%

Cost per Occupied Room per Year

Your Hotel

All Resorts

Rooms Department expenses	\$1,830
Telephone - net cost	116
Administrative and general expenses	1,303
Advertising and business promotion	661
Heat, light and power	513
Repairs and maintenance	867
Fire insurance and franchise taxes	90
Real estate taxes	367
Sub-total	\$5,747

Deduct

Food and beverage profit	900
Store rentals	162
Other profits and income	373

Sub-total of Deductions \$1,435

Net Operating Cost Per Occupied Room	\$4,312
Average Rental per Occupied Room (including public room rentals)	
Profit per occupied room per year after real estate taxes but before other capital expenses	\$1,759
Cost per Available Room per Year	
Rooms Department expenses	\$1,035
Telephone - net cost	65
Administrative and general expenses	737
Advertising and business promotion	374
Heat, light and power	290
Repairs and maintenance	490
Fire insurance and franchise taxes	51
Real estate taxes	207
Sub-total	\$3,249
Deduct	
Food and beverage profit	\$509
Store rentals	92
Other profits and income	211
Sub-total of Deductions	\$812
Net operating cost per available room	\$2,437
Average Rental per Available Room (including public room rentals)	3,431
Profit per Available Room per Year After Real Estate Taxes but Before Other Capital Expenses	\$ 994
Note: Payroll taxes and employee relations distributed to each department.	

OPERATION COSTS

The operation costs of a business determines its eventual success or failure, especially when the business must pay for a new building. Complete knowledge of the departments of the hotel and the functions they are to perform is the chief management concern. The most important single criterion in developing a sound internal operation is communication between all the departments. This type of communication

requires management to know what is happening, where it is happening, and the cost of performing such duties. For example, maintenance alone can incur losses up to 5% of gross revenue due to the lack of proper coordination between management and maintenance. (1,8,1965)

FOOD AND BEVERAGES

It has been mentioned that a great deal of hotel success depends on the operation of the food and beverage department. The margin for success and failure in the food area is quite slim, usually breaking even at best. On the other hand, the beverage trade provides a large profit for the operation.

"The use of standards, portion controls, and a general uniformity within the kitchen, from the purchasing department to the service department, are the means by which a successful food and beverage operation is achieved." (1,9,1965)

Management must set the standards. Restaurant Operating percentages are shown in Table 3-2.

TABLE 3-2

(1,28,1965)

Restaurant Operating Percentages
(Courtesy Horwath & Horwath)

Sales	
Food	77.00
Beverages	<u>23.00</u>
Total	100.00%
Cost of sales	
Food	42.00
Beverages	<u>33.00</u>
Total	75.00%

Gross profit	60.07
Other income	<u>.59</u>
TOTAL GROSS PROFIT AND OTHER INCOME	60.66%

Expenses	
Payroll	28.63
Payroll taxes and employee benefits	<u>3.87</u>
Sub-total	32.50%

Departmental expenses	7.00
Administrative and general	5.00
Advertising	1.50
Repairs and maintenance	<u>1.50</u>
TOTAL	47.50%

Profit before rent, interest, depreciation and taxes	13.16%
--	--------

Deduct	
Rent	5.51
Interest	.41
Depreciation	<u>1.24</u>

TOTAL DEDUCTIONS	7.16
------------------	------

Profit before Federal and State taxes	6.00%
---------------------------------------	-------

Departmental Expenses

Laundry and linen	2.00
Utilities	1.90
China, glassware and silver	.97
Miscellaneous	.57
Licenses	.32
Cleaning supplies	.30
Menus	.30
Utensils	.17
Guest supplies	.15
Decorations	.15
Printing and stationery	.12
Paper supplies	<u>.05</u>
TOTAL	7.00%

Payroll	2.75
Insurance-general	.60
Legal and accounting	.50
Miscellaneous	.32
Telephone	.25
Promotion	.25
Printing	.10
Travel	.10
Postage	.08
Association dues	<u>.05</u>

TOTAL	5.00%
-------	-------

STAFF PLANNING

The first element in staff planning is a thorough review of each job classification keeping in mind "who", "what", "when", and "how" the work can be simplified. The end product of the analysis is to find yard-sticks relative to staffing anticipated work loads.

Forecasting becomes most important at this point, both in regards to the planning and scheduling of personnel and to convention requirements. Weekly discussions with department heads should be held to ascertain volumes, discuss ideas and forecast weekly capacities anticipated. An example of a weekly forecast is shown in Table 3-3. (1,15,1965)

TABLE 3-3 - Resort Hotel X
Forecast for week beginning May 25 (1,33,1965)

	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total
Occupied rooms	120	130	130	130	150	150	150	960
Guest count	200	205	205	205	230	230	230	1505
Anticipated arrivals	150	15	5	5	10	10	10	-
Anticipated departures	80	10	5	5	25	10	10	-
Breakfast	130	180	200	200	200	230	230	1370
Luncheon	210	220	220	220	230	250	230	1580
Dinner	160	220	220	220	240	250	250	1560
Special events						L 20		20
						Elks luncheon		

To be effective, the staff planning program must coordinate closely with an effective payroll control system. This control is achieved by daily reporting of personnel used as compared to

predictions. This continual correlation will develop trends and aid in forecasting. (1,16,1965)

A sample of a weekly payroll control report is shown in Figure 3-2. (1,17,1965)

FIGURE 3-2 - WEEKLY PAYROLL CONTROL REPORT

Department	No. of Units		No. of Employee Days		
	Forecasted	Actual	Std. Per Forecast	Std. Per Actual	Actual
Front Office	1085	1344	60	60	61
Uniformed Service	1085	1344	120	120	110
Housekeeping	1085	1344	247	268	250
Steward	4595	4846	138	138	129
Kitchen	2250	2832	180	180	205
La Reserve	1395	1682	139.5	142.5	155
La Loire	540	585			
Men's Bar					
Room Service	615	565	74	76	82
Banquet			72	72	72
Bartenders			36	36	34
Checkers-Cashiers	2550	2832	55	55	51
Repairs and Maint.			115	115	115
Laundry			60	60	63
Protection			36	36	36
Telephone			30	30	30
Printing			10	10	10
Comptroller			75	75	75
Admin. & General			35	35	35

FIGURE 3-2 - WEEKLY PAYROLL CONTROL REPORT

(1,19,1965)

Hotel

Payroll Control Summary for Week Ending _____

Department	Emp. Days Over or Under		No. Units Per Employee	
	Std. Per Forecast	Std. Per Actual	Std. Per Actual	Per Actual
Front Office		(1)	22.2	22
Uniformed Service	10	10	11.2	12.2
Housekeeping	(3)	18	5	6
Steward	9	9	35.1	38
Kitchen	(25)	(25)	15.1	13.1
La Reserve	(15.5)	(12.5)	11.1	10.1
La Loire				
Men's Bar				
Room Service	(8.)	(6.)	7.3	7
Banquet				
Bartenders		2		
Checkers-Cashiers		4	51.2	55.2
Repairs and Maint.				
Laundry			(3)	
Protection				
Telephone				
Printing				
Comptroller				
Admin. & General				

Prepared by _____ Date: _____

From this forecast, the individual department heads determine staffs needed for service. A sliding scale of manpower requirements, such as one prepared by Harris, Kerr, Forster, and Company, will serve as a guide to this end. An excerpt of such a table is shown in Table 3-4. (1,18,1965)

TABLE 3-4 SLIDING SCALE TABLE OF MANPOWER REQUIREMENTS
(1,18,1965)

Weekly Range of Covers	Manager and Super- visors	Hostess	Chefs and Cooks	Bakers	Pantry	Kitchen Helpers	Waiters
500-999	15	7	16	8	8	35	27.5
	15	5	16	5	5	25	27.5
1000-1499	15	7	20	8	12	35	47.5
	15	5	20	5	10	25	47.5
1500-1749	21	7	20	10	12	35	60.0
	15	5	20	10	10	25	60.0
1750-1999	21	7	21	15	12	37	70
	-	-	-	-	-	-	-
2000-2249	21	9.5	21	15	18.5	39	77.5
	-	-	-	-	-	-	-
2250-2499	21	9.5	21	15	18.5	39	87.5
	-	-	-	-	-	-	-
2500-2749	21	9.5	21	15	18.5	44	95.0
	-	-	-	-	-	-	-
2750-2999	21	9.5	21	15	18.5	44	105.0
	-	-	-	-	-	-	-
3000-3249	21	12	24	15	18.5	44	115.0
	-	-	-	-	-	-	-
3250-3499	21	12	24	15	18.5	44	122.5
	-	-	-	-	-	-	-
3500-3749	21	12	24	15	18.5	44	132.5
	-	-	-	-	-	-	-
3750-3999	21	12	24	15	18.5	44	140.5
	-	-	-	-	-	-	-

TABLE 3-4 SLIDING SCALE TABLE OF MANPOWER REQUIREMENTS

(1,18,1965)

Weekly Range of Covers	Housemen Bar and Men Maids	Total Number of Empl.Days	Percentage of Employees Per Week	Number of Employees Per Day	Number of Meals Empl.Day	Number of Meals Waiter Day
500-999	7 15	138.5	27.7	19.8	5.4	27.2
	5 12	115.5	23.1	23.1	6.5	
1000-1499	7 15	166.5	33.3	23.8	7.5	26.4
	5 12	144.5	28.9	28.9	8.7	
1500-1749	7 15	187	37.4	26.7	8.6	27.1
	5 12	162	32.4	32.4	10.1	
1750-1999	7 15	205	41.0	29.3	9.2	26.8
	- -	-	-	-	-	
2000-2249	9.5 15	226	43.2	32.3	9.4	27.4
	- -	-	-	-	-	
2250-2499	9.5 15	236	47.2	33.8	10.0	27.2
	- -	-	-	-	-	
2500-2749	9.5 15	248.5	49.7	35.5	10.5	27.6
	- -	-	-	-	-	
2750-2999	9.5 15	258.5	51.7	37.0	11.1	27.4
	- -	-	-	-	-	
3000-3249	9.5 15	274	54.8	39.2	11.4	27.2
	- -	-	-	-	-	
3250-3499	9.5 15	281.5	56.3	40.2	12.0	27.6
	- -	-	-	-	-	
3500-3749	9.5 15	291.5	58.3	41.7	12.4	27.4
	- -	-	-	-	-	
3750-3999	9.5 15	299	59.8	42.8	13.0	27.6
	- -	-	-	-	-	

Although the economics of the operation of a hotel is an important design consideration, the developed patterns have evolved over years of tested practices which have dictated a rigid design program. For the purposes of this design solution, economics will be considered as secondary to developing of space to serve the necessary functions of the hotel. It is hoped that the experiments with space planning and arrangement will justify any deficit in economy.

C H A R A C T E R

In the vernacular of architecture, the word aesthetic seems to be one of those most often used and most often confused. A dictionary definition of the word indicates a relationship to, or a sense of the beautiful. Talking about a building, we hear it described as "aesthetically pleasing", or we may read that a building has good "aesthetics". (Too often the everyday citizen, as well as the professional architect and the student, infers great artistic value to the structure.) But what sets the value system and who determines the "aesthetics"?

Essentially the "aesthetics" or character of a building is a value judgment arrived at individually, depending on background and experience. To the citizen, unless he is versed in the process of building design, probably not much stable evidence, other than appearance, is available for judgment. To the architect, the designer, the process of building design reveals elements of judgment throughout, which when evaluated, show a "good" or a "bad" building.

The relationship of the building's functional areas and how well they work together is the first and most important criterion. If the chef has to walk from the kitchen through the dining room to get to the food storage the building doesn't meet its functional requirements. It doesn't work.

The spaces for these functional requirements should be arranged in a logical manner and materials which meet the needs of service and appearance combine to give the building its character. For a hotel, a place for public entertainment, the complex should express invitation, interest, warmth, and excitement. The special public facilities should each retain a flavor reflecting their essential function while providing an atmosphere for good business.

The establishment must be distinct, yet complementary to its environment. The ages of buildings existing in the downtown area of Great Falls span about an 85 year period, at the time many of them were built, there existed a brick factory on the outskirts of the city. Consequently, virtually all buildings in the area are of brick construction. The plant no longer exists, and a different technology is present. Steel and concrete are becoming more prevalent in the Great Falls construction scene, as well as all newer forms of building materials such as plastics. In essence then, the character of the hotel will be expressed by the materials used to best suit the various structural and related problems. Influencing this character will be the moods needed to attract clientele to the hotel.

It seems evident that if a structure is compatible with its surroundings, it reflects somewhat its function,

and it meets the requirements it was designed for; that it is doing its job. It is an asset rather than a liability to its location. All facets of the design relate one to another in an atmosphere which presents a distinct unity and clarity throughout the entire complex.

F U N C T I O N O F T H E C O M P L E X

Essentially the design of this convention-hotel complex must provide space for the hotel functions and all related services catering to transient and convention guests, the space allowed for leasing to various specialty shops and stores, and a parking garage, which will serve not only the guests of the hotel, but shoppers in the downtown areas.

Downtown Great Falls has for many years experienced a parking problem. This situation has been blamed for everything from slum areas to loss of retail sales to district shopping centers. Whereas this may not be entirely true, the fact remains that too much land area, much of it prime commercial land, is being used for parking.

The 1981 traffic projection of trips with destinations in the Central Business District indicates a total of 37,000⁵ trips, or an increase of about 45% over the 1961 average. This figure takes into account future dispersal of retail trade to outlying shopping centers. The average weekday period in 1981 will require parking for about 30,000 cars during the hours of 10:00 AM to 6:00 PM. (7,48,1961)

It is predicted that there will be a shortage of about 950 parking spaces in the core of the Central Business District by 1981. These spaces will have to be provided within a group of blocks on Central Avenue, one of which is the site for the proposed convention center. It would

seem feasible to include parking facilities of a high density, in the convention center, with an orientation toward future downtown parking. (7,64,1961)

Generally, the basis of all services provided by a hotel comes under the headings of rooms, food and beverages, administration, rental space, and equipment services (telephone, laundry, etc.). These basics mesh closely in terms of functioning space and the economics of administration. There must be a constant manipulation between the services (physical space and personnel) and the cost-profit operation. This manipulation will govern the services provided by the hotel, the personnel available, and the quality of this personnel, all of which are important in establishing a character and stability which is important in the operation of the smaller hotel.

Studies of hotels and their operations over the years have led to the formulation of several "rules of thumb" which provide a starting point for design considerations. These basic "rules of thumb" are:

1. Construction cost should not exceed \$1,000 for every \$1.00 of average room rate.
2. The total area of bedroom floors should be at least as much as the total public space and service areas.
3. The total allowance for all facilities should not exceed 6,000 cu. ft. per guest room.
4. Not over one employee per room.

5. Land cost should not exceed 10% of the cost of the building.
6. Profit ratios to consider within individual departments average 70% on rooms, 50% on beverages, 15% on rentals, and nothing on food.
7. A break-even point of 65% occupancy.
8. Miscellaneous guest-room "rules":
 - a. Net bedroom area should be at least 50% of the gross area of the typical guest floor.
 - b. If a variety of guest room sizes are required, increments of 20 sq. ft. of floor area are advisable.
 - c. Minimum feasible net bedroom areas are 90-110 sq. ft. for a room with a single bed, and 160 to 180 sq. ft. for a room with twin beds.. (2,1045,1965)

According to graphs from "Time-Save Standards", which are the result of the studies of 40 hotels, approximate space areas can be determined for an estimate of essential space areas. The number of guest rooms for a hotel is the building block from which these areas were derived.

A typical hotel has six main space divisions which are classified in the following functions: (1) Public space, (2) Concession space, (3) Subrental space, (4) Food and beverage service space, (5) Guest-room space, and (6) General-service space. (2,1055,1965)

PUBLIC SPACE

Public space is considered those areas which are necessary auxiliaries to the hotel but do not provide

direct profit. Typical rooms in this area would include the lobby, lounge, and public toilets.

The lobby which includes the front office usually provides 11 s.f. of area per guest room, although it is important to reduce this nonproductive space.

The front office is the focal point for the activities of the hotel and provides guest-contact, cashier, general information, mail, and telephone service.

The trend in lounges has been to provide more free traffic flow between lobby and lounge in order that guests waiting in the lobby will more readily be induced into the bar.

Public corridors adjoining the lobby connect the lobby, with the street. The corridors are combined, depending on the layout, with shops to provide some financial return from an otherwise dormant area.

A layout combining the lounge, lobby, and connecting corridors has the advantage of providing free circulation to all areas reducing the amount of allotted space, and providing more profit from these areas. (2,1056,1965)

A summary of the basic areas for public space is as follows:

1. Building height - - - - - 16 stories
2. Ground floor area - - - - - 33,500 s.f.
3. Guest floor area - - - - - 18,000 s.f.
4. Guest rooms per floor - - - - - 40
5. Total guest and service elevators - - 5
6. Lobby and front office area - - - - - 4,600 s.f.
7. Front office area - - - - - 400 s.f.
8. Lounge area - - - - - 2,400 s.f.
9. Public corridors adjoining lobby - - 1,000 s.f.
10. Men's toilets - - - - - 600 s.f.
11. Women's toilets - - - - - 430 s.f.,
12. Women's rest rooms - - - - - 360 s.f.

2,1056,1965

CONCESSION SPACE

"Concession space is for guest-paid hotel services that might be run by the management or sublet on a percentage basis." These areas would provide the customary barber and beauty shops, cigar and news stand, and valet shop. Services not normally provided by the hotel operation such as stores, permanent exhibits, travel agencies, offices, and club quarters are obtained by subrental of area.

The beauty parlor usually has about half as many chairs as the barber shop, and includes adequate space for manicure tables, lockers and employees toilet.

The valet shop provides cleaning, pressing, and possible minor tailoring for guests of the hotel. This service might be included as part of regular hotel service or connected with a men's store included in the hotel design. Arrangements are made through the bellman.

If the operation is large enough, a telegraph office might be considered for the hotel, if it is anticipated the desk won't be able to handle the processing of guest telegrams. (2,1057,1965)

SUBRENTAL

The excessive cost of land and tax assessments make it necessary in many hotels to include a number of store rentals to help carry the premium cost of the land. The number of these stores depends on the individual financial situation. The total area rented to stores depends on the size and requirements of the hotel. Optimum rental from these stores can be obtained by providing store entrances on the street and to the lobby.

Storage area for these shops may run about one-fifth of the store area and is usually located in the less valuable basement areas where receiving rooms, unpacking, and storage areas should be available.

Travel agencies, offices, club quarters, and other

facilities are provided as the individual demands of the hotel and its location dictate. (2,1057,1965)

The spaces for these areas include:

1. Barber shop - - - - - 680 s.f.
2. Number of rented shops - - - - - 12
3. Rented stores (total area) - - - 8,000 s.f.
4. Storage space for rented stores - 1,500 s.f.

(2,1057,1965)

FOOD AND BEVERAGE SERVICE

The food and beverage areas provide all space required for the receiving, storage, preparation, and service of these items for guests, the general public, and the employees.

Related to these areas are all the kitchens, dining and banquet halls, pantries, storage, receiving, bar and cocktail lounges, eating utensil storage and garbage disposal.

The main dining room size is determined by the specific clientele to be served, the personnel, size of hotel, and hours of operation. Specific care in this area is necessary for a successful operation because this facility many times only breaks even in the overall profit percentage, even with well designed facilities.

In direct connection with the main dining room, will be the planning of the kitchen and its services to guest rooms, coffee shops, banquet hall, and private dining rooms.

The cake shop, for reasons of economy is usually located in an area of the main kitchen and might make up 20% of the total kitchen area.

The coffee shop is designed to provide quick food service at moderate prices to hotel guests and the general public. In some operations the coffee shop is expanded into a cafeteria to provide self-service meals, again depending on clientele, hours of operations, and numbers of personnel.

The bar and cocktail facilities, providing a wide margin of profit, require careful consideration in planning as to location, size, clientele to be catered to, and the general characteristics of the community.

The use of private dining rooms depends on the needs of the community and the possibility of dividing banquet halls into smaller eating areas. The dining-banquet depend a great deal on the main dining and kitchen location, as well as public entrances which may or may not have a special foyer. Flexibility of these rooms exerts demands on storage requirements and serving facilities.

For the bellmen, maids, elevator operators, and other employees, dining facilities should be provided in the operation. The food services should be cafeteria style

with a simple menu provided from the kitchen.

The stewards storeroom allows the necessary space for dry foodstuffs, canned foods, vegetables, dairy products, and meat. All the necessary equipment for the storage of these items should be provided. Deliveries should be planned for about three times a week, although this schedule can be arranged to the individual needs of the hotel and the facilities available.

Beverage storage should be provided separately from food storage for control reasons. The general storage area should be broken down into areas for specific types of beverage. Relationship to the bar and cocktail lounge, kitchen and room service elevators are of particular importance.

The receiving room is the area where supplies for the hotel are checked against delivery slips, weighed, counted, and inspected. Since these supplies must usually wait for a time until storage in respective areas, ample space should be provided for temporary storage of material while receiving is continually going on.

The garbage room receives the accumulated used bottles, cans, and carton from the hotel and should be planned for clutter-free storage and good health practices. The area

should be separated from the kitchen. The regularity of garbage collection is to be considered. (2,1058,1965)

Spaces for the food and beverage service are as follows:

1. Main dining room - - - - -	6,400 s.f.
2. Bake Shop - - - - -	8,500 s.f.
3. Coffee Shop - - - - -	2,800 s.f.
4. Kitchen for coffee shop - - - - -	600 s.f.
5. Main kitchen - - - - -	4,400 s.f.
6. Private dining rooms - - - - -	5
7. Private dining rooms (area) - - - - -	2,800 s.f.
8. Banquet-ballroom - - - - -	5,500 s.f.
9. Banquet-ballroom storage - - - - -	520 s.f.
10. Banquet-ballroom serving pantry - - - - -	1,250 s.f.
11. Bar and cocktail lounge - - - - -	300 s.f.
12. Employees dining room - - - - -	1,000 s.f.
13. Stewards store room - - - - -	1,500 s.f.
14. Beverage store room(s) - - - - -	560 s.f.
15. Receiving room - - - - -	700 s.f.
16. Garbage room - - - - -	300 s.f.

(2,1058,1965)

GUEST ROOM SPACE

The guest room space is essentially the room which includes bathrooms, closets, entrance vestibules, sleeping area, and the auxiliary areas of corridors, stair wells, elevators, and maids facilities. The breakdown of single, double, and twin beds is the initial consideration. From this point the bed lengths, special closet facilities, lounge area, special bathroom accessories, room orientation, communication and service facilities are a few areas which lend themselves to the success of the hotel.

There is no set standard for guest room dispersal per floor, but in many cases the number of rooms assigned per floor depends on the maid service planned. A maid usually handles about 16 rooms, and consequently the number of guest rooms per floor should be a multiple of 16.

Guest-floor stairways increase with the number of guest rooms per floor and are governed by local and national codes. Elevators are also governed by the number of guest rooms. The height of building, elevator speed, and frequency of room service are also determining factors. (2,1060,1960)

GENERAL SERVICE SPACE

General service space includes the areas for general administration, operation, maintenance and storage which are generally nonproductive and have not been otherwise classified.

The administration offices would include space for the manager, assistant manager, accountant, secretary, convention registration, coatrooms, toilets, and lounge areas.

Linen and laundry areas would come under the category of operational space. The facilities in the space should provide for the laundering, ironing, mending, and storage of the hotel linen. The laundering of employees uniforms is also performed in this area.

Mens and women's toilet and locker room space is a necessary requirement to provide area for employees to change clothes, clean up and store personal belongings while at work. About 35% of each area is allotted for toilet facilities and the remaining 65% for the locker rooms. The general proportion of space for men as opposed to women, depends on the proportion of men to women employees.

To repair and upkeep the equipment of the hotel area, a plumbing and electric shop, a carpentry and upholstery shop, and a paint and varnish shop should be provided. These functions should be in separate areas as the work in each shop doesn't mix well with the work in others. Arranged near the carpentry shop should be space for damaged furniture to be placed while waiting for replacement parts for general repair.

The mechanical room(s) house the necessary heating and cooling equipment for air and water, and their location depends on the systems and equipment to be used. Space requirements may run as high as 10% of the total building area. Accessibility to all facilities for service is a key-note in planning as well as selection of a system or systems which provides as little maintenance as possible. The consideration of thermal environment control for each guest room will govern the choice of the most economical system.

The location of refrigeration and boiler plants in hotels is usually in the basement with some of the air handling equipment and cooling tower located on the roof.
(2,1061,1965)

Spaces for these general service areas include:

1. Managers office - - - - - 170 s.f.
2. Accountants office - - - - - 300 s.f.

3. Linen room - - - - -	1,300 s.f.
4. Laundry - - - - -	2,800 s.f.
5. Men's toilets and lockers - - - - -	900 s.f.
6. Women's toilets and lockers - - - - -	900 s.f.
7. Maintenance shops - - - - -	1,700 s.f.
8. Furniture storage - - - - -	1,000 s.f.
9. Boiler room - - - - -	2,400 s.f.
10. Transformer vault - - - - -	400 s.f.

(2,1061,1965)

LIGHTING

Lighting is a major factor in the character and mood which prevails throughout the hotel. Entrance foyers should provide a smooth transition from both day and night lighting, to the interior space of the hotel. The lighting scheme should carry through to the lobby where the atmosphere is retained but yet provides ample illumination for functions of the hotel administration. This theme should be continuous through the corridors and to the guest rooms so as to provide adequate, yet pleasing, light for walking, reading, writing, grooming, and even sleeping. (2,906,1965)

Special areas such as the lounge, dining rooms, and meeting areas should carry through schemes which complement their decor.

ADDITIONAL FACILITIES

The hotel catering to conventions must also plan additional facilities for the proposed types and scales to be

handled by the facility. The need of a auditorium should be a definite consideration. In addition, special facilities, movie theaters, athletic area, gamerooms, etc., should be considered as is deemed practical by the client.

PARKING GARAGE

As with the hotel and its auxiliary facilities, the parking garage depends on planning and design to insure a profitable return from the investment. The type of location usually determines the type of operation of the garage, as well as the type of structure to be built on the particular site. The hours of parking, the clientele, accessibility during peak hours, all enter into the design considerations.

In connection with the hotel, a parking garage will specifically be for the service of guests of the hotel and customers shopping in the specialty shops. But to provide as near capacity conditions as possible, the location and hours of stores, offices, theaters, and other downtown establishments must be considered.

The peak loads of the downtown is collaborated with the traffic flow patterns of the district, not only present but future. These traffic characteristics will help determine the practical size of the structure.

"Under normal conditions it is felt that the garage should be limited in size by the number of cars that can be delivered to it in an hour." "Another practice based on experience is tied in with the maximum waiting time for delivery of a car." "This is based on the theory that the garage should be able to fill and empty in an hour." (2,1239,1965)

To make a garage economically feasible, it must rise at least three stories above the ground. The upper limit is about six stories as experience has shown that people dislike going around a ramp for more than six levels.

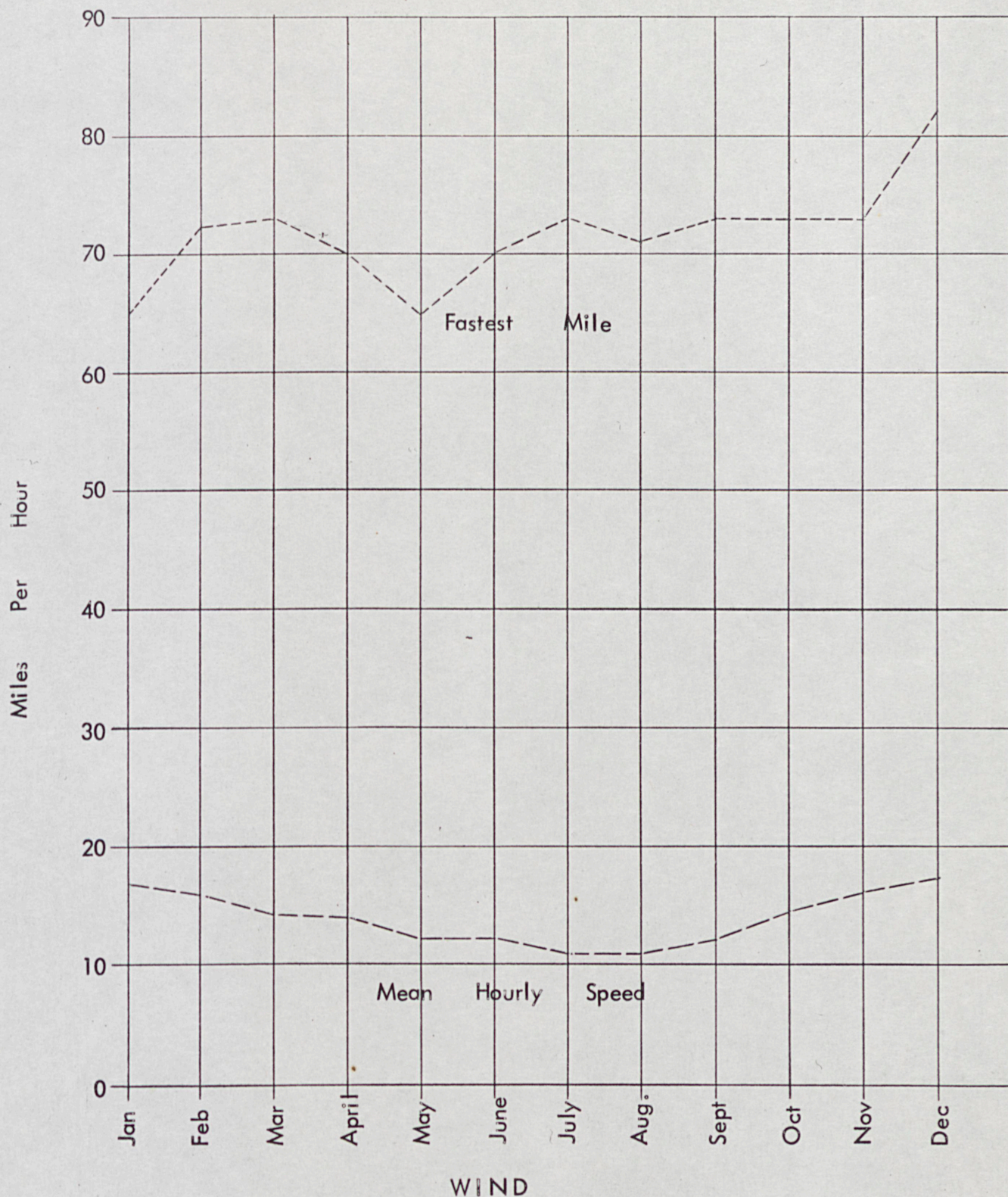
There are three methods of operation in use today; the traditional attendant method, the self-operated system, and the mechanical parking method. These methods all have their advantages and disadvantages and the selection of which method is to be used is based on the evaluation of the site and the requirements of the client. (11,222,1955)

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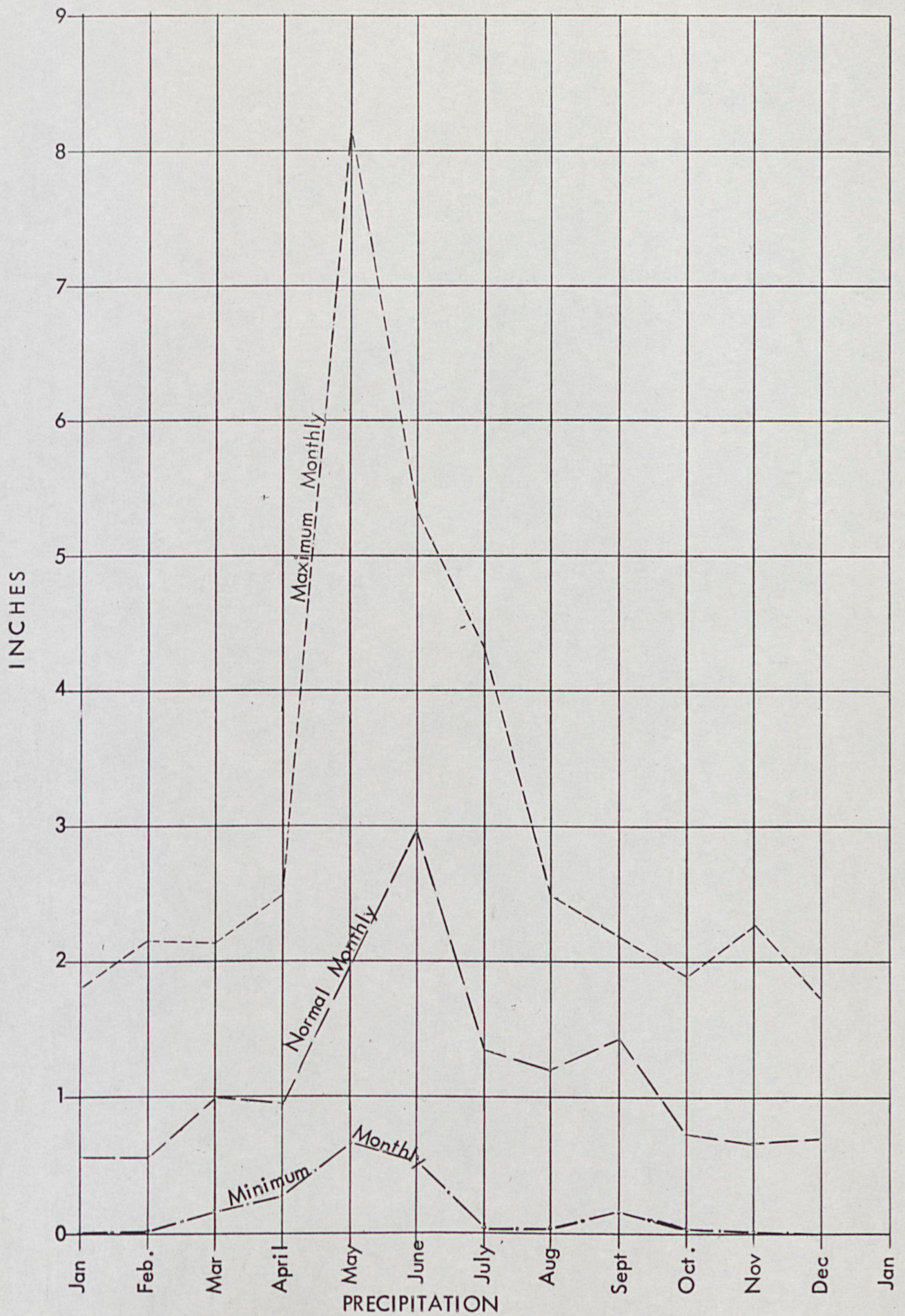
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APPENDIX



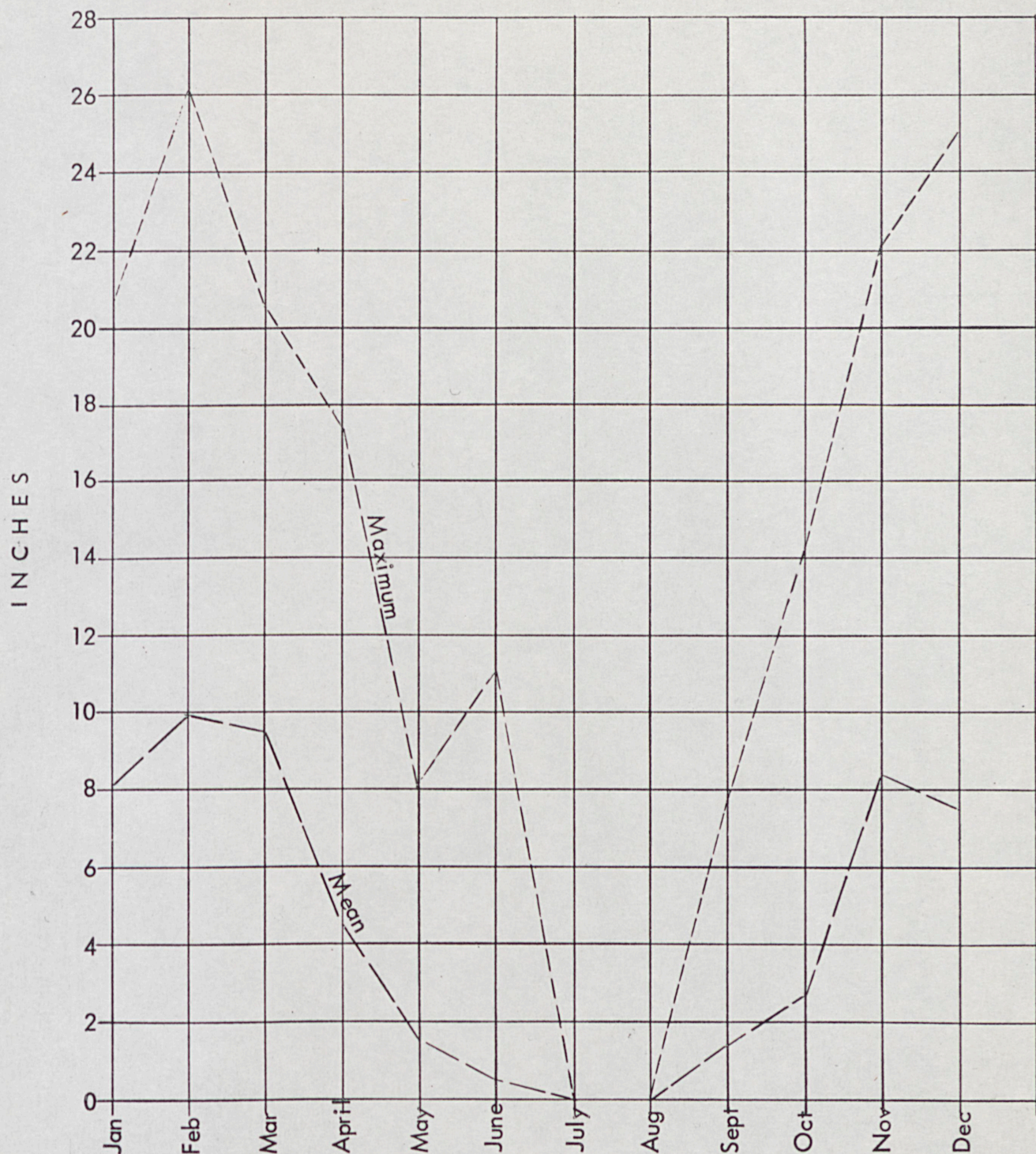
Average Annual Wind Speed = 13.9 m.p.h.

FIGURE I
(2, 48, 1966)



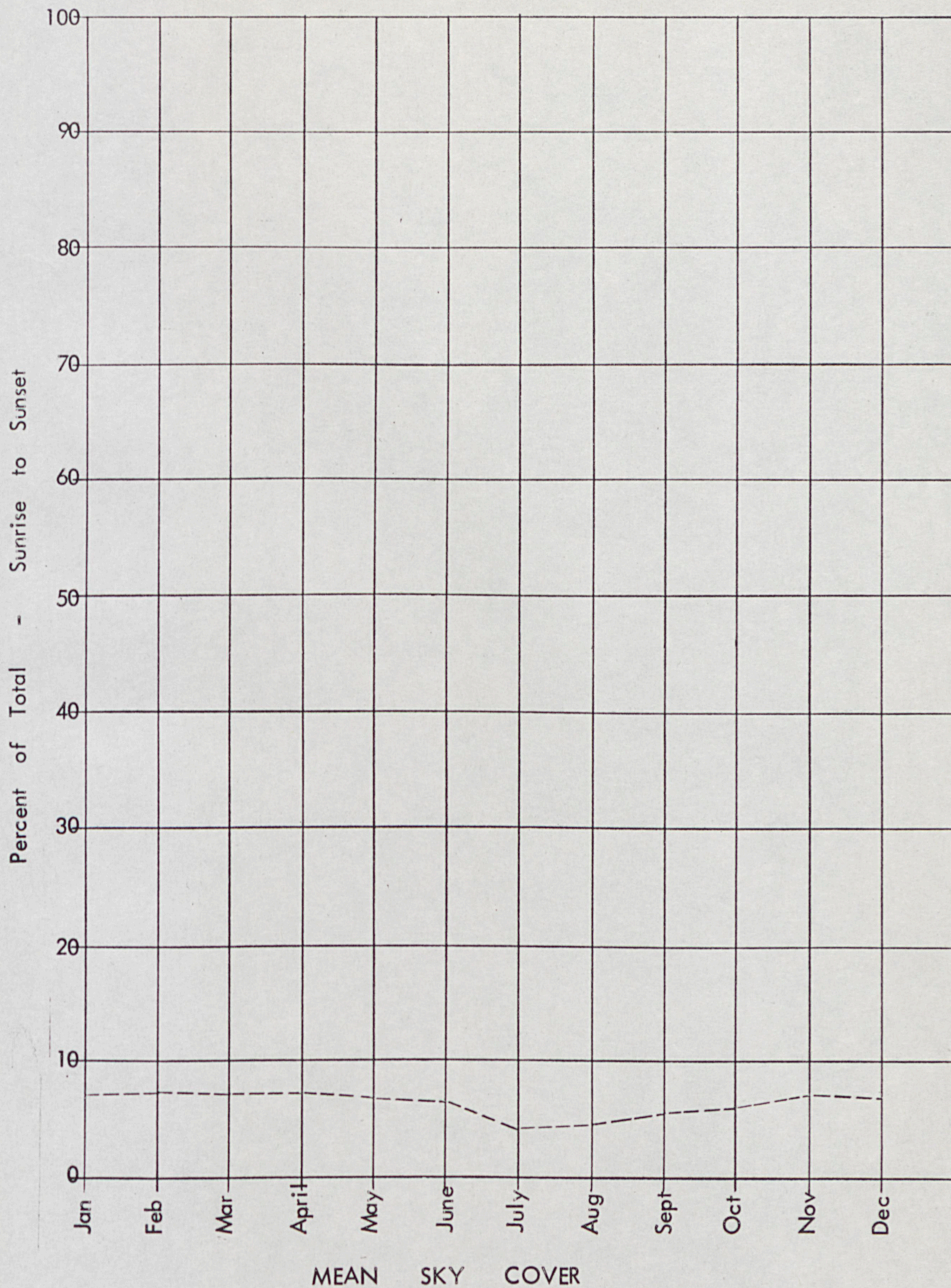
Average Annual Precipitation = 14.03 in.

FIGURE 8 II
12, 47, 1966



SNOW AND SLEET
Average Annual = 54 in.

FIGURE III
(12, 50, 1966)



Average Annual Sky Covers = 6.3 %

FIGURE IV
(12, 51, 1966)

SUBJECT	GREAT FALLS SMSA	GREAT FALLS UA	GREAT FALLS U.P.
TOTAL POPULATION	73 418	57 629	55 357
NATIVITY AND PARENTAGE			
NATIVE	69 556	54 505	52 394
NATIVE PARENTAGE	56 588	44 039	42 363
WHITE	55 318	43 285	41 645
NONWHITE	1 270	754	718
FOREIGN OR MIXED PARENTAGE	12 968	10 466	10 031
WHITE	12 833	10 367	9 948
NONWHITE	135	99	83
FOREIGN BORN	3 862	3 124	2 963
WHITE	3 692	3 010	2 849
NONWHITE	170	114	114
STATE OF BIRTH			
TOTAL NATIVE POPULATION	69 556	54 505	52 394
BORN IN STATE OF RESIDENCE	38 160	30 701	29 257
BORN IN DIFFERENT STATE	29 913	22 708	22 069
BORN IN U.S. OUTLYING AREA, AT SEA, ETC.	682	472	445
STATE OF BIRTH NOT REPORTED	801	624	611
RESIDENCE IN 1955			
POPULATION 5 YEARS OLD AND OVER, 1960	63 195	49 539	47 634
HOME AS IN 1960	24 593	19 207	18 357
DIFFERENT HOUSE IN U.S.	36 170	28 803	27 767
SAME COUNTY	18 131	15 302	14 764
DIFFERENT COUNTY	18 039	13 501	13 003
SAME STATE	5 913	5 143	4 894
DIFFERENT STATE	12 126	8 358	8 109
BROAD	1 918	1 178	1 159
MOVED, RESIDENCE IN 1955 NOT REPORTED	514	351	351
YEAR MOVED INTO PRESENT HOUSE			
TOTAL	73 418	57 629	55 357
1959 TO 1960	28 701	22 396	21 600
1958	8 225	6 409	6 084
1957	5 768	4 588	4 445
1954 TO 1956	10 268	8 206	7 958
1950 TO 1953	7 628	6 201	5 983
1940 TO 1949	3 372	5 769	5 478
1939 OR EARLIER	3 369	2 524	2 353
WAYS LIVED IN THIS HOUSE	2 087	1 536	1 456
PLACE OF WORK AND MEANS OF TRANSPORTATION			
ALL WORKERS ¹	27 514	21 275	20 514
WORKED IN COUNTY OF RESIDENCE	26 227	20 211	19 489
WORKED OUTSIDE COUNTY OF RESIDENCE	674	587	574
PLACE OF WORK NOT REPORTED	613	477	451
PRIVATE AUTOMOBILE OR CAR POOL	19 734	16 861	16 332
BIKE, ROAD, SUBWAY, OR ELEVATED	4	4	4
ON STREETCAR	132	100	100
WALKED TO WORK	3 079	2 604	2 543
OTHER MEANS	809	636	532
WORKED AT HOME	3 278	683	635
NOT REPORTED	478	387	368
VETERAN STATUS			
CIVILIAN MALES 14 YEARS OLD AND OVER	21 034	17 253	16 559
ARMED FORCES	9 500	8 076	7 767
KOREAN WAR	1 902	1 579	1 521
KOREAN WAR AND WORLD WAR II	442	397	393
WORLD WAR II	5 022	4 279	4 098
WORLD WAR I	971	819	815
OTHER SERVICE	1 163	1 002	940
NONVETERAN	11 534	9 177	8 792
MARRIED COUPLES AND FAMILIES			
MARRIED COUPLES	16 753	13 371	12 862
WITH OWN HOUSEHOLD	16 622	13 258	12 757
WITH OWN CHILDREN UNDER 6	6 814	5 313	5 086
WITH OWN CHILDREN UNDER 18	10 838	8 482	8 130
WITH HUSBAND UNDER 45	10 076	8 014	7 701
WITH OWN CHILDREN UNDER 18	8 477	6 661	6 376
FAMILIES	18 236	14 626	14 090
HUSBAND-WIFE FAMILIES	16 622	13 258	12 757
WITH OWN CHILDREN UNDER 6	7 062	5 540	5 313
WITH OWN CHILDREN UNDER 18	11 585	9 120	8 756
RELATED INDIVIDUALS	6 861	4 786	4 690
SONS UNDER 18 YEARS OLD	28 359	22 012	20 990
LIVING WITH BOTH PARENTS	25 826	19 960	19 009
CHILDREN EVER BORN			
WHEN EVER MARRIED, 15 TO 24 YEARS OLD	2 874	2 384	2 277
CHILDREN PER 1,000 WOMEN EVER MARRIED	1 381	1 321	1 299
WHEN EVER MARRIED, 25 TO 34 YEARS OLD	4 720	3 783	3 651
CHILDREN PER 1,000 WOMEN EVER MARRIED	2 606	2 570	2 542
WHEN EVER MARRIED, 35 TO 44 YEARS OLD	4 440	3 567	3 400
CHILDREN PER 1,000 WOMEN EVER MARRIED	2 737	2 618	2 600

SUBJECT	GREAT FALLS SMSA	GREAT FALLS UA	GREAT FALLS U.P.
SCHOOL ENROLLMENT			
TOTAL ENROLLED, 5 TO 34 YEARS OLD	18 149	13 900	13 276
KINDERGARTEN	1 526	1 314	1 268
PUBLIC	1 397	1 194	1 148
ELEMENTARY (1 TO 8 YEARS)	11 963	9 140	8 710
PUBLIC	9 915	7 253	6 893
HIGH SCHOOL (1 TO 4 YEARS)	3 951	2 874	2 749
PUBLIC	3 183	2 241	2 164
COLLEGE	709	572	549
NUMBER ENROLLED IN SCHOOL, BY AGE ¹			
5 AND 6 YEARS OLD	2 307	1 918	1 839
7 TO 13 YEARS OLD	10 464	8 050	7 678
14 AND 15 YEARS OLD	2 090	1 574	1 476
16 AND 17 YEARS OLD	1 727	1 276	1 228
18 AND 19 YEARS OLD	653	528	523
20 AND 21 YEARS OLD	229	186	176
22 TO 24 YEARS OLD	201	150	150
25 TO 34 YEARS OLD	478	218	206
PERCENT ENROLLED IN SCHOOL, BY AGE ¹			
5 AND 6 YEARS OLD	67.1	70.9	70.9
7 TO 13 YEARS OLD	99.0	98.9	99.0
14 AND 15 YEARS OLD	98.3	98.3	98.2
16 AND 17 YEARS OLD	86.1	86.3	86.8
18 AND 19 YEARS OLD	34.0	38.7	39.0
20 AND 21 YEARS OLD	10.3	12.1	11.8
22 TO 24 YEARS OLD	5.8	5.7	6.0
25 TO 34 YEARS OLD	4.6	2.7	2.7
YEARS OF SCHOOL COMPLETED			
MALE, 25 YEARS OLD AND OVER	19 251	15 077	14 530
NO SCHOOL YEARS COMPLETED	98	77	77
ELEMENTARY: 1 TO 4 YEARS	585	462	420
5 AND 6 YEARS	786	621	589
7 YEARS	882	634	607
8 YEARS	3 746	2 886	2 758
HIGH SCHOOL: 1 TO 3 YEARS	3 495	2 760	2 640
4 YEARS	5 746	4 408	4 285
COLLEGE: 1 TO 3 YEARS	2 074	1 668	1 615
4 YEARS OR MORE	1 839	1 561	1 539
MEDIAN SCHOOL YEARS COMPLETED	12.0	12.0	12.0
FEMALE, 25 YEARS OLD AND OVER	18 217	15 000	14 504
NO SCHOOL YEARS COMPLETED	88	84	84
ELEMENTARY: 1 TO 4 YEARS	471	383	366
5 AND 6 YEARS	728	628	602
7 YEARS	503	397	383
8 YEARS	2 758	2 197	2 092
HIGH SCHOOL: 1 TO 3 YEARS	3 215	2 577	2 481
4 YEARS	6 495	5 447	5 230
COLLEGE: 1 TO 3 YEARS	2 749	2 228	2 211
4 YEARS OR MORE	1 210	1 059	1 055
MEDIAN SCHOOL YEARS COMPLETED	12.2	12.2	12.2
EMPLOYMENT STATUS			
MALE, 14 YEARS OLD AND OVER	25 221	18 987	18 275
LABOR FORCE	21 329	15 813	15 199
ARMED FORCES	4 187	1 734	1 716
CIVILIAN LABOR FORCE	17 142	14 079	13 483
EMPLOYED	16 158	13 247	12 686
UNEMPLOYED	984	832	797
NOT IN LABOR FORCE	3 892	3 174	3 076
INMATE OF INSTITUTION	137	125	125
ENROLLED IN SCHOOL	1 396	1 014	969
OTHER, UNDER 65 YEARS OLD	622	536	518
OTHER, 65 YEARS OLD AND OVER	1 737	1 499	1 464
FEMALE, 14 YEARS OLD AND OVER	23 970	19 709	19 010
LABOR FORCE	8 661	7 554	7 306
EMPLOYED	8 026	6 981	6 766
UNEMPLOYED	614	573	540
NOT IN LABOR FORCE	15 309	12 155	11 704
INMATE OF INSTITUTION	100	88	88
ENROLLED IN SCHOOL	1 740	1 248	1 182
OTHER, UNDER 65 YEARS OLD	11 099	8 774	8 415
WITH OWN CHILDREN UNDER 6	5 367	4 246	4 058
MARRIED, HUSBAND PRESENT	5 221	4 131	3 947
OTHER, 65 YEARS OLD AND OVER	2 370	2 045	2 019
AGE OF PERSONS IN LABOR FORCE			
MALE: 14 TO 17 YEARS OLD	802	601	576
18 TO 24 YEARS OLD	3 683	2 226	2 141
25 TO 34 YEARS OLD	5 397	3 984	3 843
35 TO 44 YEARS OLD	4 749	3 758	3 600
45 TO 64 YEARS OLD	5 798	4 521	4 330
65 YEARS OLD AND OVER	900	723	709
FEMALE: 14 TO 17 YEARS OLD	537	448	429
18 TO 24 YEARS OLD	1 564	1 404	1 356
25 TO 34 YEARS OLD	1 544	1 329	1 289
35 TO 44 YEARS OLD	1 934	1 669	1 622
45 TO 64 YEARS OLD	2 653	2 306	2 220
65 YEARS OLD AND OVER	429	398	390
MARRIED WOMEN IN LABOR FORCE, HUSBAND PRESENT	5 108	4 320	4 140
WOMEN IN LABOR FORCE WITH OWN CHILDREN UNDER 6	1 512	1 247	1 192
MARRIED, HUSBAND PRESENT	1 334	1 077	1 022

SUBJECT	GREAT FALLS SMSA	GREAT FALLS UA	GREAT FALLS UP
OCCUPATION			
MALE, EMPLOYED	16 158	13 247	12 686
PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS	1 491	1 371	1 336
ENGINEERS, TECHNICAL	229	221	216
MEDICAL & OTHER HEALTH WORKERS; SALARIED	99	86	86
SELF-EMPL	131	127	127
TEACHERS, ELEMENTARY & SECONDARY SCHOOLS	177	121	118
OTHER PROFESSIONAL, ETC.; SALARIED	732	706	679
SELF-EMPLOYED	123	110	110
FARMERS AND FARM MANAGERS	886	152	144
MANAGERS, OFFICIALS, & PROPRIETORS, EXC. FARM	2 344	2 102	2 012
SALARIED	1 462	1 316	1 279
SELF-EMPLOYED; RETAIL TRADE	350	295	270
OTHER THAN RETAIL TRADE	532	491	463
CLERICAL AND KINDRED WORKERS	1 056	972	942
SALES WORKERS	1 358	1 283	1 269
RETAIL TRADE	484	450	445
OTHER THAN RETAIL TRADE	874	833	824
ARTISANS, FOREMEN, AND KINDRED WORKERS	3 612	2 963	2 830
CONSTRUCTION CRAFTSMEN	1 215	957	887
FOREMEN (N.E.C.)	423	378	359
MECHANICS AND REPAIRMEN	744	605	588
METAL CRAFTSMEN, EXCEPT MECHANICS	222	171	159
OTHER CRAFTSMEN	1 008	852	837
OPERATIVES AND KINDRED WORKERS	2 414	2 041	1 914
DRIVERS AND DELIVERYMEN	725	574	566
OTHER OPERATIVES, ETC.; DUR. GOODS MFG.	625	565	479
NONDUR. GOODS MFG.	248	225	212
NONMFG. INDUSTRIES	816	677	657
PRIVATE HOUSEHOLD WORKERS	31	31	31
SERVICE WORKERS, EXCEPT PRIVATE HOUSEHOLD	902	831	800
PROTECTIVE SERVICE WORKERS	169	161	161
WAITERS, BARTENDERS, COOKS, & COUNTER WKRS.	227	201	197
OTHER SERVICE WORKERS	506	469	442
FARM LABORERS AND FARM FOREMEN	417	152	148
LABORERS, EXCEPT FARM AND MINE	1 116	921	847
CONSTRUCTION	314	247	213
MANUFACTURING	272	219	191
OTHER INDUSTRIES	530	455	443
OCCUPATION NOT REPORTED	531	428	413
FEMALE, EMPLOYED	8 026	6 981	6 766
PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS	1 296	1 121	1 112
MEDICAL & OTHER HEALTH WORKERS; SALARIED	487	446	437
SELF-EMPL	36	36	36
TEACHERS, ELEMENTARY & SECONDARY SCHOOLS	452	362	362
OTHER PROFESSIONAL, ETC.; SALARIED	244	212	212
SELF-EMPLOYED	77	65	65
FARMERS AND FARM MANAGERS	8	...	...
MANAGERS, OFFICIALS, & PROPRIETORS, EXC. FARM	487	435	430
SALARIED	325	289	284
SELF-EMPLOYED; RETAIL TRADE	71	63	63
OTHER THAN RETAIL TRADE	91	83	83
CLERICAL AND KINDRED WORKERS	2 471	2 218	2 175
SECRETARIES, STENOGRAPHERS, AND TYPISTS	826	770	760
OTHER CLERICAL WORKERS	1 645	1 448	1 415
SALES WORKERS	789	703	670
RETAIL TRADE	688	606	578
OTHER THAN RETAIL TRADE	101	97	92
ARTISANS, FOREMEN, AND KINDRED WORKERS	31	38	34
OPERATIVES AND KINDRED WORKERS	327	283	273
DURABLE GOODS MANUFACTURING	8	4	4
NONDURABLE GOODS MANUFACTURING	44	32	32
NONMANUFACTURING INDUSTRIES	275	247	237
PRIVATE HOUSEHOLD WORKERS	675	590	580
SERVICE WORKERS, EXCEPT PRIVATE HOUSEHOLD	1 471	1 271	1 178
WAITERS, BARTENDERS, COOKS, & COUNTER WKRS.	672	558	515
OTHER SERVICE WORKERS	799	713	663
FARM LABORERS AND FARM FOREMEN	73	13	13
LABORERS, EXCEPT FARM AND MINE	16	4	4
OCCUPATION NOT REPORTED	362	305	297
CLASS OF WORKER			
SELF-EMPLOYED IN AGRICULTURE	1 351	332	320
PRIVATE WAGE AND SALARY WORKERS	387	152	148
GOVERNMENT WORKERS	21	8	8
SELF-EMPLOYED WORKERS	906	172	164
UNPAID FAMILY WORKERS	37	...	...
MALE, EMPLOYED IN AGRICULTURE	136	38	33
PRIVATE WAGE AND SALARY WORKERS	80	34	29
GOVERNMENT WORKERS	8	4	4
SELF-EMPLOYED WORKERS	4	...	...
UNPAID FAMILY WORKERS	44	...	...
SELF-EMPLOYED IN NONAGRICULTURAL INDUSTRIES	14 807	12 915	12 366
PRIVATE WAGE AND SALARY WORKERS	11 177	9 832	9 390
GOVERNMENT WORKERS	1 843	1 489	1 449
SELF-EMPLOYED WORKERS	1 778	1 585	1 523
UNPAID FAMILY WORKERS	9	9	9
MALE, EMPLOYED IN NONAGRICULTURAL INDUS	7 890	6 943	5 733
PRIVATE WAGE AND SALARY WORKERS	6 129	5 490	5 323
GOVERNMENT WORKERS	1 144	898	873
SELF-EMPLOYED WORKERS	508	459	451
UNPAID FAMILY WORKERS	109	96	86

SUBJECT	GREAT FALLS SMSA	GREAT FALLS UA	GREAT FALLS UP
INDUSTRY GROUP OF EMPLOYED			
BOTH SEXES	24 184	20 228	19 452
AGRICULTURE	1 487	370	353
FORESTRY AND FISHERIES	21	12	12
MINING	121	82	82
CONSTRUCTION	2 078	1 357	1 565
MANUFACTURING	3 260	2 845	2 624
FURNITURE, AND LUMBER AND WOOD PRODUCTS	48	40	40
PRIMARY METAL INDUSTRIES	1 338	1 112	955
FABRIC'D METAL IND. (INCL. NOT SPEC. METAL)	32	32	32
MACHINERY, EXCEPT ELECTRICAL	108	104	100
ELECTRICAL MACHINERY, EQUIP., AND SUPPLIES	49	41	41
MOTOR VEHICLES AND MOTOR VEHICLE EQUIPMENT	16	16	16
TRANSPORTATION EQUIP., EXC. MOTOR VEHICLE	17	17	17
OTHER DURABLE GOODS	147	127	127
FOOD AND KINDRED PRODUCTS	809	719	698
TEXTILE MILL PRODUCTS	...	...	...
APPAREL & OTHER FABRIC'D TEXTILE PRODUCTS	12	12	12
PRINTING, PUBLISHING, AND ALLIED PRODUCTS	576	517	490
CHEMICAL AND ALLIED PRODUCTS	4	4	4
OTHER NONDUR. GOODS (INCL. NOT SPEC. MFG.)	104	104	92
RAILROAD AND RAILWAY EXPRESS SERVICE	917	819	786
TRUCKING SERVICE AND WAREHOUSING	329	299	279
OTHER TRANSPORTATION	191	158	158
COMMUNICATIONS	568	501	484
UTILITIES AND SANITARY SERVICE	291	212	207
WHOLESALE TRADE	1 064	963	959
FOOD AND DAIRY PRODUCTS STORES	659	588	565
EATING AND DRINKING PLACES	994	855	792
OTHER RETAIL TRADE	3 014	2 738	2 636
FINANCE, INSURANCE, AND REAL ESTATE	1 257	1 175	1 167
BUSINESS SERVICES	246	224	215
REPAIR SERVICES	325	256	237
PRIVATE HOUSEHOLDS	767	682	672
OTHER PERSONAL SERVICES	912	867	843
ENTERTAINMENT AND RECREATION SERVICES	252	214	214
HOSPITALS	945	863	838
EDUCATIONAL SERVICES; GOVERNMENT	893	648	623
PRIVATE	286	254	249
WELF., RELIG., & NONPROFIT MEMBERSHIP ORGNS	325	300	300
OTHER PROFESSIONAL AND RELATED SERVICES	747	711	697
PUBLIC ADMINISTRATION	1 601	1 392	1 366
INDUSTRY NOT REPORTED	634	543	529
FEMALE	8 026	6 981	6 766
AGRICULTURE, FORESTRY, AND FISHERIES	140	42	37
CONSTRUCTION AND MINING	106	94	94
MANUFACTURING	330	276	258
MACHINERY	12	8	8
TRANSPORTATION EQUIPMENT	...	...	...
OTHER DURABLE GOODS	32	32	32
FOOD AND KINDRED PRODUCTS	162	129	125
TEXTILE MILL PRODUCTS	...	...	...
APPAREL & OTHER FABRIC'D TEXTILE PRODUCTS	4	4	4
OTHER NONDUR. GOODS (INCL. NOT SPEC. MFG.)	120	103	89
TRANSPORT, COMMUN., AND OTHER PUBLIC UTIL.	362	326	313
WHOLESALE TRADE	213	188	188
FOOD AND DAIRY PRODUCTS STORES	300	254	244
EATING AND DRINKING PLACES	641	557	511
OTHER RETAIL TRADE	1 148	1 055	1 014
FINANCE, INSURANCE, AND REAL ESTATE	557	513	513
BUSINESS AND REPAIR SERVICES	88	76	76
PERSONAL SERVICES	1 259	1 133	1 110
ENTERTAINMENT AND RECREATION SERVICES	110	86	86
HOSPITALS	824	747	727
EDUCATIONAL SERVICES; GOVERNMENT	588	442	433
PRIVATE	223	191	186
OTHER PROFESSIONAL AND RELATED SERVICES	515	479	470
PUBLIC ADMINISTRATION	385	313	301
INDUSTRY NOT REPORTED	237	209	205
MAJOR OCCUPATION GROUP OF UNEMPLOYED			
MALE, EXPERIENCED UNEMPLOYED	945	798	763
PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS	19	15	15
FARMERS AND FARM MANAGERS	4	4	4
MANAGERS, OFFICIALS, & PROPRIETORS, EXC. FARM	20	16	16
CLERICAL AND KINDRED WORKERS	35	31	31
SALES WORKERS	16	16	16
CRAFTSMEN, FOREMEN, AND KINDRED WORKERS	235	186	173
OPERATIVES AND KINDRED WORKERS	166	136	132
PRIVATE HOUSEHOLD WORKERS	...	...	...
SERVICE WORKERS, EXCEPT PRIVATE HOUSEHOLD	105	105	105
FARM LABORERS AND FOREMEN	53	40	40
LABORERS, EXCEPT FARM AND MINE	202	167	154
OCCUPATION NOT REPORTED	90	82	77
FEMALE, EXPERIENCED UNEMPLOYED	574	533	500
PROFESSIONAL, TECHNICAL, AND KINDRED WORKERS	44	44	36
FARMERS AND FARM MANAGERS	...	...	...
MANAGERS, OFFICIALS, & PROPRIETORS, EXC. FARM	20	20	20
CLERICAL AND KINDRED WORKERS	129	117	108
SALES WORKERS	87	83	83
CRAFTSMEN, FOREMEN, AND KINDRED WORKERS	4	4	4
OPERATIVES AND KINDRED WORKERS	18	18	14
PRIVATE HOUSEHOLD WORKERS	44	44	44
SERVICE WORKERS, EXCEPT PRIVATE HOUSEHOLD	191	163	175
FARM LABORERS AND FOREMEN	4	...	...
LABORERS, EXCEPT FARM AND MINE	...	...	...
OCCUPATION NOT REPORTED	33	20	16

SUBJECT	GREAT FALLS SMSA	GREAT FALLS	GREAT FALLS UP
FAMILY INCOME			
ALL FAMILIES	18 236	14 626	14 090
UNDER \$1,000	507	352	340
\$1,000 TO \$1,999	904	688	667
\$2,000 TO \$2,999	1 173	941	913
\$3,000 TO \$3,999	1 690	1 223	1 179
\$4,000 TO \$4,999	2 227	1 633	1 555
\$5,000 TO \$5,999	2 541	1 983	1 903
\$6,000 TO \$6,999	2 381	1 979	1 896
\$7,000 TO \$7,999	1 883	1 551	1 501
\$8,000 TO \$8,999	1 374	1 181	1 131
\$9,000 TO \$9,999	1 006	876	855
\$10,000 TO \$14,999	1 784	1 534	1 488
\$15,000 TO \$24,999	576	507	494
\$25,000 AND OVER	190	178	168
MEDIAN INCOME: FAMILIES	\$6 032	\$6 249	\$6 257
UNRELATED INDIVIDUALS	\$1 825	\$1 960	\$1 964
FAMILIES AND UNREL. INDIV.	\$5 048	\$5 399	\$5 391
HUSBAND-WIFE FAMILIES, ONE EARNER, TWO CHILDREN UNDER 18	2 901	2 263	2 192
MEDIAN INCOME	\$6 248	\$6 545	\$6 554
INCOME OF PERSONS			
MALE, TOTAL	25 221	18 987	18 275
TOTAL WITH INCOME	23 747	17 900	17 217
\$1 TO \$499 OR LOSS	1 261	837	813
\$500 TO \$999	1 039	671	639
\$1,000 TO \$1,499	1 774	1 052	1 020
\$1,500 TO \$1,999	1 287	863	836
\$2,000 TO \$2,499	1 424	921	885
\$2,500 TO \$2,999	1 003	730	709
\$3,000 TO \$3,499	1 474	1 136	1 088
\$3,500 TO \$3,999	1 001	730	689
\$4,000 TO \$4,499	1 646	1 175	1 118
\$4,500 TO \$4,999	1 581	1 226	1 166
\$5,000 TO \$5,999	3 452	2 778	2 643
\$6,000 TO \$6,999	2 439	2 103	2 028
\$7,000 TO \$9,999	2 800	2 354	2 293
\$10,000 AND OVER	1 566	1 324	1 290
MEDIAN INCOME	\$4 489	\$4 841	\$4 848
FEMALE, TOTAL	23 970	19 709	19 010
TOTAL WITH INCOME	13 487	11 728	11 377
\$1 TO \$499 OR LOSS	3 424	2 783	2 677
\$500 TO \$999	2 432	2 084	2 023
\$1,000 TO \$1,499	1 642	1 484	1 423
\$1,500 TO \$1,999	1 096	992	961
\$2,000 TO \$2,499	1 089	986	963
\$2,500 TO \$2,999	785	692	670
\$3,000 TO \$3,499	857	776	767
\$3,500 TO \$3,999	777	671	649
\$4,000 TO \$4,499	514	454	446
\$4,500 TO \$4,999	222	218	210
\$5,000 TO \$5,999	289	253	249
\$6,000 TO \$6,999	164	148	148
\$7,000 TO \$9,999	142	133	133
\$10,000 AND OVER	54	54	54
MEDIAN INCOME	\$1 270	\$1 336	\$1 346
WEEKS WORKED			
TOTAL PERSONS WHO WORKED IN 1959	33 168	25 995	25 047
50 TO 52 WEEKS	19 036	14 531	14 093
48 TO 49 WEEKS	1 407	1 119	1 084
40 TO 47 WEEKS	2 399	1 920	1 793
27 TO 39 WEEKS	3 591	2 955	2 818
14 TO 26 WEEKS	2 884	2 361	2 262
13 WEEKS OR LESS	3 851	3 109	2 997
MEDIAN EARNINGS OF SELECTED OCCUPATION GROUPS			
MALE, TOTAL WITH EARNINGS ¹	\$5 110	\$5 246	\$5 262
PROFESSIONAL, MANAGERIAL, & KINDRED WORKERS	6 564	6 694	6 739
CRAFTSMEN, FOREMEN, AND KINDRED WORKERS	5 587	5 652	5 637
OPERATIVES AND KINDRED WORKERS	4 311	4 334	4 379
LABORERS, EXCEPT FARM AND MINE	3 363	3 306	3 215
FEMALE, TOTAL WITH EARNINGS ¹	\$2 029	\$2 053	\$2 075
CLERICAL AND KINDRED WORKERS	2 687	2 701	2 680
OPERATIVES AND KINDRED WORKERS	2 193	2 218	2 250
TYPE OF INCOME			
ALL TYPES OF INCOME ²	37 234	29 628	28 594
NUMBER OF RECIPIENTS	37 234	29 628	28 594
MEAN INCOME	\$3 812	\$3 956	\$3 955
WAGES OR SALARY	28 822	22 882	22 053
NUMBER OF RECIPIENTS	28 822	22 882	22 053
MEAN INCOME	\$3 498	\$3 635	\$3 646
SELF-EMPLOYMENT INCOME	4 933	3 502	3 374
NUMBER OF RECIPIENTS	4 933	3 502	3 374
MEAN INCOME	\$5 179	\$5 785	\$5 699

SUMMARY SHEET FOR 1964 LAND USE INVENTORY

(Great Falls Study Area Land Use As Of September 1964)

(12, 1966)

TOTAL LAND USE INVENTORY FOR 24 DISTRICTS OR 100 ZONES IN THE STUDY AREA. (SEE MONTANA STATE HIGHWAY COMMISSION URBAN TRANSPORTATION SURVEY OF GREAT FALLS, MONTANA - VOLUME II - 1961, FOR BREAKDOWN OF ZONES, DISTRICTS AND CORDON BOUNDARY OF STUDY AREA.)

* * * * *

L A N D U S E

DISTRICT	24 Districts A through X
BLOCK NO.	All Blocks and Parcels of Land
ZONE	100 Zones - 6101 through 8202
TOTAL AREA	20,424.83 Acres
NET AREA	17,705.45 Acres
RIGHT-OF-WAY AREA	2,719.38 Acres

1. RESIDENTIAL:¹

	<u>DWELLING UNITS</u>	<u>AREA (ACRES)</u>
Number of (a) One-Family Housing Units	13,502	2,960.37
(b) Two-Family Housing Units	2,276	331.13
(c) Three or More Family Units	4,500	137.07
(d) Motel Units	780	27.77
(e) Trailer Court Units	644	68.04
(f) Hotel Units	<u>401</u>	<u>1.12</u>
Sub-total	20,802	3,525.50

¹ The dwelling unit numbers include Malmstrom Air Force Base on-base and off-base housing units. The land area does not include the on-base housing areas. The land area does include Malmstrom off-base (Off-base Wherry and Off-base Capehart) housing.

<u>COMMERCIAL:</u>	<u>LAND AREA</u>		<u>FLOOR AREA</u>		<u>PARKING AREA</u>	
	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>
Local Business	467,069	10.72	154,621	3.55	50,270	1.15
Intensive Business ²	7,197,346	165.23	688,641	15.81	3,046,352	69.94
General Business ³	5,554,187	127.50	1,523,230	34.97	1,061,048	24.36
Shopping Centers	1,450,694	33.30	422,659	9.70	664,957	15.27
Department Stores	45,000	1.03	132,355	3.04	1,500	.03
Offices and Banks	777,782	17.86	398,544	9.15	291,179	6.68
Parking Lots ⁴	<u>228,875</u>	<u>5.26</u>	<u>0</u>	<u>0</u>	<u>228,875</u>	<u>5.26</u>
Sub-total	15,720,953	360.90	3,320,050	76.22	5,344,181	122.69

The Intensive Business breakdown includes the Malmstrom A.F.B. BX Gasoline Station.

The General Business breakdown includes the Malmstrom A.F.B. Commissary and BX.

The Parking Lot category is composed primarily of municipal parking lots.

<u>INDUSTRIAL:</u>	<u>LAND AREA</u>		<u>FLOOR AREA</u>		<u>PARKING AREA</u>	
	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>
Light Industry	16,966,533	389.50	3,133,686	71.94	2,332,950	53.55
Heavy Industry	33,655,016	772.61	1,513,006	34.73	1,039,593	23.87
Railroads and						
Public Utilities	<u>28,576,436</u>	<u>656.02</u>	<u>334,403</u>	<u>7.68</u>	<u>63,250</u>	<u>1.45</u>
Sub-total	79,197,985	1,818.13	4,981,095	114.35	3,435,793	78.87

<u>PUBLIC:</u>	<u>LAND AREA</u>		<u>FLOOR AREA</u>		<u>PARKING AREA</u>	
	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>
Parks	19,666,404	451.48				
Public Buildings	17,731,567	407.10				
Malmstrom A.F.B. ⁶	<u>40,553,053</u>	<u>930.97</u>				
Sub-total	77,951,024	1,789.55				

Complete data on Floor Area and Parking Area was not available. It is listed partially on some Zone Sheets.

Exclusive of Commercial Land Area as noted above. This is the part of Malmstrom A.F.B. within the study cordon line only.

<u>CHURCHES:</u>	<u>LAND AREA</u>	
	<u>Sq. Ft.</u>	<u>Acres</u>
	<u>1,788,700</u>	<u>41.06</u>
Sub-total	1,788,700	41.06

6. SEMI-PUBLIC BUILDINGS AND INSTITUTIONS:

	<u>LAND AREA</u>		<u>FLOOR AREA</u>		<u>PARKING AREA</u>	
	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>
Cemeteries	1,800,750	41.34	45,910	1.05	8,000	.18
Lodge Halls	38,458	.88	12,935	.30	10,000	.23
Fraternal Organizations	130,215	2.99	173,199	3.97	6,900	.16
Hospitals	576,400	13.23	532,950	12.23	105,940	2.43
Convalescent Homes	203,440	4.67	63,710	1.46	19,769	.45
Private Schools	3,364,213	77.23	240,012	5.51	151,600	3.48
Country Club	5,577,768	128.05	30,000	.69	80,000	1.84
Boat Club	98,100	2.25	1,800	.04	10,000	.23
Salvation Army	7,500	.17	4,900	.11	2,600	.06
Orphan's Home	580,000	13.32	109,600	2.52	0	0
Union Hall	54,000	1.24	6,824	.16	28,575	.66
Sub-total	12,430,844	285.37	1,221,840	28.04	423,384	9.72

7. VACANT LAND:

<u>NOT ZONED</u>	<u>Sq. Ft.</u>	<u>Acres</u>
Not zoned (area outside City Limits)	363,503,184	8,344.88
Vacant streets (abandoned or undeveloped)	4,248,144	97.52
Vacant alleys (abandoned or undeveloped)	512,050	11.76
Vacant parks (undeveloped)	6,611,355	151.78
Vacant cemetery (undeveloped)	5,893,150	135.29
	380,767,883	8,741.23

ZONING

<u>Area</u>	<u>Use</u>	<u>Sq. Ft.</u>	<u>Acres</u>
A	A	18,525,451	425.28
A	B	431,068	9.90
A	LB	15,750	.36
A	SUB	9,983,163	229.18
B	A	1,412,438	32.43
B	B	816,280	18.74
B	C	15,625	.36
B	GC	188,354	4.32
B	LB	41,000	.94
C	B	195,000	4.48
C	C	1,961,671	45.04
C	GC	30,000	.69
C	LB	777,208	17.84
C	LB-Limited	418,185	9.60
D	GC	2,071,952	47.56
D	LB	703,585	16.15
D	1ST Ind.	11,488,125	263.73
Sub-total		429,842,738	9,867.83

RIGHTS-OF-WAY:A R E A
Acres

Streets	2,550.53
Alleys	166.58
Private Road	<u>2.27</u>
Sub-total	2,719.38

MIXED USE:LAND AREA
Sq. Ft. AcresFLOOR AREA
Sq. Ft. AcresPARKING AREA
Sq. Ft. Acres

ND USE CLASSIFICATION
NO. OF ESTABLISHMENTS

GB/LI/MDU 4 Estab.	15,000	.35	8,620	.20	9,780	.22
GB/OFF 18 Estab.	71,250	1.64	155,297	3.57	21,719	.50
GB/OFF/MDU 3 Estab.	7,500	.17	24,800	.57		
GB/IB/OFF/SP 13 Estab.	32,280	.74	48,947	1.12	8,623	.20
LI/HOTEL 2 Estab.	3,750	.09	6,125	.14	250	.01
GB/HOTEL 14 Estab.	85,500	1.96	182,048	4.18	8,350	.19
GB/l-FDU 2 Estab.-1 D.U.	7,500	.17	14,500	.33		
GB/IB/OFF/SP/VAC 5 Estab.	15,000	.35	45,000	1.03		
IB/GB 10 Estab.	56,250	1.29	38,162	.88	20,755	.48
GB/IB/MDU 9 Estab.	22,500	.52	36,700	.84	3,940	.09
IB/GB/OFF 6 Estab.	22,500	.52	66,410	1.52	1,090	.03
GB/OFF/VAC 6 Estab.	26,250	.60	81,030	1.86		

9. <u>MIXED USE:</u> (Continued) LAND USE CLASSIFICATION & NO. OF ESTABLISHMENTS	<u>LAND AREA</u>		<u>FLOOR AREA</u>		<u>PARKING AREA</u>	
	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>
GB/MDU 10 Estab.	31,250	.72	56,335	1.29	4,000	.09
GB/IB/HOTEL 9 Estab.	19,950	.46	59,850	1.37		
GB/IB/OFF/HOTEL 4 Estab.	15,000	.35	54,570	1.25		
DS/OFF 2 Estab.	11,250	.26	78,750	1.81		
GB/IB/OFF/VAC 3 Estab.	15,000	.35	13,750	.32	2,500	.06
GB/LI/OFF 3 Estab.	7,500	.17	6,850	.16		
IB/VAC 1 Estab.	6,375	.14	15,375	.35		
GB/VAC 6 Estab.	58,750	1.35	87,761	2.02	12,814	.30
MDU/VAC 1 Estab.	11,250	.26	17,700	.41	1,050	.02
GB/IB/OFF/SP/HOTEL 5 Estab.	22,500	.52	79,847	1.83		
GB/IB/OFF/HTL/LI/VAC 6 Estab.	15,000	.35	42,190	.97		
GB/SP/HOTEL 3 Estab.	11,250	.26	18,450	.42	1,875	.04
IB/OFF 2 Estab.	3,750	.08	3,950	.09	850	.02
IB/HOTEL/VAC 3 Estab.	7,500	.17	22,500	.52		
GB/OFF/MDU/CHURCH/VAC 3 Estab. - 9 D.U.	7,500	.17	12,500	.29		

MIXED USE: (Continued) LAND USE CLASSIFICATION NO. OF ESTABLISHMENTS	LAND AREA		FLOOR AREA		PARKING AREA	
	Sq. Ft.	Acres	Sq. Ft.	Acres	Sq. Ft.	Acres
GB/IB/OFF/MDU 3 Estab.	15,000	.35	21,820	.50	4,090	.09
IB/LI 2 Estab.	3,150	.07	6,300	.14		
IB/HOTEL 5 Estab.	10,000	.23	14,340	.33	3,650	.08
IB/HOTEL/SP 3 Estab.	11,250	.26	23,645	.54	2,250	.05
GB/HOTEL/VAC 3 Estab.	7,500	.17	22,500	.52		
GB/LI 2 Estab.	3,750	.08	5,122	.12	875	.02
IB/GB/VAC 3 Estab.	7,500	.17	8,579	.20	1,100	.03
GB/LI/HOTEL 3 Estab.	7,500	.17	15,980	.37	1,000	.02
HOTEL/SP 2 Estab.	4,500	.10	10,800	.25	900	.02
LB/GB/HOTEL/VAC 4 Estab.	7,500	.17	15,000	.34		
GB/LI/VAC 3 Estab.	8,250	.18	7,375	.17	875	.02
GB/RR/PU 3 Estab.	25,000	.57	25,000	.58		
OFF/MDU 3 Estab.-6 D.U.	3,012	.07	4,562	.10		
IB/LI/SP 3 Estab.	7,500	.17	20,150	.46		
GB/IB/LI/HOTEL 5 Estab.	7,500	.17	22,500	.52		

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9. <u>MIXED USE:</u> (Continued)	<u>LAND AREA</u>		<u>FLOOR AREA</u>		<u>PARKING AREA</u>	
	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>	<u>Sq. Ft.</u>	<u>Acres</u>
LAND USE CLASSIFICATION & NO. OF ESTABLISHMENTS						
MDU/HOTEL						
2 Estab.	<u>7,500</u>	<u>.17</u>	<u>15,000</u>	<u>.34</u>	<u> </u>	<u> </u>
Sub-total	745,517	17.11	1,516,690	34.82	112,336	2.58

KEY TO ABBREVIATIONS

- | | |
|----------------------------|--|
| 1. GB - General Business | 7. 1-FDU - One-family dwelling unit |
| 2. IB - Intensive Business | 8. MDU - Multiple Dwelling Unit |
| 3. OFF - Offices and Banks | 9. LI - Light Industry |
| 4. DS - Department Stores | 10. VAC - Vacant |
| 5. HTL - Hotels | 11. LB - Local Business |
| 6. SP - Semi-Public | 12. RR & PU - Railroads and Public Utilities |

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