a bank and office facility

FOR ABILENE, TEXAS

DWAIN
WADLINGTON

A Bank and Office Facility for Abilene, Texas

Presented to

Professor Garvin
Division of Architecture
Texas Tech University

In Partial Fulfillment
Of the Requirements of the
Bachelor of Architecture Degree

by

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Dedication

I want to dedicate this program to the memory of my Dad who I lost a year ago.

I also want to dedicate this program to my mom and my fiancee Angie; without their love and support this program could not have been written.

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introduction

Project Introduction

This program involves the development of a "Bank and Office Facility" for Abilene, Texas. The construction of this facility would be a boost and would upgrade the banking services of Abilene.

The client for this project will be the "First State Bank of Abilene." The bank is desiring to upgrade and enlarge their present facility by the construction of a new bank and office facility. The customers that presently use the First State Bank have shown a large interest in this project. Various businesses have shown interest because the bank will have new prestigious office space to lease. Members of the Abilene Chamber of Commerce are excited about the project because it will have a positive effect on Abilene's economy.

The site chosen for this project is in the southern portion of the central business district of Abilene. It is adjacent to the present facility. The new facility will be surrounded by lower income housing and small businesses. The facility is needed in this neighborhood to function as a landmark and to help upgrade the surrounding neighborhoods.

The site access will be excellent in that there are existing major thoroughfares adjacent to the site. The site presently is undeveloped and covered with trees that could be an interesting design feature. Various forms of vegetation exist and the soil is good for planting.

The facility will provide a design for the present needs of First State Bank as well as a plan for future expansion. The program which follows is a description and study of the needs, activities and functions along with ways to accommodate these needs. It is to aid the designer to understand the essence for which he is planning or designing. A

project of this type will allow the thesis student to demonstrate what he has learned at Texas Tech along with how progression has taken place. This bank and office facility will offer a challenge in that it possesses many needs and functions.

external background

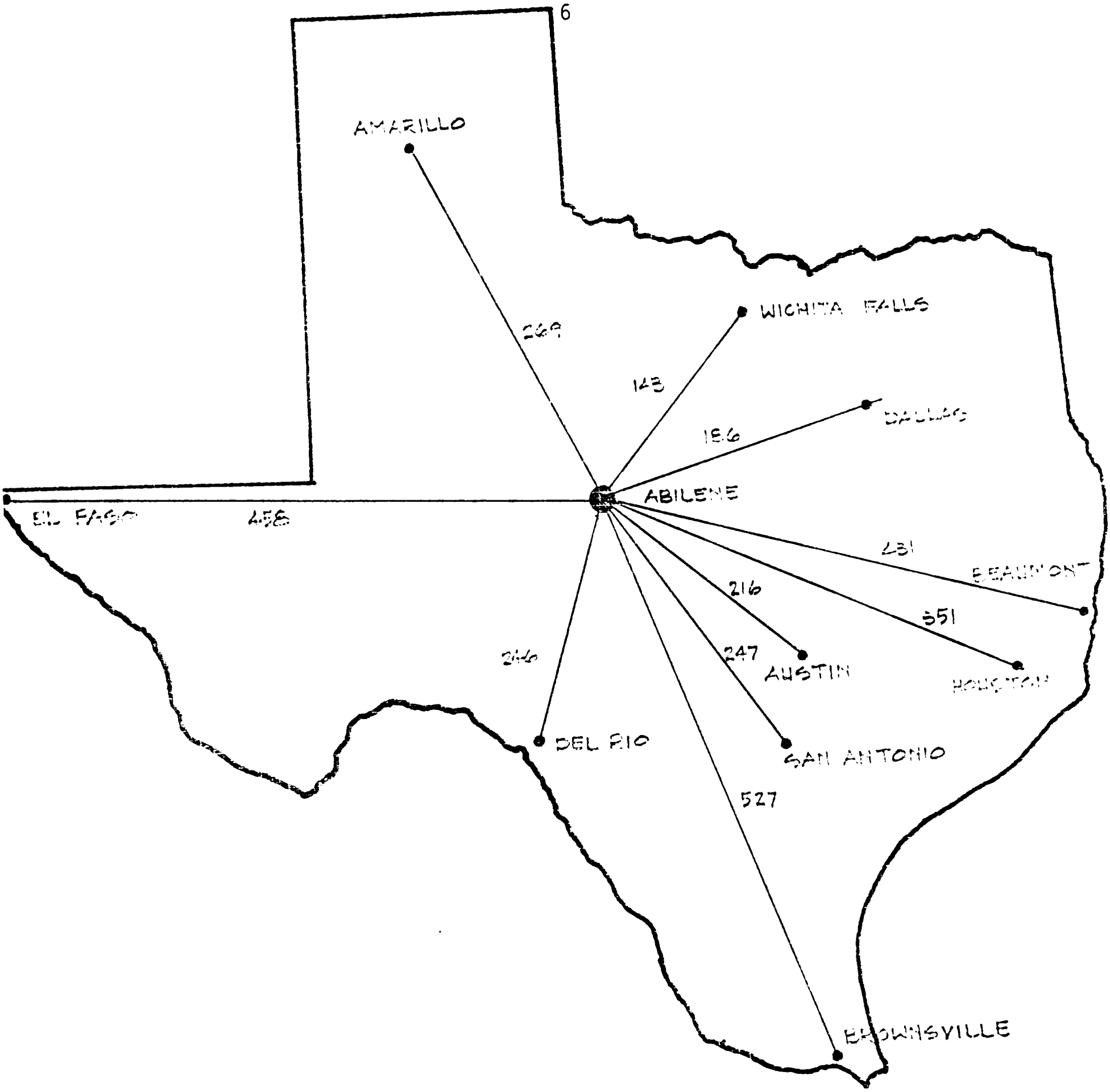
Introduction to Background

The topic for this program is A Bank and Office Facility for the City of Abilene. This dictates a need for research and study to determine different needs that affect a banking and office facility. Since the facility is to be located in Abilene, the ingredients that make up the city and the characteristics of its inhabitants will be studied. The elements that make up the city of Abilene are documented in the External Background section of this program. Additional issues which are directly related to this project are studied in the Internal Background section.

The topic "bank" will be studied to determine the needs of such a facility. The facility will be studied in how it relates to the environment around it. By conducting a synthesis of this research, an investigation of the entire thesis project can be made and studied.

Geographic Location

Abilene is located in Taylor County and is recognized as the "key city" of West Texas. Abilene's extensive highway system has made possible the development of the city into a primary retail trade center of 22 counties. Abilene is located on U. S. Highway 80--the Broadway of America--which is an important link between the East and West coasts. In addition, the city is served by Interstate 20, U. S. Highways 83, 84, and 277 and by State Highways 36 and 351. Abilene is near the geographic center of Texas. It is 186 miles west of Dallas, 351 miles north of Houston, 515 miles east of Albuquerque, and 308 miles south of Oklahoma City. The excellent access to and from and around Abilene has been instrumental in its growth.



2.1 Geographic Location of Abilene

Map 2.1 is a graphic description of Abilene's location in relation to the state of Texas.

Climate

Abilene is located in the extreme western part of north central Texas at an elevation of about 1,750 feet. The topography of the area is rolling plains, treeless except for mesquite, and broken by low hills to the south and west. The surface rises gently to the south and east. The agriculture of the region consists mainly of cattle raising, with some dryland cotton and feed crops.

Abilene lies roughly on the boundary between the humid climate of east Texas and the semi-arid climate to the west and north. The normal annual rainfall is near 23 inches. The rainfall pattern is typical of the Great Plains with maxima in spring, during April, May and June, and in fall during September and October. A large part of the rainfall is the result of thunderstorm activity, and wide variations occur from year to year. The range in precipitation has been from 9.78 inches in 1956 to 48.77 inches at the City Office in 1941.

The wide range between maximum and minimum temperatures characteristic of the Great Plains extends into the Abilene area. Periods of very cold weather are short, however, so that even in January fair, mild weather is frequent. High daytime temperatures prevail for a long period in summer but are broken by thunderstorm activity on an average of five times a month. The Abilene area has an average of around 40 days a year with thunderstorms but severe storms and tornados are infrequent. Rapid cooling occurs after nightfall, however, and most nights are pleasant, with minimum temperatures in the upper 60s and low 70s throughout the summer.

Rapid temperature changes occur in the winter as cold dry polar air replaces warm moist tropical air over the area. The temperature sometimes falls as much as 20 to 30 degrees in an hour.

The high temperatures of summer are usually associated with fair skies, southwesterly winds and dry air. The low humidity, however, is conducive to personal comfort because of rapid evaporation, which has a cooling effect.

The region receives an average of near 80 percent of the possible sunshine in the summer, and about 70 percent for the year. The prevailing wind direction is southerly, and winds are frequently high and persistent for several days from this direction. The strongest winds are from a northerly direction and result from the passage of cold fronts or "northers." Dusty conditions are infrequent and occur only with northwest winds. The frequency and intensity of dust storms are dependent mainly on soil conditions in the Texas Panhandle, Oklahoma and Kansas.

The banking facility will need to be designed so that all climate conditions are used to the advantage of the facility. The sun angles, for June (68° at noon) and December (21° at noon), should be considered for the use of heating and cooling effects of natural sunlight. The rain and snowfall precipitation should be considered in the way that it is drained off and away from the facility. This is important because during heavy rains in Abilene, there are problems with the streets filling with water and sometimes minor flooding will occur. The storm sewer system that Abilene has is not large enough to handle the water run-off from a heavy rain.

The intensity of winds is usually greater around a high-rise building so the entrances and orientation of the facility should be designed to

eliminate as much wind as possible. The wind is a major problem during the winter months because they are more intense and cause a problem with heating the facility.

The charts and tables which follow are much more detailed and a more thorough analysis is presented. The charts go back to approximately 1942 and indicate all important climatic data.

Meteorological Data For The Current Year

Station: ABILENE, TEXAS # 13962 — MUNICIPAL AIRPORT — Standard time used: CENTRAL — Latitude: 32° 25' N — Longitude: 99° 41' W — Elevation (ground): 1784 feet — Year: 1981

Month	Temperature °F: Averages: Daily maximum	Daily minimum	Monthly	Extremes: Highest: Date	Lowest: Date	Degree days Base 65 °F: Heating	Cooling	Precipitation in inches: Water equivalent: Total	Greatest in 24 hrs.	Date	Snow, Ice pellets: Total	Greatest in 24 hrs.	Date
JAN	55.2	34.3	44.8	73 29	25 17	619	0	1.20	0.98	8-9	1.9	1.6	17-18
FEB	60.6	38.1	49.4	82 20	9 11	439	6	1.06	0.85	27-28	T	T	11
MAR	65.1	44.6	54.9	84 30	31 19	312	8	2.36	1.42	3	0.0	0.0	
APR	78.9	57.6	68.3	89 30	40 5	51	154	3.52	1.15	14	0.0	0.0	
MAY	82.9	60.3	71.6	98 28	45 11	20	230	1.48	0.84	29-30	0.0	0.0	
JUN	91.0	69.5	80.3	100 9	56 17	0	464	2.73	1.77	3-4	0.0	0.0	
JUL	97.1	74.5	85.8	104 23	70 7	0	653	1.69	1.14	3	0.0	0.0	
AUG	94.5	72.1	83.3	102 2	63 21	0	575	0.63	0.40	10	0.0	0.0	
SEP	88.6	67.1	78.0	97 13	50 18	7	403	1.74	0.86	14	0.0	0.0	
OCT	75.3	57.1	66.2	92 4	36 26	116	162	10.68	6.08	12-13	0.0	0.0	
NOV	69.9	44.8	57.4	87 16	30 10	237	15	0.43	0.38	29-30	0.0	0.0	
DEC	60.6	37.0	48.8	82 21	19 18	496	1	0.25	0.25	13-14	0.0	0.0	
YEAR	76.7	54.6	65.8	104 JUL 23	9 FEB 11	2297	2671	27.77	6.08	OCT 12-13	1.9	1.6	JAN 17-18

Standard time used:

Month	Wind: Fastest mile: Speed m.p.h.	Direction	Date	Percent of possible sunshine	Average sky cover, tenths, sunrise to sunset	Number of days: Sunrise to sunset: Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Ice pellets 1.0 inch or more	Thunderstorms	Heavy fog, visibility ¼ mile or less	Temperature °F: Maximum: 90° and above (b)	32° and below	Minimum: 32° and below	0° and below	Average station pressure mb: Elev. 1790 feet m.s.l.
JAN	25	18	31	52	6.3	11	4	16	6	1	0	0	0	0	12	0	957.7
FEB	31	36	10	56	6.3	9	4	15	5	0	0	3	0	0	8	0	955.6
MAR	35	31	17	57	5.8	11	6	14	7	0	5	1	0	0	2	0	951.9
APR	35	28	22	70	6.6	9	2	19	8	0	3	0	0	0	0	0	952.9
MAY	35	32	29	69	5.6	8	13	10	7	0	7	0	7	0	0	0	948.9
JUN	28	20	18	70	5.1	10	12	8	4	0	4	0	22	0	0	0	949.9
JUL	39	36	3	84	3.3	19	9	3	4	0	3	0	31	0	0	0	952.6
AUG	21	18	16	68	5.0	11	11	9	4	0	5	0	26	0	0	0	952.6
SEP	25	26	14	72	4.6	13	10	7	6	0	2	0	18	0	0	0	953.9
OCT	28	32	31	50	6.7	6	8	17	9	0	4	2	3	0	0	0	953.3
NOV	32	36	8	76	4.1	15	8	7	3	0	3	0	0	0	1	0	953.9
DEC	29	35	22	64	5.3	9	12	10	2	0	2	0	0	0	7	0	953.9
YEAR	39	36 JUL 3		66	5.4	131	99	135	65	1	38	7	107	0	30	0	953.1

Normals, Means, And Extremes

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Month (a)	Temperatures °F: Normal: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	Normal Degree days Base 65 °F: Heating	Cooling	Precipitation in inches: Water equivalent: Normal	Maximum monthly	Year	Minimum monthly	Year	Snow, Ice pellets: Maximum in 24 hrs.	Year
J	55.7	31.7	43.7	89	1943	-9	1947	660	0	1.02	4.35	1969	T	1967	2.19	1961
F	59.9	35.9	47.9	90	1940	1	1951	479	0	0.97	2.84	1940	0.04	1962	1.74	1940
M	67.3	41.7	54.5	97	1974	7	1943	354	29	0.98	5.16	1979	0.03	1963	2.23	1977
A	77.7	52.7	65.2	99	1948	25	1973	104	110	2.47	6.80	1966	T	1961	3.75	1957
M	83.9	62.4	73.2	107	1967	36	1979	11	240	3.86	13.19	1957	0.15	1956	2.85	1969
J	91.6	69.6	80.3	109	1980	47	1964	0	459	2.82	9.60	1961	0.03	1954	3.66	1959
J	95.3	72.4	83.9	110	1978	55	1943	0	586	2.34	7.15	1968	T	1970	3.74	1960
A	95.3	71.9	83.6	109	1943	55	1961	0	577	2.05	8.18	1969	T	1943	6.39	1978
S	87.5	64.6	76.1	106	1952	35	1942	0	333	2.26	11.03	1974	T	1956	6.70	1961
O	78.0	54.2	66.1	103	1979	28	1957	89	123	2.60	10.68	1941	0.00	1952	6.04	1941
N	66.2	42.0	54.1	92	1980	14	1976	336	9	1.20	4.60	1968	0.00	1949	2.43	1975
D	60.2	34.5	46.4	89	1955	9	1966	577	0	1.02	2.83	1960	T	1972	2.30	1946
YR	76.4	52.6	64.5	110 JUL	1978	-9	1947	2610	2466	23.59	13.19	MAY 1957	0.00	OCT 1952	6.70	SEP 1961

*Courtesy of National Weather Bureau - Abilene

Average Temperature

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
1942	41.6	47.7	54.8	65.2	70.8	79.1	81.5	81.5	71.7	63.5	57.5	47.1	63.5
1943	44.1	52.0	51.3	68.6	70.9	80.2	84.1	87.6	74.3	64.0	53.5	42.3	64.4
1944	44.4	49.6	53.4	64.4	71.1	81.6	84.0	83.3	74.2	65.8	56.0	42.8	64.2
1945	45.2	48.8	60.3	60.6	73.0	79.2	79.5	82.0	77.2	63.9	57.6	43.3	64.2
1946	42.4	51.2	60.0	69.4	71.0	79.2	85.7	84.8	75.2	68.9	54.8	50.2	66.1
1947	41.5	42.4	50.0	63.4	71.1	81.9	85.2	84.0	79.2	73.0	50.0	47.4	64.1
1948	39.0	44.6	52.5	71.2	74.8	83.4	84.2	84.9	76.2	64.2	52.7	50.3	64.9
1949	35.4	48.4	55.6	60.6	73.0	79.8	83.8	80.4	74.7	64.6	58.6	48.6	63.6
1950	47.7	52.9	55.4	64.1	73.0	79.2	81.2	80.1	74.7	71.6	53.8	44.4	64.8
1951	44.4	49.6	56.3	63.8	73.4	80.0	85.6	87.1	78.1	68.5	50.5	48.8	65.5
1952	51.7	52.6	54.5	63.1	72.4	83.5	84.2	90.1	75.9	63.7	52.7	45.6	65.8
1953	51.9	49.3	61.0	63.7	72.3	87.7	84.0	82.6	78.5	66.4	53.2	44.4	66.2
1954	46.1	55.9	55.1	70.1	68.2	81.9	87.4	86.5	80.4	67.8	55.6	49.3	67.0
1955	45.8	48.0	57.5	69.6	74.6	78.4	83.8	82.8	78.8	66.8	53.2	46.7	65.5
1956	43.4	47.7	58.7	64.1	76.9	84.7	86.2	85.1	79.3	69.8	52.0	49.0	66.4
1957	44.0	53.3	54.3	61.9	68.2	77.8	85.7	84.6	73.5	62.6	48.9	49.8	63.7
1958	44.1	43.6	47.3	61.2	72.0	81.1	84.5	83.5	75.5	63.1	54.7	42.6	62.8
1959	42.5	46.9	56.0	63.1	74.7	79.0	79.8	82.1	78.3	63.1	47.8	48.1	63.5
1960	44.2	42.7	49.8	65.9	72.3	82.8	83.4	82.8	77.3	68.2	57.0	40.9	63.9
1961	40.6	48.0	58.0	65.4	74.2	76.2	79.2	79.7	72.9	65.2	50.0	44.9	62.9
1962	39.7	54.5	53.0	64.0	77.3	77.3	82.4	84.3	75.2	69.1	55.0	46.6	64.9
1963	38.7	47.1	60.7	70.3	75.0	79.5	86.1	85.6	78.8	73.0	57.4	41.4	66.1
1964	46.2	44.9	57.2	68.8	75.3	81.3	87.0	85.3	76.1	66.0	56.7	48.6	66.1
1965	48.3	45.8	48.1	68.1	72.3	79.3	85.7	84.7	79.2	66.5	62.3	51.4	66.0
1966	39.3	44.4	56.9	63.2	71.0	79.9	86.9	80.4	75.2	64.1	59.5	44.6	63.8
1967	48.0	46.6	63.5	71.9	72.5	81.9	82.8	80.2	71.1	63.7	54.2	43.7	65.0
1968	43.9	43.6	53.1	61.7	71.4	79.3	80.7	82.5	74.4	69.5	52.6	45.5	63.2
1969	48.0	48.0	47.5	65.7	70.4	78.4	87.4	85.6	75.9	61.9	53.4	47.7	64.2
1970	40.9	48.8	51.4	65.1	70.3	79.2	84.4	83.8	78.1	63.4	51.2	51.5	64.0
1971	46.4	48.7	55.1	64.5	72.4	80.4	84.4	76.9	73.3	66.0	55.0	48.9	64.3
1972	43.7	49.2	59.5	69.4	70.6	80.6	80.8	78.9	75.3	63.7	46.4	42.1	63.3
1973	37.5	44.4	57.2	58.6	70.6	77.4	81.2	82.5	73.8	66.5	58.2	46.8	62.9
1974	42.8	51.2	62.6	65.6	76.0	80.8	84.4	78.7	66.3	64.6	51.7	44.4	64.1
1975	44.8	45.1	54.1	62.9	70.2	78.5	79.7	81.3	70.8	65.6	54.3	46.1	62.8
1976	42.4	56.0	56.5	64.8	68.2	78.9	77.7	81.6	73.5	56.9	45.6	42.5	62.1
1977	35.7	50.9	56.8	62.4	73.4	81.3	83.8	83.4	82.6	66.9	54.6	48.7	65.0
1978	34.5	38.7	55.0	70.3	76.3	83.3	89.0	82.3	77.3	66.9	55.3	43.3	64.3
1979	35.6	44.9	55.7	64.3	69.8	79.0	83.7	82.2	77.7	71.6	50.9	47.7	63.7
1980	45.2	47.9	54.8	63.9	72.1	84.4	89.4	86.1	77.7	64.9	52.6	49.3	65.7
1981	44.8	49.4	54.9	68.3	71.6	80.3	85.9	83.3	78.0	66.2	57.4	48.8	65.8
RECORD MEAN	44.1	47.9	56.0	65.1	72.3	80.1	83.5	82.9	76.1	66.0	53.9	46.3	64.5
MAX	55.6	59.9	68.5	77.2	83.6	91.2	94.7	94.1	87.0	77.4	65.2	57.4	76.0
MIN	32.6	35.9	43.5	52.9	60.9	68.9	72.3	71.7	65.2	54.9	42.6	35.1	53.0

Heating Degree Days

ABILENE, TX

Season	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
1961-62	0	0	20	71	449	618	777	310	379	115	8	0	2747
1962-63	0	0	2	68	299	567	805	502	207	51	15	0	2511
*1963-64	0	0	2	6	251	725	573	575	258	54	6	3	2453
1964-65	0	0	2	44	293	505	519	538	522	59	0	0	2482
1965-66	0	0	4	67	117	424	791	570	281	122	42	0	2418
1966-67	0	0	0	119	198	633	532	508	154	14	23	0	2181
1967-68	0	0	17	118	321	654	648	611	366	134	15	0	2884
1968-69	0	0	0	42	387	599	520	468	541	53	15	1	2626
1969-70	0	0	0	192	350	528	748	449	422	92	31	1	2813
1970-71	0	0	15	147	414	411	569	455	326	96	22	0	2455
1971-72	0	0	44	44	312	492	651	464	207	49	12	0	2275
1972-73	0	0	13	158	554	702	844	574	235	228	43	0	3351
1973-74	0	0	6	60	227	557	680	389	181	78	7	0	2185
1974-75	0	0	60	67	400	631	620	553	351	144	7	0	2833
1975-76	0	0	55	97	327	578	692	276	296	68	39	0	2428
1976-77	0	0	11	276	575	690	901	393	262	89	0	0	3197
1977-78	0	0	0	56	314	500	938	730	337	37	34	0	2946
1978-79	0	0	5	58	308	667	906	567	272	84	55	0	2920
1979-80	0	0	0	43	429	530	605	496	316	118	10	0	2547
1980-81	0	0	16	116	389	485	619	439	312	51	20	0	2447
1981-82	0	0	7	116	237	496							

Cooling Degree Days

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1969	0	0	5	83	190	412	699	644	332	105	12	0	2482
1970	2	0	5	104	202	433	607	590	411	106	6	1	2467
1971	0	4	26	88	256	469	607	376	297	83	20	0	2226
1972	0	12	41	188	189	478	497	436	330	123	1	0	2296
1973	0	0	0	44	224	379	506	550	277	111	32	0	2125
1974	0	7	113	102	354	480	607	430	104	62	8	0	2267
1975	0	0	20	89	175	411	462	513	236	120	13	0	2039
1976	0	21	40	67	145	424	401	521	275	31	0	0	1925
1977	0	4	13	17	267	498	590	579	534	122	7	1	2630
1978	0	0	35	201	392	555	751	542	379	121	23	1	3000
1979	0	9	20	67	209	428	586	539	390	253	11	0	2512
1980	0	7	6	91	237	588	762	660	405	119	21	5	2901
1981	0	6	8	154	230	464	653	575	403	162	15	1	2671

Precipitation

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
1942	0.07	0.51	0.25	4.84	3.36	2.86	0.62	2.41	2.84	6.79	0.79	2.32	27.66
1943	0.25	0.05	2.39	0.42	3.63	2.70	0.13	T	1.50	0.21	0.73	1.74	13.75
1944	1.72	1.76	0.88	0.59	4.70	1.29	3.76	2.11	1.03	3.34	1.37	1.75	24.29
1945	0.59	0.89	2.31	2.29	2.45	4.24	3.25	0.75	0.87	4.12	0.48	0.64	22.88
1946	1.60	0.76	0.49	1.03	3.12	0.51	T	1.89	1.42	0.85	1.43	2.38	15.48
1947	0.84	0.06	1.35	1.16	4.05	2.26	0.92	0.48	0.31	4.80	1.24	2.55	20.02
1948	0.01	1.13	1.00	1.33	3.05	2.40	1.65	0.37	0.01	2.21	T	0.78	13.94
1949	1.78	1.04	1.12	3.05	5.09	3.07	4.43	2.20	1.39	4.00	0.00	1.20	28.37
1950	0.96	0.30	0.17	2.61	5.09	1.50	6.96	5.79	2.81	0.09	T	0.02	26.30
1951	0.05	0.65	0.81	1.56	4.38	3.03	1.47	0.22	0.83	1.35	0.37	0.11	14.83
1952	0.71	0.38	1.05	2.04	2.43	0.04	0.70	0.02	2.34	0.00	3.33	0.84	13.88
1953	0.10	0.56	0.91	1.89	3.70	2.41	3.98	0.76	1.24	3.74	0.39	0.07	19.75
1954	0.93	0.13	0.05	4.24	4.61	0.03	0.08	0.85	0.77	2.04	1.65	0.60	16.02
1955	0.83	0.72	0.60	1.82	5.94	4.71	1.36	1.56	3.85	1.04	0.20	0.05	22.68
1956	0.69	1.39	0.35	2.32	0.15	0.12	0.87	0.55	T	1.91	0.45	0.99	9.78
1957	0.54	2.15	0.54	6.52	13.19	2.30	0.62	0.47	2.92	4.35	2.45	0.52	36.57
1958	1.39	1.63	1.37	3.50	3.45	2.38	3.12	2.06	4.23	3.72	0.71	0.23	27.49
1959	0.04	0.73	0.42	1.88	2.34	7.22	4.93	0.72	0.77	5.79	0.35	2.12	27.31
1960	2.14	0.92	0.27	2.42	1.93	1.95	4.51	2.68	1.43	3.99	0.02	2.83	25.09
1961	3.99	1.52	0.65	T	1.29	9.60	4.35	1.41	7.86	1.67	2.91	0.30	35.55
1962	0.07	0.04	1.20	1.37	1.55	7.65	4.54	1.48	5.12	2.27	1.06	0.77	27.12
1963	0.01	0.34	0.03	1.53	6.21	1.63	0.28	3.56	0.67	0.39	2.67	0.44	17.76
1964	2.36	2.47	1.26	2.76	1.53	1.55	2.58	5.87	2.11	0.50	2.19	0.17	25.35
1965	1.13	1.48	0.59	2.78	5.04	3.70	0.69	1.59	1.86	2.67	1.85	0.97	24.35
1966	0.85	0.40	0.40	6.80	0.46	1.16	0.12	5.08	4.08	2.09	0.28	0.05	21.77
1967	T	0.24	1.01	0.49	4.39	2.85	1.32	0.58	5.44	1.74	2.89	2.43	23.38
1968	4.35	1.93	2.12	3.32	2.40	1.09	7.15	0.89	0.53	0.14	4.60	0.12	28.64
1969	0.81	1.29	2.08	2.49	7.76	2.42	2.15	8.18	4.10	1.98	1.11	2.48	36.84
1970	0.04	1.84	2.41	2.56	3.68	1.94	T	1.54	2.41	1.18	0.08	0.24	17.92
1971	0.01	0.57	0.04	2.44	2.17	1.78	1.85	6.92	5.33	2.43	0.76	1.81	26.11
1972	0.29	0.11	0.23	1.04	2.47	3.67	1.27	4.92	3.15	4.49	0.37	T	21.96
1973	3.52	1.61	3.28	1.10	1.38	2.21	2.68	0.30	4.65	3.15	0.22	0.01	24.11
1974	0.18	0.57	0.72	3.44	0.72	1.03	2.20	5.61	11.03	5.06	1.75	1.14	33.45
1975	0.83	1.86	1.49	0.52	4.43	1.68	1.93	2.47	2.27	0.84	2.67	1.22	22.21
1976	0.02	0.08	0.25	3.70	1.04	0.68	4.27	1.47	3.97	6.24	0.63	0.18	22.53
1977	1.22	0.04	2.35	3.11	0.44	1.71	1.82	2.54	0.09	2.15	0.57	0.19	16.27
1978	0.62	1.24	0.17	1.00	1.50	1.24	0.72	6.70	2.36	1.49	0.94	0.28	18.28
1979	0.72	1.10	5.16	1.72	1.86	2.89	1.55	1.55	0.01	0.53	0.65	2.62	20.36
1980	0.77	0.72	0.69	0.17	5.00	1.14	0.24	1.62	6.30	0.71	1.62	1.69	20.67
1981	1.20	1.06	2.36	3.52	1.48	2.73	1.69	0.63	1.74	10.64	0.43	0.25	27.77
RECORD MEAN	0.93	1.00	1.20	2.96	3.61	2.64	2.04	2.20	2.68	2.65	1.27	1.17	24.05

Snowfall

Season	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
1942-43	0.0	0.0	0.0	0.0	0.0	T	T	T	T	0.0	0.0	0.0	T
1943-44	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	5.6
1944-45	0.0	0.0	0.0	0.0	0.0	T	0.0	0.3	0.0	0.0	0.0	0.0	0.3
1945-46	0.0	0.0	0.0	0.0	0.0	1.5	3.0	0.1	0.0	0.0	0.0	0.0	4.6
1946-47	0.0	0.0	0.0	0.0	0.0	4.3	5.0	T	3.7	0.0	0.0	0.0	13.0
1947-48	0.0	0.0	0.0	0.0	T	T	T	2.0	T	0.0	0.0	0.0	2.0
1948-49	0.0	0.0	0.0	0.0	0.0	T	4.0	T	T	T	0.0	0.0	4.0
1949-50	0.0	0.0	0.0	0.0	T	T	T	T	T	T	0.0	0.0	T
1950-51	0.0	0.0	0.0	0.0	0.0	0.2	0.5	3.5	T	0.0	0.0	0.0	4.2
1951-52	0.0	0.0	0.0	0.0	T	T	0.0	0.1	0.0	0.0	0.0	0.0	0.1
1952-53	0.0	0.0	0.0	0.0	0.0	0.0	1.0	T	0.0	0.0	0.0	0.0	1.0
1953-54	0.0	0.0	0.0	0.0	0.0	0.3	1.5	0.0	0.4	0.0	0.0	0.3	1.9
1954-55	0.0	0.0	0.0	0.0	0.0	4.0	2.4	T	0.0	0.0	0.0	0.0	6.4
1955-56	0.0	0.0	0.0	0.0	T	0.0	3.3	8.4	0.0	0.0	0.0	0.0	11.7
1956-57	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	T	0.0	0.0	0.0	T
1957-58	0.0	0.0	0.0	0.0	3.5	0.0	4.7	1.8	4.0	0.0	0.0	0.0	14.0
1958-59	0.0	0.0	0.0	0.0	T	4.0	T	1.5	T	0.0	0.0	0.0	5.5
1959-60	0.0	0.0	0.0	0.0	T	0.0	T	1.2	T	0.0	0.0	0.0	1.2
1960-61	0.0	0.0	0.0	0.0	0.0	T	3.9	4.7	0.0	0.0	0.0	0.0	8.6
1961-62	0.0	0.0	0.0	0.0	T	0.0	0.4	T	5.7	0.0	0.0	0.0	6.1
1962-63	0.0	0.0	0.0	0.0	T	T	0.7	2.5	T	0.0	0.0	0.0	3.2
1963-64	0.0	0.0	0.0	0.0	0.0	0.7	2.0	4.3	T	0.0	0.0	0.0	7.0
1964-65	0.0	0.0	0.0	0.0	0.0	T	0.0	T	T	0.0	0.0	0.0	T
1965-66	0.0	0.0	0.0	0.0	0.0	0.0	6.6	1.5	0.0	0.0	0.0	0.0	8.1
1966-67	0.0	0.0	0.0	0.0	0.0	T	0.0	T	T	0.0	0.0	0.0	T
1967-68	0.0	0.0	0.0	T	0.0	4.0	T	1.6	2.5	0.0	0.0	0.0	8.1
1968-69	0.0	0.0	0.0	0.0	8.1	0.0	0.0	T	0.5	0.0	0.0	0.0	8.6
1969-70	0.0	0.0	0.0	0.0	T	3.1	0.2	0.0	7.3	0.0	0.0	0.0	10.6
1970-71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.4	0.0	0.0	0.0	1.6
1971-72	0.0	0.0	0.0	0.0	0.0	T	1.0	0.0	T	0.0	0.0	0.0	1.0
1972-73	0.0	0.0	0.0	0.0	0.1	0.0	13.5	3.0	0.0	0.0	0.0	0.0	16.6
1973-74	0.0	0.0	0.0	0.0	0.0	T	T	0.2	T	0.0	0.0	0.0	0.2
1974-75	0.0	0.0	0.0	0.0	0.0	T	6.0	1.6	T	0.0	0.0	0.0	7.6
1975-76	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	T	0.0	0.0	0.0	2.6
1976-77	0.0	0.0	0.0	0.0	0.0	5.6	0.0	3.9	0.0	0.0	0.0	0.0	9.5
1977-78	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.4	1.0	0.0	0.0	0.0	4.1
1978-79	0.0	0.0	0.0	0.0	0.0	0.9	0.5	5.9	0.0	0.0	0.0	0.0	7.3
1979-80	0.0	0.0	0.0	0.0	0.0	0.3	T	2.2	T	T	0.0	0.0	2.5
1980-81	0.0	0.0	0.0	T	3.7	0.0	1.9	T	0.0	0.0	0.0	0.0	5.6
1981-82	0.0	0.0	0.0	0.0	0.0	0.0							
RECORD MEAN	0.0	0.0	0.0	T	0.5	0.5	1.7	1.2	0.7	T	0.0	0.0	4.6

*Courtesy National Weather Bureau - Abilene

Abilene Population and Population Characteristics

Abilene has gained its population through steady growth and overall prosperity from a wide diversification of interests. Abilene abounds in agriculture and ranching, military facilities and oil. It is a mecca of higher education with two universities and a senior college, and boasts industrial manufacturing, which ranges from watches to components for military aircraft.

The employment opportunities in Abilene are very good and have attracted many families and individuals to the area. The economic opportunities in Abilene, because of its rapid growth, have attracted younger and middle-aged people that are taking advantage of the high hiring rate. There are several land developments where housing districts provide the newcomers with a place to live. Even with the recession in the United States, the building industry, both residential and commercial, is currently doing very well in Abilene.

The population gain to an area results from two basic factors. The first is a natural increase, or the number of resident births less the number of resident deaths. Second is the gain or loss resulting from migration. The table below shows growth characteristics from 1960 to 1980 for Abilene and Taylor County.

	Population	
Year	Abilene	Taylor County
1960	89,653	97,853
1970	90,368	105,381
1980	98,315	110,932
1990	108,247 (estimated)	126,689
2000	120,000	140,000

*Source: Census of Population, 1980, U. S. Department of Commerce

The chart indicates the population of Abilene has generally grown over the years. The growth is attributed to the rise in births, while the number of deaths has stayed about the same. This growth along with the new migration are the reasons for Abilene's growth.

The table below is showing the comparison between Taylor County and other typical counties in terms of population in 1980.

	Abilene	Taylor Co.	Jones Co.	Callahan Co.
Population	98,315	110,932	16,400	10,700
% White	93.6	93.1	93.3	99.0
Median Age of Pop.	30.0	28.0	40.8	43.4
Age Group Percent				
Age Group:				
0-17	27.7	28.4	24.7	24.0
18-24	15.2	17.0	8.2	7.1
25-34	14.3	15.3	11.4	10.6
35-49	15.3	15.5	14.7	14.9
50 - over	27.5	23.8	41.0	43.4
No. of Households	49,700	38,500	7,000	4,200

*Source: Abilene SMSA Market Data Summary, 1980.

In analyzing the previous tables, one can conclude that Abilene has a significantly youthful character. Most of the counties that surround Abilene have a population that is mostly made up of older people. The economic prospects and excellent job opportunities of Abilene represent the attraction of the most productive age group for employment and increasing birth rates.

Abilene's geographical location is a factor that will bring new families into its population because many surrounding communities depend on Abilene for many of their needs. These needs create jobs which, in

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turn, attract more people to the area. Below is a table of projected future population trends.

Projections

Year	Abilene	Taylor County
1981	99,266	112,415
1982	100,226	113,918
1983	101,195	115,441
1984	102,173	116,984
1985	103,161	118,549
1986	104,159	120,134
1987	105,166	121,740
1988	106,183	123,368
1989	107,210	125,017
1990	108,247	126,689

*Source: Census of Population, 1980, U. S. Department of Commerce

The projected figures could be altered by the amount of water supply, availability of land, transportation, and future economic trends.

Economy

Abilene's economy is based on several items, but the four main items that make up its economy are agriculture, oil and gas, retail trade, and travel trade.

Agriculture around Abilene was originally based on cattle only, but today agriculture includes the raising of cotton, grains, pecans, fruit and truck crops. The sales of these farm products in Taylor County are valued at around 13 million dollars, and livestock sold is valued at approximately 37 million dollars annually.

Taylor County oil wells produced 2,380,870 barrels of crude in 1983 that brought in 51,498,219 dollars. Gas production was 2,948,350,000 cubic feet for 4,384,048 dollars. Total oil and gas revenues were 55,882,266 dollars last year compared to 20,220,231 dollars in 1975. In 1980 there were 5,500 employed in the oil and gas industry and the total annual payroll exceeded 49,000,000 dollars.

Abilene is the center of a 22-county area which in 1980 had retail sales of 1,441,996,000 dollars. The retail sales in the Abilene metropolitian area in 1980 amounted to 714,716,000 dollars. These retail sales figures are a good indication that Abilene not only supplies its needs, but also the needs of surrounding counties.

Travel trade in Abilene and Taylor County brought in 71,151,000 dollars in 1980. Approximately 1,900 persons are employed in the industry with an annual payroll of 14,421,000 dollars. Abilene is the principle area for buying income in Taylor County. The following tables will illustrate the Effective Buying Income for Abilene, Taylor County, and the state of Texas.

*Texas Market Information

Effective Buying Income for the State of Texas	$ 99,528,547,000
Texas Per Capita Effective Buying Income	7,393
Population of the State of Texas as of 12/31/79	13,462,300
Number of Households in Texas	4,629,000

*Abilene Market Data 1980

	Abilene	Taylor County
Population	97,900	107,600
Number of Households	34,800	38,500
Effective Buying Income		
Total	$699,578,000	$761,319,000
% of Households by Income		
$0-7,999	20.5	21.4
$8,000-9,999	6.6	6.7
$10,000-14,999	17.0	16.9
$15,000-24,999	29.2	28.9
$25,000-over	26.7	26.1

*Market Information charts courtsey of Abilene Chamber of Commerce

The tables show the Effective Buying Income for Abilene and Taylor County. These tables indicate that the income per household is in the range of middle to upper class. This indicates the good economy in Abilene and is one of the reasons for the new migration of people and businesses to the area. The banking facility will need to meet its present needs as well as plan for this new migration of people and businesses.

Living Conditions

Abilene has a home rule type of city government with a mayor, a city council and city manager. There are seven members of the city council including the mayor. The major acts as a ceremonial head at different functions in the city and has no real administrative duties. All of the administrative and law making duties are carried out by the city council. The city manager is in charge of carrying out the decisions of the city council.

The police department of Abilene consists of 139 municipal police with 50 patrol cars, three motorcycles and one crime prevention van, all equipped with two-way radios.

The fire department of Abilene consists of 132 paid firemen, with equipment of 12 pumpers, three aerial ladder trucks, one 75-foot snorkel, six boosters, one grass truck, two utility vans, and one rescue unit, all with two-way radios. The fire department is structured with a Fire Marshall and assistant Fire Marshalls.

The police and fire departments are major, positive elements in the living conditions of Abilene. There is a low crime rate in Abilene, and this is primarily because of the police department. This protection that is supplied by the police is another reason for migration into Abilene because of the safety of life and property.

The fire department is located in different parts of the city so that there can be fast access to fires. The fire department can be in any part of Abilene in three to five minutes.

Abilene has an excellent school system that provides its population with a good education. The schools are located in neighborhoods so there

is easy access to and from the facilities. The Texas Research League has stated that the Abilene Independent School District has the smallest teacher-pupil ratio of any district in the state of Texas. In the table below Abilene's School System Data shows the breakdown of schools in Abilene.

School System Data

1979-80 Fall enrollment	17,642 Pupils
Annual Payroll	$16 Million
Elementary Schools	20
Junior High Schools	5
Senior High Schools	2
Private Schools	3
Universities and Colleges	3
Business and Trade Schools	9

Abilene has had the nickname as "The City of Churches." The reason is because there 149 Protestant churches, three Roman Catholic, and one Jewish Temple. Every type of major protestant denomination can be found in Abilene. The churches bring a vital and positive influence to the Abilene environment.

The city revenues and tax rates are shown on the following pages. These revenues are used to improve the living conditions in Abilene, such as road improvement and school improvements, etc.

Taxation

Total effective rate per $100 current value is $2.0295. There is a Selective one percent City Sales Tax.

Taxing Unit	Rate per $100 Assessed Value	Assessment Ratio to Current Value	Effective Rate
County	.90	35%	.3150
City	1.46	55%	.8030
School	1.05	100%	1.0500
Road and Bridge	.14	35%	.0490
Water District	.15	55%	.0825

Source: Abilene Chamber of Commerce

Utility revenues are shown below for the last 11 years.

Utilities

Year	Phones	Gas	Electric	Water
1970	57,713	26,244	29,085	25,282
1971	59,816	26,750	29,941	25,984
1972	61,865	26,951	30,397	26,396
1973	64,744	27,526	30,949	26,854
1974	67,939	28,008	31,344	27,286
1975	71,868	28,008	32,018	27,795
1976	75,279	28,347	32,975	28,368
1977	78,297	28,534	34,262	28,874
1978	82,090	28,940	36,986	29,880
1979	86,276	29,313	27,092	30,521
1980	90,897	30,130	38,441	31,213

Source: Abilene Chamber of Commerce

The city of Abilene also receives much of its revenue from building permits. A summary of these revenues is shown below:

Building Permits

1978	No.	$ Amount	1979	No.	$ Amount
New Business	202	47,598,084	New Business	128	27,719,848
New Residence	514	28,634,670	New Residence	423	27,764,852
Industrial Bldg.	21	8,109,200	Industrial Bldg.	14	1,730,545
Alterations	797	4,287,791	Alterations	748	6,265,448
Totals	1,534	88,628,751	Totals	1,313	63,480,693

1980	No.	$ Amount
New Business	79	15,326.880
New Residence	507	42,233,124
Industrial Bldg.	22	3,511,120
Alterations	787	13,068,320
Totals	1,395	74,139,444

Source: Abilene Chamber of Commerce

Public Utilities

The water supply for Abilene is derived from four man-made lakes that surround the Abilene area. They are: Lake Abilene, Lake Hubbard, Lake Fort Phantom, and the Clear Fork of the Brazos. These lakes furnish a daily capacity of 68 million gallons of water to Abilene. The Water Department of the City of Abilene is owned and operated as a branch of the municipal government. The electric power is supplied by West Texas Utilities and provides 5-138 kv and 8-69 kv transmission lines. Lone Star Gas Company supplies the city gas, and uses seven transmission lines as its source. Abilene's telephone service is provided by Southwestern Bell Telephone Company which is equipped with 1,424 long distance circuits. The sewer system is city owned and has a 12 million gallon capacity.

All of these utilities are accessible to the proposed site. The water meter pressure is 40 psi. If this pressure is not enough to operate the fixtures on the top floors properly, the designer should use pressure tanks or some other means to increase the water pressure. The electric power will have underground access to the site. Transformers will be needed to supply the required amount of electricity to the facility. The supply of gas is already adequate for a facility of this type. The sewer system, along with the other utilities, runs through the center of the site and may need to be relocated. There is more on the location of the utilities in the site analysis portion of this program.

internal background

When the present First State Bank was established back in 1943, its primary concern was to help the needs of the people in Abilene and the surrounding area. The facility was designed to house the bank's needs at the present time, but there was very little rental space and future expansion was not even designed for. Now that the bank is in need of more space to house its operations, it is looking for a design that will integrate the following design elements:

1) Cater to the customers' convenience and comfort - The designer should make things more comfortable for the man or woman who comes in off the street. This should include everything from the design of a particular space, to the furnishing, and even to the "zones" of a bank, where the customers know automatically where they can have a particular service taken care of. This is important because the bank will lose business when customers become confused about services.

2) To conserve energy - The bank is willing to pay extra for a flexible construction that can easily accept future systems. The designer should consider things like zoned heat pump units that will allow cooling with outside air when feasible. Then there are overhangs that shade most of the glass areas, but still allow outside lighting to come in.

3) To expand in the future - The designer should allow for the bank to expand in the future to meet its future needs. The spaces inside the facility should also be designed for flexibility so that they can easily accommodate the future needs for that particular space. This flexibility can be carried even through the construction of the facility.

The bank wants a building that will give an impression of stability, security, quality, accessibility, and identification with the region in and around Abilene. The facility should also be a landmark for the area

in which it will be located. This landmark will help upgrade the surrounding community and will hopefully bring new life to the southern portion of the central business district. A more detailed analysis of the site and environment is located in the site analysis portion of this program.

goals and objectives

Goals and Objectives

Goals:

1) The bank facility is to provide an image of efficiency, solidity, permanency, openness, and security to the citizens and businessmen of Abilene.
2) It is to be a landmark that will attract attention to the area in which it is located.
3) The bank facility is to provide the best service possible to its customers with the use of the latest banking technological advancements.

Objectives:

1) Parking is to be provided to adequately serve the employees and customers of both the bank and office facility.
2) All on-site circulation is to be designed so that congestion be minimized between the customers and employees.
3) The design will insure the handicapped of total freedom of movement through the use of ramps, handrails, and other special equipment.
4) In order to insure maximum protection, top quality security systems and fire detection systems will be provided.
5) Flexibility in terms of space arrangement and space enlargement is to be fully incorporated to allow for changes and future growth.
6) Energy conservation measures are to be carefully considered for maximum fuel savings and minimizing overhead expenses.

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Objectives:

1) Parking is to be provided to adequately serve the employees and customers of both the bank and office facility.
2) All on-site circulation is to be designed so that congestion be minimized between the customers and employees.
3) The design will insure the handicapped of total freedom of movement through the use of ramps, handrails, and other special equipment.
4) In order to insure maximum protection, top quality security systems and fire detection systems will be provided.
5) Flexibility in terms of space arrangement and space enlargement is to be fully incorporated to allow for changes and future growth.
6) Energy conservation measures are to be carefully considered for maximum fuel savings and minimizing overhead expenses.

7) All materials used in the construction of the facility will be top quality materials that require a minimum amount of maintenance and upkeep.

activity analysis

Entrance and Approach

The location of the proposed facility, on a major thoroughfare, will provide easy access for those coming to the bank. Road and pedestrian traffic will be somewhat increased due to the project. The site is accessible by customers, visitors, staff members, tenants, and personnel for delivery of supplies and services.

The main entrance of the facility greets the customer or visitor. It should be easily visible and well defined by the use of landscaping, visibility of doorways, signs, etc. Signs should not be thought of as a cosmetic afterthought. The semiotics of the building are the most evident. The architectural language used on the entrance must relate more to the customer and visitor than the architect. This element is a must to achieve the warmth of entrance to the customer.

The activities which take place in the banking facility itself can be broken down into three categories: the customer, the staff, and the paperwork. These three categories will be analyzed as to the effect their functions will have on the building design itself.

Customer

The first encounter within the facility by the customer is an area that is needed to allow transition from the exterior to the interior. Once this transition is made, the customer needs to have easy access to a centralized gathering point. This gathering point is needed to help separate the office tenants and the banking customers. This space should provide the customer with easy access to all of the needed services.

The customer's functional requirements include:

1) Filling out deposit slips

2) Starting new accounts

3) Cashing checks

4) Taking care of business concerning accounts

5) Making checking and savings deposits

6) Waiting for meetings with officers

7) Storing valuables

8) General services (cashier checks, money packets, money orders, etc.)

9) Settling of estates, administering trusts, etc.

Each area that is used by the customer needs to be marked or labeled so the customer will not be confused about the needed services. The method used to mark these areas needs to be a part of the design. Well designed service areas will cut down on the confused traffic through the gathering point.

The atmosphere through the bank needs to be one of comfort. This will help the customer feel more at ease. The colors and furnishings used need to be analyzed so that they will present themselves as being comfortable and relaxing. The lighting and acoustics are a very important part of this design feature.

Staff

The staff needs to have a transition area from the exterior to interior. This area needs to be away from the normal traffic that occurs in a bank facility. There also needs to be a transition from the customer area to the work areas. There needs to be a space for personal belongings that the staff can use upon entering the facility. The following is a list of the staff and their needs.

New Accounts Officer

The new account officer's primary concern is to help customers open new accounts. This involves filling out forms and communicating with the customer. Once the forms are filled out, there is some travel done by this officer to teller stations to deliver cash, checks, and deposit slips, used to open a new account.

Loan Secretary

The loan secretary works directly with the loan officer. The secretary is involved in taking the customer from the waiting area to the loan officer. The secretary also receives material from the loan officer. Most of the activities done by the secretary are at an individual work space.

Loan Officer

The loan officer communicates with the customer to determine if the customer is eligible for a loan. The only traveling done by the loan officer is to the secretary work space to deliver work instructions.

Teller

Most of the teller's activity is done in an individual work space that has direct contact with the customer. The teller needs to have access to a high security storage area to retrieve and store cash box and to equipment used to check on customers' accounts.

Safety Deposit Clerk

The clerk's main activity is to help the customer in opening their safety security box and checking for articles that are left behind by the customer. The clerk's space needs to be located by the safety deposit space.

Bookkeeping Staff

Most of the activity done by the bookkeeping staff is done in a specified area mainly away from the customer. There is, however, a lot of traveling by the staff to different areas in the bank. These areas include:

--to mail and messenger area to retrieve incoming checks

--to an area set aside to help the customer resolve problems concerning their accounts

--to the teller area

--to the proof, clearing, and transit area

--to the data-processing area to get account information from the main computer.

Proof, Clearing, and Transit Staff

Most of the activity is done in a specified area located near the bookkeeping staff. The space needs to have access to the teller area

and to the mail and messenger area to retrieve incoming checks, deposit slips, records, etc. There is some traveling done to the data processing area.

Savings Staff

The main activities of the savings staff are done in a specified space where their main function is dealing with the customers' savings. This space needs to have access to the teller area to retrieve deposit slips, and withdrawal slips concerning customers' savings accounts, and to the mail and messenger area to retrieve incoming account information. There is some travel done to the data processing area.

Credit Staff

Most of the activity is done in a specified space that works with the loan officers' area. The staff supplies the loan officer with information concerning customers requesting loans. There is some traveling to the data processing area to gain access to account information in the main computer.

Collection Staff

Most of the activity is done in a space that is located near the mail and messenger area. This staff retrieves records and items to be collected, etc.

Investment Staff

Most of the security is done in a space that has access to the data processing area where it can gain information concerning the bank's financial situation from the main computer, wire service, etc., and also to the bookkeeping area for information concerning large deposits and withdrawals.

Trust Staff

All of their activities take place in a space that operates independently from the bank.

President

Most of the activities of the President are done in an individual space that needs to have access to the Administrative Vice-President's area and to a conference area where meetings are held with other officers and the board of directors.

Administrative Vice-President

Most of the activities are done in an individual space that needs access to the President and Vice-President's spaces. There also needs to be access to the conference area for meetings with the executives of the bank.

Vice-President

Most of the activities are done in an individual space, but the Vice-President does travel to the area of the bank that he is responsible and to the conference area for meetings.

Cashier

Most of the activities are done in a specified space, but there is some traveling done to the operations area of the bank and to the conference area for meetings. There also needs to be access to the Administrative Vice-President.

Comptroller

Most of the activities are done in a specified space that has access to the cashier's area, and to the vice-presidents spaces.

Building Clerk

Most of the activities are done in an individual space. There is some travel to the comptroller's area and to the data processing area.

Paperwork

The design of the facility will have an effect on the way the paperwork is handled. The following is a list of paperwork activities that occur in the bank.

Checks (Deposited) - The check is given to the teller by the customer where it is taken to a sorting area to be sorted. The check is then checked for proper written information on the check. Then the check is taken to proving area to be proved and sent to bank from which it was drawn.

Checks (Received) - The check is taken to sorting area to be sorted. It is then checked for stop payment orders and checked for overdraws, photographed, and canceled. They are filed in fire-resistant storage and sent to customer in statement form.

Cash (Deposited) - The cash is given to the teller and placed in a cash box. The customer is given a receipt and the cash amount is added to the customer's account. The cash is taken to a high security storage area at the end of the day.

Cash (Delivered) - The cash delivered by armored car is taken to the high security storage area. When it is needed, it is retrieved from the storage area and given to the customer with a receipt. The cash amount is deducted from the customer's account.

Deposit Slips - Are filled out by the customer and given to the teller. The slip is taken to be proved with the checks and then filed in a fire-resistant storage. The slip is sent with canceled checks in the statement form to the customer.

New Accounts - The application is placed in the customer file. The signature cards are sent to the bookkeeping area. The deposit slip and check used to open the new account are treated as all others. A receipt is given to the customer and new checks are ordered for the customer.

Loan Applications - Are filled out by the customer and given to the personnel responsible for determining if the loan is to be granted. The application is then filed in fire-resistant storage as a permanent record of transaction.

Bookkeeping - The ledgers are proved and balanced after the day's posting is completed. Statements are prepared on a periodic basis and sent to the customer along with any canceled checks and deposit slips.

Savings - Ledgers containing deposits of the day and deposit slips are retrieved from tellers. Information from these instruments are placed on computer cards and fed into the computer for permanent storage.

Credit Reports on File - Information obtained concerning the customer's credit is placed in fire-resistant storage. Credit reports are given to the respective loan officer to aid in deciding whether a loan should be granted.

Deposit Slips - Are filled out by the customer and given to the teller. The slip is taken to be proved with the checks and then filed in a fire-resistant storage. The slip is sent with canceled checks in the statement form to the customer.

New Accounts - The application is placed in the customer file. The signature cards are sent to the bookkeeping area. The deposit slip and check used to open the new account are treated as all others. A receipt is given to the customer and new checks are ordered for the customer.

Loan Applications - Are filled out by the customer and given to the personnel responsible for determining if the loan is to be granted. The application is then filed in fire-resistant storage as a permanent record of transaction.

Bookkeeping - The ledgers are proved and balanced after the day's posting is completed. Statements are prepared on a periodic basis and sent to the customer along with any canceled checks and deposit slips.

Savings - Ledgers containing deposits of the day and deposit slips are retrieved from tellers. Information from these instruments are placed on computer cards and fed into the computer for permanent storage.

Credit Reports on File - Information obtained concerning the customer's credit is placed in fire-resistant storage. Credit reports are given to the respective loan officer to aid in deciding whether a loan should be granted.

Collection - Outgoing collections when received are filed and a receipt is given to the presenter. Records of the collection item are made for permanent files. A copy is sent to the bank which is handling the collection. Incoming collections are permanently filed and copied. The copy is sent to the sending bank to acknowledge the receipt of the item.

Investment - The investment ledger is used to keep a record of all the bonds held by the bank. The maturity schedule shows the remaining balance of the different bonds held by the bank. The daily statement of condition gives the financial status of the bank at the start of the banking day.

Trust - Accounts are received from the customer and a record is made containing all important account information. It is stored in fire-resistant storage until needed.

Mail and Messenger - Incoming mail is sorted according to destination within the bank and delivered to the respective areas. Outgoing mail is sent to a central preparation area and processed for mailing.

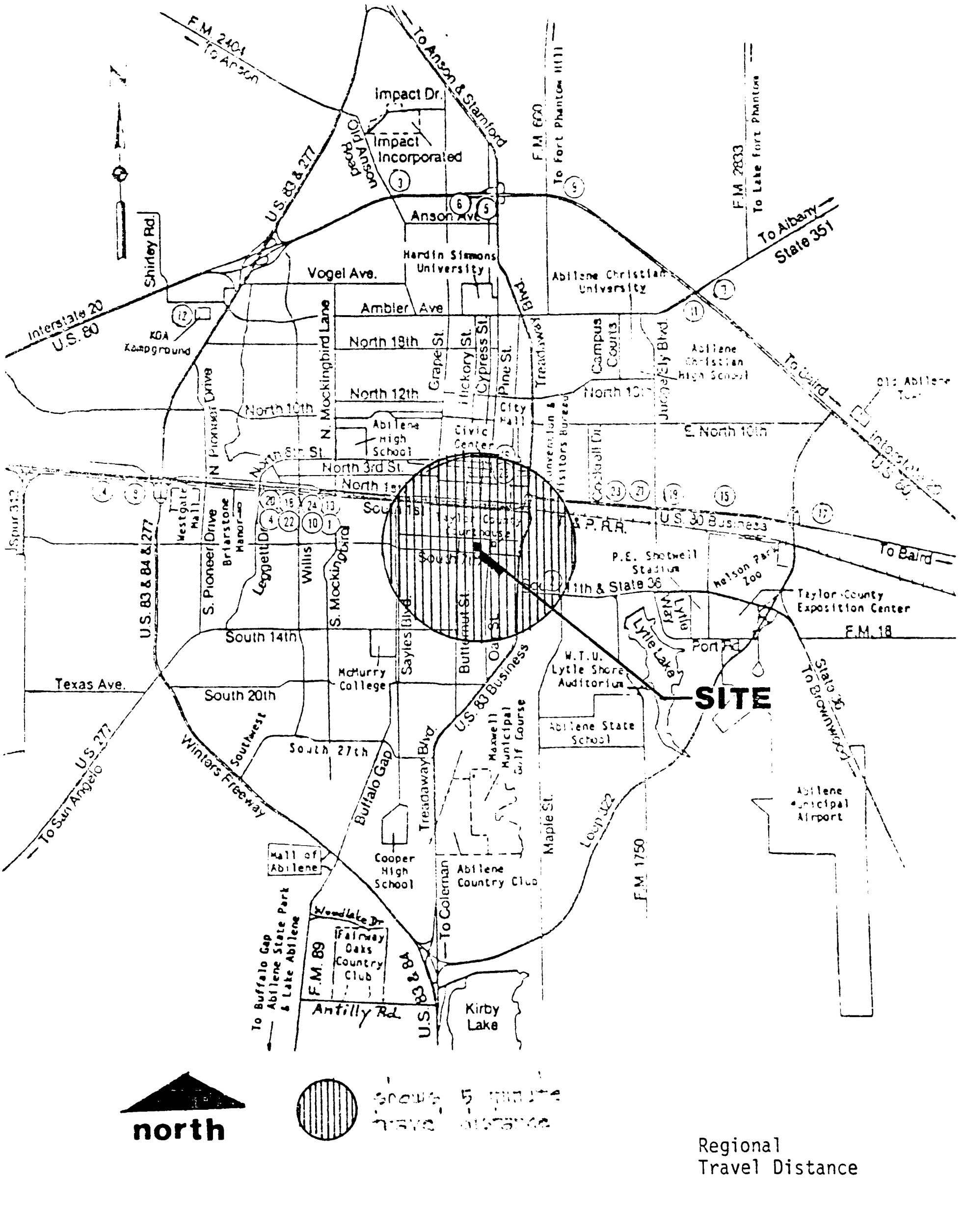
Buildings - Incoming rent - Cash or check is received and treated in the normal manner. A receipt is given to the rentor as a record of payment. A record is made of the payment and filed in the fire-resistant storage.

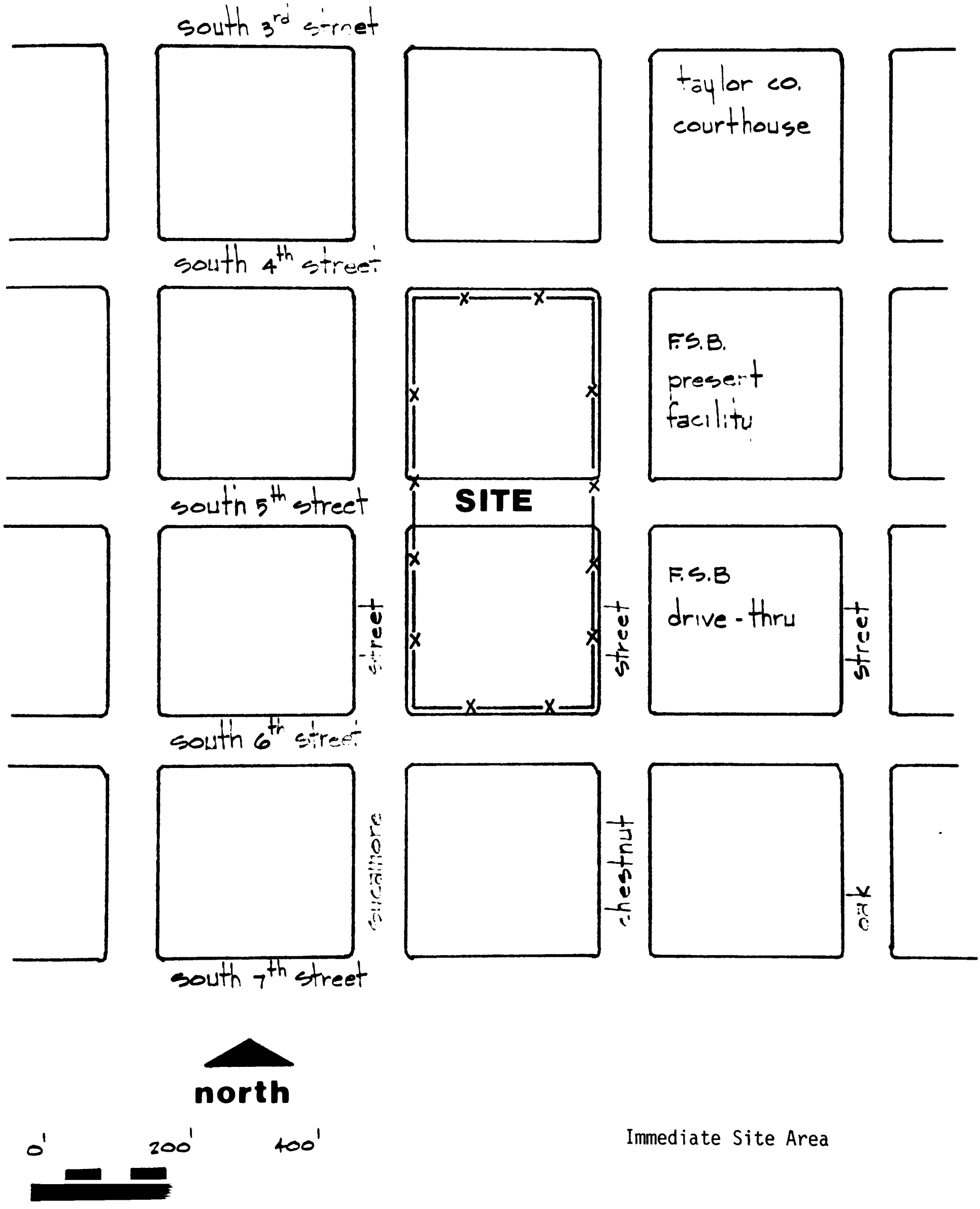
the site

Existing Site Issue

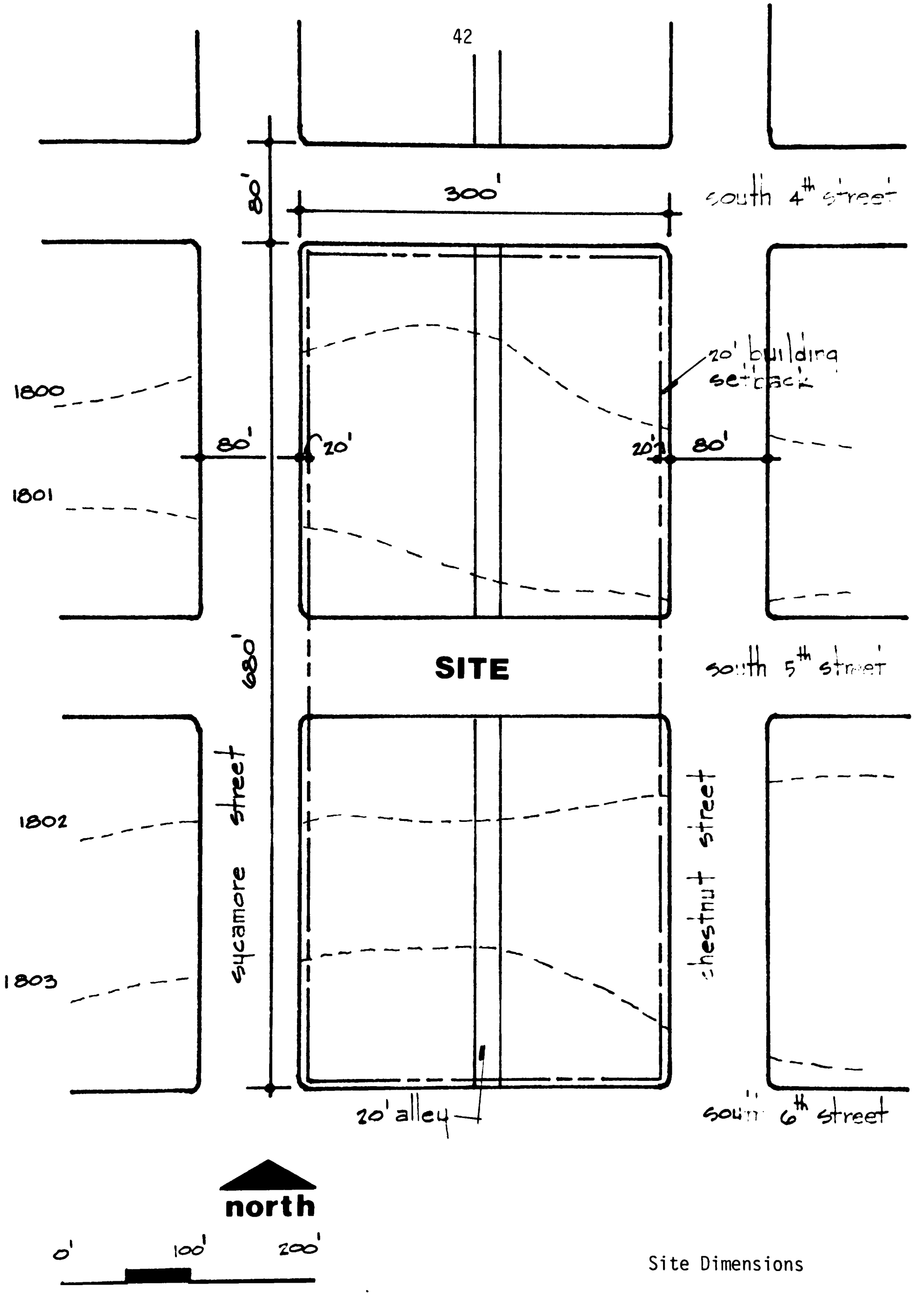
The site is presently located on the outer southern region of the central business district of Abilene, Texas. With the site in this central location, any portion of Abilene can be reached within 15 minutes or less by automobile. There are no traffic lights surrounding the site to slow down traffic.

The pedestrian access from the downtown area will be the major flow of pedestrians. The site is surrounded on two sides by residences and there will be a minor access from this area.


F.M. 2404
To Anson
To Anson & Stamford
Impact Dr.
Impact Incorporated
Old Anson Road
U.S. 83 & 277
F.M. 600
To Fort Phantom Hill
F.M. 2833
To Lake Fort Phantom
To Albany
State 351
Shirley Rd.
Interstate 20
U.S. 80
KOA Campground
Vogel Ave.
Hardin Simmons University
Abilene Christian University
Ambler Ave
North 18th
North 12th
North 10th
N. Mockingbird Lane
N. Pioneer Drive
Grape St.
Hickory St.
Cypress St.
Pine St.
Treadaway Blvd.
Campus Courts
Judge Ely Blvd.
Abilene Christian High School
Old Abilene Town
Interstate 20
Abilene High School
Civic Center
Convention & Visitors Bureau
Cockrell Dr.
E. North 10th
North 3rd St.
South 1st St.
Spur 322
U.S. 83 & 84 & 277
Westgate Mall
S. Pioneer Drive
Briarstone Manor
Leggett Dr.
Willis
S. Mockingbird
T. & P. R.R.
U.S. 80 Business
To Baird
P.E. Shotwell Stadium
Nelson Park Zoo
11th & State 36
Taylor County Exposition Center
F.M. 18
South 14th
McMurry College
Sayles Blvd.
Butternut St.
Oak St.
W.T.U. Lytle Shore Auditorium
Lytle Lake
SITE
State 36 To Brownwood
Texas Ave.
South 20th
U.S. 277
To San Angelo
Southwest
Winters Freeway
South 27th
Buffalo Gap
Treadaway Blvd.
U.S. 83 Business
Maxwell Municipal Golf Course
Abilene State School
Maple St.
Loop 322
Abilene Municipal Airport
F.M. 1750
Hall of Abilene
Cooper High School
Abilene Country Club
To Coleman
To Buffalo Gap
Abilene State Park
& Lake Abilene
Woodlake Dr.
Fairway Oaks Country Club
F.M. 89
U.S. 83 & 84
Antilly Rd.
Kirby Lake
north
Regional
Travel Distance



Immediate Site Area



Site Dimensions

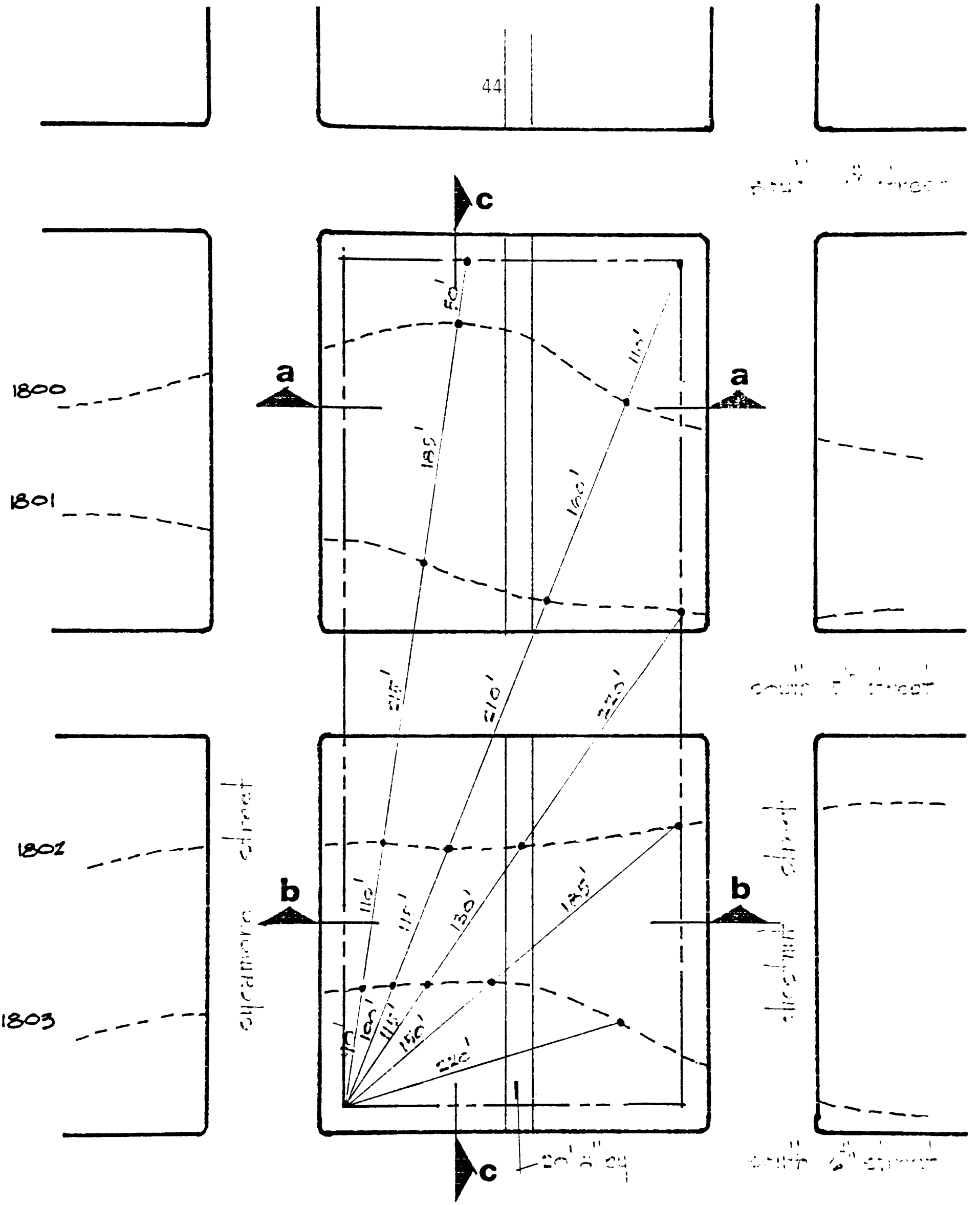
Soils

Abilene is located in the central region of Texas where there are a variety of soil types present. The following is a brief description of the soil types and characteristics of the site region.

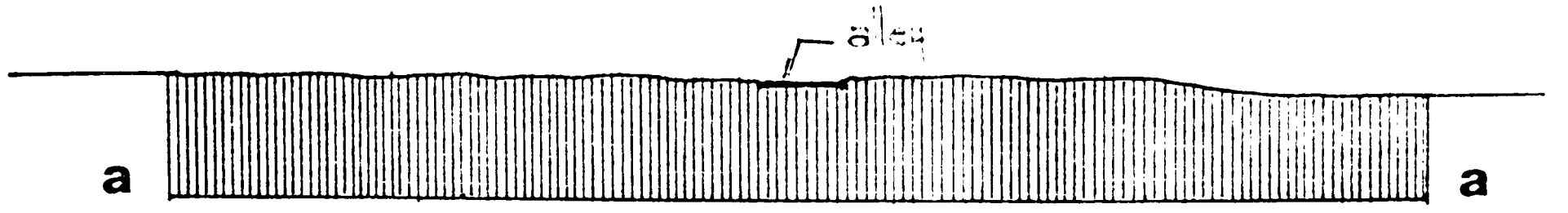
Stratification - In general, the subsurface materials from the existing ground surface down, consist of 9.0 to 13.5 feet of reddish brown to brown sandy clay or clayey sand with varying amounts of caliche, sand, and gravel, followed by red and gray shale or siltstone with layers of limestone and intersperced sand layers.

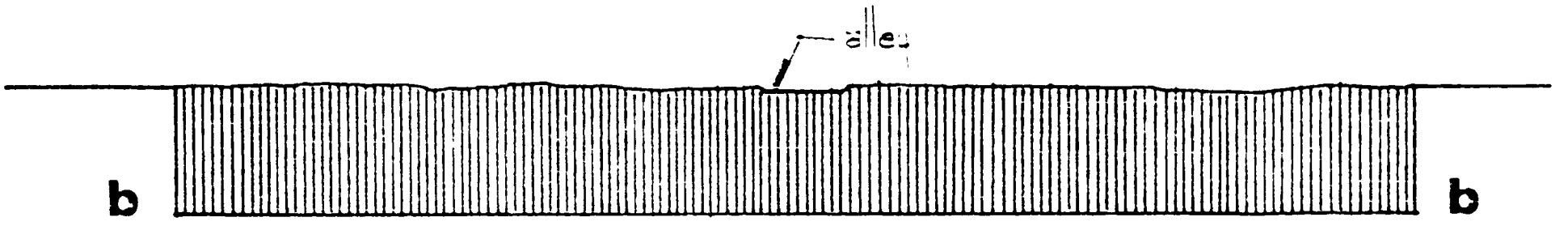
Groundwater - Groundwater can be found at depths usually around 15 feet.

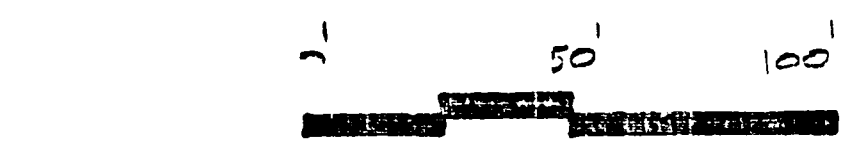
Subsurface Material Characteristics - The surface layers of sandy clay are low to medium plasticity soils. The underlying shale formation is generally a low to medium plasticity soil while the limestone and siltstone rock are non-plastic. The shale and rock formations are very dense and very hard.

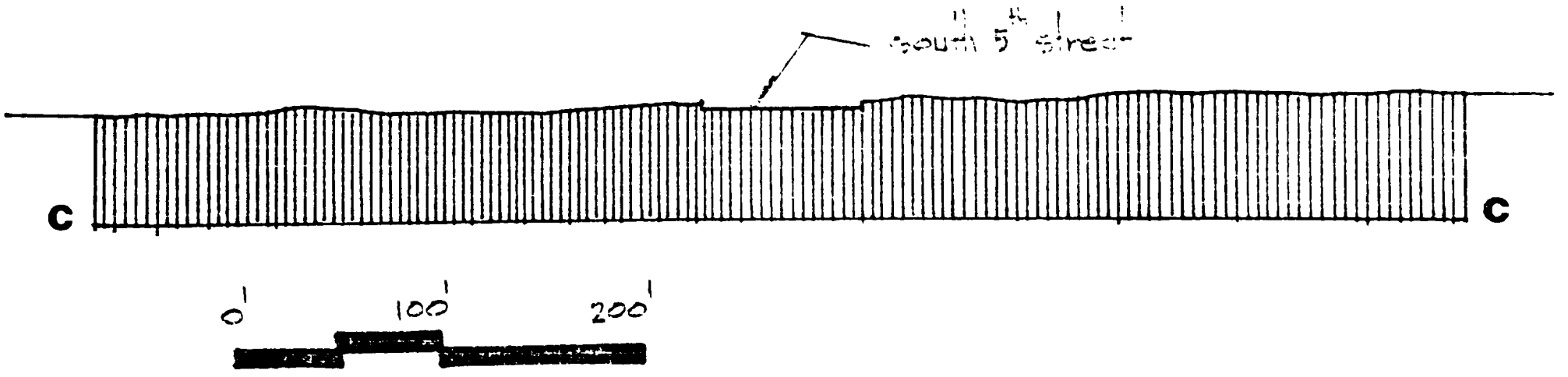

44
c
a
a
b
b
c
1800
1801
1802
1803
50'
185'
160'
210'
220'
110'
130'
135'
north

Topography









Site Sections

Foundation Conditions

The most desirable material for support of the structural loads is the hard, dense, and relatively incompressible shale and/or siltstone strata. The easiest and most economical method of transmitting loads to these materials is through straight shaft drilled piers. The shafts may be sized using an allowable unit loading intensity of 10,000 pounds per square foot provided that a minimum penetration of 1.5 feet into the formation is obtained. The use of underreamed piers is not recommended since seepage water may be present just above the shale and due to the presence of hard limestone and siltstone lenses in the shale formation.

As an alternative to the drilled piers, shallow excavated and formed square or continuous footings may be considered. These footings, however, will be subject to small settlements from consolidation and shrinkage of the sandy clays below the footings and thus some degree of movement must be acceptable to the design. Footings should extend into the natural soil profile at least 3.0 feet and should have a minimum cover of 3.0 feet of soil in all instances. An allowable unit load intensity of 5,000 pounds per square foot may be used to size the footings.

The removal of approximately 5.0 feet of the surface soil for the basement construction will effectively reduce the expansion potential in this area such that an interior ground supported floor slab can be used without the risk of large expansion movements. If a ground supported slab is used, the possibility and magnitude of expansive movements can be minimized by proper drainage and moisture control. Theoretically, expansive soils experience volume changes only when allowed to dry or when exposed to moisture. Therefore, if the soil moisture content remains

constant, volume changes would be minimal. It is difficult to prevent seasonal soil moisture content fluctuations, but it is not unrealistic to attempt to limit these moisture changes in an attempt of minimizing volume changes. It is most important to provide proper grading and drainage around the foundation to prevent the accumulation of rain water. Gutter systems should discharge water either into storm drains or into paved surfaces. If possible, paved surfaces should be extended up to the building line to serve as a barrier to soil moisture evaporation and infiltration.

48

cold weather blows in from the northwest

south 4th street

1800

1801

1802

1803

sycamore street

prevailing winter winds are from the southwest

20' alley

south 5th street

cherry street

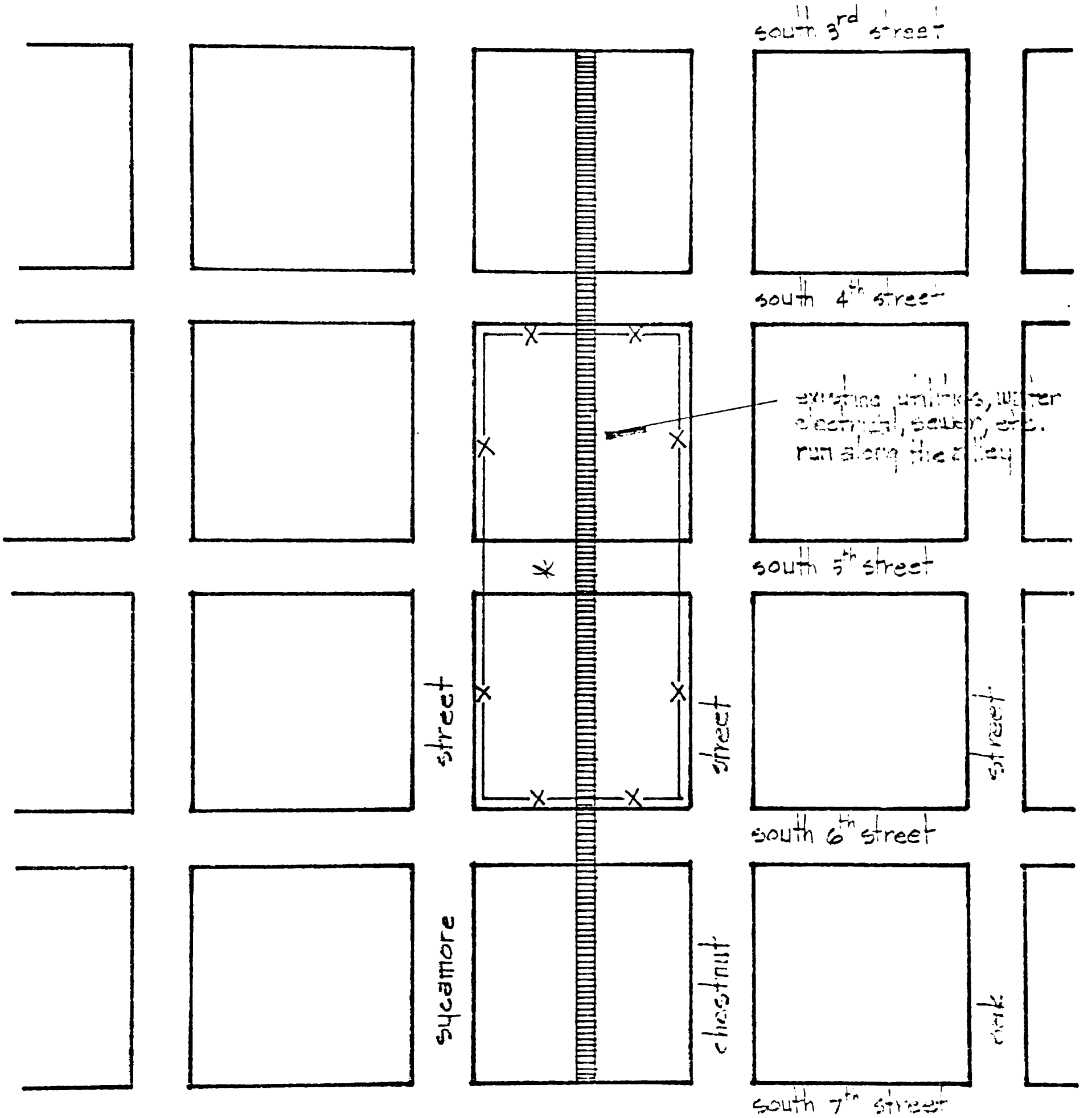
south 6th street

spring & summer winds are from the south

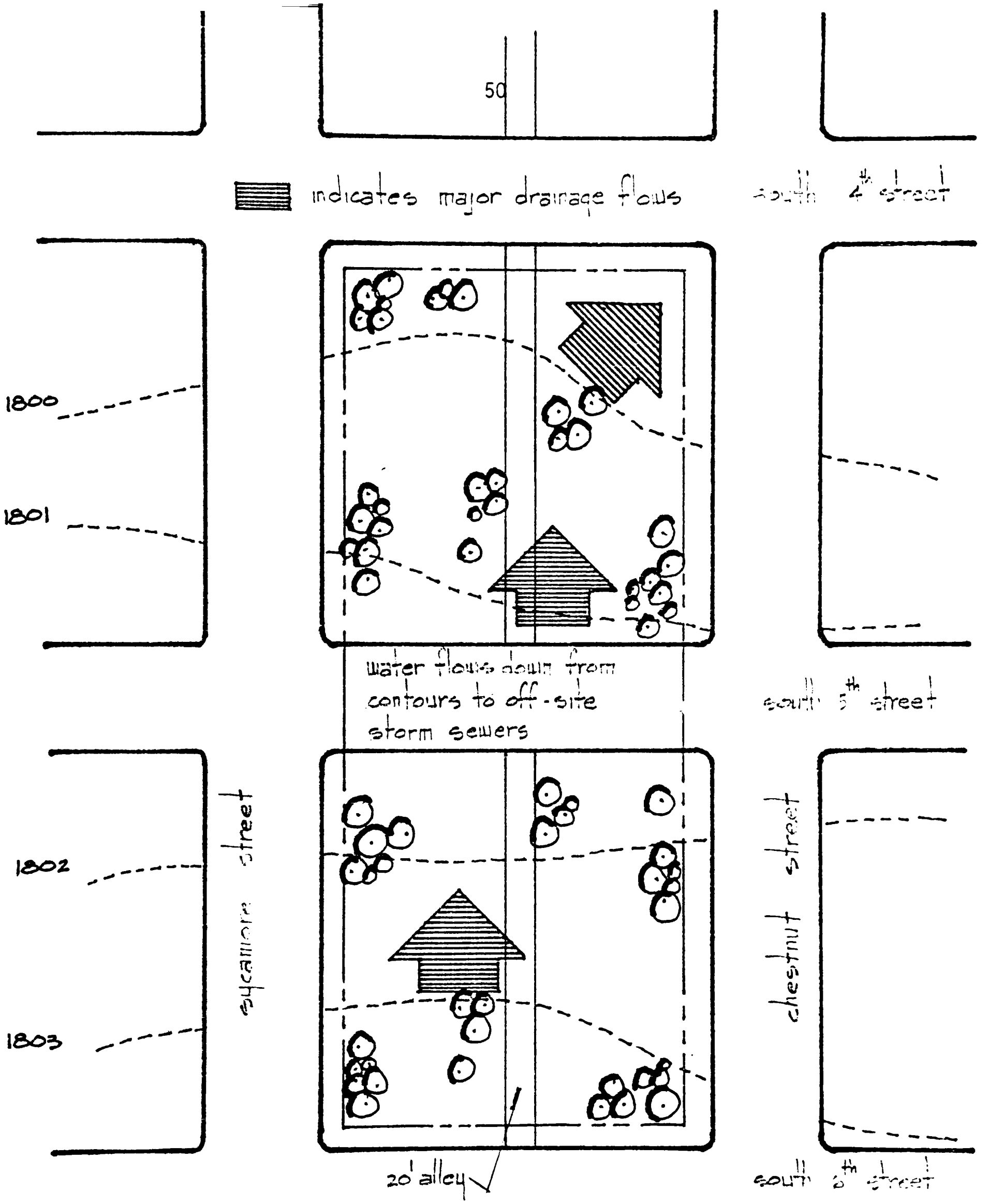
north

0' 100' 200'

Climate


south 3rd street
south 4th street
existing utilities, water electrical, sewer, etc. run along the alley
south 5th street
south 6th street
south 7th street
street
street
street
sycamore
chestnut
north
0'
200'
400'

Utilities



Site Drainage

small commercial buildings

51

South 4th street

view of Taylor Co. Courthouse

present F.S.B facility

1800

view to housing district

major access road

1801

view of road with light duty use

South 5th street

1802

Sycamore street

1803

existing F.S.B. drive-thru

Chestnut street

20' alley

view of housing

South 6th street

north

0' 100' 200'

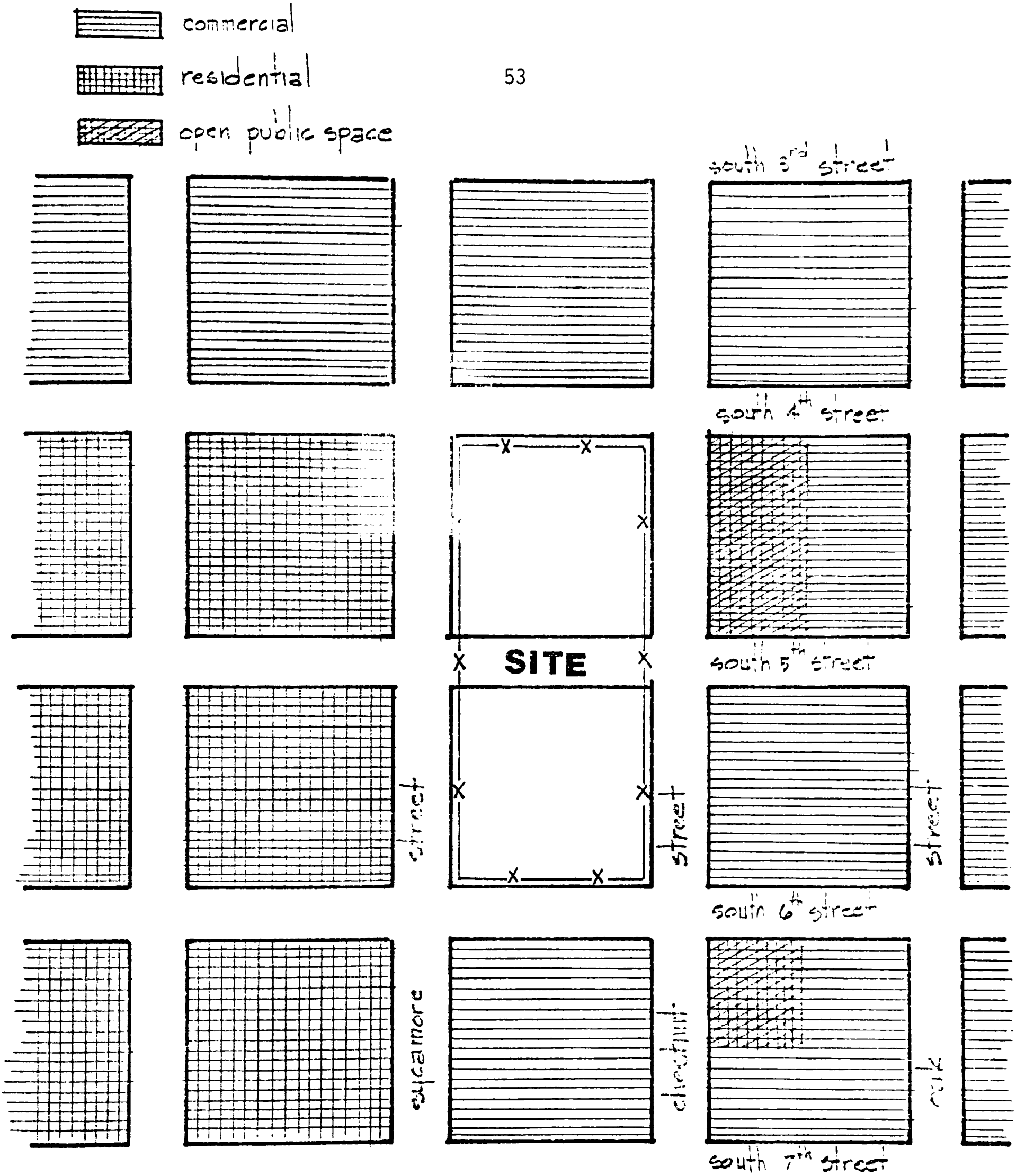
Site Views

Proposed Land Use (Future)

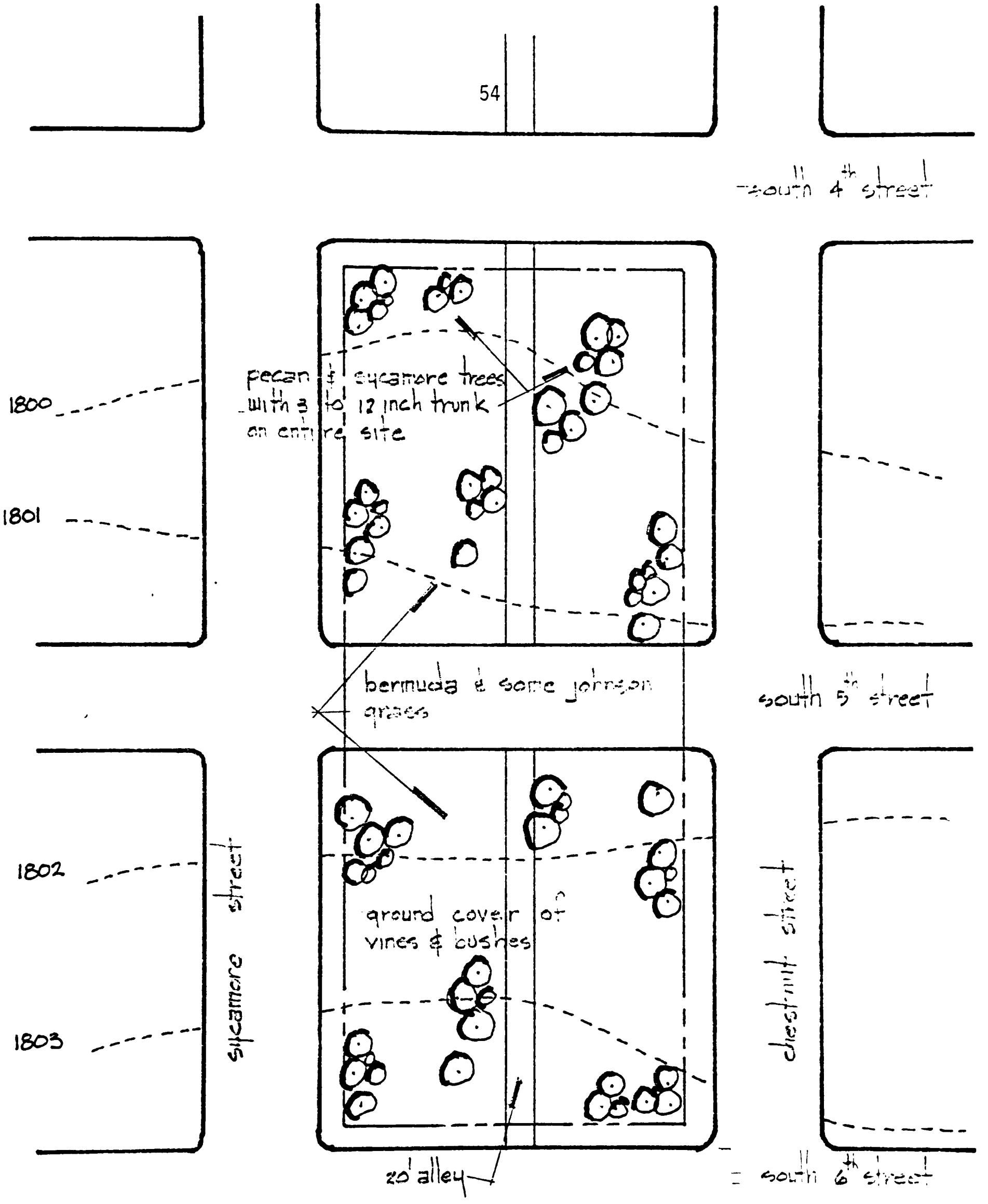
The future land use diagram indicates what possible alternatives the city has planned for the site region. The city's central business district is expanding to the south. The growth will surround the site region in the next 10-20 years. Areas to the north of the site are planned for commercial use. Areas to the east are where the First State Bank is presently located. The present facility will be removed so that new commercial buildings can be built. The current drive-thru bank that the First State Bank uses will remain and will be used with their new facility.

The area to the South has been designed for low commercial buildings mostly made up of offices and small businesses. Future plans may involve the remodeling or designing of public areas in this area to make it more attractive to the public to encourage pedestrian use. Directly to the west are areas made up of residences. This may develop into a commercial area in the future, but there are no definite plans for this area at the present time.

The proposed land usage will be an improvement over existing conditions. The bank and office facility will fit into the scheme perfectly. The site should become one of Abilene's most exclusive areas in the downtown region.



Future
Land Use



north

0' 100' 200'

Vegetation

Site Conditions Summary

The proposed site area has several good points which should be summarized. It is very convenient to transportation in the city of Abilene. This means excellent accessibility to the community both vehicle and pedestrian. Public utilities are already accessible to the site. Drainage on the site is good. Runoff is directed to existing gutters and storm sewers.

The absence of factories, manufacturing plants, and other large polluting areas is also an advantage. There are no tall structures near the site except the Taylor County Courthouse which is located to the north-east. This provides for maximum air and light to all parts of the building. Air and light are important in the customer and tenant's moral.

The surrounding areas are pleasant to view by the tenant. This element is a big factor in leasing the office space in the building. With the future plan to develop public spaces around the site, the views will become even better. The site is large enough so that future expansion is a real possibility. The site topography is basically flat with some small contour changes. This makes design conditions somewhat easier, but not always more interesting.

The site will fit perfectly into future plans for the region. The southern part of the downtown area of Abilene needs this type of facility. Overall, the site will function very well with this facility. Care should be taken to utilize it to its maximum potential. The area should become a place of "desirability" to the city of Abilene and its citizens along with surrounding counties and communities.

space summary

Space Summary

Once the activities have been disclosed, the spaces and areas to facilitate them can be named and studied. By referring to the Time-Saver Standard for Building Types and the Uniform Building Codes, a suitable square footage can be calculated. This section is a simple list of spaces that will aid in determining an accurate cost estimate.

After the total net area is calculated, the total gross area will be figured by using the "net to gross ratio." This ratio can be obtained from case studies, research, consultations or by referring to published sources.

No.	Space	Occupant Users	Sq. ft. per Occupant Level	Total sq. ft.
1	Entry			400
2	Lobby			3,000
3	New accounts	6	100	600
4	Customer service	2	100	200
5	Loan officers	8	150	1,200
6	Loan secretaries	8	120	960
7	Loan waiting area			300
8	Loan conference room	8	16.5	275
9	Loan files			500
10	Walk-up tellers	15	100	1,500
11	Safety deposit area	1	120	120
12	Safety deposit vault			1,400
13	Money vault			175
14	Bookkeeping area	15	145	2,175
15	Bookkeeping vault			350
16	Proof, clearing and transit	6	110	660
17	Savings area	5	120	600
18	Credit area	6	120	720
19	Credit vault			300
20	Collection area	5	120	600
21	Investment area	3	120	360
22	Trust area	5	130	650
23	President's office	1	400	400
24	President's toilet	1	50	50
25	Administrative vice-president	1	350	350

No.	Space	Occupant Users	Sq. ft. per Occupant Level	Total sq. ft.
26	Administrative vice-pres. toilet	1	50	50
27	Vice-president's office	1	100	100
28	Pres. & vice-pres. secretary	2	120	240
29	Executive conference room			450
30	Cashier's office	1	200	200
31	Comptroller's office	1	150	150
32	General service			7,460
33	Data Processing			400
34	Mail and messenger area	6	125	750
35	Buildings office	2	120	240
			Total (net)	27,885

A general "net to gross ratio" for small office buildings is 85% and for high rise office buildings, 75%. This facility will fall somewhere halfway between these two ratios. Therefore, an 80% ratio will be used. An additional 100,000 sq. ft. of leasable office space will be included in the facility.

27,885 sq. ft. (bank)
100,000 sq. ft. (office)
127,885 sq. ft. Total (net)

$$\frac{127,885}{80} = \frac{x}{20}$$

$x = 31,971$ sq. ft.

127,885 sq. ft. (net)
+ 31,971 sq. ft. (circulation)
159,856 sq. ft. Total (gross)

cost analysis

Capital Cost Components

The capital cost of a project includes all funds necessary to plan, design, and construct a building. Normally, these funds are provided by the equity investors, usually in the form of free and clear land ownership, and the construction lender who provides interim financing. There are four general categories of capital cost:

1) Land cost - This is the actual purchase price as estimated market value of the raw land plus associated expenses. Appreciation of land value must exceed 15% per year in order to cover holding costs.
2) Improvement cost - These costs include labor and material charges for the building and site work. Professional fees such as legal, financial, and design services are included here.
3) Overhead cost - These are the carrying and administrative expenses associated with the project. Carrying charges can be broken down into interest, property taxes, insurance, as well as property security costs. All administrative services by the developer are included here.
4) Developer's profit - The profit estimate will depend upon the risk and contingency variables associated with the project. The profit can be estimated as a specified rate of return on the equity capital invested in the project or as a simple percentage of the total project cost.

Construction Cost Estimate

The construction cost estimate is calculated by using a comparative unit technique. This technique analyzes the construction of similar types of projects in order to develop an average cost per square foot. Comparable

cost information can be taken from cost estimation manuals and quickly be converted into a cost estimate for the subject property.

Construction Cost Estimate and Total Percentages

Site Work	% of total construction cost	$/sq. ft. of gross building area
Excavation	1.2	1.81
Parking and drives	4.2	6.33
Landscaping and lighting	2.1	3.16
	7.5%	$11.3
Building Shell		
Caulking	.3	.45
Concrete	19.0	28.6
Elevators	10.2	15.3
Facade	3.9	5.88
Glazing and frames	3.7	5.58
Insulation	.4	.60
Roofing	.6	.90
	38.1%	$57.31
Interior		
Acoustical	.8	1.20
Flooring	1.7	2.56
Hardware	.6	.90
Millwork	1.4	2.11
Painting	2.9	4.37
Plaster & drywall	4.1	6.18
Toilet finishes	.8	1.20
	12.3%	$18.52
Building System		
Electrical	11.2	16.89
HVAC	19.4	29.26
Plumbing	8.6	12.97
Sprinklers	2.9	4.37
	42.1%	$63.49

Construction Cost Estimate per sq. ft.	=	$ 150.62
Gross Building Area	=	159,856 sq. ft.
Building Construction Cost Estimate	=	$24,077,510

Total Project Cost

	$ Cost	% Total
Total building cost estimate	24,077,510	83%
Site acquisition and preparation	1,025,000	4.1%
Soil tests	9,000	---
Professional services	1,230,000	4.9%
Financing costs	2,000,000	8.0%
Total	$28,341,510	100%

During recent years, building costs have risen drastically. The chart below illustrates the rise with a 12% inflationary rate taken into consideration.

Inflationary Construction Rates (per sq. ft.)

Year	1977	1978	1979	1980	1981	1982
Cost per sq. ft.	$79.91	$89.50	$100.24	$112.24	$125.41	$139.74

Life Cycle Cost Data

The life cycle cost analysis relies on the conversion of future benefits into a present value. The table below is a useful life guidelines for building components.

Item	Life in Years (average)
Air conditioning system	20
Large (over 20 tons)	15
Medium	15
Small (under 5 tons)	10
Elevators	
Freight	25
Passenger	20
Incinerators	14
Heating Systems	
Boilers and furnances	20
Gas burner equipment	16
Oil burner equipment	10
Radiator	25
Lighting fixtures	15
Plumbing fixtures	25
Tar and gravel roofs	25

The normal average useful life of a building of this type is fifty years. Component parts must be considered on a basis of usefulness after a specified number of years. An example of a life cycle cost analysis for the HVAC system is given on the following page.

Systems Data

	HVAC #1	HVAC #2
Initial cost	$100,000	$125,000
Useful life	20 years	20 years
Salvage value	10% of initial cost	10% of initial cost
Operation cost	$ 12,000	$ 12,000
Component replacement	$ 25,000 in years 10 & 15	$ 30,000 in year 12

HVAC #1

Initial cost	$100,000
Value of operation cost $12,000 · 9.8 (annuity factor)	$117,817
Value of the 10th year replacement $25,000 · .46 (reversion factor)	11,579
Value of the 15th year replacement $25,000 · .31 (reversion factor)	7,881
Salvage Value ($10,000)· .21 (reversion factor)	2,145
Total present value of HVAC #1 cost	$235,132

HVAC #2

Initial cost	$125,000
Value of operation cost $10,000 · 9.81 (annuity factor)	98,181
Value of 12th year replacement $30,000 · .39 (reversion factor)	11,913
Salvage value ($12,500) · .21 (reversion factor)	2,681
Total present value of HVAC #2 cost	$232,413

After an investigative analysis, it can be concluded that HVAC system #2 is the most desirable. This system has a higher initial cost, but lower present value of operating, maintenance, and replacement costs over a long time period.

systems performance

systems performance

Structural System

1) All structural work shall conform to the standards set by the latest addition of the Uniform Building Code.
2) The structural system must allow for maximum flexibility in terms of space arrangement and rearrangement partition and furniture movement.
3) Large spans must be designed for in areas such as the lobby, bookkeeping, proof, clearing and transit, and mechanical areas.
4) The inner portion of the structural system must allow for the easy use of moveable partition systems and any unforeseen space changes.
5) The structural system must be designed to allow for easy routing and flexibility in the plumbing, H.V.A.C., and electrical systems.
6) Vibration caused by electronic machinery, data processing equipment, and mechanical equipment must be decreased to a minimum level through the use of specially designed structural members and components.
7) Fire resistant materials must be used in construction for the safety of employees and visitors.

Enclosure System

General

1) The materials used to enclose the structure must conform to the standards in the Uniform Building Code.
2) All enclosure materials must be of the highest quality and require a minimum amount of upkeep and maintenance.

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Exterior

1) All enclosure materials used must be able to withstand the climatic conditions of the Abilene region with no change in the physical appearance unless otherwise specified (such as weathered steel).
2) Exterior enclosure systems must be used in a way to allow for maximum, efficient use of natural light through the use of clerestories, windows, skylights, etc.
3) All enclosure materials must provide maximum energy conservation measures by reducing unwanted heat gain and heat loss into the building.

Interior

1) All interior enclosure materials must be designed to allow for maximum flexibility in terms of area rearrangement, relocation and enlargement.
2) All interior enclosure materials must be able to withstand rough treatment such as scraping by equipment and treatment by personnel.
3) Interior floor systems must be designed for easy placement of electrical outlets wherever needed in large areas.
4) Flexibility in H.V.A.C. systems and lighting systems must be obtained through the use of ceiling system which allows easy and quick adjustments and changes.
6) The moveable partitioning systems must not interfere with the routing of plumbing, mechanical or electrical systems.
7) The interior enclosure materials, such as those used in the vaults must be permanent and provide maximum security.

Plumbing

1) All plumbing chases should be run so that they clear all spandrel and floor beams.
2) Thick partitions and furrings will be required for wastes and soilstacks.
3) Floor plans should be arranged so that plumbing fixtures will be placed one above the other in order to reduce the number of stacks required.
4) Roof, drive and other drains should generally be discharged into a storm sewer.
5) The mineral and chemical content of the water should be determined in order that pipes which will resist corrosion can be selected.
6) Should the street water main pressure not be sufficient to supply the fixtures on the upper floors, a tank with duplicate pumps may be necessary.
7) By properly locating and designing the piping system, excessive noise can be reduced or eliminated.

Mechanical System

General

1) The mechanical system must not hinder the flexibility of the space which it serves.
2) The system shall be designed to allow for controlled conditioning of different spaces as needed.
3) The system must be capable of operating efficiently during both peak and limited usage periods.
4) Air infiltration into the structure shall be kept to a minimum through the use of a positive pressure H.V.A.C. system.

5) The system must be designed to control the spread of smoke and flames in case of a fire.

Heating System

1) The heating system used must be designed for high thermal efficiency, thus minimizing heating costs, however, the source of heat generation used shall be chosen based on current costs compared to estimated future costs. The possibility of conversion to solar heating in the future shall be a definite consideration.

Cooling System

1) The cooling system used must be very efficient compared to the cost of the system and cooling source requirements. It has been estimated that the use of water cooled refrigeration equipment, utilizing a cooling tower and condensing water system will produce energy savings of approximately 35 percent. This should be taken into consideration when the decision is made as to the type of cooling system to be used.

Ventilation

1) During favorable climatic conditions, the use of outside air for cooling shall be a design consideration. This will help reduce cooling costs for the facility.

Components

1) The heating and cooling system shall be provided with a means of decreasing or completely shutting down the system during times that the facility is not in operation. This system must be zoned to shut down different areas at different times. The data processing

area must be constantly cooled as required by the equipment housed in the area.

Flexibility

1) The heating and cooling system chosen shall be flexible in terms of placement of ductwork, registers and grilles to allow for easy work area rearrangement.

Electrical System

General

1) All electrical work shall comply with the National Electrical Code.
2) All electrical systems shall be installed in a manner allowing for maximum flexibility in space arrangement.
3) All electrical materials used must require a minimum amount of maintenance and upkeep.
4) The electrical system shall allow for easy installation of individual meters in rental space. This must be flexible in nature to allow for varied tenant rental requirements.
5) Provisions must be made on the site to allow for the placement of power transformers as required.
6) There must be a main cutoff switch for all electrical supply into the structure. This switch will be located within the building itself.

Lighting

1) The lighting systems used should give off a minimum amount of sensible heat.
2) The type of lighting used must allow for easy movement and replacement in order to provide for maximum flexibility in space arrangement.

3) The lighting system must provide a minimum illumination of thirty footcandles at work level in the public and executive areas and forty-five footcandles in all other areas.

Power

1) Power supply must be 277/480 volts for fluorescent lighting and equipment requirements.
2) Power supply must be 120/208 volts for general requirements.
3) All power receptacles must be easily accessible and numerous enough to minimize the use of extension cords.
4) Placement of power receptacles must be flexible to allow for space arrangements.
5) Emergency power must be provided to keep emergency exits lighted, data processing equipment cooled to normal operating range, and for the security systems used.

Elevators

1) A minimum travel speed of 200 feet per minute must be provided.
2) The equipment room must be designed to isolate sound caused by the equipment and keep it from entering the rest of the building.
3) Adequate heating and ventilation of machine spaces must be provided to provide efficient working temperature.
4) All operating equipment must be mounted on stock pads to prevent excess vibration.
5) Special consideration for the handicapped shall be taken in the selection of elevator cabs.
6) Maintenance requirements of public areas of the elevator area must be kept to a minimum.

7) All elevator equipment and standards must comply with the latest edition of the American National Standard Safety Code for Elevators and the Uniform Building Code.

Life Safety Systems

1) All life safety systems shall conform to the standards established by the Uniform Building Code.

Sprinkler System

1) The sprinkler system must be installed in a manner which does not interfere with the flexibility of the areas of the facility. I will not extend into the areas any further than absolutely necessary in order to fulfill this requirement.
2) A dry fire protection system will be installed in the data processing area.

Fire Alarm System

1) The fire alarm system must be installed so that it can be heard in all areas of the facility and the immediate exterior surroundings.
2) The fire alarm system must be directly connected to the proper authorities for fast action in case of fire.
3) Access to fire alarm boxes must be made possible to all user groups in the facility.
4) The alarm shall provide for both visual and aural attraction.

Security System

1) The security systems used will be specifically fitted to the bank's application needs by a top quality security company.

2) The system chosen must provide maximum security, both visual and aural, in all public and staff areas of the bank. In order to be more effective, the system must be as inconspicuous as possible but still be noticeable to provide a sense of security to customers within the banking premises.

Energy Conservation

Listed below are those measures which will be incorporated into the design phase:

1) Reduced lighting levels in corridors, meeting rooms and waiting areas.
2) Variable air volume systems to reduce heating and cooling costs.
3) Use of two degree dead band thermostats to prevent heating or cooling between 74°F and 76°F, thus eliminating overlapping heating and cooling modes of operation.
4) Added wall insulation.
5) During periods when the outside air is below 55°F, return air to the air handler is relieved to the outside and outside air provides free cooling without the use of any refrigeration. This is the most economical means to condition the air.
6) Tinted glass will be used throughout.

detailed space list

Space No. 1 Entry

Number of Units - 1

Floor Area - 400 sq. ft.

Functional Description - transitional area from exterior to the interior, directional information, waiting, meeting point.

Adjacency - located between the exterior and the lobby area. It shall be made available for use by the public, staff and service people

Lighting - 30 f.c.

Air Flow - 20 c.f.m.

Furnishings - water cooler
- ash stand
- foot wiping mat
- telephones (3)
- trash receptacle

Space No. 2 Lobby

Number of Units - 1

Floor Area - 3,000

Functional Description - This space is used as a transition from the entry to all other public spaces in the building. It also serves as a check writing, deposit slip filling, waiting area.

Adjacency - This space should be in a centralized location in relation to allow easy access to the other publically used spaces. It will be regarded as a high noise generating area of the bank.

Lighting - 30 f.c.

Air Flow - 20 c.f.m.

Furnishings - check writing desks

- sofa: 2 - 2'-7"d x 6'-0"w, with arms
- chair: 10 - 2'-7"d x 2'-6"w, with arms
- coffee table: 1 - 23" x 45" wood table
- end table: 4 min. - 24" x 24" wood tables
- fire detection devices
- fire extinguishers
- electric clock
- table lamps
- ash stand
- reading materials
- windows, blinds
- trash receptacle

Space No. 3 New Accounts

Number of Units - 6

Floor Area - 600 sq. ft.

Functional Description - This space is where any customer goes to open a new form of account depending upon his/her needs.

Adjacency - It should be located in a manner providing a direct link between it and the lobby area. It is possible and somewhat suggestible that there be no physical barrier between the two spaces. In fact, this area could be an extension of the lobby.

Lighting - 30 f.c.

Air Flow - 20 c.f.m.

Furnishings - desk: 1 - 2'-6" x 5'-0" wood desk

- chair: 1 - 2'4" x 2'-3" swivel armchair
- arm chairs (2) 1'-10" x 1'-10"
- telephone - PBX, direct line, and intercom
- adding machine
- file cabinets - 17-7/8" x 29-3/4" x 28-9/16", 2 drawers
- fire detectors
- trash receptacle

Space No. 4 Customer Service

Number of Units - 1

Floor Area - 200 sq. ft.

Functional Description - This area is used by the customer when he has the need to check on his current balance or savings balance, cancel a check, etc.

Adjacency - It should be easily accessible from the lobby area and in somewhat close relation to the entry area. It should directly link with the bookkeeping area.

Lighting - 40 f.c.

Air Flow - 20 c.f.m.

Furnishings - counter space

- chair: 7 - swivel armchairs
- semi-private partitions between spaces
- fire extinguisher; wall mtd.
- fire detectors
- trash receptacle

Space No. 5 Loan Officers

Number of Units - 8

Floor Area - 1,200 sq. ft.

Functional Description - This area is where loan interviews are given. Each loan officer has his/her own office in which to conduct business. Privacy is important in this area because of confidentiality of reports reviewed and discussions made.

Adjacency - This area should be located in direct relation to the loan secretaries' area, and closely associated with both the collection and credit departments. It should also be within easy access of the public.

Lighting - 30 f.c.

Air Flow - 10 c.f.m.

Furnishings - desk: 1 - 5'-8" x 3'-2" wooden desk

- chairs: 1 - 2'-6" x 2'-6" swivel chair
  2 - 1'-10" x 1'-10" arm chairs
- telephone - PBX, direct line, and intercom
- desk size calculator
- filing cabinet
- fire detectors
- trash receptacle

Space No. 6 Loan Secretaries

Number of Units - 8

Floor Area - 960 sq. ft.

Functional Description - This area serves as the transition area between the loan officers and those waiting in the waiting area. The secretary controls this action.

Adjacency - This area should be located between the waiting area and the loan officers. Public access is required so the area should be in close relation to the lobby area.

Lighting - 30 f.c.

Air Flow - 20 c.f.m.

Furnishings - desk: 1 - 2'-6" x 5'-0" wood desk

- chair: 1 - 2'-4" x 2'-3" swivel armchair
- telephone - PBX, direct line, and intercom
- typewriter
- trash receptacle

Space No. 7 Loan Waiting Area

Number of Units - 1

Floor Area - 300 sq. ft.

Functional Description - This area is where the customer waits to talk to one of the loan officers.

Adjacency - This area should be located between the lobby and the loan secretary's area.

Lighting - 30 f.c.

Air Flow - 20 c.f.m.

Furnishings - sofa: 1 - 2'7"d x 6'-0"w, with arms
- chair: 8 - 2'-6"w x 2'-7"d, with arms
- coffee table: 1 - 23" x 45"
- end table: 3 min. - 24" x 24"
- ash stand
- reading materials

Space No. 8 Loan Conference Room

Number of Units - 1

Floor Area - 275 sq. ft.

Functional Description - This area is for meetings between the loan officers.

Adjacency - This area should be located near the loan officer units but needs to be private in nature away from public access.

Lighting - 40 f.c.

Air Flow - 20 c.f.m.

Furnishings - conference table: 1 - 48" x 120"

- chair: 10 - executive style swivel chairs
- coffee bar: 2'0" x 4'-0" min.
- coffee maker
- telephone - PBX, direct line, intercom
- fire detector
- fire extinguisher, wall mtd., unexposed
- trash receptacle

Space No. 9 Loan Files Room

Number of Units - 1

Floor Area - 500 sq. ft.

Functional Description - This area is for storing files on customers that have taken out loans from the bank.

Adjacency - This area needs to be accessible to the loan secretaries. Considering the privacy of these files, this space needs to be located away from any public access.

Lighting - 30 f.c.

Air Flow - 10 c.f.m.

Furnishings - file cabinets: 10

- fire detector
- fire extinguisher, wall mtd.
- table: 1 - 2'-6" x 5'-0"
- chair: 2 - 2'-4" x 2'-3" armchairs
- trash receptacle

Space No. 10 Walk-up Tellers

Number of Units - 15

Floor Area - 1,500 sq. ft.

Functional Description - This area is the most used area of the bank. For this reason, the area should be visually inviting and physically attractive.

Adjacency - This area should have direct access to the lobby area, for customer use and to proof, clearing and transit for efficient bank operations. There should exist some definite link, either physical or electronic with the bookkeeping area. There should also be close relationship between this area and the new accounts area to aid in the opening of an account.

Lighting - 50 f.c.

Air Flow - 30 c.f.m.

Furnishings
- teller boothes
- coin dispenser
- adding machine
- calculator
- cash drawer
- stool: variable height
- alarm button
- telephone - PBX, direct line, and intercom

Area
- micro-film viewers: 5 total
- storage for cash tray cart
- fire detectors
- fire extinguishers: wall mtd.
- trash receptacles

Space No. 11 Safety Deposit Area

Number of Units - 1

Floor Area - 120 sq. ft.

Functional Description - This area is used as a storage space for customers' valuables. It consists of a clerk area and a vault area. The clerk controls who enters the vault area and for what reasons.

Adjacency - It is important that this area be located close to the lobby area in order to provide easy access by the customers who require its use.

Lighting - 30 f.c.

Air Flow - 15 c.f.m.

Furnishings - desk: 1 - 2'-6" x 5'-0"

- chair: 1 - 2'-4" x 2'-3" swivel armchair
- telephone - PBX, direct line, intercom
- adding machine
- file cabinets (2)
- card record file: 5-drawer
- fire detectors
- trash receptacles

Space No. 13 Money Vault

Number of Units - 1

Floor Area - 175 sq. ft.

Functional Description - This space is used for storage of money and currency. Tellers cash drawers are placed here at the end of the day and retrieved the next day. It is also used as a fireproof storage area.

Adjacency - This area should be located in very close relation to the armored car service area for quick and secure transfer of money. It should also be located close to the walk-up tellers.

Lighting - 30 f.c.

Air Flow - None

Furnishings - fireproof floor safe (small)
- metal shelving
- fire extinguisher
- fire detectors

Space No. 14 Bookkeeping Area

Number of Units - 1

Floor Area - 2,175 sq. ft.

Functional Description - This is one of the primary areas of the bank. It is in this area that the books are kept concerning the demand deposit accounts of the bank's customers.

Adjacency - This area should have direct contact with the proof, clearing and transit area. In fact, those areas could easily be separated in name only, occupying the same general area. There should also be a strong relationship between this area and the collection area and savings area. The credit area should be located in this general area of the bank also.

Lighting - 100 f.c.

Air Flow - 30 c.f.m.

Furnishings - desk: 6 - 2'-6" x 5'-0"
- chair: 6 - 1'-7" x 1'-5"
- telephones - PBX, direct line, intercom
- micro-fische viewers, 3'd x 18"w x 2'h
- filmers, 4'd x 2'w x 2'h
- file cabinets
- adding machines
- calculators
- fire detectors
- fire extinguishers
- trash receptacles

Space No. 15 Bookkeeping Vault

Number of Units - 1

Floor Area - 350 sq. ft.

Functional Description - This area is for storing records and films for the bookkeeping area.

Adjacency - This area needs to be a fireproof vault that has direct access to the bookkeeping area.

Lighting - 30 f.c.

Air Flow - None

Furnishings - file cabinets

- metal shelving

- fire extinguisher

- fire detector

Space No. 16 Proof, Clearing and Transit

Number of Units - 1

Floor Area - 660 sq. ft.

Functional Description - This area is responsible for the preparation of all incoming and outgoing checks.

Adjacency - It should be located in very close relation to the bookkeeping area. These areas could easily share the same general space. It should also be located close to the mail and messenger area.

Lighting - 100 f.c.

Air Flow - 30 c.f.m.

Furnishings - desk: 6 - 2'-6" x 5'-0"

- chair: 6 - 1'-7" x 1'-5"
- telephone - PBX, direct line, intercom
- rotary check files, 4'd x 5'w x 5'h
- post machine, 2'd x 3'w x 1'h
- proof machine, 3'd x 6'w x 3'h
- encoders, 3'd x 3'w x 9"h
- fire detectors
- fire extinguishers
- trash receptacles

Space No. 17 Savings Area

Number of Units - 1

Floor Area - 600 sq. ft.

Functional Description - This area is where all bookkeeping is done concerning customers' savings accounts.

Adjacency - It should be located in close relation to the bookkeeping area and the credit area. These relationships need not be direct, however, flow between the areas should be smooth and easy.

Lighting - 50 f.c.

Air Flow - 20 c.f.m.

Furnishings - desk: 5 - 2'-6" x 5'-0"

- chair: 5 - 1'-7" x 1'-5"
- telephones - PBX, direct line, intercom
- adding machines
- calculators
- typewriters
- file cabinets
- fire detectors
- fire extinguishers
- trash receptacles

Space No. 18 Credit Area

Number of Units - 1

Floor Area - 720 sq. ft.

Functional Description - This area is where credit checks are run on those requesting loans. These checks are given to the loan officers and other institutions desiring credit status on customers in the bank.

Adjacency - It should be located within easy access of the bookkeeping, savings and collection areas. The loan offices should also be close to this area for easy transfer of materials between the areas.

Lighting - 50 f.c.

Air Flow - 30 c.f.m.

Furnishings - desk: 6 - 2'-6" x 5'-0"

- chair: 6 - 2'-5" x 2'-3" swivel armchairs
- telephones - PBX, direct line, intercom
- filing cabinets
- calculators
- fire detectors
- fire extinguisher
- trash receptacles

Space No. 19 Credit Vault

Number of Units - 1

Floor Area - 300 sq. ft.

Functional Description - This area is for storing records for the credit area.

Adjacency - This fireproof vault needs to be directly connected with the credit area.

Lighting - 30 f.c.

Air Flow - None

Furnishings - file cabinets

- metal shelves

- fire detectors

- fire extinguisher

Space No. 20 Collection Area

Number of Units - 1

Floor Area - 600 sq. ft.

Functional Description - It is the purpose of this area to collect on overdue accounts on items which cannot be obtained through a clearing house.

Adjacency - This area should be located in close relation to the bookkeeping area because of the shared use of records in these areas. It should also have some relationship with the credit area because of this area's duty to check on the credit record and payment records of the bank's customers.

Lighting - 50 f.c.

Air Flow - 30 c.f.m.

Furnishings - desk: 6 - 2'-6" x 5'-0"

- chair: 6 - 2'-4" x 2'-3" swivel armchairs
- telephones - PBX, direct line, intercom
- typewriters
- calculators
- filing cabinets
- fire detectors
- fire extinguisher
- trash receptacle

Space No. 21 Investment Area

Number of Units - 1

Floor Area - 360 sq. ft.

Functional Description - This area is responsible for detemining the financial investments of the bank's funds. The personnel in this area determine how the excess funds of the bank will be used.

Adjacency - The area should be located within fairly easy reach of the the bookkeeping area, however, its major link will be with the bank's computer system and the executive area of the bank.

Lighting - 40 f.c.

Air Flow - 30 c.f.m.

Furnishings - desk: 3 - 2'-6" x 5'-0"

- chair: 3 - 2'-4" x 2'-3" swivel armchairs
- telephones - PBX, direct line, intercom
- typewriters
- calculators
- computer terminal, 2'w x 2'h x 3'd
- filing cabinets
- fire detectors
- fire extinguishers, wall mtd.
- trash receptacle

Space No. 22 Trust Area

Number of Units - 5

Floor Area - 650 sq. ft.

Functional Description - The general responsibility of this area is to settle accounts, administer trusts, and perform agency services for individuals, partnerships, associations and business corporations.

Adjacency - There are no special relationship requirements since this area is ideally operated independently from the other areas of the bank. It should be easily accessible to the public.

Lighting - 40 f.c.

Air Flow - 30 c.f.m.

Furnishings - desk: 1 - 3'-2" x 5'-8"

- chair: 1 - 2'-6" x 2'-6" swivel chair
  2 - 1'-10" x 1'-10" armchair
- telephone - PBX, direct line, intercom
- calculator
- filing cabinets
- book shelves
- fire detectors
- fire extinguishers
- trash receptacle

Space No. 23 President's Office

Number of Units - 1

Floor Area - 400 sq. ft.

Functional Description - This is the area where the bank president conducts his business responsibilities.

Adjacency - The area should be accessible by the public but away from direct public access. It should be located to allow the president to visually oversee the operational functions of the bank. It should also be closely related to the administrative vice-president's and cashier's office and the conference room.

Lighting - 40 f.c.

Air Flow - 10 c.f.m.

Furnishings - desk: 1 - 42" x 86"

- chair: 1 - executive chair

2 - armchairs

3 - lounge chairs with arms

- credenza - 1 - 19" x 78"
- bookcase - 1 - 19" x 118"
- sofa: 1 - 2'-7" x 6'-0" with arms
- end tables: 2 - 18" x 28"
- coffee bar: 2'-0" x 4'-0"
- coffee maker
- coat closet
- telephone - PBX, direct line, intercom
- calculator
- fire detector
- fire extinguisher
- trash receptacle

Space No. 24 President's Toilet

Number of Units - 1

Floor Area - 50 sq. ft.

Functional Description - Requires no discussion

Adjacency - This space must be located adjacent to the president's office.

Lighting - 30 f.c.

Air Flow - 10 c.f.m.

Furnishings - water closet

- lavatory
- mirror
- towel rack
- single roll tissue dispenser
- trash receptacle

Space No. 25 Administrative Vice-President

Number of Units - 1

Floor Area - 350 sq. ft.

Functional Description - This is the area where the bank's administrative vice-president conducts his business responsibilities.

Adjacency - This area should be accessible by the public but away from direct public access. It should have close relationship to the comptroller's and president's offices and the conference room.

Lighting - 40 f.c.

Air Flow - 10 c.f.m.

Furnishings - same as President's office

Space No. 26 Administrative Vice-President's Toilet

Number of Units - 1

Floor Area - 50 sq. ft.

Functional Description - Requires no discussion

Adjacency - This area needs to be located with the administrative vice-president's office.

Lighting - 30 f.c.

Air Flow - 10 c.f.m.

Furnishings - Same as President's toilet

Space No. 27 Vice-President's Office

Number of Units - 1

Floor Area - 100 sq. ft.

Functional Description - This area is where the vice-president conducts his business responsibilities.

Adjacency - This area should be located close to the administrative vice-president's office area and also to the bank department which he oversees.

Lighting - 50 f.c.

Air Flow - 15 c.f.m.

Furnishings - desk: 1 - 5'-8" x 3'-2"

- chair: 1 - 2'-6" x 2'-6"
- telephone - PBX, direct line, intercom
- calculator
- filing cabinet
- fire detector
- trash receptacle

Space No. 28 President's Secretary

Number of Units - 1

Floor Area - 120 sq. ft.

Functional Description - The secretary is in charge of messages, appointments, and introducing customers to the president and administrative vice-president.

Adjacency - This area is located near the president's and administrative vice-president's office.

Lighting - 30 f.c.

Air Flow - 10 c.f.m.

Furnishings - desk: 1 - 2'-6" x 5'-0"

- chair: 1 - 2'-4" x 2'-3"
- telephone - PBX, direct line, intercom
- typewriter
- trash receptacle

Space No. 29 Executive Conference Room

Number of Units - 1

Floor Area - 450 sq. ft.

Functional Description - This area serves as a meeting place for the bank's board of directors and for other members of the executive area of the bank.

Adjacency - It should be located away from public access and within easy access of all executive area members.

Lighting - 30 f.c.

Air Flow - 15 c.f.m.

Furnishings - conference table: 1 - 48" x 120"

- chair: 10 swivel chairs
- bookcase: 19" x 118"
- coffee bar: 2'-0" x 4'-0" min.
- telephone - PBX, direct line, intercom
- movie screen: wall hung
- fire detector
- fire extinguisher
- trash receptacle

Space No. 30 Cashier's Office

Number of Units - 1

Floor Area - 200 sq. ft.

Functional Description - This area is where the cashier conducts his business responsibilities.

Adjacency - It should be located away from the public and close to the president's office and the conference room.

Lighting - 50 f.c.

Air Flow - 10 c.f.m.

Furnishings - Same as vice-president's office

Space No. 31 Comptroller's Office

Number of Units - 1

Floor Area - 150 sq. ft.

Functional Description - This area is where the comptroller conducts his business responsibilities.

Adjacency - It should be located away from public access and close to the administrative vice-president's office and the conference room.

Lighting - 50 f.c.

Air Flow - 15 c.f.m.

Furnishings - Same as vice-president's office

Space No. 32A General Services

Number of Units - 1 Men's Toilet

Floor Area - 375 sq. ft.

Functional Description - Requires no discussion

Adjacency - This area should be located close to the public areas as well as the employee lounge area.

Lighting - 30 f.c.

Air Flow - 10 c.f.m.

Furnishings - lavatory (3)
- water closet (3)
- urinal (2)
- mirror (3)
- toilet stalls
- floor drain
- towel dispenser
- tissue dispenser
- soap dispenser
- fire detector
- trash receptacle

Space No. 32B Women's Toilet

Number of Units - 1

Floor Area - 375 sq. ft.

Functional Description and Adjacency - Same general requirements as Men's Toilet 32A.

Lighting - 30 f.c.

Air Flow - 10 c.f.m.

Furnishings - lavatory (3)
- water closet (4)
- mirror (3)
- toilet stalls
- floor drain
- towel dispenser
- tissue dispenser
- feminine napkin dispensers
- feminine napkin disposals
- soap dispensers
- fire detector
- trash receptacle

Space No. 32C Lounge Area

Number of Units - 1

Floor Area - 950 sq. ft.

Functional Description - This area is used as a rest and relaxation, snack area. It will also include a storage area for employee's coats.

Adjacency - It should be located close to the operations area of the bank. Public access should also be made available. In addition, toilet areas and janitor closet area should be in this same general area.

Lighting - 30 f.c.

Air Flow - 20 c.f.m.

Furnishings - table: 6 - 4'-0" dia.

- chair: (30)
- water cooler
- vending machines
- counter space
- microwave oven
- sink
- coffee maker
- cabinet space
- under counter refrigerator

Coat Storage - 450 sq. ft.

- closed steel wardrobe lockers
- fire detectors
- fire extinguishers
- trash receptacle

Space No. 32D Mechanical Area

Number of Units - 1

Floor Area - 5,240 sq. ft.

Functional Description - This is the location of all of the mechanical equipment of the facility. This includes the HVAC equipment and some plumbing.

Adjacency - It should be located in an area where the most efficient use of supply and return systems can be made. No direct access to the exterior is permitted so interior openings should be wide enough to allow for removal of equipment.

Lighting - 100 f.c.

Air Flow - 40 c.f.m.

Furnishings - all equipment
- floor drain
- fresh air intake
- exhaust vents
- fire detectors
- fire extinguishers, wall mtd.

Space No. 32E Switchboard

Number of Units - 1

Floor Area - 120 sq. ft.

Functional Description - This is where all incoming calls are taken and connected to their proper areas within the bank.

Adjacency - This area should not be accessible to the public. Its general location within the bank is flexible.

Lighting - 40 f.c.

Air Flow - 15 c.f.m.

Furnishings - desk: 1 - 2' x 6" x 5'-0"

- chair: 1 - 2'x 4" x 2' x 3"
- typewriter
- switchboard
- fire detector
- trash receptacle

Space No. 33 Data Processing

Number of Units - 1

Floor Area - 400 sq. ft.

Functional Description - This area is used to house the electronic equipment required to connect the bank to the main computer and other outside sources of financial information.

Adjacency - This area should be located away from the public area. It should be in close relation to the operations area and the buildings area of the bank.

Lighting - 50 f.c.

Air Flow - 40 c.f.m.

Furnishings - 4 - computer terminals

- 1 - teletype machine
- 1 - bank wire machine
- halon extinguishing system
- fire extinguishers, wall mtd.
- desk: 1 - 2' x 6" x 5'-0"
- chair: 1 - 2' x 4" x 2'-3"
- telephone - PBX, direct line, intercom
- xerox machine
- trash receptacle

Space No. 34 Mail and Messenger Area

Number of Units - 1

Floor Area - 750 sq. ft.

Functional Description - This area is used as a sending and receiving area for mail. The staff members in this area are responsible for separating and distributing all incoming mail and preparing all outgoing mail for sending.

Adjacency - This area should be located in fairly close relation to the operations area of the bank. There should be no public access allowed.

Lighting - 100 sq. ft.

Air Flow - 20 c.f.m.

Furnishings - desk: 6 - 2'-6" x 5'-0"

- chair: 6 - 2'-4" x 2'-3"
- mailing machine
- telephones - PBX, direct line, intercom
- calculators
- file cabinets
- fire detector
- fire extinguisher, wall mtd.
- trash receptacle

Space No. 35 Buildings Office

Number of Units - 1

Floor Area - 240 sq. ft.

Functional Description - This area is where all business concerning rent property owned by the bank is taken care of. This area is also responsible for the maintenance of the physical building itself.

Adjacency - This area should be accessible to the public for ease of rent payments.

Lighting - 30 f.c.

Air Flow - 15 c.f.m.

Furnishings - desk: 2 - 2'-6" x 5'-0"

- chair: 2 - 2'-4" x 2'-3"

4 - 1'-10" x 1'-10"

- telephones - PBX, direct line, intercom
- calculator
- file cabinet
- fire detector
- trash receptacle

case studies

Introduction

The purpose of case studies is to help the designer by examining different accounts of the same project as well as by comparing similar projects. In this case a bank and office facility is the topic.

The bank and office facilities should be studied so that the current theories, practice of design, and user intent for similar building types will aid the designer in his evaluation of future trends for that design intent or building type.

The criteria below will be used in analyzing the case studies that follow:

(a) Context: The social, economic and cultural or institutional aspects of a project influence its shape and character.

(b) Function: This includes: client; user groups, primary and secondary activities.

(c) Form: The physical aspects of a project and its environmental surroundings that provide meaningful insights about designers and users.

(d) Building Systems Analysis: How the structural and mechanical systems accommodate functions, climate and site.

(e) Site Analysis: Examining how site conditions impinge upon the project design, both internal and external.

(f) Cost Analysis: Developing appropriate unit area or other cost basis and examine implications of differences between people.[1]

The following is a list of projects that will be analyzed for this set of case studies:

(1) Chase Manhattan Bank in New York, New York

(2) First National Bank in Amarillo, Texas

(3) Fort Worth National Bank in Fort Worth, Texas

(4) Citizens Bank Center in Richardson, Texas

Project: Chase Manhattan Bank

Location: New York, New York

Architect: Skidmore, Owings & Merrill

It is important for the designer to know the changes that banking has made over the past years in design needs. The Chase is a good example of banking's history in the United States as far as design goes.

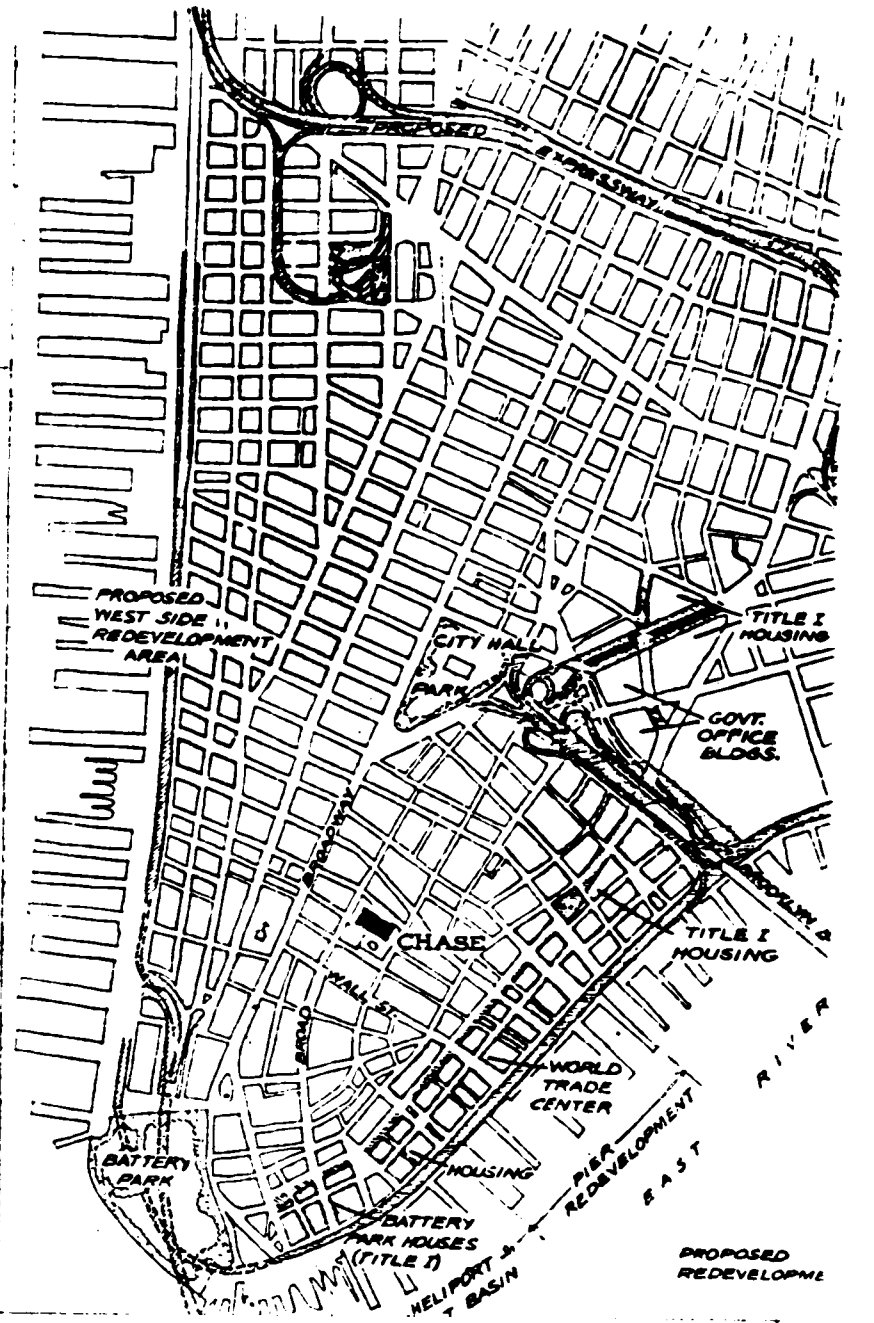
The idea of the project started back in the early fifties, when the Chase National Bank was in a need for space. The problem turned into a real headache in 1955 when Chase merged with the Bank of the Manhattan Company to become New York's largest bank. The headquarters staff was located in nine different buildings in the financial district. "Chase decided to locate its major commitment downtown, where it could keep its vital linkages with all the other banks, brokerage houses, exchanges, and business firms which make Wall Street such a uniquely tight and inter-dependent little island."[2]

The architects at Skidmore, Owings, and Merrill were consulted and they worked quickly to analyze the problem and make its proposal. By developing square footage and cost analysis for three alternates (sketches are on the following page), SOM persuaded Chase of the merits of the latter scheme. The advantages were: "more usable square feet of office space and greater operational efficency, plus better light and air, easier rentability, room for expansion, and important effects on employee and public relations, not to mention the long-term value of the property itself."[3]

The function of the building was a very important consideration that SOM took into account. The Chase located its offices and needs on the

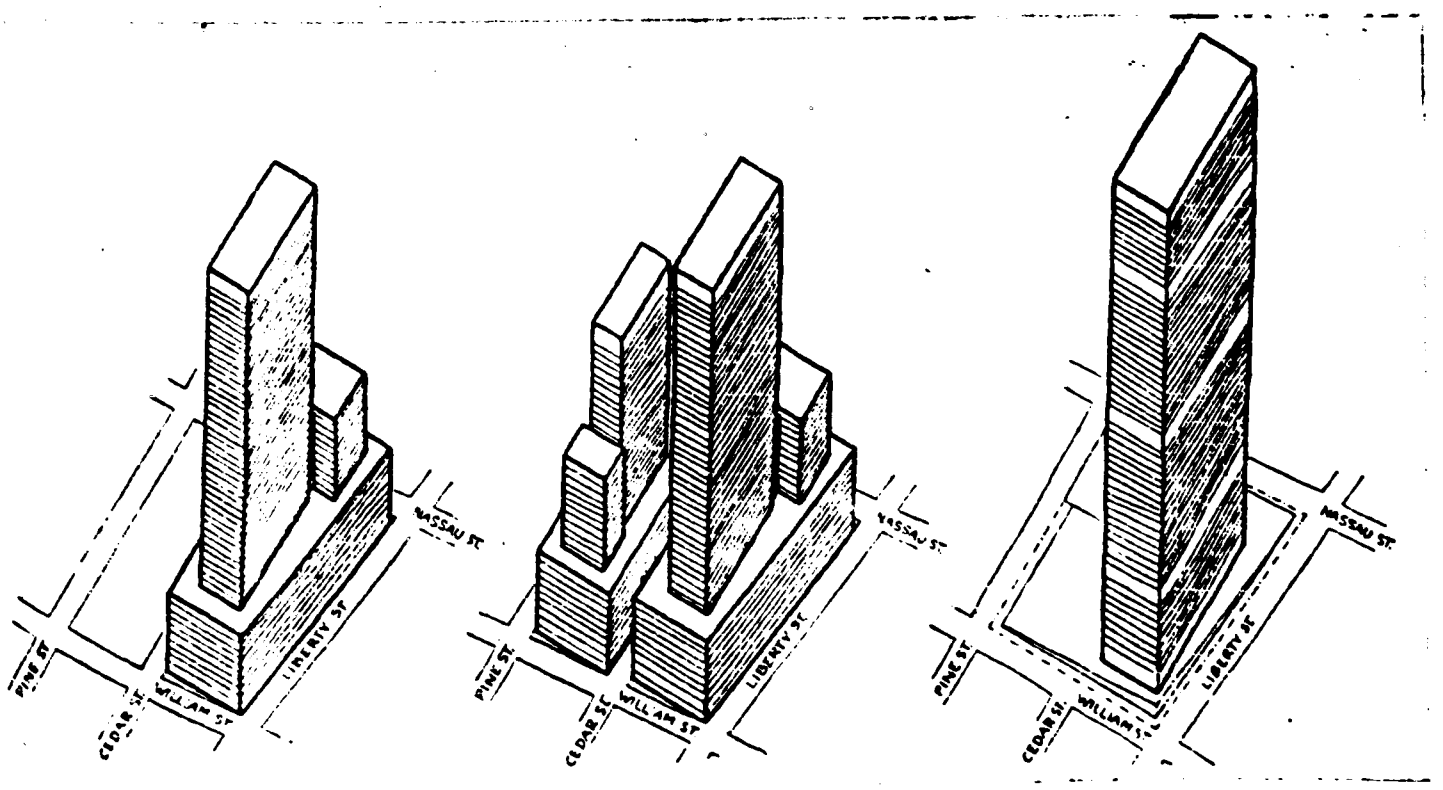
To the right is a map that shows the location of the Chase facility. The decision was made to build the facility on its present site instead of moving to the Park Avenue Sector.

* Source: Architectural Forum, July 1961, p. 67



Below are the alternatives that SOM showed Chase. The latter yielded uniformly larger tower and basement floors, better light, air, internal communication, and a priceless plaza.

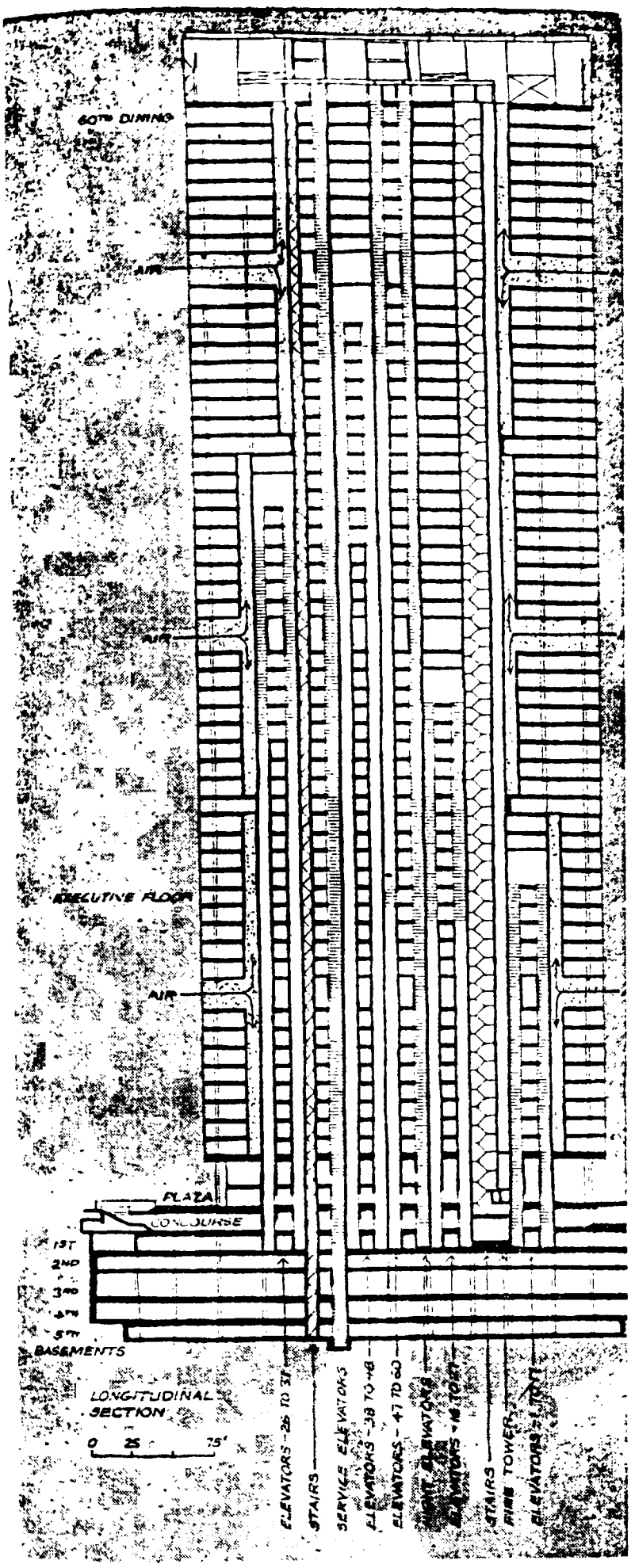
* Source: Architectural Forum, July 1961, p. 67



lower half of the tower. This left the upper half for rental space. The main problem was how to move people from one space to another effectively. The architects studied passenger traffic patterns, and a system which uses both escalators and elevators for peak-hour service was worked out. The subways discharge their passengers on the ground-floor level. During non-rush hours, employees and visitors who want to go up into the tower enter the elevators at the ground floor. During rush hours, however, the elevators do not serve the ground floor, and passengers must ride escalators up to the plaza level where the elevators are then based. The rising escalators discharge their passengers on the north side of the elevator banks, while people coming in from the plaza enter the south side of the elevator banks. In this way, lobby confusion is minimized.

Once inside the building, a visitor is likely to find himself in one of two entrance floors: in the concourse located under the plaza and entered directly from one of the three surrounding streets, or in the main lobby which is at the plaza level. Once on these two floors, it is possible to reach all the banking areas most frequently used by the public. From the concourse one enters the branch bank used for ordinary transactions. The concourse is the busiest and most useful public area because of its three street entrances and two entrances from the subways. The thirty-foot-tall main lobby at the plaza level is the most impressive because of the surrounding structures and objects far beyond the line of the glass.

The Chase tower differed from most others in three respects: first, it has no interior columns so it could produce a much more flexible space; second, its 30,000-square-foot plan is not symmetrical about the core; and finally, it was planned to serve future needs based, in a large part,

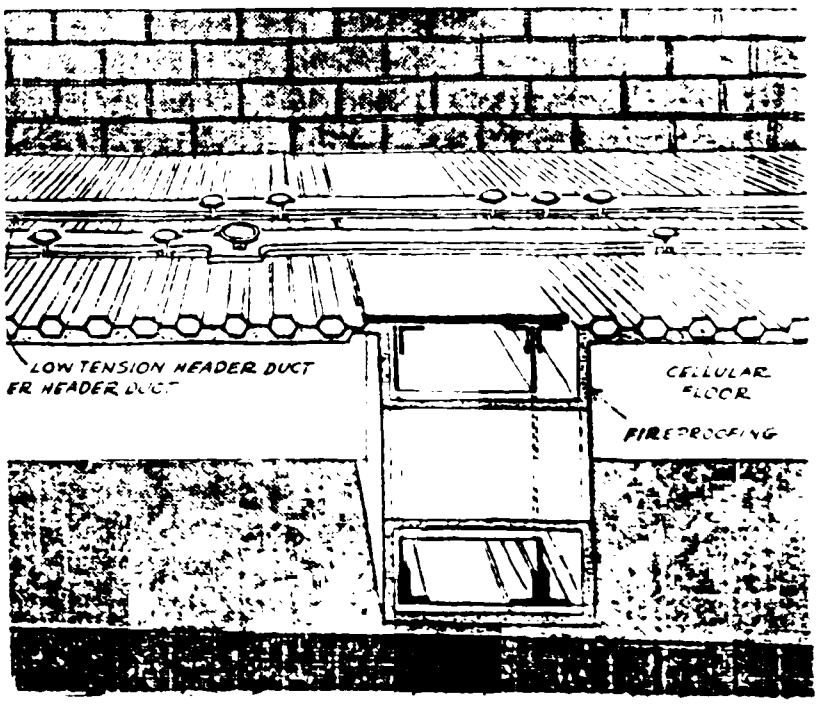


On the left is a section of Chase's vertical circulation patterns. The movement of people and paper activities from one space to another was an important design concideration. This design was worked out for peak-hour service to minimize confusion.

* source: Architectural Forum, July 1961, p. 93

On the right is the cellular floor that permits the delivery of power and telephone service to almost every square foot of floor space.

* Source: Architectural Forum, July 1961, p. 89



on guesswork. The bankers had no idea what kind of machines would be needed in the future,but the building was designed for them anyway.

"The architects left no detail, no fixture, no push-button undesigned--however unimportant."[4] If there was a detail that was not on the market to match the building, SOM would either adapt an existing unit, or design an entirely new one.

The structural and mechanical systems that were used in the Chase are outdated by today's standards, but at the time it was a structure of major significance. One of these was the big exterior columns, which simplified the interior planning of the building. Since there were no interior columns, the space was more flexible for design. There was a problem that occurred from this design of the exterior columns. The change in outdoor temperatures would cause the exterior columns to expand and contract by several inches over the sixty-story height, while the core columns would remain unchanged. This would induce bending stresses in the columns and girders of the frame. To prevent this accordian effect of thermal expansion, the engineers conceived the idea of packing the columns of the upper thirty stories with rigid foam-glass insulation.

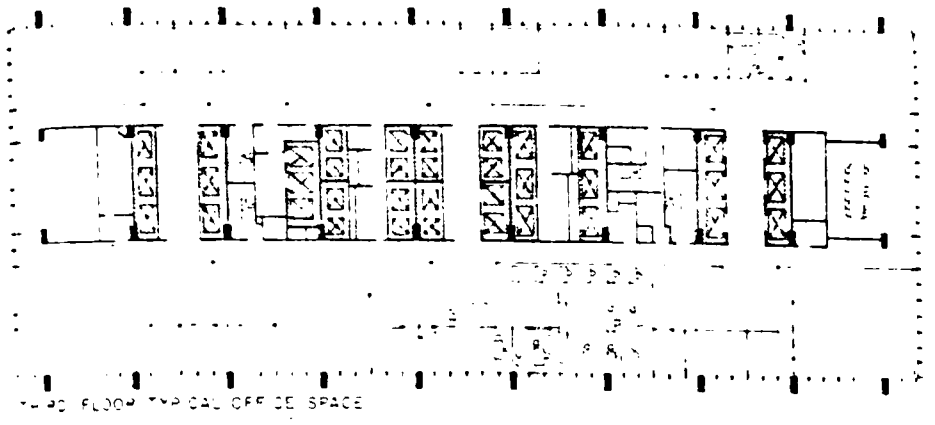
The attachment of girders to the exterior columns also presented a structural problem. With the columns set outside the frame's horizontal grid, it was possible to brace each column in only one direction: on its long axis. "The engineers compensated for the absence of a second beam (required by the building codes) by using a pair of heavy girders joined with a plate one inch thick, welded to the top flanges."[5] The interior columns were reinforced in the same way.

The structural system that was used on the Chase is no longer used because technology has improved since the fifties. The thing that is

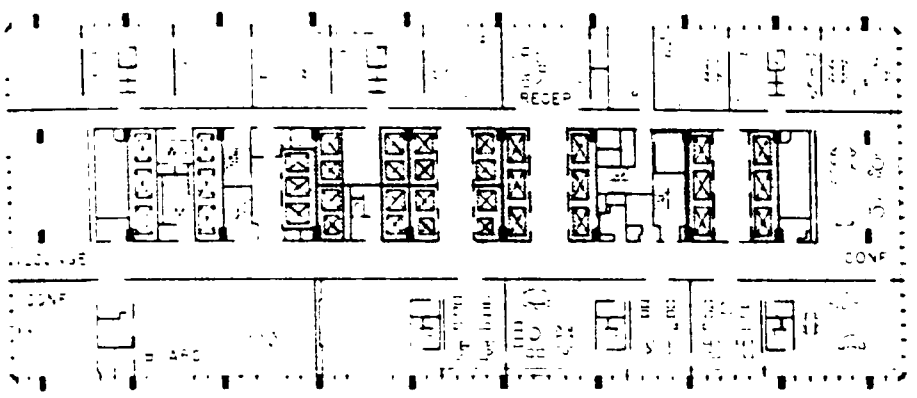
important is the way the architects and engineers were trying to accomplish a design for the future needs of Chase. The way in which they used the materials that were accessible to them and used the materials in a way that was revolutionary at the time for that particular kind of structure. Flexibility was the main objective in the design of the Chase. The design for no interior columns was not the only aspect of flexibility. The architects also used a cellular steel subflooring which made it possible at any time to install outlets for small business-machine power or telephones at one-foot intervals anywhere along the feeder ducts. This flexibility enabled Chase and its tenants to arrange desks and partitions according to need, rather than force them to conform to fixed outlet locations.

Heating and cooling of the inner areas is done with the use of a medium-velocity system serving at least four zones on each floor. The conditioned air comes from the fan rooms through risers in the core utility shafts and is distributed through ceiling diffusers. Return air is sucked into ceiling plates and fed back to the utility shafts which themselves act as return air risers. When the return air gets back to the mechanical floors, 40 percent is pushed through the louvers and out of the building, and 60 percent is recirculated.

The site that Chase and SOM decided to use was the one that Chase was already located on. "Chase's decision to stay home, instead of joining the uptown Park Avenue parade, set off a chain of new buildings and remodelings, a game of musical chairs as fascinating to follow as it was helpful to the long-term strength of the financial community."[6] Chase planned to link two major buildings, the old and new Chase headquarters, across a sizable pedestrian space by actually closing off a city-owned street. In return for getting one block of the intervening Cedar Street to incorporate



TYPICAL FLOOR TYPICAL OFFICE SPACE



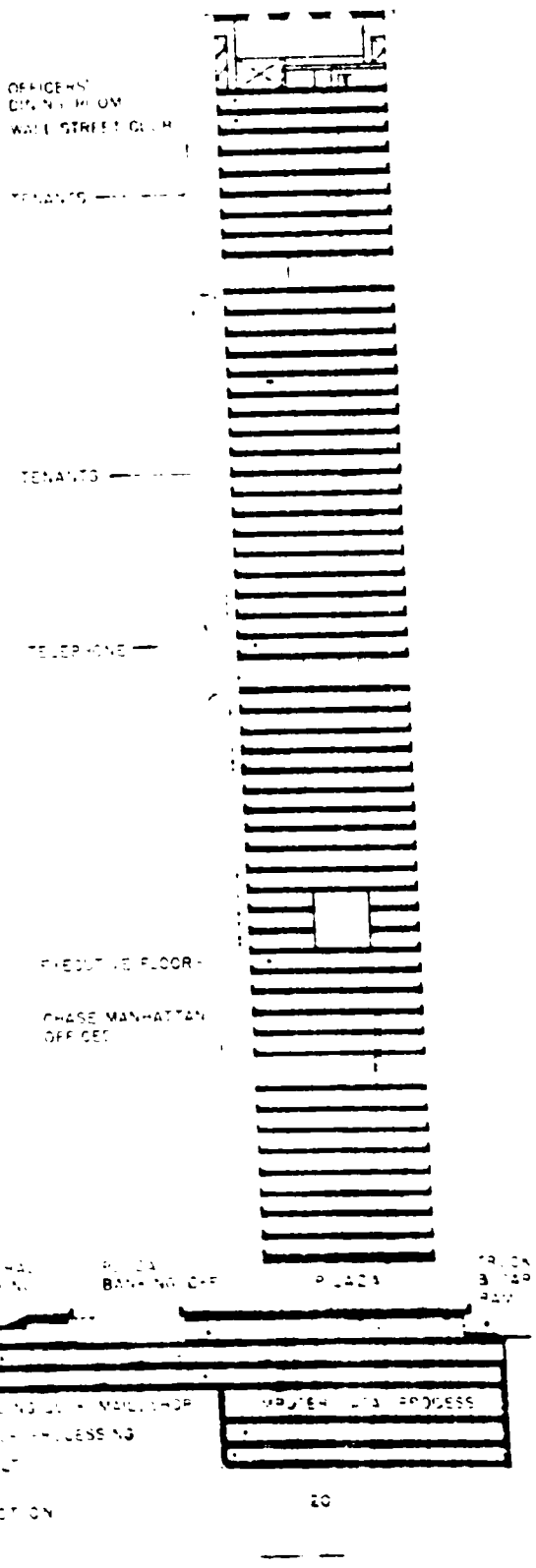
SEVENTEENTH FLOOR EXECUTIVE OFFICES

To the left are the plans of the third and seventeenth floors that are typical office space. The plans show that by elminating the columns from the interior it gives more flexibility in the design of interior spaces.

*Architectural Forum, July 1961, p. 72

The section on the right shows how the floors were laid out acording to user groups.

* source: Architectural Forum, July 1961, p. 147



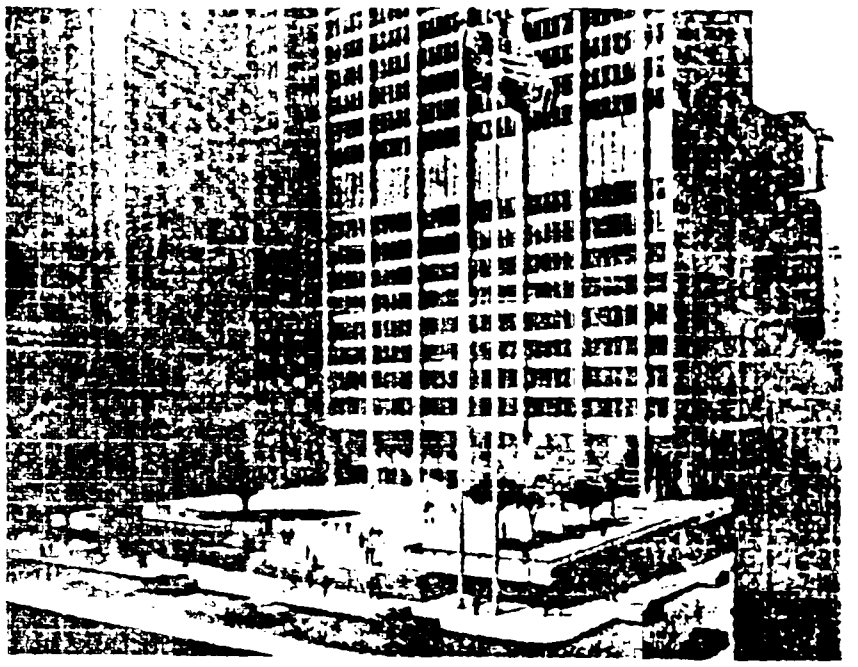
into its plan, Chase and SOM agreed to ease traffic flow around the superblock by ceding to the city a fifteen-foot strip on three sides and an eight-feet on the fourth. Chase also agreed to reroute existing utilities, at its own expense, and to pay the city $100,000.

The architects made a number of studies and proposed to Chase that the facility should be concentrated in a single building on their two-block site with rental floors into which the Chase operations could expand in the future.

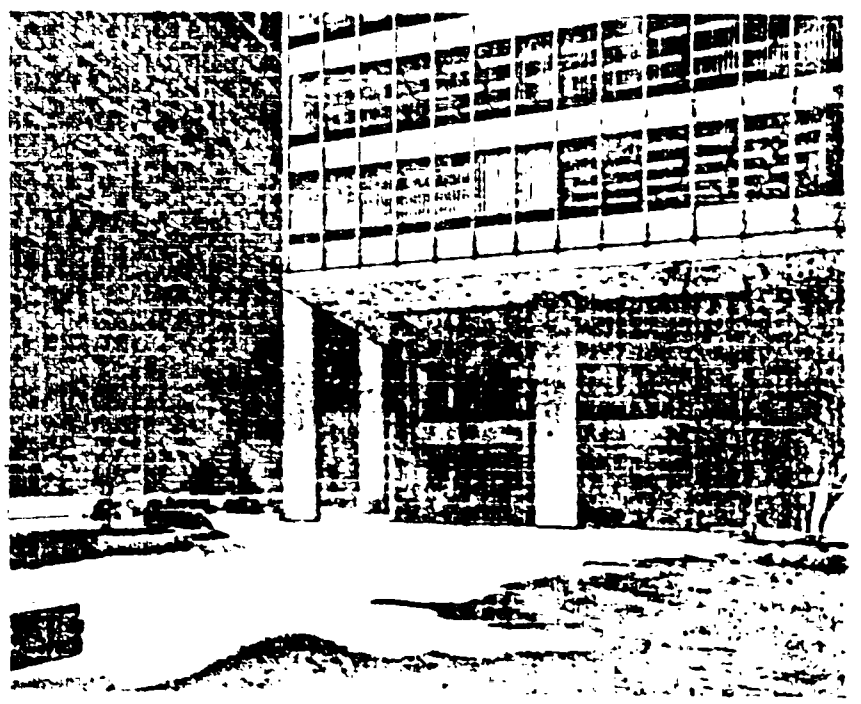
Unlike most older civic plazas which flow directly off the street, Chase's is raised and parapeted; as the land slopes away to the northeast corner of the site, its height increases to twenty feet above the sidewalk. This allowed headroom for a direct pedestrian entrance to the bank's concourse level on the east. There is a truck entrance to a service basement on the north, and air intake and exhaust louvers for basement working areas around the block. "Some have criticized the plaza as a one-story building which does not fully open up the area to the man in the street."[7] Others are happy to wander underneath the hawthorn trees, slightly removed above the scramble in the canyon-like streets. The Chase's lead in site design caused others to follow suit. The building around Chase began to dress up and welcome the new piece of open space in downtown Manhattan.

In analyzing the cost analysis of the Chase, it is important that the designer remember that the Chase was built in 1955. The Chase was in actual construction for four and a half years and was not a cheap project. There are estimates that the current construction costs were running 8.1 percent over earlier estimates of $91 million, and that $100.5 million was spent on construction by 1963. This represented some $45 per square foot, in line with buildings of comparable quality such as Seagram's and Union Carbide.

The top photo shows the plaza level of the bank where the main lobby is located. This open space was a relief in the congested downtown area. The plaza area is also where the bank could expand in the future if needed.



The bottom photo is a closer view of the plaza level.



* source: Architectural Forum, July 1961, p. 90

"An additional $19 million was spent on land acquisition, demolition, and utility rerouting: close to another $19 million was spent on all-new furnishings, including the $500,000 art program and considerable office machinery and special banking equipment."[8] Chase was a $137.5 million project.

The bank offset the cost of its new building with the rents from its tenants, who occupy one-third of the net area. Annual rents would run from $200,000 to $231,000 for full floors, or the equivalent of $7 to $8.50 a foot, figured on the New York Real Estate Board formula. Chase tenants can use all the space they are paying for and get the same degree of layout flexibility that Chase itself enjoys.

Even though the Chase is outdated by today's standards in building technology, there are many principles in its design that can still be used today. The way in which the architect designed the building to be flexible and work for the bank's needs in the future is an important consideration that should be considered even today. The way the building was designed structurally to enable this flexibility shows that the designer should consider every aspect of building types for his users needs, even if it has never been done before. The designer should also take into account the designing of details in the building all the way down to the door knobs. The Chase was and still is a good example of bank design.

Project: First National Bank

Location: Amarillo, Texas

Architect: 3D/International

The First National Bank of Amarillo is the oldest bank in Amarillo. It was confronted with the need for expansion space, and decided around 1971 to erect a new building rather than to enlarge the one they had been occupying.

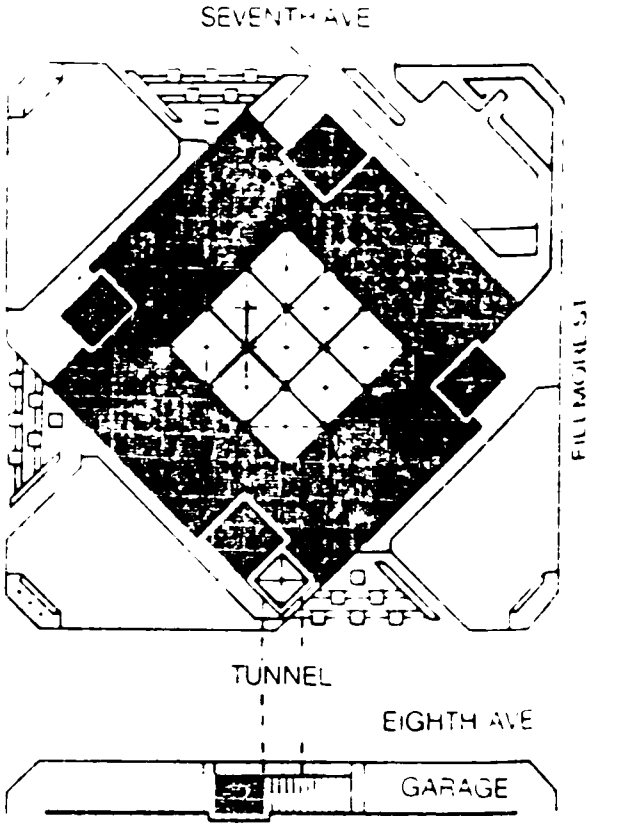
First National hired 3D/International for the project. The problems of First National were analyzed by 3D and the following proposal was made. Since two new buildings were put up some time before by the two other local banks, their rivals, 3D saw that both buildings were average curtainwall towers whose sole claim to fame was which one was the tallest. Considering that the modest downtown in this city of between 150,000 and 200,000 people has one of the flattest plateaus on which to expand, they reasoned that competing in height would make no sense.

The operations of First National mandated a low, large building envelope. It was decided by the architect that the individual departments worked more efficiently on one floor and needed to interact as immediately as possible with others as well. Each department was large, requiring ample floor space to begin with and future expansion space contained within the layout.

"The bank and architect defined a less tangible psychological profile--their role in the community as native promoters of the Texas Panhandle."[9] Located in the Amarillo region are the biggest cattle feed lots, the biggest cattle auction, the biggest copper refinery, and the only source of helium in the world. "The bank wanted an image of permanency, solidity, quality,

The site to the right shows how the building was oriented in a diamond shape in order to allow the four corners of the site to be landscaped. This also helped make the building seem less massive to passers by.

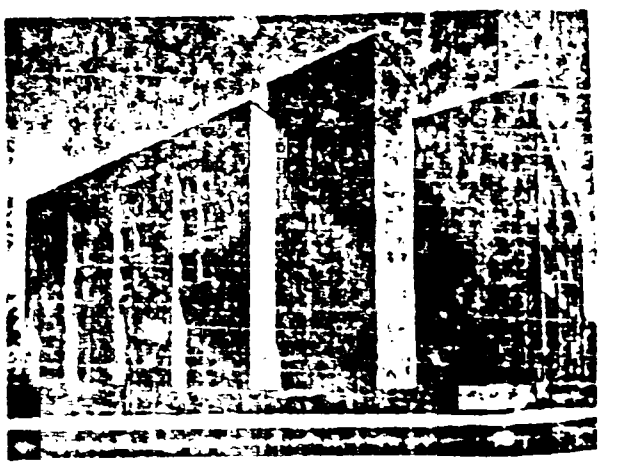
* Source: Contract Interiors, June 1978, p90



site

This is a view of the exterior of the bank.

* Source: Contract Interiors, June 1978, p98



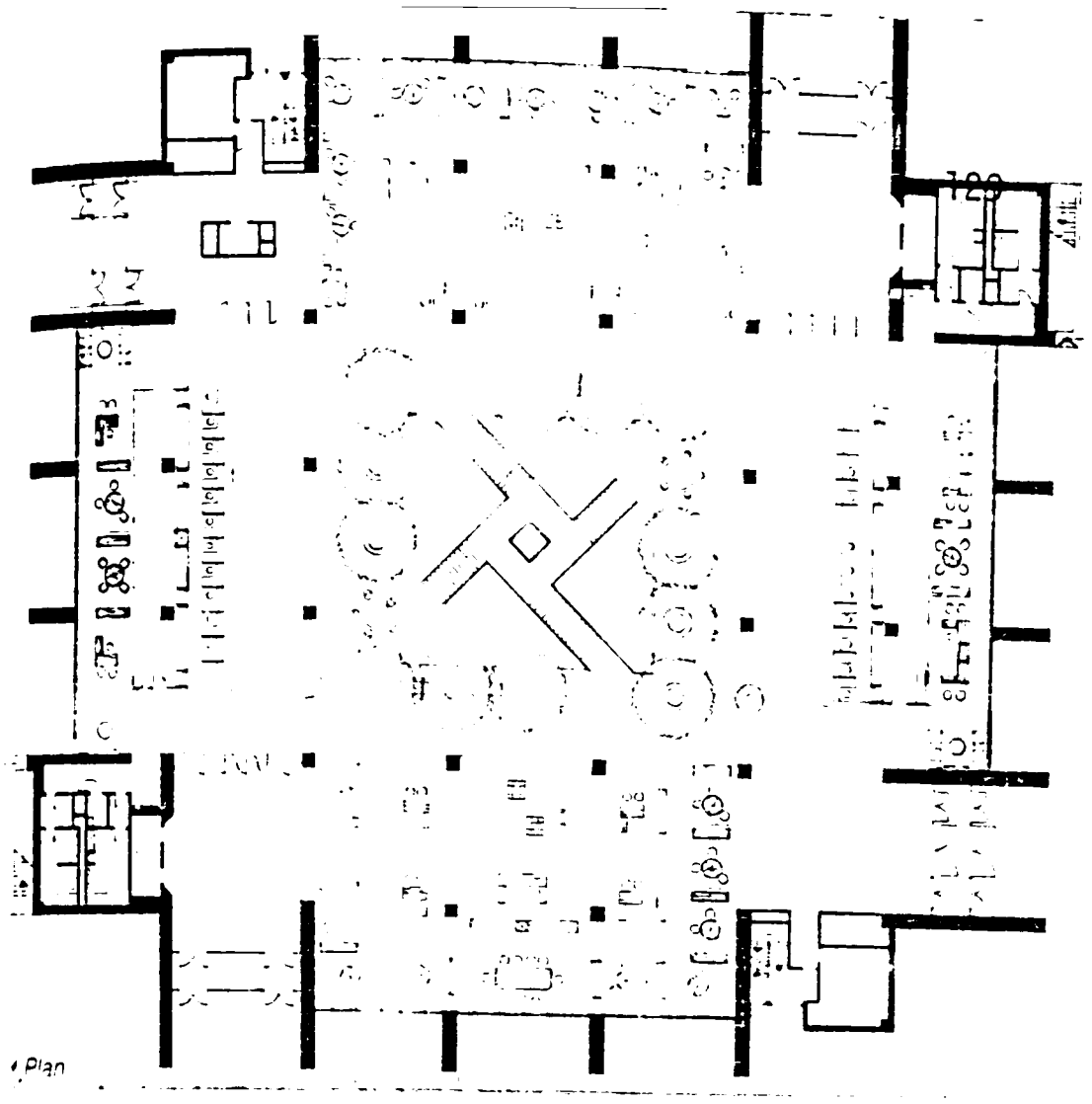
resourcefulness, accessibility, openness, warmth, directness, identification with the region, and friendliness."[10]

The height of the bank was finally designed for six stories with a four-story parking garage to be located beside it. The garage is of the same, earth brown, brick as the bank. The solar bronze glazing was set in to protect the interior from the sun and to emphasize the structure's massiveness. The bank is more dominant, not only because of its greater height, but because its square form has been diamonded on the square block, leaving space for a small part at each corner. The building can not only be seen from every direction, but it can be entered in that way, from any of four entrances, or through the mirror-sided underground parking tunnel.

The bank has an atrium located in the center of the building, and it is this atrium that the entire building is designed around. The atrium was an idea that 3D came up with to help the bank achieve the goals that they wanted to achieve that were listed earlier. On the main and second level are most of the familiar banking departments, with executive offices that are completely private as well as officer stations that are set up with various open plan arrangements. The fixtures, woodwork, desks, and stations were all designed by 3D for the bank.

The structural system is made up of steel beams and joist with a curtain wall brick face. The brown brick was used not only to blend in with the region but also to help give an impression of a massive and strong building. This is important when people start thinking about the security of a bank. The security system is a network of cameras that feed thirty-two television screens monitored in an ably guarded station.

The mechanical system is located on the outside corners of the building. The chases are located beside the restrooms so that the interior space would be more open to the public and employees.



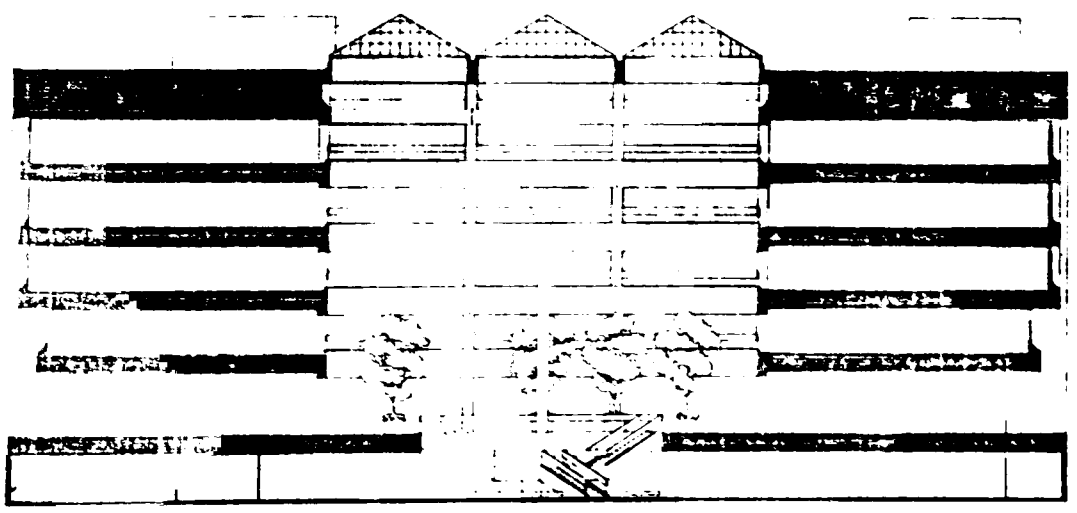
Plan

The plan of the bank is laid out in four quadrants that surround the atrium. This was done for the need of flexibility plus it added to the comfort of the visitor, and employee. It gave the bank a more relaxed feeling.

* Source: Contract Interiors, June 1978, p. 100

The section below shows how the building encircles the atrium. The exterior skin expands farther out with the increase of stories. This was done to make the building seem stronger and also to help lure the passerby into the atrium space.

* Source: Contract Interiors, June 1978, p. 100



Section

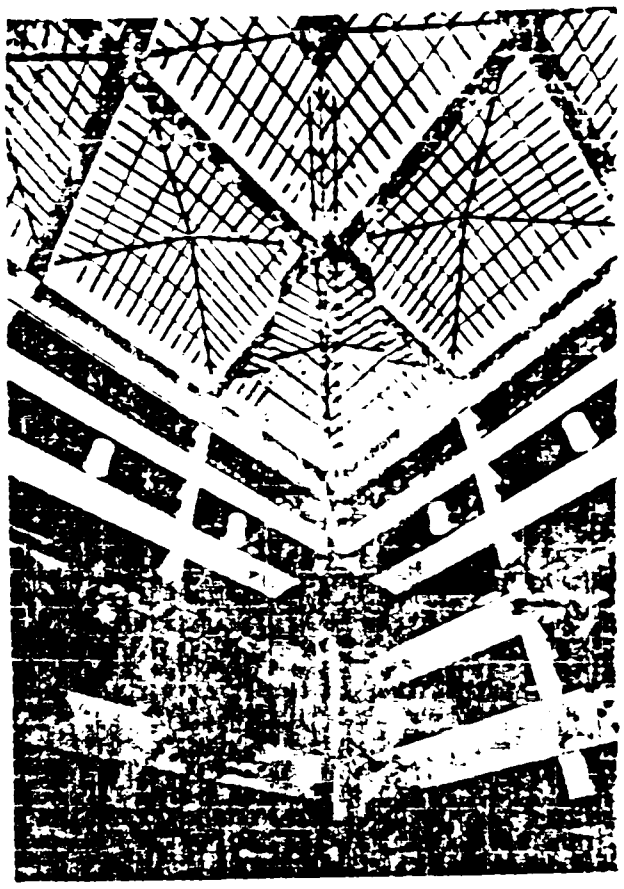
The bank by 1974 had assembled three city blocks in L formation for their site. The north block now accommodates the six-level main bank building; the south block the four-level parking garage; the block east of the garage now accommodates employee parking and can be used for future expansion. A tunnel joins the bank and garage. Since the building axis is turned to give a diamond shape, there is room for planting at the corners of the block. This green belt is needed in any downtown area. Pedestrians can enter the bank from any side because there are four entrances on the ground floor. This gives an easy access to different banking departments.

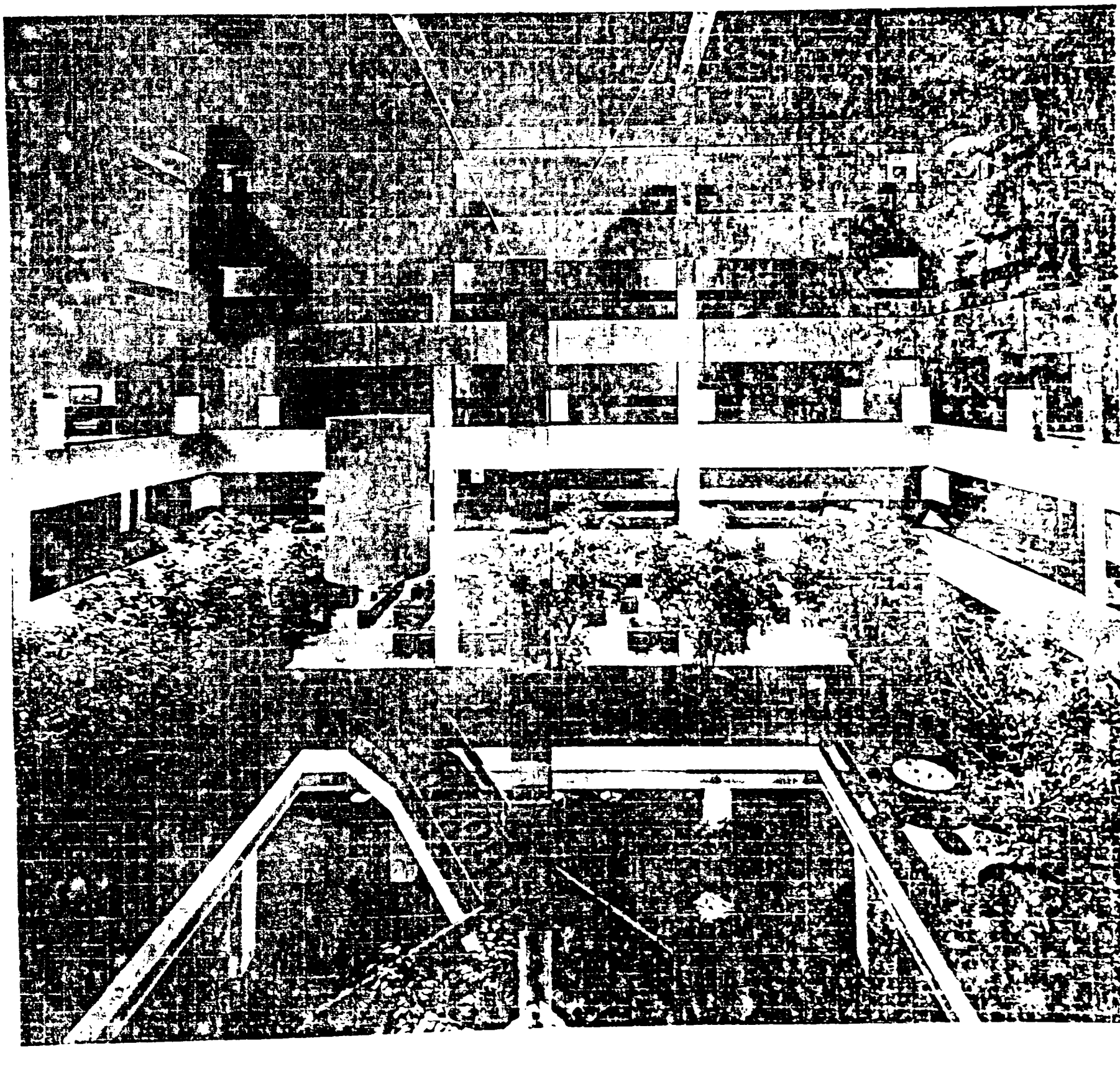
When the bank was to be built the bank decided early to use a local contractor in whom they had confidence and whose cost analyses they had compared with others; they proceeded with a design-build fast-track operation without bidding. Preventing costs under inflationary conditions was the main consideration. They eventually saved a million dollars on the $18 million total. Because so many decisions were made during the recession of 1974, the bank made one large mistake in that they had limited tenant space. There is a little on the upper tiers, and it is inadequate to the demand. This also hurt the bank in terms of rental income. The cost of the bank in 1974 was estimated at around $60 a square foot.

The First National Bank of Amarillo was trying to accomplish something different from their competitors. They tried to bring a public place into a bank with the use of an atrium in order to make the person off the street feel more comfortable. In doing this, the interior space of the bank is more open and flexible. The atrium gives the interior space a less confined feeling.

These two photos show the interior atrium as the focal point of the interior space. The rest of the building surrounds the atrium, making it a people place.

* Source: Contract Interiors, June 1978, p 99





Project: Fort Worth National Bank

Location: Fort Worth, Texas

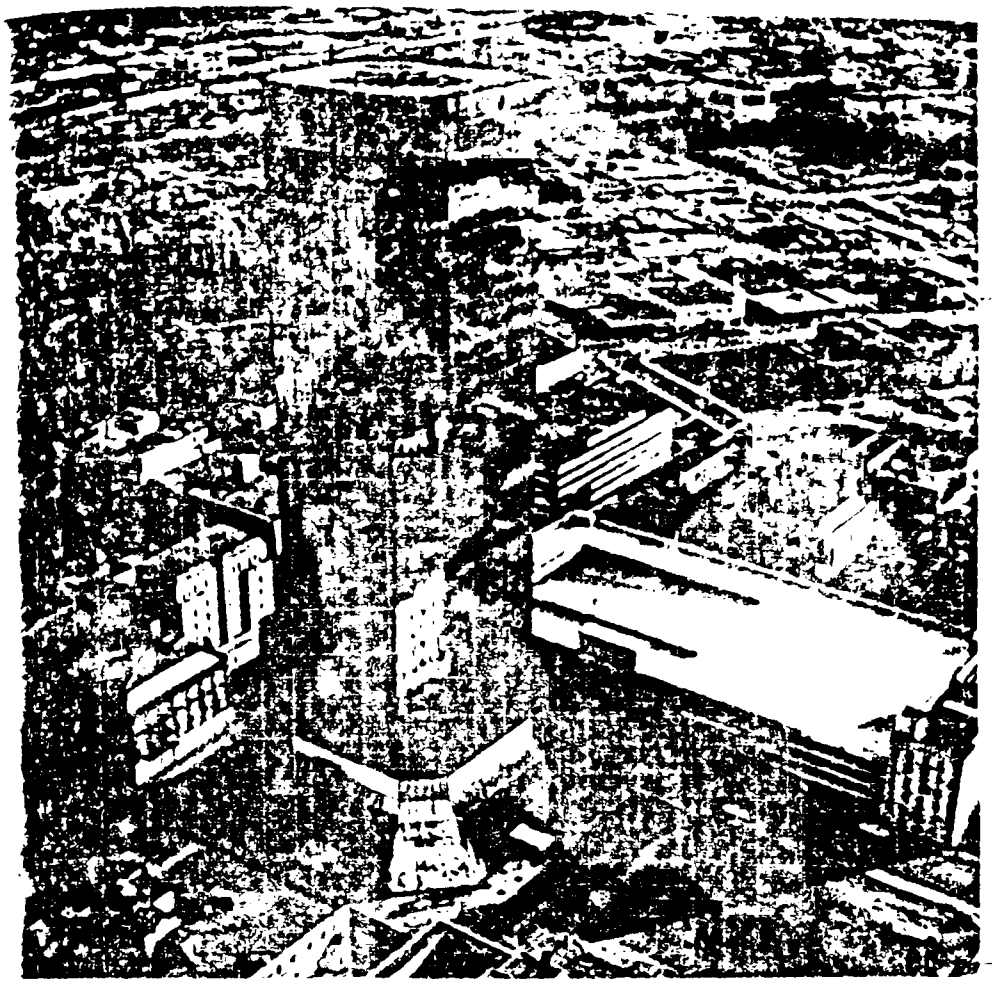
Architect: John Portman & Associates

The Fort Worth National Bank, as in the case of most banks, had a need to expand its present banking operation. Fort Worth is one of Texas' fastest growing cities and Fort Worth National also needed to grow to keep up with the demand.

When Fort Worth National was ready to make their decision to expand, they consulted John Portman because they knew Portman had a lot of experience in designing for public spaces. The bank and architect analyzed the bank's needs and looked at locating in the congested downtown area. The decision was made to locate the building at the edge of the downtown area where it would be diagonal to the old downtown buildings on the streets of the area. This was intended to make the building the focal center of a centrifugal pattern and did by virtue of its sheer size.

The bank wanted a design where there could be an easy interaction between departments and wanted to cut down on wasted space. The ordinary solution for client programs like that of the Fort Worth National is a tower building with the public banking operation located somewhere to one side of the building lobby. The result would be: modest-dimensioned, isolated spaces for the lobby and bank. There would be no grand space to lure the public.

"Portman operated on the premise that a building which performs only its defined functions never performs it as well as it might were it to serve, in addition, as an urban core, magnet, meeting place, and stage for people."[11] Portman did this while adhering strictly to the space

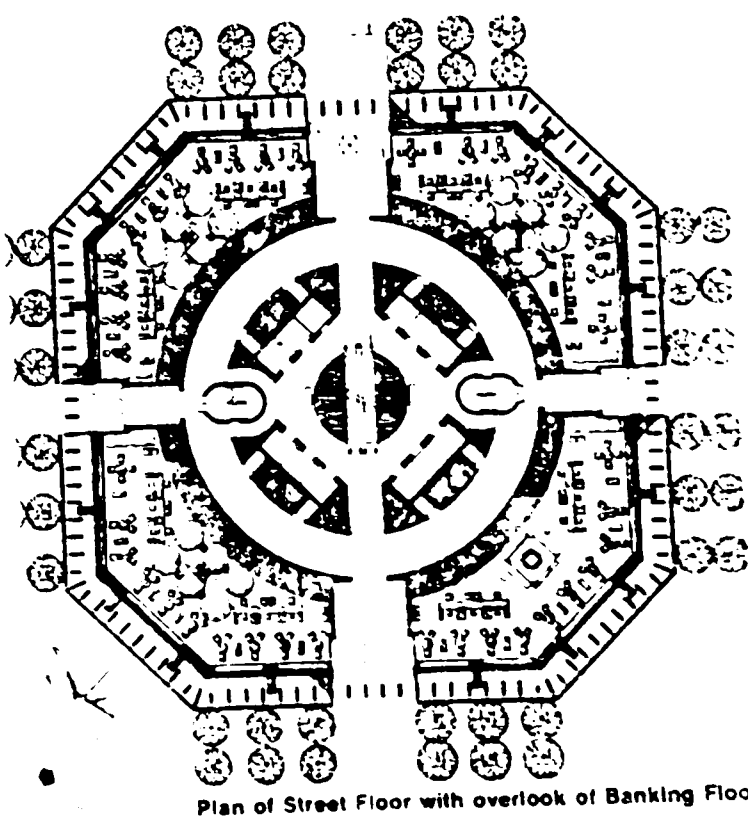


This is a view of the office tower and the 5-story parking garage. The glass skin office tower is a landmark in its setting with smaller buildings around it.

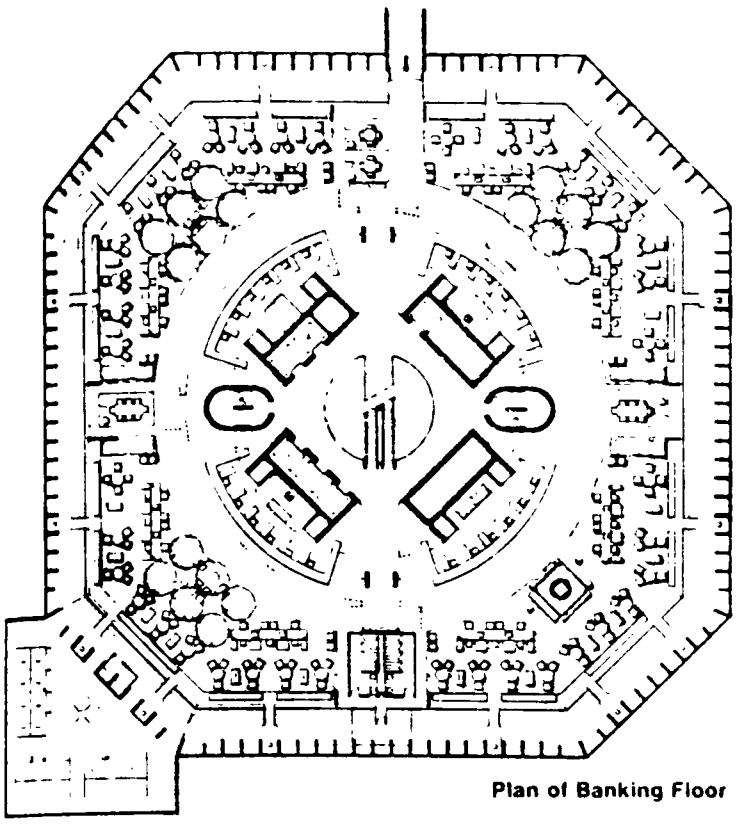
*source: Interiors, Nov. 1974, p. 96

To the right is the plan of the street level that overlooks the banking floor. The atrium is located at the base of the building. The plan is flexable in that all obsticals are located in the center core.

*source: Interiors, Nov. 1974, p97



Plan of Street Floor with overlook of Banking Floo



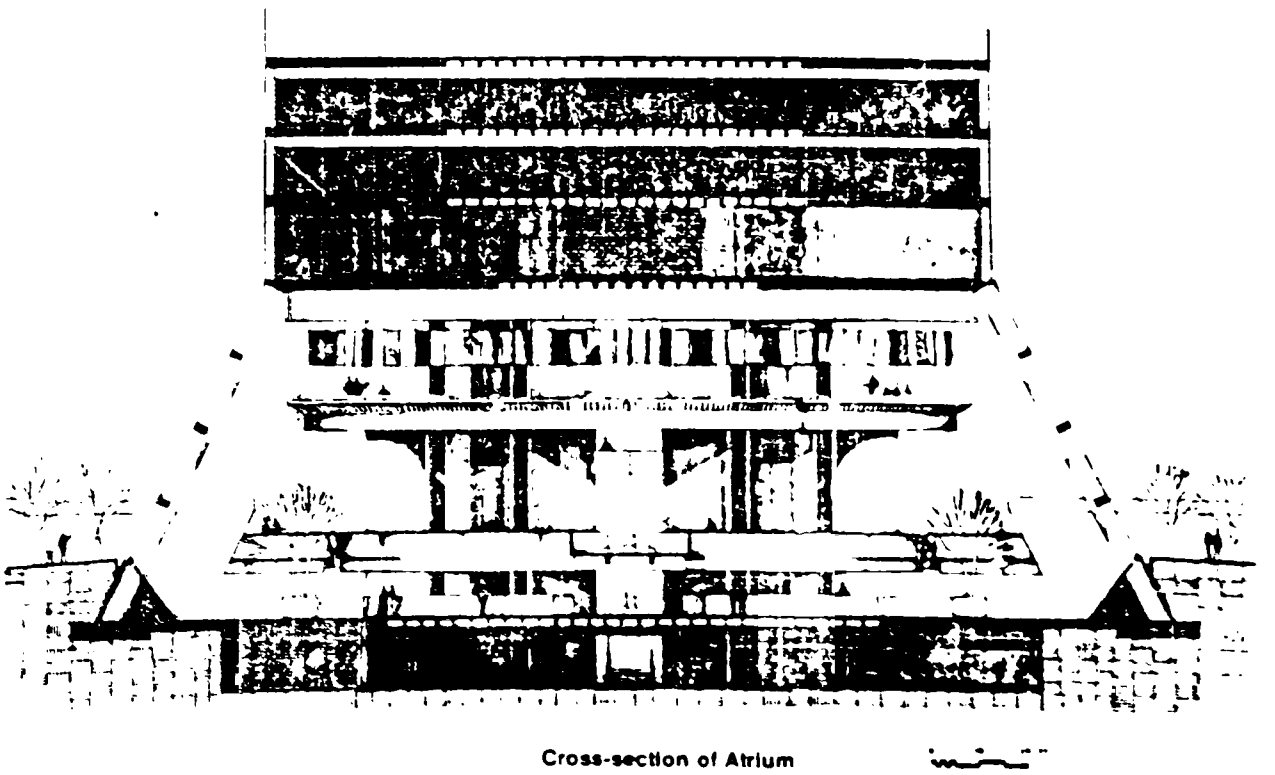
Plan of Banking Floor

The banking floor plan is divided into four quadrants. since the elevators and chases are located at the core, the lay-out for the banking operations are more flexable.

Source: Interiors, Nov. 1974, p. 97

The section below shows the design concept more clearly. The space in the atrium is a lively, airie, sunny, and atractive.

* Source: Interiors, Nov. 1974, p. 98



Cross-section of Atrium

allowed for the client-related functions. His trick was to get the same space to do more than one job at the same time. The obvious application of this principle was to avoid wrapping the public-area functions in solid enclosures, thus creating one grand space. "Thus an important corollary of the shared-space principle: when two or more functions share the same space in whole or in part, then each can do with less space although both appear to have more space."[12] This means the whole becomes greater than the sum of its parts.

The atrium at the base of the building is one of a hollow tent with glass and is partly excavated under a multi-story tower. The spaces that were to be shared were stacked one above the other. The banking floor is divided into four quadrants and encircles the atrium. The space one enters is larger, airier, sunnier, and deeper than is hinted by the shell of the building. The building's glass shell can be seen through to give the visitor the feeling of being outdoors.

The structural system of the building is made of concrete. This was used to give the visitor a sense of strength and security. The building used a glass skin on the exterior to play down its mass by means of reflecting the sky and the lower masonry buildings that surround it. The mechanical systems in the building are located near the core with the elevators. Since all the systems are located near the center of the building, there is more accessibility and supply for each floor.

The 39-story office tower of Fort Worth National is on its own city block. The bank has a connecting five-story parking garage on an additional block-and-half. The site is almost entirely used by the tower, except for a walk around the building. There are four entrances: one centered on each of the four facades, each heralded by a row of twelve live oak trees.

The building is tall on its site and was intended to be a landmark in the older downtown area of Fort Worth. The tower is not overpowering to the smaller buildings that surround it because the glass skin reflects the sky so the building does not look as massive as it really is.

The Fort Worth National Bank was constructed in 1974 and was a new, fresh idea in bank design. The cost of the project was based on $64 a square foot. This cost was slightly high for construction at that time. The use of concrete and the glass skin must have been expensive since there was a recession going on at the time. The bank has sixteen stories that are used as rental spaces. This income helped in the bank being able to finance the project.

The bank's main concept was to use a space for more than one activity. In doing this, the outcome was a multi-use, multi-level atrium that lures in the visitor and turned the atrium into a people place. The architect was effective in supplying the spaces that the bank required. The open and active spaces have led the bank to the top in bank design of today.

Project: Citizens Bank Center

Location: Richardson, Texas

Architect: Omniplan

The Citizens Bank Center found its needs outgrowing its present facility. Instead of remodeling or expanding its present building, it decided to move to a site in Richardson just off the expressway.

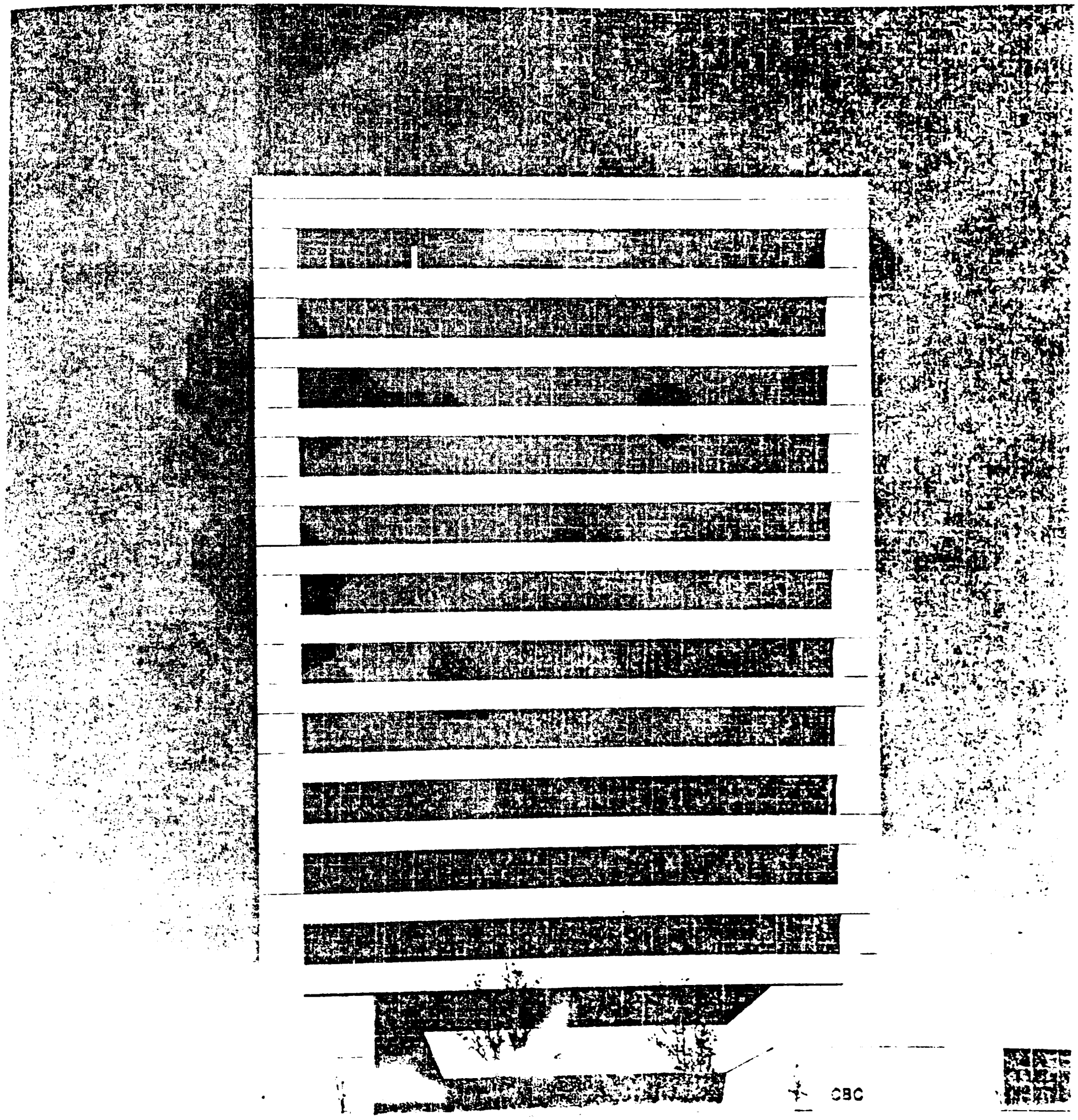
The program for Citizens Bank Center called for a strong visual identity, a form that would attract attention by motorists passing on the expressway. It also asked for an image that would express the bank's commitment to long-term ownership. Yet, it wanted a building that would be suitable to what is a more suburban than urban location. All of these needs were accomplished with a design of simplicity: a composition of solids and voids, of huge precast concrete elements and deeply recessed insulating glass.

Citizens Bank Center consists of the bank and an office tower linked by an arcade with retail and restaurant facilities. The entrances to the arcade are located at several points, convenient to the major functions and to the parking. "The bank's operations are located on two floors with its main lobby and related public functions on the ground level adjacent to the arcade."[13] These are secured by a roll-away grille. A central island houses the teller functions and is connected by a stair to the bookkeeping department directly below.

The width, height, and lighting of the arcade are manipulated to create a variety of spaces for pedestrians circulating through the building. This is an example of the drawbacks with the use of this type of modular design. It almost seems as if the spaces and needs are forced into a certain module instead of letting the needs create the space. There is

The exterior of the bank shows off its boldness. The modular construction shows its effectiveness here with the deep sunk windows.

* source: Architectural Record, July 1975, p. 131



not much flexibility in the design of the bank's plan. How will this effect the bank when it grows, or there is an increase in technology in baking operations and equipment? The tower does seem to have more flexibility. The only interruption in the plan is at the core where elevators, stairs, mechanical systems are located.

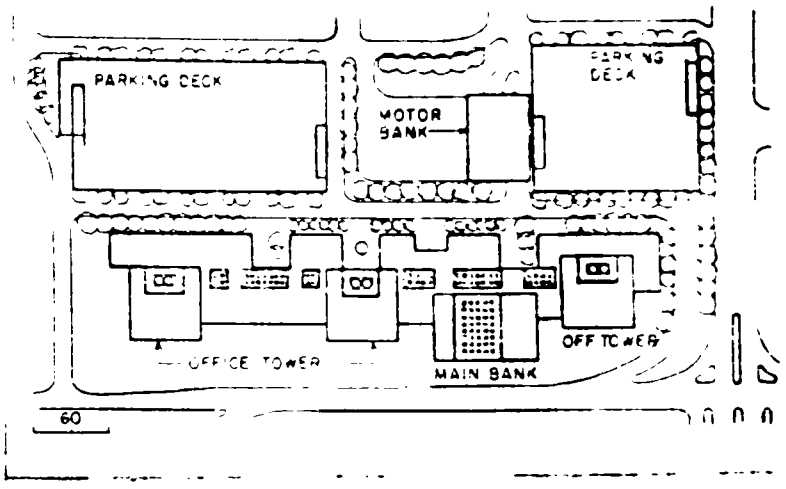
The structural system is a hybrid system of precast concrete, poured-in-place concrete and structural steel. The reason concrete was used so extensively was to give the building a bold look, one of security, and this material did just that. The windows in the bank were sunk deep into the structure. This was not only done to create voids but was necessary because of the climate in the region.

The basic air system uses multi-zone air handling units of the blow-through type, one unit per floor, each with nine zones for control. The ductwork is of the low-velocity type with acoustical attenuation at the air handling room to assure a quiet delivery throughout the building. Heating for perimeter offices is provided by electric duct heaters in the exterior-zone ductwork.

The site for Citizens Bank Center is located just off the expressway in Richardson. The bank wanted a site that would bring them out of the urban area and into the suburb. The site that supports the thirteen-story office building that stands above the 35,000 square foot bank and 15,000 square foot retail space is easily seen from the expressway. Another reason for locating the site was to bring the bank to the people. The site is large enough to have a lot of vegetation planted on it around the building. This was done to try and make the bank look like part of the neighborhood. The buildings around the site are mainly small commercial. The cost of this bank was $70 a square foot.

The site is fairly large and shows the modular lay-out of the building and its three towers. There is adequate parking behind the bank. The site is heavily landscaped.

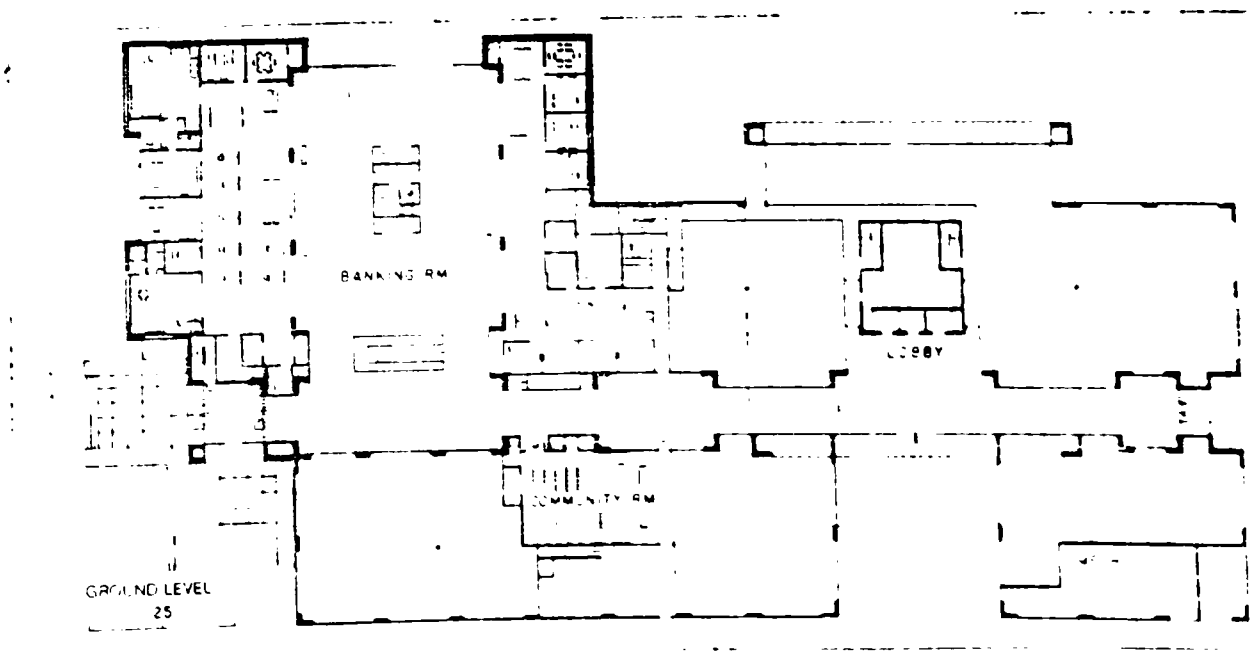
* source: Architectural Record, July 1975, p. 132



site

The banking plan is shown here with its modular lay-out. The design is based on the banks present needs but there is no room for expansion in the future.

* source: Architectural Record, July 1975, p135



plan

The bank was trying to make a landmark statement in the suburbs but what it got was a building that presents itself as an average office building. There is really no indication that a bank even exists in the facility except for the sign. The building did satisfy some of the wants and needs of the bank, but as far as the bank design needs for its spaces, the building is lacking. This is a good example of a trap that most architects fall into today in that they give the client what they want instead of what they want and need.

Comparisons

In comparing these different banks it can be concluded that a bank has many typical needs that are independent from any one set of individual needs.

The site plans were designed so that the building would give an impression of stability, but at the same time give an inviting appearance to the pedestrian passing by. This inviting appearance was accomplished either by the design of the entrances or by the use of landscaping. The site plans were also arranged to help give easy access to the building either from the parking garage or by foot.

Once inside the banks all of the public-needed banking functions were located on the lower floors to give the customer easy and convenient access. The banking floors were laid out with flexibility in mind. Planning for the bank's future needs was a major consideration.

The vertical circulation was always located in the center of the facility. This was done for a number of reasons. The first was to allow easy access of pedestrians as well as mechanical chases to different floors as needed. Another reason was to eliminate barriers from the exterior perimeter of the floor plans. This made it easier to rent more office space with better views. It also allowed more flexibility in the layout of office space for the present as well as future.

The structural systems were made up of steel beams and joists with either brick and glass or concrete and glass facades. This system was mainly used because it is more rapidly constructed, more flexible, and a little less expensive. The exterior facade was designed, on all the bank, to give a look of massiveness. This was done to give an impression of security.

Energy conservation was designed into all the banks as far as shading and sun orientation. The banks all used zoned heating and cooling so that certain parts of the building could be shut off when not in use. The use of natural ventilation was not used effectively in any of the banks even though two of the banks had atriums.

Footnotes - Case Studies

1. Garvin, Professor. "Case Study Assignment." Spring, 1983, p. 1.
2. "The Chase," Architectural Forum. July, 1961, p. 67.
3. "The Chase, economics of a big investment," Architectural Forum. July, 1961, p. 86.
4. "Chase Manhattan Bank Head Office Building," Architectural Record. July, 1961, p. 145.
5. "The Chase, economics of a big investment," Architectural Forum. July, 1961, p. 87.
6. "The Chase," Architectural Forum. July, 1961, p. 66.
7. "Chase Manhattan Bank Head Office Building," Architectural Record. July, 1961, p. 146.
8. "The Chase, economics of a big investment," Architectural Forum. July, 1961, p. 88.
9. "Banking on an atrium," Contract Interiors. June, 1978, p. 98.
10. Ibid.
11. "Portman's most intensively shared space," Interiors. November, 1974, p. 96.
12. Ibid., p. 102.
13. "Citizens Bank Center," Architectural Record. July, 1975, p. 133

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